COMMENTS RECEIVED THRU DECEMBER 31, 2016

Technical Memorandum

December 31, 2016

prepared by:

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prepared for:

City of Bozeman & Montana Department of Transportation

Public Comment Matrix - FROM DIRECT EMAIL

(thru December 31, 2016)

ID	Initial Comment	Creator	Create Date	Source
1	Coordination with MSU and their 50-year master planning effort needs to be included as part of the Transportation Master Plan as motorized and non-motorized travelers to/from MSU have a significant impact on traffic operations in and around Bozeman.	Tom Eastwood	2-Sep-15	website
2	Our address is 27383 Frontage Rd, Bozeman. We are located on the short stretch of highway between Springhill and 7th Avenue. There are 7 residences, some with teenagers that are of driving age, along that stretch with private driveways that access Frontage Road. In addition, there are several small businesses and a daycare facility whose patrons use the small roads off of Frontage. The reduction of speed from 60mph to 50mph on Frontage Road for the past year has resulted in much safer conditions for those of us who live here and also those who access businesses in this same area. As you know, there are no shoulders nor turn lanes in this area, and it is an area with a highly-used wildlife corridor. Between the wildlife crossings, the school buses stopping here for school children, the teenagers leaving for school, the parents dropping off their toddlers for the daycare center, and the residences needing to leave and return to their homes, this area has been a safety concern for years. We have heard that the MDT is considering increasing the speed again in this area by sometime around the end of October, which has all of us who live here very concerned. Because there are freeway accesses on both ends of our area and, therefore, no need for the traffic to have higher speeds here, we ask that this area be seriously studied for safety reasons and that the city of Bozeman has input with the MDT to keep our speed reduced and perhaps consider designating it as a quiet zone with a 45mph speed limit. In addition, we ask that the city seriously consider making this area a no-passing zone, as there are many drivers passing unsafely, especially during the morning commute, causing those of us who live here to be concerned about turning into our own driveways. If you would like to talk to us for any reason, our phone number is 406-585-5443. Thank you for your time!	Scott & Terry Hall	7-Oct-15	website
3	Thanks for your University Neighborhood briefing last night. I posted a number of comments. I ride more than 4000 miles annually on a bike and avidly tour outside the US. I've visited 35 countries and cycled in 21 of them. Please contact me if my posted comments are unclear. Happy to contribute.	Larry Newman	14-Oct-15	website

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4	Kudos (belatedly) on College/11th roundabout - it functions wonderfully for cyclists and autos! It is really unfortunate that the same was not approved for Baxter/Davis. Meanwhile, Church/Kagy intersection is a debacle for autos, cyclists, and runners alike - a roundabout would be a tremendous improvement there.	Lucian Hand	15-Oct-15	website
5	Thank you for taking comments. I am a bicycle, bus, and walking commuter and hope that the master plan pays careful attention to transportation that is based on bikes, buses, and walking. Having safe and accessible ways to move around town that are not based on cars/trucks is important and will help us to keep our high quality of life. Plus it's healthy.	Suzanne Christophe	20-Oct-15	website
6	The left hand turn arrow at the traffic light really helps move traffic going south on Rouse who want to turn east on Main Street. I believe we need 2 more left hand turn arrows: for traffic going east on Main that turns north on Rouse, and for those going south on Willson turning east on Main. Thanks!	Marilyn Guggenheir	24-Oct-15	website
7	I hope to participate further in the future, but I have two big problems with West Babcock street. There needs to be a roundabout or 4 way stop at Ferguson, so traffic doesn't pile up at rush hours. Also, a left turn arrow is badly needed at Babcock, 23rd and Main. Most West Babcock traffic is turning left onto main, but with more and more through traffic on 23rd to Babcock, fewer and fewer can pass the intersection, which will get much worse with a light at 23rd and College.	Jay Sinnott	26-Oct-15	website
8	In general, the bike lanes and paths in Bozeman are well placed and well maintained. In a few places, however, they are still very much needed. On West Oak, between the intersection with Davis and Meager, there is a stretch where the road narrows and goes into an S bend. There are no bikes lanes, no street lights, and no road shoulders as it is banked by jersey barriers. There also tends to be a lot of road debris and plants which grow under the barriers and into the road. I commute to MSU by bike and need to pass through this twice a day. It is dangerous in the mornings when there is heavy traffic, but much worse in the evening when cars have trouble seeing me. I would love to see a marked bike lane, and a street light would be even better. Thank you!	Sue Pellegrini	27-Oct-15	website

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9	I commend the efforts to gather as much input from the community as possible. As Bozeman grows, it is crucially important to preserve the sense of community that exists, but is diminishing as we spread farther apart into the valley. One way to preserve the community is through maintaining and enhancing our connectivity to Bozeman's cultural and community centers. I believe that by developing and implementing a better non-motorized connectivity master plan from the Downtown Core and radiating outward to the outlying residential areas, that Bozeman will continue to thrive long into the future and maintain it character. Without this connectivity, Bozeman will become further separated into smaller sub-communities with are both physically and culturally isolated from each other. The opportunity existing now to invent in making the necessary corrections and connections to the missing pedestrian and bike routes to downtown, thru motorized route barriers (i.e. 7th, 19th, I90, etc.), property barriers (i.e. High School property, Undeveloped land West of 7th) and to the outlying neighbors, particularly to the west, as well as plan and require that future development be integrated with such a master plan. Ultimately, I believe trail connectivity and corridors to have greater impact than pocket open-space requirements, in new developments. As the Transportation Master Plan is developed, please place a high importance on non-motorized routes, and their overall connectivity throughout the community.	Tom Kujawa	27-Oct-15	website
10	Our one way street system with Mendenhall and Babcock Streets does not work well ... in fact, the project was never completed with the North 7th to Babcock connection for it to work as originally conceived. Mendenhall from North 7th to 11th makes no sense. Now with the new Element Hotel on Mendenhall, and the major housing development (with inadequate parking provisions) planned across from the Martel Plaza on West Lamme, we need Mendenhall and Babcock returned to two-way streets NOW ... not later when it's a huge problem. With the Athea Hotel and new hotel on 5th and Main, the congestion and traffic problems are going take matters from very bad to worse. As Bozeman grows to the west, this will only become worse with more traffic heading downtown. The morning and afternoon traffic forced on West Lamme Street and other side streets to circumvent the one ways is very problematic and dangerous with speeding traffic down a very narrow residential street (also designated as the "Bike Route") Thank you for allowing this format to comment!	Doug Wales	2-Nov-15	website

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11	The laws concerning cyclists on the roads are flawed. The law says cyclists have the same rights and responsibilities as motor vehicles, but there are a couple of problems with this. First, drivers don't treat cyclists like cars. Bikes are much slower, smaller, and harder to see. More importantly, though, are the consequences of an accident - cyclists don't pose much of a risk to people in cars, but a cyclist hit by a car stands a good chance of serious injury or death. The laws about cyclists on the road should be more similar to pedestrian laws than motor vehicle laws.	Perry Hooker	3-Nov-15	website
12	I would like more bike paths out to areas such as Four Corners and throughout the city. I'd also like us to think of areas where can make roads into green spaces in the city centers to help people become more conscious of the environment much like Germany is doing. We could be the first city in the U.S. http://www.bbc.com/future/story/20140204-can-a-city-really-go-car-free I would also like to see more solar roadways. Thank you!	Emily Kniles	4-Nov-15	website
13	Install stop signs on streets crossing Yellowstone Ave and Meagher Ave between Babcock and Durston. Install stop signs on avenues crossing Cascade St. between Yellowstone Ave and Ferguson Ave. Eliminate all unregulated intersections in Valley Unit subdivision. Finish Durston Rd. improvements between Fowler and Flathead - including bike lanes.	Jeanette Hall	5-Nov-15	website
14	Lets stop kidding ourselves that we have bicycle lanes! The current bike lane designs are idiotic! These lanes are more like killing zones given the way traffic volume and driving habits have changed over time in this city. Even adults are now riding on the sidewalk rather then use the lanes. The new section of College street is a good example. We should be separating cars and bicycles as they do in Europe.	Alan Hooker	10-Nov-15	website

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15	Traffic control is badly needed at Church/Sourdough and Kagy. I live south of this intersection on Sourdough, and navigate this intersection daily either in a vehicle, on a bike, or walking. Wait times just over the past year have greatly increased. Its also not clear to drivers entering the intersection from the N or S on Church/Sourdough who has the right-of-way. Rather than a traffic light, the best solution at this location would be a roundabout, or traffic circle. The safety and efficiency of these structures definitely justifies their expense. They're enjoyable to drive, and work well for bikes and pedestrians. I've heard there may not be sufficient right-of-way for a standard design. MDT is planning on acquiring additional easement for a roundabout at Cottonwood and Stucky. I support that decision, and I'd argue Sourdough/Kagy is in even greater need of this type of solution, given traffic volume.	Gary Weiner	19-Nov-15	website
16	Please consider adding left turn to signals on main street (downtown area) from Rouse to Grant at least every other light or something like that. Absolute nightmare to turn left now.	Scott McMahan	19-Nov-15	website
17	I live on the north side of Main near the Bozeman public library, and am a daily (year-round) user of the commuter trail that begins at the library (linear/Gallagator). Unfortunately, it is very difficult to get from the point where the trail ends (at the library) north across Main. The trail terminates in the middle of the block. The biker thus has the choice of riding illegally on the sidewalk to an intersection, or hopping the curb and merging into very busy Main Street traffic. When I am alone, I usually risk the merge into Main Street traffic. In the summer and fall, however, I am often with my children either in a trailer or on a tag along. We end up riding illegally two blocks on Main Street until we get to the Church and Main intersection where I feel it is safe-ish to cross and ride with traffic again. Crossing at Wallace and Main is extremely dangerous on a bicycle because of the cars turning in and out of Heebs as well as because of the right turn lane. I have witnessed one hit here (of a little girl on a bike whom I think was uninjured) and one near miss when a driver almost hit a pedestrian. I'm not sure what it would look like, but I would love to see a safe way for bikers to cross Main to access and exit this trail system.	Shannon Mahoney	19-Nov-15	website
18	I would really like to see a running/biking trail out Springhill road. This could be an extension of the trail system near Cherry River fishing access.	Betty Aleagha	19-Nov-15	website

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19	I would like to encourage the inclusion of a "Perimeter Bike Loop" in the future transportation plan to provide a safe bicycle route around the perimeter of Bozeman, recognizing that it will take County cooperation as well. The loop would provide a wide paved 12-foot wide path that provides select underpasses to avoid major arterials. The route might include Cottonwood Rd / Love Ln. on the West, Sourdough on the east, 19th / Nash on the south and Valley Center to the North. Deciding to include this in the master plan will inform future development requirements. Partnering with non-profits such as GVLT or TPL can bring donations and grants into the equation.	Terry Cunningham	23-Nov-15	website
20	It would really help if there could be a connecting street going north from Oak on 15th, over to Lowe's. Another helpful street would be south from the Staples/Target shopping center. And please limit the roundabouts to one-lane. Two-lane ones (like the new ones near the airport) are so dangerous! I think even single lane ones are risky for pedestrians and bicyles. Have you ever tried to cross one? scary!!	Melani Burnett	24-Nov-15	website
21	I am glad to see an attempt to create bike lanes and designate bike routes. However, the current method of white stripes with an image of a bike on a narrow section of pavement is not safe. Markings should be more visible to motorists. There are dangerous intersections where traffic turns across a bike lane. A good example is the new lane created on College heading east off of West Main St. across from the Gallatin Valley Mall. Traffic turning south into the shopping center (at City Brew) makes a very quick turn across the bike lane. Any biker would be crazy to use it. I recommend that at a minimum bike lanes be a different color from the rest of the pavement to increase visibility. Also we should be creating shared bike/pedestrian paths whenever possible to encourage biking and walking.	Emily Hooker	24-Nov-15	website
22	The intersection of Ferguson and Huffine is extremely dangerous and needs a turning signal. Eastbound traffic making left hand turns must cross 3 lanes of speeding traffic.	Jennifer MacFarlane	12/1/2015	website
23	We need cooperation with the county and state government to make Huffine Lane safer and more attractive to pedestrians. A bike path that connects with Four Corners is essential for safety and decreasing the amount of automobile traffic entering town.	Scott MacFarlane	12/1/2015	website

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24	Hi Jeff, It was nice talking to you last night and it was a great meeting. We would like to request that the Transportation Master Plan look at the requirements for street widths on all types of roads. We know there has been a big push to narrow streets down. Quite often we hear the reasoning for that as “it helps slow traffic”. But in actuality it has made for unsafe conditions and extreme frustration of drivers in some areas. When drivers are frustrated, they do stupid things. We also know that it is also popular with developers that are trying to save every penny and are lobbying hard for narrower roads. Specifically, we think the City needs to consider multiple factors in assessing what the minimum requirement is in all districts and then hold a hard line even in planned developments. Among these factors are: snow removal, future designated bike paths and/or bicycle use, population density, future needs, and parking needs. Our experience is that in newer areas of town as infrastructure fills in, it quite often is with a much higher density than originally planned for. Streets next to or near apartment buildings, condo’s, and smaller homes with pocket parks often are packed with cars and especially pickup trucks and vans utilizing the parking on both sides of the street. A pickup is over 7 feet wide (mirror to mirror). And they usually don’t park touching the curb. That means that if they are parked on both sides of the street, they will take up to 16 feet (with no snow) of the 28 foot current minimum width requirement leaving only 12 feet for two vehicles, busses and bicycles to occupy when traveling two ways. This is further complicated by not having enough driveways to pull over into. Perhaps if this was only a very short block or two, with no high density, school, or commercial activity, then vehicles and bicycles could plan ahead. But we have witnessed many a time vehicles having to back up to allow others through. And we have also watched as narrow feeder streets get lengthened over time with further development and then become a collector with even more of a problem. If you need any further information, examples or witnesses, we are happy to help. Please feel free to forward this letter to anyone in the City that might want to consider looking at this issue. Thank you, Marilee Brown, Director Citizens for a Safer Bozeman and Gallatin County (406)579-5447	Marilee Brown	12/2/2015	website
25	South Church, from the park to Kagy needs a bike lane or sidewalk. Sidewalk currently ends at 700 block. This could be extended on the West side of the street will minor impact. The last few hundred feet by Kagy will be difficult, but some extension would be much safer.	Randall	12/3/2015	website

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26	Hi Jeff, I was in a parent meeting with the superintendent and assistant superintendent of Bozeman schools yesterday. The discussion was of how a new high school will probably be built containing up to 1200 students by 2020 . There are two locations being considered. The first and more likely one is at Durston and Cottonwood. The property at Cottonwood and Stucky will most likely be way in the future due to missing City plumbing infrastructure. The planning for transportation was specifically mentioned but it was unclear as to if you and your group had that information. I am copying Todd since he is the only school official I have an email for. Thanks, Marilee Brown 406-579-5447	Marilee Brown	12/4/2015	website
27	NPR on 10/22/2015 featured streetcar plan developed in Guangzhou City, China using super capacitor is worth looking at. cheap, fuel and time efficient public transit for all ages would yield huge benefits for those unable to drive and those who prefer to socialize, read or work while traveling...	Beth Sirr	12/6/2015	website
28	The light crossing Main street at 11th is too short of an interval in duration for safe bike/pedestrian crossing by anyone who isn't super quick! Further, N. 11th Avenue at the new entrance to the high school is unsafe at peak times, given the lack of a designated student pick up/drop off area. Students are frequently dropped off/picked up on the East side of N 11th, meaning they must cross the street to BHS. Few bother to look at traffic as they do-- it's very troubling to watch, given the number of vehicles and students in proximity at peak times. The 2007 transportation plan proposes a bike route along N 11th-- which sounds like a good idea to help students get to school under their own power. However, the absence of a pick up/drop off area means riding in the street is far too congested to do so safely at school's beginning/end.	Abigail Breuer	12/6/2015	website

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29	Thanks Jeff, I was only mentioning the new high school because of the Travel Demand Model. Please don't feel you have to give me long answers. I am only commenting like the general public and don't want to take up a lot of your time. I'm sure you must have also been informed about the proposed convention center on Baxter. I am very concerned about the increased demand on the intersection at Baxter and 7th. Currently when traveling East on Baxter, traffic is forced South at Seventh. This forces traffic to do U-turns at 7th and Oak. I hope you are looking into the idea of adding a traffic light at Baxter and 7th and opening traffic to turning North so that Convention Center travelers can easily access I-90. If you visit that intersection during rush hour, you will see how difficult it already is to negotiate. Thanks, Marilee Brown 579-5447		12/7/2015	website
30	Please give the Commission the correct recommendation for the intersection of College and Willson and for access on to Willson from the west in general. While there is adequate political pressure to keep the Commission from doing the right things, they at least need to know what they are. Try to go EB anywhere from the west side of Willson to NB on Willson and see the problem. Roundabout at Willson and College would be a great start and the City already owns 1/4 of the needed right - of - way.	Ron Brey	12/9/2015	website
31	We need to have a list of priority bicycle and pedestrian routes. This list must include: Oak St, Durston, Baxter, Babcock, Fowler/Davis, 15th, Ferguson, Cottonwood, Annie St, Kagy, Stucky, and others. These routes MUST have a shared use path and bike lanes as part of the corridor. No exceptions. We have too many cases where these critical transportation connections are sacrificed by having a sidewalk instead of a pathway. If biking and walking are to be viable transportation options, we must not build incomplete networks or networks that do not provide the facilities that make those viable options for the broadest (ages 8-80) population.	Taylor Lonsdale	12/14/2015	website

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32	This plan needs to put in place the framework and process for establishing a "minimum grid" of low stress bicycle and pedestrian facilities. Identifying the existing streets and future corridors that will make up a complete network of bicycle boulevards or community greenways must be part of this plan. We have a great network of low speed, low volume, local streets that can be utilized to prioritize moving people on bicycles. We need to identify and prioritize the intersection improvements needed to eliminate barriers to the use of this network. Places like 7th and Lamme, Peach and Rouse, Koch and Willson, need to have improvements that make these intersections less of a barrier. This plan needs to identify how and where ALL future development will add to and connect this low stress network.	Taylor Lonsdale	12/14/2015	website
33	The congestion on S 3rd is out of control as it is the only street available to get to Morning Star and Sacajawea Schools. Graf should be pushed out to 19th and 11th should be continued to Goldenstein, or at least to the connecting street in Alder Creek Subdivision.	Sarah Gorlitz-Burk	12/17/2015	website
34	This transportation survey is going to get unrealistic results, by asking questions about biking in December, after 1-1/2 weeks of snowstorms. There are also some choices that are either generically worded as motherhood-and-apple-pie or have no context (for instance, who is going to vote against efficiency or low maintenance costs).	B. Geller	12/18/2015	website

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35	BABAB is pleased to hear that the new Bozeman Transportation Master Plan has a strong emphasis on bicycle, pedestrian and bus transportation. Please consider our comments as follows: 1. The TMP should outline the roles of a multi-modal transportation coordinator to oversee bike, pedestrian and bus transportation issues for the greater Bozeman area. The TMP should outline a timeline and implementation plan to establish that position. This work requires personnel with specific bicycle, pedestrian and transit experience and qualifications. Creating a well-connected network requires more than the current volunteer efforts by groups like BABAB and the Pedestrian and Traffic Safety Committee. 2. The TMP needs to sets performance based goals for our future transportation system. These goals need to have measurable outcomes such as specific bicycle, pedestrian and bus mode share or vehicle miles traveled goals (similar to those in Boulder, Colorado). These goals should drive all future transportation funding and planning decisions. The proposed plan has seven goals and numerous objectives, but does not state any performance measures for meeting these goals. 3. The TMP should require an annual or bi-annual evaluation of performance based goals and recommended bicycle and pedestrian facility improvements to be documented in a report to the City commission. BABAB is excited about the direction of the new TMP and is hopeful this plan will help Bozeman to continue to be the most livable community and a place where people from 8 to 80 years old are able to safely get around by foot, bike and bus.	???	1/7/2016	website
36	Lighting should be an integral part of every major transportation way. College for example, is incredibly dark at night to the point that certain streets are almost impossible to see. That also goes for pedestrian crossings. By the time you see someone and need to stop, its to late to stop.	???	1/8/2016	website

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37	I feel very strongly that we need to move away from motor vehicle level of service as our only measure of transportation system performance. We also need to lower our LOS criteria for triggering improvements. We need to take a broad Transportation Demand Management approach with goals that include reducing per capita VMT, increasing mode share for bicycle, pedestrian, and transit. We can't possible afford (in many ways) to build bigger and bigger roads and intersections. Not only does evidence increasingly support that building bigger roads only increase traffic, but there is strong evidence that communities that build a transportation system that prioritizes motor vehicle transportation are less healthy. We can't afford to continue to have communities that actively discourage people from incorporating active transportation into their daily lives. It is literally killing us.	Taylor Lonsdale	1/13/2016	website
38	New subdivisions off Bridger Drive need turning lanes. People pass on shoulder while I'm trying to make a left.	Mike Mccormick	1/15/2016	website
39	Hi Jeff and Joe, It was a lively TCC meeting this week! Jeff- I liked what you said at the meeting about incorporating non-auto centric performance metrics to the TMP update. It's good to hear that discussion is happening. I'm not sure that you've seen the letter that WTI wrote. I had meant to share it with you before. It is attached – FYI –along with questions regarding the planning/design process for Kagy (and other projects). I'm hopeful this TMP can initiate real change in the transportation planning process. Let us know if you have other thoughts about how to keep momentum on this. Thank you, Rebecca ------- The info below is what raised our concerns - that Bob Lashaway discussed at the meeting. *At last week's Transpo Work Group meeting to review progress on the City Transpo Plan update it was noted that it is highly unlikely that a 3-lane option for Kagy will prove viable. Current traffic counts are at or above the capacity of a 3-lane design and capacities are projected to double over the next 20 years. So, while Peccia plans to model a 3-lane solution so we can see the numbers, the outcome will most likely show that it would be irresponsible to spend $ now to only build a 3-lane solution – absent an absolute epiphany on the part of half our traffic contributors to change their commuting habits. So, we should be honest about this high likelihood and not talk as tho a 3-lane solution might be at all viable.*	Rebecca Gleason	31-Jan-16	email

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40	Hello Jeff: I hope you're enjoying the winter and that the plan is coming along well. Could you give me some information about key steps and dates as follows?: 1. Deadline to fill out survey, either online or paper copies 2. Wikimap comments deadline 3. Any upcoming public presentations such as the TCC, city council, other public agencies or groups 4. Technical memo releases. Also, is it possible for me to be put on the list to receive the newsletter or other appropriate communications? A group of multimodal transportation geeks (including me) would like to promote the planning process with our "tribe". Thank you for any info, Jeff.	Linda DuPriest	2/2/2016	website
41	Comment about the transportation survey: I don't drive a car, therefore I was not able to answer the questions about driving preferences (intersections). However, the survey did not allow to leave questions blank. The questions about driving preferences shoud be changed to include the option "I don't drive".	Sara Fischer	2/23/2016	website
42	Better timing , techniques, and/or enforcement is needed at 8th and Main. It is an extremely dangerous intersection for our employees to cross--about 30 of whom cross 2-10 times on any given day (Co-op campus is split between N and S sides of Main.) I conducted an informal survey for a month and found this: Many drivers turning from 8th toward the west onto Main often are often in a hurry to turn after having waited for a longer time, and do not yield to—or even notice—pedestrians. • Weekly, most pedestrians observed or experienced at least one close call. • Daily, some drivers, especially those traveling west, run the full-on red light on Main. • Routinely, people are using their cell phone while driving. • Failure to yield to pedestrians is common—30-50% of drivers. Sometimes that seems intentional, sometimes not (ie., once drivers notice you in the crosswalk, they'll stop suddenly. Or they might honk at you and keep driving!) At least two of our staff now drive their own vehicles from the north side of Main to the south side to avoid crossing as pedestrians. I'd be happy to discuss this further. 587-1919 x80 Thanks, Anne	Anne Johnson	2/29/2016	website
43	There should be a bike & pedestian path between Bozeman and Belgrade. Thanks, Anne	Anne Johnson	2/29/2016	website

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44	Hey there, I noticed you were listed as contacts on the Bozeman TMP website. I'm interested in the issues of bike/walkability and am curious to know what you see as the major hurdles to safe cycling and walking in Bozeman, today? And, moving forward? I use these modes of transportation and love that bike paths are being built into newer areas such as heading out to N 19th. I'm interested to know what the challenges are to improving the core, and, further development. Thank you, Kris Keller	Kris Keller	3/23/2016	website
45	Craig, I am reviewing your transportation master plan and had a few comments: (1) Kenyon Noble has their main delivery and rail yard between Rouse and Wallace, North of Tamarack. It is not listed as a truck activity center. I believe your staff missed this as an oversight. Alan McCollim will be following up with staff on this. (2) Baxter will become an arterial even if you don't want it to. I think it is shortsighted to think it's not going to be. It is the only street between Huffine and Valley Center to go all the way through to Jackrabbit. Everyone I know uses it to get into town if you need to go east of 19th (I am one of them, I live downtown, but work on Jackrabbit and Cameron Bridge). It is the only direct road from Jackrabbit to 7th Ave. It is wishful thinking to think Oak St. will be the arterial alternative, but with it being a dead end at Love, makes it a dead end to drive. Both will end up being arterials in various forms. (3) I don't know what can be done with county on a county master transportation plan? If there is any writing or calling I need to do, I will help. I look at a road like Durston that should be another arterial, it is hurt by not having the road footprints protected from development out west. We need more thoughtful planning to ensure our collectors and arterials are protected from development. I also believe the city and county need to start talking about how the new airport interchange will integrate into these streets. As it stands I know the new interchange could go all the way south to Baxter. Sincerely, Leif.	Leif Sundeen	3/24/2016	website
46	I would like for there to be a stop sign at 5th Street and West Curtiss. There are many children playing in the 400 block of West Curtiss and increasing traffic makes their play hazardous!	Mary Ellen Wolfe	4/12/2016	website
47	The TRAIN horn is AWFUL! It used to stop at 11, now it blows ALL night. This is unnecessary. Billings put a moratorium on it from 11pm-7am. Bozeman really needs to follow suit if it wants to attract tourists who desire a good nights' sleep!!!	Amy Cline	4/14/2016	website

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48	Jeff, attached are my comments to request that the Kagy/Sourdough/Church St. intersection be addressed in the Bozeman TMP. Currently, it is a very unsafe intersection and I hear constantly from residents living south of the intersection about the difficulty in getting across the intersection or onto Kagy from either Sourdough or Church, particularly during busy traffic times. There needs to be a light there or a 4 way stop, or some other way to make access across or onto Kagy safer than it is today. The sun rising or setting makes the intersection even unsafer. It is an intersection waiting for a serious accident to occur. Thank you for your consideration. Jeff	Jeff Yates	4/22/2016	website
49	Please increase walking and bike riding routes wherever possible, to include downtown, schools, and commuters.	Rosemary Keating	4/23/2016	website
50	I was not able to attend the public hearing on the plans for Kagy, but from what I heard the plan is to provide narrow one-lane roads in both directions, in an effort to discourage additional traffic. If this is the case I would like to voice disagreement. The additional traffic will come regardless, as their are now other East-West arteries south of Main, and population of the area and MSU is rapidly increasing. Two lanes are needed for Kagy, unless there is a plan to provide a new East-West arterial somewhere else, and soon. In addition, how are emergency vehicles supposed to navigate Kagy if it is a narrow one-lane road each way, seperated by a median?	Scott Buecker	4/24/2016	website

ID	Initial Comment	Creator	Create Date	Source
51	As I will not have a chance to attend your meeting on April 12th, I would like to share a few comments regarding the Bozeman Transportation Master Plan. As you may recall from my previous correspondence, I have a full-time driving job (passenger van) with a local non-profit organization. Driving over 20,000 miles a year in the local area (primarily Bozeman itself) has given me a better-than-average perspective on these transportation-related problems currently under review by you and the DOT. My suggestions are: 1. railroad underpass on Griffin Drive (probably not do-able but badly needed nevertheless) 2. pedestrian overpass on Babcock St. just east of the Federal Building 3. traffic light at intersection of Kagy Blvd. and Sourdough Road 4. traffic light left-turn arrow at the intersection of 19th Avenue and Baxter Road! and last but not least: 5. comprehensive county-wide public transit system (from Three Forks to Livingston) I wish there was some magical way to resurrect the old GVRR and electried trolley (streetcar) system that was terminated in 1926!!! This would really make a difference in reducing traffic congestion but I would guess that its cost would simply be prohibitive at this point in time. I hope my suggestions are given some serious consideration. Thank you for giving me the opportunity to present my ideas. Wishing you much success in your endeavor.	Douglas Stream	4/25/2016	website

ID	Initial Comment	Creator	Create Date	Source
52	Hello! I am originally from Eastern MT. I moved away for 13 years and lived in larger cities such as Seattle and traveled the world to various places. I have now come back to my beloved home state and settled in Bozeman. There is literally less stress for me here. One thing I have gained by traveling the world is knowledge of how other transportation systems work. I see the pluses and minuses, but really the root of all the problems in each is globalization. The world is growing bigger superficially, but we are not gaining depth. I realized this after I became very sick due to stress and couldn't function in our economy any longer. It's not that we need socialism to help our citizens; it's that we need to help stop the effects of what modern-day globalization has done to humanity. I understand you may be thinking, we are just the transportation department, what do we have to do with this? Well, if we want to have healthy transportation, we must become smarter in dealing with the large-scale problems that ultimately affect smaller communities such as Bozeman in the state we all love and are lucky enough to live. Transportation has a direct part in bringing globalization into our community. I witnessed the problems Haiti has because the people in the country moved into the city. We need to keep urban sprawl from happening without depth. This is where you come in. We need less roads and more gardens throughout the city for people to consume food so they can stay healthy and have direct input into what goes into their body and hopefully not get as sick. We need less reliance on fossil fuels. We need more public transportation. Please watch Economics of Happiness on localfutures.org. Thank you kindly for your time. From a person in your community who is learning to heal herself of sickness but ultimately can't unless the whole of society is healthy. "It is no measure of health to be well adjusted to a profoundly sick society." (Jiddu Krishnamurti) Let's help Montana to become the leader in showing the world how healthy a society can be. Thank you for your time.	Emily Niles	4/26/2016	website

ID	Initial Comment	Creator	Create Date	Source
53	Tho' not bike riders ourselves, we notice wonderful Bozeman activities such as "GVBC's youth/family rides are aimed for families with children up to approximately 10 years of age. The rides take place on the town bike paths (hard-packed dirt) as much as possible, with some sections on roads necessary to connect the trails." [from recent GVBC announcement] Surely with all the multi-million dollar road projects and intersection improvements, we can find the necessary funds to connect the various walking and biking paths inside the city limits. More morning/evening walk options, better facilitating bike commuting, expanded recreational biking, improved safety for all ages (including kids getting to school), reduced vehicle emissions are only some of the benefits. And the low impact improvements cost a fraction of laying asphalt, intersection lighting systems and ongoing road maintenance. Please place more emphasis on this city-wide, cost effective improvement in the TMP.	Jack & Patricia Tyler	5/5/2016	website
54	I cannot make tonights meeting. I am very concerned with traffic flow throughout the Bozeman area. Specifically the timing of traffic signals. I applaud the work done on portions of Main St. However on main thru ways such as Huffine and others this is sorely lacking . The side arteries need to have longer wait times for their signal to turn green . And most importantly the flow on Huffine needs to be timed to allow the huge majority of traffic to flow better . When traveling 55 mph plus and having to stop at each light along huffing due to a trigger from an artery is not working well. There are many obvious advantages to timing the lights. My other concern is the lack of sidewalks/paths(bike lane?) along areas of 191 heading south from 4 Corners to Gallatin Gateway . There are a few rudimentary paths set up with kids at times using them but they do not go thru and create a dangerous situation. With the bulk of business and spots to visit in 4 Corners all of the residents (increasing every day!)south are forced to drive the few miles. I am more than happy to volunteer for any studies or work that needs to be done . Feel free to contact me any time . Scott (XXX) XXX-XXXX	Scott Hamburg	5/12/2016	website
55	Are there plans for improving (upgrading) Johnson Rd between Cottonwood Rd and Gooch Hill Rd? If not a plan, is it being considered for the future? Thank you	Michael Natale	5/14/2016	website
56	We should be developing a more refined street classification systems than simply arterial, collector, and local. There are examples of good context sensitive classifications. The Project for Public Spaces has some good info on this.	Taylor Lonsdale	5/17/2016	website

ID	Initial Comment	Creator	Create Date	Source
57	Our typical lane width should be no more than 11' on all street sections. I feel that the typical lane width should be 10 feet on all but Commercial Arterial streets, where the lane width could be 11 feet. If there is a case where a wider lane width is desired, then it can be accomplished with a variance. Research indicates that 12' lanes are more dangerous for all roadway users and that there is no reduction in capacity for 10 or 11 foot lanes.	Taylor Lonsdale	5/17/2016	website
58	ALL new roads should include a bike path which is separate from the road. Citizens should have a safe way to travel by bike. Commuting by bike helps ease traffic congestion and improves air quality.	Debra Turnquist	6/4/2016	website
59	The future collector extension of South 27th Avenue between West Garfield Street and West College Street that is currently shown in the plan should not be included as it is not supported by MSU, and a previously completed study identified that its termination at West Garfield Street had better traffic operations for West College Street and the surrounding transportation network. Showing it on the plan will create future difficulties for the development of the Montana State University Innovation Campus.	Tom Eastwood	7/27/2016	website
60	19th and Lincoln. I am a pedestrian and the crosswalk across 19th by EFree church is extremely hazardous. There is an appt. building on Remington and there is suppose to be another one built adjacent to those apartments (the adjoining landowners resolved their differences and I believe it was submitted to the city) which will be predominantly occupied by students like the Remmington property is, hence there is a lot of pedestrian traffic going to the University. Crossing 19th with 6 lanes (includes turn lanes) is really dangerous as frequently the cars that can see you stop but the driver in a hurry will accelerate and swing to the outside lane to get around the slowing lane (stopped for the pedestrian) which is way dangerous. The pedestrian signals on Kagy by the stadium and behind the museum seem to be very functional for cars and pedestrians in that they are real short but very noticeable. It seems like it may be in the interest of the city think about similar signalling across 19th. Thank you for considering this. R. Neal Kohtz	Richard Kohtz	8/1/2016	website
61	I'm seriously thinking of moving back to Bozeman but need to confirm a couple of things. What is the situation with public transportation for non drivers? Does the city have groups that support low vision and senior people?	Sheila Andren	8/6/2016	website

ID	Initial Comment	Creator	Create Date	Source
62	When will we be getting a stoplight on the corner S. Church/Sourdough and Kagy? For us living south of Kagy, its almost impossible to cross Kagy & traffic moves too fast west on Kagy to be safe. Is it a city/county/state issue? Be concerned not only about traffic on Kagy @ MSU, but also east on Kagy to Highland. Does it take a traffic death or accident to slow cars down when a traffic light could handle the situation. Thanks	Kris Schofield	10/1/2016	website

Craig Woolard
Public Works Director
City of Bozeman
PO Box 1230
Bozeman MT 59771

Delivered via e-mail 11-23-15

Mr. Woolard:

On behalf of the Downtown Business Improvement District and the Downtown Tax Increment Finance District, I would like to formally request that the Bozeman Transportation Master Plan include capacity modeling for Babcock and Mendenhall Streets configured for two-lane, two-way traffic flow.

Jeff Key, Peccia & Associates, presented an overview of the Bozeman TMP at the BID and TIF board meetings last week. He indicated that public comment had been received that Babcock and Mendenhall should be converted to two-way traffic.

More importantly the 1998 Downtown Improvement Plan states that the one-way traffic is problematic for pedestrians and vehicles (page 20-21). In addition the City adopted the 2009 Downtown Improvement Plan which explicitly recommends converting Babcock and Mendenhall Street to two-way traffic flow (page 28-29).

Respectfully submitted,

Chris Naumann, Executive Director

Cc: Jeff Key, Peccia & Associates

DOWNTOWN BOZEMAN PARTNERSHIP
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BOZEMANTMP
Transportation Master Plan

COMMENT FORM

Please Submit Your Comments: 11/26/2015

I haved owned my house at 317 W. Lamme for 11 years. Because Mendenhall is a one way, W. Lamme turns into the easiest way for commuters to drive east towards downtown: No traffic lights & few stop signs. Traffic is heavy for a residential area, plus the street is a designated bike lane — a dangerous one at that.

Please do away with Mendenhall & Babcock one-way traffic & make them two-way. As downtown grows with new hotels & developments the pressure on W. Lamme increases. It is a residential street & not designed for this ~~heavy~~ heavy use.

Thank you for the opportunity to comment.

Doug Chabot

Doug Chabot

Please mail or email your comments to:

Jeff Key, RPA Project Manager
Robert Peccia and Associates
PO Box 5653
Helena, MT 59604
406-447-5000
Email: jeff.key@rpa-hln.com

To receive further study information, please provide your name and address:

Name: Douglas Chabot
Address: 317 W. Lamme St.
Bozeman, MT 59715
Email: dchabot@neomailbox.net

BOZEMANTMP
TRANSPORTATION MASTER PLAN

COMMENT FORM

Please Submit Your Comments:

It's crucial to design a transportation system around people and not around their automobiles. As Bozeman grows my biggest concern is how to secure trails and bicycle paths that allow non-motorized travel. I want to see not just token paths but substantial long-distance connectors that allow people to travel on foot and by bicycle between neighborhoods where we live and shopping and recreation areas, including federal lands that border our community. The Gallagator trail is a wonderful example of how popular these car-free routes are.

Further suggestions

- Turn much of Main St. into a pedestrian zone like the ones found in European cities. Motorized travel could be allowed during limited hours.
- Use more roundabouts and other traffic calming measures
- Make it safe for children to bike to school and on more roads

Please mail or email your comments to:

Jeff Key, RPA Project Manager
Robert Peccia and Associates
PO Box 5653
Helena, MT 59604
406-447-5000
Email: jeff.key@rpa-hln.com

To receive further study information, please provide your name and address:

Name: Bern Kohler
Address: 4038 Rain Roper Dr
Bozeman
Email: bern.kohler@gmail.com

BOZEMANTMP
TRANSPORTATION MASTER PLAN

COMMENT FORM

Please Submit Your Comments:

→ Need a long-term horizon, say 50 years!

→ Include county level folks – pull them in somehow!

→ light-train transportation should be considered.

Please mail or email your comments to:

Jeff Key, RPA Project Manager
Robert Peccia and Associates
PO Box 5653
Helena, MT 59604
406-447-5000
Email: jeff.key@rpa-hln.com

To receive further study information, please provide your name and address:

Name: _____

Address: _____

_____

Email: _____

Ilze M. Thompson
2988 Blackbird Drive
Bozeman, Montana 59718

Phone 406-570-2880 Email: thompson0089@msn.com

To: City of Bozeman Montana

December 8th, 2015

The Pedestrian Safety Traffic Committee

I have grave concerns about the safety of the public and our children in particular crossing Davis lane on their way to school.

It is a blind intersection on a road that, despite a recent reduction in speed limit, still sees exceptionally fast traffic thru on Davis lane. This thru a dangerous intersection of new construction that was planned for, reviewed and approved by the City of Bozeman. At this same intersection we have seen wildlife hit and killed on the road.

We have grave concerns about the safety of pedestrians crossing in this area and believe there to be a lack of proper planning and consideration of pedestrian users of the road at this intersection.

This is the path that children regularly take to the regional middle school, there should be proper safety measures in place that give due consideration to the pedestrian users at this crossing. Failure to have such measures and considerations in place is a failure in planning, design, approval and acceptance of completed work of the municipality in this area.

Given the high volume of traffic and speeds in the area, a stop light, crossing and crossing guard would be reasonable expectations to safely protect all users of the right of way in this medium density area that is scheduled for higher density use in the future.

Do we really have to wait until there is a fatality at this intersection before proper planning and safety measures are planned for and put in place to protect children on their way to school?

Respectfully,
Ilze M. Thompson

Scan & forward to Jeff Key
Rick Hixson

MONTANA STATE UNIVERSITY
College of ENGINEERING

Western Transportation Institute

December 30, 2015

Dear Kagy Boulevard Design Team:

The Western Transportation Institute's Small Urban and Rural Livability Center (SURLC) is recognized by the United States Department of Transportation as a University Transportation Center. One of the research focus areas is bicycle and pedestrian safety. The staff of SURLC have considerable background and experience in the design of communities to improve the safety for bicycles and pedestrians while enhancing the vitality of the community. Decisions such as those made for the reconstruction of Kagy Blvd are fundamental in shaping the future of Bozeman. Projects of this magnitude shape how small urban communities grow. As we are all aware, Kagy Blvd serves as a key east-west transportation connection on Bozeman's south side. In addition to people driving motor vehicles, it is an important connection for people walking, biking and riding buses. WTI is pleased to hear discussion on the importance of bicycle, pedestrian and bus friendly design for this project. We support the following recommendations from November 2015 planning meetings.

- Ensure there is effective and safe movement for cyclists and pedestrians at the Kagy & 11th and Kagy & 7th intersections.
- There are good connections to the bike and pedestrian network all along Kagy, and that the Kagy project itself enhances the bike/pedestrian network.

There are many details to consider in the design of Kagy Blvd, but it is important to first settle on the overarching concepts. How will Kagy Blvd represent Bozeman and MSU? Please consider the following concepts, which support the Montana Department of Transportation's Vision Zero initiative for safer streets (safer users) that eliminate fatalities and serious injuries.

1) **Safety -** Research confirms that lower speeds are safer and can decrease both crash frequency and severity. However, speeds cannot be reduced simply by changing the posted speed limit. Street design is the best way to achieve the desired vehicle speeds. Geometric and cross-sectional elements, in combination with the context, establish a driving environment where drivers choose speeds that feel comfortable. (FHWA, Design Speed). With Kagy's high use by people on foot and bikes, it is critical to design for lower speeds. Before decisions about cross section or specific treatments can be made, a **desired** speed should be established. Based on this desired speed, specific design elements can be selected. Examples of design elements that encourage lower speeds include narrower lanes, trees/landscaping, curb bulb outs and roundabouts.

   - According to the AASHTO Roadside Design Guide, trees can be planted 18 inches away from the travel way, if the road is classified as an urban arterial, the speed limit is 25 mph, and the road is curbed. Speeds higher than 25 mph do not support MDT's Vision Zero for a multi-use urban arterial. In 2014, one initiative of New York City's Vision Zero was to lower the default citywide speed limit to 25 mph.

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Mountains & Minds

- The National Association of City Transportation Officials (NACTO) Urban Streets Design Guide is one resource that explains various street design elements. This link provides information about how lane widths affect travel speed. This link discusses design speed.

- Research on the relationship between lane width and safety concluded that "There was no indication that the use of 3.0- or 3.3-m (10- or 11-ft lanes) rather than 3.6-m (12-ft) lanes for midblock segments led to increases in crash frequency. There are situations in which use of narrower lanes may provide both benefits in traffic operations, pedestrian safety, or reduced interference with surrounding development and space for geometric features that enhance safety, such as medians or turn lanes. The analysis results indicated that narrow lanes can generally be used to obtain these benefits without compromising safety." (Potts, Harwood, Richard, 2007).

2) **Congestion** - Numerous studies show that adding capacity to roadways fails to alleviate congestion for long because it actually increases vehicle miles traveled (VMT) (Handy, 2015). Five lane arterial streets, such as Bozeman's 19th Avenue are stressful places for most people to walk and bike, and often serve as barriers for non-motorized transportation. This leads to more auto dependent travel and in the long term increases congestion problems. One extreme example of this is the Katy Freeway (I-10 West) in Houston, TX.

    - Traditional methods for predicting traffic overestimate growth. As Bozeman grows, we should plan for increasing bus, bicycle and pedestrian traffic, consistent with City and MSU climate action plans. This will lead to cleaner air as well as more efficient and healthier transportation options. NACTO's Design Year discussion provides more information.

    - Consider how Traffic Demand Management (TDM) tools will impact traffic growth, and may lead to minimal growth in vehicle miles traveled. Also consider how the development of housing (like Stadium View Apartments) in close proximity to schools and essential services may lead to less driving.

    - Explore a 3 lane configuration rather than 5 lanes and consider how to use active management of the Kagy corridor and the connecting street network to allow for the maximum use (flow) of the infrastructure. By using a "systems management approach"; which includes gathering data (monitoring), communication and control; streets may be used more efficiently, without having to add lanes.

    - Auto Level of Service (LOS) should not be the only performance measure. Think of the best way to move people most efficiently. Consider how the street functions for pedestrians, bicyclists, transit and other measures. This link provides more details.

3) **Public Space** - Consider Kagy Blvd as a public space that serves as a gateway to Bozeman, the Museum of the Rockies and MSU. It should be designed with appealing aesthetic qualities to complement our community and campus. The Project for Public Spaces, NACTO Urban Streets Design Guide and Jan Gehl's Cities for People book have more information on streets as public spaces.

Kagy Blvd serves many purposes that include moving motor vehicles, pedestrians and bicyclists as well as a gateway to MSU. Will Kagy be a place that welcomes students, visitors and locals or a place whose focus is moving motor vehicles? The two are not mutually exclusive and with the right intention and attention to details, Kagy Blvd will be both. To maintain Bozeman's vision of being "The Most Livable Place", design decisions need to consider how to build our community through roads and not roads through our communities.

Sincerely,

David Kack, Director, Small Urban and Rural Livability Center

In conjunction with, and on behalf of:

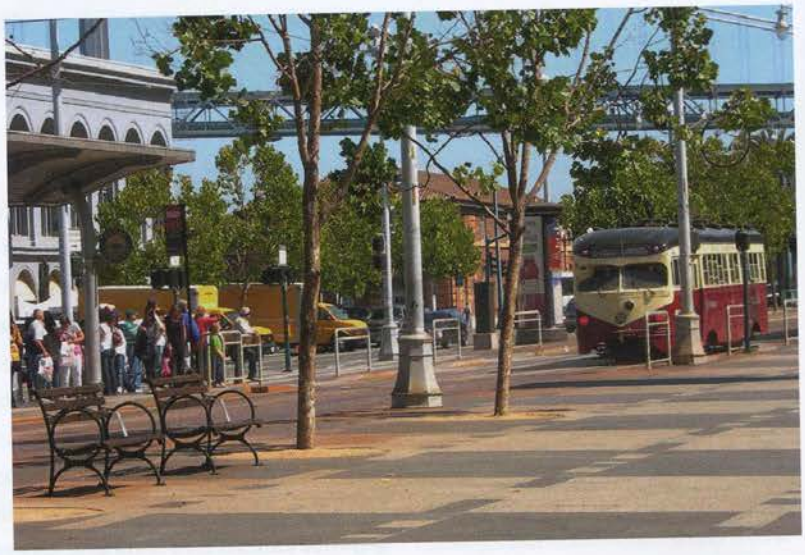
Rebecca Gleason, MS, PE, Research Engineer
Taylor Lonsdale, PE, Research Engineer

Excerpt from *Cities for People* by Jan Gehl, 2010

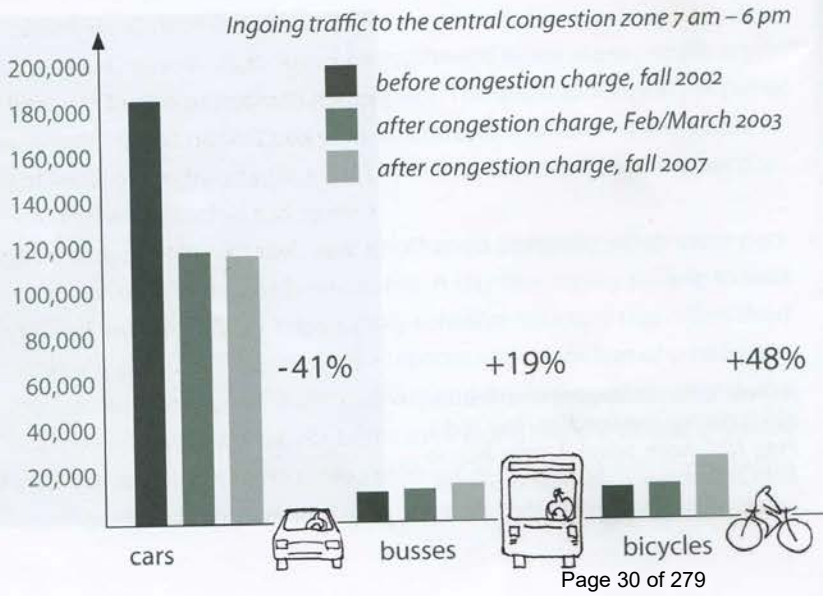
more roads — more traffic. fewer roads — less traffic

After 100 years of car traffic, the notion that more roads lead to more traffic is accepted as fact. In Shanghai, China, and other major cities, more roads do indeed mean more traffic and more congestion.

When the extensive Embarcadero Freeway in San Francisco was closed after the 1989 earthquake, people quickly adapted their traffic behavior and residual traffic found other routes. Today the Embarcadero is a friendly boulevard with trees, trolley cars and good conditions for city life and bicyclists.



In 2002 London introduced road congestion pricing, which meant that motorists have to pay to drive into the designated part of the inner city. From the start, the congestion charge led to a dramatic reduction in vehicular traffic. The fee zone was later expanded towards the west and now comprises almost 50 km²/19 square miles.[5]



Excerpt from *Cities for People* by Jan Gehl, 2010

1.2
First we shape the cities — then they shape us

city planning and patterns of use — a question of invitation

If we look at the history of cities, we can see clearly that urban structures and planning influence human behavior and the ways in which cities operate. The Roman Empire had its colony towns with their fixed and regimented layout of main streets, forums, public buildings and barracks, a formula that reinforced their military role. The compact structure of medieval cities with short walking distances, squares and marketplaces supported their function as centers of trade and craftsmanship. Haussman's strategic urban renewal of Paris in the years after 1852, the broad boulevards in particular, supported military control of the population, as well as providing the platform for a special "boulevard culture" that sprouted promenades and café life along the city's wide streets.

more roads — more traffic

The connection between invitations and behavior came to a head for cities in the 20th century. In the efforts to cope with the rising tide of car traffic, all available city space was simply filled with moving and parked vehicles. Every city got precisely as much traffic as space would allow. In every case, attempts to relieve traffic pressure by building more roads and parking garages have generated more traffic and more congestion. The volume of car traffic almost everywhere is more or less arbitrary, depending on the available transportation infrastructure. Because we can always find new ways to increase our car use, building extra roads is a direct invitation to buy and drive more cars.

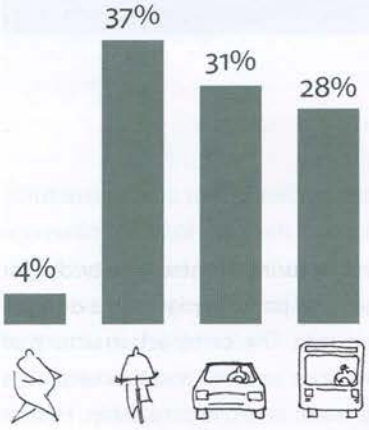
fewer roads — less traffic?

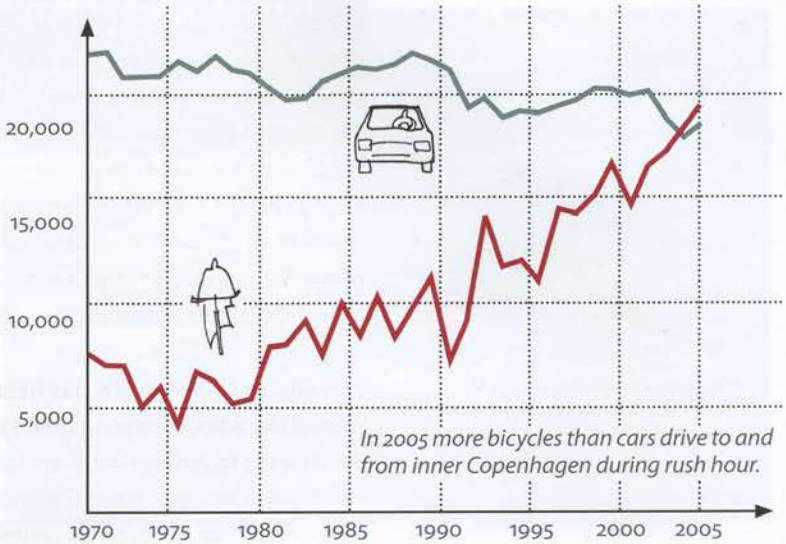
If more roads mean more traffic, what happens if fewer cars are invited rather than more? The 1989 earthquake in San Francisco caused so much damage to one of the vital arteries to the city center, the heavily trafficked Embarcadero freeway along the bay, that it had to be closed. Thus a significant traffic route to the city center was removed in one fell swoop, but before plans for reconstruction were off the drawing board, it was clear that the city was managing just fine without it. Users quickly adapted their traffic behavior to the new situation and instead of the damaged double-decker freeway, today there is a city boulevard with trolley cars, trees and wide sidewalks. San Francisco has continued to convert freeways to peaceful city streets in subsequent years. We can find similar examples in Portland, Oregon; Milwaukee, Wisconsin; and Seoul, Korea, where dismantling large road systems reduced capacity and the amount of traffic.

Excerpt from *Cities for People* by Jan Gehl, 2010

inviting bicyclists: example Copenhagen

Below: going to and from work and education in Copenhagen (2008).





In 2005 more bicycles than cars drive to and from inner Copenhagen during rush hour.

For many years Copenhagen has invited more bicycle traffic. Networks of good bicycle paths now support a safe and effective alternative transit system. By 2008, bicyclists account for 37% of commutes to and from work and education. The goal is 50%.[6]

The development of a distinct bicycle culture is a significant result of many years of work to invite people to bicycle in Copenhagen. Bicycling has become an important part of the daily activity pattern for all groups of society. More than 50% of Copenhageners bicycle every day.[7]

National Center for Sustainable Transportation

POLICY BRIEF

Increasing Highway Capacity Unlikely to Relieve Traffic Congestion

Susan Handy
Department of Environmental Science and Policy
University of California, Davis

Contact Information:
slhandy@ucdavis.edu

Issue

Reducing traffic congestion is often proposed as a solution for improving fuel efficiency and reducing greenhouse gas (GHG) emissions. Traffic congestion has traditionally been addressed by adding additional roadway capacity via constructing entirely new roadways, adding additional lanes to existing roadways, or upgrading existing highways to controlled-access freeways. Numerous studies have examined the effectiveness of this approach and consistently show that adding capacity to roadways fails to alleviate congestion for long because it actually increases vehicle miles traveled (VMT).

An increase in VMT attributable to increases in roadway capacity where congestion is present is called "induced travel". The basic economic principles of supply and demand explain this phenomenon: adding capacity decreases travel time, in effect lowering the "price" of driving; and when prices go down, the quantity of driving goes up.[1] Induced travel counteracts the effectiveness of capacity expansion as a strategy for alleviating traffic congestion and offsets in part or in whole reductions in GHG emissions that would result from reduced congestion.

Key Research Findings

The quality of the evidence linking highway capacity expansion to increased VMT is high. All studies reviewed used time-series data and sophisticated econometric techniques to estimate the effect of increased capacity on congestion and VMT. All studies also controlled for other factors that might also affect VMT, including population growth, increases in income, other demographic factors, and changes in transit service.[2]

Increased roadway capacity induces additional VMT in the short-run and even more VMT in the long-run. A capacity expansion of 10% is likely to increase VMT by 3% to 6% in the short-run and 6% to 10% in the long-run. Increased capacity can lead to increased VMT in the short-run in several ways: if people shift from other modes to driving, if drivers make longer trips (by choosing longer routes and/or more distant destinations), or if drivers make more frequent trips.[3,4,5] Longer-term effects may also occur if households and businesses move to more distant locations or if development patterns become more dispersed in response to the capacity increase. One study concludes that the full impact of capacity expansion on VMT materializes within five years[6] and another concludes that the full effect takes as long as 10 years.[7]

Capacity expansion leads to a net increase in VMT, not simply a shifting of VMT from one road to another. Some argue that increased capacity does not generate new VMT but rather that drivers simply shift from slower and more congested roads to the new or newly expanded roadway. Evidence does not support this argument. One study found "no conclusive evidence that increases in state highway lane-miles have affected traffic on other roads"[8] while a more recent study concluded that "increasing lane kilometers for one type of road diverts little traffic from other types of roads".[9]

Increases in GHG emissions attributable to capacity expansion are substantial. One study predicted that the growth in VMT attributable to increased lane miles would produce an additional 43 million metric tons of CO_2 emissions in 2012 nationwide.[10]

Capacity expansion does not increase employment or other economic activity. Economic development and job creation are often cited as compelling reasons for expanding the capacity of roadways. However, most studies of the impact of capacity expansion on development in a metropolitan region find no net increase in employment or other economic activity, though investments do influence where within a region development occurs.[11, 12]

Conversely, reductions in roadway capacity tend to produce social and economic benefits without worsening traffic congestion. The removal of elevated freeway segments in San Francisco coupled with improvements to the at-grade Embarcadero and Octavia Boulevards has sparked an on-going revitalization of the surrounding areas while producing a significant drop in traffic.[13] Many cities in Europe have adopted the strategy of closing streets in the central business district to vehicle traffic as an approach to economic revitalization,[14] and this strategy is increasingly being adopted in cities the U.S., from New York City to San Francisco.

Further Reading

This policy brief is drawn from the "Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions" policy brief and technical background memo prepared for the California Air Resources Board (CARB) by Susan Handy (University of California, Davis) and Marlon Boarnet (University of Southern California), which can be found on CARB's website along with briefs and memos on 22 other land use and transportation strategies that impact vehicle use and GHG emissions. Website link: http://arb.ca.gov/cc/sb375/policies/policies.htm

[1] Noland, R.B. and L.L. Lem. (2002). A review of the evidence for induced travel and changes in transportation and environmental policy in the US and the UK. *Transportation Research* D, 7, 1-26. http://bit.ly/1jZbl1E

[2] Noland, R.B. and L.L. Lem. (2002).

[3] Noland, R.B. and L.L. Lem. (2002).

[4] Gorham, R. (2009). Demystifying Induced Travel Demand. Sustainable Urban Transport Document #1. Transport Policy Advisory Services on behalf of the Federal Ministry of Economic Cooperation and Development, Bonn, Germany. http://bit.ly/1MszHfq

[5] Litman, T. (2010). Generated Traffic and Induced Travel: Implications for Transport Planning. Victoria Transport Policy Institute. http://bit.ly/1WXC258

[6] Hansen, M. and Y. Huang. (1997). Road Supply and Traffic in California Urban Areas. Transportation Research A, 31(3), 205-218. http://bit.ly/1ZvLO0k

[7] Duranton, G. and M.A. Turner. (2011). The Fundamental Law of Road Congestion: Evidence from US Cities. American Economic Review, 101, 2616-2652. http://bit.ly/1MszTeD

[8] Hansen and Huang. (1997).

[9] Duranton and Turner. (2011).

[10] Handy, S. (2005). Smart Growth and the Transportation-Land Use Connection: What Does the Research Tell us? International Regional Science Review, 28(2): 1-22. http://bit.ly/1NCeeSP

[11] Handy, S. (2005).

[12] Funderberg, R., H. Nixon, M. Boarnet, and G. Ferguson. (2010). New Highways and Land Use Change: Results From a Quasi-Experimental Research Design. Transportation Research A, 44(2): 76-98. http://bit.ly/1LqYhfD

[13] Cervero, R., J. Kang, and K. Shively. (2009). From Elevated Freeways to Surface Boulevards: Neighborhood and Housing Price Impacts in San Francisco. *Journal of Urbanism*, 2(1), 31-50. http://bit.ly/1LF8eSq

[14] Hajdu, J.C. (1988). Pedestrian Malls in West Germany: Perceptions of their Role and Stages in their Development. *Journal of the American Planning Association*, 54(3). 325-335. http://bit.ly/1LqYnUy

The National Center for Sustainable Transportation is a consortium of leading universities committed to advancing an environmentally sustainable transportation system through cutting-edge research, direct policy engagement, and education of our future leaders.

Consortium members: University of California, Davis; University of California, Riverside; University of Southern California; California State University, Long Beach; Georgia Institute of Technology; and The University of Vermont

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Questions regarding the design decisions on Kagy Blvd

1. What is the projected traffic volume?
2. What method(s) was (were) used for traffic projections?
3. What criteria are being used to evaluate the need for number of lanes?
    a. Intersection Level of Service (LOS)?
    b. Peak hour?
    c. Bicycle and pedestrian LOS?
    d. Safety
4. How is MDT's Vision Zero Policy being incorporated into the scoping process?
5. How are Bozeman's planning documents being incorporated into the scoping process? (including City Climate Action Plan)
6. How is Bozeman's Complete Streets Policy being incorporated into the planning process?
7. How are MSU's planning documents being incorporated into the planning process? (including MSU Climate Action Plan)
8. Who has the final say on design decisions?
    a. Design speed
    b. Number of lanes
    c. Intersection control
    d. Bike/ped accommodation
9. How has public input been solicited during the scoping process?
10. How are the costs being compared for the different scoping options?

COMMENT FORM

Please Submit Your Comments:

I believe our community needs better and safer bike and pedestrian routes. I live near 15th ave + Babcock. Naturally, people in our neighborhood (including families with young children) walk to nearby stores, schools, and amenities. However, Babcock from 19th to 11th has no sidewalk or proper pathway. People walk right on the side of the road or through the muddy mud bog behind the old Arby's. These are unsafe routes, especially in the winter. There is plenty of open property yet no sidewalk. Babcock + Koch are the only exit streets for our immediate area which is higher density residential including many MSU students, retirees, and young families. Please consider the patches of disconnected pedestrian and bike access routes. Further, the bike/pedestrian pathways on 19th are disconnected, rendering them useless. Please help keep Bozeman a walkable, bikable community by connecting pathways and sidewalks & ensuring safe routes for non-motorists.

Please mail or email your comments to:

Jeff Key, RPA Project Manager
Robert Peccia and Associates
PO Box 5653
Helena, MT 59604
406-447-5000
Email: jeff.key@rpa-hln.com

To receive further study information, please provide your name and address:

Name: Aubree Roth
Address: 3045 S. 15th ave
Bozeman MT 59715
Email: aubree.roth@gmail.com

Mayor and City Commission of the City of Bozeman

c/o City Clerk's Office
Suite 201, City Hall
P.O. Box 1230
121 North Rouse Avenue
Bozeman, Mt. 59771

RE: Air quality and bicycling safety with respect to the Transportation Plan Update

April 7, 2016

Dear Mayor and Commissioners,

I have been a “bicycle commuter” most of my adult life, in cities such as Denver, Reno, Salt Lake City, Detroit, and Ann Arbor, generally cycling at least 10 miles per day. Air quality, even in Denver has never been an issue for me. It was not until moving to Bozeman that I have developed a chronic respiratory condition (basically asthma) due to the high levels of particulates in the air, i.e., smoke, diesel exhaust, and dust.

In Denver, most of the major bike paths are off-street, even below the street, bike lanes are usually on quiet boulevards or less-traveled collector streets, where traffic is minimal. This makes for a safe, enjoyable, and relatively pollution-free ride into work.

If our goal here in Bozeman is to encourage bicycling as alternative transportation, traffic safety and ground-level air quality are key factors that must be addressed. For example, see the photos below, which I took on my way to work this morning:

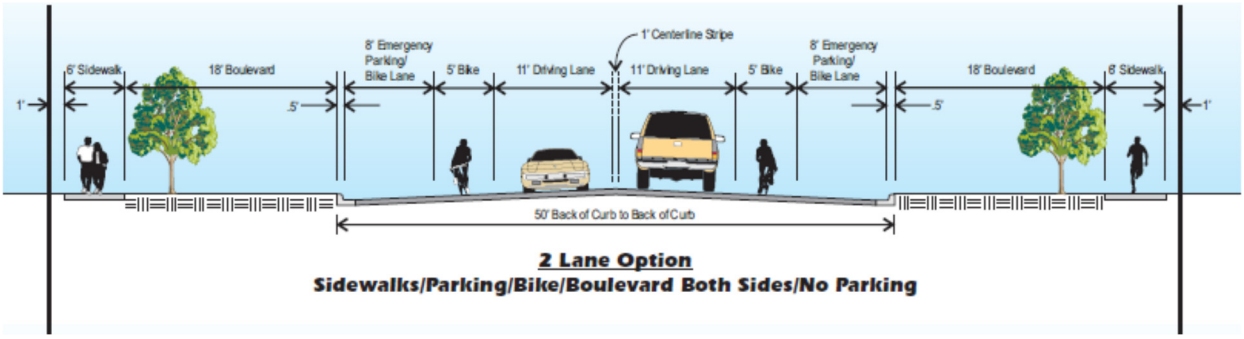
Villard at 19th

Durston at 7th

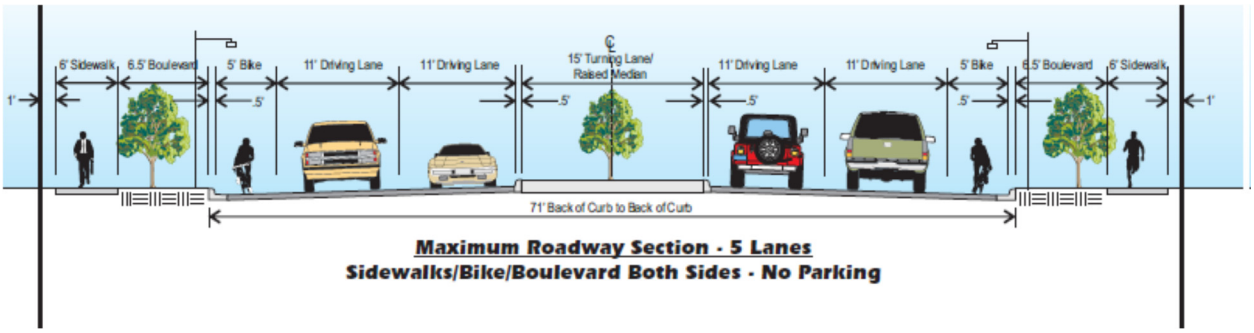
<u>The bus exhaust, gravel and gravel dust, and encroachment by vehicles into the bike lane make biking here unsafe and definitely not enjoyable.</u>

I strongly urge you to make off-street multi-use ped/bike paths a high priority for Bozeman, especially along major corridors. A five- or six-foot sidewalk along arterials and collectors should not be an option.

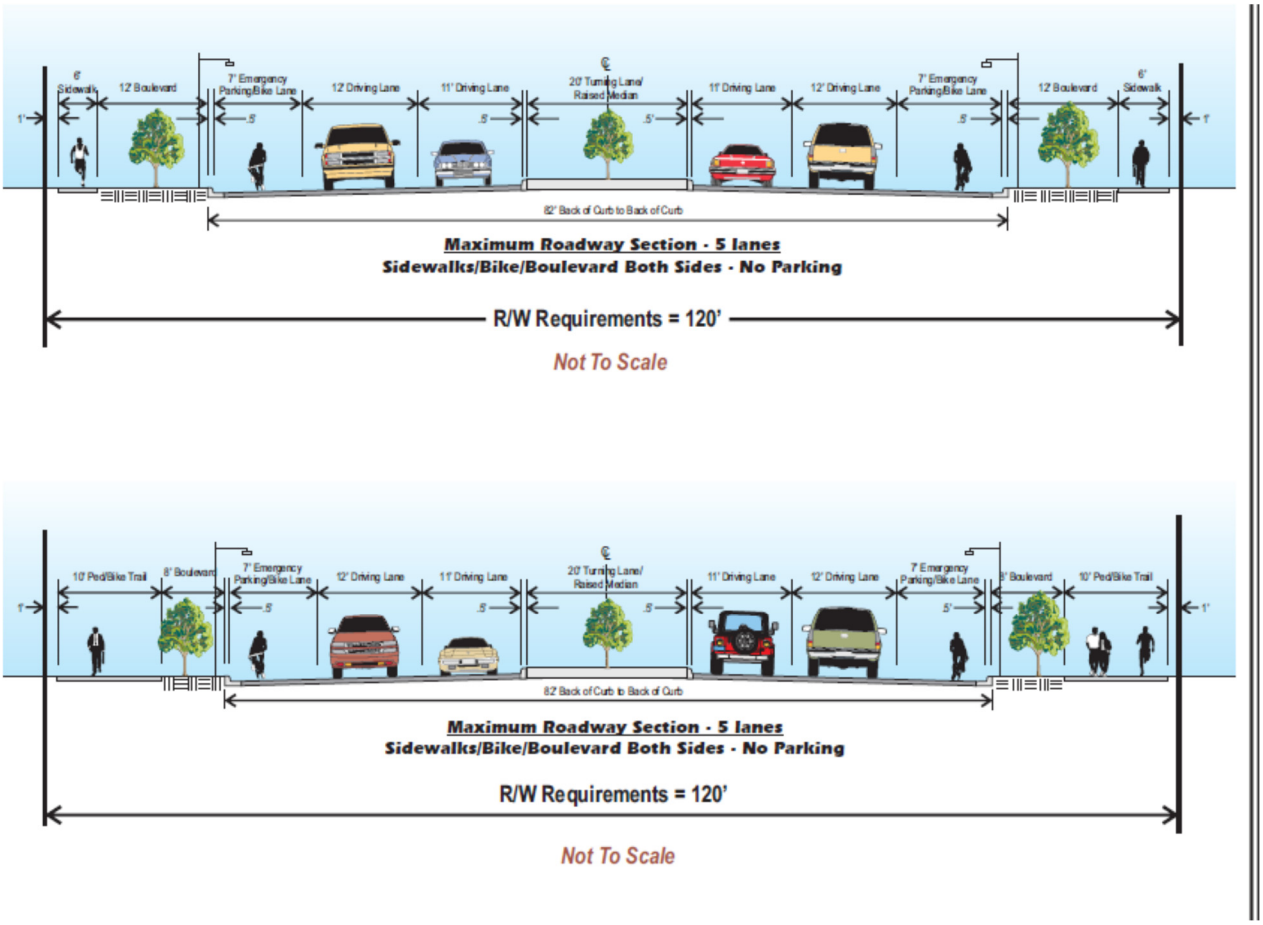
In this Minor Arterial cross section, there is plenty of room for a 10-foot wide paved path in the boulevard.



It would be FAR preferable to have the off-street path instead of the bike lane on busy streets.



In this principal arterial cross-section, <u>a 10-foot path should not be an option, it should be a requirement.</u> Otherwise, you are FORCING people to ride their bikes in the street since riding on the sidewalk is currently (strangely enough) illegal for adults in Bozeman. I also strongly urge you to require 10-foot wide concrete bike/ped paths as a standard instead of asphalt, which does not hold up and is highly susceptible to root heaving and rodent damage, or at least require a 12" crushed, clean gravel 97% SPD compacted base with geotextile fabric overlay.



The following examples are totally doable with our right-of-way widths, and numerous other examples may be found via Google:

(https://www.google.com/search?site=&tbm=isch&source=hp&biw=1026&bih=901&q=bike+path&oq=bike+path&gs_l=img.3..0l10.2414.3296.0.3511.9.9.0.0.0.0.170.671.3j3.6.0....0...1ac.1.64.img..3.6.670.3bxJSrDOsTE#imgrc=66ozGcy9HKYJqM%3A :

Needless to say, bike lanes next to parking are unacceptable unless a buffer zone is provided. My sister was seriously injured by a door being opened in front of her while on her bike, causing her to do a head-first flip over the door and land flat on the pavement. Last year, a truck started to turn right in front of me at 19th and Durston, so I slammed on my brakes, skidding on the gravel and landing on my side, breaking 3 ribs and requiring rotator cuff repair surgery with a 6-month rehab. I had never sustained an injury in over 50 years of bicycling until this.

While visiting Bozeman last fall, Stephen Clark, Community Specialist with the League of American Cyclists indicated to me that we are at risk of losing our “Silver” status as Bozeman grows if we do not do a better job of addressing safety and connectivity issues. In the results of the recent Citizen Survey, many, many people indicated “Air Quality” as a number on priority. No sooner do we get through wildfire season, then fall comes and people start burning wood, then in the spring “everything turns to dust.” No wonder I’ve developed asthma.

If we truly want Bozeman to be a world-class city and leader in sustainable lifestyles, we need to provide both clean air and safe alternative modes of transportation.

Thank you for your consideration.

Sincerely,

Carolyn Poissant
Property owner of:
430 Greenway Avenue
Bozeman, MT 59718
Phone: 970-309-0317

cc: Craig Woolard, Public Works Director
John Vandelinder, Streets Supt.
Wendy Thomas, Community Development Director
Mitch Overton, Parks & Recreation Director
Kelly Pohl, GVLT
Joe Gilpin, Alta Planning and Design
Bill Cochran, Bicycle Advisory Board

COMMENT FORM

Please Submit Your Comments:

I urge you to include the KASY/Sourdough/Church St. intersection in your Transportation Master Plan. The intersection is extremely unsafe and there are delays on Sourdough & Church during busy traffic times. In addition to cars, there are a lot of bikes and pedestrians in the area. It is particularly unsafe as the sun rises & before it sets. I believe there needs to be a light or 4 way stop sign put there, so that traffic on Sourdough & Church can get out onto KASY & across safely.

Thank you for your consideration.

Jeff Yates

Please mail or email your comments to:

Jeff Key, RPA Project Manager
Robert Peccia and Associates
PO Box 5653
Helena, MT 59604
406-447-5000
Email: jeff.key@rpa-hln.com

To receive further study information, please provide your name and address:

Name: Jeff Yates
Address: 141 South View Ridge La.
Bozeman MT. 59715
Email: jeffyates500@gmail.com

Bozeman Climate Partners

August 15, 2016

Bozeman City Commission
121 N Rouse Avenue
Bozeman, MT 59715

Re: 2016 Bozeman Transportation Master Plan

Dear Bozeman City Commission:

On behalf of the Bozeman Climate Partners (BCP) Working Group, I would like to provide comment on the 2016 Bozeman Transportation Master Plan. The Bozeman Climate Partners were established by the City of Bozeman to help implement the City's Community Climate Action Plan. Our goal is to encourage actions which minimize and reduce Greenhouse Gas (GHG) emissions from all activities of the City and Community of Bozeman. The transportation sector contributes at least 26 percent of Bozeman's GHG emissions. In order to optimize the sustainability of Bozeman's transportation activities, we encourage actions that help reduce vehicle miles traveled (VMT) and encourage the efficiency of those activities, including any strategy to minimize fossil fuel consumption. All areas of planning for the future of Bozeman potentially impact fossil fuel consumption and air pollution, including greenhouse gases.

We therefore offer the following ideas which might benefit the community and the atmosphere in the development of an updated Bozeman Transportation Plan.

Transportation Planning Goals

The design of transportation infrastructure affects safety, development patterns and pollution levels. Transportation and development plans and subsequent rules and policy must be carefully integrated to discourage deteriorating traffic conditions and sprawl. Regional transportation trends must be considered even though neighboring governments have been reticent to plan for the future.

We would like to emphasize that high capacity, high speed roadways tend to encourage sprawl and attract additional traffic as well as rendering the roadways more dangerous, while increasing air pollution. The goal should be to move traffic smoothly at moderate speeds while encouraging alternate forms of transportation, such as public transit, electric vehicles, walking and bicycling.

The partnership between the City of Bozeman, Montana State University, and Western Transportation Institute to develop a Transportation Demand Management Program with a

dedicated FTE is an important step, which demonstrates a commitment to implementing demand response programs that will curb peak traffic and result in continued mode shifts. With this program, we would like to see goals established to limit the rate of growth of Vehicle Miles Traveled (VMT).

Traffic Calming

Divided roadways, bike lanes, sidewalk extensions, roundabouts, green strips and narrower traffic lanes, for example, are known to calm traffic with minimal impact on travel times. Traffic calming techniques reduce emissions and result in transportation systems that are more pleasant for all.

Reduced speed limits should be considered on some arterials. Speed increases fuel consumption. Traffic signals and stops increase fuel consumption. Roundabouts, for example, calm traffic and improve flow, reducing fuel consumption. When vehicles are idle in a queue they emit about 7 times as much carbon monoxide (CO) as vehicles traveling at 10 mph. The emissions from a stopped vehicle are about 4.5 times greater than a vehicle moving at 5 MPH[1] Additional roadways of four or more lanes should be discouraged. Three lane roadways are efficient, calmer, and allow space for biking and walking. Multiple lane streets present intimidating barriers which discourage biking and walking.

Air Quality

Pollution should be considered and modeled when roadways and other infrastructure are designed. To date, Bozeman has been blessed with excellent air quality, but this fortune is subject to change if Vehicle Miles Traveled climb inexorably with population growth. The City and MSU should help establish a more robust air quality monitoring program in order to establish a baseline and track changes over time. We should be prepared to measure the air quality impacts, including Greenhouse Gas Emissions (GHGs) and main criteria pollutants of concern (CO and PM10) in order to compare the total potential pollutant emissions of each building alternative, including those from construction activities, lifecycle emissions of construction materials, long-term operational maintenance of the project, and changes in vehicle traffic and idling emissions.

Public Transportation

Public transit infrastructure should be given equal priority with automobile capacity in long term planning. Future transportation needs and means may be much different and we should be ready for healthy change. The resources are not available to solve all traffic problems by increasing roadway capacity. Traffic congestion will increase despite current improvement

[1] Crown, Barry. Report on Roundabouts. January 2001. http://www.cccnh.org/cintroduction.htm.

plans, according to the studies supporting the updated Transportation Master Plan. Alternatives to auto trips may improve traffic while reducing pollution.

Future Innovation

Infrastructure to support electric vehicles should be considered, wherever possible, supplemented by renewable local electric generation. There is mounting evidence that younger citizens do not have the same cultural attachment to cars as their parents; these citizens will be demanding more transportation alternatives to auto ownership, such as carsharing. A major cultural shift is in progress and we should be ready for change by not over investing in endless road construction for capacity increases.

MSU's College of Engineering and Western Transportation Institute have recently launched a program to explore "driverless" and "connected" vehicle technology for improved transportation system efficiency. The Bozeman Transportation Master Plan should discuss the golden opportunity for innovation that we have right here at our hometown university.

In general and in summary, we strongly encourage the Transportation Master Plan to consider air pollution and greenhouse gas emissions in all decisions regarding infrastructure. A greater dialogue regarding local pollution and global impacts will benefit our community.

Thank you for your consideration of our suggestions to develop a forward-looking, visionary Transportation Master Plan for Bozeman.

Sincerely,

Jay Sinnott

Bozeman Climate Partners:

Joan Montagne
Kathy Powell
Susan Bilo
Kristen Walser
Dan Perata
Marcia Rundle

BOZEMANTMP
TRANSPORTATION MASTER PLAN

COMMENT FORM

Please Submit Your Comments:

- How long does a typical street last?
- (Land Use) How much has the planning dept. been involved in this plan?
- County islands - Can this plan address the County and its responsibility to their areas in the planning boundary?
- Is the LOS for non-car modes?
- has there been discussion about relaxing the LOS standards?

Please mail or email your comments to:

Jeff Key, RPA Project Manager
Robert Peccia and Associates
PO Box 5653
Helena, MT 59604
406-447-5000
Email: jeff.key@rpa-hln.com

To receive further study information, please provide your name and address:

Name: _____

Address: _____

_____

Email: _____

Public Meeting notes 20 including us
~~27~~ ~~25~~ 26 ~~28~~ 29

- No left turn intersections? why?
Wilson/College

- What could we, as the public, do to make a change?

- When would it be possible to install a diverter at college/Wilson to physically limit turns?

- Why does neighborhood character take a back seat to functional class? (Peach)
* Traffic Calming is the gist of the Greater *

- Autom roads in neighborhoods is desirable in downtown, how do we keep those feet still reduce traffic?

- East (Olive) w/ clear run Wilson → Wallace, 1-ways may effect that.

- We have not talked about reducing demand, How do we give the people places to go that don't require cars?
* Mixed use development *

- Grade separated crossings, is it an option ~~the~~ with rolly over over 19th or Huffine

- They state routes seem to prioritize speeds?
- did increasing the lanes of the seconds make the Main st less safe

MONTANA MDT DEPARTMENT OF TRANSPORTATION

Comment Form

Project name: Kagy Boulevard – S. 19th Avenue to Willson Avenue
Project ID: Control Number: 8931000
Meeting date and time: Thursday, April 21, 2016, 4:30 – 6:30 p.m.; presentation at 5:30 p.m.
Location: Stadium Club, MSU Bobcat Stadium, 1 Bobcat Circle, Bozeman, Mont.

You are invited to make your comments on this form and place it in the comment box located at the sign-in table or take it with you and mail to Jeff Ebert, MDT Butte District office, PO Box 3068, Butte, MT 59702-3068. Comments may also be submitted by fax to (406) 494-4396 or online at:

www.mdt.mt.gov/mdt/comment_form.shtml

The deadline for comments is **May 13, 2016**. Please indicate your name, address and affiliation (if any) below. Thank you for your interest in and comments about this project. Please use the back and/or additional sheets of paper if necessary.

Name and address ***(include physical address and email address):***

Cheryl Boylan
1550 W. Kagy Blvd
Bozeman, MT 59715

Comments: I'm asking that you do not increase your right of way in front of my property. If you can control traffic flow from 11th Street east, then this should alleviate any backup that might occur further west. You have just updated the corner of Kagy + 19th so shouldn't have to spend any more money there.

I am 3RD generation living on this little farm. It was here long before Kagy was even thought of. Please consider my property rights – the rights of a family that has been in this valley for over 100 years. Also there are extensive wetlands on this portion of Kagy. Please don't encroach on my property.

Citizens for a
SAFER BOZEMAN
& Gallatin County

Commuter traveling to Belgrade along Frontage Road P-205 5/18/16 2:15 p.m. at Nelson Road and MDT facility.

Recreational Cyclist on Frontage Road P-205 5/18/16 2:10 p.m. near where Kevin O'Brien was killed in 2014 on his bike.

Unconnected segment of Separated Multi-Use Pathway next to Highway Patrol Facility. Cyclist and Traffic on Frontage Road P-205 at right side of photo.

Marilee Brown, Director
saferbozeman@gmail.com
406-579-5447

www.frontagepathway.com

May 23, 2016

Dear Mr. Key,

Presented here is our petition to have a separated multi-use pathway built between Bozeman and Belgrade along Frontage Road signed by over $3,000 people from all over the Galltin Valley.

We received an overwhelmingly positive response from the community. So many people were excited by the prospect of having a multiuse path to safely connect Bozeman and
Belgrade.

While some of these signatures are from cyclists, we made great effort to collect names in public places such as grocery stores, schools, shopping areas, restaurants, and on line to accurately reflect the whole community. These signatures were gathered over a very short period of time in less than 6 weeks. More complete information such as physical addresses and/or e-mail addresses is available upon request.

Below is the petition wording:

> *"We the undersigned people of Gallatin County urge the Cities of Belgrade and Bozeman, Gallatin County, and the Montana Department of Transportation to work together to include a shared-use paved pathway on any projects upon the old U.S. 10 highway running from Bozeman through Belgrade (the frontage road).*
>
> *To maximize safety, the pathway should be outside the edge of the paved shoulder and preferably beyond the drainage ditch along the side of the road. If necessary, additional right of way should be acquired.*
>
> *This pathway should be incorporated in all construction and reconstruction projects on the highway including any that already are in planning and/or design.*
>
> *The pathway should be extended as far west and east as possible and connected to other paths wherever feasible."*

We trust you will consider the voices of the people as public comment to be used in the new TMP and help us in any way that you can to make this a reality. This pathway will be the fulfillment of 30 years of longing and hard work by community residents.

Sincerely,

Marilee Brown, Director
Citizens for a Safer Bozeman and Gallatin County

cc: Woolard

Belgrade to Bozeman Frontage Road Bike/Pedestrian Pathway

Petition published by Safer Bozeman on Mar 09, 2016

Background (Preamble):

The Golden Opportunity for a Belgrade to Bozeman Bike/Pedestrian Pathway is NOW!

Road improvements along Frontage Road between Belgrade and Bozeman Montana are currently in design and we don't want to miss this once in a lifetime opportunity to add a pathway now or on future projects.

The Cities, County, and MDT need to know that this is vital - and smart.

Please sign the Petition!

Petition Text:

Petition for Frontage Pathway

We the undersigned people of Gallatin County urge the Cities of Belgrade and Bozeman, Gallatin County, and the Montana Department of Transportation to work together to include a shared-use paved pathway on any projects upon the old U.S. 10 highway running from Bozeman through Belgrade (the frontage road).

To maximize safety, the pathway should be outside the edge of the paved shoulder and preferably beyond the drainage ditch along the side of the road. If necessary, additional right of way should be acquired.

This pathway should be incorporated in all construction and reconstruction projects on the highway including any that already are in planning and/or design.

The pathway should be extended as far west and east as possible and connected to other paths wherever feasible.

Total signatures 3025

#	FirstName	Surname	Zip/PC
3025	Carissa	Aarsvold	59715
3024	Tanner	Abdallah	59714
3023	Kimberly	Achziger	59718
3022	Nickie	Achziger	59718
3021	Gene	Achziger	59718
3020	Loren	Acton	59715
3019	Evelyn	Acton	59715
3018	Marybeth	Adams	59714
3017	rich	Adams	59715
3016	Tyler	Adams	59715
3015	Philip	Adams	59715
3014	Jacque	Adams	59714
3013	jason	Adams	59714
3012	Kayden	Adams	59714
3011	Kynzi	Adams	59714
3010	Ray	Adams	59714
3009	aliaana	Adelmann	59715
3008	Marina	Adelmann	59715
3007	Sara	Adlington	59718
3006	Amanda	Ahlquist	59714

Powered by GoPetition

#	FirstName	Surname	Zip/PC
3005	tina	Albers	59718
3004	Lucas	Albers	59715
3003	Sarah	Alexander	59715
3002	Ben	Alexander	59715
3001	Rian	Alexander	59718
3000	Jim	Allard	59715
2999	Leslie	Allen	59718
2998	Kathy	Allen	59715
2997	JEANINE	ALLEN	59718
2996	William	Allen	59718
2995	Dr. Ed	Allen	59714
2994	Dorthea	Allen	59714
2993	Emily	Allison	59715
2992	Kimberly	Am Rophe	59714
2991	Jessica	Amende	59718
2990	Kevin	Amende	59718
2989	Wyah	Amende	59718
2988	Byron	Amerson	59717
2987	Josh	Amidon	59718
2986	Macey	Amy	59718
2985	A	anderode	59714
2984	Paul	Andersen	59715
2983	sarah	anderson	59715
2982	Kathi	Anderson	59714
2981	Bruce	Anderson	59715
2980	Janet	Anderson	59715
2979	Mollie	Anderson	59718
2978	Tim	Anderson	59718
2977	Clint	Anderson	59718
2976	Clint	Anderson	59718
2975	Ryan	Anderson	59715
2974	Ryan	Anderson	59718
2973	Travis	Anderson	59718
2972	Clint	Anderson	59714
2971	Bijan	Andrade	59715
2970	Gina	Andrade	59714
2969	David	Andreani	59715
2968	Sarah	Andresen	59715
2967	Valorie	Andrews	59718
2966	Michael Neal	Andrews	59718
2965	Judy	Andriolo	59718
2964	Lynda	Andros	59715
2963	Cyndy	Andrus	59715
2962	Danny	Anduza	59715
2961	Laurel	Angel	59715
2960	Tess	Annalora	59718
2959	Drew	Antonich	59715
2958	William	Anzon	59715
2957	Michael	Appelgate	59715
2956	Steve	Apple	59718
2955	angela	Arbour	59714
2954	Courtney	Archer	59718

#	FirstName	Surname	Zip/PC
2953	Adam	Archuleta	59714
2952	Yolanda	Arellano	59718
2951	Lynn	Armfield	59714
2950	Jimmy	Armijo-Grover	59714
2949	Jimmy	Armijo-Grover	59714
2948	Cami	Armijo-Grover	59714
2947	Dan	Armstrong	59715
2946	Rebecca	Armstrong	59715
2945	Megan	Arndt	59714
2944	Mandee	Arnold	59718
2943	Lisa	Arnot	59718
2942	Peter	Arnot	59718
2941	Blaise	Arsenault	59718
2940	Jen	Arsenault	59718
2939	Riley	Asbell	59718
2938	steve	Ashley	59718
2937	Cindy	Ashley	59718
2936	Cindy	Ashley	59718
2935	Ryan	Askuy	78225
2934	Dorothy	Austin	59718
2933	Derya	Avci	59715
2932	Jason	Bacaj	59715
2931	John	Baden	59730
2930	Sheri	Bagley	59718
2929	Teddy	Bagley	59718
2928	Nicole	Bahich	59715
2927	Jason	Baide	59715
2926	Julie	Baii	59714
2925	Tara	Bailey	59715
2924	Meaghan	Bailey	59715
2923	Chad	Bailey	59715
2922	Robert	Baker	59714
2921	Kirstin	Baker	59714
2920	John	Baker	59715
2919	Brianna	Baker	59715
2918	Merna	Baker	59714
2917	Taylor	Baker	59715
2916	Brian	Bakken	59715
2915	Chris	Bakwin	59771
2914	Peggy	Baldwin	59718
2913	Austin	Baldwin	59718
2912	Teri	Ball	59718
2911	Mary D.	Ball	59715
2910	Bob	Ballard	59715
2909	Lillian	Ballard	55104
2908	Shelby	Ballard	59718
2907	Matt	Ballinger	59714
2906	Megan	Ballinger	59714
2905	Heidi	Balus	59718
2904	Brad	Baner	59715
2903	Robert	Banis	59715
2902	Anne	Banks	59715

#	FirstName	Surname	Zip/PC
2901	Katie	Bark	59715
2900	Eleanor	Barker	59715
2899	Kathryn	Barnes	59718
2898	Dave	Barnes	59718
2897	Rudy L	Barnett	59714
2896	John	Barney	59718
2895	Carmen	Barnhart	59715
2894	Amber	Barone	59714
2893	Darcy	barry	59718
2892	Maryann	Barry	59718
2891	Robert	Bartelby	59715
2890	Patricia	Bartholomew	59715
2889	douglas	Bartholomew	59715
2888	William	Bartlett	59715
2887	Elizabeth	Bastian	59715
2886	Annie	Battle	59715
2885	Tim	Baucom	59715
2884	Mary	Bauer	59714
2883	Nicole	Bauerle	59714
2882	William	Bayless	59718
2881	Krista	Baziak	59714
2880	Karen	Beach	59718
2879	ryan	Beal	59715
2878	Greg	Beardslee	59715
2877	Kathryn	Beardslee	59715
2876	Deborah	Beauchamp	59714
2875	Greg	Beaudslee	59715
2874	Stephen	Beaujois	59718
2873	Julia	beck	59718
2872	Emilia	Becker	59714
2871	Pat	Becker	59714
2870	Izak	Becker	59714
2869	Richard	Becker	82414
2868	Meggin	Becker	59718
2867	Marge	Becker	82414
2866	Nick	Becker	59714
2865	Jordan	Beckman	59714
2864	Larry	Beebe	59715
2863	Nancee	Beebe	59715
2862	Cami	Beedie	59714
2861	Michael	Beeman	59715
2860	Michaelanne	Beighley	59715
2859	Briana	Bell	59715
2858	Joe	Bell	59718
2857	Erin	Bell	59714
2856	Rebecca	Belou	59715
2855	Gabor	Benda	59715
2854	Janet	Bender-Keigley	59718
2853	suzanne	bendick	59715
2852	Marcus	Bendon	59715
2851	Tina	Benedickt	59714
2850	sofia	Bennett	59714

#	FirstName	Surname	Zip/PC
2849	William	Bennett	59714
2848	Ben	Bennett	59715
2847	Talitha	Bennett	59714
2846	Erin	Benson	59714
2845	May Ann	Benz	59714
2844	Nicolas	Berezovski	59715
2843	Danielle	Berg	54476
2842	Chrystal	Berg	59714
2841	Joshua	Bergan	59714
2840	Morgan	Bergeron	59715
2839	Kathy	Bergevin	59718
2838	Kaitlin	Bergez	59715
2837	amy	berghold	59718
2836	Savannah	Bergo	59718
2835	Troy	Bergquist	59718
2834	Gwen	Bergquist	59718
2833	Kela	Bergren	59715
2832	Garrett	Bernard	59715
2831	Joe	Bernhardt	59715
2830	Beleisha	Bernhekdt	59715
2829	Adam	Berry	59714
2828	Celia	Bertoia	59718
2827	Carl	Bery	59715
2826	Grant	Best	59714
2825	Rishad	Bharucha	59715
2824	Aidan	Bickford	59715
2823	Anna	Bidegaray	59715
2822	Lauren	Bierschenk	59714
2821	justin	bigart	59718
2820	Corey	Biggers	59714
2819	Sherry	Biggerstaff	59715
2818	Dan	Biggerstaff	59715
2817	Cotton Real	bird	59714
2816	Emmaline Real	bird	59714
2815	Karl	Birkeland	59715
2814	Dorothy	Bishop	59715
2813	Norm	Bishop	59715
2812	Barbara	Bishop	59714
2811	Steve	Bjorklund	59718
2810	robert	Black	59715
2809	Sheri	Blackwood	59718
2808	Christina	Blaine	59718
2807	Steven	Blair	59718
2806	Jane	Blair	59715
2805	victoria	Blalu	59715
2804	Thomas	Blalu	59715
2803	Oliver	Blanehold	59714
2802	Milena	Blanes	59714
2801	Robin	Blazer	59729
2800	Amy	Blevins	59718
2799	John	Blixt	59718
2798	Molly	Bloomquist	59715

#	FirstName	Surname	Zip/PC
2797	Tom	Bloomquist	59715
2796	Nicole	Bloyer	59718
2795	Andy	Bloyer	59718
2794	Jesse	Bobrepena	59715
2793	Phyllis	Bock	59715
2792	Phyllis	Bock	59715
2791	Daniel	Bockiud	59714
2790	Jessica	Boerger	59771
2789	Lisa	Bogar	59715
2788	David	Boggemon	59718
2787	Karen	Boich	59715
2786	John	Boich	59715
2785	Mallory	Boich	59718
2784	Joshua	Bok	59718
2783	Barb	Bolte	59718
2782	Matthew	Bolus	59718
2781	Chris	Bond	59715
2780	Beth	Bondy	59840
2779	Beth	Bondy	59840
2778	Jennifer	Bonham	59718
2777	Faye	Boom	59715
2776	Ford	Boozer	59715
2775	Jannet	Borrmann	59715
2774	Jessica	Borzak	59715
2773	Travis	Bos	59718
2772	Scott	Bosse	59718
2771	Tommy	Bossenbrook	59715
2770	Harlee	Bossera	59714
2769	Brian	Bothner	59715
2768	Sarah	Bothner	59715
2767	Andrew	Boughan	59715
2766	Rosemary	Bourne	59715
2765	Rebecca	Bourret	59715
2764	Madison	bowden	59714
2763	Eric	Bowman	59718
2762	Larry	Bowman	59715
2761	Molly	Bowman	59718
2760	Betty	Boxmeyer	59715
2759	Michele	Boyd	59715
2758	Eric	Boyd	59771
2757	William A.	Boyd	59714
2756	Jan	Boyer	59715
2755	Jan	Boyer	59715
2754	Jennifer	Boyer	59715
2753	Sarah	Boyle	59715
2752	Alasdair	Boyle	59715
2751	Jef	Boyle	59715
2750	Kevin	Boyles	10023
2749	Elizabeth A.	Boyson	59714
2748	Safer	Bozeman	59718
2747	Kaleb	Brace	89227
2746	Steve	Bracken	59715

#	FirstName	Surname	Zip/PC
2745	Mitch	Bradley	59718
2744	Tyson	Bradley	59715
2743	Leane	Bradley	59714
2742	Patrick	Bradshaw	59715
2741	Colin	Brady	59718
2740	Kirk	Branch	59715
2739	Graham	Branch	59715
2738	DeeAnn	Brandon	59718
2737	Bert	Brandon	59715
2736	Adria	Brandvold	59714
2735	Tyler	Brantrold	59714
2734	Jesslyn	Braught	59715
2733	Steve	Braun	59771
2732	Sally	Brauss	59714
2731	Lea	Brayton	59715
2730	Ansel	Brayton	59718
2729	Andrew	Brechbuller	59715
2728	Noreen	Breeding	59715
2727	Roger	Breeding	59715-1744
2726	Maggie	Breen	59715
2725	Christopher	Brekk	59718
2724	Chris	Brekke	59718
2723	Chris	Brekke	59718
2722	Dan	Brelsford	59718
2721	Carole	Brennan	59718
2720	Scott	Brennan	59715
2719	Devin	Brewer	59715
2718	Ron	Brey	59715
2717	Chase	Brezney	59715
2716	Jourdan	Bridwell	59714
2715	Carlisle	Bridwell	59714
2714	Alexis	Briere	59714
2713	rachael	Briggs	59715
2712	Don	Brigham	59714
2711	ANN	Brigham	59714
2710	Josh	Brigham	59714
2709	Sam	Brigham	59714
2708	Diane	Bristol	59714
2707	Bruce	Bristol	59714
2706	Ethan	Bristol	59714
2705	KIm	Broden	59715
2704	Megan	Brodston	59718
2703	Landon	Brody	59718
2702	Sarah	Bronsky	59715
2701	Collette	Brookshops	59715
2700	Mikayla	Broughton	40065
2699	Marilee	Brown	59718
2698	Jes	Brown	59715
2697	Virjeana	Brown	59714
2696	Gary	Brown	59718
2695	Anthony	Brown	59714
2694	annah	brown	59714

#	FirstName	Surname	Zip/PC
2693	Jordan	Brown	59718
2692	Leslie	Brown	59718
2691	Jessie	Brown	59718
2690	Kathy	Brown	59715
2689	Sue	Brown	59718
2688	Jarvis H.	Brown	59718
2687	Kimberly	Brown	59718
2686	Duke	Brown	59718
2685	Thomas	Brown	59714
2684	Cindy	Brown	59715
2683	Joyce	Brown	59715
2682	Lizzie	Browning	59714
2681	Elisa	Bruce	59714
2680	Spencer	Bruce	59718
2679	spencer	Bruce	59715
2678	Bruce	Bruck	59771
2677	Deborah	Bruner	59614
2676	Deborah	Bruner	59614
2675	Deborah	Bruner	59714
2674	Heather	Brunner	57719
2673	Britt	Brupbacher	59714
2672	Katherine	Bryant	59718
2671	Heather	Btemurw	59718
2670	Mike	Buck	59715
2669	ryan	Buck	59718
2668	Robert	Buczala	59718
2667	Nicole	Buettner	59718
2666	Jessica	Bunn	59714
2665	Joshua	Burgess	59718
2664	Ashley	Burkardt	59714
2663	Jason	burkenpas	59714
2662	Raymond	Burket	59715
2661	Laura	Burkle	59715
2660	Stacy	Burley	59714
2659	Doug	burns	59715
2658	John	Burns	59027
2657	Alex	Burr	59101
2656	Patrick	Burr	59715
2655	Grendel	Burrell	59715-3609
2654	Tim	Burrows	59715
2653	Rosemary	Burton	59715
2652	Mary	Bushing	59715
2651	Ranks	Busskohl	59718
2650	Michael	Butler	59718
2649	Ally	butler	59718
2648	Patrick	Byorth	59714
2647	Susan	Byorth	59714
2646	Kathleen	Byrne	59715
2645	Lisa	Cady	59714
2644	Bailey	Cage	59714
2643	Greg	Cairns	59715
2642	Paul	Calabro	59714

#	FirstName	Surname	Zip/PC
2641	jeanette	calarco	59741
2640	Jea2	Calarco	59741
2639	William	Calbert	59714
2638	Evan	Caldwell	59047
2637	Cache	Calio	59715
2636	Tyler	Call	59715
2635	Wendy	Call	59714
2634	Patrick	Callaghan	59715
2633	Krista	Callantine	59714
2632	Daniela	Calle	59718
2631	Tracy	Calvert	59718
2630	Carolyne	Calvin	59718
2629	CarolRae	Cambianica	59715
2628	Ilima	Cameron	59714
2627	Bobbi	Campbell	59714
2626	Jessie May	Campbell	59715
2625	Reuben	Campbell	59715
2624	Julyan	Campbell	59718
2623	Chase	Campbell	59714
2622	Anne	Cantrell	59716
2621	Joseph D.	Capell	59715
2620	Catherine	Caracciolo	59718
2619	Joanna	Carey	59715
2618	Peter	Cariosian	59718
2617	Gracie	Carisch	59741
2616	Sam	Carlson	59715
2615	Janice	Carlson	59772
2614	Joseph	carolan	59718
2613	Gina	Carolan	59718
2612	Randy	Carpenter	59715
2611	mona	carroll	59718
2610	Jess	Carroll	59715
2609	Jessica	Cartwright	59718
2608	Gail	Cary	59715
2607	Lowell	Cary	59715
2606	Chase	Casey	59741
2605	Jennifer	Casey	59718
2604	Katelyn	Casey	59718
2603	Aurora	Casey	59715
2602	KC	Cassidy	59715
2601	Amanda	Cater	59715
2600	Travis	Cathcart	59718
2599	Katie	Catlett	59718
2598	Emily	Cattaloriga	59715
2597	Tori	Cavigli	59715
2596	Connor	Cavigli	59718
2595	Zach	Cayer	59715
2594	Madison	Cebuhar	59715
2593	Barb	Cestero	59715
2592	Linda	Chambers	59715
2591	Nyla	Chandler	59715
2590	Leo	Chapman	59715

#	FirstName	Surname	Zip/PC
2589	Russ	Chapman	59715
2588	Lacey	Chapman	Bozeman
2587	Rachel	CHapo	59718
2586	Stephen	Chapo	59718
2585	Everdawn	Charles	59718
2584	David	Charles	59715
2583	Chris	Chase	59714
2582	Linda	Chatriand	59718
2581	Jenna	Chenette	59714
2580	Natalie	Chew	59714
2579	Mandie	Chidester	59714
2578	Alijah	Chidester	59714
2577	Aspen	Chidester	59714
2576	Alex	Chidster	59714
2575	gus	Chisholm	59715
2574	Amy	Chiuchiolo	59718
2573	Sara	Christensen	59718
2572	Howard	Christiansen	59771
2571	shaman	christie	59718
2570	Joy	Churchill	59714
2569	Barton	Churchill	59715
2568	Kaehl	Chvilicek	59715
2567	D'Ann	Cigler	59718
2566	D'Ann	Cigler	59718
2565	Man	Cigler	59718
2564	Cyd	Cimmiyotti	59714
2563	Whitni	Ciofalo	59715
2562	Jason	Claar	59715
2561	Ben	Clapp	59715
2560	Donnie	Clapp	59718
2559	Bethany	Clark	59718
2558	Joe	Clark	59715
2557	Elliyah	Clark	59718
2556	Brett	Clark	59718
2555	Alixa	Clark	59718
2554	Tamara	Clark	59718
2553	Tamara	Clark	59718
2552	Debbie	Clark	59714
2551	Matt	Clark	59714
2550	Ashleigh	Clark	MT
2549	Steven	Clarkson	59714
2548	Sara	Clary	597412
2547	Christopher	Clay	59715
2546	Virginia	Cleaveland	59718
2545	Daniel	Clem	98144
2544	Kerri	Clement	59047
2543	Kelly	Clements	59718
2542	Tim	Clements	59718
2541	Sella	Clements	59718
2540	Brian	Close	59715
2539	Kerri	Cobb	59714
2538	William	Cochran	59715

#	FirstName	Surname	Zip/PC
2537	Logan	Codding	59718
2536	David a.	Coey	59718
2535	Jerry	Coffey	59715
2534	Sally	Coffman	59715
2533	Ashley	Cole	59715
2532	Martin	Coleman	59715
2531	Martin	Coleman	59715
2530	Lisa	Coleman	59715
2529	Timothy	Coleman	59718
2528	Marcia	Coleman	59718
2527	Tiffany	Coletta	59715
2526	Lucy	Coley	59718
2525	Jocelynn	Coley	59718
2524	Garret	Coley	59718
2523	Nash	Coley	59718
2522	Madison	Collins	59715
2521	Matthew	Collins	59715
2520	Coy	Colucci	59715
2519	Norman d.	Comfort III	59715
2518	Michael	Conlon	59715
2517	Brett	Conner	59715
2516	Cynthia A	Conner	59718
2515	David	Conors	59718
2514	Amanda	Conradt	59718
2513	Pam	Cook	59714
2512	Spring	Cook Riddle	59047
2511	Richard	Cooper	59718
2510	Caron	Cooper	59047
2509	Rebecka	Copenhaver	59714
2508	Henry	Coppolillo	59715
2507	Dianne	Corneer	59714
2506	Gary	Corneer	59714
2505	Fred	Cornelious	59715
2504	lexi	cornforth	59718
2503	Jenifer	Cornwell	59714
2502	Nancy	Cornwell	59715
2501	Jeff	Cory	59715
2500	Gregory	Costanza	59715
2499	Alison	Counts	59714
2498	Alison	Counts	59714
2497	Ann	Cowley	59714
2496	anna	Cox	59714
2495	Katie	Coyle	59715
2494	Erin	Cramer	59714
2493	Rhonda	Craven	59715
2492	Tom	Craver	59715
2491	Kevin	Crawford	59715
2490	Autumn	Crawn	59718
2489	G. La	Cristie	59718
2488	Shannon	Criswell	59715
2487	Nathan	Crockett	59718
2486	Lauren	Cromer	59715

#	FirstName	Surname	Zip/PC
2485	Melissa	Cronin	59718
2484	Melissa	Cronin	59718
2483	Frances	Cronin	59718
2482	Paul	Cronin	59718
2481	Eileen	Crook	59715
2480	cynthia	Crosby	59715
2479	Kent	Crosby	59714
2478	Whitney	Crosby	59718
2477	Patrick	Cross	59715
2476	Teri marie	Croteau	59718
2475	Amy	Crowder	59714
2474	Elizabeth	Croy	59715
2473	Colton	Crum	59714
2472	Mani	Cu	59718
2471	Betty	Cude	59718
2470	Melinda	Culbertson	59718
2469	William	Culpepper	59718
2468	Breschine	Cummins	59718
2467	Graham	Cummins	59718
2466	Kelsey	Cundy	59718
2465	Tucker	Cunningham	59715
2464	Randi	Cunningham	59714
2463	Charles	Cunningham	59714
2462	Jim	Cunningham	59718
2461	Bill	Curran	59741
2460	Juie	Currence	59718
2459	William	Currie	59718
2458	Lisa	Curry	59718
2457	James	Curry	59715
2456	Siiri	Cusomato	59715
2455	Debby	Custerfsa	59714
2454	Ryan	Cyr	59718
2453	Ashlyn	Cysewski	59714
2452	Juliana	D'Andrilli	59718
2451	Olivia	D'Antuono	59715
2450	Charles	Daenen	59715
2449	Charles	Daenen	59715
2448	Rebecca	Dahl	59714
2447	Chris	Dahlhauser	59718
2446	Joy	Dale	59715
2445	Dani	Daley	59718
2444	Mia	Damico	59715
2443	Andy	Damjanovich	59714
2442	Becca	Dammann	59718
2441	Jeffrey	Dandy	59718
2440	Amy	Dandy	59718
2439	Amy	Dandy	59718
2438	Mary	Danhof	59715
2437	Don	Daniels	59715
2436	Doug	Daniels	59715
2435	Megan	Dannar	59714
2434	Lisa	Danzll-Scott	59718

#	FirstName	Surname	Zip/PC
2433	Holcomb	Darby	59718
2432	Bridget	Dassenlo	59741
2431	Barbara	Daulgren	59715
2430	Daniel	Daum	59718
2429	Johnathan	Davidson	59714
2428	Lincoln	Davie	59715
2427	Eddie	Davila	59718
2426	Faith	Davila	59718
2425	Misti	Davis	59715
2424	Aaron	Davis	59749
2423	Linda	Davis	59760
2422	Nancy	Davis	59718
2421	STEVEN	DAVIS	59718
2420	Aaron	Davis	59749
2419	Matt	Davis	99587
2418	Lisa	Davis	59718
2417	Lisa	Davis	59714
2416	Kate	Davis	59714
2415	Dr. John R.	Davis	59715
2414	Melissa	Davis	59715
2413	Katie	Davis	59718
2412	Brianna	Davis	59715
2411	Michael	Davis	59715
2410	Robert F	Davordan	59715
2409	Christine	Day	59718
2408	Larry	Day	59718
2407	John	Day	59715
2406	Debra	De Bode	59715
2405	Kevin	Dean	59715
2404	Kevin	Dean	59715
2403	Sarah	Dean	59715
2402	April	Dearing	59714
2401	Brad	Deats	59715
2400	Beth	Deats	59715
2399	Vicki	Deboer	59718
2398	Marcia	DeBon	59715
2397	William	DeBuse	59714
2396	Emily	Decker	59714
2395	Sara	Dee	59718
2394	Alex	DeFelice	59715
2393	Lillian	Deford	59715
2392	Amy	DeFrance	59718
2391	Jarrett	Degen	59714
2390	scott	Dehlendorf	59715
2389	sydney	Deichman	59714
2388	Jodie	DeLay	59718
2387	Jason	Delmue	59725
2386	Jason	Delmue	59715
2385	Emily	DeLuca	59715
2384	Mike	Deming	59714
2383	Laura	Demmel	59718
2382	rick	Dendinger	59601

#	FirstName	Surname	Zip/PC
2381	D	Denecke	59086
2380	Kendra	Dennis	59715
2379	Derek	Dennison	59715
2378	Sarah	DeOpsomer	59715
2377	Robert	Des Enfants	59715
2376	Angela	Des Jardins	59718
2375	Cora	DeSantis	59715
2374	Shrila	Devitt	59718
2373	Aimee	Devlin	59715
2372	Jesse	DeVoe	59718
2371	Karen	DeVries	59718
2370	Brett	DeWoody	59715
2369	Jalen	Deyo	59715
2368	Gunder	Dhondt	59714
2367	Christine	Dhondt	59714
2366	Tori	DiBiase	59718
2365	Elizabeth	Dickensheets	59715
2364	David	Dickensheets	59715
2363	Sally	Dickinson	59715
2362	Makayla	Dickson	59714
2361	Becky	DiCola	59715
2360	John	DiCola	59715
2359	Lisa	Diekmann	59715
2358	dave	diem	59601
2357	R	Dier	59715
2356	Laza	Dietz	59105
2355	Lynn	DiGennaro	59715
2354	Michael	Dills	59715
2353	katie	Distin	59715
2352	Katie	Distin	59715
2351	Evi	Dixon	59741
2350	Evi	Dixon	59741
2349	Nancy	Dodd	59718
2348	James D	Doe	59718
2347	Dawn	Doe	59718
2346	daniel	Doehring	59715
2345	Malori	Doerfler	59718
2344	Terry	Doerfler	59718
2343	Kristina	Dolan	59718
2342	Priscilla	Dolan	59718
2341	Stimson	Dolesh	59718
2340	Danyelle	Dolson	59718
2339	Andrew	Dombroski	59718
2338	Andrew	Dombroski	59718
2337	Jenny	Dombroski	59718
2336	Kyle	Domin	59718
2335	John	Dominick	59715
2334	John	Dominick	59715
2333	Katie	Donath	59718
2332	Gail	Donau	59714
2331	Kirkwood	Donavin	59718
2330	Michael	Donch	59718

#	FirstName	Surname	Zip/PC
2329	Dana	Doney	59714
2328	Jeremy	Doorn	59718
2327	Terri	Dore	59715
2326	Gabby	Dorrene	59714
2325	Nicholas	Dorsett	59715
2324	Tim	Dotson	59718
2323	Christopher	Dowell	59714
2322	Henry	Dowling	59714
2321	Kristin	Downer	59716-0023
2320	Philip	Downer	59714
2319	Kelli	Downer	59714
2318	Andrea	Downs	59047
2317	Judy	Doyle	59715
2316	Leslie	Doyle	85718
2315	Sam	Doyle	59715
2314	Megkian	Doyle	59718
2313	Shane	Doyle	59718
2312	Valorie	Drake	59714
2311	Robert	Drake	59715
2310	Valorie	Drake	59714
2309	Barbara	Dralle	59718
2308	Cally	Driessen	59714
2307	Lesie	Driscoll	59715
2306	Elisabeth	Dryden	59718
2305	alex	Dujish	59718
2304	gar	duke	59715
2303	Alexendra	Dulie	59714
2302	Melissa	Dulin	59715
2301	Allison	Duncan	59741
2300	Adam	duncan	59714
2299	Jack	Dungan	59718
2298	Rachel	Dunn	59714
2297	Jennifer	Dunn	59715
2296	Tyler	Dunning	59714
2295	Lynn	Dunnington	59718
2294	Tim	Dunnington	59718
2293	Yolanda	Duperret	59715
2292	Nicole	Dupre	59715
2291	LouAnn	Durham	59730
2290	Adeline	Dutton	59715
2289	William	Dutton IV	59714
2288	Joby	Dynneson	59715
2287	Debra	Earl	59047
2286	Kathryn	Earley	59715
2285	Catherine	Ebelke	59715
2284	Diana	Eck	59718
2283	Dorothy	Eck	59715
2282	Kim	Eddie	59715
2281	sophia	Edelman	59715
2280	Gail	Eder	59718
2279	Justin	Edgell	59718
2278	Carmen	Edgerley	59715

#	FirstName	Surname	Zip/PC
2277	Clarence	Edwards	59714
2276	Gloria	Edwards	59715
2275	Cheryl	Eiholzer	59715
2274	lucas	Eisenstein	59718
2273	Pipi	Eitel	59714
2272	Nicole	Ekegren	05072
2271	Marti	Elder	59715
2270	galen	eldridge	59718
2269	Siri	Eliasem	59715
2268	Celeste	Ellig	59715
2267	Clay	Ellig	59715
2266	Moriah	Ellig	59715
2265	Diane	Elliott	59718
2264	Rainer	Ellison	59741
2263	Brett	Emmelkamp	59718
2262	Kristen	Emmett	59715
2261	Juniper	Emnett	59718
2260	Kelsie	Emsberger	59714
2259	Ahannon	Endegnen	59718
2258	Victoria	Enger	59718
2257	Mike	England	59715
2256	Roberta	Ennis	59718
2255	Kareen	Erbe	59715
2254	Sara	Erickson	59718
2253	Lincoln	Erickson	59718
2252	Jason	Erickson	59715
2251	Becky	Erickson	59718
2250	Kendyl	Escobar	59718
2249	Alina	Escoda	59718
2248	Sarah D.	Espinoa	59714
2247	Felishia	Espinosa	59718
2246	Nicholas	Esposito	59718
2245	Jacob	Estep	59718
2244	Kade	Estill	59101
2243	Nancy	Etchingham	59715
2242	John	Etgen	59718
2241	Emmanuel	Eudave	59714
2240	Joni	Evans	59718
2239	Alicia	Evanson	59714
2238	joel thomas	Evers	59718
2237	Joe	Evers	59718
2236	Anna	Ewen	59715
2235	Stephanie	Ewing	59715
2234	Stephanie	Ewing	59715
2233	Marcee Ten	Eyck	59714
2232	R	F	59715
2231	Gregory	Fagenstrom	59404
2230	Joshua	Fairchilds	59715
2229	Jenna	Fallaw	59715
2228	Lindsey	Farsberg	59714
2227	John	Faunce	59715
2226	Brian	fay	59718

#	FirstName	Surname	Zip/PC
2225	Delores	Feddes	59714
2224	Penelope	Fedro	59715
2223	Laura	Fedro	59715
2222	Sandra	Feeney	59718
2221	Sari	Feenstra	59718
2220	Sandi	Fehrer	58718
2219	John	Feight	59714
2218	Amy	Ference	59715
2217	michael	ference	59715
2216	Brice	Ferger	59714
2215	Catherine	Ferguson	59718
2214	Casey	Ferguson	59714
2213	sheila	Ferrera	59718
2212	Jesse	Fetzuk	59715
2211	Kenneth	Feueller	59718
2210	Ken	Fichtler	59718
2209	Ashley	Fields	59714
2208	LuAnn	Fikani-adams	59714
2207	Karen	Filipovich	59715
2206	mark	filonczuk	59047
2205	mark	filonczuk	59047
2204	Dorothy	Filson	59714
2203	Dustin	Findley	59718
2202	Brent	Finith	59718
2201	Julie	Finn	59714
2200	Serena	Finn	59715
2199	Georgianna	Fischer	59715
2198	Roger	Fischer	59718
2197	Sara	Fischer	59715
2196	Christine	Fisher	59718
2195	Kirsten	Fisher	59714
2194	Cathy	Fisher	59715
2193	Courney	Fitzpatrick	59715
2192	Kay	Fladstol	59714
2191	Carol	Flaherty	59715
2190	Robert	Flaherty	59715
2189	Andrea	Flaherty	59718
2188	Bill	Flanagan	59718
2187	Dana	Flatow	59715
2186	Shelley	Fleming	59718
2185	Tristyn	Fleming	59718
2184	Cindy	Fleshman	59715
2183	Doug	Fletcher	59715
2182	Mikayla	Fletcher	59715
2181	John	Fluga	59718
2180	Alice	Flynn	59715
2179	Tim	Foote	59715
2178	Kerie	Foote	59715
2177	Aisling	Force	59715
2176	Patti	Ford	59715
2175	Jen	Ford	59715
2174	Jennifer	Forecki	59718

#	FirstName	Surname	Zip/PC
2173	Brad	Foreman	59714
2172	Rob	Forster	59047
2171	Keith	Fortune	59718
2170	Micaele	Fortune	59718
2169	Page	Fossum	59715
2168	Thomas	Foster	59715
2167	Christina	Fournier	59718
2166	Sarah	Fournier	59715
2165	Jeff L.	Fox	59715
2164	Jessie	Frame	59715
2163	Nancy	Francis	59718
2162	Todd	Frandsen	59047
2161	Doug	Frank	59714
2160	Mike	Franklin	59714
2159	Nancy	Franklin	59715
2158	Danny	Fraser	59718
2157	Colin	Frazer	59715
2156	Andrea	Frederick	59714
2155	Elizabeth	Freedman	59718
2154	Debra	Freedman	59716
2153	Austin	Freeman	59718
2152	William	Freese	59714
2151	Sarah	Freitas	59718
2150	Allen	Fremier	59714
2149	Dakota	Fremont	59718
2148	Barbara	French	59715
2147	David	French	59714
2146	Dane	French	59715
2145	Kate	French	59715
2144	Wally	Freund	59718
2143	Trish	Freund	59718
2142	Frederick	Frey	59718
2141	Heather	Frisk	59718
2140	Halie	Frisk	59718
2139	Matt	Fritz	59716
2138	Matt	Fritz	59716
2137	Melissa	Frost	59715
2136	Heidi	Fry	59715
2135	Josh	Fry	59715
2134	Emma	Fry	59715
2133	Corbin	Fry	59715
2132	Amy	Frykman	59715
2131	Clarlia	Fuller	59714
2130	Jim	Fulmis	59714
2129	Molly	Fulton	59718
2128	Rob	Funderburk	59715
2127	Don	Funke	59715
2126	Vince	Furst	59718
2125	Mary	Furst	59718
2124	josh	gage	59715
2123	Dee	Gagnon	59715
2122	Kristi	Gaines	59718

#	FirstName	Surname	Zip/PC
2121	Anna	Galindo	59715
2120	Peter	Galindo	59715
2119	Tara	Gallagher	59715
2118	Brenda	Gallagher	59714
2117	Tara	Gallagher	59715
2116	Susan	Gallagher	59715
2115	Clay	Galloway	59714
2114	LeeAnn	Galluabr	59718
2113	Janet	Gamble	59718
2112	Ed	Gamble	59718
2111	Julie	Gandulla	59718
2110	Vivian	Ganje	59714
2109	Lindsay	Ganong	59715
2108	Shauna	Gaona	59714
2107	Rebecca	Gardner	59714
2106	Patricia	Garnick	59715
2105	molly	garrison	59715
2104	Luie	Garza	59714
2103	Cheri	Gaswalt	59718
2102	Julian	Gaub	59714
2101	Tomas	Gedeon	59714
2100	Anne	Gee	59715
2099	John	Geer	59714
2098	Barbara	Geller	59718
2097	Dave	Gellner	59715
2096	Ryan	Gendreau	59714
2095	Paul	Gentile	59715
2094	Caroline	Gentry	59718
2093	Nancy	Gerlach	59715
2092	Lisa	Gerrard Radick	59718
2091	Gail	Gettler	59715
2090	Michelle	Ghibson	59718
2089	Rene	Gibbs	59715
2088	josh	gibion	59714
2087	David	Gibson	59715
2086	Stephanie	Gibson	59714
2085	Chris	Gibson	59715
2084	Stacey	Giffin	59715
2083	Wes	Gilbert	59718
2082	Katie	Gilbertson	59715
2081	Julie	Gilfus-kresser	59714
2080	Elizabeth	Gilje	59718
2079	Michael	Gill	59715
2078	Dylan	Gillespie	59715
2077	Kali	Gillette	59715
2076	Richard	Gillette	59715
2075	Paul	Gillig	59715
2074	Paul	Gingras	59715
2073	Paul	Gipe	59715
2072	Tracy	Glass	59715
2071	Willis	Glass	59715
2070	Rebecca	Gleason	59715

#	FirstName	Surname	Zip/PC
2069	Heather	Glenn	59718
2068	Sharon	Glick	59715
2067	Josh	Gliko	59715
2066	Pat	Goede	59718
2065	Darla	Goeres	59715
2064	Carmen	Goetsch	59715
2063	Sheryl	Goff	59715
2062	Gene	Goldenfeld	59715
2061	Elizabeth	Gooch	59715
2060	Jacob	Goodhue	59714
2059	joy	goodpaster	59714
2058	Erik	Gorman	59715
2057	Eric	Goroski	59714
2056	Jennifer	Gorrell	59714
2055	Donna	Gottsch	59718
2054	Tim	Gottsch	59718
2053	Heidi	Goulet	59714
2052	Davis	Gove	59715
2051	Ryan	Grabinski	59714
2050	Jessica	Graf	59714
2049	Frances	Graham	59741
2048	john	Graham	59718
2047	Sam	Graham	59718
2046	Andrew	Graham	59715
2045	Bruce	Granger	59715
2044	Dugan	Gravage	59718
2043	Andy	Gravage	59714
2042	Stephanie	Gray	59715
2041	deb	greany	59718
2040	Barbara	Greason	59715
2039	Nathan	Green	59718
2038	Elizabeth	Green	59718
2037	ryan	Green	59715
2036	Shawn	Green	59715
2035	Lynne	Greenlee	59714
2034	Teresa	Greenwood	59715
2033	Mark	Greenwood	59715
2032	Mary Jo	Gregory	59714
2031	Chrisie	Greinek-Shelton	59718
2030	Edwin T.	Gresham	59715
2029	Connie	Griffin	59715
2028	Mason	Griffin	59715
2027	Adam	Griffith	59715
2026	courtney	grigg	59718
2025	Jacob	Grinuas	59714
2024	Maren	Griswold	59718
2023	Stephen	Griswold	59715
2022	Kinsie	Grooms	59718
2021	Jenny	Grossenbacher	59715
2020	Elizabeth	Growney	59715
2019	Kelli	Gruchalla	59714
2018	ty	Grvanino	59715

#	FirstName	Surname	Zip/PC
2017	Jourdon	Gudafs	59718
2016	Paul	Guest	59718
2015	Marilyn	Guggenheim	59715
2014	Patricia	Guild	59714
2013	Lynda	Gullett	59718
2012	Jane	Gum	59715
2011	Bill	Gum	59715
2010	vanessa	gunnell	59715
2009	Leilani	Gutierrez	59714
2008	Maggie	Guttormson	59718
2007	Nina	Haarer	59718
2006	Fred	Haas	59718
2005	Eric	Haferman	59718
2004	Noelle	Hagan	81230
2003	Nick	hagan	59047
2002	Joseph	Hagementer	59715
2001	Lisa	Hagen	59718
2000	Julie	Hager	59714
1999	Julie	Hager	59714
1998	Kerie	Hagler	59715
1997	Keith	Haglund	59047
1996	Arra	Hahn	59718
1995	Emme	Hahn	59718
1994	Audrey Jane	Haight	59715
1993	Audrey Jean	Haight	59715
1992	Jackie	Haines	59715
1991	Pamela	Hainsworth	59715
1990	Suzanne	Hainsworth	59715
1989	Mahn	Halfh	59718
1988	bethanie	hall	59714
1987	Terry	Hall	59715
1986	Mike	Hall	59715
1985	Bethanie	Hall	59714
1984	Calina	Hall	59715
1983	Leif	Halvorson	59715
1982	Tim	Haman	59718
1981	Jessica	Hamel	59716
1980	Michael	Hamey	59715
1979	Zan	hamilton	59718
1978	Caroline	Hamilton	59715
1977	Mary A	Hamilton	59714
1976	ryan	Hamilton	59715
1975	Annmarie	Hamling	59718
1974	Lucian	Hand	59715
1973	susie	Hand	59714
1972	Gwendolyn	Handley	59715
1971	Taylor	Handley	59715
1970	Taylor	Handley	59715
1969	Jessica	Hann	59717
1968	kathy	hanna	59718
1967	Nicole	Hannah	59718
1966	Erich	Hannan	59715

#	FirstName	Surname	Zip/PC
1965	Rick	Hannula	59715
1964	Lorrie	Hansen	59715
1963	Abigail	Hansen	59714
1962	Sam	Haraldson	59715
1961	Sam	Haraldson	59715
1960	Marsha	Harber	59714
1959	RaLea	Harbrige	59714
1958	Amanda	Hardin	59715
1957	Ty	Hardin	59715
1956	Ty	Hardin	59715
1955	amanda	Hardy	59715
1954	cory	Hardy	59714
1953	Tod	Hare	59718
1952	Quin	Hare	59718
1951	Suzette	Harkin	59718
1950	Raquel	Harnadez	59718
1949	Quinn	Harper	59715
1948	Christina	Harrell	59718
1947	Mason	Harrelson	59715
1946	Mike	Harrelson	59715
1945	Jeffrey	Harrington	59718
1944	Lane	Harris	59718
1943	Richard	Harris	59730
1942	Cece	Harris	59715
1941	JIM	HARRISON	59718
1940	Corey	Harrison	59718
1939	Bill	Hart	99216
1938	Heather	Hart	59715
1937	Lori	Hartlaub	59718
1936	Gennifre	Hartman	59715
1935	Tony	Hartshorn	59715
1934	Carolyn	Hartsog	59715
1933	Kevin	Harvey	59047
1932	Susan	Haskins	59718
1931	Alex	Haslitt	59718
1930	Jushin	Hass	59715
1929	Colleen	Hatcher	59730
1928	Toyia	hatten	59771
1927	toyia	hatten	59715
1926	Matt	Hausauer	59718
1925	Jodi	Hausen	59718
1924	Traci	Hauser	59714
1923	Patricia	Hawkinson	59715
1922	Lynn	Hawkinson	98208
1921	Jane	Hawks	59715
1920	sarah	hay	59741
1919	Kelly	Hayden	59715
1918	Kelly	Hayden	59715
1917	Tom	Hayes	59715
1916	susan	Heahlike	59715
1915	Tawnya	Healy	59718
1914	Chris	Healy	59715

#	FirstName	Surname	Zip/PC
1913	James	Healy	59718
1912	andrew	heath	59718
1911	Mary	Heath	59715
1910	Leah	Hecker	59714
1909	Sophia	Heckman	59714
1908	Susan	Hedrick	59714
1907	Mandy	Hedstrom	59715
1906	Paul	Hefferman	59715
1905	Laura	Heil	59715
1904	J.	Heilman	59715
1903	Meghan	Heim	59714
1902	Lindsay	Hein	59714
1901	Kimberly	Heinemeyer	59718
1900	Stacey	Heines	59715
1899	Aubrin	Heinrichs	59714
1898	Serena	Heinrichs	59714
1897	Colby	Heiser	59714
1896	Andrew	Helder	59714
1895	Tessa	Heller	59718
1894	Seth	Heller	59718
1893	Schanell	Helmstedt	59714
1892	Brandt	Hen	59715
1891	JD	Henderson	59718
1890	Kate	Henderson	59715
1889	Courtney	Hendrick	59715
1888	Paul	Hendricks	59715
1887	Sarah	Hendrikx	59715
1886	cheryl	Hendry	59715
1885	Ashley	Heningman	59718
1884	Brendan	Henry	59715
1883	Michael	Hensley	59718
1882	Craig	Henson	59715
1881	alex	Herbert	59715
1880	Sara	Herdina	59714
1879	Jeannie	Hermes	59715
1878	William	Hermes	59715
1877	Paul	Herron	59752
1876	Elin	Hert	59715
1875	Marsha	Hertz	59718
1874	Meg	Hertz	59714
1873	Erin	Hess	59718
1872	Danielle	Hess	59715
1871	Nate	Hess	59715
1870	Dani	Hess	59715
1869	Andy	Hessen	59714
1868	Turi	Hetherington	59718
1867	Neil	Hetherington	59718
1866	Mike	Hetherington	59718
1865	Rea	Hibl	59714
1864	Noi	Hidenstab	59715
1863	Bruce	Hietala	59714
1862	Liz	Hietala	59715

#	FirstName	Surname	Zip/PC
1861	Sue	Higgens	59715
1860	Bryon	Higgins	59715
1859	Audrey	Higley	59718
1858	Jody	Hill	59715
1857	Joshua	Hill	59715
1856	Kristen	Hilleren	59718
1855	Maurene	Hinds	59715
1854	Katy	Hines	59715
1853	John	Hinkle	59714
1852	Cindy	Hinson	59771
1851	Andy	Hintzpeter	59718
1850	Matthew	Hirsh	59047
1849	Cheryl	Hite	34857
1848	Paige	Hitzer	59714
1847	Brandon	Hjelseth	59714
1846	Aaron	Hjelt	59771
1845	Amber	Hoadley	59715
1844	Mary	Hoagland	59714
1843	Roxanne	Hoblitt	59718
1842	Christian	Hochhalter	59718
1841	brad	hodge	59715
1840	Cale	Hofferber	59718
1839	Perry	Hofferber	59718
1838	Patrick	Hoffman	59715
1837	Justin	Hogan	59718
1836	Kimberly	Hohenstein	59714
1835	Amy Kelley	Hoitsma	59715
1834	Rob	Holden	59718
1833	Kirsten	Holland	59715
1832	Patrick	Holland	59715
1831	tobias	Holleman	59718
1830	Kate	Holley	59715
1829	Terrence	Hollingsworth	59715
1828	Virginia	Holman	#16
1827	Harold	Holmes	59715
1826	Jordan	Holms	59714
1825	Jennie	Holton	59715
1824	Scott	Holton	59715
1823	Amy	Hood	59718
1822	Barclay	Hook	59718
1821	Emily	Hooker	59715
1820	Alan	Hooker	59715
1819	tracy	hookey	59714
1818	Janet	Hoppe	59030
1817	Caleb	Hoppe	59030
1816	Jenifer	Horan	98208
1815	Bert	Horley	59714
1814	Erik	Horn	59718
1813	Diane	Horne	59715
1812	Peggy	Horner	98424
1811	Ralph	Horner	98424
1810	Rhiannon	Horsley	59714

#	FirstName	Surname	Zip/PC
1809	Mayjier	Horst	59718
1808	Jon	Horton	59771
1807	Hailey	Hosken	59718
1806	Matt	Hoskins	59714
1805	Karen	Hoss	59068
1804	Paul	House	59715
1803	Verne	House	59715
1802	Elaine	Howald	59715
1801	Even	Howard	59715
1800	Eric	Howarth	59718
1799	David	Howlett	59718
1798	David	Howlett	59718
1797	David	Howlett	59718
1796	David	Howlett	59718
1795	Ian	Hoyer	80461
1794	Ross	Hoyla	59715
1793	Kathleen	Hoyle	82414
1792	Justin	Hsu	59715
1791	Salal	Huber-McGee	59715
1790	Amanda	Huff	59714
1789	Dave	Hull	59714
1788	Nathan	Hull	59714
1787	Rachael	Hundhausen	59718
1786	James	Hunger	59714
1785	Meg	Hunger	59715
1784	Meg	Hunger	59715
1783	Amber	Hungerford	59752
1782	Terry	Hunt	59714
1781	Wes	Hunt	59718
1780	Rebecca	Hurst	59715
1779	Hadley	Huston	59714
1778	Kara	Huyser	59715
1777	Jessa	Ideson	59714
1776	margareth	idoels	59714
1775	Mary Ellen	Igo	59714
1774	Glenniss	Indreland	59715
1773	Glenniss	Indreland	59715
1772	Hayden	Innis	59714
1771	Henry	Irvine	59715-5076
1770	chase M.	Isle	59718
1769	Sharon Tudor	Isler	59715
1768	Nicole	Jabaut	59771
1767	Nicole	Jabaut	59715
1766	Megan	Jacks	59714
1765	Nate	Jacksan	59718
1764	Steven	Jackson	59718
1763	Jeff	Jackson	59718
1762	Erin	Jackson	59715
1761	Matthew	Jackson	59718
1760	Jan	Jacob	59714
1759	Kevin	Jacobsen	59715
1758	fiona	Jacobsen	59715

#	FirstName	Surname	Zip/PC
1757	Art	Jacobsen	59714
1756	Margie	Jacobsen	59714
1755	Peter	Jacobsen	59715
1754	Jenna leigh	Jacobson	59741
1753	phoebe	jacques	59715
1752	Frank	Jacques	Bozeman, MT, 59715
1751	Pam	Jacques	59715
1750	Karen	Jallings	59714
1749	Terri	Jallings	59714
1748	Jeff	Jallinss	59714
1747	K.C.	James	59715
1746	Richard	James	59715
1745	Jaiden	James	59715
1744	Melissa	Jardstrom	59718
1743	Curt	Jeffries	59718
1742	Rosalind	Jenkins	59718
1741	Martha	Jenkins	59714
1740	Stuart	Jennings	59715
1739	Joanne	Jennings	59715
1738	Scott	Jensen	59714
1737	Lesley	Jensen	59714
1736	Holly	Jessen	59714
1735	Arri	Jillard	59714
1734	Raymond	Jimenez	59715
1733	Diane	JllioH	59718
1732	Melissa	Joecks	59718
1731	charissa	Johaneson	59715
1730	Donald	Johns	59718
1729	laura	johns	59715
1728	Laura	Johns	59715
1727	Jeff	Johnson	59715
1726	Kaitlin	Johnson	59718
1725	Claire	Johnson	59718
1724	Frieda	Johnson	59715
1723	Jamie	Johnson	59718
1722	Rosemary	Johnson	59715
1721	Suzie	Johnson	59715
1720	Douglas	Johnson	59714
1719	Starta	Johnson	59718
1718	Janay	Johnson	59718
1717	Stan	Johnson	59718
1716	Noelle	Johnson	59718
1715	Kaylee	Johnson	59718
1714	Carla	Johnson	59718
1713	Jayci	Johnson	59808
1712	Tom	Johnson	59715
1711	Soren	Johnson	59718
1710	RD	Johnson	59718
1709	sue	Johnson	59718
1708	Elizabeth	Johnson	59714
1707	Michael	Johnson	59714
1706	Jesse	Johnson	59714

#	FirstName	Surname	Zip/PC
1705	Joseph	Johnson	59714
1704	Dan	Johnson	59714
1703	Martin	Johnson	59715
1702	Karl	Johnson	59715
1701	William	Johnston	59715
1700	Grey	Johnysa	59714
1699	Amy	Joiner	59771
1698	Jacqualynn	Jones	59714
1697	Kevin	Jones	59714
1696	Lucas	Jones	59718
1695	Briana	Jones	59718
1694	sami	jones	59718
1693	Gina	Jones	Belgrade
1692	Justin	Jones	59714
1691	David	Jones	59714
1690	Ashley Maves	Jones	59741
1689	Ian	Jones	59715
1688	Justin	Jones	59715
1687	Brendan	Jones	59715
1686	Will	Jones	59714
1685	Darla	Joyner	59752
1684	Savannah	Juarez	59715
1683	Taylor	Juckleberry	59718
1682	Marie Y	Judisch	59718
1681	Liz	Juers	59714
1680	Hebbufer	June	59718
1679	Laurie	Jungst	59715
1678	Jim	Junker	59718
1677	Dan	Jupka	59715
1676	Remy	Jurie-Joly	59715
1675	Jo Vanne	Justifed	59714
1674	Chris	Kabbaz	59714
1673	Forrest W.	Kabbuz	59714
1672	andrew	kach	59715
1671	Katya	Kahanek	59714
1670	Dana	Kahl	59718
1669	Brandon	Kahl	59718
1668	Marie	Kailer	59718
1667	Kristin	Kailey	59718
1666	Tucker	Kalberg	59715
1665	Joseph	Kall	59714
1664	Camille	Kallestad	59714
1663	Maureen	Kampfe	59715
1662	Joanne	Kamplain	59718
1661	Jennifer	Kanewske	59718
1660	Paul	Kanive	59715
1659	Carol	Kankelborg.net	59718
1658	Annette	Kanning	59714
1657	Lander	Karath	59718
1656	Lander	Karath	59718
1655	Ethan	Karhum	59714
1654	Judy	Karl	59714

#	FirstName	Surname	Zip/PC
1653	Hal	Karl	59714
1652	Hal	Karl	59714
1651	Colleen	Karls	59714
1650	Jason	Karp	59714
1649	Clayton	Karp	59714
1648	Shannon	Karp	50714
1647	Michael	Kasic	59715
1646	Kara	Kasmer	59718
1645	Fletcher	kasmer	59718
1644	Deborah	Kasper	59715
1643	Melanie	Kass	80537
1642	Belen	Kasser	59718
1641	Stathia	Katsoulis	59715
1640	Kris	Kaull	59718
1639	Mike	Kautz	59718
1638	Marcia	Kaveney	59715
1637	Jessica	Kay	59715
1636	Nicol	Kay	59714
1635	Brian	Keanum	59714
1634	Linda	Keddington	59718
1633	Eugene	keefe	59714
1632	Eugene	keefe	59714
1631	Todd	Keetch	59714
1630	Dianna	Kegel	59714
1629	Mark	Kehke	59714
1628	Joey	Kehoe	59718
1627	Richard	Keigley	59718
1626	Kathryn	Keiser	59718
1625	Barbara	Keith	59715
1624	Chase	Keith	59714
1623	Anne	Keith	59718
1622	Chad	keizar	59715
1621	Kim	Keller	59747
1620	Sarah	Keller	59715
1619	Angelina	Kelly	59718
1618	Evan	Kelly	59715
1617	Nathan	Kelm	59714
1616	Renee	Kemker	59715
1615	Renee	Kemker	59715
1614	Elizabeth	Kendall	59718
1613	susan & chuck	kendrick	59715
1612	Susie	Kenison	59714
1611	Jessica	Kerr	59047
1610	Cary	Kessenich	59718
1609	Maureen	Kessler	59715
1608	Brenda	Kessler	59718
1607	Teresa	Kessler	59715
1606	Niki	Keuch	59718
1605	Michael	Keysher	59715
1604	Wren	Kilian	59715
1603	Claire	Killip	59715
1602	Ryan	Kiluran	59714

#	FirstName	Surname	Zip/PC
1601	Matt	Kimball	59714
1600	Chad	Kimm	59718
1599	D'Arla	King	59715
1598	Bruce	King	59715
1597	Jessica	Kingsley	59715
1596	julie	kipfer	59715
1595	Karin	Kirk	59715
1594	David	Kirk	59715
1593	Julie	Kirkland	59715
1592	david	Kirkland	59715
1591	Amanda	Kirkpatrick	59715
1590	amber	Kirkpatrick	59714
1589	Travis M	Kirkpatrick	59715
1588	Georg	Kirschner	59718
1587	Peter	Kirwan	59715
1586	Sue	Kirwan	59715
1585	Dave	Kisko	59718
1584	Kelly	Kjorlien	59715
1583	Carissa	Klarich	59715
1582	Gabby	Klein	59718
1581	Kyle	Kliehn	59715
1580	Zach	Klonsinski	59714
1579	Abby	Klonsirki	59714
1578	Erik	Kloskwski	59715
1577	Nancy	Klotovich	59718
1576	Marty	Klotovich	59718
1575	Bart	Kluch	59701
1574	Hanna	Kluck	59701
1573	Max	Kluck	59701
1572	Robert	Knapp	59715
1571	Sandra	Knapp	59715
1570	Alaina	Knight	59718-1806
1569	Phil	Knight	59718
1568	Gethin	Knight	59718
1567	Meridith	Knight	59715
1566	Marcie	Knoff	59714
1565	Gary	Knuchel	59714
1564	Polly	Knuchel	59714
1563	Mick	Knutson	59718
1562	Kate	Koenig	59715
1561	Susy	Kohout	59715
1560	Matt	Konen	59718
1559	Ed	Konina	59718
1558	Elishya	Konkler	59714
1557	Stacy	Konkol	59714
1556	Brad	Koontz	59715
1555	Jeanne	Korn	59718
1554	Melanie	Korthas	59714
1553	Kelly	Kortum	59715
1552	Kimberly	Korzym	59719
1551	Alex	Kovash	59715
1550	Jane Ellen	Krabler	59715

#	FirstName	Surname	Zip/PC
1549	Kasey	Krabler	59715
1548	Curt	Kraboia	59714
1547	Gret	Krantz	59718
1546	Jack	Kraus	59715
1545	Doug	Kremer	59715
1544	Chad	Krezelok	59715
1543	Jessica	Kristof	59714
1542	Eli	Krko	59718
1541	Casey	Krohn	59715
1540	Brian	Krueger	59715
1539	Maren	Kruger	59718
1538	Nathan	Kruger	59718
1537	ruama	kruse	59715
1536	Keith	Kuahns	59714
1535	Kirsten	Kubat	59718
1534	Krista	Kubischta	59715
1533	LizAnn	Kudrna	59715
1532	Barbara	Kuhlemeier	59715
1531	Misty	Kuhn	59714
1530	Tom	Kujawa	59718
1529	Ryan	Kuntz	59718
1528	Megan	Kuntz	59718
1527	Richard	Kuntzelman	59715
1526	Joe	Kurcinka	59718
1525	mary	kurcinka	59718
1524	Lauren	Kurt	84111
1523	Jessica	Kurzen	59718
1522	Mark	Kurzen	59718
1521	John	Kushman	59715
1520	Jaroslaw	Kwapisz	59715
1519	Hunter	Lacey	59718
1518	Bobbie Sue	Lacey	59718
1517	Paul	Lachapelle	59718
1516	Mathew J	Lacko	59715
1515	M	Lagarza	59718
1514	Carol	Lalani	59715
1513	Robert	Lamb	59715
1512	Paul	Lamb	59714
1511	Becky	Lamb	59714
1510	Karen	Lambiase	59752
1509	John	Landers	59715
1508	Allana	Lang	59718
1507	J. stuart	lange	59718
1506	Dixie	Langton	59718
1505	Mary Jo	Lanpher	59714
1504	Kara	Lapp	59718
1503	katie	laramore	59715
1502	Laura	Larocco	59714
1501	Rocky	Larocco	59714
1500	Brody	Lasmley	59718
1499	Bertie	Lau	59715
1498	Ellen	Lauchnor	59715

#	FirstName	Surname	Zip/PC
1497	karl	lauenstein	59718
1496	Claire	Laune	59718
1495	Angel	Lawellin	59741
1494	Angel	Lawellin	59741
1493	Charles	Lawellin	59741
1492	Gabe	Lawhead	59715
1491	Margaret	Lawrdes	59714
1490	Bryan	Lawrence	59718
1489	Emma	Lawver	59714
1488	Peter	Lazar	59715
1487	James	Leake	59718
1486	Carolyn	Leavengood	59715
1485	chris	Leavy	59715
1484	Anthony	Lebaron	59718
1483	Dylan	LeBlanc	59715
1482	Sandra (Sandy)	Lee	59714
1481	Carl	Lee	59714
1480	Tacia	Lee	59714
1479	Paula	Lee	59715
1478	Patricia	Lee	59714
1477	Carol	Leferovich	59715
1476	Beth	Leininger	59718
1475	Theresa	Leland	59715
1474	Briane	Lelund	59715
1473	Janet	Lemis	59715
1472	Makayla	Lennick	59718
1471	Kristine	Leo	59714
1470	Marcia	Leritz	59715
1469	David	Leveie	59715
1468	Kendall	Levinson	59714
1467	D. Kay	Levitt	59715
1466	Sanford	Levy	59718
1465	James	Lewis	59715
1464	Matt	Lewis	59714
1463	Irene	Liang	59718
1462	Hugh	Life	59715
1461	Sam	Lightbody	59716-0771
1460	Julie	Ligtenberg	59714
1459	Thompson	Limanek	59715
1458	Elle	Limesand	59715
1457	Heidi	Lindemulder	59714
1456	Paul	Lindemulder	59714
1455	Guro	Lindgren	59718
1454	Rodona	Lindley	59718
1453	Scott	Lindley	59718
1452	Camille	lindsay	59715
1451	Paul	Lindsay	59715
1450	Janice	Lindy	59715
1449	Katie	Link	59718
1448	Cindy	Linkenbach	59715
1447	Sarah	Linkenhoker	59718
1446	Kyler	Linten	59714

#	FirstName	Surname	Zip/PC
1445	Denise	Linton	59714
1444	Andrea	Litt	59715
1443	Chris	Little	59715
1442	drew	little	59715
1441	Kyle r.	Littlefield	59718
1440	Marya	Llovet	59714
1439	Redo	Loessberg	59715
1438	Nancy	Loeza	59718
1437	Catrina	Lofgren	59718
1436	Riley	Logan	59715
1435	Jessica	Lohmeier	59718
1434	Chris	lohss	59715
1433	Connor	Lohss	59718
1432	Taylor	lonsdale	59715
1431	Daniel	Loomis	59715
1430	Lisa	Lord	59715
1429	Dennis	Loreth	59718
1428	Cameron	Lothspeith	59714
1427	Daniel	Lourie	59718
1426	Janene	Love	59771
1425	Eric	Love	59715
1424	Ed	Lucey	59714
1423	Kali	Lucey	59714
1422	Patrick	Luchenb	59714
1421	Caleb	Lucy	59715
1420	Levi	Lucy	59715
1419	Dave	Luebbe	59718
1418	Phillip	Luebke	59718
1417	Karen	Luebke	59718
1416	Elizabeth	Luejder	59718
1415	Katrina	Lueneburg	59718
1414	Emmy	Luenemann	59715
1413	Marit	Lueth	59715
1412	Marit	Lueth	59715
1411	Evan	Luhnsen	59714
1410	Eric	Luhrsen	59714
1409	Eli	Luie	59715
1408	Emmy	Lund	59714
1407	Scott	Lundberg	59718
1406	Gro	Lunde	59715
1405	Randall	Lundgren	59718
1404	Patrick	Lupton	59715
1403	Rowan	Lurleford-tate	59718
1402	Alexandre	Lussier	59715
1401	Bryan	Luther	597148780
1400	Jeff	Lutzenberger	59718
1399	Mike	Lynch	59715
1398	Suzanne	Lynch	59715
1397	Mrs.	Lynch	59718
1396	Rebecca	Lynn	59714
1395	Hilamion	Lynn	59718
1394	jazmine	lyra	59718

#	FirstName	Surname	Zip/PC
1393	Dan	maber	59715
1392	Beth	MacFAWN	59771
1391	Beth	MacFawn	59771
1390	Jean	MacInnes	59715
1389	Julie	Mackley	59718
1388	Douglas	MacLeod	59714
1387	James	Madden	59715
1386	James	Madden	59715
1385	Gilli	Madden	59715
1384	Kent	Madin	59715
1383	Kent	Madin	59715
1382	Joe	Madonna	94044
1381	Nathaniel	Madsen	59715
1380	Amy	Madsen	59715
1379	Nick	Maffei	59718
1378	Hudson	Magee	59715
1377	Barbara	Magerfleisch	59715
1376	Jack	Mahen	59718
1375	Adam	Maher	59714
1374	Brian	Maher	59718
1373	Andy	Maheras	59718
1372	Janine	Mahn	59714
1371	Karl	Mahn	59714
1370	Madison	Mahoney	59718
1369	Loy	Maierhauser	59715
1368	Tiffany	Maierle	59714
1367	Nikki	Maiser	59715
1366	Sally	Maison	59715
1365	Joy	Maitu	59715
1364	Heidi	Makoutz	59715
1363	Mary	Makris	59715
1362	Andee	Malarchick	59714
1361	Austin	Malarchick	59714
1360	Charlynn	Malcom	59715
1359	Barbara	Mall	59615
1358	Deja	Malone-Persha	59715
1357	Judi	Maloney	59715
1356	Cordine	Malty Dig	59714
1355	Adrianne	Mancoronal	59714
1354	Craig	Mandeville	59718
1353	Connie	Mandeville	59718
1352	Brian	Mange	59718
1351	Angie	Mangels	59715
1350	Alar	Manrique	59715
1349	Hayden	Mans	59715
1348	Misay	Manu	59715
1347	Matt	Marcinek	59715
1346	Zach	Margaris	59718
1345	Ruth	Marion	59718
1344	Mike	Marosits	59718
1343	Wendy	MARQUIS	59714
1342	John	Marroquin	59715

#	FirstName	Surname	Zip/PC
1341	Brett	Marshall	59741
1340	Chelsea	Marshall	59715
1339	James	Marshall	59718
1338	Brett	Marshall	59741
1337	Tina	Martin	59714
1336	Constance	Martin	59718
1335	John	Martin	59715
1334	Lois	Martin	59715
1333	Trese	Martin	59715
1332	Irene	Martin	59715
1331	Taylor	Martin	59714
1330	Justin	Martin	59715
1329	Wesley	martin	59718
1328	Brian	Martin	59715
1327	Dean	Martineau	59714
1326	Elizabeth	Marum	59714
1325	peter	marvin	59718
1324	Julie	Marvin	59718
1323	Emily	Mason	59715
1322	Ryan	Mason	59803
1321	Coreene	Masse	59718
1320	Kelly	Massey	59714
1319	Candace	Mastel	59718
1318	Candace	Mastel	59718
1317	Cody	Masters	59718
1316	John	Mateskon	59718
1315	Taylor	Mathews	59741
1314	Susie	Mathre	59715
1313	Judy	Mathre	59715
1312	aj	Matosich	59718
1311	Ryan	Matsko	59715
1310	chris	Matsko	59715
1309	Erin	Matson	83716
1308	Renae	Mattimoe	59714
1307	Deb	Matus	59718
1306	Nathan	Mauney	98926
1305	Luke	Mauritsen	59714-8441
1304	Susan	Mavor	59715
1303	Jon	Maxwell	59715
1302	Heather	Maxwell	59714
1301	Laramie	Maxwell	59715
1300	Dustin	Maxwell	59714
1299	Bary	May	59718
1298	Bill	Mayer	82190
1297	Shey	Mayland	59714
1296	Tana	Mayo	59714
1295	Julia	Mazade	59718
1294	Jeff	Mazer	59718
1293	Kathryn	Mazurek	59715
1292	Katelyn	McAree	59715
1291	Stephanie	McBride	59715
1290	Cynthia	McBride	59715

#	FirstName	Surname	Zip/PC
1289	Geoffrey	McBride	59715
1288	Richard	McCabe	59718
1287	Bonnie	Mccallum	59718
1286	Lauri	McCarthy	59718
1285	patrick	mccarthy	Belgrade MT
1284	Scott	McCarthy	59715
1283	Judy	McCarthy	94044
1282	Chris	McCarthy	59714
1281	Mandi	McCarthy-Rogers	59718
1280	Mandi	McCarthy-Rogers	59718
1279	Jessi	McCloud	59714
1278	Mitch	Mccloud	59741
1277	Tracey	Mccloud	59741
1276	Merrill	McCollum	59715
1275	Patricia	McCormack	59718
1274	Matt	McCormack	59718
1273	Jamey	McCormick	59715
1272	Evan	McCotter	59715
1271	Ashley	McCullough	59715
1270	Jenny	McCune	59718
1269	Matt	McCune	59715
1268	James	McDermott	59715
1267	Sara	McDermott	59716-1162
1266	Jody	McDevitt	59715
1265	Dawn	McDonald	59718
1264	Anne	McDonald	59714
1263	Daniel	McDonald	59714
1262	James	McDowell	59715
1261	Stephanie	McDowell	59715
1260	Mary	McEachern	59714
1259	Breana	McElgunn	59718
1258	Jamie	McEvoy	59715
1257	Mary	McFadzen	59715
1256	Karie	McFarland	59714
1255	Cathy	McGoldrick	59718
1254	Jim	McGowan	59718
1253	Aryanna	McGowen	59718
1252	Stephanie	McGrath	59718
1251	Jacki	McGuire	59715
1250	Stephen	McGuire	59715
1249	Jason	McHann	59714
1248	Sandy	McJunkin	59714
1247	Megan	McKeary	59718
1246	Jess	McKeen	59718
1245	Alexander	Mckelvey	59715
1244	John	McKenna	59715
1243	Tricia	McKenna	59715
1242	Bob	McKenzie	59715
1241	Hannah	McKinney	59715
1240	Madi	McKinstry	58715
1239	Alexis	McKnight	59718
1238	Brad	McKrell	59718

#	FirstName	Surname	Zip/PC
1237	Erin	Mclansky	59718
1236	patrick	mclaughlin	59714
1235	Dimitri	Mclaughlin	59715
1234	michele	mcleod	59741
1233	Sara	McLeon	59718
1232	Samuel	McMain	59718
1231	Sandra	McManus	59718
1230	Sandra	McManus	59718
1229	Colleen	McMilin	59715
1228	Ross	McMilin	59715
1227	shelly	McMullen	59714
1226	Peter H.	McNair	59715
1225	Sara	McNamara	59715
1224	Amy	McNamara	59715
1223	Jessica	McNeff	59714
1222	Laine	McNeil	59715
1221	Colleen	McNeilly	59730
1220	Susan	McNew	59715
1219	Tripp	McRaniel	59718
1218	Dalton	McVean	59718
1217	Brandi	McWalter	59718
1216	marily	mcwilliams	59718
1215	Kelly	Meeker	59718
1214	Kara	Meier	59715
1213	J.	Melline	59715
1212	Tyler	Melzer	59715
1211	Amanda	Menzel	59714
1210	melissa	meredith	59714
1209	Kelly	Meredith	59715
1208	Serena	Merler	59715
1207	Betty	Merta	59715
1206	Phil	Merta	59715
1205	Cynthia	Mervin	59715
1204	Kristen	Messer	59715
1203	Deborah	Metrick	59715
1202	jordan	metwid	59718
1201	William	Metzler	59730
1200	c	Meyer	59714
1199	Erin	Meyer	59718
1198	Sharron	Meyers	59714
1197	Richard	Meyn	59714
1196	Stephanie	Meynderd	59714
1195	TJ	Meynders	59715
1194	Kristy	Michael	59715
1193	Stefan	Michel	59715
1192	Bruce	Michelsen	59718
1191	Lee	Micken	59715
1190	Darrell	Micken	59715
1189	Lee	Micken	59715
1188	Darrell	Micken	59715
1187	Laurie	Micklewright	59718
1186	Jamie	Midyette	59714

#	FirstName	Surname	Zip/PC
1185	Jeffrey	Miesbauer	59715
1184	Chelli	Miessner	59718
1183	Chelli	Miessner	59718
1182	Danielle	Mifflin	59714
1181	Larry	Mikkola	59715
1180	Nathan	Milburn	59718
1179	Abby	Miles	59718
1178	Lascy	Miligan	59714
1177	Anne	Millbrooke	59718
1176	Betsy	Miller	59718
1175	Sam	Miller	59715
1174	Mike	Miller	59715
1173	Whitney	Miller	59718
1172	Callie	Miller	59718
1171	Tyler	Miller	59715
1170	Kaylin	Miller	59714
1169	Lesa	Miller	59715
1168	Marjorie	Miller	59771
1167	Kris	Milligan	59741
1166	Tim	Milligan	59741
1165	David	Millman	59718
1164	Candace	Mills	59714
1163	Justin	Milover	59714
1162	Michelle	Milvich	59047
1161	Tammy	Minge	59715
1160	Pablo Prats	Mira	59715
1159	Felix	Mirque	59715
1158	Meridith	Miska	59715
1157	Shawn	Mitchell	59718
1156	Katie	Mitchell	59715
1155	Brian	Mitchell	59715
1154	Jane	mittelsteadt	59715
1153	Jonathon	Moberley	59741
1152	Bryson	Mobley	59718
1151	Erin	Mock	5915
1150	Erin	Moffett	59715
1149	David	Mogk	59715
1148	Rosana	Molina	59715
1147	Mackenzie	Molzhon	59715
1146	Glenn	Monahan	59715
1145	Sierra	Monastiere	59718
1144	Ellen	Monloy	59718
1143	Madaln	Monroe	59715
1142	Joan	Montagne	59715
1141	Joan	Montagne	59715
1140	Clifford	Montagne	59715
1139	Clifford	Montagne	59715
1138	Zach	Montano	59718
1137	John	Montaya	59714
1136	Paul	Montey	59714
1135	Meghan	Montgomery	59715
1134	Abby	Montgomery	59715

#	FirstName	Surname	Zip/PC
1133	Jackie	Montgomery	59715
1132	Roscoe	Montgomery	59715
1131	Roscoe	Montgomery	59715
1130	Alison	Moor	59715
1129	C	Moore	59715
1128	Ryan	Moore	59718
1127	Peter	Moore	59715
1126	Liz	Moore	59714
1125	Alex	Moore	59715
1124	Colton	Moore	59715
1123	Sherry	Moore	59714
1122	Russ	Moore	59715
1121	steffanie	Morales	59715
1120	Tara	Morgan	59718
1119	Jeff	Morgan	59715
1118	Jean	Morgan	59718
1117	Heather	Moriarty	59714
1116	Wendy	Morris	59715
1115	Carter	Morris	59718
1114	Justin	Morris	59714
1113	Dani	Morrison	59715
1112	Hayley	Mortomer	59715
1111	Frannie	Moulton	59715
1110	Lindsey	Mulcare	59718
1109	Kelly	Mullins	59715
1108	Brendan	Mumey	59715
1107	Holly	Mumford	59715
1106	Tatianna	Murillo	59715
1105	holly	murray	59714
1104	Amelia	Musgjerd	59715
1103	Martha	Muth	59715
1102	Jim	Muth	59715
1101	Em	Muttceus	59714
1100	astan	Myhre	59718
1099	Steve	Myrtle	59714
1098	Sheila	N.	59714
1097	Carol	Nadlonek	59718
1096	Clinton	Nagel	59718-1972
1095	Tate	Nahorniak	59715
1094	Tai	naisbitt	59715
1093	Stella	Nall	59715
1092	Julie	Nansel	59718
1091	Danny	Naranche	59714
1090	Rosanne	Nash	59718
1089	Chris	Naumann	59715
1088	Rich	Needham	59718
1087	Ursula	Neese	59718
1086	Nancy	Neiley	59715
1085	Seth	Neilson	59715
1084	Lynda	Neilson	59718
1083	Zach	Nell	59718
1082	Sallee	Nelson	59718

#	FirstName	Surname	Zip/PC
1081	Nic	Nelson	59714
1080	Heather	Nelson	59714
1079	Kathleen	Nelson	59715
1078	Sam	Nelson	59715
1077	Sam	Nelson	59715
1076	Christina	Nelson	59718
1075	Lezlie	Nelson	59047
1074	Emily	Nelson	59718
1073	Kathy	Nelson	59714
1072	Lisa	Nesbitt	59718
1071	Susan	Neubauer	59715
1070	Billy	Neuburger	59718
1069	Jaime	Neuburger	59718
1068	Patricia	Newby	59718
1067	Eva	Newby	59714
1066	Deborah	Newby	59714
1065	Frank	Newman	59714
1064	Chris	Newman	59715
1063	Ted	Newman	98370
1062	Melissa	Newman	59715
1061	Bob	Nichol	59715
1060	Danielke	Nicholad	59715
1059	Kelly	Nicholson	59715
1058	susan	Nickelson	59718
1057	James	Nickelson	59718
1056	Matt	Nickls	59714
1055	Mary Ann	Nielsen	59715
1054	eMILY	nILES	59718
1053	Paul	Nirgenau	59715
1052	Blythe	Nirgenau	59715
1051	Rachel	Nixon	59730
1050	Clive	Nixon	59715
1049	ben	nobel	59715
1048	Echo	Noble	59714
1047	Echo	Noble	59714
1046	Jose	Noe	59715
1045	Hannah	Noel	59714
1044	Becky	Nohava	59718
1043	Mike	Nolop	97116
1042	Boone	Nolte	59714
1041	Erin	Nolte	59714
1040	Adam	Norlander	59718
1039	josh	Norris	59714
1038	Ginger	Norton	59715
1037	Kim	Noyes	59718
1036	Eric	Noyes	59715
1035	Ceci	noyes	59718
1034	Kendra	Noyes	59718
1033	Brianna	Nsmes	59714
1032	Colter	Nuanez	59718
1031	Heidi	Nunnikhoven	59715
1030	Lori	Nuss	59718

#	FirstName	Surname	Zip/PC
1029	Keith	Nylander	59714
1028	Diane	O'Conner McNair	59715
1027	Nick	O'Donell	59714
1026	Misty	O'Leary	59741
1025	Jim	O'Leary	59741
1024	Oryan	O'Quinn	59718
1023	Kevin	O'Reilly	59047
1022	Jenny	Obrien	59718
1021	Chris	Odegard	59718
1020	Patrick	Odenbeck	59714
1019	Valerie	Oechslin	59718
1018	rick	Ojala	59715
1017	Erin	Olejnicak	59715
1016	Annasuzanne	Oliver	59715
1015	Christy	oliveri	59718
1014	Sarah	Olivo	59718
1013	Kelly	Olmstead	59718
1012	Stephen	Olsen	59715
1011	Caroline	Olsen	59802
1010	Adam	Olsen	59715
1009	ryan	Olsen	59715
1008	Claire	Olsen	59715
1007	lindsey	olson	59714
1006	Sarah H.	Olson	59715
1005	Kristin	Olson	59714
1004	Kyle	Olson	59715
1003	Carrie	Olson-Ward	59715
1002	Jackie	Onken	59714
1001	logan	onken	59714
1000	Fred	Opperman	59718
999	august	Ore	59752
998	Anne	Ore	59752
997	Thaddeus	Orosz	59718
996	Karen	Orr	59715
995	Ann	Orser	59715
994	Ron	Orton	59715
993	Natalie	Osborne	59716
992	Tessa	Osborne	59714
991	Stormi	Oshun	59714
990	Ted	Osterloth	59715
989	Nancy	Ostlie	59715
988	Michael a.	Ourk	56401
987	Heather	Overton	59718
986	Hanah	Overton	59715
985	Richard	Owens	59718
984	Ben	Oxendehl	59714
983	Danielle	Oyler	59047
982	Barbel	Pafford	59718
981	Rudi	Pafford	59715
980	Karen	Page	59715
979	Brian	Page	59715
978	Linda	Page	59714

#	FirstName	Surname	Zip/PC
977	Brooks	Palin	59714
976	Dara	Palmer	59718
975	Ray	Palmer	59714
974	Joseph	Palmer	59714
973	Janet	Pannell	59715
972	Åsa	Pape	59715
971	Åsa	Pape	59715
970	Rebecca	Pappas	59714
969	Anna	Pappert	59718
968	Marc	Parent	59718
967	Matthew	Paris	59718
966	Russell	Parker	59718
965	Rosalinda	Parker	59718
964	Erica	Parrish	59718
963	Willow	Parrow	59714
962	Nathan	Parseghian	59718
961	Nathan	Parseghian	59718
960	Belgrade Auto	Parts	59714
959	Jamara E	Pasnice	59718
958	Tami	Pasquesi	59715
957	Tami	Pasquesi	59715
956	Rohan	Patel	59714
955	Amanda	Patriarche	59714
954	Jeff	Patriarche	59714
953	Eva	Patten	59715
952	Laine	Patten	59718
951	Tace	Patten	59718
950	Eva	Patten	59715
949	Tim	Patterson	59715
948	Amber	Patterson	59715
947	tyler	Patterson	59718
946	Lynn	Paul	59715
945	Rebecka	Pearson	59715
944	David	Peck	59718
943	Ivy	Pedersen	59715
942	Cristy	Pedersen	59714
941	Avital	Pelakh	59715
940	sue	Pellegrini	59718
939	mark	pelletier	59715
938	Richard	Pemberton	59714
937	Mark	Pence	59715
936	Christine	Pentecost	59715
935	Ashley	Peoples	59718
934	Jennifer	Pepper	59715
933	Dan	Perata	59718
932	Karen	Pereira	59718
931	Alaina	Perez	59715
930	Emily	Pericich	59714
929	Rori	Perin	59718
928	lynne	pernell	06062
927	Chad	Perry	59714
926	Jacquie	Persons	59715

#	FirstName	Surname	Zip/PC
925	Robert	Pertzborn	59715
924	Rob	Pertzborn	59715
923	Lori	Petermann	59718
922	Troy	Petermannh	59718
921	Taryn	Petersen	59715
920	Leslie	Peterson	59715
919	Thomas	Peterson	59715
918	Lyn	Peterson	59715
917	Naomi	Peterson	59714
916	Eric	Peterson	59718
915	kerry	petitt	59715
914	Bob	Petitt	59715
913	Kathryn	Petrick	59718
912	Isabella	Petrillo	59715
911	Jenny	Pettis	59718
910	Melissa	Peyton	59771
909	Kelsey	Philipsek	59715
908	Emmy	Phillips	59715
907	Christine	Phillips	59715
906	sam	Phillips	59714
905	Justin	Phipps	59718
904	Shaun	Phoenix	59714
903	Dale	Pickard	59715
902	Lance	Picton	59718
901	Nichole	Piel	59714
900	Wendy	Pierce	59715
899	Rosa	Pierce	59715
898	Sammie	Pilon	59714
897	Jessica	Pitch	59714
896	Adam	Pizitz	59715
895	Jeanie	Placek-Badenoch	59715
894	Mike	Pogoda	59715
893	Dick	Pohl	59715
892	Monica	Pokorny	59715
891	Dudley	Polake	59601
890	Ban	Pollyts	59715
889	Rhey	Polsak	59718
888	Jayden	Pomeroy	59718
887	Jacob	Pomeroy	59715
886	Iho	Pomeroy	59715
885	Amber	Pommerville	59714
884	Maddy	Pope	59715
883	Kathy	Popwell	59715
882	Noah	Poritz	59715
881	Leona	Poritz	59715
880	EJ	Porth	59714
879	Jessica	Portlondo	59714
878	Andrea	Posdon	59715
877	Ellie	Poteat	59715
876	Michaelle	Potts	59715
875	Neil	Poulseni	59718
874	Andrea	Powers	59718

#	FirstName	Surname	Zip/PC
873	Emily	Powers	59718
872	Tim	Preheim	59715
871	Trish	Preheim	59715
870	John	Preston	59715
869	Tara	Preston	59718
868	Julia	Pretzlaff	59718
867	Anna	Price	59715
866	Melissa	Prichart	59714
865	Cara	Priem	59771
864	Mark	Prince	59714
863	Laura	Prindivile	59715
862	Julie	Pritchard	59715
861	Daveson	Prnaw	59714
860	Christine	Pronce	59714
859	shawn M	Pryde	59718
858	Robert	Pudner	59715
857	Grace	Purnell	59718
856	Claire	Putnam	59715
855	Teresa	Quatraro	59715
854	Claire	Qubain	59715
853	Anyssa	Queen	59714
852	Julie	Quenemoen	59718
851	Rose	Quinn	59715
850	Chelsea	Quinones	59261
849	Joseph	Quinones	59715
848	Tom	Radcliffe	59718
847	Heather	Radke	59714
846	Salisha	Radovich	59752
845	Dylan	Radovich	59715
844	Colin	Rafford	59718
843	Neal	Rainey	59718
842	Trina	Rainey	59718
841	Ricardo	Ramos	59715
840	Barrett	Rand	59714
839	Rachel	Randash	59718
838	Keyley	Rangitshch	59715
837	Jeffry	Rasch	59718
836	Liam	Rasch	59718
835	Jeffrey	Rasch	59718
834	Hannah	Rasker	59714
833	bob	Rasmus	59715
832	Becky	Rassi	59718
831	Erik	Rassi	59718
830	Josh	Rassi	59718
829	Phil	Rassi	59715
828	Alex	Rastorguyeu	59714
827	Tom	Rath	59741
826	Meghan	Rauber	59718
825	Sarah	Ray	59715
824	Ben	Raymond	59715
823	Justin	Raynes	59715
822	Logan	Reacdon	59718

#	FirstName	Surname	Zip/PC
821	cant	read	59715
820	Janet	Ready	59715
819	Jordon	Reanier	59714
818	Kyle	Reed	59741
817	Jean	Reed	59715
816	Mary Lee	Reese	59771
815	Mary Lee S.	Reese	59771
814	Katie	Reese	59715
813	Shannon	Regan	59771
812	Megan	Regnerus	59715
811	Jodi	Reida	59715
810	Keirg	Reif	59715
809	Anjan	Reijnders	59714
808	Ryan	Reiling	59715
807	Linda	Reishus	59715
806	Linda	Rendle	59715
805	Hailey	Renner	59718
804	Katherine	Renwick	59715
803	Marlena	Renwyck	59715
802	Sydney	Resel	59714
801	Nancy	Reynolds	59715
800	kristeen	reynolds	59714
799	Lucas	Rice	59718
798	Nina	Rice	59718
797	Jordan	Rice	59718
796	Ariana	Richard	59718
795	Cathy	Richard	59718
794	Wendy	Richards	59718
793	Abigail	Richards	59714
792	John and Gail	Richardson	59715
791	Tyler	Richardson	59715
790	ryan	richer	59718
789	Coby	Richins	59714
788	Dan	Richter	59718
787	Jennifer	Rigard	59718
786	Ryan	Rigard	59718
785	Susan	Riggs	59715
784	Linda	Riley	59714
783	Alice	Rimkus	59714
782	Roberta L.	Rimpe-Johnstone	59718
781	John	Rios	59715
780	Brian	Ripple	59718
779	Will	Ritter	59772
778	Rebecca	Ritter	59718
777	Rocio	Rivas	59715
776	Ramon	Rivera	59715
775	Walter	Rivers	59715
774	Alex	Roach	59715
773	Alena	Robaon	59714
772	Kayleigh	robbins	59047
771	sophie	Roberts	59718
770	Daniel	Roberts	59715

#	FirstName	Surname	Zip/PC
769	Daniel	Roberts	59714
768	Gerry	Robertson	59714
767	Jodi	Robertson	59714
766	Toby	Robinson	59714
765	christine	Robinson	59715
764	Janine	Robinson	59714
763	Julia	Robinson	59714
762	Alice	Robison	59715
761	Dezri	Rochin	59715
760	Rachel	Rockafellow	59715
759	David	Rockafellow	59715
758	Mike	Roddewig	59715
757	Steve	Roderick	59715
756	Rebecca	Rodgers	59714
755	Kyra	Rodriguez	27330
754	Kim	Rogers	59714
753	Kyle	Rohan	591715
752	Kellie	Rolland	59718
751	Josh	Rollins	59715
750	Bri	Rollins	59714
749	Marni	Rolston	59715
748	Lisa	Rondou	59718
747	Robert	Rosa	59174
746	Bob o	Rosa	59715
745	Deb	Rosa	59715
744	Dave	Rosenbrook	59715
743	Andrea	Rosenzweh	59715
742	Scott	Rosenzweig	59715
741	Sheldon	Ross	59714
740	Kyle	Ross	83716
739	Glyn	Ross	59714
738	Doralyn	Rossmann	59718
737	Tyson	Roth	59715
736	Aubree	Roth	59715
735	Cavita	Rothing	59714
734	Leanne	Roulson	59718
733	Hazel	Roulson	59718
732	Liz	Rowe	59718
731	Marise	Rowell	59718
730	Katie	Rowse	59718
729	Danielle	Roy	59714
728	Lisa	Roy	59714
727	Kyle	Rsencrans	59715
726	Amanda	Rttinshaw	59714
725	Nancy	Rudeen	80528
724	Stacey	Rugheimer	79815
723	Nathan	Rugheimer	59715
722	Jackson	Rugheimer	59715
721	Kay	Ruh	59715
720	Rob	Rule	59715
719	Cheryl	Runyan	59718
718	Jonathan	Rusher	59714

#	FirstName	Surname	Zip/PC
717	Sarah	Rushing	59715
716	Brian	Ruskanff	59715
715	Chrissan	Russell	59718
714	Jim	Russell	59715
713	Cara	Russell	59047-8909
712	Randall	Russo	59715
711	Karen	Rutzen	59718
710	Meg	Ryan	59714
709	George	Ryan	59715
708	Chilsti	S. unreadable	59714
707	Mary Jo	Saboe	59714
706	Mary Jo	Saboe	59714
705	nima	safaeian	59715
704	June	safford	59715
703	REbecca	Sager	59715
702	Mark	Salo	59718
701	Mindy	Samman	59718
700	Abigail	Sampson	59714
699	marta teresa	san martin	59715
698	marta	san martin	59715
697	Adrian	Sanchez Gonzalez	59718
696	Rita	Sand	59715
695	Stephanie	Sand	59718
694	Mark	Sanders	59714
693	Joseph	Sands	59718
692	Linda	Sanem	59714
691	Carol	Sanford	59718
690	Matthew	Saporito	59718
689	Voss	Sartain	59715
688	nick	savage	59715
687	Leah	Saville	59715
686	Gina	Sawyer	59715
685	mya	Sawyer	59715
684	Krystina	Schaber	59718
683	Lindsay	Schack	59741
682	GREG	SCHACK	59741
681	Lindsay	Schack	59741
680	Peg	Schaefer	59718
679	Kayden	Schaff	59714
678	Danielle	Scharf	59715
677	Sara	Schaub	59715
676	Aaron	Scherr	59719
675	David	Schiff	59718
674	Nikki	Schladetsch	59714
673	Russ	Schliep	59714
672	Kathy	Schmidt	59715
671	Doug	Schmidt	59718
670	Hugo	Schmidt	59715
669	Cindy	Schmidt	59718
668	william	schmitz	59718
667	Paul	Schoep	59718
666	Jeanine	Schoessler	59714

#	FirstName	Surname	Zip/PC
665	Brett	Schomer	59714
664	Jay	Schomer	59718
663	Sadie	Schopp	59718
662	Autumn	Schram	59718
661	Haley	Schranck	59715
660	Aimee	Schrank	59718
659	aaron	Schrier	59715
658	Cate	Schroeder	59715
657	Leif	Schroeder	59715
656	Clayton	Schubert	59718
655	Jonathan	Schuler	59718
654	Briana	Schultz	59715
653	Nancy	Schultz	59715
652	Lara	Schulz	59715
651	Marianne	Schumacher	59718
650	Colto	Schumacher	59718
649	Abe	Schunk	50714
648	Matthew	Schutty	59714
647	Jason	Schutz	59715
646	Steven	Schwab	59714
645	Susan	Schwab	59714
644	Janice	Schwartz	59715
643	Janice	Schwartz	59715
642	Caroline	Schweitzer	59715
641	Darla	Schweitzer	59718
640	Breanne	Schweitzer	59718
639	Joe	Schwem	59715
638	david	Schwleler	59718
637	Ryan	Scliehuber	59715
636	Buzz	Scott	59718
635	Todd	Scott	59718
634	Stacey	Scott	59715
633	Colin	Scott	59714
632	Jayne	Scott	59715
631	Eric	Scranton	59715-8401
630	Kim	Scurry	59715
629	Kim	Seaton	Bozeman, MT 59719
628	Saralyn	Sebern	59714
627	Morgan	Secor	59714
626	Margaret	Segal	59715
625	Ryan	Seher	59718
624	Red	Seibel	59714
623	Kyle	Seifert	59714
622	Katharine	Seipel	59718
621	Joyce	Seipel	59714
620	Dorian	Selbo	59715
619	Mat	Sendral	59715
618	Gordon	Sevee	59714
617	Trish	Severson	59714
616	bill	seymour	59718
615	Jon	Shafer	59714
614	Tasha	Shaffer	59718

#	FirstName	Surname	Zip/PC
613	Will	Shahanar	59714
612	Roselle	Shallah	59714
611	Vicki	Shampeny	59741
610	Jordan	Shanahan	59714
609	Deanna	Shane	59714
608	Angie	Shaner	59718
607	Scott	Shank	59741
606	John	Shankland	59715
605	Tim	Shankwiler	59718
604	Danna	Shannon	59714
603	Payton	Shannon	59714
602	Jewel	Shapiro	59714
601	Jewel	Shapiro	59714
600	Steven	Sharber	59718
599	Duke	Sharp	59730
598	Marta	Shattuck	59718
597	Chandra	Shaw	59718
596	Christine	Shaw	59715
595	William	Sheehan	59714
594	Karla	Sheehan	59714-9534
593	Jennifer	Sheets	59715
592	Jennifer	Sheets	59715
591	Eric	Shelkey	59715
590	Dave	Shepard	59715
589	Kelly	Shepardson	59718
588	J. Storm	Shirley	59718
587	Tonya	Shonkwile	59718
586	John	Short	59718
585	wes	shorter	59715
584	Madi	Shott	59714
583	Philiip	shuler	53092
582	Lori	Shultz	59714
581	Julie	Shumaker	59741
580	Julie	Shumaker	59741
579	Mark	Shyne	59718
578	Dan	Shyne	59715
577	Peter	Sickler	59715
576	Greg	Sievers	59715
575	Adam	Sigler	59715
574	Cok	Simcox	59715
573	Brittany	Simkins	59715
572	Melanie	Simmerman	59714
571	Patricia	Simmons	59718
570	Peter	Simon	59718
569	David	Simon	59716
568	Jennifer	Simon-Becker	59714
567	Sandra	Simons	59714
566	Marilee	Simons	59715
565	Sandra	Simons	59714
564	Julie	Simonson	59714
563	Tamilla	Simpson	59714
562	Dan	Singer	59718

#	FirstName	Surname	Zip/PC
561	Erin	Singleton	59718
560	Tamara	Sinnema	59741
559	Teri	Sinopoli	59714
558	Teri	Sinopoli	59714
557	Ten	sinopoli	59714
556	Emma	Sirr	59715
555	Annie	Sites	59715
554	Ben	Sites	59715
553	Jessica	Skalet	59715
552	Peter	Skidmore	59715
551	Adam	Sklar	59715
550	Sarah	Skoglund	59715
549	Tyler	Slab	59714
548	Janyne	Slabaugh	59716
547	Bucko	Slabaugh	59715
546	darrell	slabaugh	98236
545	Bailey	Sllisbury	59714
544	Lorca	Smetana	59718
543	Sara	Smith	59718
542	Melissa	Smith	59714
541	David M.	Smith	59714
540	Laura	Smith	59457
539	Tanya	Smith	59715
538	Katie	Smith	59715
537	john	smith	59715
536	Greg	Smith	59715
535	Greg	Smith	59715
534	Ariel	Smith	59714
533	Heather	Smith	59917
532	Morgin	Smith	59718
531	Alicia	Smith	59715
530	Ariel	Smith	59714
529	Patrick	Smith	59718
528	Mich	Smith	59714
527	David	Smith	59714
526	Elsa	Smith	59714
525	Jeanne	Smith	59715
524	Bruce	Smith	59715
523	Travis	Smith	59714
522	Shantelle	Smolik	59714
521	Colton	Snure	59715
520	Vikki	Snyder	59714
519	Jasmine	Snyder	59715
518	Branham	Snyder	59715
517	Actan	Snyder	59718
516	Evan	Snyder	59715
515	Branham	snyder	59715
514	Sarah	Sobek	59715
513	John	Soderberg	59718
512	John	Soderberg	59718
511	Alislin	Sodu	59714
510	Vasu	Sojitra	59715

#	FirstName	Surname	Zip/PC
509	Hether	Sorensen	59715
508	Kesa	Sovulewski	94086
507	Amy	Sowers	59715
506	Mark	Spann	59714
505	Makentie	Spaulding	59718
504	David	Spence	59718
503	Alyson	Spery	59715
502	Amy	Spicka	59714
501	Joy	Spinella	59714
500	Michael	Spinella	59714
499	Ruth	Spinelli	59715
498	Maggie	Spinelli	59715
497	Felix	Spinelli	59715
496	Aimee	Spivak	59715
495	Steve	Spnseller	59714
494	Jake	Spohnhauer	59715
493	Bob	Sporague	59718
492	Linda	Sprague	59718
491	Karlin	Sprecher	59715
490	Austin	Sprenger	59718
489	Alex	Sread	59714
488	Carol	Staben-Burroughs	month
487	Sharon	Stachlowski	59718
486	Sara	Stafford	59715
485	Megan	Stageman	59715
484	Austin	Standley	59718
483	laurie	stanley	59714
482	ben	stanley	59714
481	Charles	Stark	59715
480	Clint	Steadman	59718
479	william Scott	Stebbins	59715
478	dore	Stectlerheim	59718
477	Brian	Steddum	59718
476	Ramie	Steer	59715
475	Shyloh	Steffan	59714
474	Cora	Steinbach	59714
473	Jill	Steinle	Manhattan, MT 59741
472	Patti	Steinmuller	59715
471	Pati	Steinmuller	59715
470	Eddie	Steinmuller	59715
469	Eric	Stenberg	59715
468	Laurie	Stenberg	59715
467	Lacy	Stephans	59715
466	Kathleen	Stephens	59771
465	Aimee	Stephens	59714
464	Kit	Stephenson	59715
463	sally	stephenson	59715
462	Becca	Sterens	59715
461	Suzy	Sterling	59715
460	Tracy	Sterling	59715
459	Sky	Sterry	59715
458	Nancy	Stetter	59718

#	FirstName	Surname	Zip/PC
457	Harold	Stevens	59714
456	Andrea	Stevenson	59718
455	Sharon	Stevenson	59718
454	Amy	Stevenson	59715
453	Amy	Stevenson	59715
452	William	Stewart	59718
451	Alistair	Stewart	59718
450	Elizabeth	Stewart	59714
449	Kristen	Stewart	59718
448	Elijah	Stewart	59718
447	John	Stewart	59068
446	Tobin	Stewart	59718
445	rich	Stewart	59714
444	Heather	Stewart	59718
443	Paige	Stewart	59714
442	Michel	Sticka	59718
441	Bli	Stidham	59718
440	Jessica	Stillman	59715
439	Luke	Stockwell	59714
438	Lisa	Stoeffler	59718
437	Joe	Stoetzel	59714
436	Joe	Stoetzel	59714
435	Carrie	Stohlm	59701
434	Cristin	Stokes	59718
433	rebecca	Stokes	59718
432	Vikie	Stoltz	59718
431	Cody	Stone	59718
430	Mary	Stone	59718
429	Shanon	Stoneberger	59715
428	Devinn	Stoneberger	59715
427	Bryson	Stoner	59718
426	Arielle	Stoness	59715
425	Christine	Stoppa	59714
424	Ruth	Story	59752
423	Brayden	Stowe	59717
422	Justin	Stowers	59715
421	Erin	Strickland	59715
420	Dylan	Strike	59714
419	elise	strong	59715
418	Betty	Stroock	59715
417	Maya	Stroock	59715
416	Betty	Stroock	59715
415	Nina	Stroock	59715
414	Gwendy	Stuart	59715
413	Leigh	Sturges	59715
412	Cassie	Stutterheim	59718
411	Johanna	Sulam	59715
410	Varedu	Sullerheren	59718
409	Melissa	Summerfield	59718
408	Leif	Summerfield	59718
407	Patrick	Sumrell	59715
406	Corbin	Surber	59714

#	FirstName	Surname	Zip/PC
405	Cooper	Sutherland	59715
404	Eric	Sutherland	59715
403	Kelly	Sveen	59718
402	John	Sveen	59718
401	linda	svendsen	59715
400	Travis	SVensrud	59715
399	Travis	Svensrud	59715
398	Travis	Svensrud	59715
397	joseph	svitak	59715
396	Ann	Swann	5971&
395	Sara	Swanson	59714
394	Margaret	Swanson	59715
393	Tammera	Swinney	59714
392	Jacob	Swisher	59715
391	andrew	Sylvester	59714
390	Johnathan	Szajnuk	59715
389	Luke	Szymanski	59718
388	Sarah	Tabor	59714
387	Sarah	Tabor	59714
386	Gary	Tabor	59715
385	Lizzie	Taggart	59715
384	Orerda	Talbott	59715
383	Richard	Talbott	59715
382	Rainny	Tamminga	59714
381	Daniel	Tanascu	59714
380	Lindsey	Tandy	59718
379	Zachary	Tanner	59718
378	Honor	Tatarka	59714-9291
377	Jana	Taurman	59718
376	Sam	Tayler	59718
375	Jonathan	Taylor	59718
374	dylan	Taylor	59715
373	Marion	Taylor	59718
372	Diane	Taylor	59715
371	Molly	Taylor	59718
370	Marisa	Tessenden	59715
369	Jennapher	Teunissen Van Manen	59715
368	Reyel	Tex	59714
367	Peg	Thale	59741
366	Peg	Thale	59741
365	Tony	Thatcher	59715
364	Roger	Thesing	59715
363	Noel	Thesing	59715
362	Lauren	Tholt	59718
361	Derek	Thomas	59715
360	Alex	Thomas	59718
359	Catherine	Thomas	59714
358	Kyle	Thomas	59718
357	andrea	Thomas	59715
356	Victoria	Thomas	59714
355	Marlyn	Thomas	59714
354	Chris	Thomas	59714

#	FirstName	Surname	Zip/PC
353	Collin	Thomes	59718
352	kristy	thompson	59714
351	Jordan	Thompson	59718
350	Ilze	Thompson	59718
349	Kayla	Thompson	59718
348	Hallie	Thompson	59405
347	Lizzie	Thompson	59714
346	Chris	Thompson	59714
345	George	thompson	59715
344	Nevada	Thompson	59714
343	Matthew	Thomsen	59715
342	Matthew	Thomsen	59715
341	Anne	Thoreson	59718
340	Michelle	Thorn	59718
339	Orion	Thornton	59715
338	Rose	Thoth	59718
337	Emily	Thrasher	59718
336	Scott	Thrasher	59718
335	Sarah	Thrasher	59718
334	Darcy	Tickner	59715
333	Jodi	Tietz	59718
332	Kyle	Tilleman	59715
331	George	Tillman	59714
330	Cindy	Tirrell	59714
329	David	Tirrell	59714
328	Steve	Titus	59715
327	Sydnee	Tobiason	59718
326	Helen A.	Tobol	59715
325	Alison	Todd	PO Box 5061, 59717
324	Melissa	Todd	59715
323	Lindsey	Tollefson	59718
322	Michelle	Tolley	59715
321	emily	tomac	59718
320	Eric	Tomko	59718
319	Sondra	Torma	59715
318	Ryan	Totman	59715
317	Jana	Tourman	59718
316	mary ann	tower	59715
315	Debbie	Trawick	59714
314	Ryan	Trefethn	59718
313	Jennifer	Treff	59718
312	Katie	Tremaine	59715
311	Jerrid	Tretter	59714
310	Erica	Trey	59718
309	Monica	Tripp	58728
308	Ryan	Tripp	59715
307	Ryan	Tripp	59715
306	Kristen	Tripp	59715
305	Lydia	Trom	59715
304	Felix	Trom	59715
303	Terra	Trom	59715
302	zach	Trombly	59715

#	FirstName	Surname	Zip/PC
301	Jo Anne	Troxel	59715
300	Brittany	Trushel	59715
299	Judy	Tucker	59715
298	David	Tucker	59715
297	Russell C.	Tuckerman	59715
296	Lisa	Tuckerman	59715
295	RachelRachel	Turner	59714
294	Lynn	Turner	59714
293	Brent	Turner	59714
292	Lindsay	Turnquist	59718
291	Debra	Turnquist	59718
290	Jennifer	Turnquist-Linn	59714
289	Will	Turpin	59718
288	Drew	Tyger	59715
287	Jack	Tyler	59718
286	Patricia	Tyler	59718
285	Patricia	Tyler	59718
284	Nick	Uehling	59718
283	Dylan	Underwood	59715
282	Samuel	Unknown	59718
281	Mishawn	Unrein	59714
280	Mike	Unruh	59730
279	Branden	Utes	59714
278	adrian	utsch	59715
277	Quinn	Van Da Welle	59718
276	Jessica	Van Dyk	59718
275	Emily	Van Genderen	59715
274	Agnes	Van Meter	59718
273	Philip	Van Pelt	59740
272	Kristi	Vance	59715
271	Abigail	Vance	59714
270	Stefanie	Vandaele	59715
269	Brigitte	Vandenbrink	59715
268	Anna	Vander Wende	59715
267	Tracie	Vanderpan	59715
266	Chelsea	Vanderpool	59715
265	Karla	Vandersloot	59718
264	Randall	VanDyke	5941
263	Jessy	Vangcom	59715
262	Camille	VanGee	14552
261	Dale	VanKuiken	59718
260	Kris	Vanlucherie	59718
259	Isaac	VanNuck	59715
258	Eli	VanNuck	59715
257	Mary	Vant Hull	59715
256	Daine	Vantdyk	59741
255	Adam	VanZee	59741
254	Rebecca	Vargas	59714
253	Carlos	Vargas	59714
252	Emily	Varmecky	59775
251	George	VAssen	59714
250	Cory	Vellinga	59715

#	FirstName	Surname	Zip/PC
249	Shannon	Veltkamp	59714
248	Taylor	Verdun	59715
247	Jennifer	Vermeer	59718
246	DUSTIN	VERTIN	59714
245	Trista	Vick-Majors	59715
244	Julia	Videon	59715
243	Priscilla	Villagomez	59714
242	Beverly	Villinger	59715
241	Zac	Vincent	59718
240	Lauren	Vine	59718
239	Jenn	Vinson	59714
238	Lynesse	voegele	59714
237	Mike	Vogel	59718
236	christel	vogel	59718
235	Leah	Vogel	59714
234	Matthew	Voll	59718
233	Jennifer	vollmer	59718
232	Eric	Vollmer	59718
231	Bronson	Voris	59741
230	Linda	Voss	59715
229	Kelly	Vredevoogd	59718
228	Ruth	Vyse	59715
227	Brenda W	W	59715
226	robert L.	Wade	59715
225	Michelle	Wagenman	59047
224	Rainy	Wagner	59719
223	Austin	Wagner	59714
222	Greer	Wagner	59715
221	V.C.	Wald	59718
220	Hanna	Waldear	59718
219	Beverly	Waldeisen	59715
218	Rosemary	Walker	59714
217	Laura	Walker	59718
216	Brett	Walker	82601
215	Lucas	Wall	59714
214	Candyce	Wallin	59719
213	Jim	Walseth	59715
212	Jennifer	Walsh	59714
211	David	Walters	59718
210	Patty	Walton	59728
209	Jamie	Walton	59718
208	Nick	Wandzilak	59715
207	Jeff	Wanken	59718
206	Seth	Ward	59715
205	Kevin	Ward	59715
204	Rebecca	Ward	59715
203	Chris	Warden	59714
202	Brandon	Warlow	59714
201	Dillon	Warn	59715
200	Tracy	Warneke	59715
199	Doug	Warner	59718
198	Penny	Wasem	80134

#	FirstName	Surname	Zip/PC
197	MaryAnn	Washburn	59718
196	Rachel	Waterman	59718
195	Nigel	Waterton	59715
194	Leah	Watling	59718
193	Jean	Watson	59047
192	Lee	Watson	59047
191	Ryan	Watson	59715
190	Scott	Weamer	59718
189	carol	weaver	59715
188	Henry	Weaver	59715
187	Richard	Weaver	59715
186	Richard	Weaver	59715
185	Kelsi	weaver Martin	59718
184	Yvette	Webb	59718
183	andrew	Webster	59715
182	Shon	Wedde	59718
181	Nancy	Weed	59718
180	Catherine	Weeden	59715
179	Melanie	Weidauer	59714
178	Nancy	Weiman	59714
177	Gary	Weiner	59715
176	Christine	Weinheimer	59718
175	Evan	Weir	59714
174	Paige	Weirich	58715
173	Lan	Weisberger	59715
172	David	Weiss	59715
171	Jason	Welch	59715
170	Gannett	Weldon	59718
169	Ada	Wells	59714
168	Jeff	Welsch	59714
167	Monique	Wenzel	59718
166	Charlie	West	59715
165	Jim	West	59715
164	Jenni	West	59718
163	Michele	West	59715
162	Jonathan	Wester	59715
161	Amy	Westlake	59715
160	Jeanie	Westnedge	59715
159	Ben	Wetzel	59715
158	Lisa	Weyerhaeuser	98588
157	Clark	Wheeler	59714
156	Jimbo	Whelan	59714
155	Caitlyn	Whetstone	59714
154	Scott	Whitaker	59715
153	Sally	White	59771
152	Richard	White	59715
151	Kinsey	White	59718
150	Susannah	White	59715
149	Aiden	White	59718
148	Rita	Whiteman	59718
147	Brian	Whitlock	59715
146	Jonna	Whitman	59714

#	FirstName	Surname	Zip/PC
145	Carolyn	Whitmer	59201
144	shelby	Whitmore	59715
143	Elizabeth	Wickland	59718-6719
142	Maureen	Wiegand	59715
141	Bruce	Wiegand	59715
140	Tanner	Wiegand	59715
139	Richard	Wiegel	59718
138	Brant	Wiehardt	59715
137	Angela	Wiehe	59718
136	Grace	Wiening	59714
135	William C.	Wilber	59718
134	Ann	Wilbert	5971&
133	Richard	Wilcox	59741
132	Kristin	Wilcox	59714
131	Geneva	Wild	59714
130	Alicia	Wilder	59715
129	Kevin	Wildrick	59715
128	Jay	Wilkins	59714
127	William	Wilkinson	59718
126	Zach	Wilkinson	59714
125	Aiden	Wilkinson	59714
124	Avery	Wilkinson	59714
123	Shaunescy	Willard	59715
122	Kathleen	Williams	59715
121	Natalie	Williams	59715
120	Naalie	Williams	59715
119	Karen	Williams	59715
118	Dana	Williams	59715
117	Ben	Williams	59718
116	Dave	Williams	59714
115	Jamie	Williams	59714
114	Aloha	Williams	59715
113	Jay	Williamson	59714
112	Elizabeth	Williamson	59715
111	Grant	Williamson	59715
110	Karolyn	Williamson	59714
109	Madelyne	Willis	59715
108	Shannon	Willoughby	59715
107	Franke	Wilmer	59718
106	Tom	Wilshire	59718
105	Sabra	Wilton	59714
104	Dravyn	Wilton	59714
103	Michele	Wilton	59714
102	Nicole	Wing	59718
101	Patrick	Wing	59718
100	Robert	Wingeles	59715
99	Brandt	Winkelman	59715
98	Chuck	Winn	59718
97	Mariah	Winterowd	59714
96	Emily	Wiseman	59715
95	Emily	Wiseman	59715
94	Priscilla	Wisner	59771

#	FirstName	Surname	Zip/PC
93	Hailey	Wisner	59714
92	Ryter	Wleavae	59714
91	Alan	Wlodarski	59716
90	James	Wolf	59715
89	Trina	Wolf	59715
88	Kristen	Wolf	59715
87	Nikole	Wolf	59715
86	Melissa	Wolf	59718
85	Mary Ellen H	Wolfe	59715
84	Mark	Wonenberg	59718
83	Christine	Wong	59718
82	Brian	Wood	59715
81	S	Wood	59715
80	Aaron	Wood	59715
79	jennifier	wood	59718
78	Jason	Wood	59714
77	Faron L.	Wood	59718
76	Peggy	Wood	59715
75	Sarah	Wood	59715
74	Brian	Wood	59715
73	Stef	Woods	59715
72	Christopher	Woods	59718
71	James t	Woodson	59718
70	ann	Woodward Bockus	59715
69	Trisha	Wookey	59715
68	Candice	Wooten	59714
67	David	Wooten	59714
66	Candice	Wooter	59714
65	wendy	Wren	59715
64	Colton	Wright	84115
63	Karen	Wright	83404
62	Kayla	Wright	59718
61	Brit	Wtson	59715
60	Roland J	Wyatt	59771
59	Jeff	Wyatt	59715
58	Homa	Wyatt	59741
57	Jeff	Wyatt	59715
56	Dan	Wycoff	59741
55	Joan	Wycoff	59741
54	Arlene	Wylie	59715
53	Tracy	Wysocki	59752
52	yu	xuan liu	59718
51	Jennifer	Yaeso	59730
50	jason	yager	59741
49	Mary	Yarnell	59715
48	Ryan	Yarnell	59741
47	Maxwell	Yarof	59715
46	christopher	Yeanicke	59718
45	anicee	Yearick	59715
44	David	Yearous	59718
43	Carl	Yeoman	59718
42	Carl	Ylinen	59715

#	FirstName	Surname	Zip/PC
41	Angela	Yonke	59715
40	Geoffrey	York	59771
39	andy	Yosooker	59718
38	Aaron	Yost	59718
37	Erin	Yost	59718
36	Jodi	Young	59714
35	Michael	Young	59718
34	Greg	Young	59715
33	Janet	Young	59715
32	Janet K.	Young	59715
31	Ron	Young	59718
30	Ron	Young	59718
29	Susan	Younkin	59718
28	Hauwa	Yusuf	59715
27	Deborah	Zander	59718
26	Joe	Zander	59718
25	levin	zars	59715
24	Delphine	Zebouloun	59714
23	Nicholas	Zelver	59718
22	Stephen	Zetzer	59714
21	Zack	Ziegler	59718
20	Stacey	Ziegler	59715
19	Ralph	Zimmer	59715
18	Meg	Zimmer	59718
17	Carol	Zimmer	59718
16	Brian	Zimmer	59718
15	Gloria	Zimmer	59715
14	David	Zinn	59715
13	Kaylee	Zito	59714
12	Marypat	Zitzer	59715
11	eileen	Zombu	59714
10	Caitlyn	Ztawkinson	59715
9	Josh	Zuehlkl	55718
8	Stephen	Zuin	59729
7	Amy	Zukowski	59715
6	Cynthia	Zullo	59715
5	Joy e.	Zwaerman	59715
4	Elizabeth	Zwang	59714
3	Douglas	Zwang	59714
2	Jacob	Zwemlee	59718
1	Tyler	Zwick	59718

* N/C - field not collected by the author

* N/G - not given by the signer

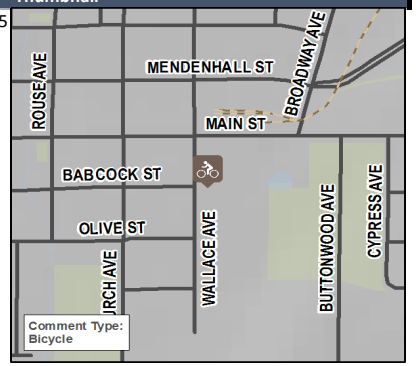
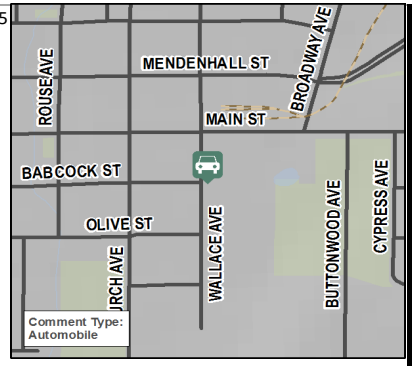
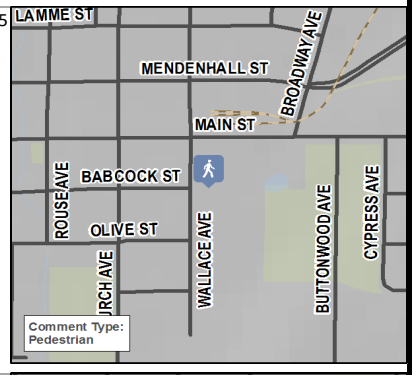
* S/C/P - State, County or Province

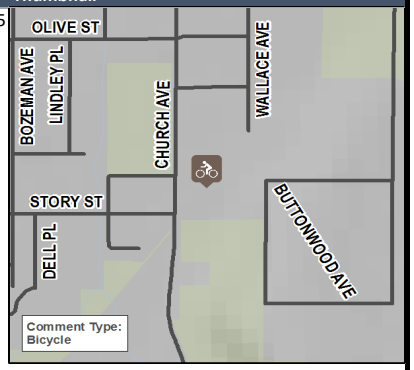
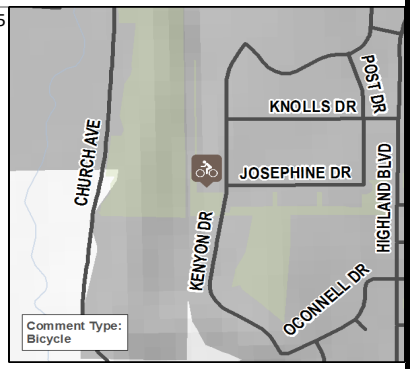
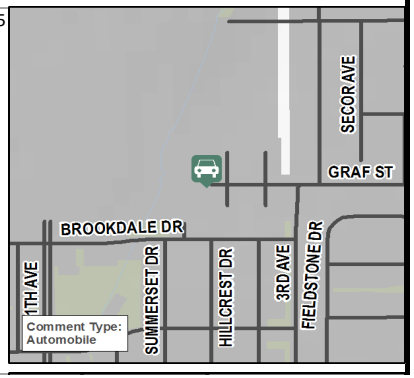
* PC - Post Code

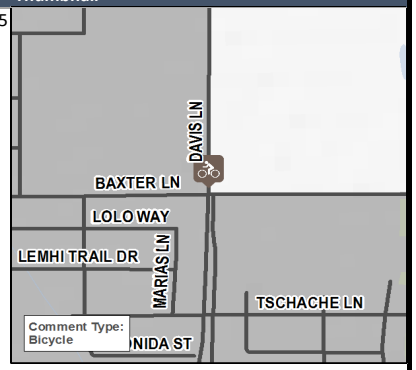
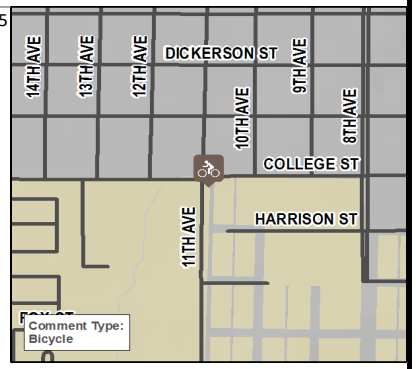
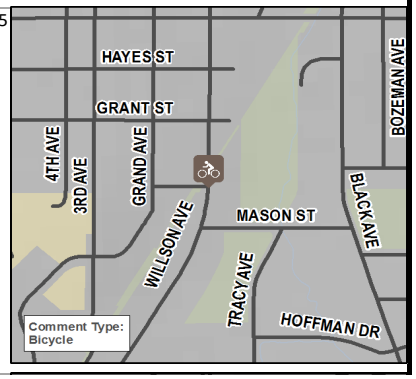
* View - view comment

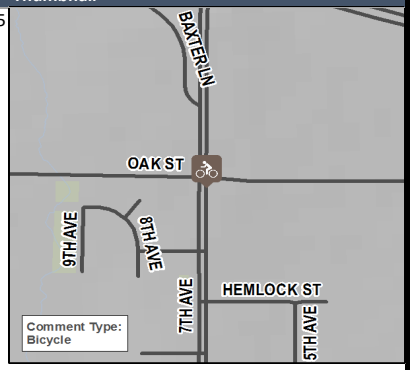
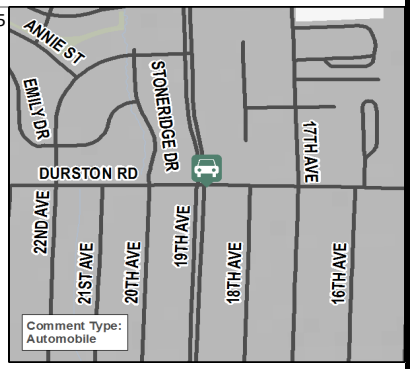
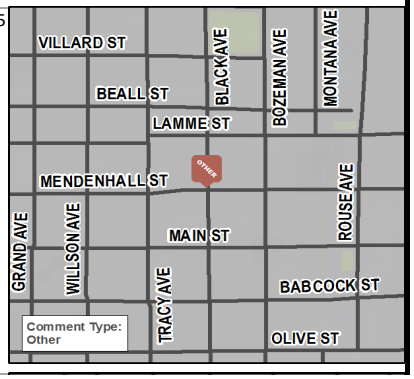
Public Comment Matrix - FROM WIKIMAP

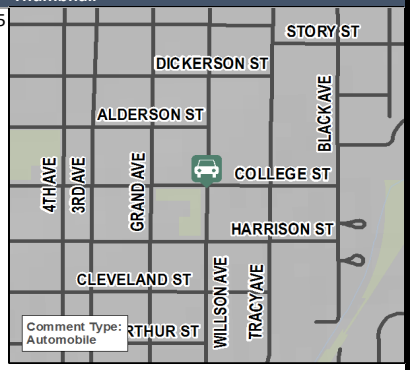
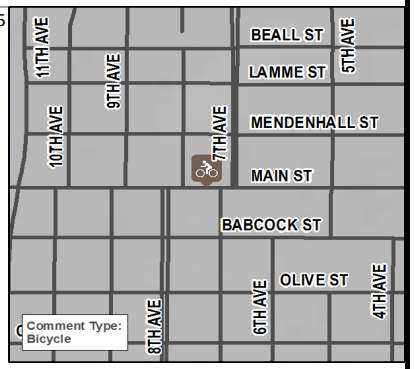
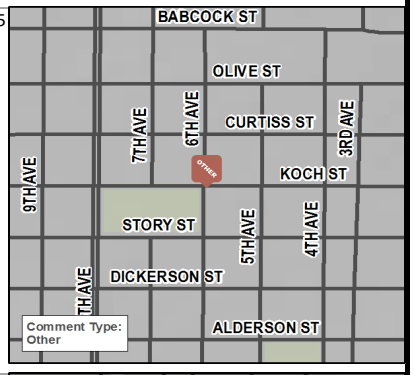
(thru December 31, 2016)

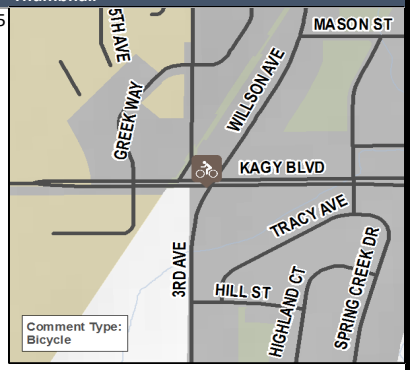
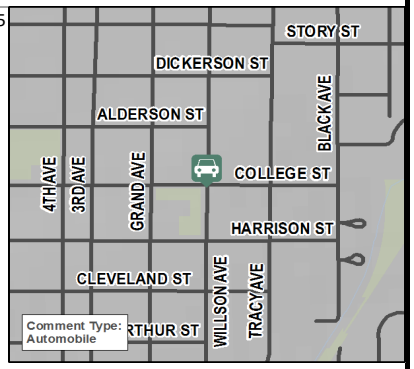
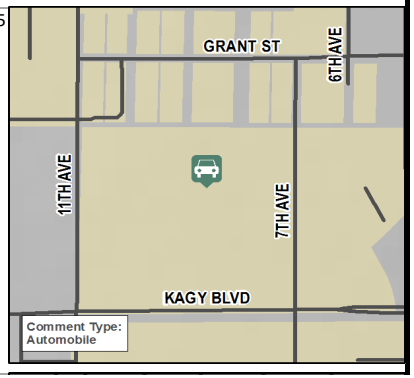
Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
1 127823	Bicycle	Future connection of E. Babcock into Library	2	2	0	21-Sep-15	
2 127824	Automobile	Future connection of E. Babcock into library.	-1	0	1	21-Sep-15	
3 127825	Pedestrian	Future connection of E. Babcock into library.	2	2	0	21-Sep-15	

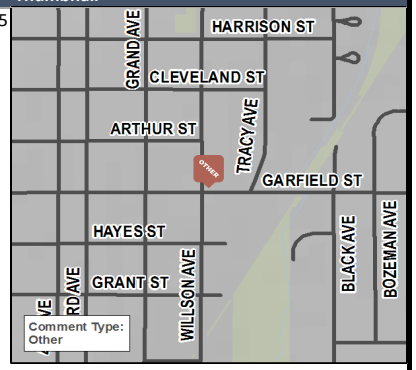
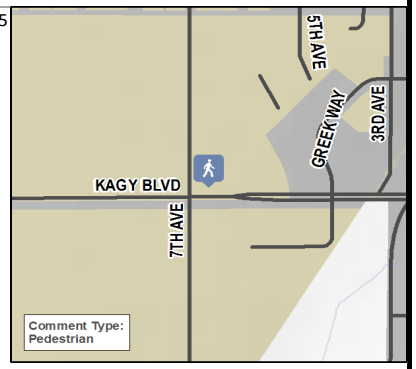
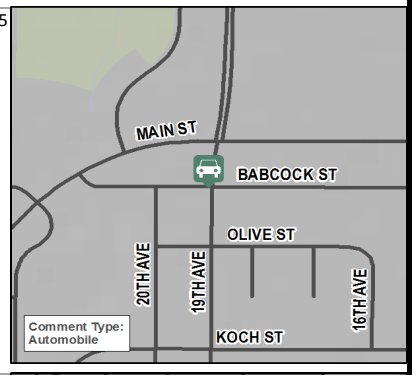
Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
4 128333	Bicycle	Peet's Hill is a wonderful recreation area, but if you bike over to take a walk, there is no place to properly lock your bike other than at the Library.	5	5	0	25-Sep-15	
5 128334	Bicycle	Peet's Hill is a wonderful recreation area, but if you bike over to take a walk, there is no place to properly lock your bike other than at the Library.	3	3	0	25-Sep-15	
6 128919	Automobile	There's no east/west connection between Kagy and Goldenstein - Graf should be extended to 19th in one project rather than several smaller sections as development proceeds.	9	10	1	5-Oct-15	

Comment I	ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
7	128989	Bicycle	Davis and Baxter would make a great location for a traffic circle.	1	4	3	6-Oct-15	
8	128990	Bicycle	"Bikes May Use Full Lane" signs on approach to roundabout.	7	7	0	6-Oct-15	
9	128991	Bicycle	A blinky cross walk for the Gallagator Trail would be nice.	4	5	1	6-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
10 128992	Bicycle	"Bikes may use Left Turn Lanes" signs throughout Bozeman would be welcome, especially on busier streets. Oak and 7th, Oak and 19th, Baxter and 19th.	5	5	0	6-Oct-15	
11 128994	Automobile	What would Shilo Road style (Billings) two-lane roundabouts look like along 19th? Baxter, Oak, Durston, and College could all have this. Shilo has two lanes each direction North-South and one lane each direction East-West. With crossings and signage for bicyclists and pedestrians, of course.	-1	0	1	6-Oct-15	
12 129584	Other	Black and Mendenhall needs a traffic signal to allow for safer pedestrian crossing of Mendenhall. Especially important now that the Element Hotel is open.	0	2	2	12-Oct-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
13	129696	Automobile	Please reconsider a compact roundabout here. Current situation is not working, College Ave. is not carrying enough traffic because everyone avoids it. Traffic stoppage on Willson is getting serious.	2	3	1	13-Oct-15	
14	129703	Bicycle	How to safely move bikes from the future bike lanes on 7th to the existing ones on 8th?	0	1	1	14-Oct-15	
15	129704	Other	Stop sign needed here and this heavily pedestrian trafficked corner.	0	4	4	14-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
16 129709	Bicycle	Since the signal does not change for a bicycle, and lacking a car to trigger the light, cyclists must either run the red light or go straight without a green following a turn arrow. Again, not bike friendly.	4	4	0	14-Oct-15	
17 129711	Automobile	Remove the curb extensions and install mini-round-about. The current solution, (no-left turn and flashing sign) is poor, and a traffic light would be worse.	2	2	0	14-Oct-15	
18 129715	Automobile	General comment regarding the unsigned or unregulated intersections: While unsafe, the issue is related to new residents, the annual influx of students, student parents, visitors, and new residents. Installing "Yields" everywhere would simply increase traffic speeds on the non-yield street.	0	1	1	14-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
19 129718	Other	Speed bumps or "sleeping policeman" as a traffic calming device: Generally a poor alternative to mini-roundabouts. However, if used, install gaps for bicycles. Even when motorists place one wheel in that gap,they still must slow. I have experienced two serious cases of "road rash" when striking "speed bumps" on roads under intermittent sun and shade. They were nearly impossible to see. Fortunately, nothing broken, but these structures are hazardous to cyclists and emergency vehicles.	1	1	0	14-Oct-15	
20 129720	Pedestrian	Given that Kagy is an arterial, install underpasses at key points to permit pedestrian and bike crossing without stopping traffic. Likely useful at 7th and 11th, given the large volume of housing being added south of Kagy.	9	9	0	14-Oct-15	
21 129766	Automobile	Can anything be done to improve the intersection of 19th and Babcock? It often conflicts with the traffic queue from 19th & Main.	6	6	0	15-Oct-15	

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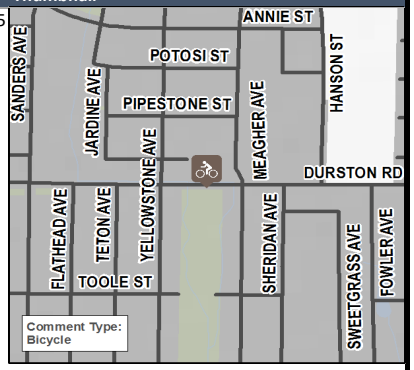
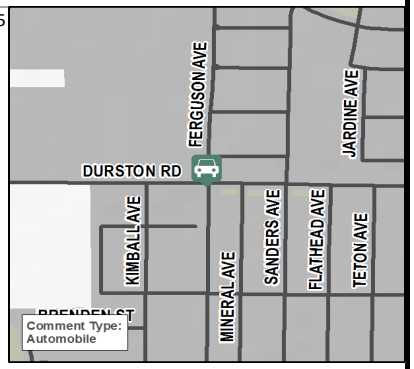
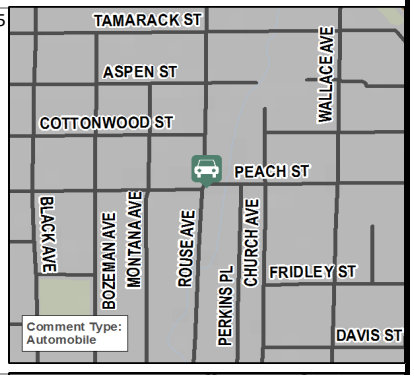
22 129802	Bicycle	Durston needs bike lanes on the part the county owns.	5	5	0	16-Oct-15	
23 129803	Automobile	Roundabout needed at Ferguson & Durston. Home building, Meadowlark School, and the future soccer fields make 17+ cars back up at this intersection in rush hour.	1	3	2	16-Oct-15	
24 129806	Automobile	roundabout needed at Rouse & Peach/Durston. The offset nature of the east-west roads makes this a dangerous intersection.	10	12	2	16-Oct-15	

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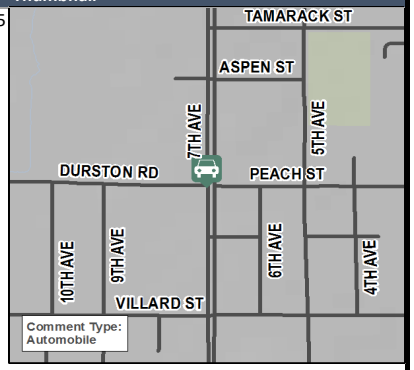
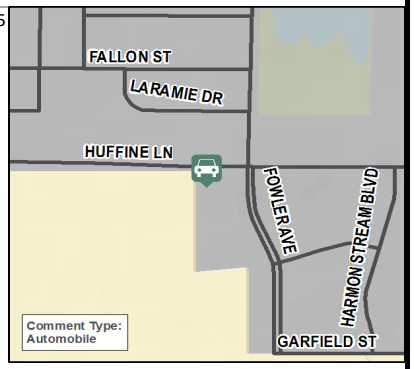
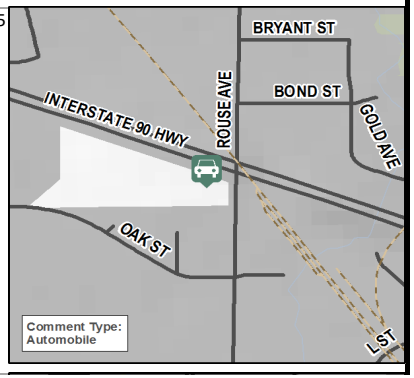
25 129815	Automobile	Eastbound on Durston, don't let the right lane turn left. As currently configured, it holds up the thru traffic.	-1	1	2	16-Oct-15	
26 129817	Automobile	Need a Park 'N Ride somewhere on the west side for carpoolers.				16-Oct-15	
27 129818	Automobile	How about a Park 'N Ride in the empty field just before the underpass? Skiers & hikers can walk to restaurants after a day on the trail. Less crowding at "M" or Story Mills Park.	0	1	1	16-Oct-15	

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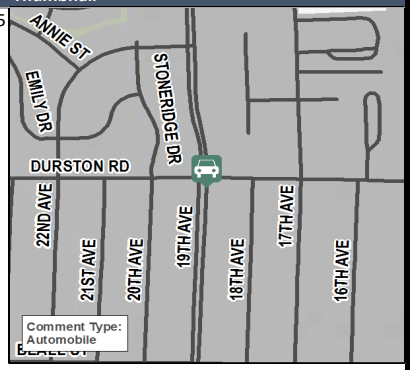
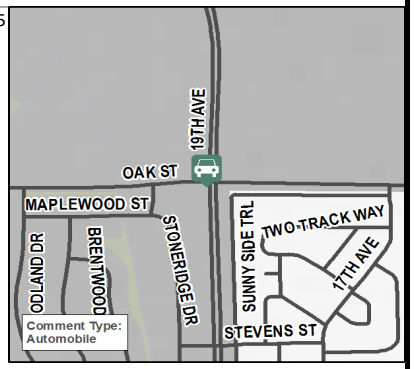
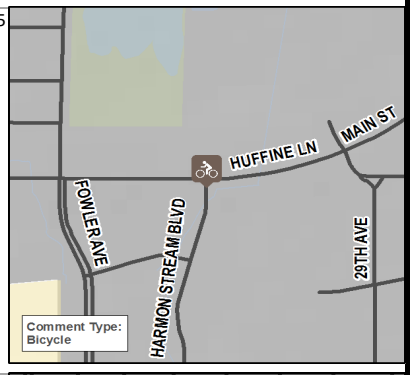
28	129870	Automobile	Northbound 19th street needs a longer left turn lane at Durston. Turning cars get stuck behind those going straight and miss the green light.	2	3	1	18-Oct-15	
29	129871	Automobile	Add a lane to eastbound Oak on either side of 19th to minimize the backups at the stop light.	0	1	1	18-Oct-15	
30	129880	Bicycle	Intersection of bike path + Harmon Stream is unsafe for Westbound cyclists and pedestrians. Cars turning right (east) from Harmon Stream to Huffine are almost never watching the bike path for oncoming cyclists from their right.	7	7	0	18-Oct-15	

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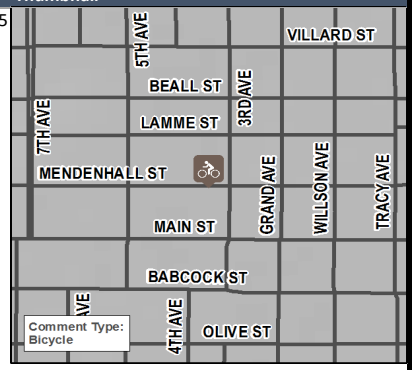
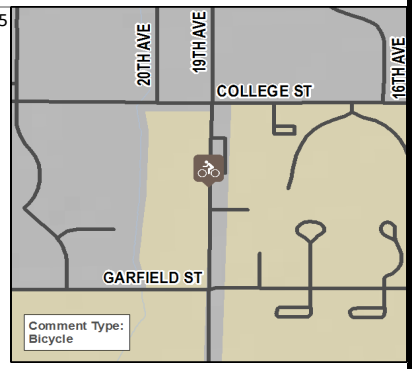
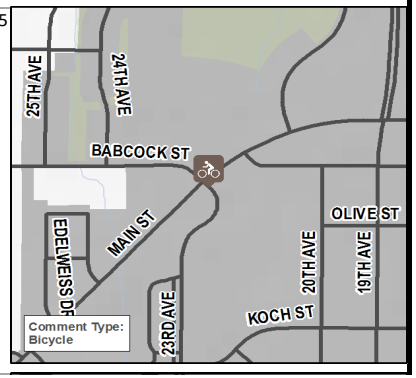
31 129881	Bicycle	The sharrows on Mendenhall are not helpful. Motorists frequently get upset with me for biking in the center of the lane. A protected bike lane would make Mendenhall a great way to ride through downtown.	4	5	1	18-Oct-15	
32 129882	Bicycle	Cyclists tend to ride on the sidewalk on S 19th rather than in the bike lanes, and I can't blame them. Sharing the street with the fast, heavy traffic on 19th is terrifying. Protected bike lanes would be very appropriate here.	9	9	0	18-Oct-15	
33 129883	Bicycle	Please add a way for cyclists on S 23rd to get through the intersection here. Currently, the bike lane ends several hundred feet south of the intersection and forces cyclists into multiple lanes of traffic. If not for this difficulty, W Babcock-S 23rd would be a nice bicycle corridor.	6	6	0	18-Oct-15	

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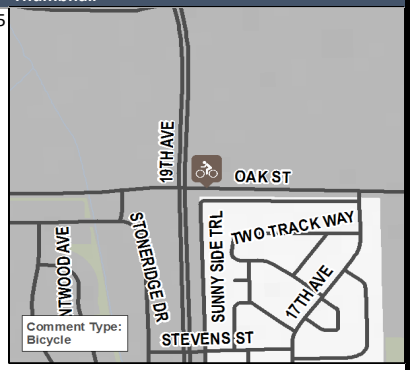
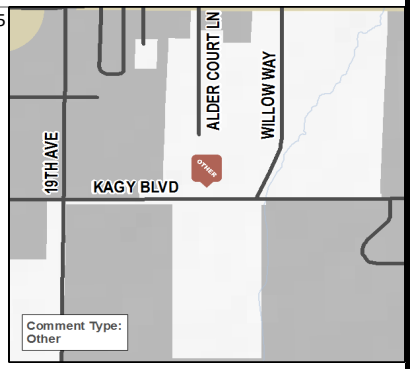
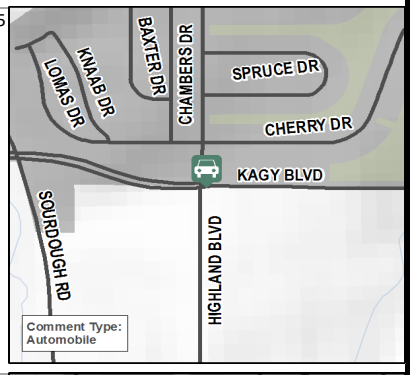
34 129884	Bicycle	"Bikes may use full lane" signs on Oak at 19th would be helpful since the bike lanes abruptly end, forcing cyclists into traffic. Or better yet, continue the bike lane through the intersection.	4	5	1	18-Oct-15	
35 130029	Other	Prioritize filling in gaps like the sidewalks along Kagy over extending roads.	2	2	0	20-Oct-15	
36 130033	Automobile	Roundabout needed. Cars coming from east drive too fast for this intersection.	4	4	0	20-Oct-15	

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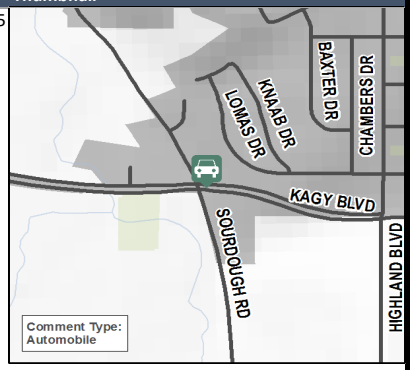
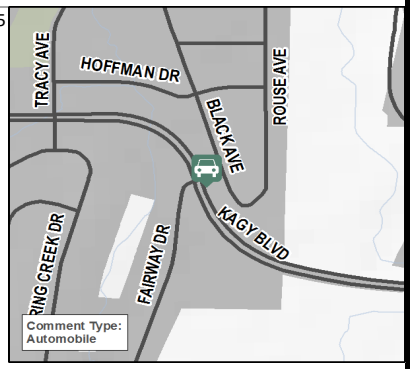
37 130034	Automobile	Roundabout needed. Very wide intersection. I was in a bike accident here b/c I couldn't see the turn signal & car kept coming so I thought they were going straight & laid my bike out :(. Very hard to get out here safely at high traffic times.	8	8	0	20-Oct-15	
38 130035	Automobile	Kagy approaching Fairway Dr. intersection often driving too fast for people to safely exit Fairway Dr to the left.	3	3	0	20-Oct-15	
39 130036	Bicycle	Friend, Jean MacInnes, had a bike accident here. No bike lane so used side walk & 2 hoses were across sidewalk to water lawn. She got over the 1st hose & bit the dust on the second hose & required a flight to Missoula for monitoring for head trauma :(. Need better bike routes around university.	2	3	1	20-Oct-15	

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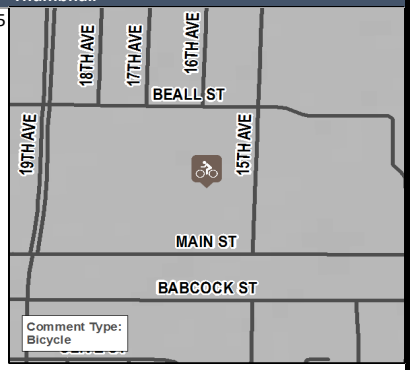
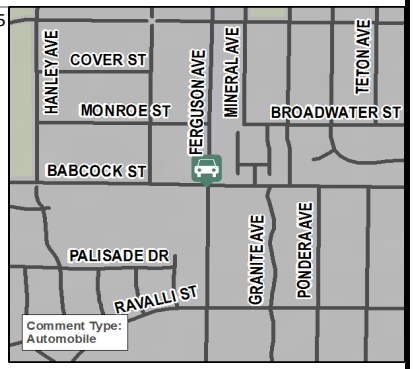
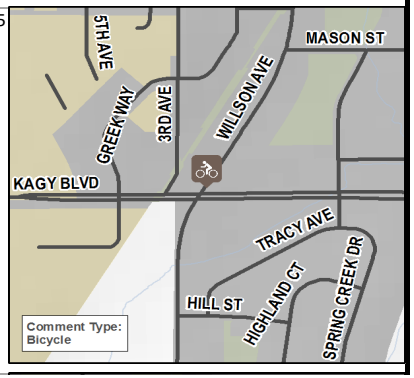
40 130037	Bicycle	Carol Weaver was hit on her bicycle in parking lot by McDonalds by inattentive drive (5 fx's to pelvis :( ) This parking lot needs to be brought up to code!	1	1	0	20-Oct-15	
41 130089	Automobile	Round about needed at Babcock and Ferguson. Bus, Bike, car and Pedestrian traffic are all impeded at this location. Along with multiple wrecks this intersection is dangerous and a multilevel (bike, bus, car and pedestrian oriented) round about will help with traffic congestion and safety.	3	5	2	21-Oct-15	
42 130090	Bicycle	We need a dedicated bike lane with green paint south bound on Willson to cross Kagy onto S. 3rd. Please attend the public forums regarding the reconstruction of Kagy this fall				21-Oct-15	

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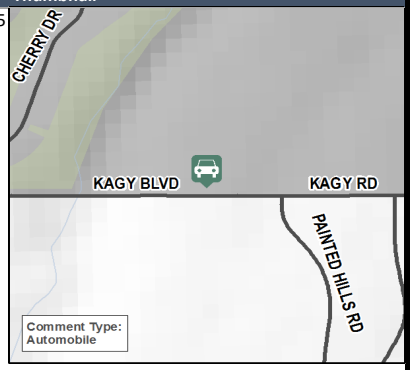
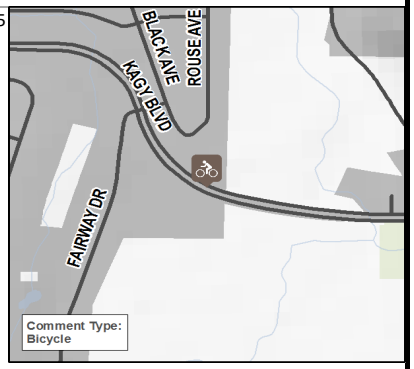
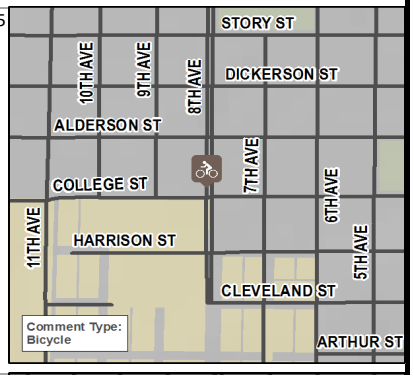
43	130094	Automobile	This road is owned by the city. There is a STEEP drop off on both sides of Kagy here. A guard rail would make it safer. This road gets icy, if a car or school bus went off, it's a long way down.	0	1	1	21-Oct-15	
44	130160	Bicycle	Enforce mca 61-8-328 giving riders protection in bike lanes. Stop letting golf course use bike lane for parking, find what city official is getting free golf to let this happen.	9	9	0	22-Oct-15	
45	130161	Bicycle	Fix bike lane to protect riders to the stop at College St. There should be a standard for bike lane marking all the way through intersections	5	5	0	22-Oct-15	

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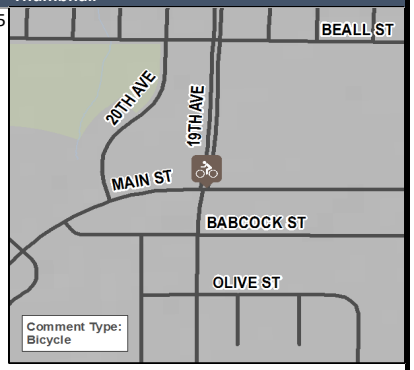
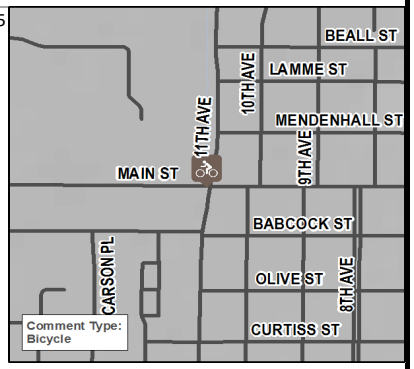
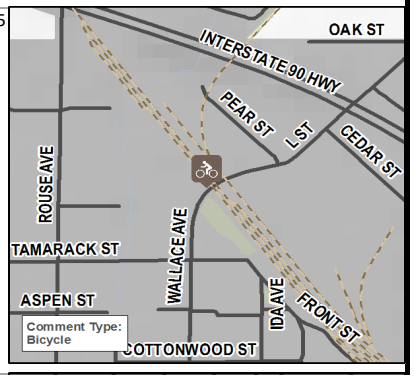
46 130165	Bicycle	Need bike friendly crossings of Main St.	5	5	0	22-Oct-15	
47 130166	Bicycle	Nee bike friendly crossings of Main st.	2	2	0	22-Oct-15	
48 130188	Bicycle	Need for Bicycle safe crossings.	2	2	0	22-Oct-15	

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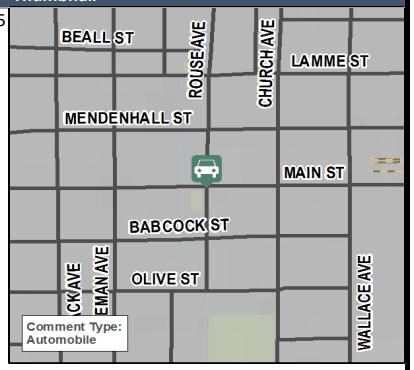
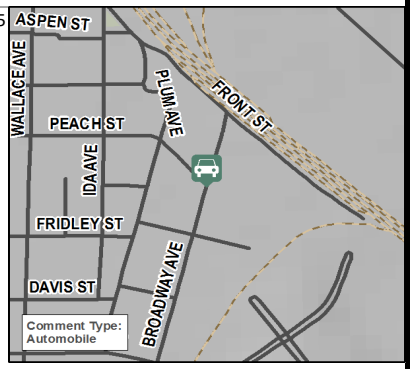
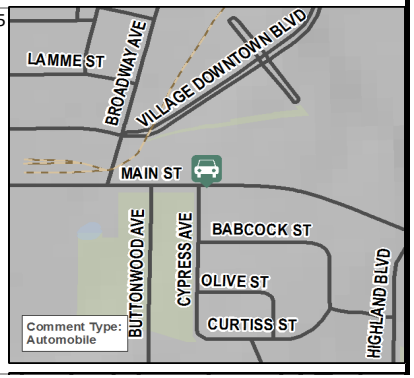
49 130189	Automobile	left turn arrow for eastboud traffic trying to head north on Rouse	2	2	0	22-Oct-15	
50 130193	Automobile	Any kind of traffic slowing device.	1	2	1	22-Oct-15	
51 130194	Automobile	Turning into this parking area is a bit sketchy. Illegal(?) to turn left but everyone does in order to get to work.				22-Oct-15	

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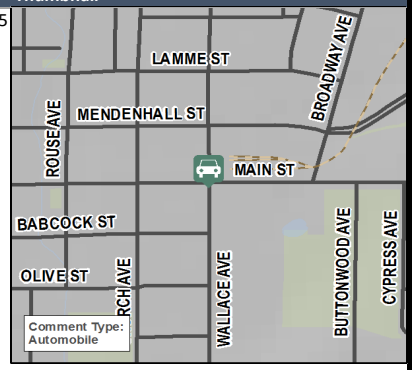
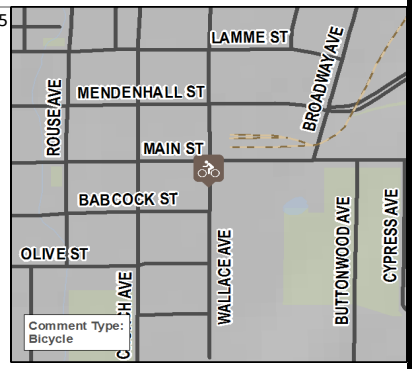
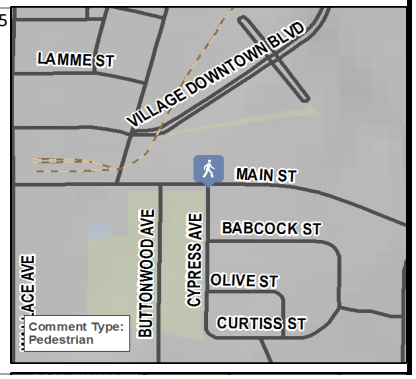
52 130195	Automobile	Getting in and out of Heebs is dangerous at 5pm. Just set up a camera and see for yourself.	1	1	0	22-Oct-15	
53 130196	Bicycle	People stop on their one way (no stop) in order to wait for me on a bike. It could cause a serious pile up/accident at 5pm.	1	1	0	22-Oct-15	
54 130197	Pedestrian	Too much regular traffic pressure to convince anyone to stop here for pedestrian crosswalk.	2	2	0	22-Oct-15	

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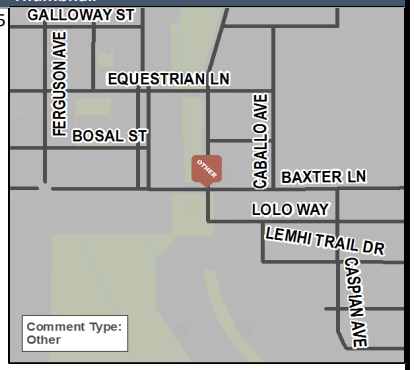
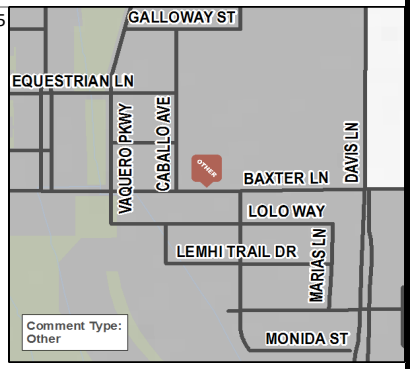
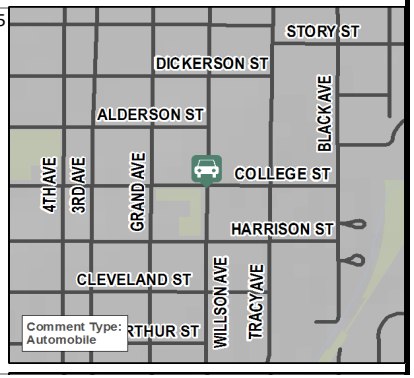
55 130198	Other	Lower speed limit @ Vaquero Pkwy heading west to 25 MPH	1	3	2	22-Oct-15	
56 130199	Other	Lower speed limit on E. Baxter Ln. from Davis to Vaquero to 35 MPH	3	4	1	22-Oct-15	
57 130272	Automobile	I agree with other comments. Many motorists ignore the right hand turn only. Feels dangerous.				24-Oct-15	

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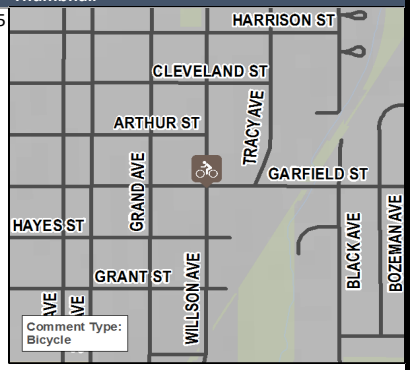
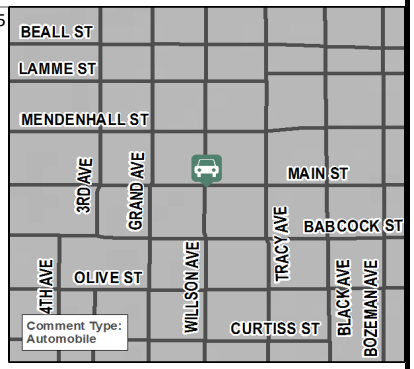
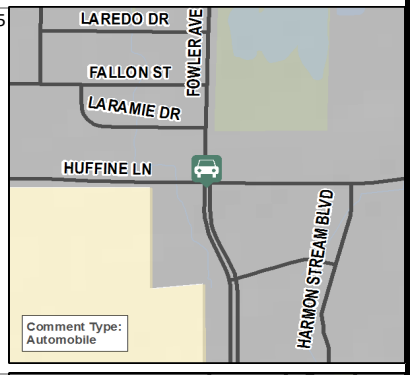
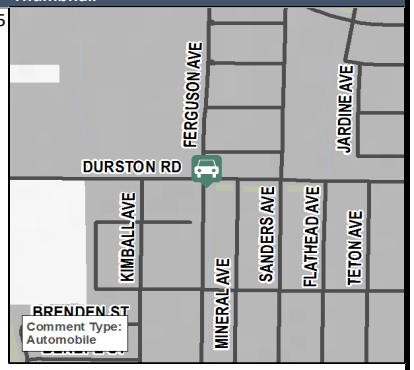
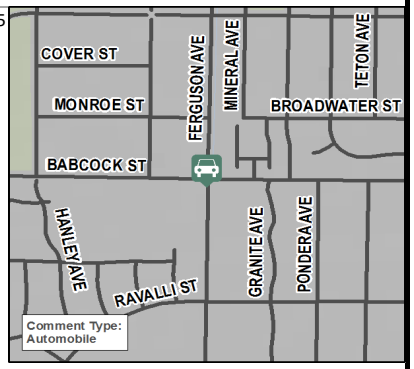
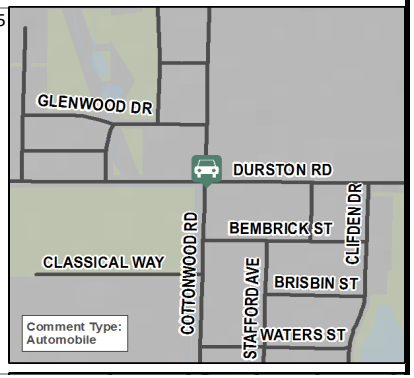
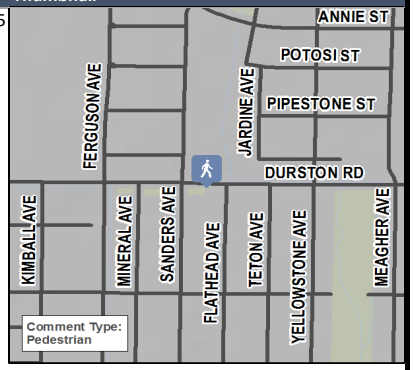
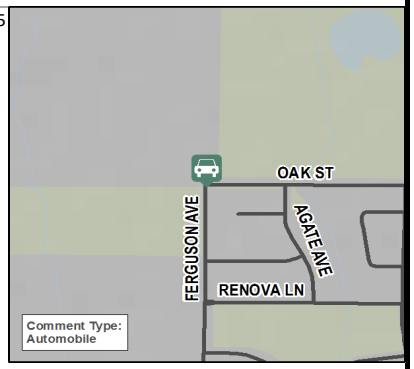
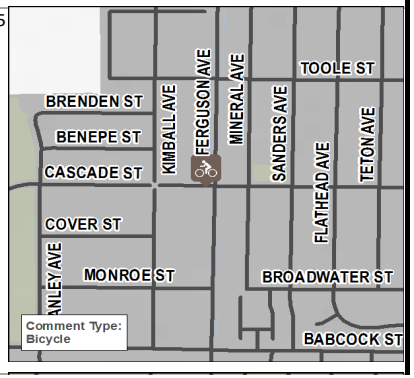
58 130273	Bicycle	Traffic on Willson is high volume. As a bycilcist, I dismount here in hopes that a vehicle will stop to allow for crossing. There is no point to slow traffic between Olive and Kagy; motorists drive quickly and if often feels dangerous when attempting to parallel park as a vehicle, ride a bike or cross as a pedestrian. It would be nice to have one method along Willson to slow the increased traffic that has occurred over the last 5 years and offer more pedestrian friendly crossing.	4	4	0	24-Oct-15	
59 130274	Automobile	Left hand turn arrow to Willson.	1	1	0	24-Oct-15	
60 130279	Automobile	Left turn light for northbound traffic turning west	5	5	0	25-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
61 130280	Automobile	Roundabout needed. Stop light would be useful during the peak hours, but would create a lot of needless idling during non peak hours. Roundabout would be a better, more efficient choice.	5	7	2	25-Oct-15	
62 130281	Automobile	Roundabout needed. Stop light would be useful during the peak hours, but would create a lot of needless idling during non peak hours. Roundabout would be a better, more efficient choice.	0	2	2	25-Oct-15	
63 130282	Automobile	Roundabout needed. Stop light would be useful during the peak hours, but would create a lot of needless idling during non peak hours. Roundabout would be a better, more efficient choice.	4	7	3	25-Oct-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
64	130283	Pedestrian	sidewalks needed on south side.	1	2	1	25-Oct-15	
65	130284	Automobile	Once intersection in completed in all directions, install roundabout.	4	6	2	25-Oct-15	
66	130336	Bicycle	This road is and will become more difficult to cross, I better alternative is Babcock if it had either a signal or traffic circle	2	2	0	26-Oct-15	

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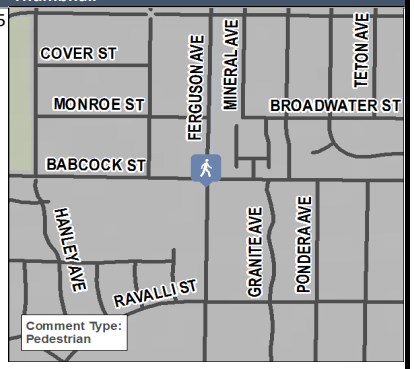
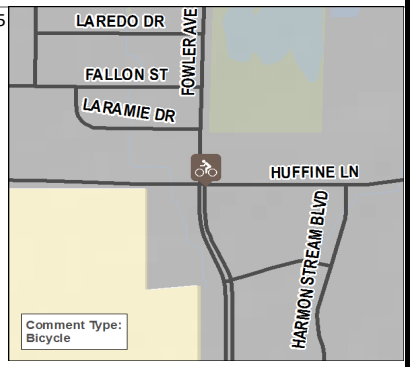
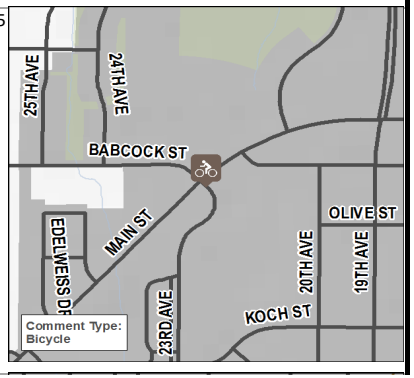
67	130337	Pedestrian	This intersection is very difficult to cross- fast traffic, a lot of directions to keep track of, yet it is a main crossing to this rapidly growing neighborhood.	1	1	0	26-Oct-15	
68	130338	Bicycle	Conflict with cars turning onto Huffine- in haste to make light they do not observe bikes/ped crossing the street.	2	2	0	26-Oct-15	
69	130339	Bicycle	Although bikes can cross at this intersection, it's a wide with fast-turning cars. Suggest a pre-signal for bike/peds- or a painted green lane to congregate bikes as a critical mass.	2	2	0	26-Oct-15	

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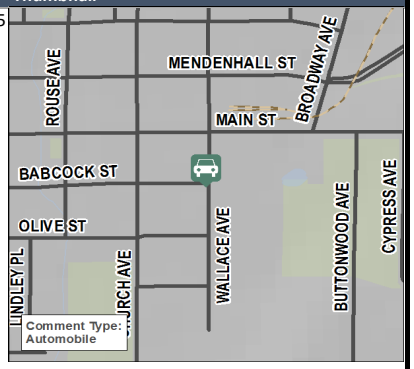
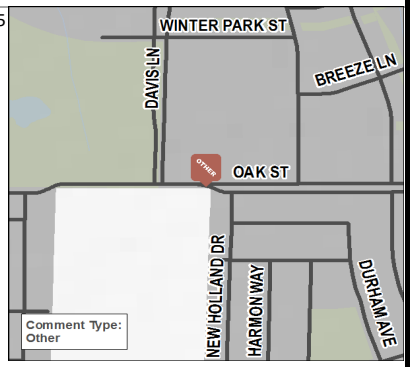
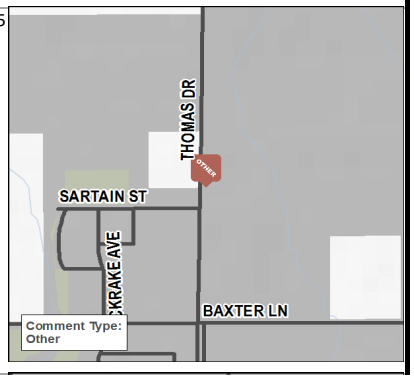
70	130344	Automobile	Stop sign needed for eastbound traffic. It's too confusing for the through street to not have the right of way.	2	3	1	26-Oct-15	
71	130356	Other	Bike/Ped/Car: the curve with concrete barriers and intersection is awkward to navigate and make	3	3	0	27-Oct-15	
72	130358	Other	Ped/Bike: It would be nice to use this road to travel to the Costco/Target shopping area. Sidewalks/bike marking would help.	5	5	0	27-Oct-15	

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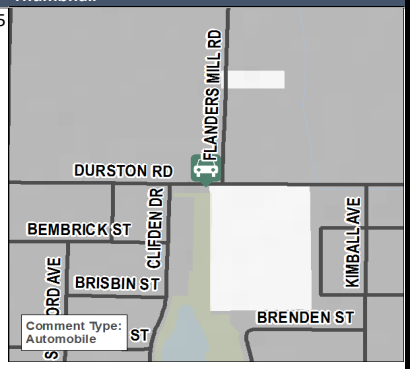
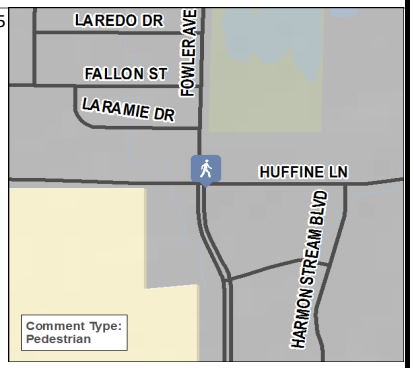
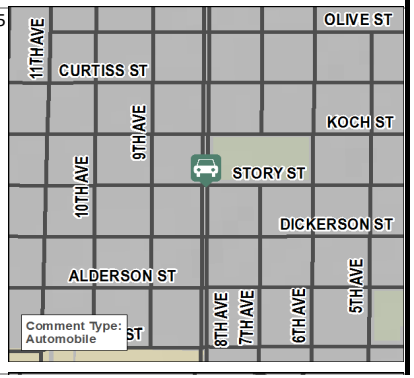
73	130359	Automobile	Could schools be signed to reduce speed only when children are present, or Mon-Fri, or when school is in session? Right now one has drive 20 when there is no one present (weekend/summer).	4	6	2	27-Oct-15	
74	130360	Pedestrian	Really unpleasant crossing- cars turning once I clear just one lane and signal is short for elderly people.	1	1	0	27-Oct-15	
75	130361	Automobile	15 mi per hr is ridiculous here, schools are 20.	2	5	3	27-Oct-15	

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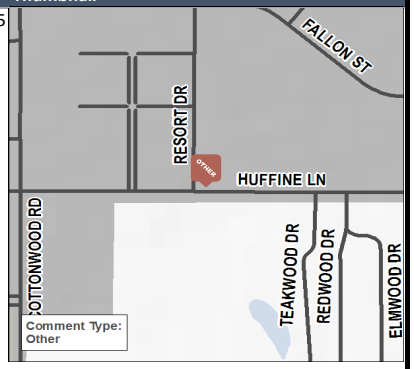
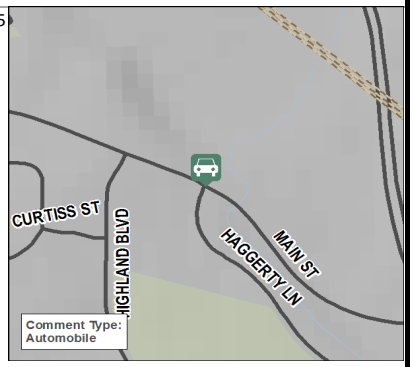
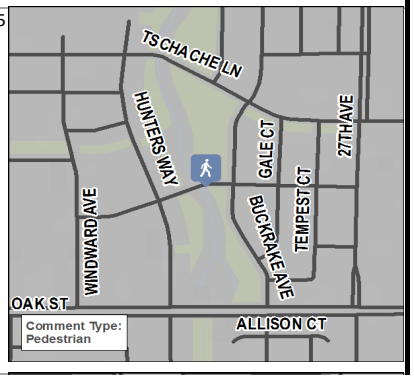
76	130363	Other	People drive over the speed limit- very fast on Huffine in area between Cottonwood and Fowler. Yet this area is growing into commercial/residential, and growing denser. Turning left with oncoming traffic going 50 mi per hr not so fun. Please do not synchronize lights- they will go faster. Anyway we could reduce posted speed limit a bit? Or have a different turn signal? Commuters drive this road like a freeway.	-2	2	4	27-Oct-15	
77	130364	Automobile	Very difficult to turn left off Haggerty in the mornings due to the amount and speed of traffic coming west into town off the freeway.	2	2	0	27-Oct-15	
78	130369	Pedestrian	Add curb cuts at street and trail intersections	2	2	0	27-Oct-15	

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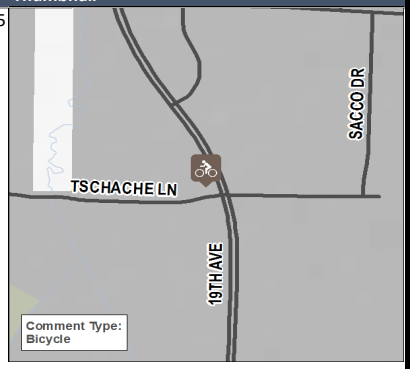
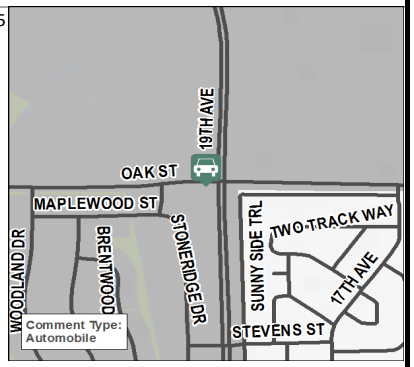
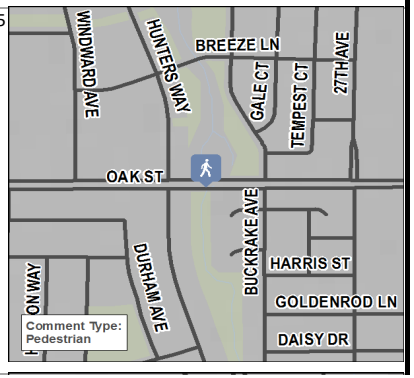
79	130375	Bicycle	Repair bike path dut out & damage by Starbucks construction	1	1	0	27-Oct-15	
80	130376	Automobile	Add separate right turn lane from eastbound Oak to 19th south	1	1	0	27-Oct-15	
81	130377	Pedestrian	Add flashing pedestrian crosswalk and missing trail section to north	2	2	0	27-Oct-15	

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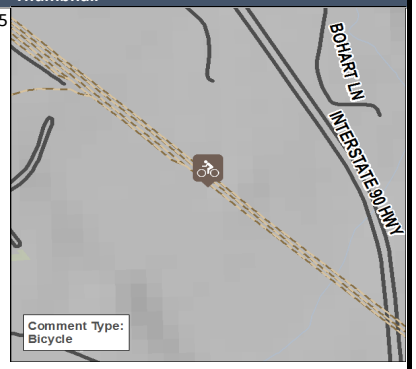
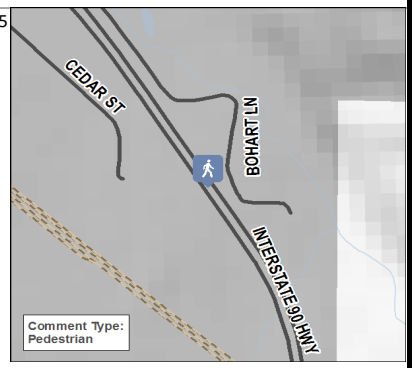
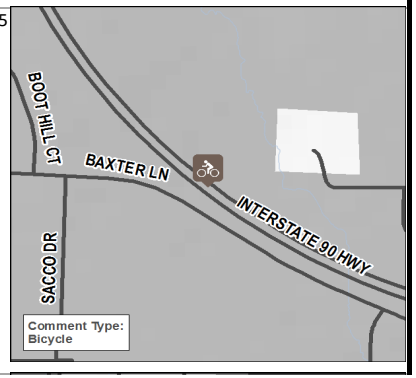
82	130378	Bicycle	Add bridge over tracks at existing abutments	1	1	0	27-Oct-15	
83	130379	Pedestrian	Add bridge over freeway at existing earth embankments	2	2	0	27-Oct-15	
84	130380	Bicycle	Need a bike and pedestrian underpass to connect west side of town to M bike path, story mill park so the entire community can share it	4	4	0	27-Oct-15	

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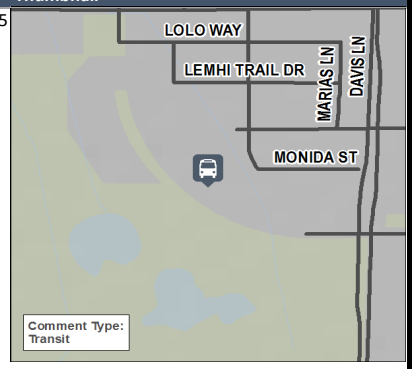
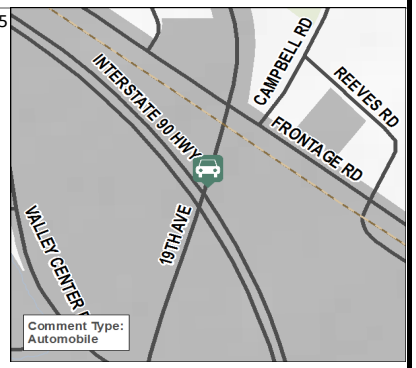
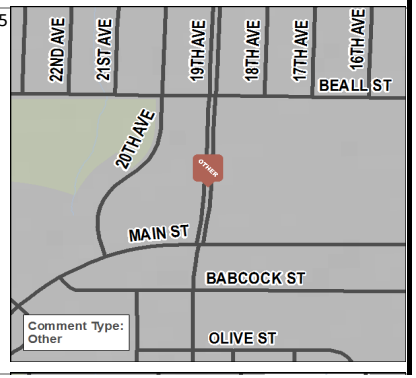
85	130381	Transit	Add future Transit stop and YMCA and Regional Park	2	2	0	27-Oct-15	
86	130382	Automobile	Add additional North Bound Thru-Lane to overpass	1	1	0	27-Oct-15	
87	130386	Other	Can we add trees to the middle boulevard on 19th to enhance Street-Scape	3	3	0	27-Oct-15	

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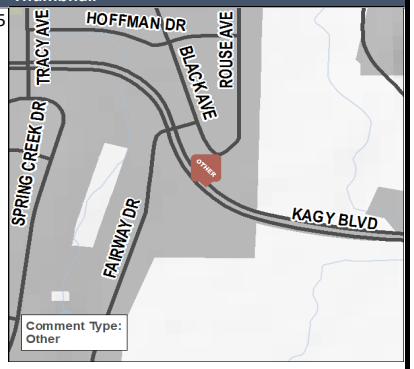
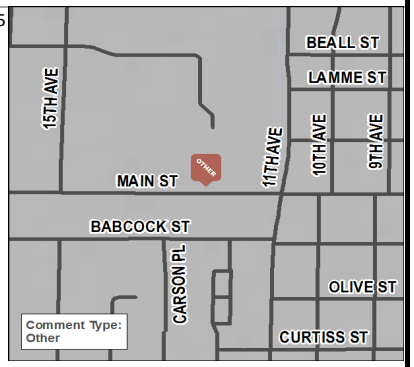
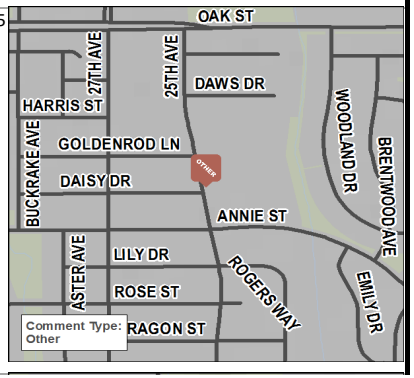
88	130387	Other	Can we add tree to middle boulevard on Kagy to enhance Street-Scape?	2	3	1	27-Oct-15	
89	130389	Other	Can trees be added to the sidewalk in the right of way, at the High School like downtown to improve the Street-Scape for this section of road?	3	3	0	27-Oct-15	
90	130390	Other	Can trees be added to the boulevard strip in the right of way at Emily Dickinson to enhance the Street-Scape?	-1	0	1	27-Oct-15	

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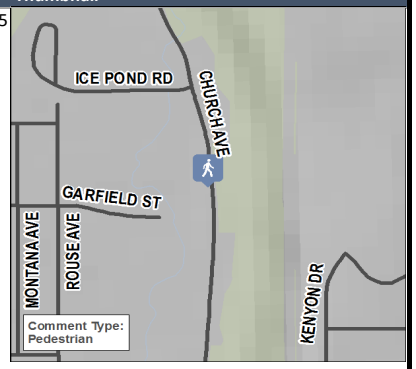
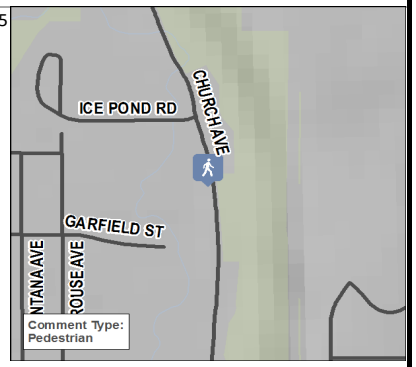
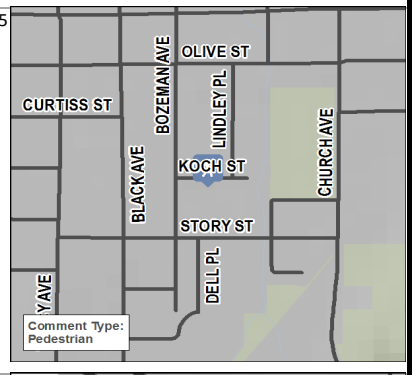
91	130428	Pedestrian	There's a trail that comes off Peet's Hill and terminates at South Church. I've always used this route, and cut through Martel's driveway over to E. Garfield. Many people do this, and I've asked Martel and they like having people "keep an eye" on their yard, and allow pedestrians through informally. So I wonder if a connector trail or walk could connect these two, along Church.	1	1	0	28-Oct-15	
92	130429	Pedestrian	There's a trail that ends at Church, that I think could connect to Ice Pond Road. Pedestrians can walk through there and connect to South Rouse already, but a trail or sidewalk on Church would make this linkage much safer.	1	1	0	28-Oct-15	
93	130430	Pedestrian	There should be a pedestrian linkage from the neighborhood on South Bozeman, E. Story, Longfellow School, etc. that would go to and from Bogert Park. There's a proposed improvement project to the bridge across Bozeman Creek, from the east end of East Koch to the park. But there is no sidewalk on the north side of E. Koch, from S. Bozeman to Bogert Park. I think it makes sense to complete these sidewalks, as I live on Lindley Place and I see many neighborhood kids and adults having to walk out into traffic, when there should be a sidewalk for this block and a half.	1	1	0	28-Oct-15	

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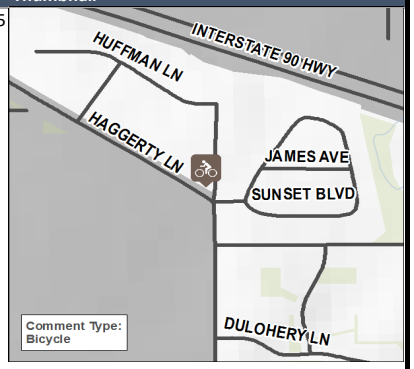
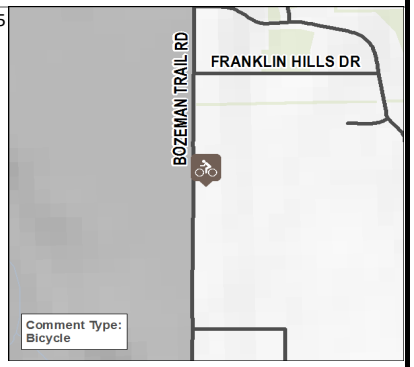
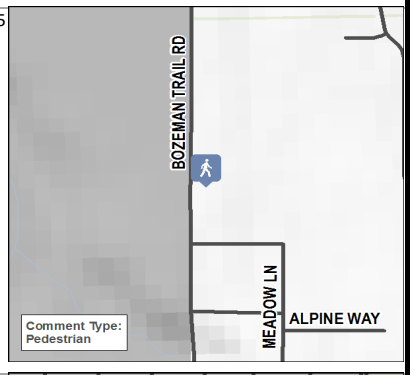
94	130562	Bicycle	Bike lanes/ pedestrian lane needed to allow access to Bozeman Trail/ Kagy	2	2	0	29-Oct-15	
95	130563	Bicycle	Bike/ pedestrian lane needed. Would create loop from town East Main back to Kagy	3	3	0	29-Oct-15	
96	130564	Pedestrian	Lots of walkers jiggers here without a lane to walk in	1	1	0	29-Oct-15	

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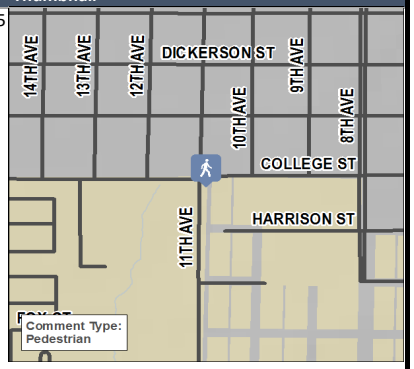
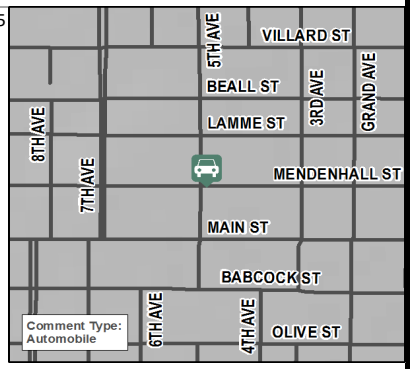
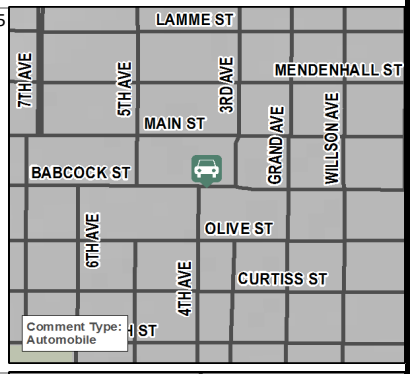
97	130588	Pedestrian	the corridor between 11th and 8th on College needs to better serve the needs of the tremendous amount of pedestrian activity on this street section. Sidewalks are badly in need of fixing (especially at driveways) ADA accessibility is very difficult with many places where there are no curb-cuts and there is a lot of pedestrian activity crossing college to get from MSU to businesses across College and NO safe marked places to cross.	2	2	0	30-Oct-15	
98	130723	Automobile	Mendenhall and Babcock need to be two- lane streets - then Lamme and Olive can be safer Bike streets	-4	0	4	2-Nov-15	
99	130724	Automobile	Mendenhall and Babcock need to be two- lane streets - then Lamme and Olive can be safer Bike streets	-4	1	5	2-Nov-15	

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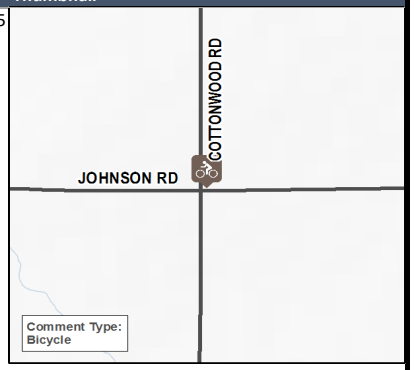
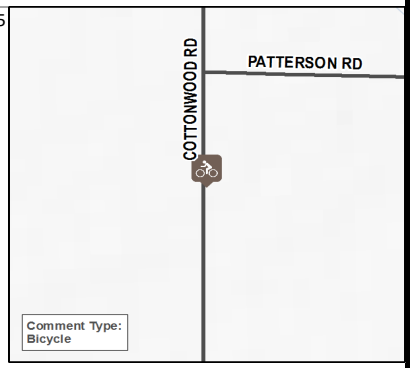
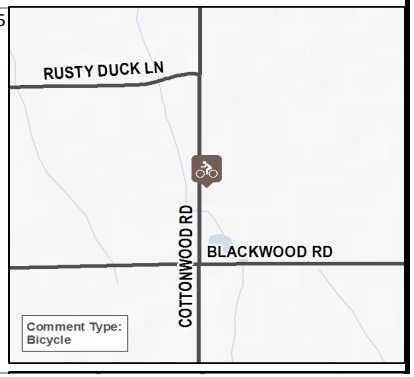
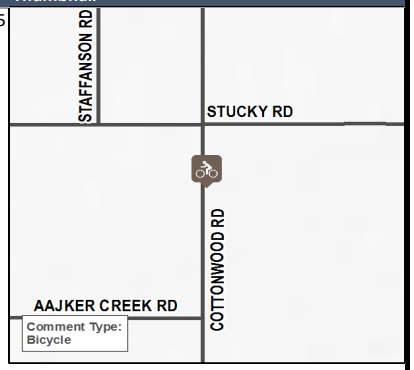
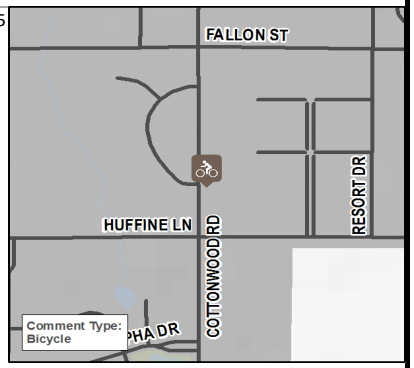
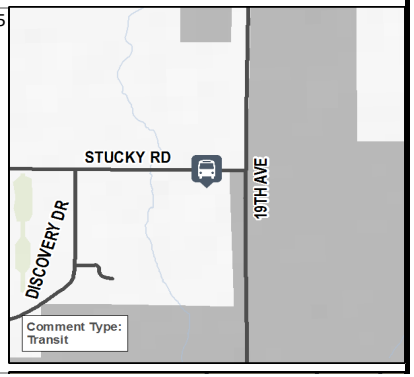
100	130749	Bicycle		2	2	0	3-Nov-15	
101	130750	Bicycle		2	2	0	3-Nov-15	
102	130751	Bicycle		2	2	0	3-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
103	130752	Bicycle		4	4	0	3-Nov-15	
104	130753	Bicycle		2	2	0	3-Nov-15	
105	130754	Transit	There is no public transportation to this area of town-- south of Kagy and west of 19th. With this end of town becoming more developed and there already being popular destinations (ex. Oracle, Montana Bible College, the Spire, etc...) public transportation to this area would benefit many people.	3	3	0	3-Nov-15	

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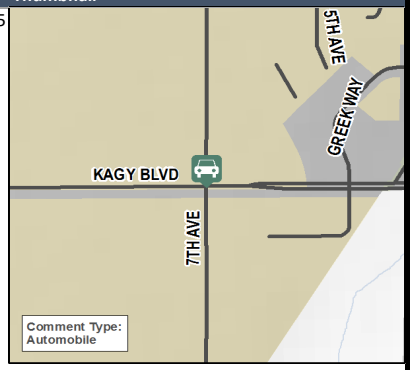
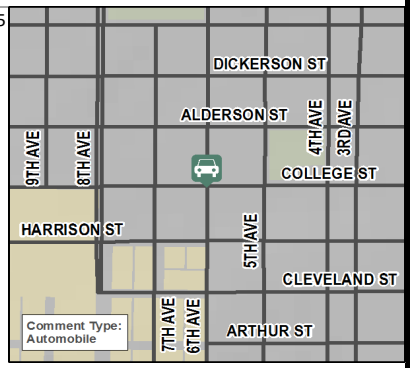
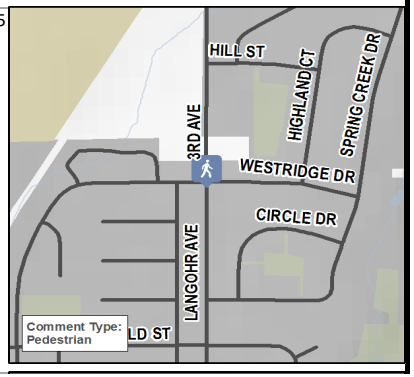
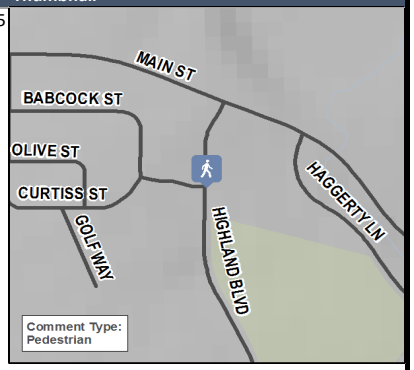
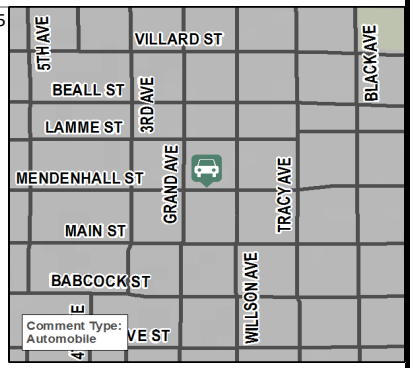
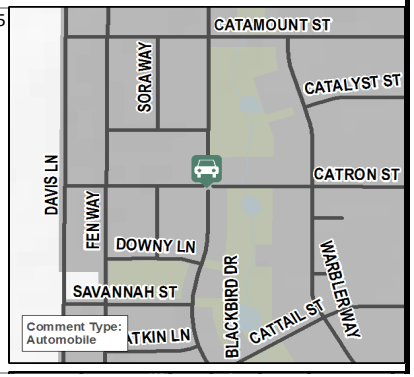
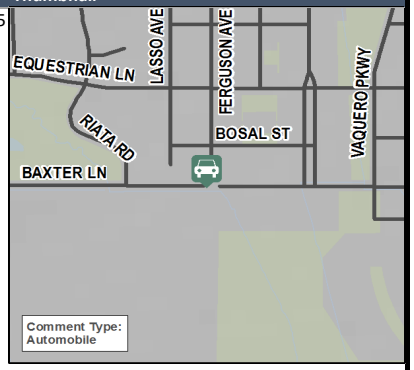
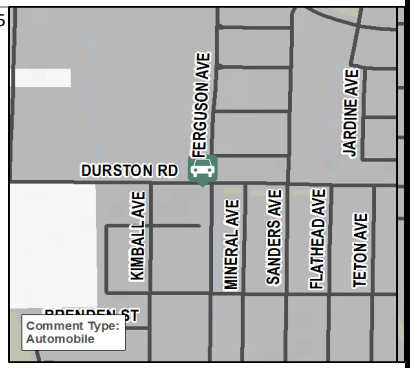
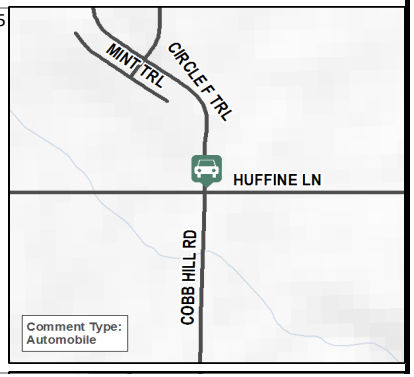
106	130760	Automobile	To help traffic flow at peak hours there needs to be a round-about here, and potentially all major corners around campus (Willson and College and Kagy and 11th). But at this intersection cars cant turn left very well and a round-about will allow all cars to move together and stop people from passing on the shoulder which causes accidents.	2	2	0	3-Nov-15	
107	130761	Automobile	Either force traffic to turn right only onto Willson or remove the signs because nobody is following this traffic change.	0	1	1	3-Nov-15	
108	130786	Pedestrian	A crosswalk is badly needed here. Lots of children cross here for school and many pedestrians/bikers cross for trail connections. Cars are not inclined to stop here.	2	2	0	3-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
109	131015	Pedestrian	There is concern about pedestrian crossing Highland from E Curtiss into the new Heebs development	3	3	0	5-Nov-15	
110	131457	Automobile	Switch the directions of the one ways on Mendenhall and Babcock. Which would allow right turns on Main.	0	2	2	11-Nov-15	
111	131458	Automobile	Remove the roundabout.	-7	0	7	11-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
112	131459	Automobile	Remove the roundabout.	-9	2	11	11-Nov-15	
113	131460	Automobile	Traffic light needed! Not a roundabout!	-2	1	3	11-Nov-15	
114	131461	Automobile	Remove the traffic light. This is a DEATH TRAP in the winter with icy roads!	-1	3	4	11-Nov-15	

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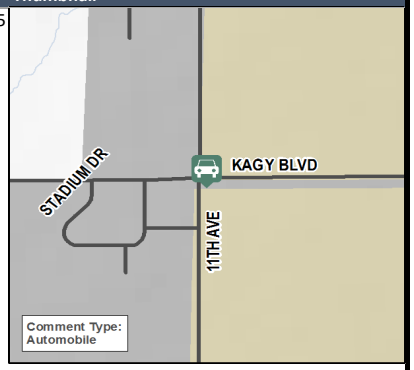
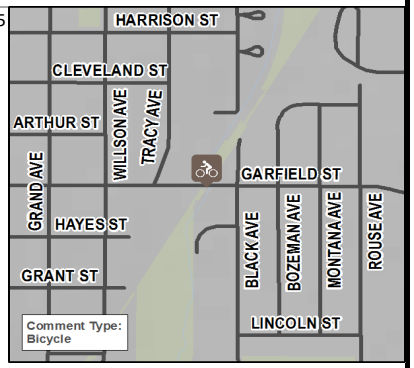
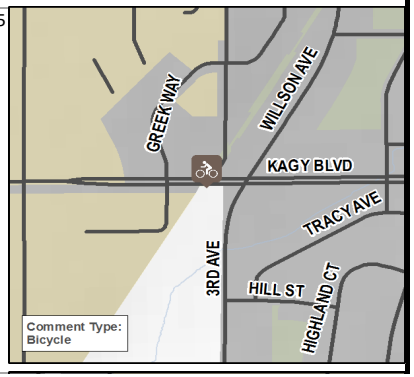
115	131558	Automobile	Left turn signals at 11th & Kagy	3	3	0	13-Nov-15	
116	131570	Bicycle	Improving this crossing. Consider prioritizing path traffic over street. Raised crossing or even stop signs for Garfield. Path volumes may be higher than street volumes.	0	1	1	13-Nov-15	
117	131571	Bicycle	would like to see grade separated crossing for the Galligator	2	2	0	13-Nov-15	

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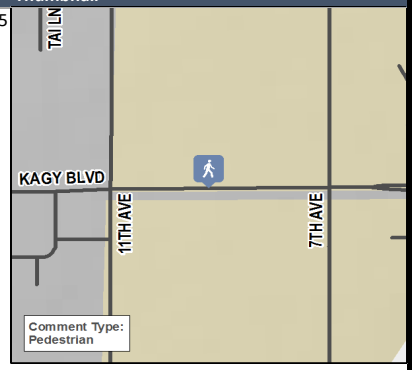
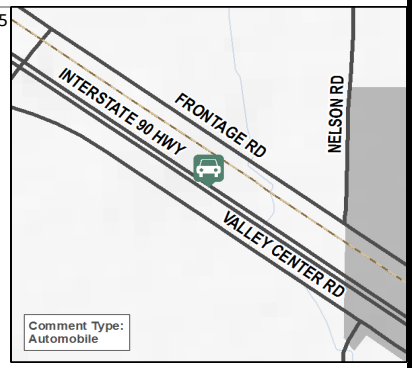
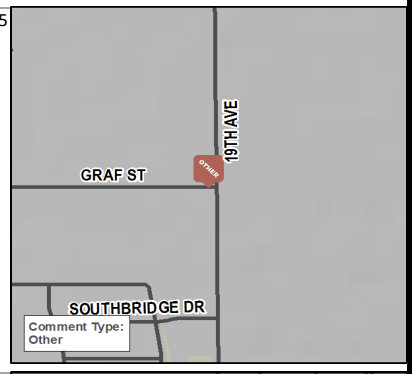
118	131572	Pedestrian	grade separation for crossing Kagy	2	2	0	13-Nov-15	
119	131590	Automobile	Considering adding an exit somewhere in this location. A large percentage of traffic would be reduced in 19th as it could line up with other north/south roads like Davis or Ferguson				14-Nov-15	
120	131850	Other	The traffic light at Graf and S. 19th needs to be a regular stoplight.	-2	0	2	18-Nov-15	

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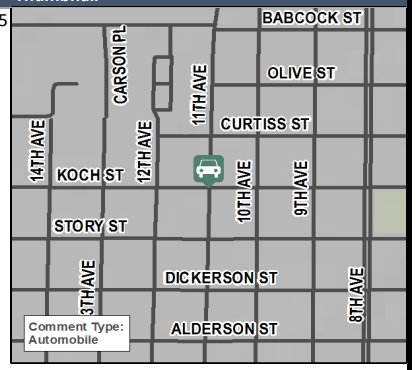
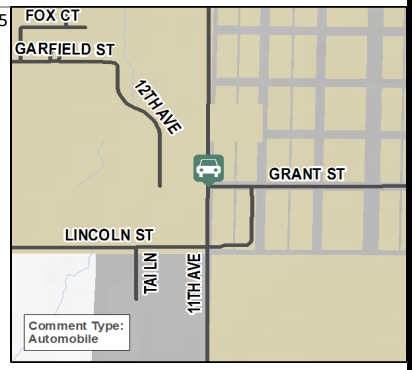
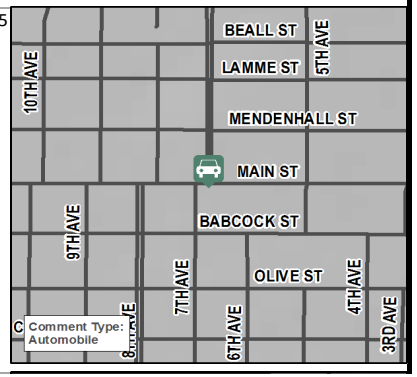
121	131951	Automobile	A light would be fantastic here.				22-Nov-15	
122	131952	Automobile	A traffic light here would improve flow during peak hours. With the large amounts of pedestrians and cars at this intersection. Even a pedestrian crossing light would be good here and everywhere around campus.	-1	0	1	22-Nov-15	
123	131953	Automobile	Need sign or flashing signal to say "No stopping to turn Left in Right Hand turn lane". Two left turn lanes is good while moving, but drivers STOP and block straight thru traffic. Get over to Left lane when possible.	1	1	0	22-Nov-15	

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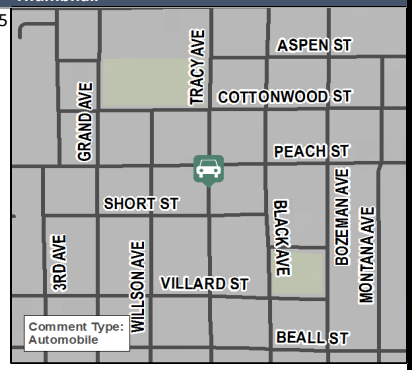
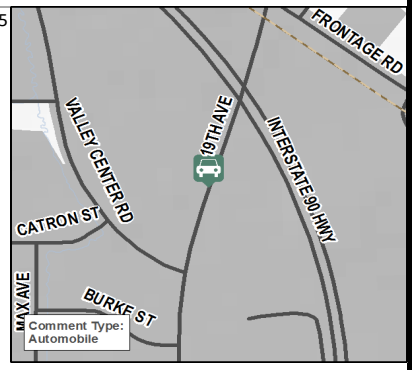
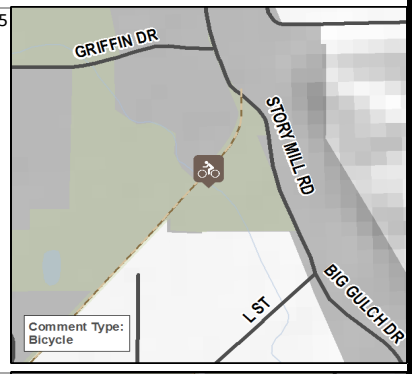
124 131954	Automobile	North Tracy-Vehicle speeds are high, traffic volume is increasing dramatically. Need speed & volume controls.				22-Nov-15	
125 131955	Automobile	Add a stop light or roundabout. Commuter traffic gets backed up onto the interstate	2	2	0	22-Nov-15	
126 131956	Bicycle	Allow bike lane as cars are speeding on newly paved road.	1	1	0	22-Nov-15	

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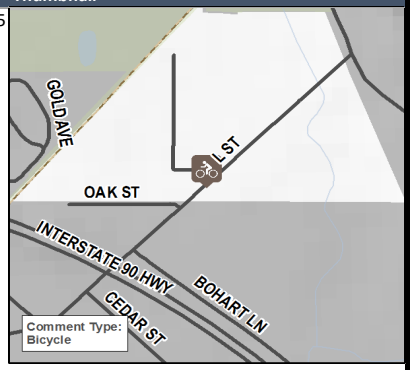
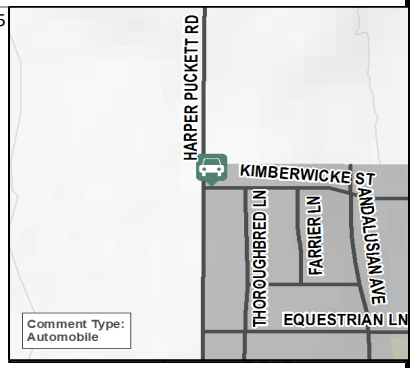
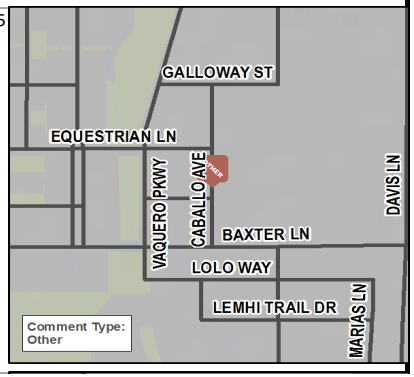
127	131957	Bicycle	Allow bike lane as car commuters are speeding on newly paved road	2	2	0	22-Nov-15	
128	131988	Automobile	Kimberwicke actually goes all the way to Harper Pucket and now functions more like a collector. It is the perfect example of how 28 feet is not wide enough to park cars on both sides and still allow two way traffic. This section has a hill obstruction. Please add no parking the entire length on one side or make it a one way street.				23-Nov-15	
129	131989	Other	This needs a 20mph speed limit due to angular parking on both sides of street with businesses.				23-Nov-15	

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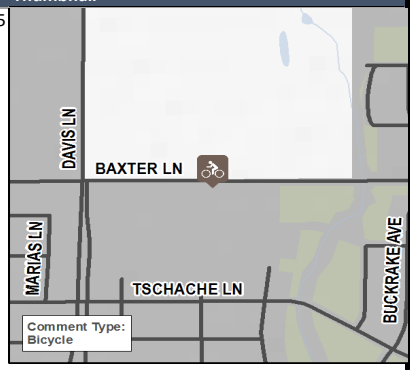
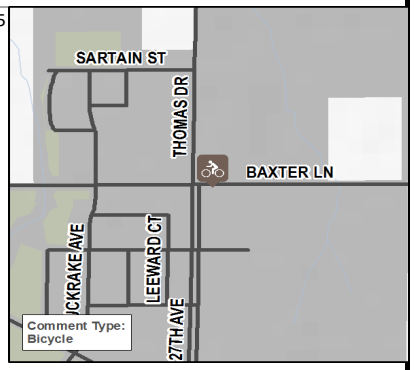
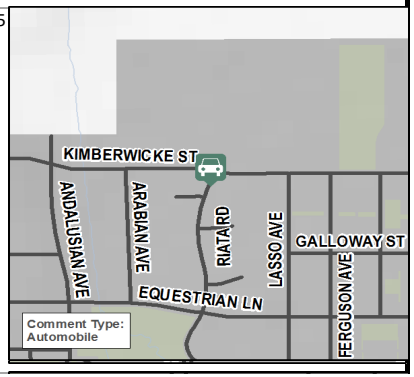
130	131990	Bicycle	Finish bike and pedestrian connectivity from Davis to 19th.	2	2	0	23-Nov-15	
131	131991	Bicycle	signage thorughout the town indicates that a bike lane exists but then they suddenly and without warning end ahead.				23-Nov-15	
132	131992	Automobile	Incorporate Riata Rd into the City and make it a public road.	-1	0	1	23-Nov-15	

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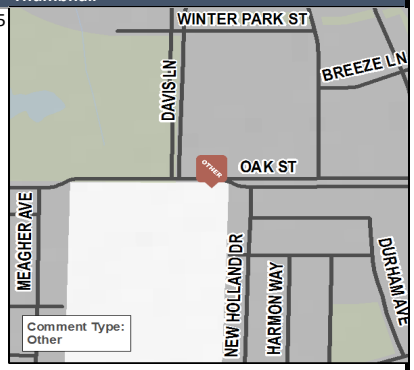
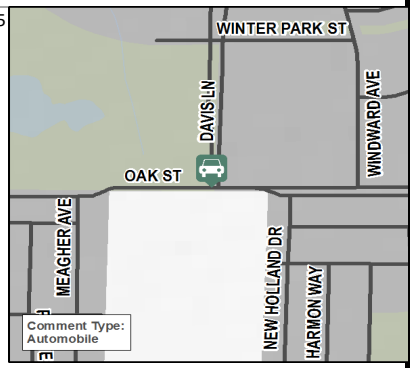
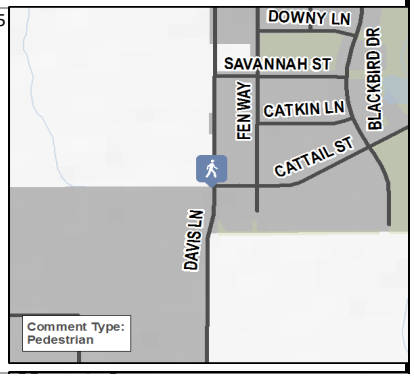
133	131993	Other	remove the bush/tree that blocks the view of Davis from New Holland.				23-Nov-15	
134	131994	Automobile	We need a 3 way stop sign.	1	1	0	23-Nov-15	
135	131995	Pedestrian	Cross walk with intersection ahead warning signs due to blind area.	1	1	0	23-Nov-15	

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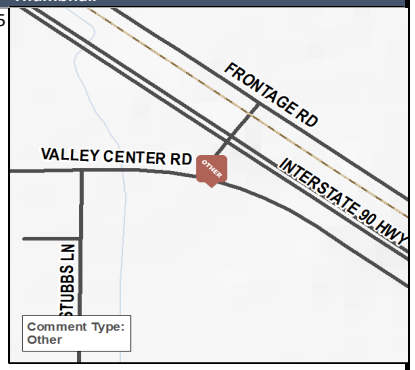
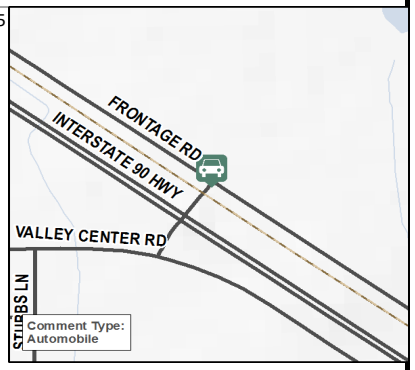
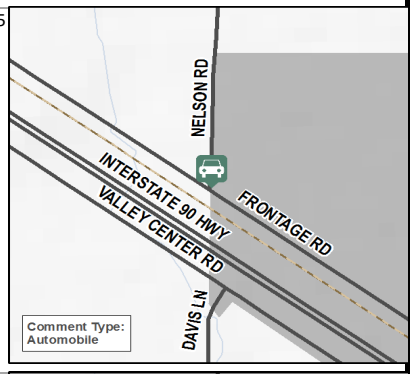
136	131996	Other	Either make the speed limit consistent on V. C. or move the speed sign a .1 miles to the east.	1	1	0	23-Nov-15	
137	131997	Automobile	Widen Frontage & fix the line of sight issue by creating a greater separation of turning traffic from through traffic.				23-Nov-15	
138	131998	Automobile	Fix the line of sight issue by creating a greater space between turn lane and through traffic.				23-Nov-15	

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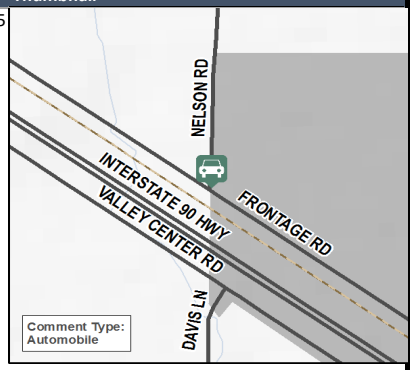
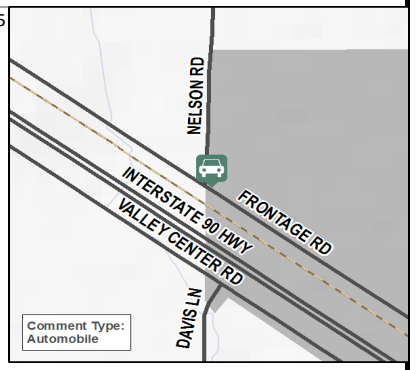
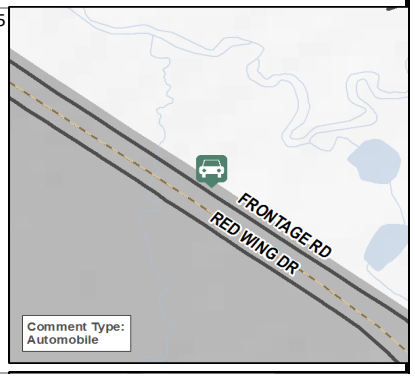
139	131999 Automobile	Put shoulder on Nelson Road in front of the MDT site.				23-Nov-15	
140	132000 Automobile	Put a greater separation between turning lane and through traffic to open the line of site of cars entering Frontage from Nelson.				23-Nov-15	
141	132001 Automobile	Paint no passing lines in front of driveways!				23-Nov-15	

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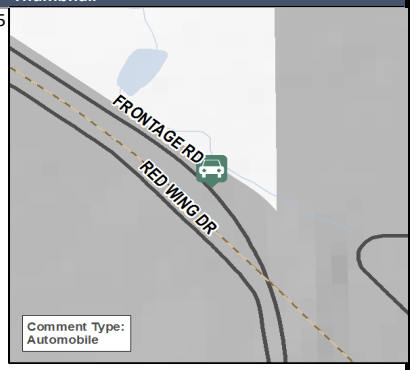
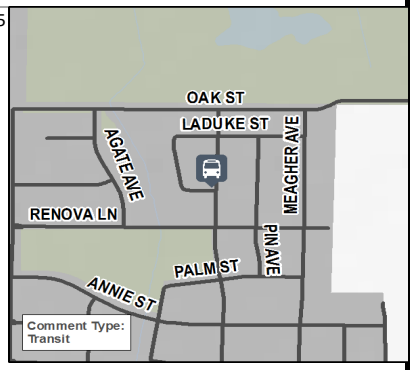
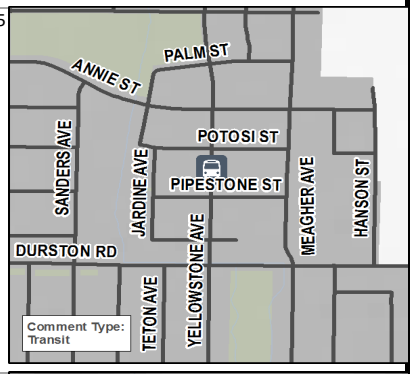
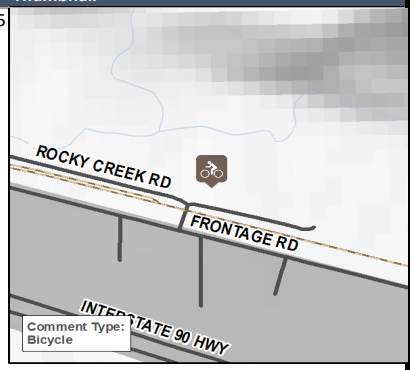
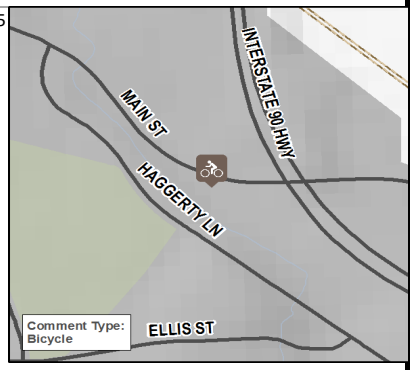
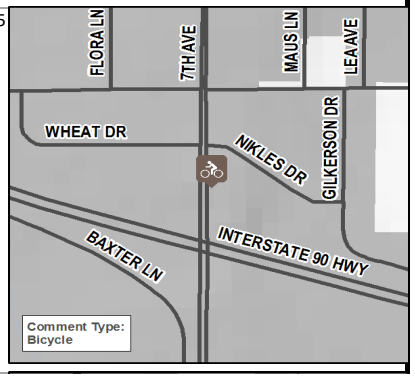
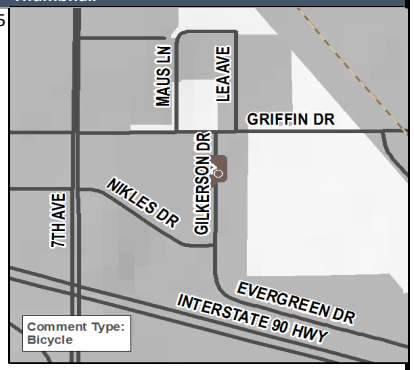
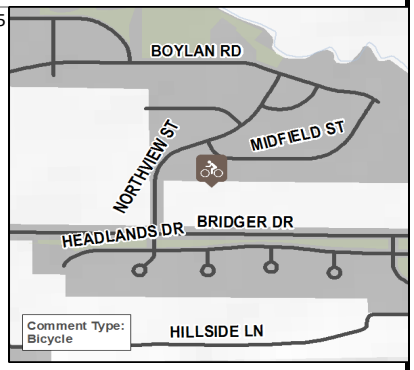
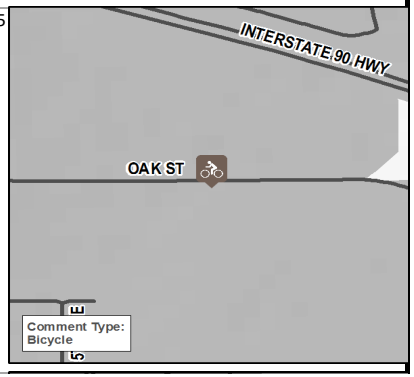
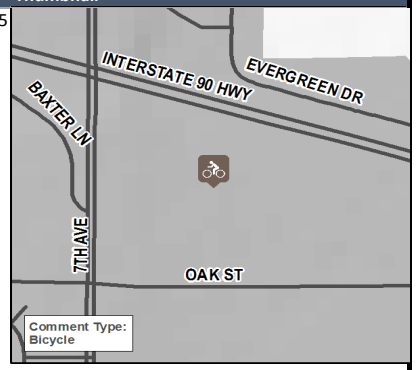
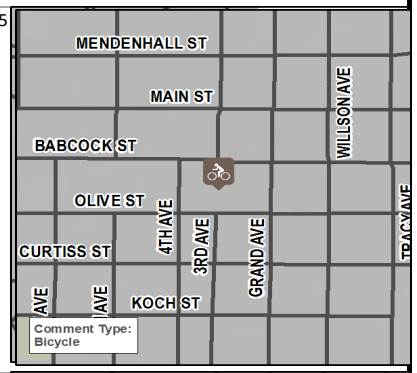
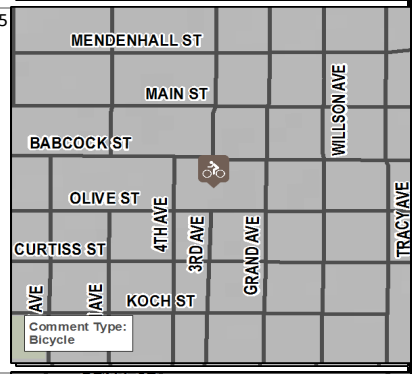
142	132002	Automobile	Post speed limit sign at bottom of on-ramp to Frontage.				23-Nov-15	
143	132013	Transit	Maybe some transit stops in these 2 subdivisions.				24-Nov-15	
144	132014	Transit	More transit stops in this area of town				24-Nov-15	

Comment I	ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
145	132019	Bicycle	Bike lanes/trail needed for access to employment and businesses.	3	3	0	24-Nov-15	
146	132021	Bicycle	Green lanes or other markings needed to address conflict between bicyclists continuing on frontage road and cars merging onto eastbound I-90.	4	4	0	24-Nov-15	
147	132026	Bicycle	Green lanes/or other bike channeling intersection markings needed at following conflict points: NB 7th @EB I-90 on-ramp; NB 7th @Griffin "right turn only" lane; NB 7th through Griffin intersection as through lane veers to east; SB 7th to channel bikes into through lane at WB I-90 on ramp; To channel bikes into left turn lane at Oak (to access EB Oak St. bike path or bike lanes; to channel SB bicycle travel on the left side of WB Oak right turn bay off 7th. Several people are already riding bikes to businesses and employers along N. 7th, Nickles, Griffin, etc, and this will only increase with future development. Either address these at-grade safety hazards, or build a grade-separated bike route at 7th and I-90	1	1	0	24-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
148	132027	Bicycle	Cars exiting I-90 and coming off Baxter Ln approach SB 7th too fast and this is a hazard for SB bicyclists. Provide warning beacons, Green lane markings, or tighten the turn radius.				24-Nov-15	
149	132028	Bicycle	Bike path, bike/ped lanes, or wide shoulder needed on Bridger Canyon Rd/Rouse from Main Street to Bracket Creek.	1	2	1	24-Nov-15	
150	132029	Bicycle	Need wider bike lane or separated path on north side of Oak for bikes, or provide RRFB or Hawk signals along Oak. At times it is nearly impossible for a bike to get a gap in car traffic to cross Oak. Path on south side of Oak ends in a sidewalk with Ped treatments at N. 7th, so there's no safe/logical way for bikes to head WB on Oak or NB on 7th.				24-Nov-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
151 132030	Bicycle	Provide Green lane/bike channeling markings just EB of Wal Mart driveways, as the extra wide roadway section here is confusing for WB bikes and cars alike. Mark through bike lane at Wal Mart, since current curbside bike lanes is in conflict with cars turning into Wal Mart from both directions.				24-Nov-15	
152 132031	Bicycle	Do road rebalance on Babcock to provide bike lanes plus green markings to channel bicyclists into left lane to turn north. Cars treat Babcock like an expressway and even experienced riders have trouble turning left off this street. Olive has gotten congested and scary for bikes, too. Make one of these streets work for bikes, since Main, Babcock and now Olive are being used as car collectors/arterials. At least knock down the speed limit to 15 on Olive to give bikes some kind of usable space!				24-Nov-15	
153 132032	Bicycle	Sharrows on Mendenhall work well to encourage bikes into center of lane, but cars still attempt to crowd us out and drive really fast on our tails and in passing us. How about some kind of highly-visible signs/markings to declare this a "bike street", lower the speed limit, or rebalance the road to provide bike space? Downtown is just a few blocks long; why do we need cars to speed through it so fast, when there is so much ped/bike traffic?				24-Nov-15	

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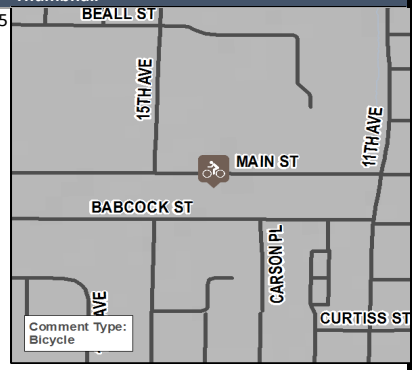
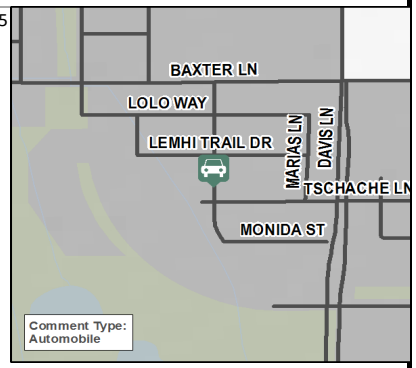
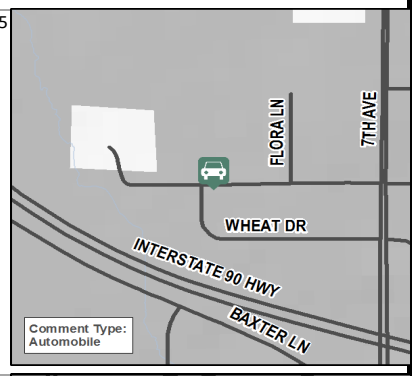
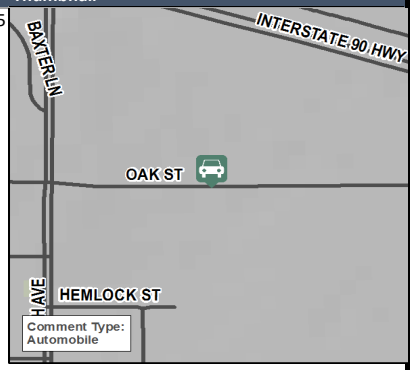
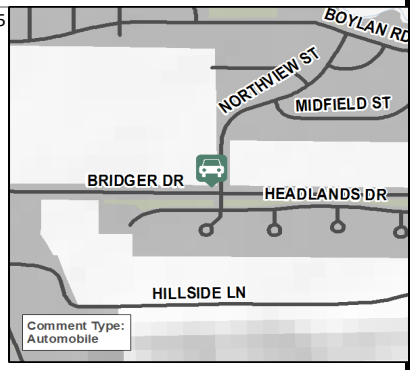
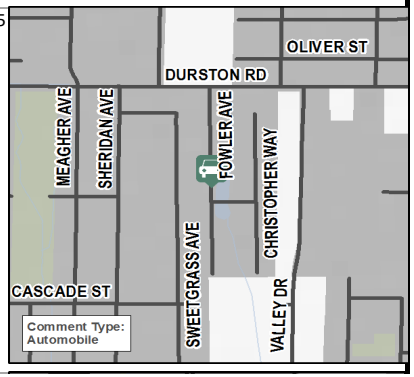
154	132033	Bicycle	Controlled bike/ped crossings needed on Babcock. While Bozeman still has a lot of nice drivers who stop at crosswalks, as it grows this will change and Babcock will become a freeway. Also need bulbouts at several crossings, including S. Bozeman due to zero-lot lines at cleaners and parking in front of Sanderson-Stewart. Bikes and peds must venture into the travel lanes to be seen by motorists.	1	1	0	24-Nov-15	
155	132040	Automobile	Please discourage auto traffic from cutting through this neighborhood to avoid the baxter-davis intersection. Speed bumps, increased patrols, and signs could help.	0	1	1	24-Nov-15	
156	132041	Automobile	Connecting griffin to Baxter over or under I-90 would relieve traffic (including busy ski traffic) on oak, the frontage road, and N 7th.				24-Nov-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
157	132042 Automobile	Add turn lanes at westbound oak and N 7th. People regularly form more lines than there are actual lanes here. Traffic exiting Wal mart can be a problem around 5 PM.				24-Nov-15	
158	132074 Automobile	add round-about to slow traffic and allow cross traffic to enter highway on heavy Bridger Bowl traffic days	0	1	1	25-Nov-15	
159	132111 Automobile	People drive much too fast on north south routes like Meagher and Yellowstone from Durston to Babcock. North of Durston east west traffic have stop signs onto Meagher and Yellowstone, but south of Durston there are no stops for east west traffic making those intersection uncontrolled, but people do not drive cautiously yielding to he right of way which results in accidents. Traffic north and south needs to be slowed to prevent accidents.	1	1	0	29-Nov-15	

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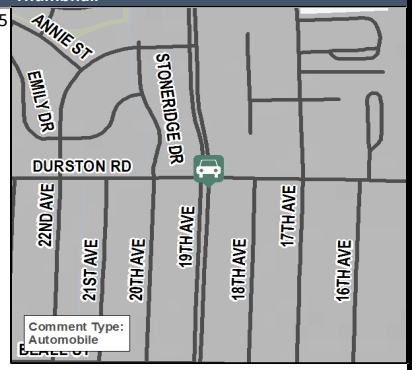
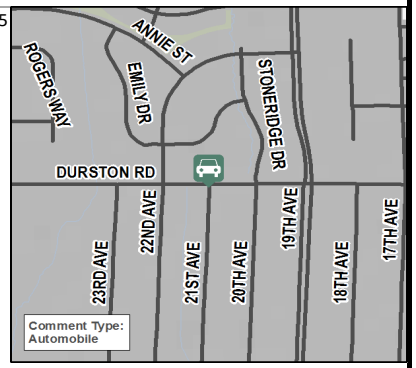
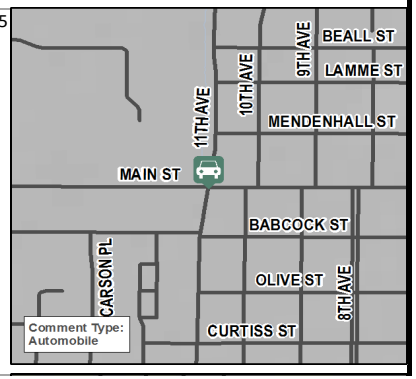
160	132151	Automobile	Durston west bound, east of 19th needs to be engineered similar to Durston west of 19th. Afternoon congestion of west bound traffic here backs up for several blocks causing delays and also makes it difficult to make left turns turns onto or from the NS streets east of the intersection. "Keep intersection clear" signs would be helpful at these intersections.				1-Dec-15	
161	132152	Automobile	21st needs to be regraded. The steep slope has resulted in my neighbor sliding into Durston traffic, and my nearly doing so every winter.	1	1	0	1-Dec-15	
162	132235	Automobile	A northbound left turn signal on S 11th at Main would greatly reduce wait time and risky left turns during evening rush hour traffic heading north and west from MSU.	1	1	0	1-Dec-15	

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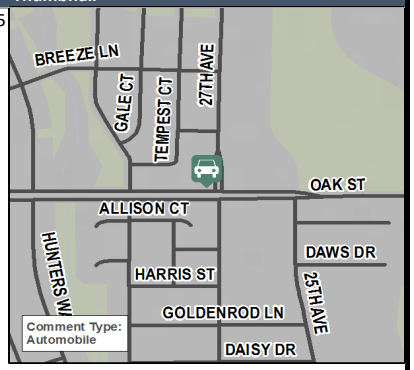
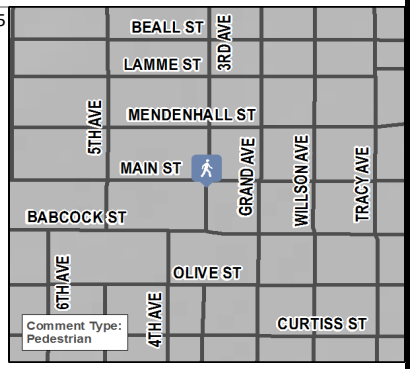
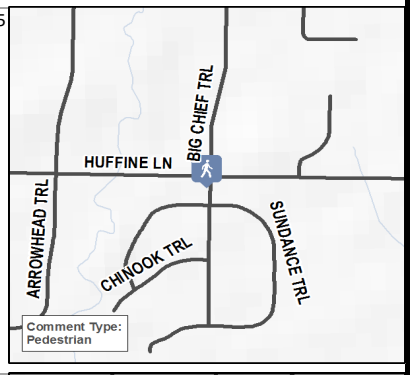
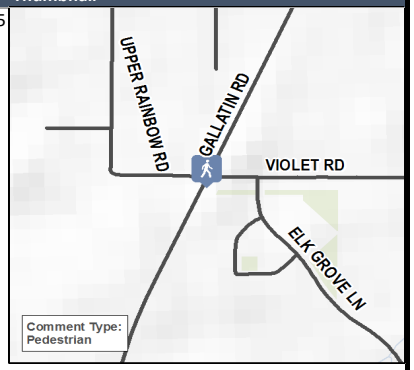
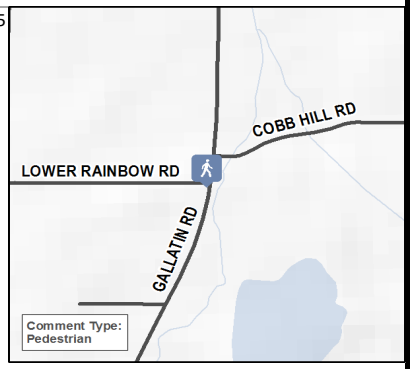
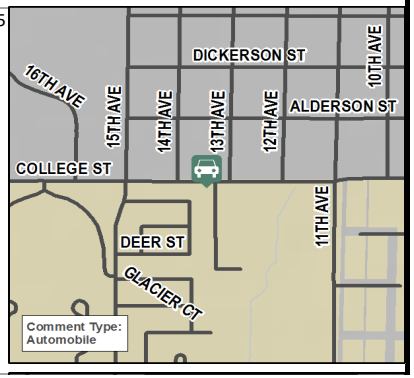
163	132274	Automobile	The left turn lane onto the unfinished 27th Ave here is not used much. It would be better to allow continued eastbound 2 lane traffic on Oak	-1	0	1	2-Dec-15	
164	132279	Pedestrian	This cross walk, while pretty to the eye, is not effective. Drivers rarely stop for pedestrians, as they do not recognize the faux brick as a formal crosswalk. As busy as the courthouse is, this intersection needs to protect pedestrians with a "real" crosswalk.				2-Dec-15	
165	132282	Pedestrian	The distance between places to cross is over 1 mile. there needs to be a safe way for residents/children to cross Huffine without traveling 2 miles out of their way.	2	2	0	2-Dec-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
166	132283	Pedestrian	We need to connect these subdivisions with safe ways to cross the road.				2-Dec-15	
167	132284	Pedestrian	A safer way to cross the road is needed here.	2	2	0	2-Dec-15	
168	132323	Automobile	West bound Cars that are trying to turn into this MSU lot, especially at 0800-1000 cause back up behind them because of the large # of east bound coming in.				2-Dec-15	

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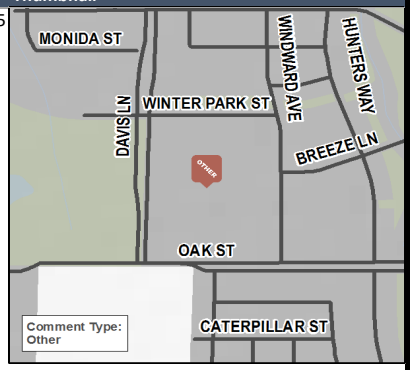
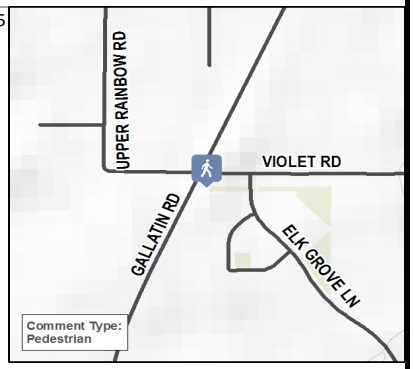
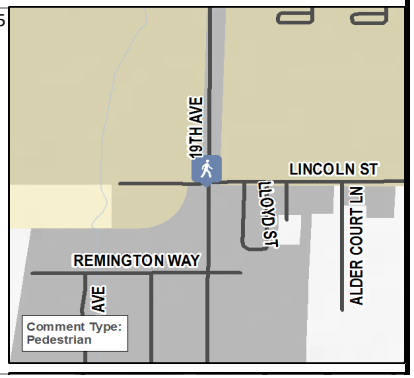
169	132405	Other	I would love to see a commercial area built near 100 acre park. Added restaurants/bars/shops on this end of town would ease traffic from all the new developments to downtown commercial areas.	2	2	0	2-Dec-15	
170	132406	Pedestrian	There needs to be a safe way to cross this road and connect the subdivisions for pedestrians.	1	1	0	2-Dec-15	
171	132448	Pedestrian	Pedestrian crossing issue: housing to west connecting to MSU, significant ped demand, difficult crossing (5 lanes high speed)				3-Dec-15	

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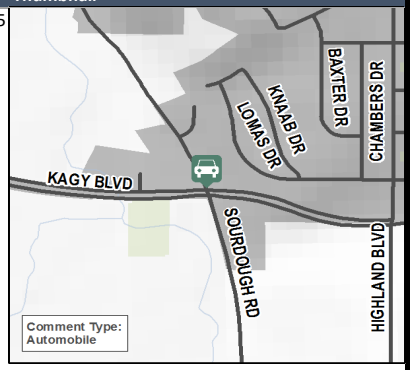
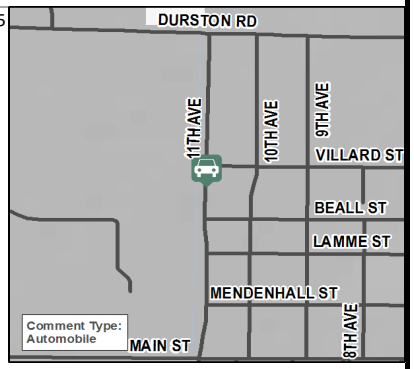
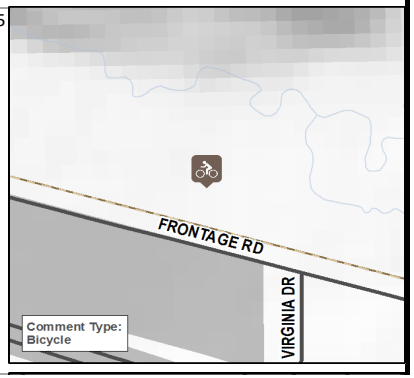
172	132453	Automobile	I cross this intersection twice per day, sometimes I have to wait several minutes to safely cross and often see very dangerous maneuvers by drivers who are trying to cross during a very tight gap in traffic. With a combination cars, bicyclists, and runners training on the hill during the afternoon hours, this intersection is in desperate need of a signal or roundabout.	2	2	0	3-Dec-15	
173	132479	Automobile	The absence of designated drop off/pick up area for students at the BHS front entrance is a true hazard; students are forced to interact with cars as they attempt to get to school; this is a frightening and unsafe situation.	3	3	0	6-Dec-15	
174	132500	Bicycle	Extend shoulder from Bozeman to Kelly Canyon. This is an increasingly popular ride.				7-Dec-15	

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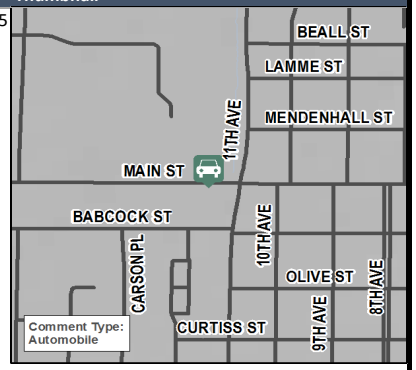
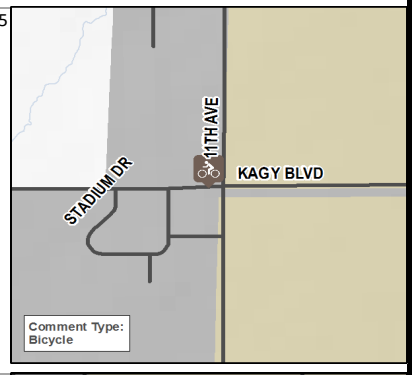
175	132526	Automobile	I know it has already been said, but a left turn signal here is greatly needed. There is a high influx of traffic on 11th and it makes it extremely difficult for vehicles to make a left turn. This also concerns me because students drivers often take this route to get to the highschool and being forced to wait for three or more lights to pass before one can turn left increases the problem of running red lights. This is also dangerous in the winter because of potential sliding which only backs up traffic of 11th even further.				7-Dec-15	
176	132527	Other	MSU should direct out of town buses to use West Lincoln instead of trying to turn left off of Kagy.				7-Dec-15	
177	132528	Bicycle	Cyclers should be ticketed for pushing the crossing lights instead of waiting for traffic like they should.	0	1	1	7-Dec-15	

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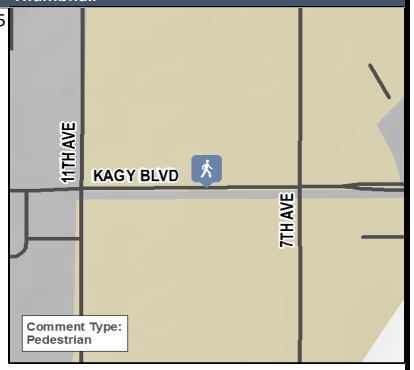
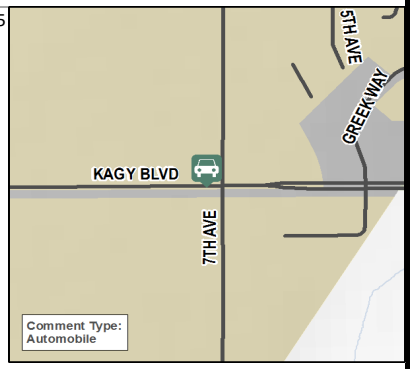
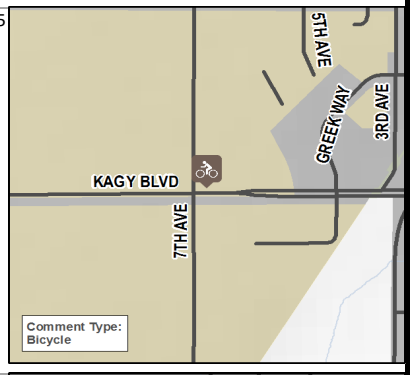
178	132529	Pedestrian	Need a tunnel or bridge across Kagy. Constant cross signal causes gridlock at busy times.	3	3	0	7-Dec-15	
179	132530	Automobile	If nothing else need a left turn lane long enough for 20 cars.				7-Dec-15	
180	132531	Bicycle	People on bikes are not pedestrians. They should not be using the crossing lights,it just messes up traffic even more.	-2	0	2	7-Dec-15	

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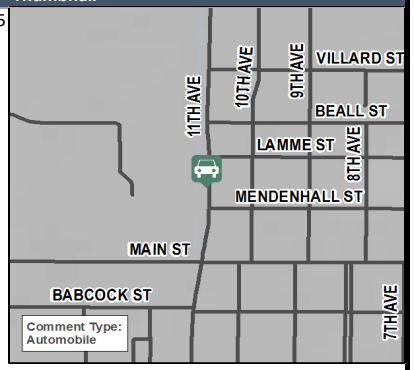
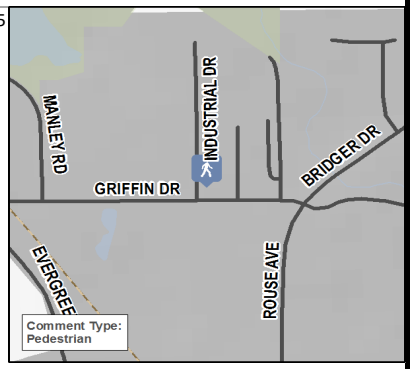
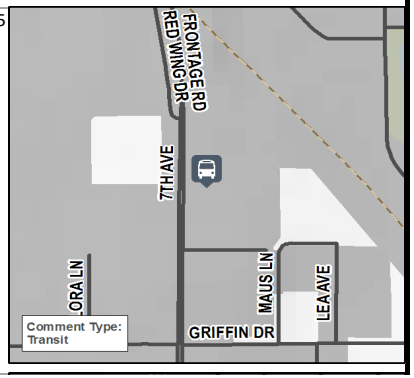
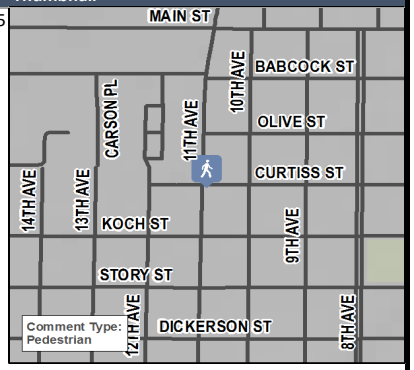
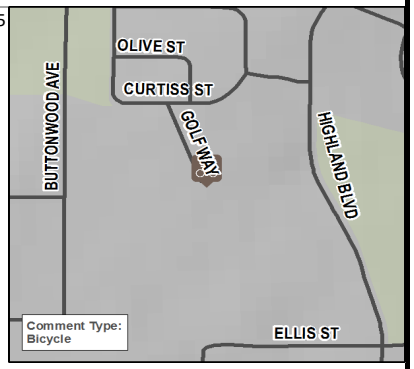
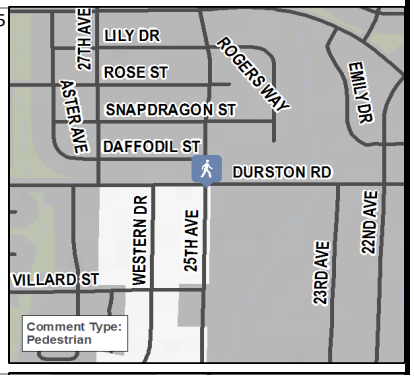
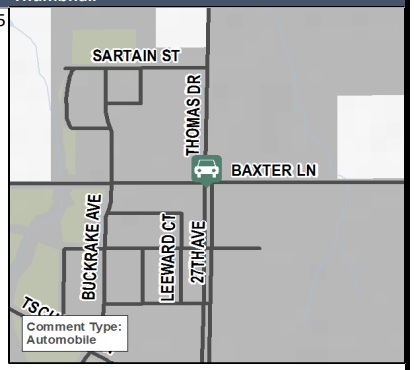
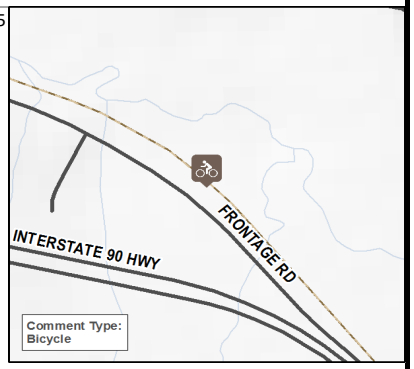
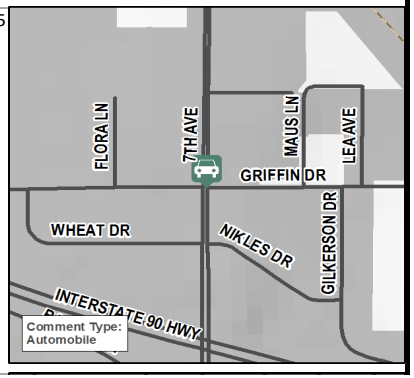
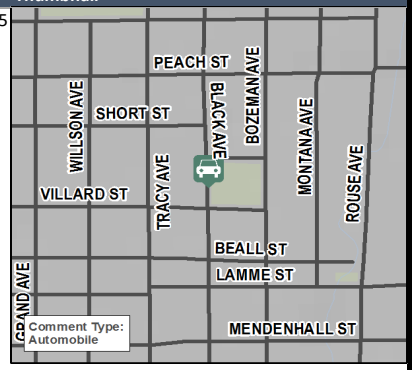
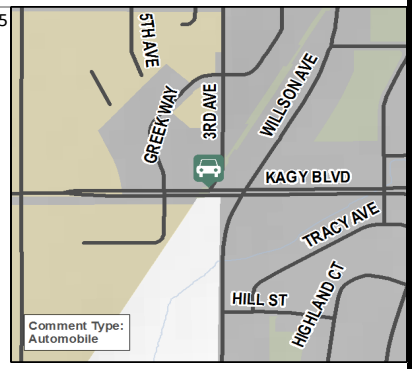
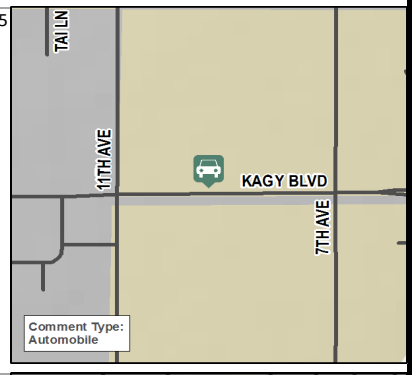
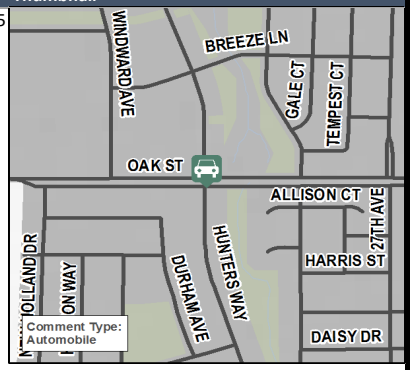
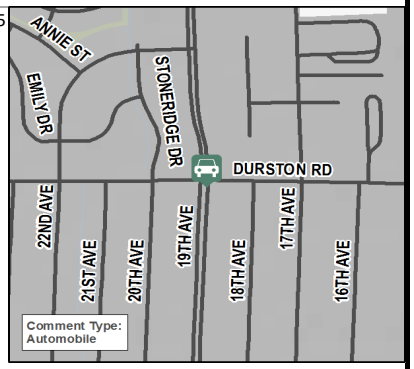
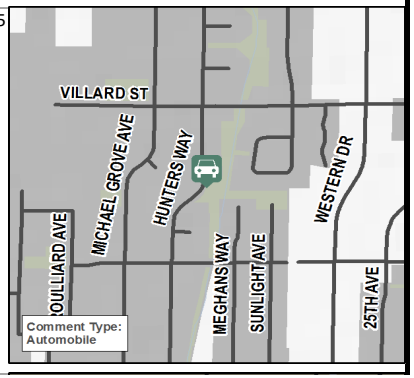
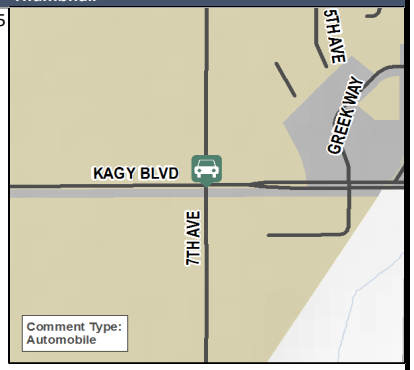
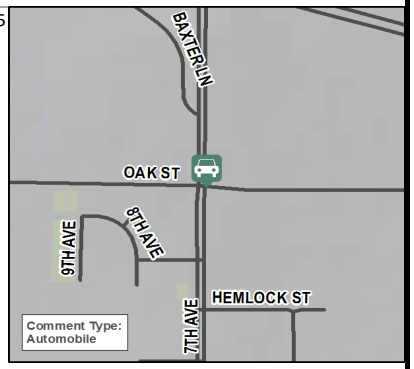
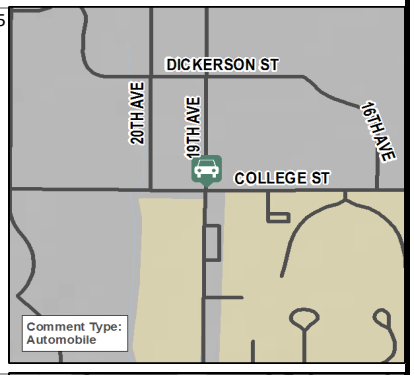
181	132657	Automobile	The City-owned parking lot used by BHS teachers is problematic, given that school bus pick up and drop off also takes place in this location; as a result, cars (usually parked), kids and buses interact.	1	1	0	8-Dec-15	
182	132682	Pedestrian	Lighted and safer walking for Warming Center residents.				8-Dec-15	
183	132683	Transit	Public transit to Alcohol and Drug Services, many people can't drive to those services.	1	1	0	8-Dec-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
184	132744	Pedestrian	There is no street light at the intersection making it very difficult to see pedestrians. there are several such intersections on 11th and even the ones with street lights, there is not enough light.				10-Dec-15	
185	132745	Bicycle	This could be a great bicycle connection with simple changes such as widening the opening in the gate and plowing the existing pavement.	1	1	0	10-Dec-15	
186	132752	Pedestrian	A button to activate "strobe-like flashing" would greatly improve safety for kids going to-and-from school. Flashing lights "prior" to crossing only flash during peak hours, and are largely ignored by drivers. (The school crossing on Peach St., near Whittier school has one of the buttons I am trying to describe.)				10-Dec-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
187	132788	Automobile	Only half of this road is open for transportation. I live int his area and am surprised that there aren't more accidents here with people turning into the wrong lane.				11-Dec-15	
188	132799	Bicycle	How about a trail from here along the freeway to connect Trail Creek. Outside of this plan but would be great.				11-Dec-15	
189	132815	Automobile	Time lights to better control the traffic back-up on W. Griffin at 5pm.				11-Dec-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
190	132851	Automobile	Add speed control measures on Black and Bozeman at Beall Park. 15 mph speed limit btwn 8a and 8p is not adhered to.				12-Dec-15	
191	132856	Automobile	Dedicated right turn lane from Wilson to Kagy would decrease queue waiting to cross Kagy at rush hours				13-Dec-15	
192	132857	Automobile	Dedicated right turn lane into Breeden parking lot. during rush hour queue to cross 11th extends east past lot entry				13-Dec-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
193	133228	Automobile	too many vehicles trying to go in too many directions - we need a more controlled intersection here before something tragic happens	0	1	1	15-Dec-15	
194	133229	Automobile	people drive way too fast on this street endangering anyone slowing down to turn onto a side street; everyday is a rear-ending waiting to happen				15-Dec-15	
195	133230	Automobile	why are vehicles allowed to park on this curve - I totally avoid this street unless I'm driving really early in the morning				15-Dec-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
196	133231	Automobile	WHY IS THERE NO TURN LANE TO GO TO THE ONLY PAY PARKING LOT AND OTHER PARKING AREAS ON CAMPUS??? This is so dangerous in winter I am forced to traverse campus traffic	1	1	0	15-Dec-15	
197	133232	Automobile	we need 4 real lanes here (westbound on Oak at N 7th) not just a shared keep straight or turn north onto N 7th lane				15-Dec-15	
198	133233	Automobile	please get rid of the vegetation and other visual clutter at this intersection - there's no way to see now if you can turn left on red (northbound onto 19th from westbound College)				15-Dec-15	

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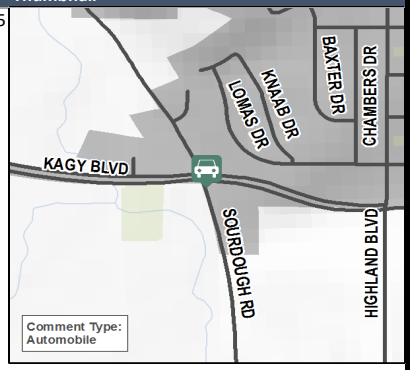
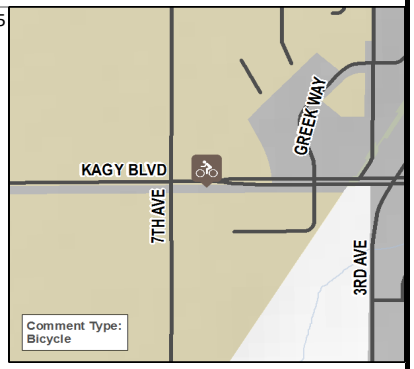
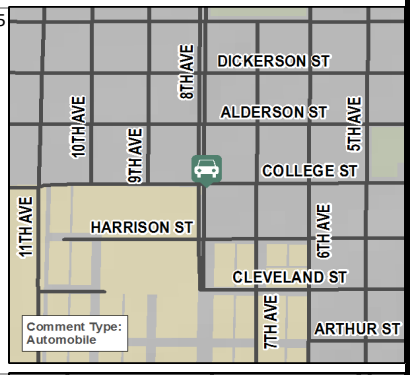
199	133234	Automobile	people wanting to leave Church south of Kagy appear to have a death wish - maybe this intersection needs a light?				15-Dec-15	
200	133235	Bicycle	why a bicycles using the strobe light crossing intended for pedestrians? why should I be delayed driving east or west on Kagy by another bona fide vehicle?	-2	0	2	15-Dec-15	
201	133236	Automobile	this intersection could use a roundabout or traffic light	-1	0	1	15-Dec-15	

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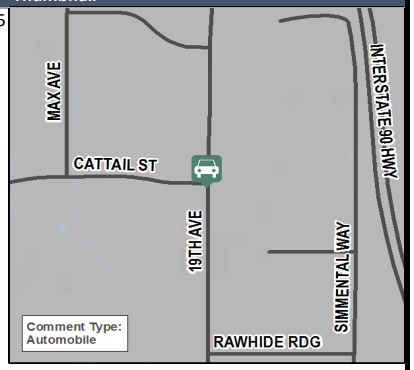
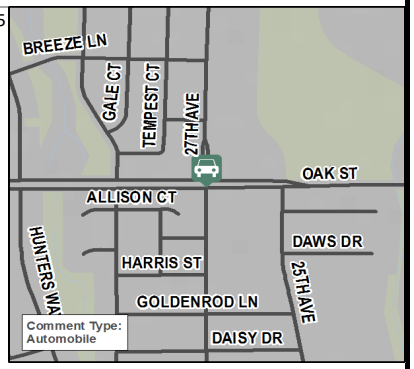
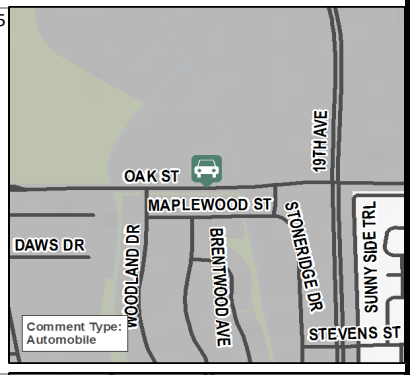
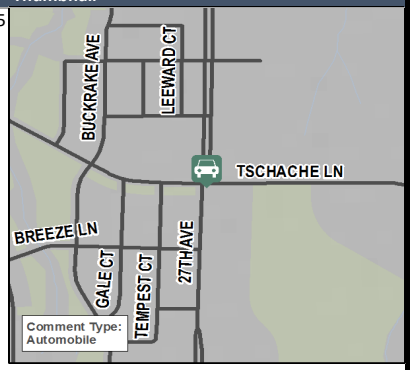
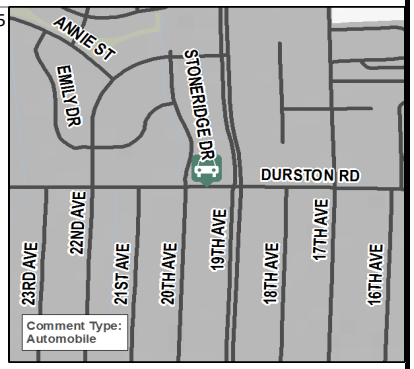
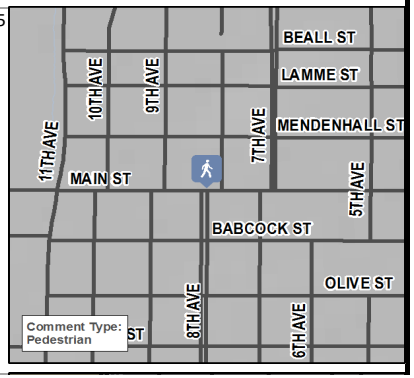
202	133237	Automobile	too many vehicles driving northbound on 19th turn left onto Cattail into oncoming traffic - I've had many near misses at this intersection				15-Dec-15	
203	133238	Automobile	this intersection is unacceptably dangerous - too many visual obstructions, especially when snow is piled up, and too many vehicles trying to go in too many directions in one small area				15-Dec-15	
204	133239	Automobile	westbound Oak where the lanes reduce from two to one is really dangerous and only encourages aggressive driving	1	1	0	15-Dec-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
205	133240 Automobile	what is going on with this entire stretch of N 27th - why isn't it 2 lanes north and southbound? what is up with that weird no man's land that you must pull out into to turn south or north from Tschache behind Home Depot onto 27th?				15-Dec-15	
206	133241 Automobile	why is the Holiday gas station allowed to have such a hazardous access driveway mere feet away from a major intersection with such high volume traffic? everytime I drive through here I wonder when I brake for vehicles turning into Holiday off of Durston will I get rear-ended by drivers charging through the 19th at Durston intersection? why can't people just access this gas station from Stoneridge?				15-Dec-15	
207	133406 Pedestrian	locations such as this need to have a lead pedestrian interval on the signal. Too many close calls with turning drivers and pedestrians.	2	2	0	16-Dec-15	

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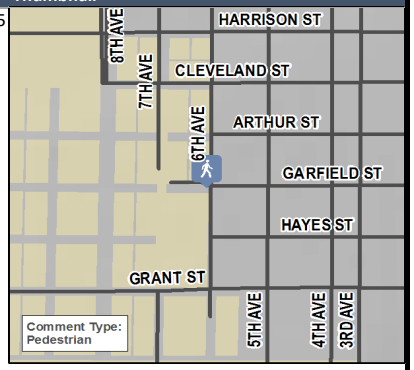
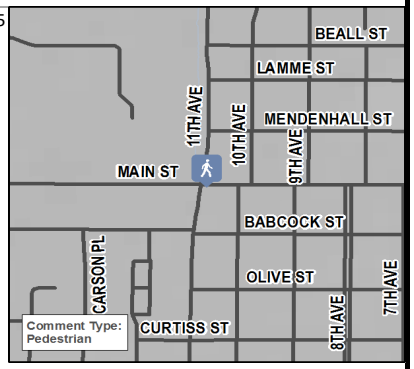
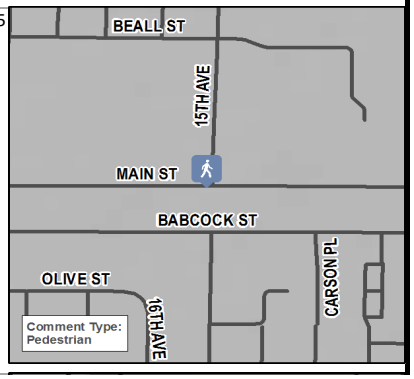
208	133407	Pedestrian	we need to provide an improved pedestrian crossing on Willson at Garfield and/or Grant				16-Dec-15	
209	133408	Pedestrian	we need to have lead pedestrian interval at the signals with high pedestrian volumes like this one				16-Dec-15	
210	133409	Pedestrian	lead pedestrian interval at this signal	1	1	0	16-Dec-15	

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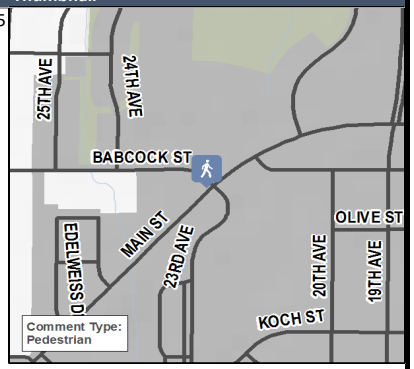
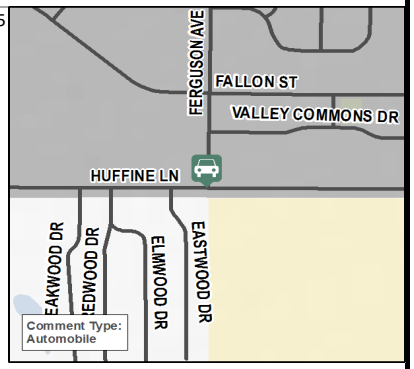
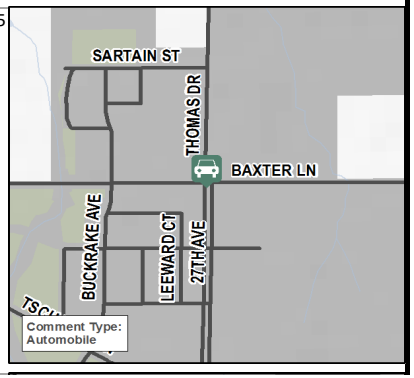
211	133410	Pedestrian	lead pedestrian interval				16-Dec-15	
212	134335	Automobile	Left turn lane from Huffine onto Ferguson with left turn signal.	3	3	0	17-Dec-15	
213	134336	Automobile	This road needs to be completed all the way to Oak as originally planned. Very dangerous turn from Baxter on 23rd.				17-Dec-15	

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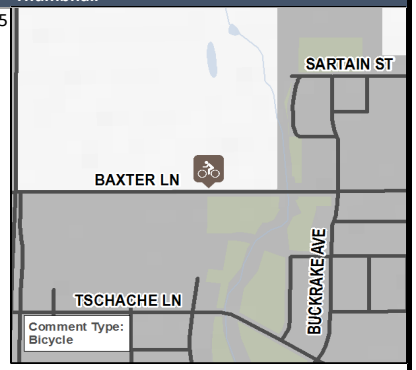
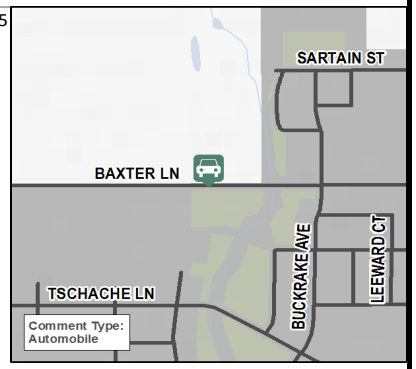
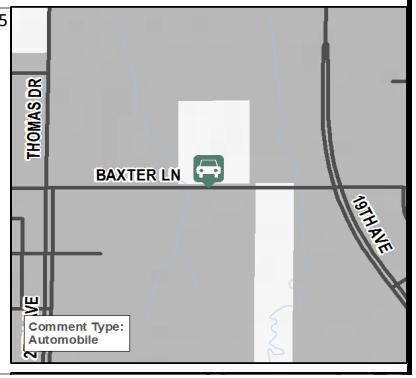
214	134337	Bicycle	We need a Bike Lane on the entire length from Davis to 19th.				17-Dec-15	
215	134338	Automobile	Properly Pave Baxter.				17-Dec-15	
216	134339	Automobile	Need a left turn lane into the post office when heading East on Baxter toward 19th. Would help traffic move more smoothly and avoid some near misses. really need an additional lane on the entire length of the Post Office to help people coming out of the post office as well.				17-Dec-15	

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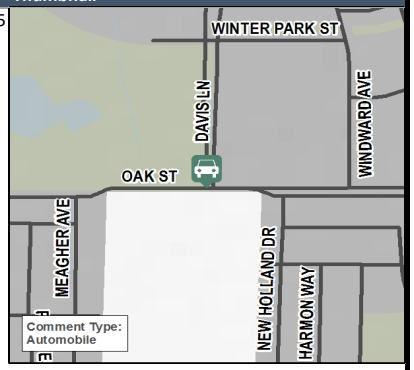
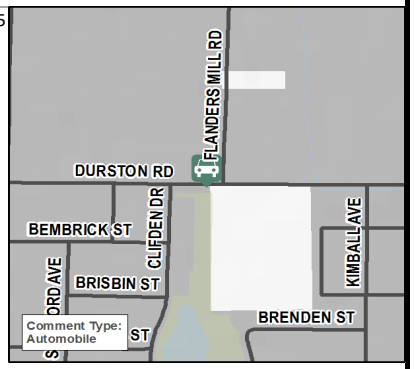
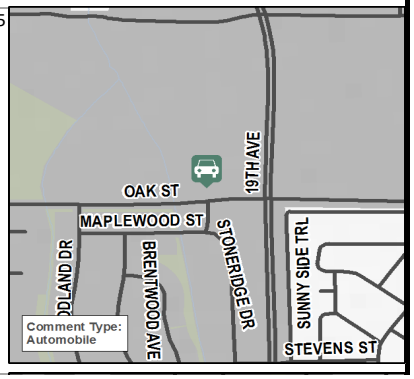
217	134340	Automobile	Davis and Oak, great place for a Roundabout. Very dangerous intersection at peak times.	1	1	0	17-Dec-15	
218	134341	Automobile	Need Left hand turn lane from Flanders Mill onto Durston.				17-Dec-15	
219	134530	Automobile	For those turning onto Oak Street from the liquor store/Buffalo Wild Wings, make this right turn only. Too many people are taking risks trying to make a left turn here in heavy traffic.	1	1	0	18-Dec-15	

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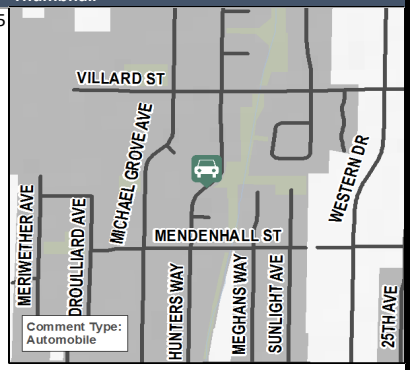
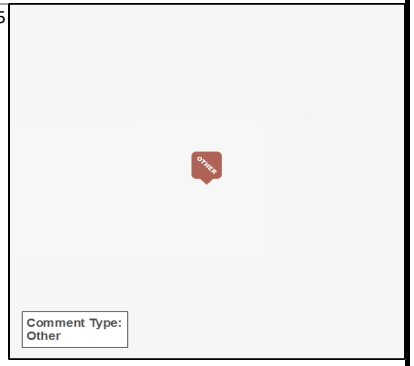
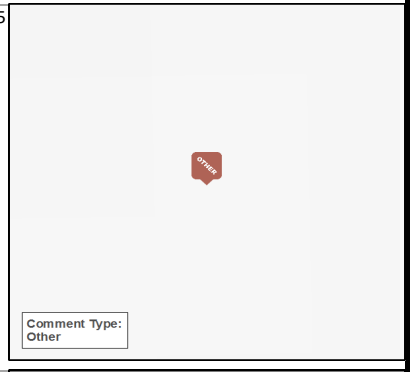
220 134531	Automobile	Dangerous curve; can't see oncoming traffic because of parked cars. Move the bus stop to the curve so no one can park there.				18-Dec-15	
221 134818	Other	Identify and get Commission sign-off on modeshare goals for the future.				22-Dec-15	
222 134819	Other	Set "no new roadways" goal for a defined year sometime in the future.				22-Dec-15	

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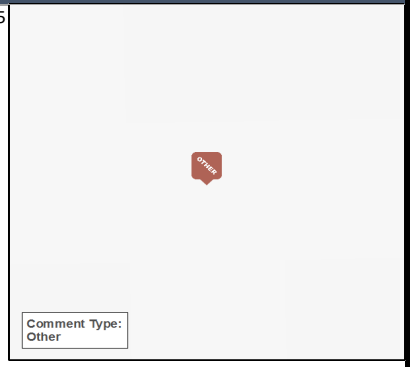
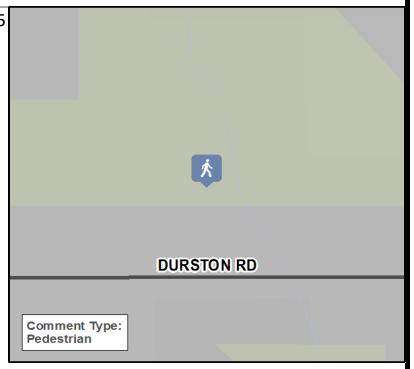
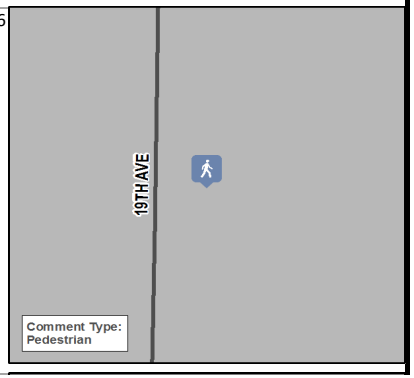
223 134820	Other	Determine how to lock Gallatin County into partnering on next Trans Plan (e.g. 2022).				22-Dec-15	
224 135138	Pedestrian	Add a crosswalk to connect the trail sections				31-Dec-15	
225 168885	Pedestrian	The car dealer should not be using the paved path as an auto show room.				9-Jan-16	

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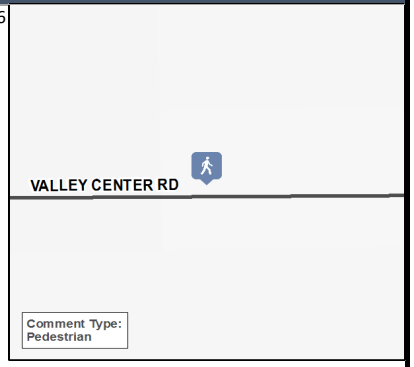
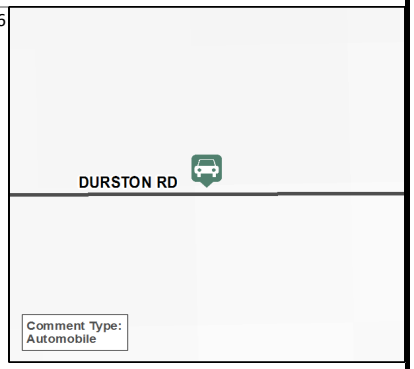
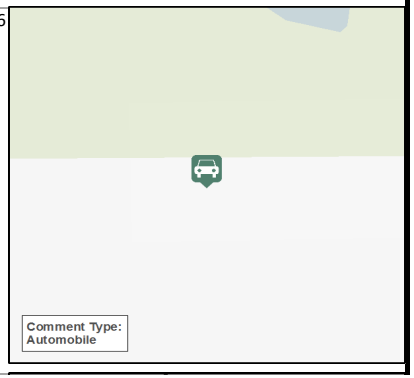
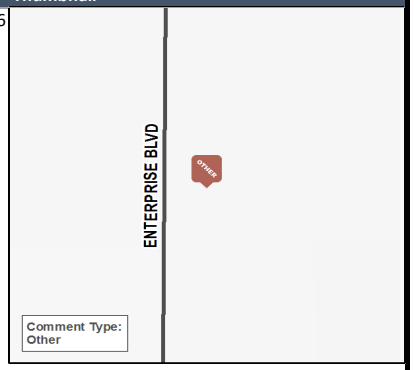
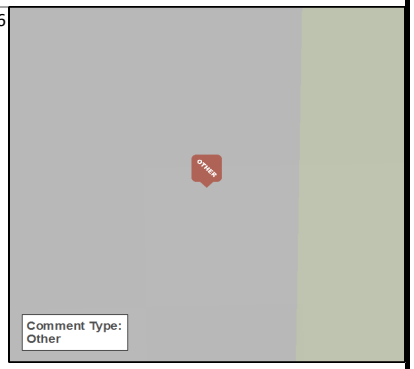
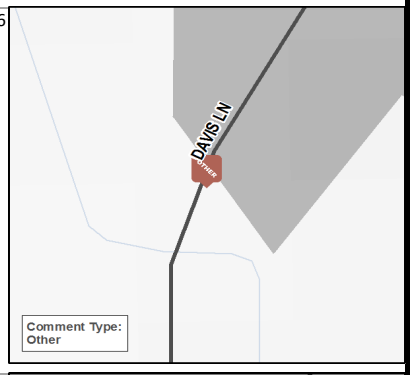
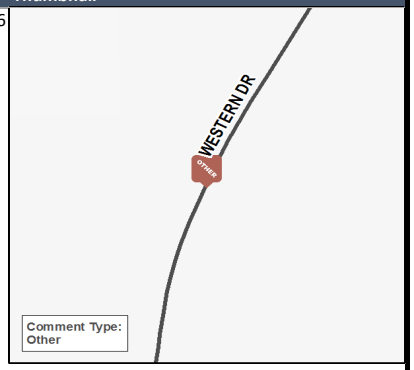
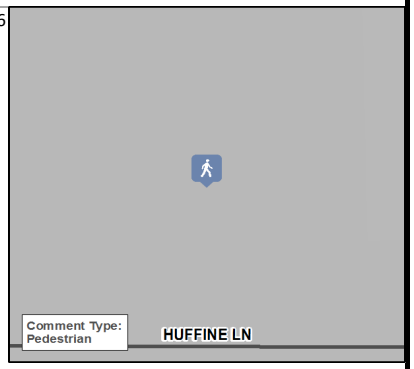
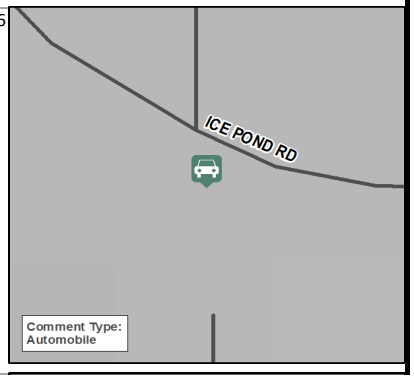
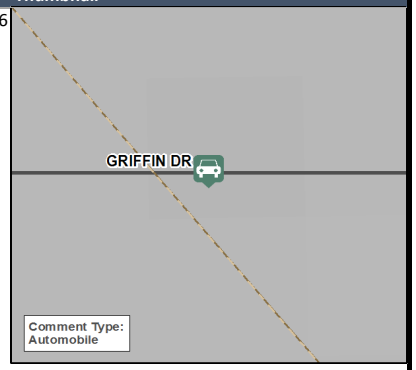
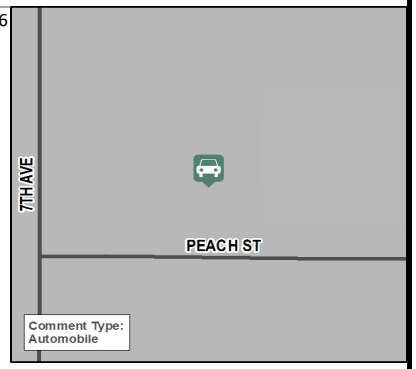
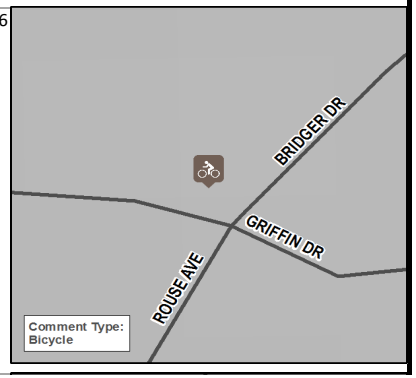
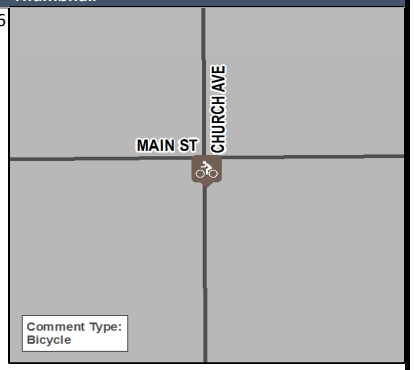
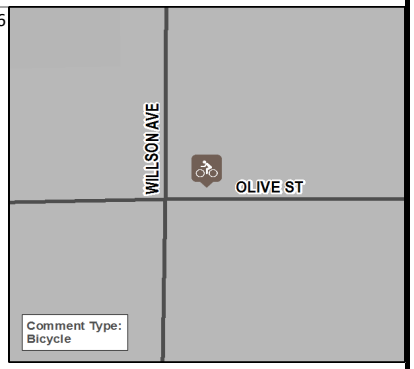
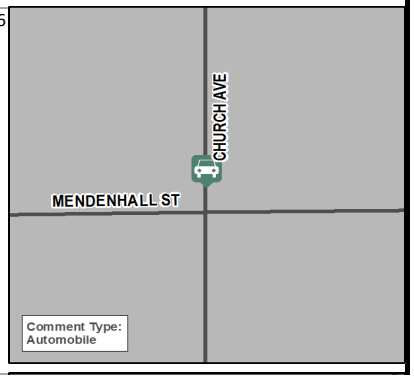
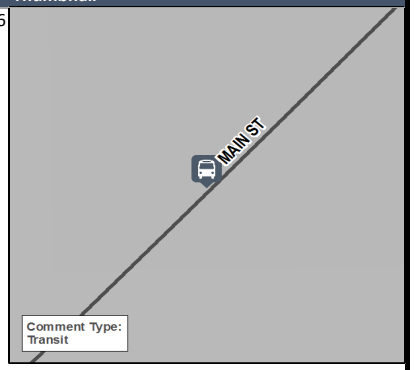
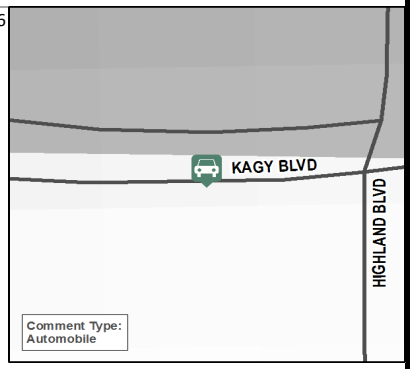
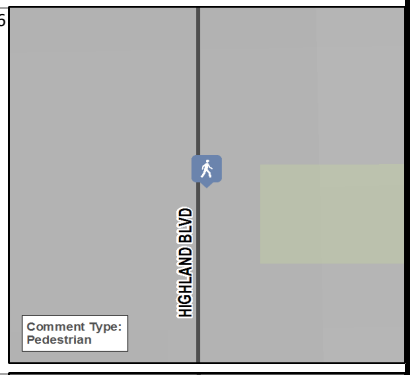
226	168886	Pedestrian	Curb walks are nearly useless in the winter. MDT should never install one again. Set them back to give the snow a place to go. It is very hard to remove snow from the sidewalk after the snowplow has buried it. Isn't this an ADA violation to have unpassable sidewalks?	1	1	0	9-Jan-16	
227	168887	Automobile	The County should be paying money for street improvements in Bozeman and Belgrade. It is unfair for municipal residents to be paying for the services used by others.				9-Jan-16	
228	168888	Automobile	School District should pay their share for Cottonwood and Oak Street. Their users are from a much larger area than just the City. It is unfair for city residents to be paying to build streets and the county residents don't when they are going to the same school.	0	1	1	9-Jan-16	

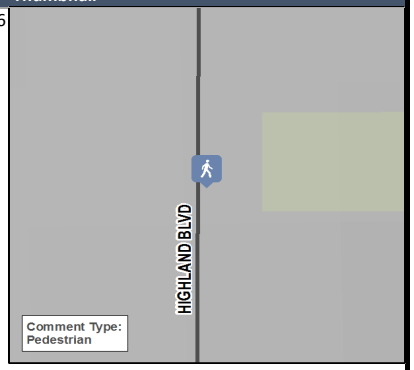
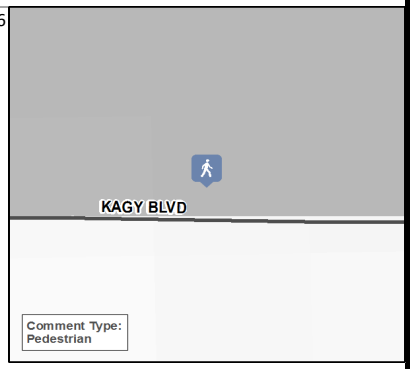
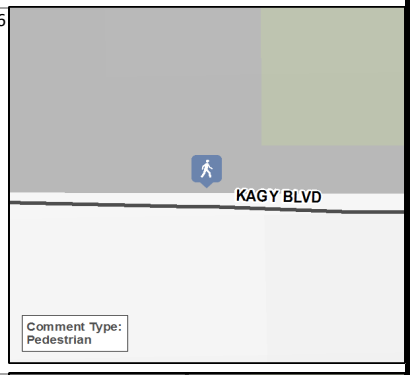
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
229	168889	Other	Annex this area. Multinational corporations should be paying their share for the streets they drive on and the facilities their employees use in the City.	2	2	0	9-Jan-16	
230	168890	Other	The County should build their share of Ferguson, Oak, and Vaquero now!	1	1	0	9-Jan-16	
231	168891	Other	The street signs at intersections need to be large enough to be seen in time to slow down and turn. Especially when they are not lit like Davis/Valley Center.				9-Jan-16	

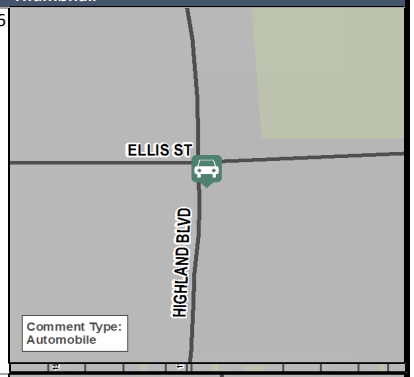
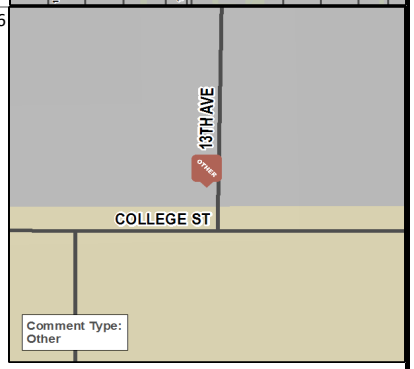
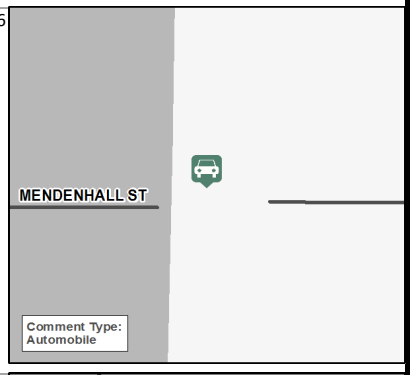
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
232	168892	Other	Annex this and other "pockets" in the city and get streets upgraded to City standards.				9-Jan-16	
233	168893	Pedestrian	Great job Bozeman in getting a continuous connection from West Bozeman to MSU for peds/bike. Continue links esp East to West.				9-Jan-16	
234	168895	Automobile	open a connection from S. Rouse to Ice Pond Road.	-1	0	1	9-Jan-16	

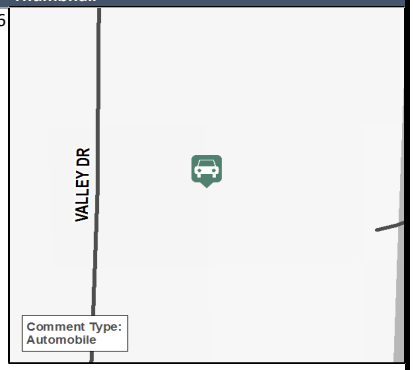
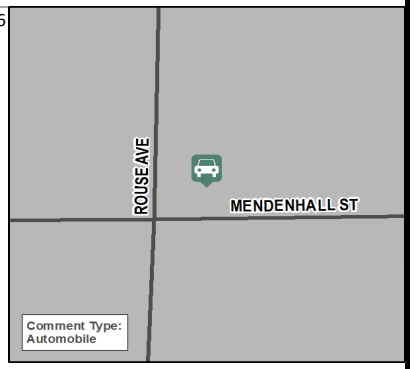
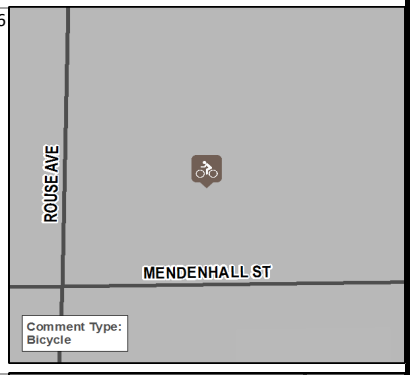
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
235	168896	Automobile	Needs a way to keep Griffin Open when trains are running.				9-Jan-16	
236	168897	Automobile	Add right turn lane from Peach to N 7th.	1	1	0	9-Jan-16	
237	168917	Bicycle	When trying to cross Rouse on a bike, this signal does not recognize a bike and refuses to change.	1	1	0	12-Jan-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
238	168918	Bicycle	This signal does not recognize bikes at night.				12-Jan-16	
239	168919	Bicycle	This signal does not recognize bikes, day or night. Many signals around town are problematic.	1	1	0	12-Jan-16	
240	168920	Automobile	Most days this intersection has parked cars obstructing vision. Our large cars and trucks have made intersection visibility marginal the past few years. Consider moving parked cars back a bit more from intersections to improve sightlines.				12-Jan-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
241	168933	Transit	The Streamline bus stop is to close to the intersection of W. Main St. and Babcock St. On several occasions a vehicle accident has almost occurred due to the bus stopping and backing up traffic. The Streamline takes up the entire right side westbound lane when stop, occasionally causing traffic to back up into the intersection. It should be moved further west of its current location.				12-Jan-16	
242	168935	Automobile	Viewing traffic from the east is difficult because of the topography; early morning sun makes it nearly impossible to track location of cars as they crest the hill.				12-Jan-16	
243	168936	Pedestrian	No safe pedestrian crossing for access to trail				12-Jan-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
244	168937	Pedestrian	No safe pedestrian crossing for access to park				12-Jan-16	
245	168938	Pedestrian	No ROW or room for SAFE pedestrian access to Bozeman Trail; I've seen cars having to swerve into the other lane to avoid walkers/hikers.				12-Jan-16	
246	168939	Pedestrian	Need safe pedestrian crossing here and all along Kagy to Highland				12-Jan-16	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
247 168940	Automobile	Need roundabout to allow vehicles exiting and entering hospital site; too congested at 8-9 AM and 4-5:30 PM				12-Jan-16	
248 169379	Other	Need overhead light at this intersection. It is a marked crosswalk but is often hard to see pedestrian approaching from the north.				24-Jan-16	
249 169380	Automobile	Connect this missing gap in Mendenhall.	1	1	0	24-Jan-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
250	169381	Automobile	Connect this portion of Mendenhall to Valley Drive.				24-Jan-16	
251	170001	Automobile	This light is not timed well for westbound traffic on Mendenhall at Rouse. Way too short green light, letting only a few cars or bikes through during the green cycle. The Rouse green and walk signal is sometimes on for a long time when there are no cars or pedestrians in the intersection. I am afraid this may motivate speeding in a school zone just to get through before the light changes again.				31-Jan-16	
252	170002	Bicycle	I don't think this signal recognizes bikes.				31-Jan-16	

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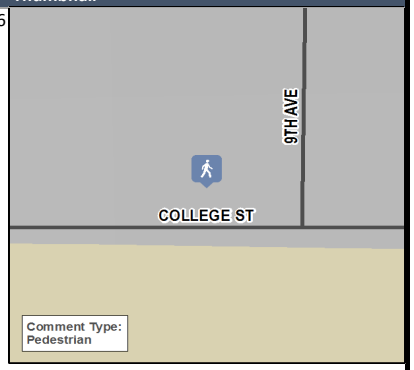
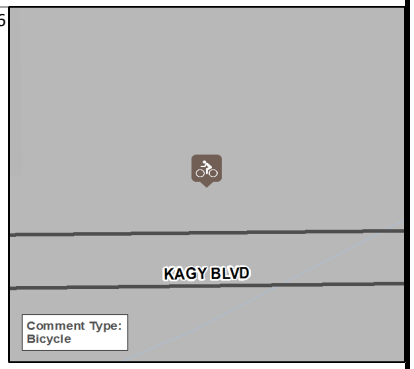
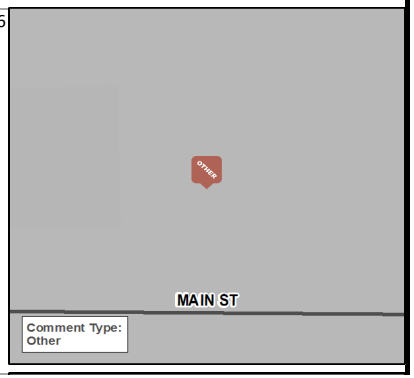
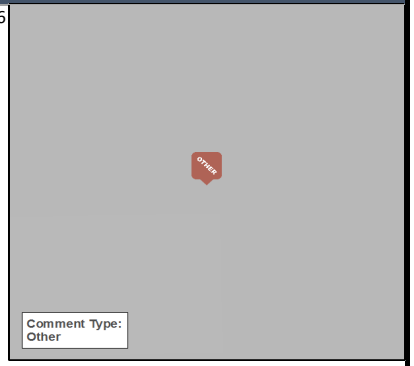
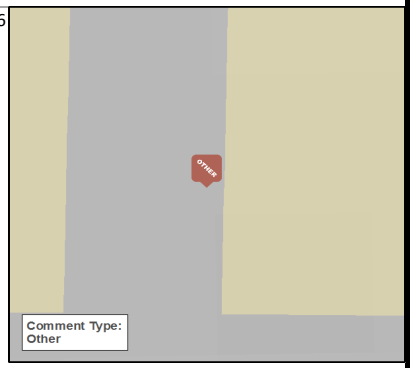
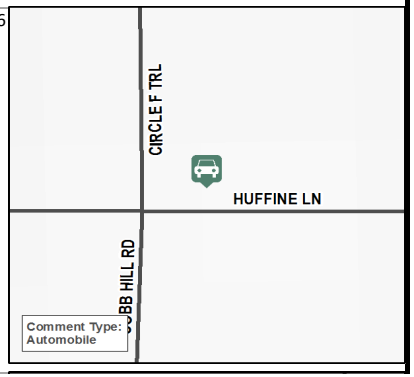
253	170005	Pedestrian	This is a hideous street for walking especially in the winter. I have no idea how someone with a disability might navigate College between 8th and 11th. Please help improve this section of roadway. Tons of foot traffic here.	2	2	0	31-Jan-16	
254	170074	Bicycle	Seems like an bike/pedestrian underpass here, where Middle Creek Ditch passes under Kagy, or farther east at Sourdough, would help with north-of-Kagy neighborhood kids getting to Sacajawea and neighborhoods south of Kagy. Boulder, Colo. pedestrian/bike underpasses work because they run right along a creek (which also helps with flood control...).				1-Feb-16	
255	170080	Other	The City, the School District and Streamline need to work together to address traffic, transit options and bike and pedestrian safety.				1-Feb-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
256	170081	Other	The City and the school district need to be working together on transportation issues related to future high school location				1-Feb-16	
257	170082	Other	The City and MSU should be coordinating and working together on issues of transportation, improving transit, and increasing opportunities to not drive to campus				1-Feb-16	
258	170947	Automobile	Need pre-warning for when light is going to turn red. Downhill / Westbound at highway speed and suddenly having Red light is hard stop.	1	1	0	6-Feb-16	

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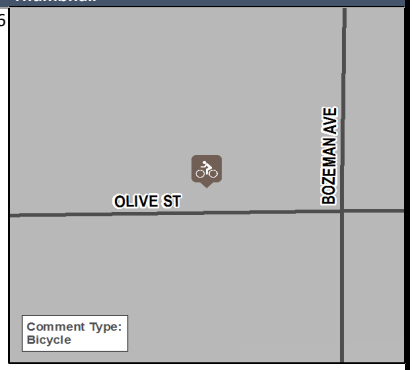
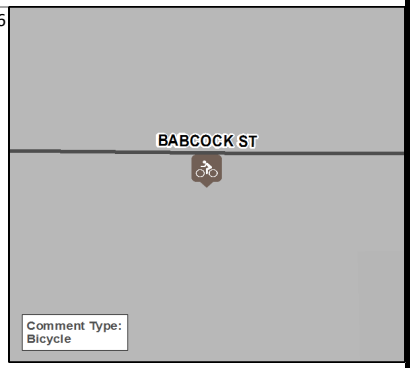
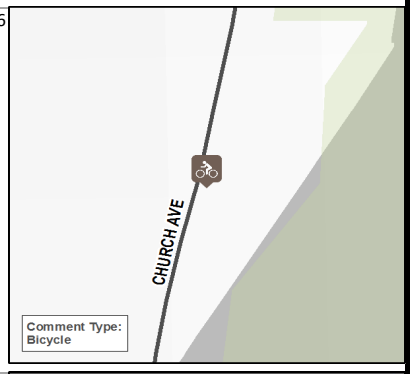
259	171153	Bicycle	Olive is a heavily used bike route and should be among best maintained streets, but it awful. The large bumps and potholes are genuinely dangerous.				9-Feb-16	
260	171154	Bicycle	Babcock and Mendenhall both should be 2-way roads with one direction of bike lane on each. If the city is serious about improving traffic flow and enhancing bike/ped friendliness, this should be a top priority	-1	0	1	9-Feb-16	
261	171155	Bicycle	Sourdough should be a bike priority route as it is the only bike-friendly option to go to/from trails South of town all the way to downtown or North side. Speeding should be aggressively enforced by Bozeman police and swept clean early in season (it's generally in excellent shape). Do not allow this to become a major car commuting route!	3	3	0	9-Feb-16	

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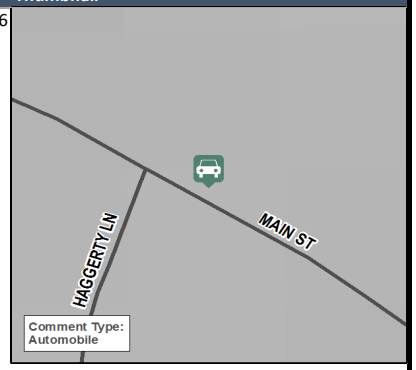
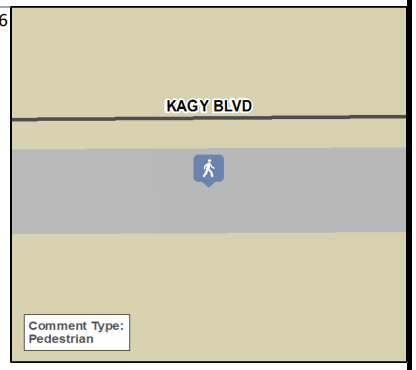
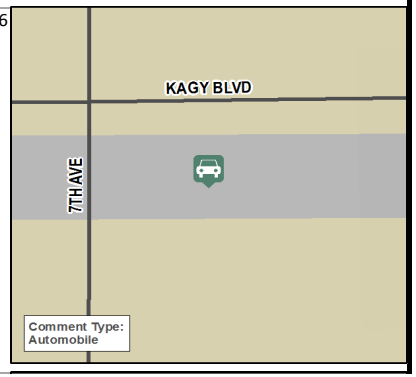
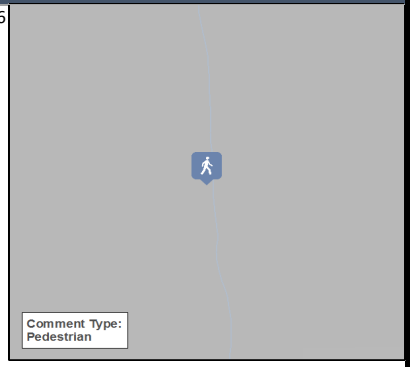
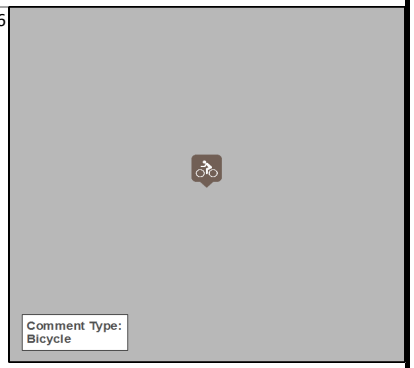
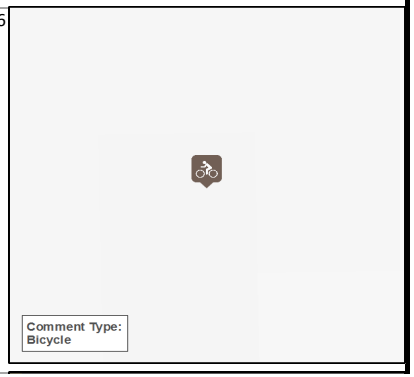
262	171418	Automobile	Traffic light or roundabout needed. Too dangerous trying to turn west off of Hagerty.				13-Feb-16	
263	171419	Pedestrian	Restrict crossing to intersections with traffic control or create pedestrian tunnel under Kagy.	3	3	0	13-Feb-16	
264	171420	Automobile	Add traffic control along with center turn lane which will also eliminate pedestrian crossing issues.	1	1	0	13-Feb-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
265	171444	Pedestrian					15-Feb-16	
266	172186	Bicycle	We need a separated multi-use bike path from Bozeman to Belgrade!	2	2	0	22-Feb-16	
267	172188	Bicycle	We need a separated multi-use path from Belgrade to Bozeman on Frontage Rd.				22-Feb-16	

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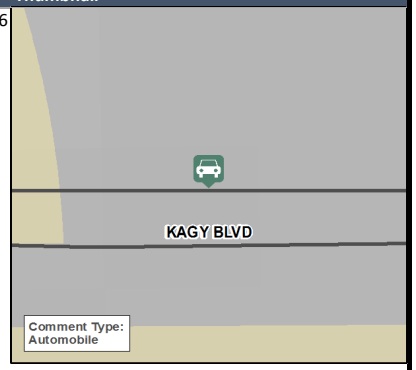
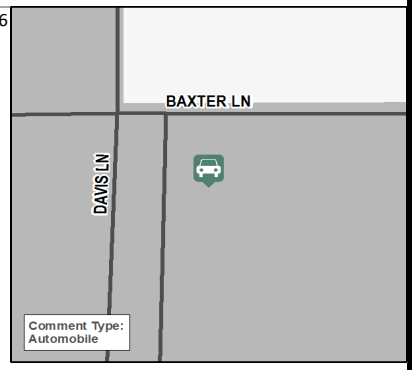
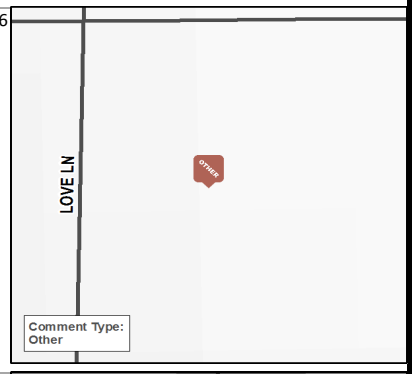
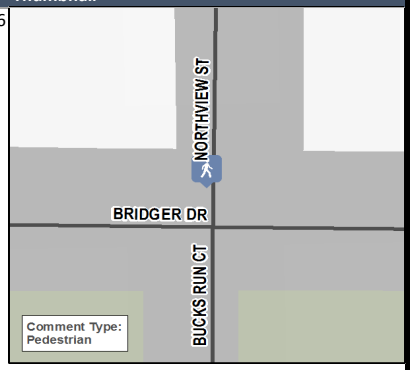
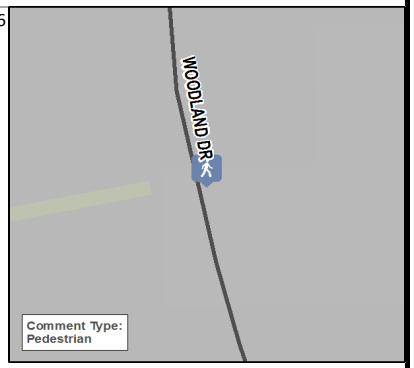
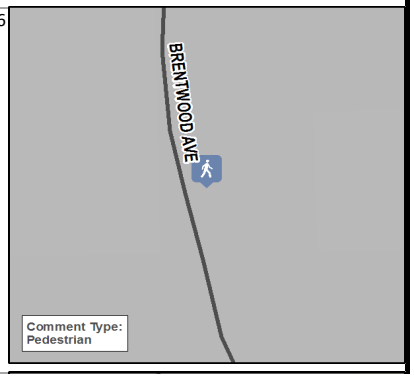
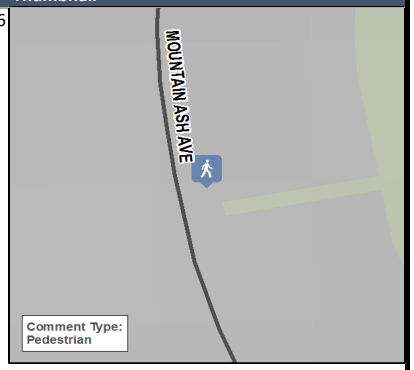
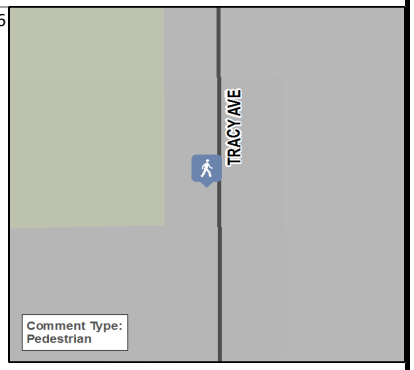
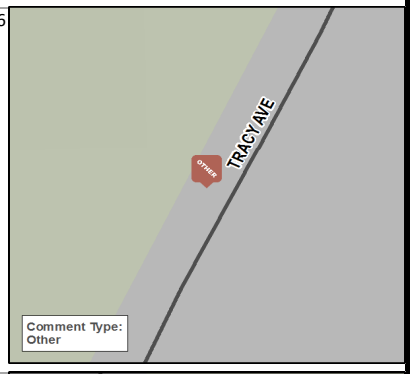
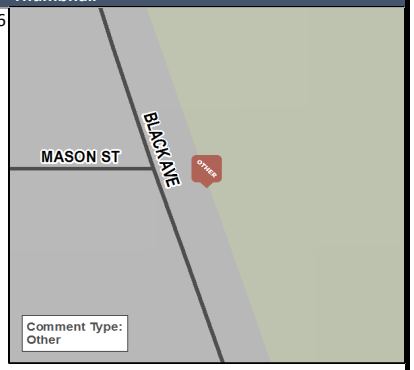
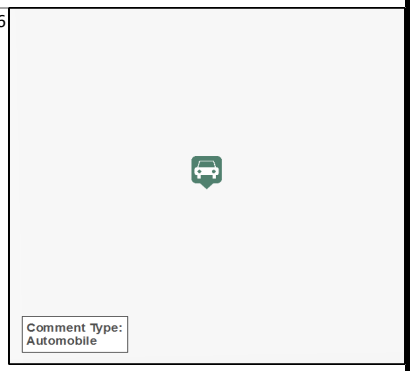
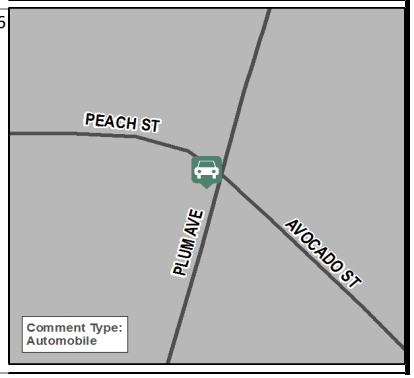
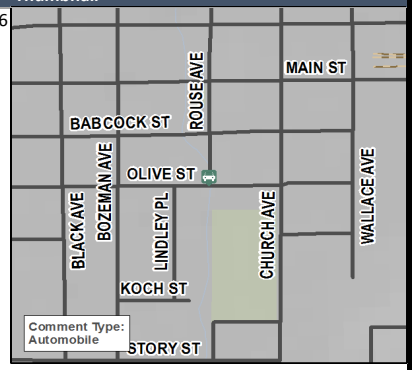
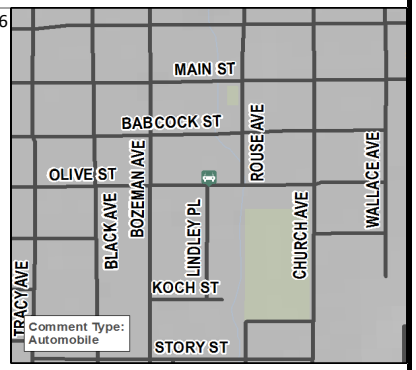
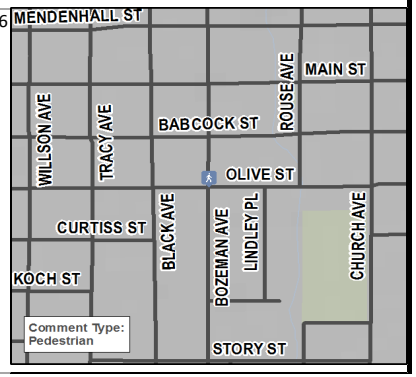
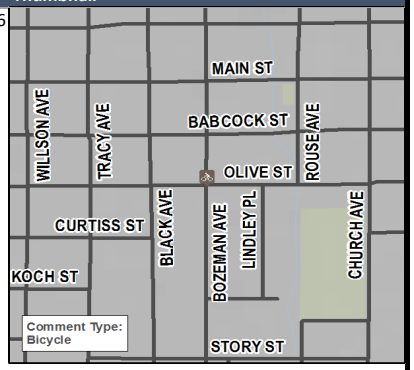
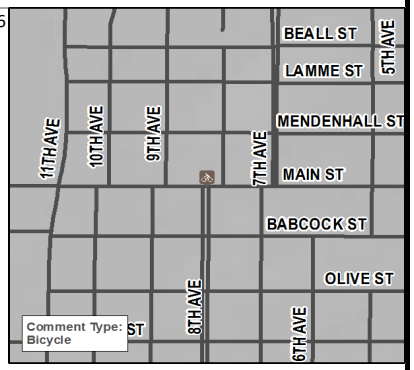
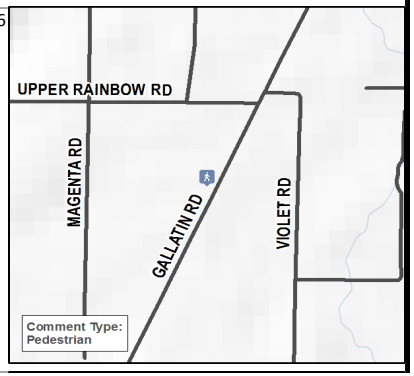
268	172250	Automobile	PLEASE PLEASE PLEASE don't transform Kagy into a five-lane highway cutting through MSU and S.Bozeman: Don't let traffic engineers dictate the design of our town. Make the boulevard more walkable and bike-able. Kids getting to and from Sacajawea Middle School, for instance, need easy, safe ways across this road. Five lanes puts more parents and kids in cars...	1	1	0	23-Feb-16	
269	172464	Automobile	A Round-a-bout doesn't HAVE to be centered on the roadways. Should be able to put in a circle without tearing up too much of NE corner property.				25-Feb-16	
270	172469	Other	Should NOT have hay stacked in these field corners blocking traffic view.				25-Feb-16	

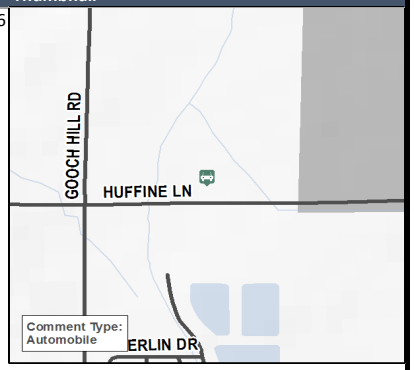
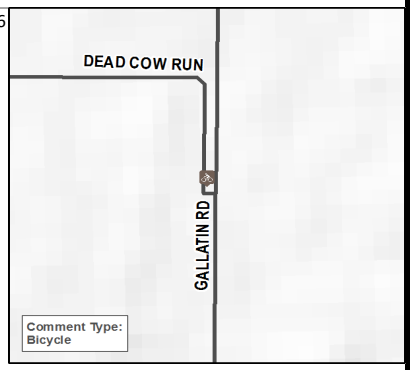
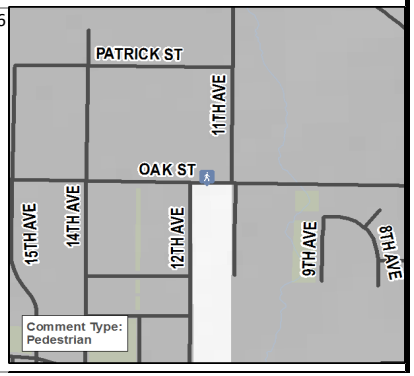
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
271	172945	Pedestrian	Add cross walk here!				29-Feb-16	
272	175032	Pedestrian	Add Curb Cuts at Concrete Trail / Sidewalk in this Neighborhood				24-Mar-16	
273	175035	Pedestrian	Add Curb Cuts at Concrete Trails / Sidewalks in this Neighborhood				24-Mar-16	

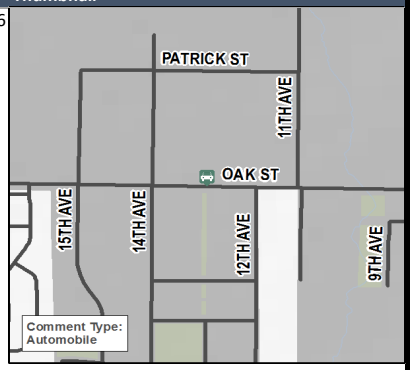
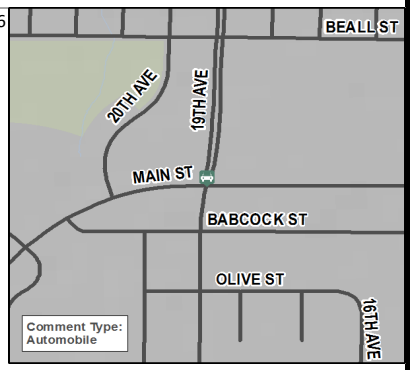
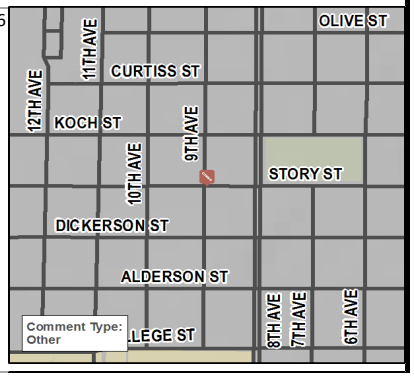
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
274	175036	Pedestrian	Add Curb Cuts at Concrete Trails / Sidewalks in this Neighborhood				24-Mar-16	
275	175611	Pedestrian	Add a curb cut to access this trail - Please!				29-Mar-16	
276	175613	Other	This City Park needs Blvd. Tree planted!				29-Mar-16	

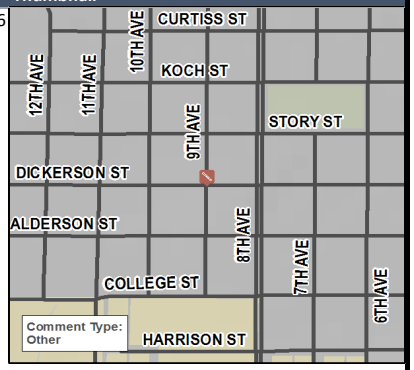
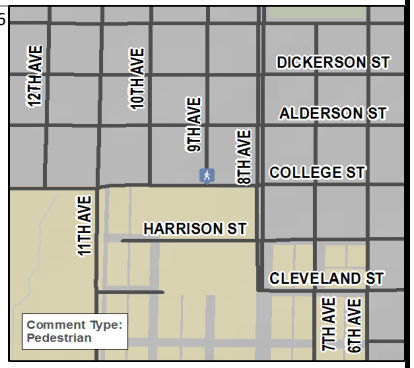
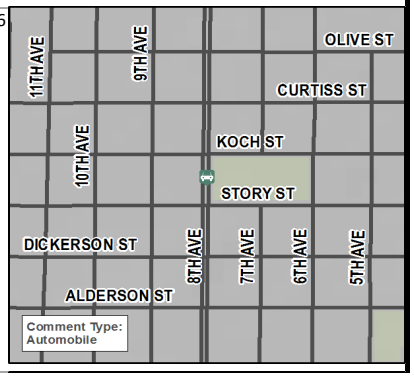
Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
277	175614 Other	This City Park needs Blvd. Tree planted!				29-Mar-16	
278	176128 Automobile	A Round-a-bout doesn't HAVE to be centered on the roadways. Should be able to put in a circle without tearing up too much of NE corner property.				3-Apr-16	
279	176818 Automobile	Install stop signs and crosswalk to slow traffic and avoid incidents as vehicles turn West onto Peach from Plum.				12-Apr-16	

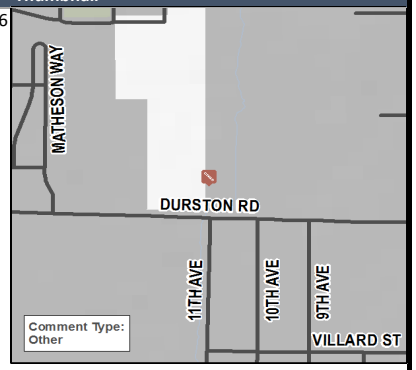
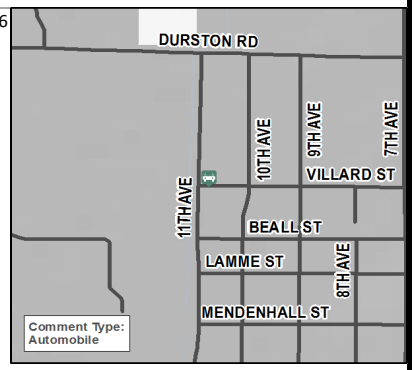
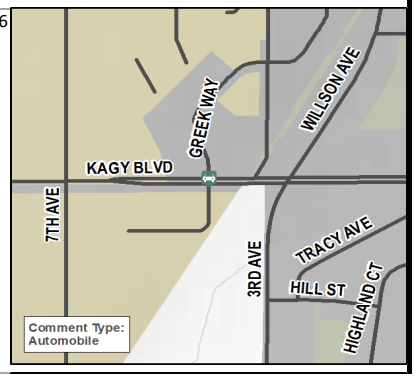
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
280	178866	Automobile	We need to evaluate traffic calming options for Olive from Church to Willson. Vehicles travel too fast, frequently endangering pedestrians crossing Olive. I have witnessed many damaged vehicles from fast moving vehicles hitting parked vehicles (mirrors broken off, sideswiping, etc). I understand Olive is slated for improvements, and think there should be consideration of traffic calming devices. People drive Olive to avoid Main and Babcock, but it is also a neighborhood street. Many of our neighbors pets have been killed on Olive. Kids riding bikes and pedestrians are ofter in serious danger.	1	1	0	5/7/2016	
281	178867	Automobile	I live on Lindley Place and walk to work downtown every day. We need to evaluate traffic calming options for Olive from Church to Willson. Vehicles travel too fast, frequently endangering pedestrians crossing Olive. I have witnessed many damaged vehicles from fast moving vehicles hitting parked vehicles (mirrors broken off, sideswiping, etc). I understand Olive is slated for improvements, and think there should be consideration of traffic calming devices. People drive Olive to avoid Main and Babcock, but it is also a neighborhood street. Many of our neighbors pets have been killed on Olive. Kids riding bikes and pedestrians are ofter in serious danger.				5/7/2016	
282	178868	Pedestrian	We need to evaluate traffic calming options for Olive from Church to Willson. Vehicles travel too fast, frequently endangering pedestrians crossing Olive. I have witnessed many damaged vehicles from fast moving vehicles hitting parked vehicles (mirrors broken off, sideswiping, etc). I understand Olive is slated for improvements, and think there should be consideration of traffic calming devices. People drive Olive to avoid Main and Babcock, but it is also a neighborhood street. Many of our neighbors pets have been killed on Olive. Kids riding bikes and pedestrians are ofter in serious danger.				5/7/2016	

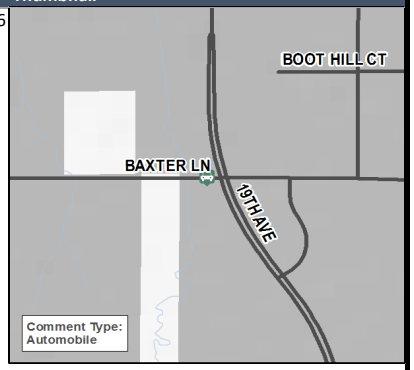
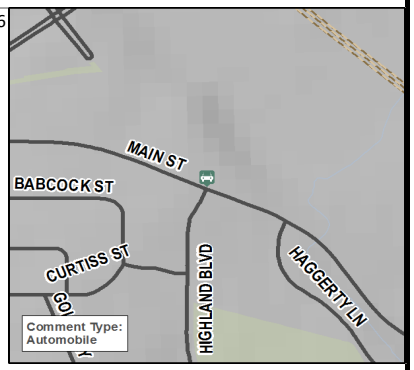
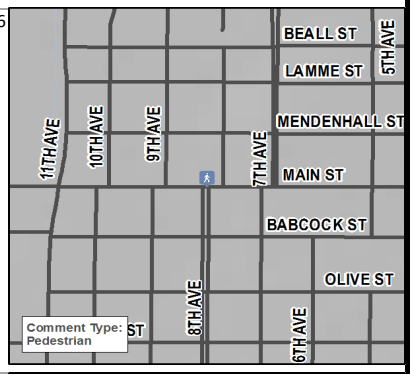
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
283	178869	Bicycle	I ride my bike on Olive often, and the road condition is terrible.				5/7/2016	
284	178927	Bicycle	The 8th Ave bike lane ends with no option for where to go on Main. When crossing from north to south bikes (and pedestrians) trying to use the pedestrian signal often end up with close calls with left-turning vehicles who simultaneously have a green turn arrow. As a biker with children in tow I am unwilling to enter traffic on Main Street to make this crossing.				5/8/2016	
285	184627	Pedestrian	Add a Walking/Bike Path for residents in the area to walk/run/bike to 4 Corners instead of driving a vehicle				5/12/2016	

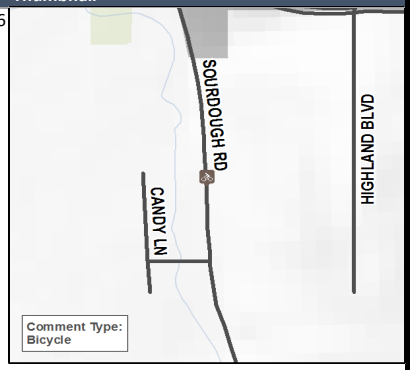
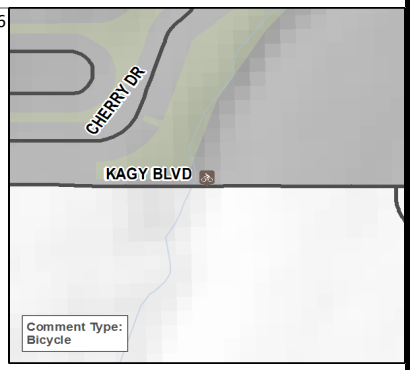
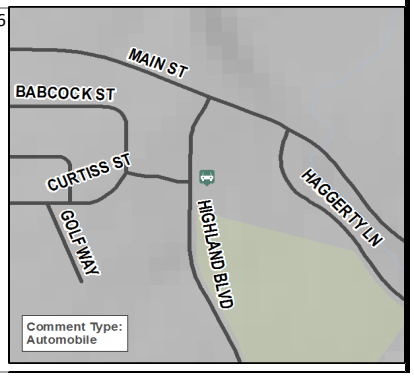
Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
286	184630 Automobile	TIME TRAFFIC SIGNALS ALONG ALL OF HUFFINE DURING MOST HOURS OF DAY (late hours can be changed for side arteries to trigger signals)				5/12/2016	
287	184632 Bicycle	Bike and walking path to 4 Corners				5/12/2016	
288	184745 Pedestrian	Sidewalk ends at guardrail and restarts on the other side of guardrail forcing pedestrians to walk in bike lane around guardrail				5/12/2016	

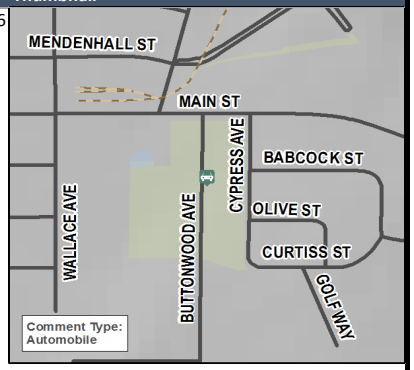
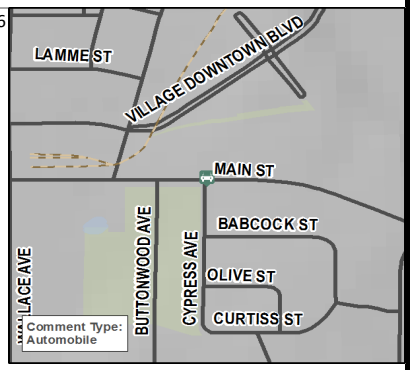
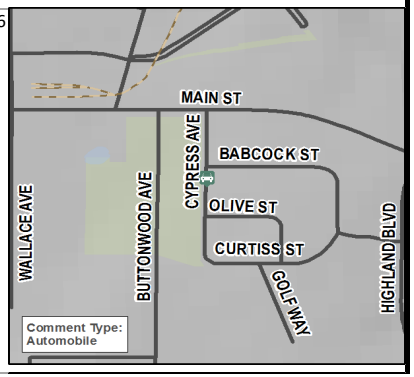
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
289	184746	Automobile	Automobile traffic along this section of Oak is too fast. Why does the speed limit increase for such a short section of road?				5/12/2016	
290	184747	Automobile	A roundabout would be an improvement at this intersection much like Shiloh Road in Billings.				5/12/2016	
291	184748	Other	Can we get a stop sign here? People speed up and down the street and I've seen a half dozen accidents at this intersection.				5/12/2016	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
292	184749	Other	A stop sign here would be good to reduce speeds around Irving School	1	1	0	5/12/2016	
293	184750	Pedestrian	People cross at this intersection. Put in a crosswalk.				5/12/2016	
294	184751	Automobile	Enforce the speed limit along 8th ave.				5/12/2016	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
295	184823	Other	Can Mandeville Creek be respected as North 11th is connected North of Durston? The creek is having nearly $500,000 invested to bring it back to life on the BHS campus via community/donor support, so we would hope the creek's continuation essentially along the North 11th line could be given a wide berth in future road building.				5/13/2016	
296	184829	Automobile	Because the new high school entrance along North 11th avenue lacks pick up and drop off area on campus, cars idle and drop off/pick up within several hundred feet of the North 11/Villard intersection, putting undue car and pedestrian traffic on these formerly quiet, neighborhood streets. The situation is also unsafe as students regularly cross 11th at non-signed areas to get from where parents drop them off to school.				5/13/2016	
297	192048	Automobile	How are cars going to exit MOR and turn left if you make Kagy multi lane? It's already difficult to find an opening to turn left here.	1	1	0	5/20/2016	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
298	192049 Automobile	Need left turn signal for Baxter eastbound traffic to turn north on 19th.				5/20/2016	
299	193386 Automobile	East Main needs a right turn lane onto Highland Blvd, Currently dangerous situations arise as drivers use the wide shoulder as a right turn lane.				5/30/2016	
300	193387 Pedestrian	this intersection sees much more ped crossings than expected and the long wait that the State recently changed it to, to time with the 7th & Main lights, makes peds impatient, and take risks. Drivers waiting a 8th also get impatient further increasing the risk to the peds				5/30/2016	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
301	193388	Bicycle	a popular cycling route yet so scary, no shoulders, lots of fast traffic and construction vehicles, yikes	1	1	0	5/30/2016	
302	193389	Bicycle	too narrow for safe cycling, who's idea was it to put those guard rails??!!?? forcing bikes into traffic with no room for cars to yield?				5/30/2016	
303	196154	Automobile	Highland is already busy and increasingly congested. The city's idea to put the only entrance to the new Heebs on Highland (with no entrances on E Main or Highland) seems like an invitation to a traffic mess. The Marwyn Addition neighborhood to the west is highly concerned ... we need the city to protect Marwyn Addition.	2	2	0	6/9/2016	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
304	196185	Automobile	Poor signage. Signs for 15 mph only face the streets that do not border the park; only speed sign motorists see on Cypress is 25 mph at top of hill. Unsure signs would help, but regular speeding here despite many children often being present or en route to Lindley park	1	1	0	6/9/2016	
305	196186	Automobile	Speed limits do not match zoning on Main here. Should be 25mph to Highland. Vehicles race up hill making left turn from Cypress burdensome. 40 mph too fast here for proximity to pedestrian traffic. Parked vehicles can also obscure safe views of Main or Cypress and pinch traffic leaving and entering Cypress.	1	1	0	6/9/2016	
306	196187	Automobile	Poor signage. Signs for 15 mph only face the streets that do not border the park; only speed sign motorists see on Cypress is 25 mph at top of hill. Unsure signs would help, but regular speeding here despite many children often being present or en route to Lindley park	1	1	0	6/9/2016	

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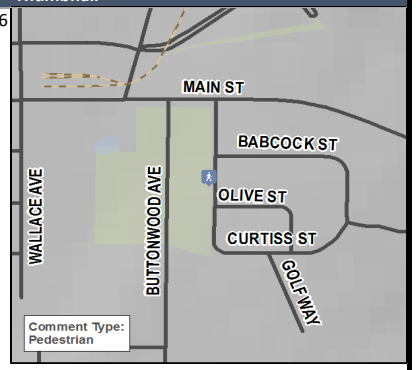
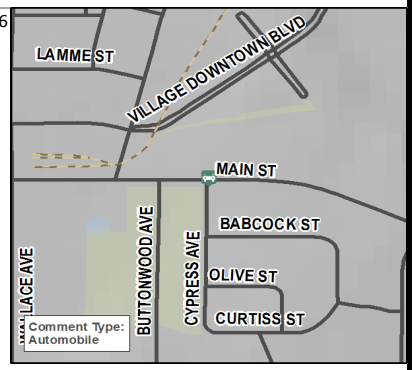
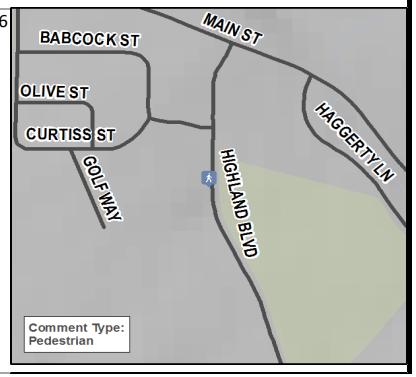
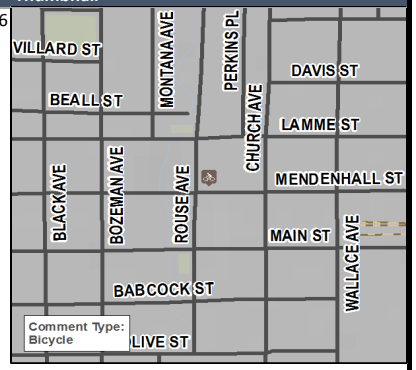
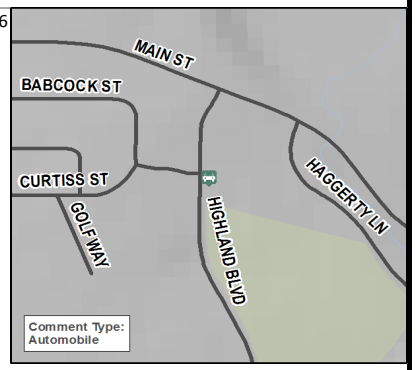
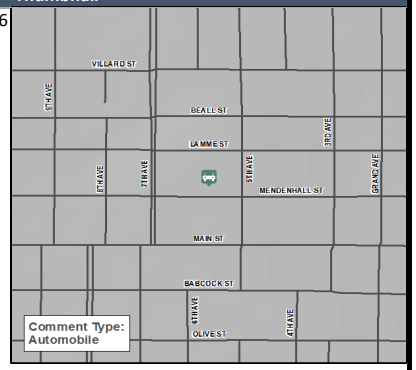
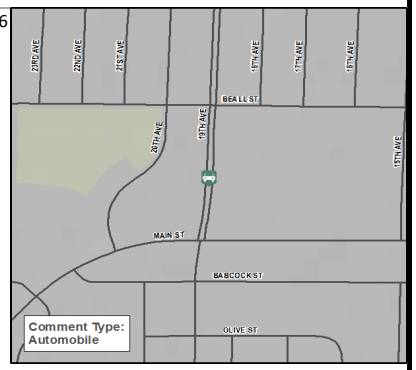
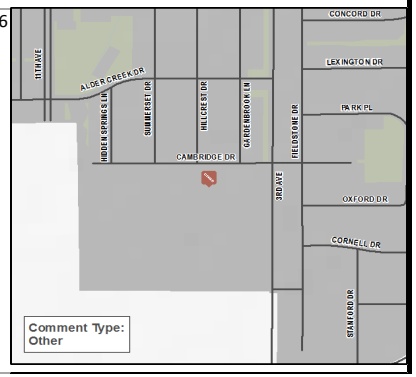
307	196472	Pedestrian	As a resident of the Marwyn-Lindley neighborhood, traffic speed is too fast, most of the time, along Cypress Ave. There is only one, 15 mph speed limit sign on each side of the street. It is a wide, straight street where people disregard the speed limit when there are few cars parked to access Lindley. Yet in the summer time kids play there throughout the day, kids classes are held and people picnic there continuously in good weather. Our neighborhood children are at a great risk of speeding traffic.	1	1	0	6/14/2016	
308	196473	Automobile	With the continuing development on East Main street, the speed limit needs to be reduced down to 25 to Highland Blvd. Motorists bolt up the hill, much faster than 25 because they can see the 40 mph sign at the Park Place development. Cars are traveling over the speed limit in both directions. As I leave and return home from the Marwyn-Lindley neighborhood, I am routinely passed as I obey the posted speed limit.	1	1	0	6/14/2016	
309	196474	Pedestrian	The city needs to consider a safe method for pedestrian and bicycle traffic to cross Highland to facilitate access to the new Blackmore Bend Marketplace, the dog parks, ski trails and the softball field complex. As Highland is developed to accommodate more traffic from the hospital expansion employees, patients, and new residents, non-motorists need a safe way to cross the street.	1	1	0	6/14/2016	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
310	196483	Bicycle	Seconded that these lights don't seem to respond to bikes.				6/14/2016	
311	196632	Automobile	please consider the Marwyn Addition neighborhood in regards to the driveway into the new Heebs complex. We are excited to have Heebs up the hill, but worry about cut-through traffic coming through the neighborhood. We understand intersection lights will be adjusted, but we already get cut-through traffic and would hate the integrity of our neighborhood to be compromised with an excess traffic.	1	1	0	6/17/2016	
312	196633	Other	Not an appropriate place for any sort of new housing. Please keep this green space.				6/17/2016	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
313	216705 Automobile	In 2009 the City Commission adopted the Downtown Bozeman Improvement Plan, which called for converting Mendenhall and Babcock 2 way streets, This would allow for the redevelopment of Mendenhall and 7th. The TMP should take this Commission adopted recommendation seriously. The plan describes the issue in the following manner:A major obstacle to introducing housing to downtown right now is the one-way couplet of Mendenhall and Babcock. With most of the housing density encouraged on Mendenhall, Mendenhall acts more as a major through-way getting people through downtown than moving people within downtown. The lack of street trees and vehicular focus will likely discourage future residents from moving Downtown. People choose to live downtown because of the benefits of urban living which include close access to services entertainment and walkability. Currently, both Mendenhall and Babcock have a very poor pedestrian environment with narrow or inconsistent sidewalks flanked by long stretches of surface parking lots. In order to attain the future vision of denser urban housing downtown the city should restore the original two-way network of these streets and provide pedestrian amenities such as wider sidewalks street trees and safe comfortable crossings. The 1998 MAKERS Plan originally recommendedthe conversion of Mendenhall and Babcock back to two-way streets in addition to transforming the pedestrian environment along these corridors.(Downtown Bozeman Improvement Plan 2009)"				8-Aug-16	
314	217776 Automobile	Need more time for traffic turning south from Main Street to get through light at Babcock. Essentially no way to not have to stop seconds after making turn from Main coming from the East				20-Aug-16	
315	219373 Other	With the recent decision of the school district to eliminate 2 bus routes that provide service for approx. 150 kids to SMS, it more critical than ever to have safe routes for kids to bike and walk. This includes kids that have to cross Kagy in order to get to school.				20-Sep-16	

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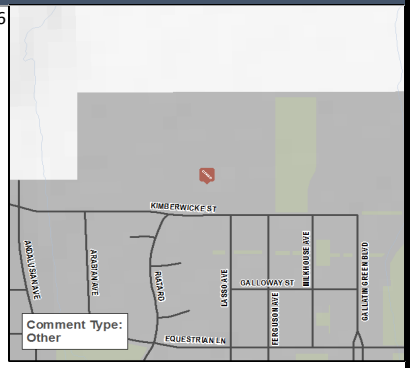
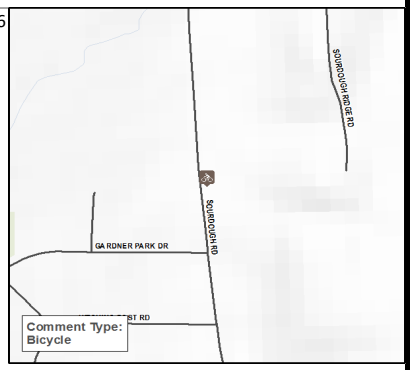
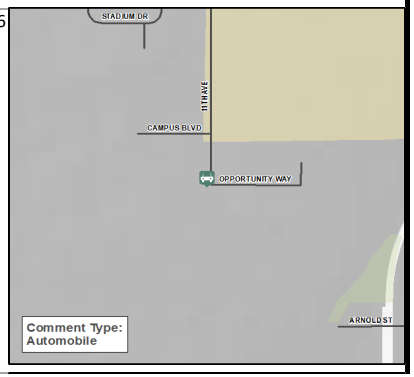
316	219374 Other	With the recent decision of the school district to eliminate 2 bus routes that provide service for approx. 150 kids to CJ, it more critical than ever to have safe routes for kids to bike and walk. This includes kids that have to cross Baxter in order to get to school.				20-Sep-16	
317	219995 Bicycle	Surprised no one has been seriously hurt biking out Sourdough! A biking/walking lane desperately needed here, from Kagy to Nash.				3-Oct-16	
318	222813 Automobile	Connect 11th and 7th south to Graf and complete Graf from 3rd to 19th. Depress Kagy at crossings with 11th and 7th. No need for connection between 11th and 7th with Kagy. Without the intersections Kagy could be a two lane arterial through campus with no surface connections.				28-Oct-16	

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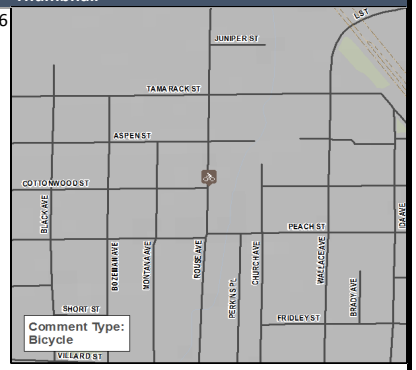
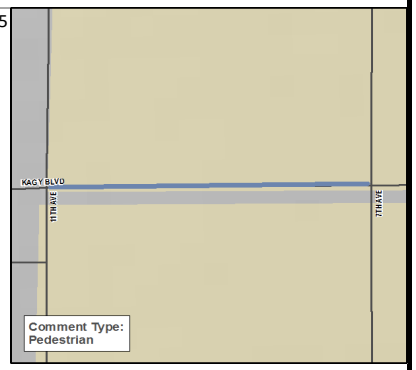
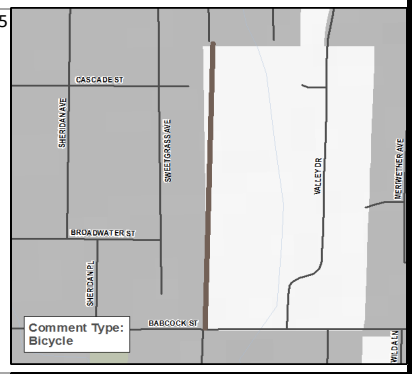
319	224057	Bicycle	When re-developing Rouse the bike lane should be protected from cars by moving the lane of parked cars between the bike path and the roadway. Many people use the road to access services such as the Food Bank via bike. A protected bike lane is much safer for both people on bikes and drivers. This change would also decrease the chance of getting "doored', people would feel safer and fewer collisions may occur. http://trec.pdx.edu/research/project/583/Lessons_from_the_Green_Lanes:_Evaluating_Protected_Bike_Lanes_in_the_U.S._				11-Nov-16	
320	964140	Pedestrian	This entire stretch becomes very congested during events and busy times; especially football games. Please review for better walkability across Kagy.	4	4	0	21-Sep-15	
321	969357	Bicycle	This trail connection needs to be completed. It is heavily used by bicycles and pedestrians and should be paved. It connects neighborhoods with parks and schools.	4	4	0	24-Sep-15	

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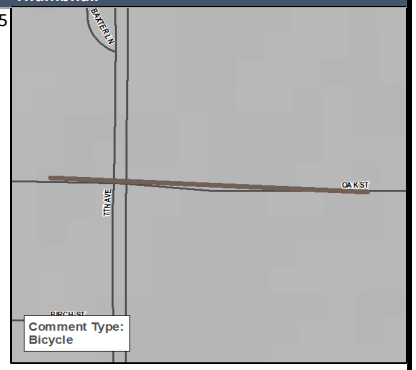
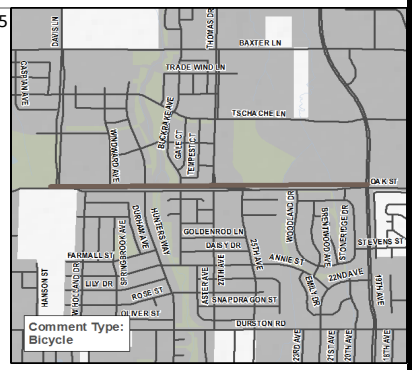
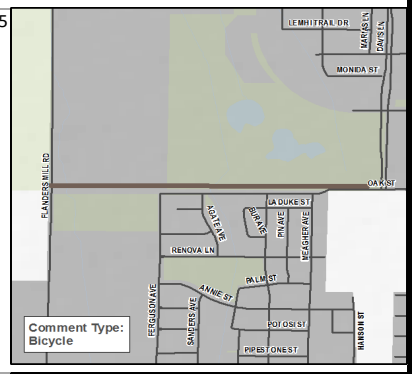
322 969358	Bicycle	The connection of the Oak St pathway across N 7th needs to be completed. The Oak St Path will soon connect to the future Story Mill Park. The missing connection across N 7th is a major barrier to this pathway being a useful transportation corridor.	4	4	0	24-Sep-15	
323 969359	Bicycle	Oak St needs to have shared use pathway along its entire length. The section from N 19th to the regional park is only sidewalk and is inadequate for families on bicycles. The bike lanes are not useful for families.	7	7	0	24-Sep-15	
324 969360	Bicycle	We need to connect the regional park and the future sports complex with a shared use path along the N side of the Oak St corridor.	6	6	0	24-Sep-15	

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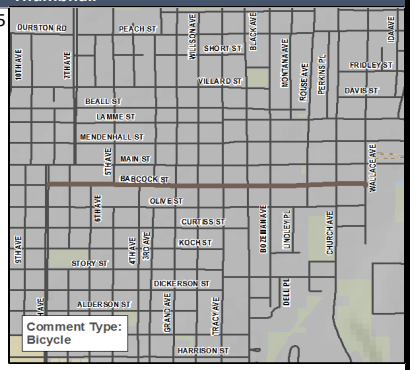
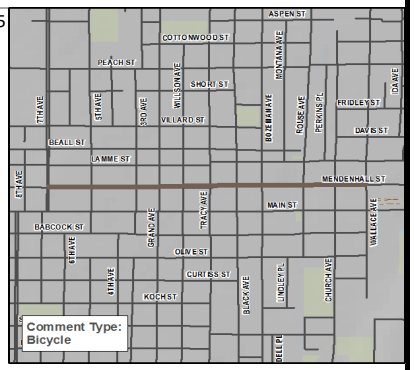
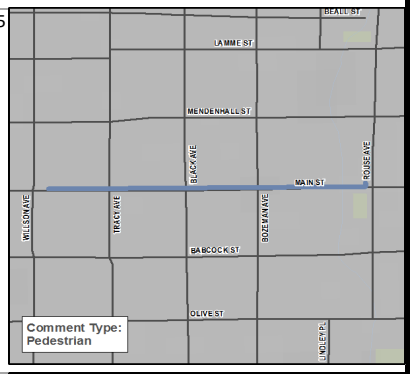
325 969916	Bicycle	Current "bicycle friendly" routes on the south side of downtown are often through uncontrolled intersections and feel dangerous. As you approach the epicenter of downtown, it would be nice to have a proper bike lane as biking on Babcock, Olive, Story, etc	4	4	0	25-Sep-15	
326 969917	Bicycle	A bike lane to allow safer access to the Bozeman epicenter that meets the needs of westbound traffic would be wonderful. While Peach is a great lane for accessing western neighborhood, Babcock would allow for safe downtown travel with controlled intersect	3	3	0	25-Sep-15	
327 969918	Pedestrian	Wouldn't it be wonderful if a portion of Main Street was a pedestrian street similar to Denver, Boulder and Burlington? I believe it could be a wonderful draw for our community and for tourism.	4	4	0	25-Sep-15	

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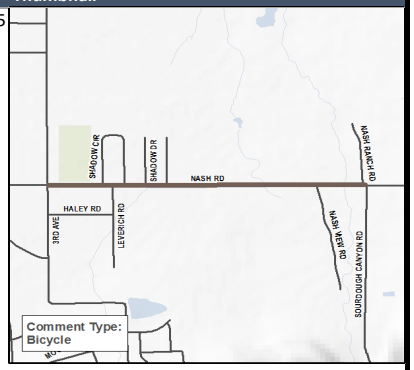
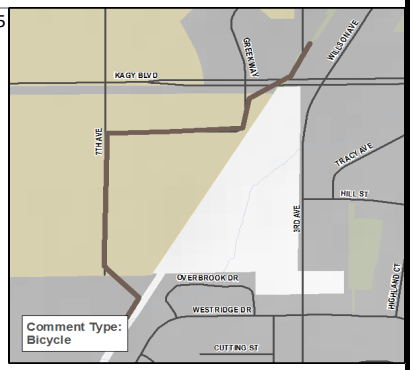
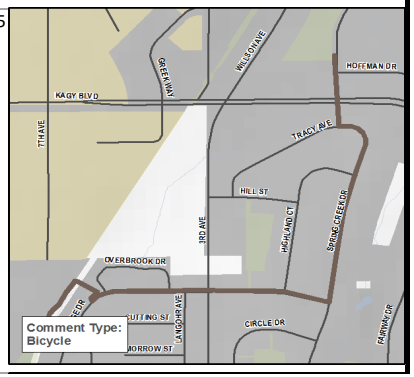
328 969919	Bicycle	South 3rd to Sourdough Canyon Rd is a common bicycle route to access Sourdough Canyon. A lane along Nash Rd would increase safety.	2	2	0	25-Sep-15	
329 972949	Bicycle	The Gallagator ought to get connected through the Museum. Maybe some signage pointing in the right direction, green paint on Kagy so bikes can use the turn lane.	3	3	0	6-Oct-15	
330 972950	Bicycle	A second idea for a Gallagator Connector across Kagy. It would definitely need direction signs, maybe a blinking cross walk (like kagy and 7th) across Kagy, another on across S. 3rd.				6-Oct-15	

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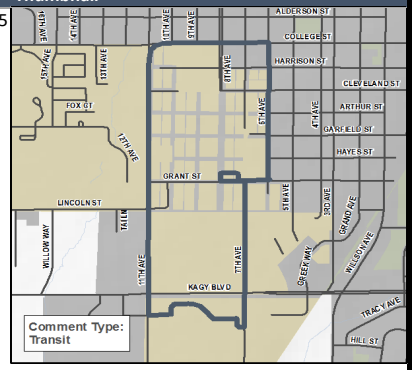
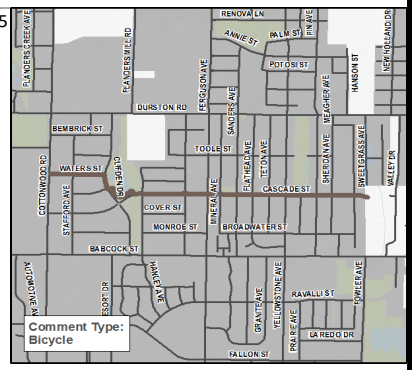
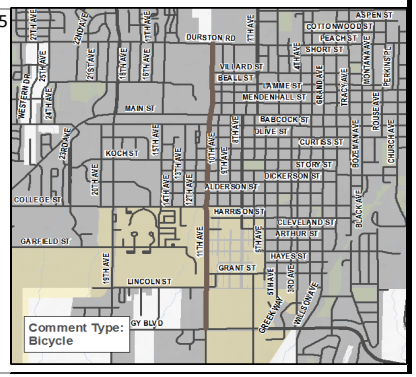
331 972951	Transit	MSU (or Streamline) could develop a University-specific Park and Ride system, centering on the Stadium for parking, stopping at other parking lots and other likely stops, and circumnavigating campus. That would help relieve the perennial parking woes on c	2	2	0	6-Oct-15	
332 973000	Bicycle	make Cascade a designated bike route by parks (add sharerows and bike route signs) and connects to north/south bike route options effectively from neighborhhods	3	3	0	7-Oct-15	
333 976375	Bicycle	Safet N/S bike facilities needed for both High School and University on 11th.	5	5	0	14-Oct-15	

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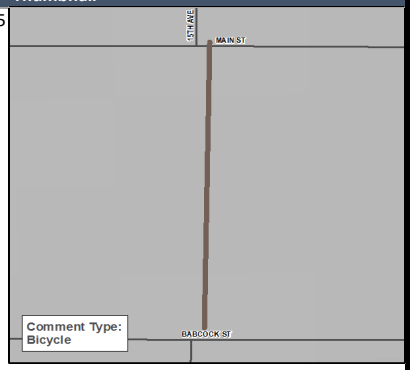
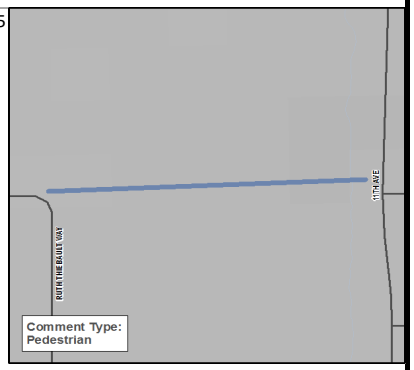
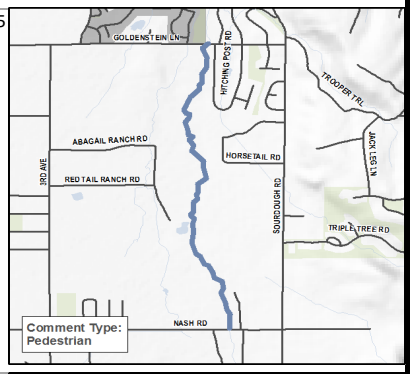
334 976376	Bicycle	A bicycle and pedestrian connector between 15th and Babcock.	2	2	0	14-Oct-15	
335 976377	Pedestrian	When they added on to the High School they built a wall for bikes and peds that wished to cut across the campus.	1	2	1	14-Oct-15	
336 976378	Pedestrian	If you're going to dream, dream big, right?	10	11	1	14-Oct-15	

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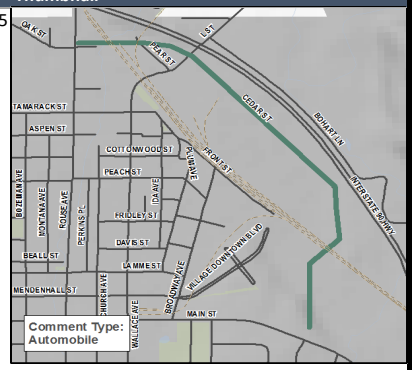
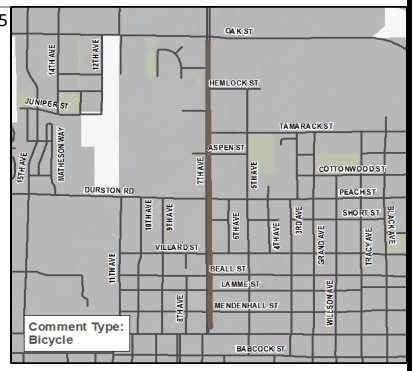
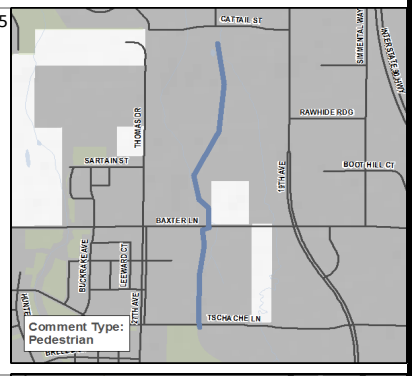
337 976379	Automobile	Move hospital (and other) thru-traffic off downtown streets (replace downtown traffic with bike/ped infrastructure and features).	3	5	2	14-Oct-15	
338 976380	Bicycle	Fully separated, protected bike lane and pedestrian infrastructure. The corridor to work with here is HUGE.	3	3	0	14-Oct-15	
339 976381	Pedestrian	Continued trail systems connecting neighborhoods with commercial centers.	5	5	0	14-Oct-15	

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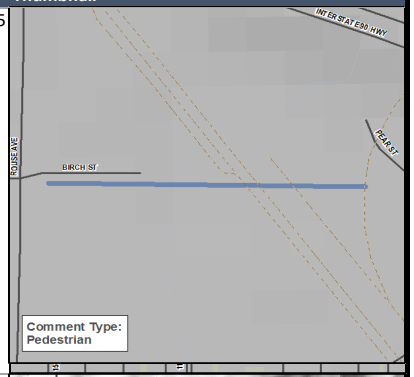
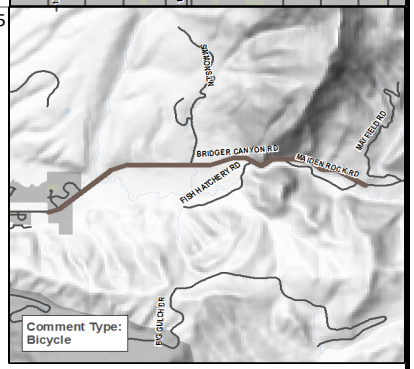
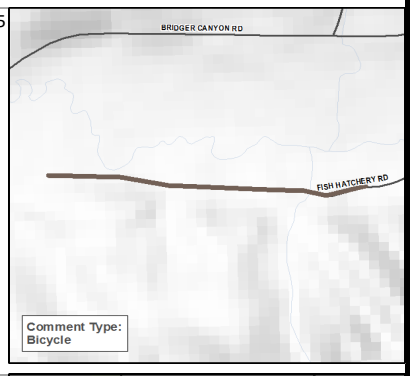
340 976382	Pedestrian	Just putting this here even though it's already as good as a done deal.	3	3	0	14-Oct-15	
341 976383	Bicycle	Safer shared-use needed through this corridor for both auto, bikes, and peds.	5	5	0	14-Oct-15	
342 976384	Bicycle	Bridger Canyon alternative to Drinking Horse and "M".	4	4	0	14-Oct-15	

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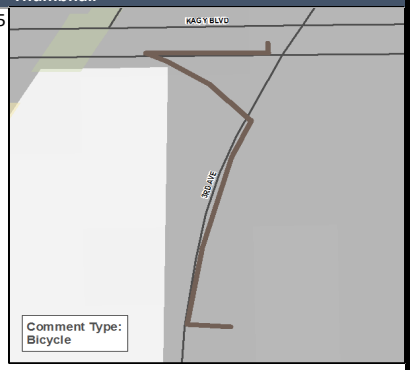
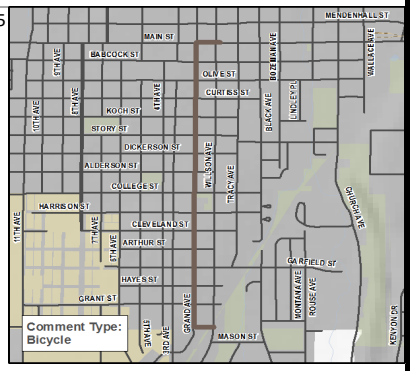
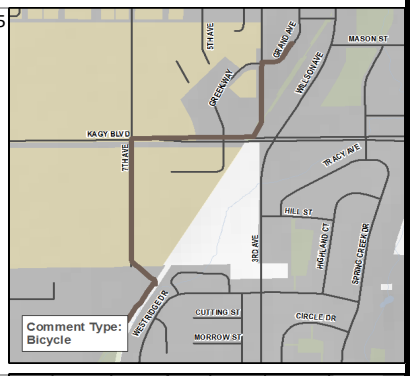
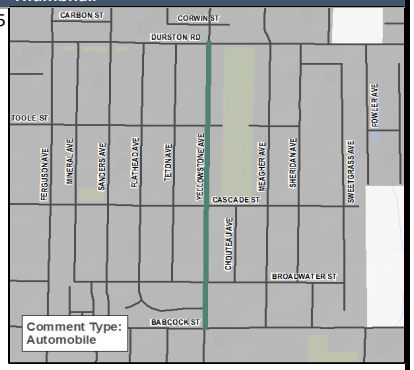
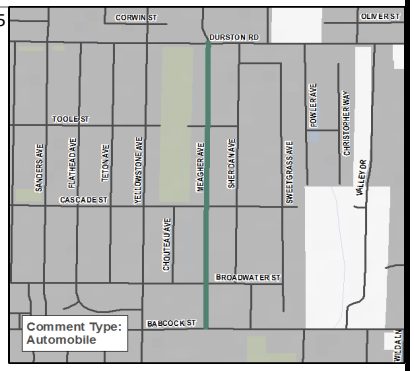
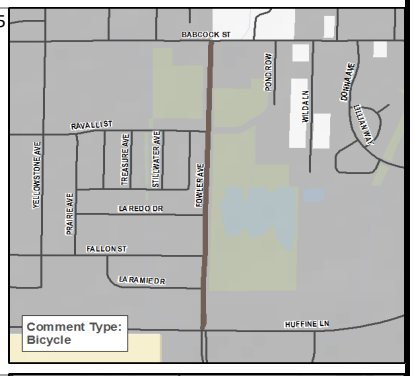
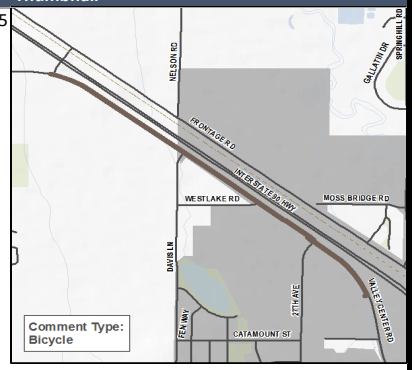
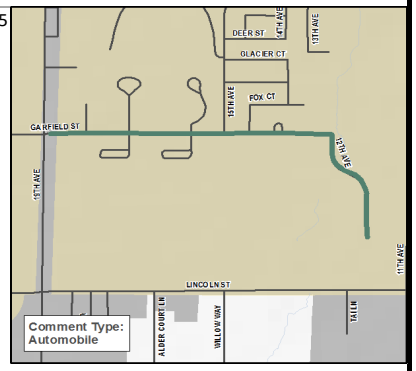
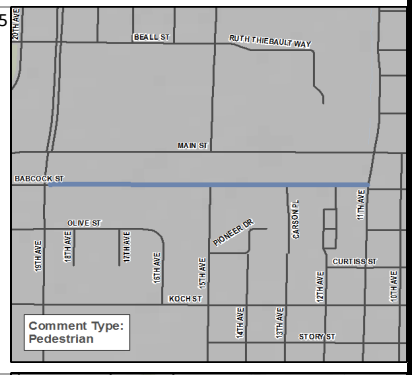
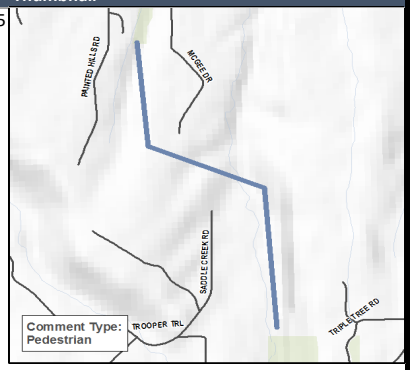
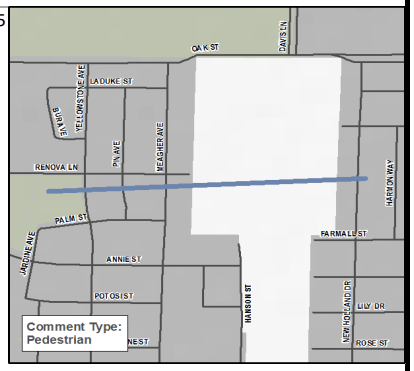
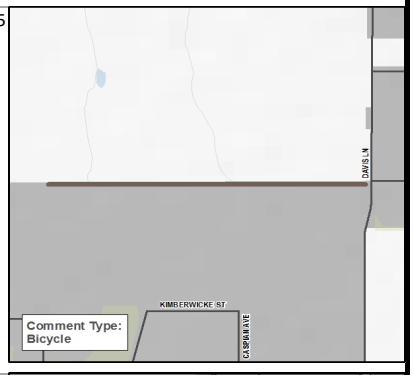
343 976385	Bicycle	Thanks for removing the dumb vertical divider that cars repeatedly flattened. Us cyclists had to avoid the bike lane at that point because is simply collected all the broken glass from cars hitting the barrier.				14-Oct-15	
344 976386	Bicycle	These comments are meant for Wilson Avenue, not Grand as shown. 1. Cyclists are forced to weave in and out of the parking on the right. I realize parking is sacred. 2. The curb extensions at intersections repeatedly force cyclists out into traffic. The	1	3	2	14-Oct-15	
345 976389	Bicycle	The Galigator Trail connection for pedestrians and cyclists across Kagy and around the MOR is terrible, inconvenient and poorly signed. Seems that MOR might take a more progressive view towards people passing through their grounds. Then, I would love to s	2	2	0	14-Oct-15	

Comment IID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
346 977348	Automobile	North-south traffic rarely yields to east-west traffic or pedestrians. Adding mini-roundabouts would calm traffic and make these residential intersections safer for bikes and pedestrians.	0	1	1	15-Oct-15	
347 977349	Automobile	North-south traffic rarely yields to east-west traffic. Adding mini-roundabouts would calm traffic and make these residential intersections safer for pedestrians and bicycles.	1	1	0	15-Oct-15	
348 977350	Bicycle	Add bicycle lanes as this route is an important link for bicycle commuters from the west end neighborhoods to shopping and MSU.	2	2	0	15-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
349 977351	Bicycle	Continue shared-use path route to connect existing paths on 19th Ave to the path on Valley Center Rd. This would provide a continuous trail from Bozeman to Jackrabbit Lane.	3	3	0	15-Oct-15	
350 977352	Automobile	Garfield/12th Ave needs to be reconstructed to improve surfacing quality and enhance pedestrian and bicycle safety through campus.	6	6	0	15-Oct-15	
351 977353	Pedestrian	Add sidewalks along this portion of W Babcock St.	2	2	0	15-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
352 977410	Pedestrian	Main Street to the Mountains! extended Painted Hills Trail to meet the Triple Tree neighborhood trail.	4	4	0	16-Oct-15	
353 977412	Pedestrian	A route to the 100 acre park through neighborhoods, rather than alongside busy Oak Street, would be safer for families and dogs.	3	3	0	16-Oct-15	
354 977431	Bicycle	bike lanes on BOTH sides of the new extension of Cattail St so kids can bike to and from school	6	6	0	18-Oct-15	

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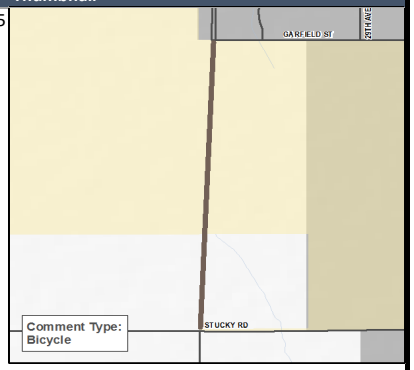
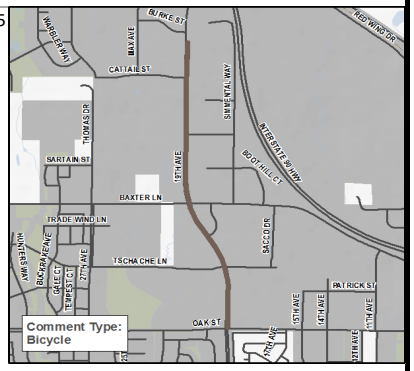
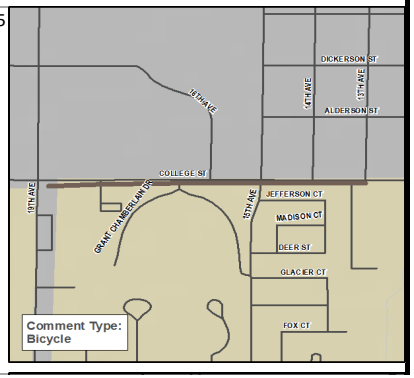
355 977432	Bicycle	bike route to Hyalite, bypassing all the busy streets.	3	3	0	18-Oct-15	
356 977435	Bicycle	N 19th is one of our busiest commercial corridors yet lacks bike facilities. Perhaps the ample shoulders along most of the route could become protected bike lanes. Making this part of town accessible to cyclists would likely benefit businesses in the area	2	3	1	18-Oct-15	
357 977436	Bicycle	As a cyclist, I find the shared-use path here very confusing. While cyclists have yield signs at Grant Chamberlain, 15th and 13th, motorists have stop signs at these same intersections. Who should yield to whom? I would like to see signage similar to that	2	2	0	18-Oct-15	

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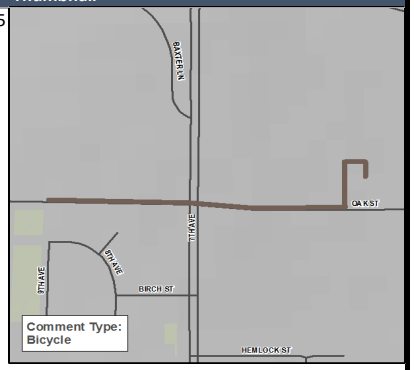
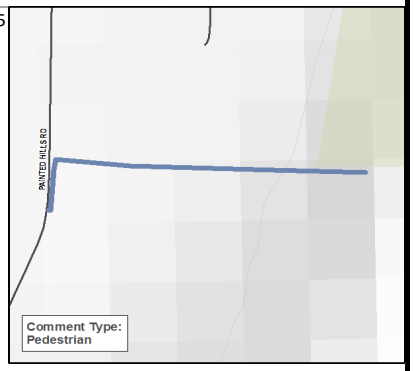
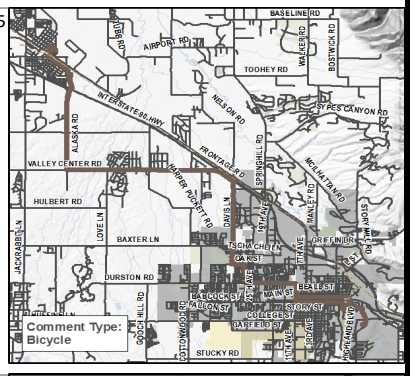
358 977483	Bicycle	On Oak, bicycle lane ends abruptly at 7th and starts up again on the other side of 7th. How are bikes supposed to cross 7th? Are we supposed to use the pedestrian crossing?	3	3	0	20-Oct-15	
359 977485	Pedestrian	New access from Painted Hills Rd. to proposed extension and old Painted Hills Trail. The old connector was closed due to a new home being built. Maybe build a new connector on the other side of the fence and put gate in?	4	4	0	20-Oct-15	
360 977499	Bicycle	We NEED a bike route separate from cars from Bozeman to Belgrade! How can other communities do this & we still haven't been able to :(. Let's make this a priority!!	4	6	2	20-Oct-15	

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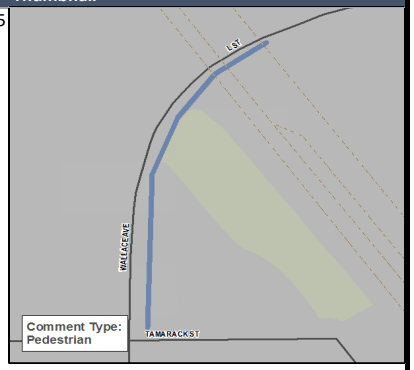
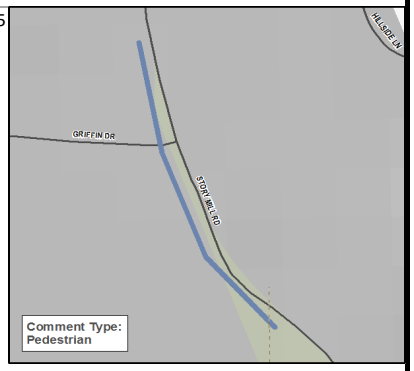
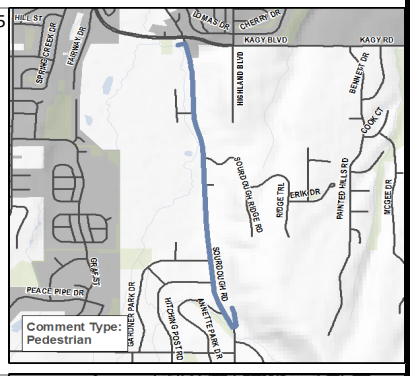
361 977500	Pedestrian	Continue sidewalk to trail system.	4	4	0	20-Oct-15	
362 977501	Pedestrian	Connect two trails together to avoid road walk.	5	5	0	20-Oct-15	
363 977502	Pedestrian	Need to connect trail system for hiker/walker/biker from Highland &/or Painted Hills over to Triple Tree Trail to complete the main street to the mountains route to the south. (I'm sure you already know this. :)	7	7	0	20-Oct-15	

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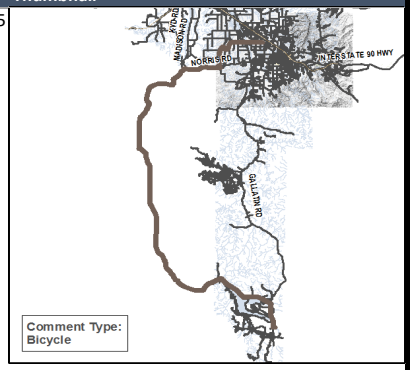
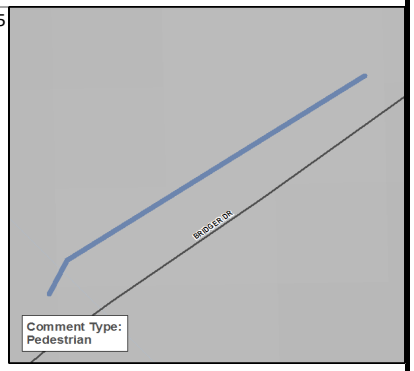
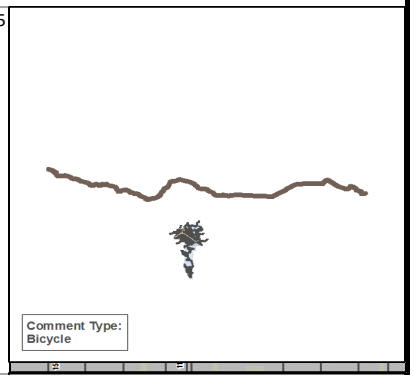
364 977503	Bicycle	Couldn't make the line work right. Want bike route from Bozeman to West Yellowstone. People would come from all over to be able to ride the canyon. Bozeman to West Yellowstone NOT through Ennis as this line drew (not good at this technology, but home ms	0	1	1	20-Oct-15	
365 977504	Pedestrian	Sidewalk	3	3	0	20-Oct-15	
366 977505	Bicycle	Bike route separate from interstate w/o 70 mph cars... any old rail beds we can reclaim--pretty please... :)				20-Oct-15	

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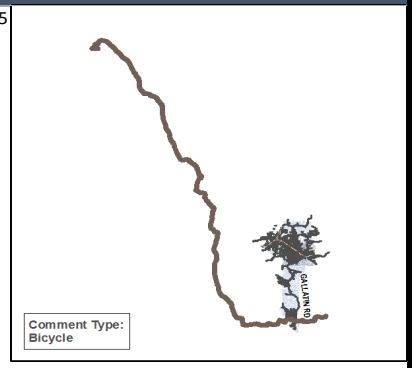
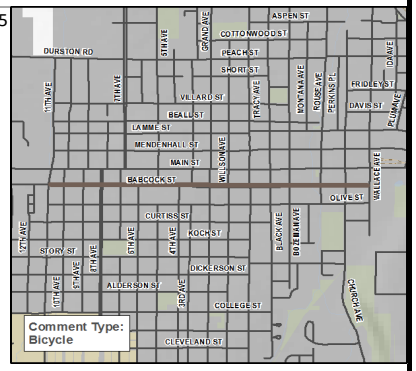
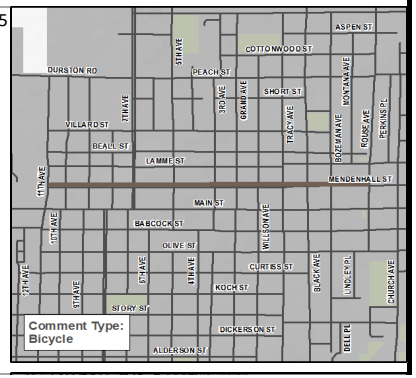
367 977506	Bicycle	Need bike route from Glacier to Yellowstone.				20-Oct-15	
368 977507	Bicycle	Reduce to single automotive lane on Babcock. Add multi-directional, protected bike lane.	2	2	0	20-Oct-15	
369 977508	Bicycle	Reduce to single automotive lane on Mendenhall. Add multi-directional, protected bike lane.	3	3	0	20-Oct-15	

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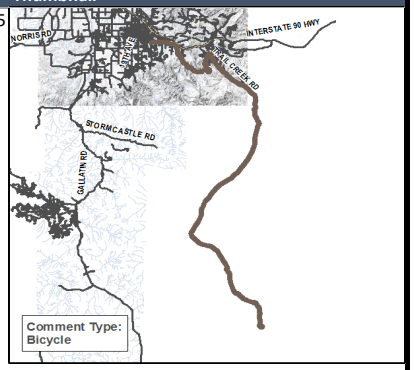
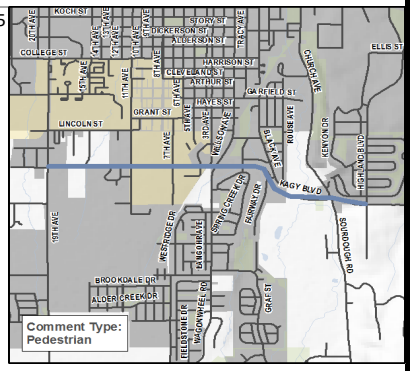
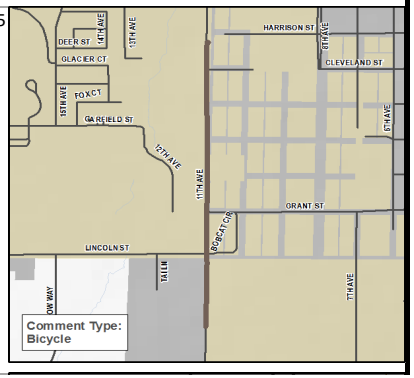
370 977509	Bicycle	Bike route from airport to Yellowstone via Mammoth needed.	-1	1	2	20-Oct-15	
371 977510	Pedestrian	Use the massive right-of-way along Kagy for protected bike lanes.	9	9	0	20-Oct-15	
372 977628	Bicycle	Enforce mca 61-8-328(6) and don't allow vehicles to stop, sit, or park in bike lane.	4	4	0	22-Oct-15	

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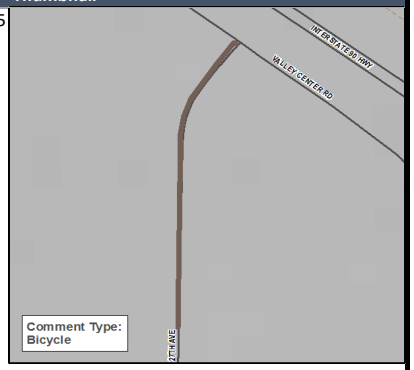
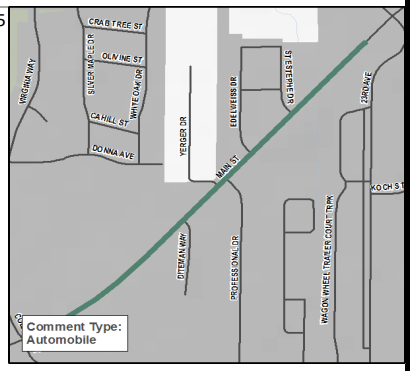
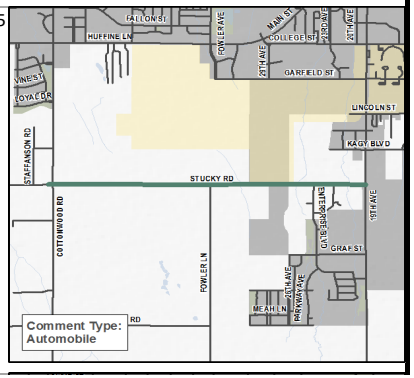
373 977629	Bicycle	Continue existing bike lane all the way to intersection of Valley Center. This was newly striped and bike lane was not included.				22-Oct-15	
374 977633	Automobile	It is really dark along this stretch of Main Street with NO street lights. Dangerous for pedestrians, bikers and cars alike.	1	1	0	22-Oct-15	
375 977634	Automobile	Stucky Rd is getting a lot more traffic on it than it ever used to have... No room for pedestrians or bicyclists, plus the road is also too small to accommodate large trucks that have started using Stucky as well. Trucks often get stuck in the steep dit	5	5	0	22-Oct-15	

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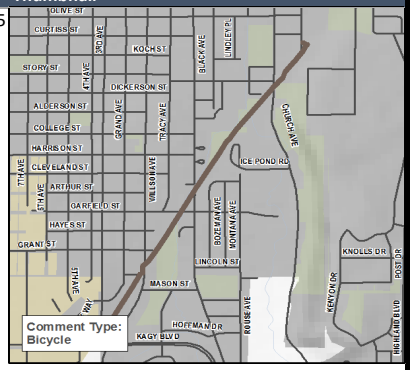
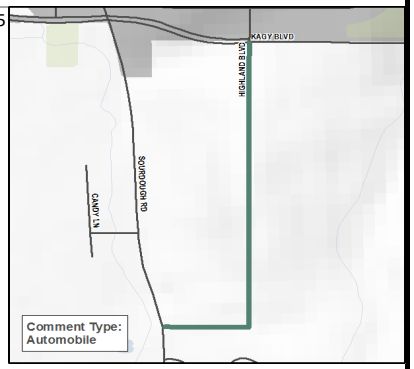
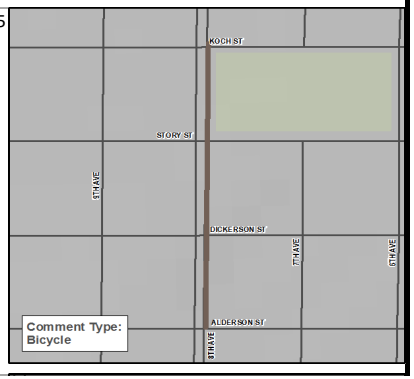
376 977637	Bicycle	Apply surface to Galligator trail that can be plowed and maintained for year round bike-ability.	2	3	1	22-Oct-15	
377 977640	Automobile	Alternate route to Highland to make Kagy and Highland the primary intersection and detour traffic from Church.	2	2	0	22-Oct-15	
378 977641	Bicycle	When I am passing cars on my bike with out pedaling there is a problem. What's wrong with 25 mph?	-1	0	1	22-Oct-15	

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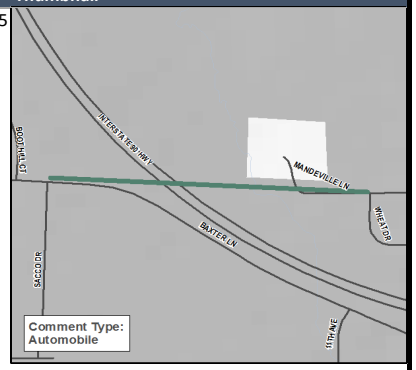
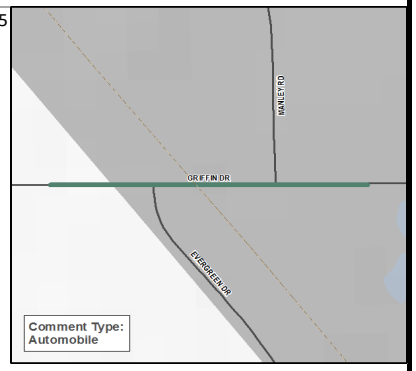
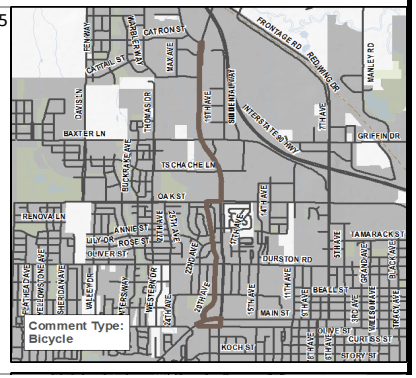
379 977642	Automobile	Freeway Overpass	3	3	0	22-Oct-15	
380 977643	Automobile	railroad underpass	3	3	0	22-Oct-15	
381 977644	Bicycle	Need a bike lane/path on N. 19th that gives bike the right of way at all intersections and driveways otherwise it is useless for commuting. This is the quickest route from Trout Meadows to MSU and should be bike friendly!	1	1	0	22-Oct-15	

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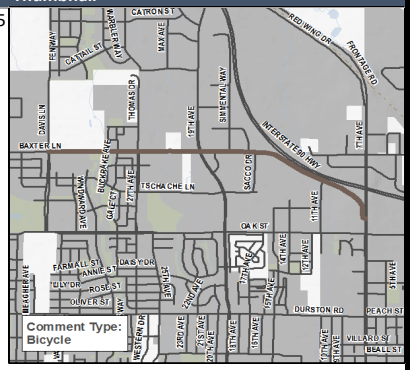
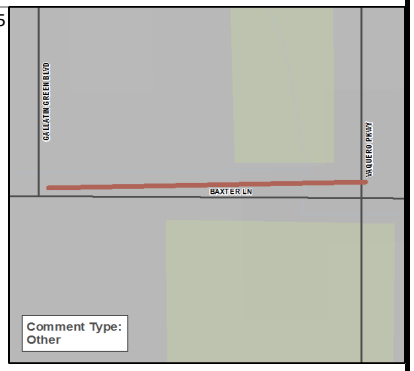
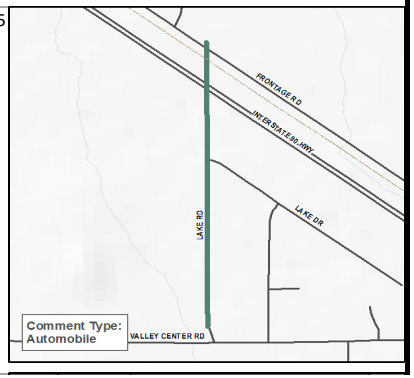
382 977645	Bicycle		4	4	0	22-Oct-15	
383 977646	Other	Lower speed limit to 25MPH	1	1	0	22-Oct-15	
384 977647	Automobile	Interstate access/overpass	1	1	0	22-Oct-15	

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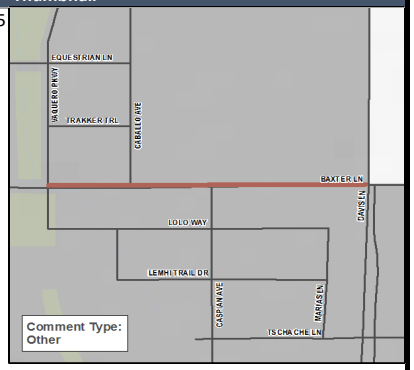
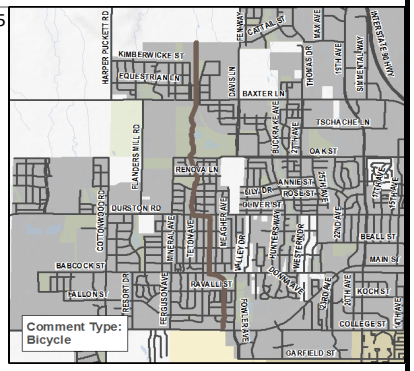
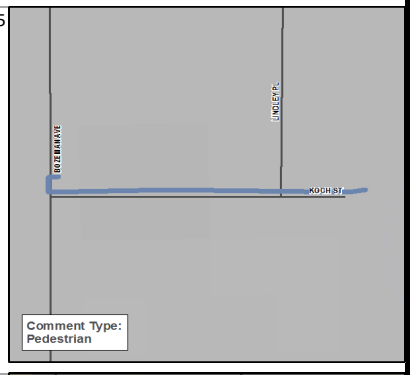
385 977648	Other	Lower speed limit to 35MPH	1	1	0	22-Oct-15	
386 977649	Bicycle	continuous north south path	3	3	0	22-Oct-15	
387 977650	Pedestrian	Northside of street is missing a sidewalk.				22-Oct-15	

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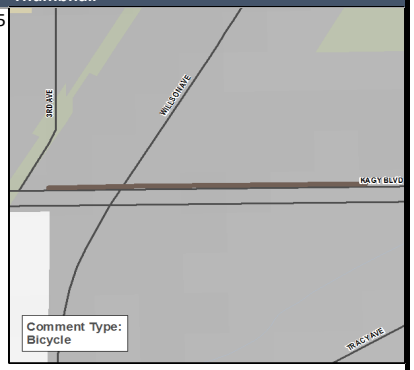
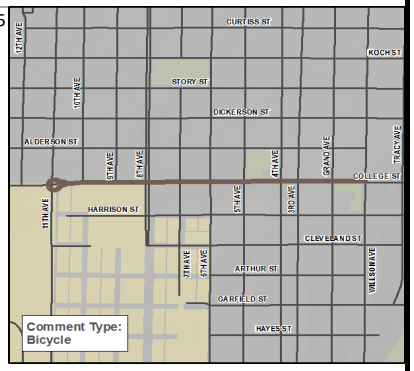
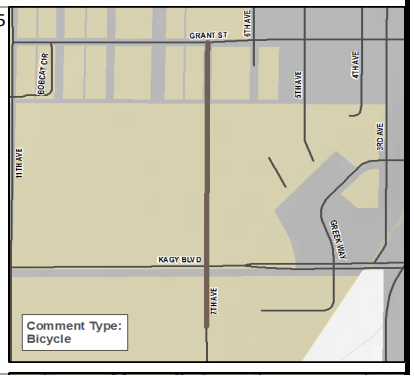
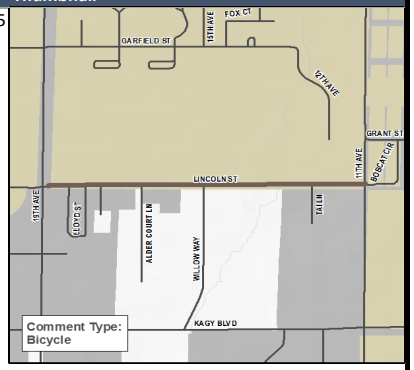
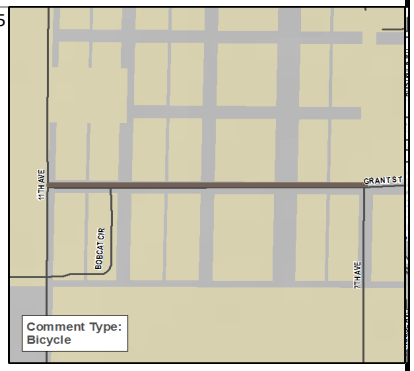
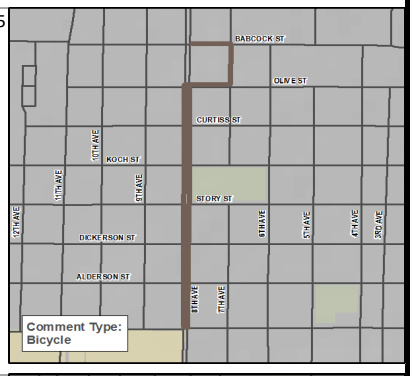
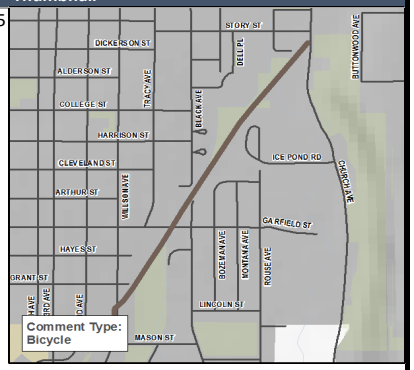
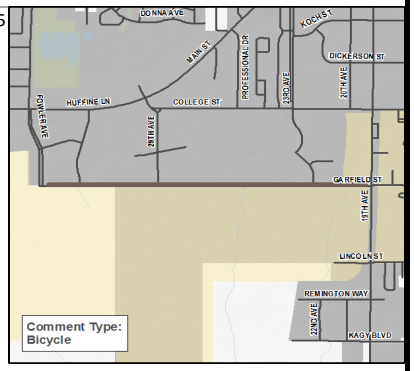
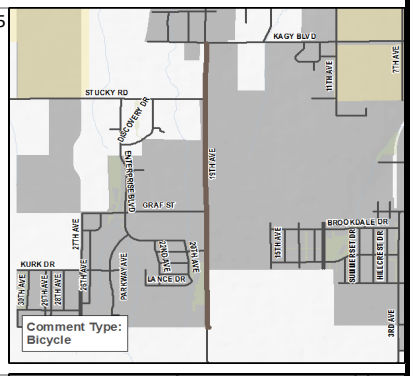
388 977654	Bicycle	Attempting to continue W along Kagy and cross the Wilson right turn is terrifying. There is no bike lane and motorists do not slow/signal when turning.				22-Oct-15	
389 977655	Bicycle	This is a major route to campus for many students. There is no bike lane and directly infront of campus it is dangerously narrow with parking. Especially during the winter.	3	3	0	22-Oct-15	
390 977656	Bicycle	This has potential for a bike lane with it's large road width. With the installation of the new parking garage the street parking could be be moved indoors.				22-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
391 977657	Bicycle	This is entirely student housing along this street and would benefit with the connection between 19th BL and 11th BL. This road is due for an upgrade.				22-Oct-15	
392 977658	Bicycle	The enforcement of no parking or stopping needs to be enforced. When someone parks along this road it forces a once safe cyclist into an unsafe environment unnecessarily.	1	1	0	22-Oct-15	
393 977659	Bicycle	Bicycle lane is almost entirely in the door zone. Rendering it useless.	1	1	0	22-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
394 977660	Bicycle	This replaced surface type was a terrible choice. The gravel will never settle to a flat smooth surface making it dangerous for kids to practice riding in a safe zone. Use different material!	1	1	0	22-Oct-15	
395 977661	Bicycle	This has a one way bicycle lane. Only going west. Make sure the lanes go both directions	2	2	0	22-Oct-15	
396 977684	Bicycle	A bike lane or separated shared use trail along 19th to Kagy. Meadowcreek continues to grow as a pedestrian/bicycle island. One safe connection to the City's existing trails/bike lanes would be ideal.	4	4	0	23-Oct-15	

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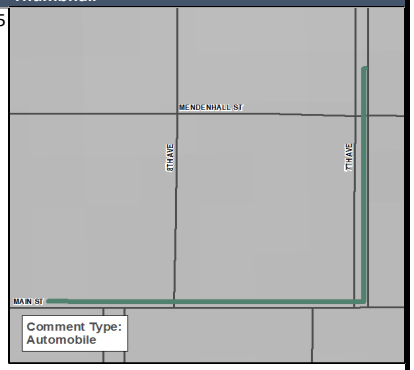
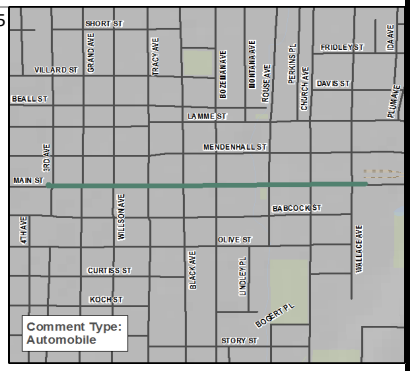
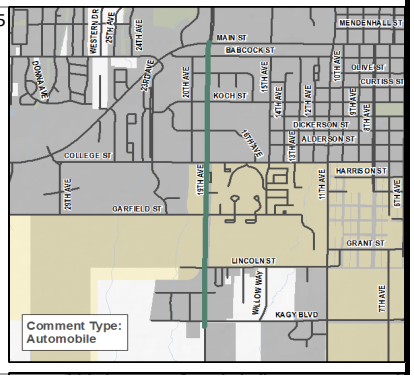
397 977696	Automobile	Synchronize these lights.				23-Oct-15	
398 977697	Automobile	Synchronize these lights.				23-Oct-15	
399 977698	Automobile	Synchronize these lights.	-1	0	1	23-Oct-15	

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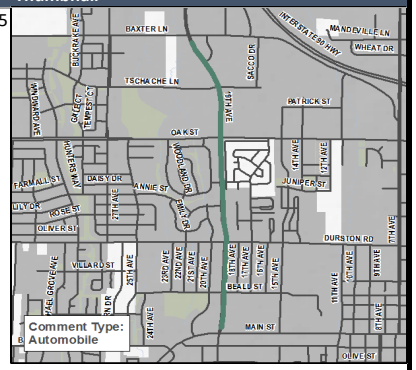
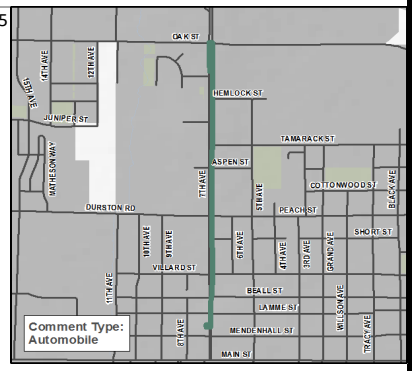
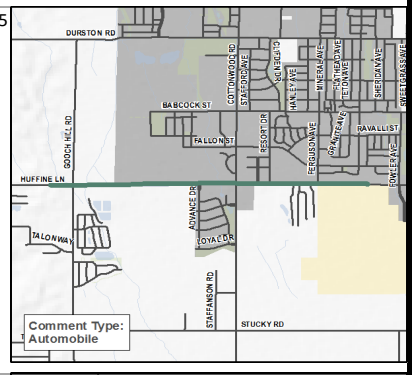
400 977699	Automobile	Synchronize these lights.	1	1	0	23-Oct-15	
401 977700	Automobile	Synchronize these lights.	-2	0	2	23-Oct-15	
402 977701	Automobile	Synchronize these lights.	3	4	1	23-Oct-15	

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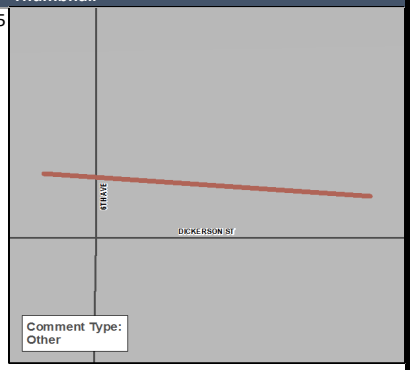
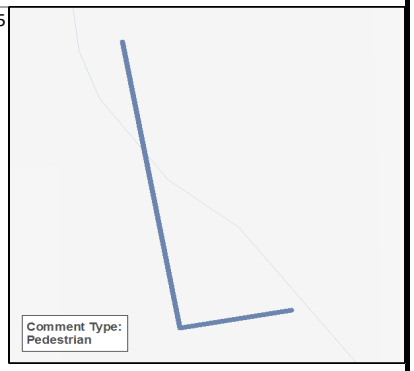
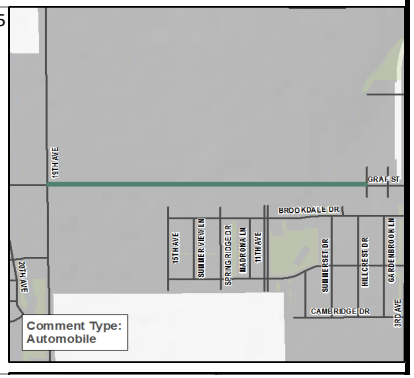
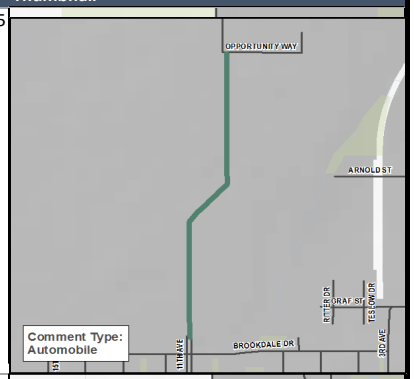
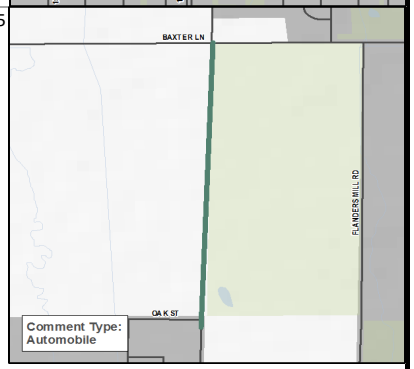
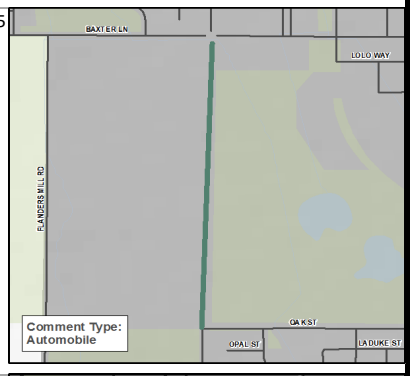
403 977702	Other	Put up stop signs at ALL uncontrolled intersections. I've never seen a town with so little signage.	-1	0	1	23-Oct-15	
404 977703	Pedestrian	How about a main street to mountains trail that goes from main street to the mountains, without starting and stopping a dozen times.	1	1	0	23-Oct-15	
405 977704	Automobile	Extend Graf street	6	6	0	23-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
406 977707	Automobile	Extend 11th ave	4	4	0	23-Oct-15	
407 977708	Automobile	Complete Cottonwood	3	3	0	23-Oct-15	
408 977709	Automobile	Complete Ferguson Ave	4	4	0	23-Oct-15	

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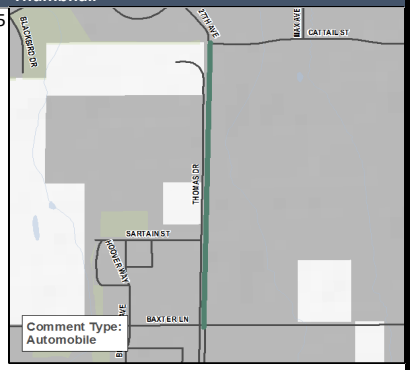
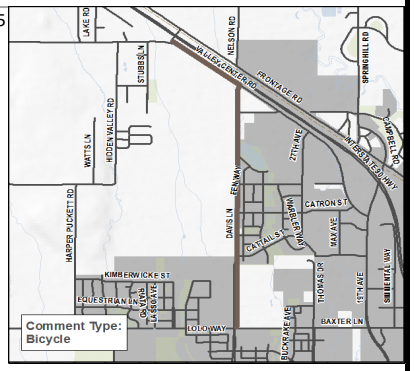
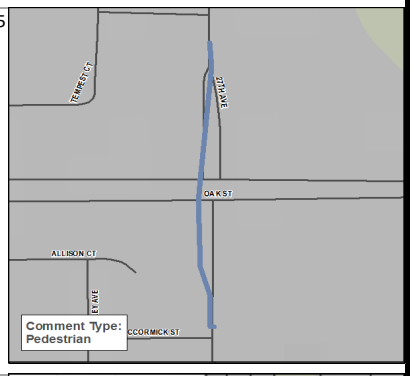
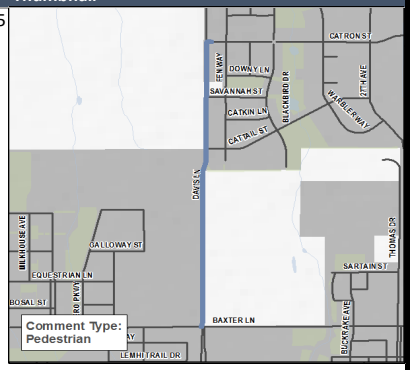
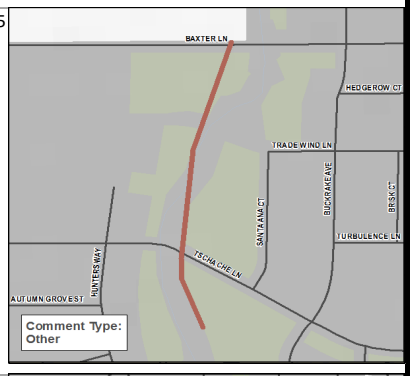
409	977710	Automobile	complete 27th Ave	4	4	0	23-Oct-15	
410	977812	Bicycle	Need a bike lane on Davis Lane, to connect to the roadside bike trail on Valley Center. Davis Lane is too narrow to be safe for bikers.	4	4	0	26-Oct-15	
411	977835	Pedestrian	Hard road to cross- people seldom stop for pedestrians.				27-Oct-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
412	977836	Pedestrian	A sidewalk would really help!	2	2	0	27-Oct-15	
413	977841	Other	Add a connector trail north of Oak to align with Trail south of Oak. Add crosswalk and curb cuts				27-Oct-15	
414	977843	Other	Add missing section of trails to provide connectivity	1	1	0	27-Oct-15	

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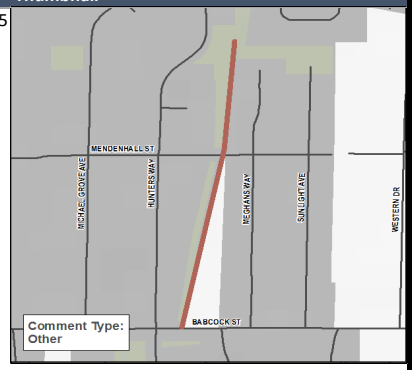
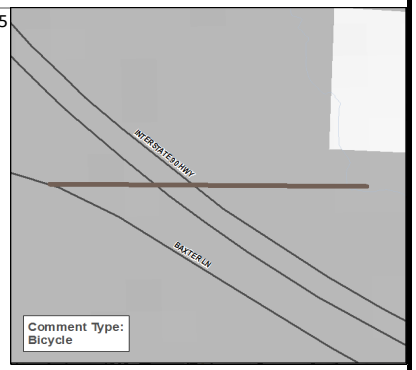
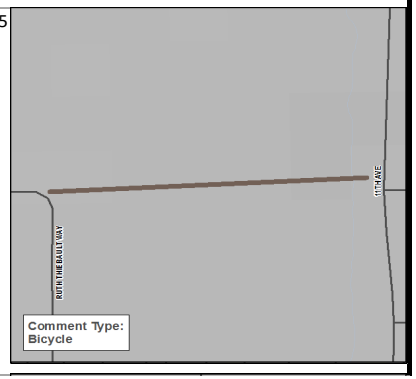
415	977845	Other	Add trail through open space to provide connectivity between residential areas and commerce centers	4	4	0	27-Oct-15	
416	977848	Bicycle	Bike and Ped Over or Underpass	2	2	0	27-Oct-15	
417	977851	Bicycle	There should be a Connector trail for bikes through the High School Campus because there are very few options other than Oak, Durston & Main to get from the West side of 15th to 7th & downtown - This could be one option	2	2	0	27-Oct-15	

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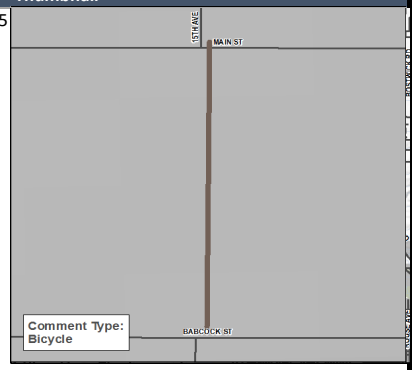
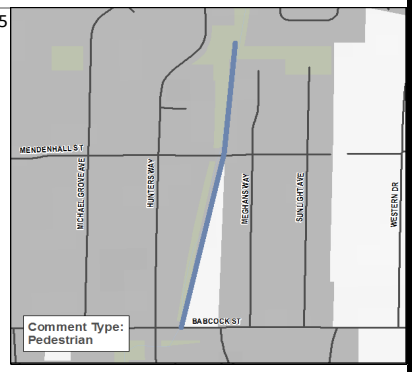
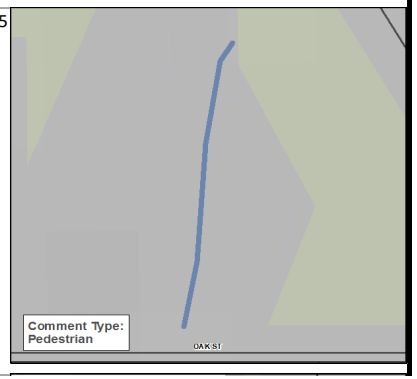
418	977852	Bicycle	There needs to be a Bike connector trail here because there are very limited route from West of 15th toward downtown. This would help bikers get from Babcock to 15th	2	2	0	27-Oct-15	
419	977853	Pedestrian		1	1	0	27-Oct-15	
420	977854	Pedestrian	Need a connector trail here				27-Oct-15	

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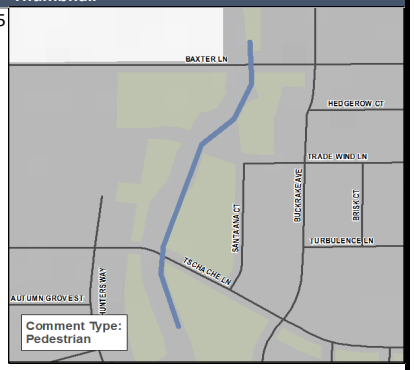
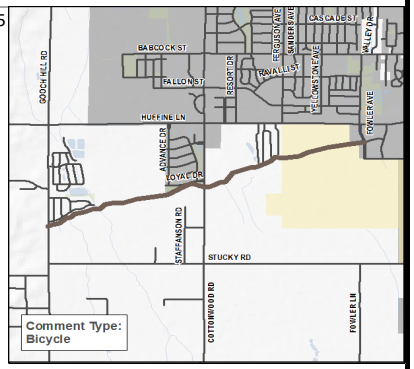
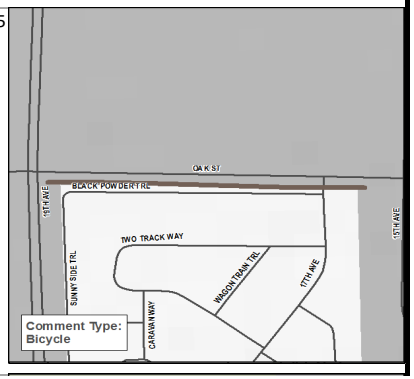
421	977855 Pedestrian					27-Oct-15	
422	977856 Bicycle	Lets add a paved bike path along the irrigation ditch at least to Gooch Hill, if not all the way to Hwy 191	5	5	0	27-Oct-15	
423	977859 Bicycle	Provide separate paved Shared Use / Bike path	2	2	0	27-Oct-15	

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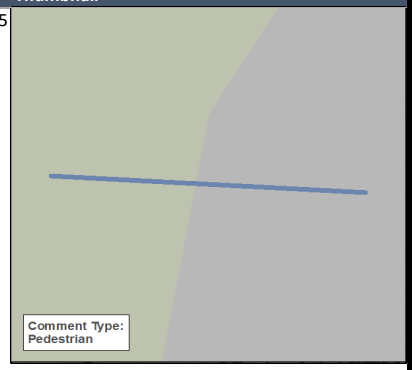
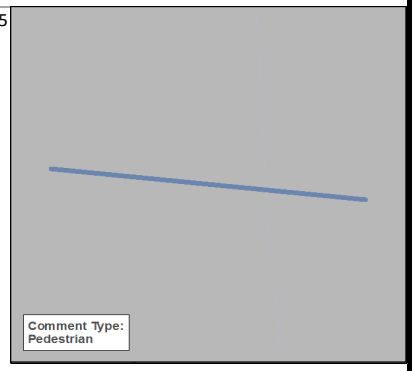
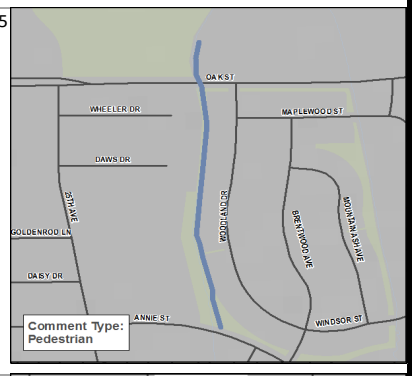
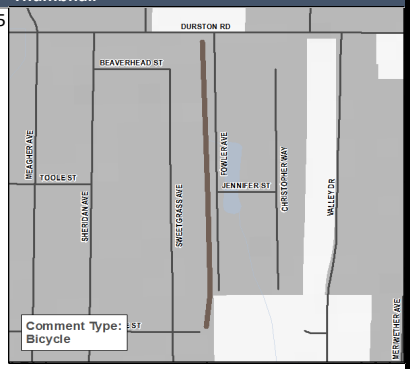
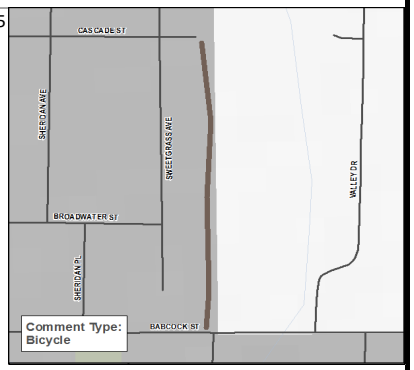
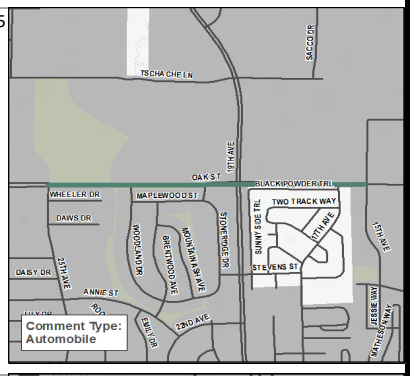
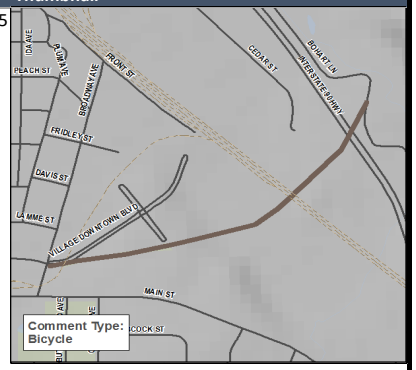
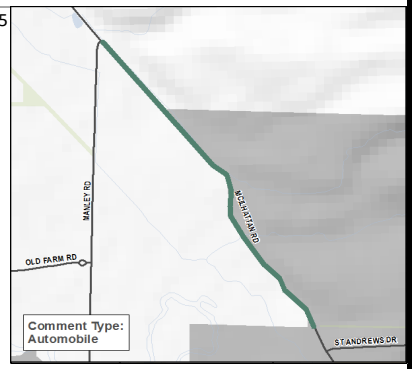
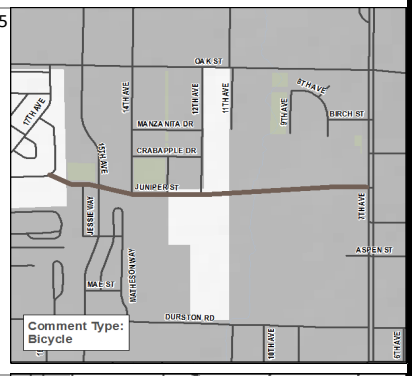
424	977860	Pedestrian	Add bridge and connector trail				27-Oct-15	
425	977861	Pedestrian	Add missing sidewalk & bridge to connect sidewalks	2	2	0	27-Oct-15	
426	977863	Pedestrian	Add or repair missing trail sections (Safe routes to school and access to parks)	1	1	0	27-Oct-15	

Comment IID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
427	977864	Bicycle	Repair deteriorated pavement on Fowler Bike Path				27-Oct-15	
428	977865	Bicycle	Provide paved Shared-Use / Bike Path to connect along Fowler corridor and beyond to College st. Bike Path	1	1	0	27-Oct-15	
429	977866	Automobile	Make Oak 4 lanes and provide separate Bike Path where possible	3	3	0	27-Oct-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
430	977868	Bicycle	Add trail and bridge over railroad tracks and freeway where embankments and grade exisitng	3	3	0	27-Oct-15	
431	977870	Automobile	Pave gravel section of McIlhattan	1	1	0	27-Oct-15	
432	977872	Bicycle	Need more East-West Bike and Pedestrian Connectivity - Add future route on Juniper St to connect 19th to 7th	1	1	0	27-Oct-15	

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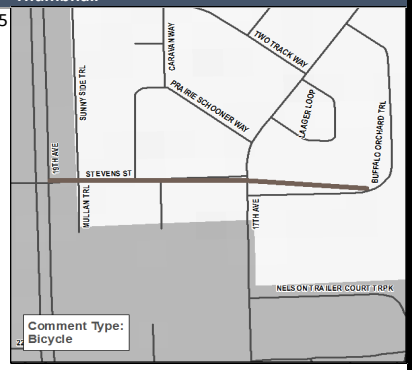
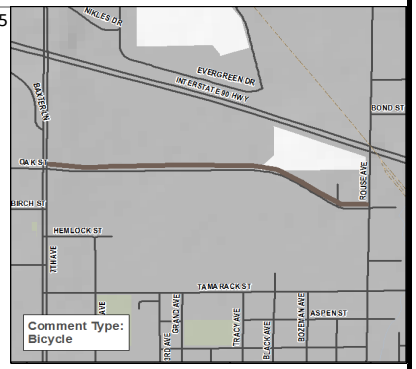
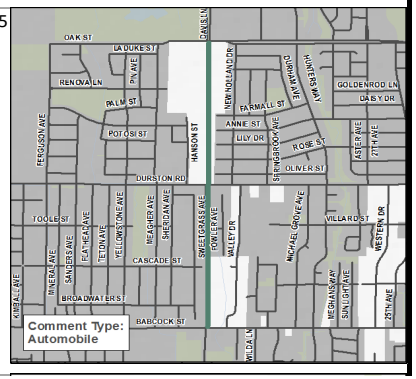
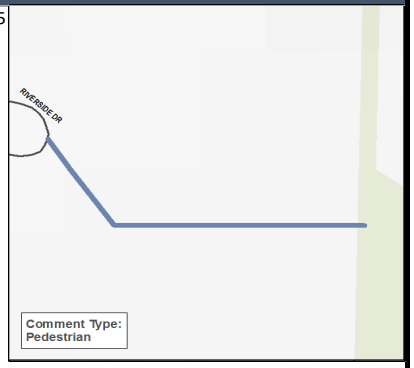
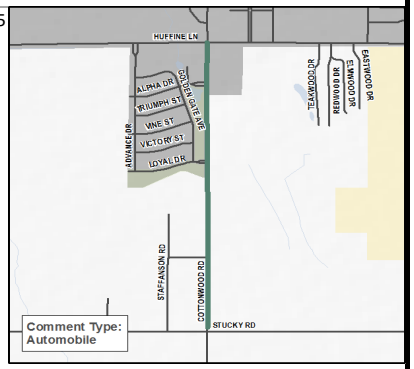
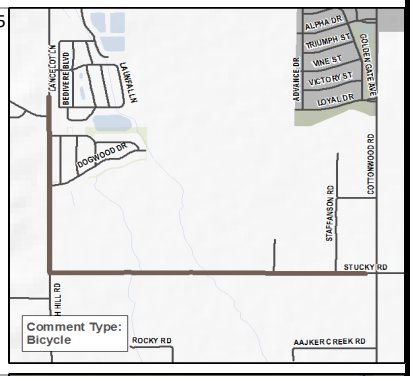
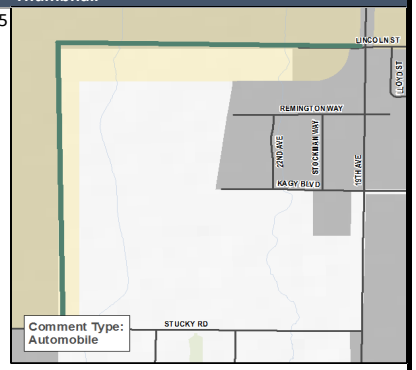
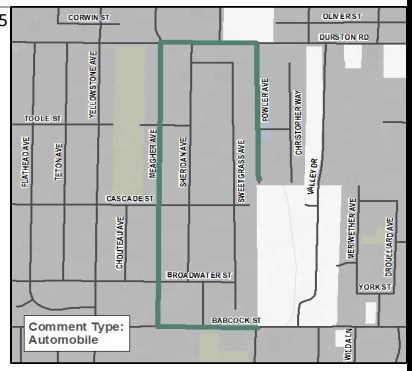
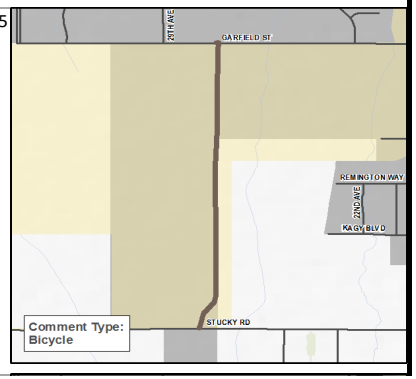
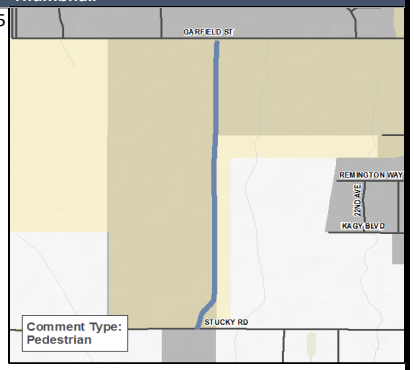
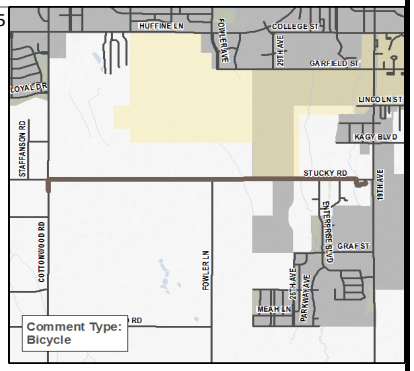
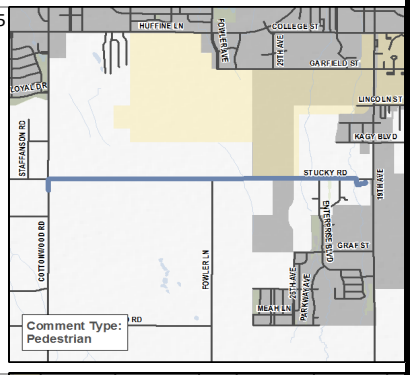
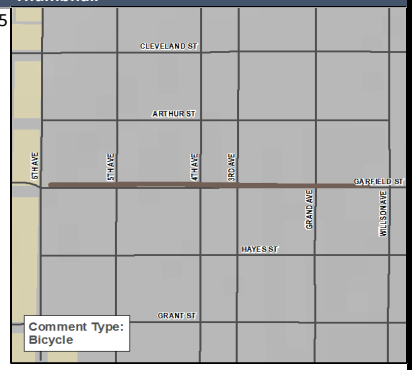
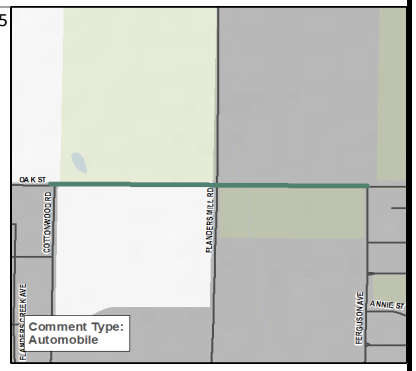
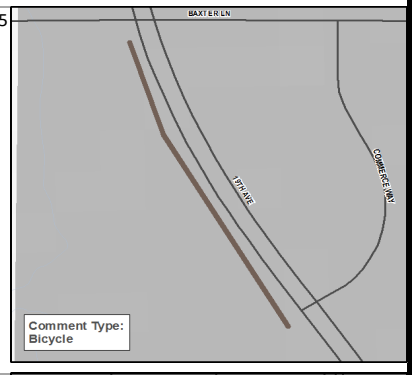
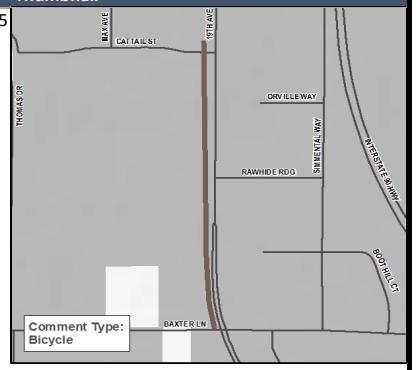
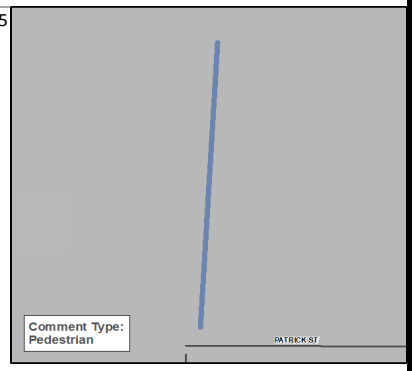
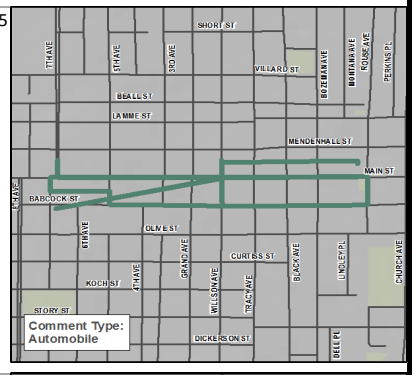
433	977873	Bicycle					27-Oct-15	
434	977874	Bicycle	There should be a Separate Shared use path on the N. Side of Oak from Rouse to 7th to match up to the West of 7th. In order to use these paths, bikers have to cross back and forth across Oak.	4	4	0	27-Oct-15	
435	977876	Automobile	Once Fowler is completed to Davis, it seems like it will become an Arterial St. Do not build it piecemeal, but rather all at once, to avoid directly traffic to neighborhood streets. Plan for and provide separated paved bike path from Main to Oak (Region	4	5	1	27-Oct-15	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
436	978006 Pedestrian	pedestrian trail				30-Oct-15	
437	978122 Automobile	This road has high speed (50) compared to Stucky which is more appropriate at 40. The road narrows after Loyal Gardens and there is no bike or pedestrian route.	1	2	1	3-Nov-15	
438	978123 Bicycle	There is a lot of bike traffic on this road which has problems with drivers going over the speed limit which is 40. The sides of the road are steep and it is hard to pass bicyclists with oncoming traffic.	2	2	0	3-Nov-15	

Comment IID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
439	978124	Automobile	Why are these roads usable? Opening up these roads will reduce traffic on 19th, Garfield, Stucky and Fowler.				3-Nov-15	
440	978125	Automobile	Complete Fowler! We have too few streets that cross from Huffine into housing. The houses are all facing away from Fowler is it was intended to have traffic! This is a main choke point between Huffine and Durston. Finishing this road will limit traffic heavily on streets like Hunters Way and Michael Grove and ultimately 19th.	2	3	1	3-Nov-15	
441	978128	Bicycle	Bike path thru the MSU Ag Station would be safer than 19th				3-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
442	978129	Pedestrian	Pedestrian path thru the MSU Ag Station would be safer than 19th -- less vehicle exhaust. The air on a path next to a busy street is often more polluted than inside the vehicles on the same street."	3	3	0	3-Nov-15	
443	978130	Bicycle	Stucky needs a bike lane	2	2	0	3-Nov-15	
444	978131	Pedestrian	Stucky needs room for pedestrians				3-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
445	978352	Bicycle	Garfield Street is a East-West artery that is an important route for pedestrians and bicyclists alike. We live on Garfield and are constantly in awe of what an busy route it is for the commuting community and college folks. We believe that Garfield needs to be further developed into a bicycle-friendly route, as it is flanked to the South and North by streets (Cleveland and Grant) that work as important arteries for car traffic. Garfield is already set up to be a good option for a safer pedestrian and bicycle route as there is not parking on the South side of the street, and dead ends into Campus as well as has an easy access point for the Galligator trail.	2	2	0	8-Nov-15	
446	979085	Automobile	Connect Oak to Cottonwood to reduce traffic congestion on Ferguson.				12-Nov-15	
447	979115	Bicycle	Need to complete this trail connection.				13-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
448	979116	Bicycle	need shared use path on this side too				13-Nov-15	
449	979117	Pedestrian	pathway connection until development occurs	1	2	1	13-Nov-15	
450	979215	Automobile	If you are considering changing the one-ways of Mendenhall and Babcock then you should also consider changing Main St to a 3-lane road.				18-Nov-15	

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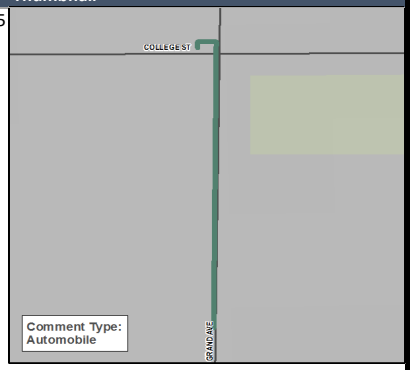
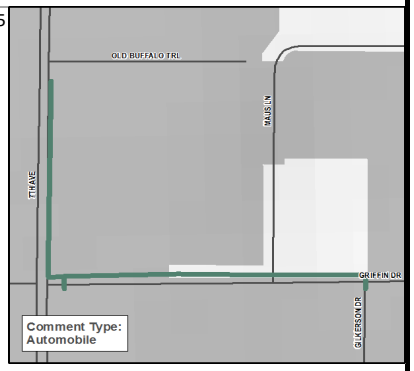
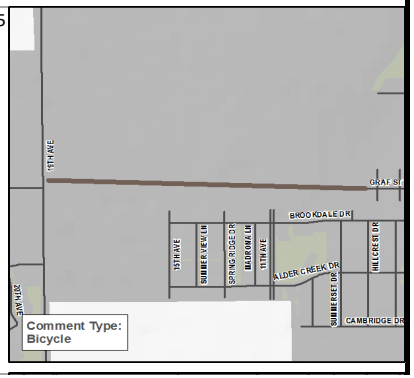
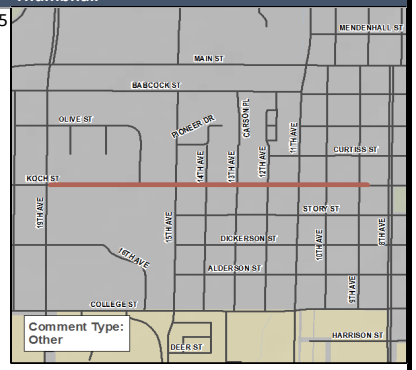
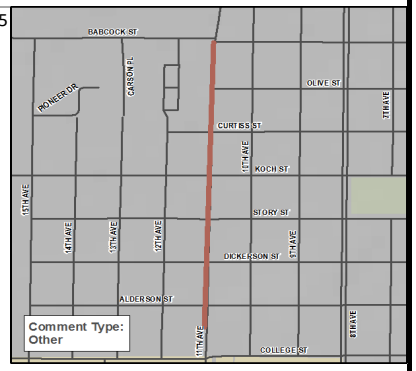
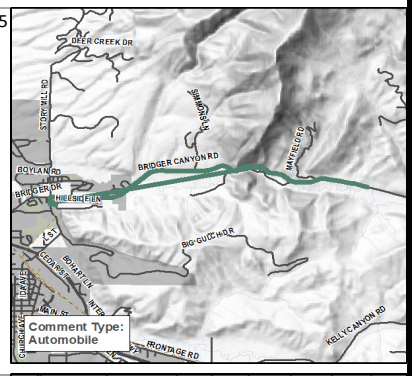
451	979216	Automobile	Change right-hand-turn only at College and Willson to right-hand-turn only 7am-9 am and 4pm-6pm (or whatever hours work.) Having a blanket all day time is not working.	4	4	0	18-Nov-15	
452	979218	Automobile	A proper right-hand turn lane from Griffin to N 7th should be installed.	2	2	0	18-Nov-15	
453	979231	Bicycle	There needs to be an extension of Graf Street with multi-use trail to connect Meadow Creek, Southbridge and Enterprise Street. There are many workers at Oracle and other businesses along Enterprise Street.				18-Nov-15	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
454	979282	Other	Remove parking on one side of this street and add dedicated bike lanes.	1	1	0	22-Nov-15	
455	979283	Other	Remove parking on one side and add dedicated bike lanes. As is this is a narrow road with lots of traffic.	1	1	0	22-Nov-15	
456	979284	Automobile	Excessive heavy truck thru-traffic makes Bridger Canyon inhospitable to bikes and peds (plus quite noisy on M and Drinking Horse)				22-Nov-15	

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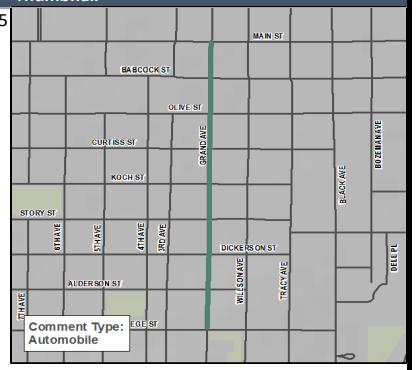
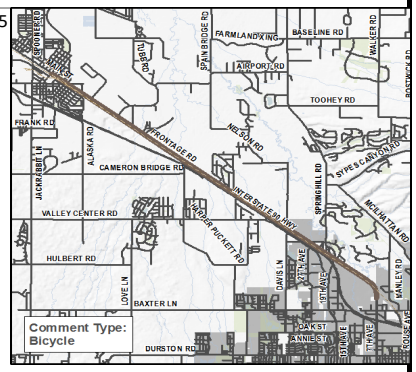
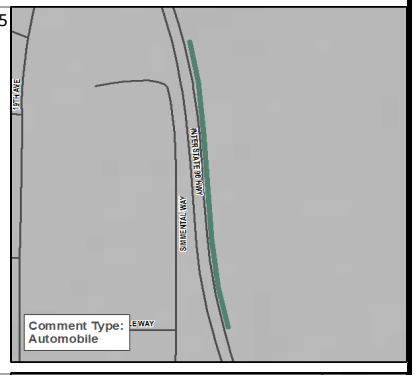
457	979286	Automobile	Lots of North-bound traffic on Grand moving very fast (downhill) due to Right-turn only at College & Willson. Seems like we just swapped problems with that: in exchange for lessening congestion on College, we pushed through-traffic onto Grand. Can we have a plan for getting non-local traffic (destination or point of origin within residential area between Willson & 8th, College and Olive) off of Grand which is not an arterial in any way shape or form? Or at least slows down traffic and removes incentive for motorists to speed downhill through uncontrolled intersections and towards the next arterial they are trying to get to?	1	1	0	23-Nov-15	
458	979311	Bicycle	We need a bike route from Bozeman to Belgrade. Between the Frontage Rd and RR, or between RR and Interstate would remove bikes from dangerous Frontage Rd. Add an underpass at the fishing site to connect with trail system there.	1	1	0	23-Nov-15	
459	979312	Automobile	3rd lane added with the new 7th Ave bridge project should have been extended all the way to the 19th off ramp	1	1	0	23-Nov-15	

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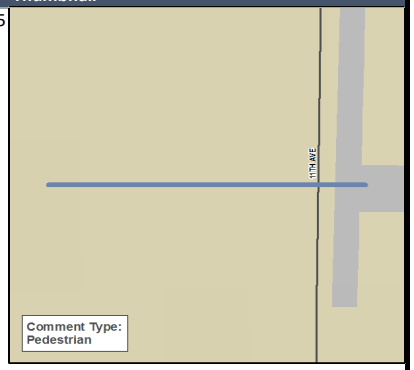
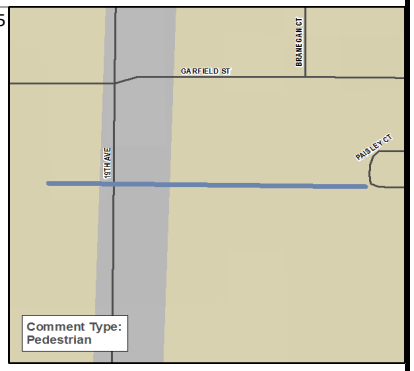
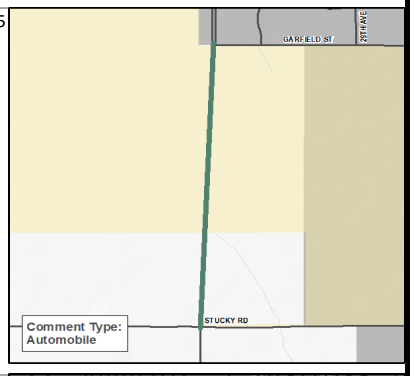
460 979313	Pedestrian	Above grade pedestrian crossing. The original design of Cheever and Haynes Halls called for this, and makes all kinds of sense.				23-Nov-15	
461 979314	Pedestrian	Above grade pedestrian crossing of 19th				23-Nov-15	
462 979315	Automobile	Finish Fowler				23-Nov-15	

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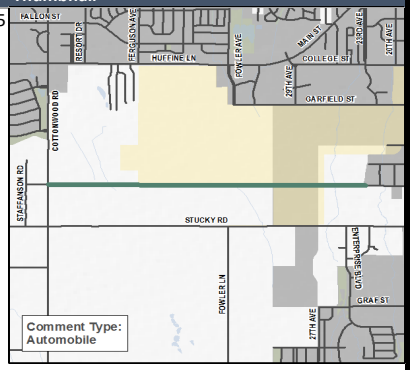
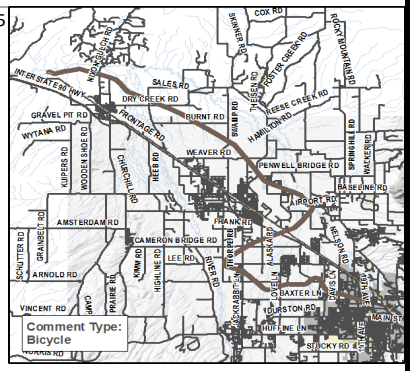
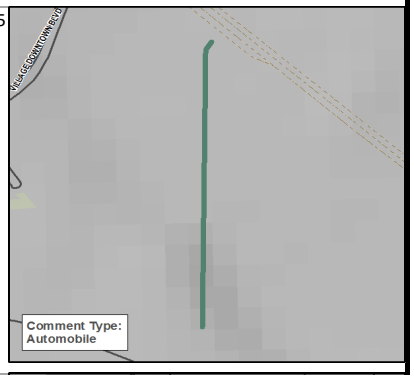
463	979316	Automobile	Push Kagy out to Cottonwood	4	4	0	23-Nov-15	
464	979317	Bicycle	Old rail line would make for a great multi-use trail to Headwaters State Park	1	2	1	23-Nov-15	
465	979318	Automobile	Do not extend Highland to the north through the wetlands. This would not significantly relieve traffic on main street, it would destroy valuable wetland habitat, and it would be extremely expensive.				24-Nov-15	

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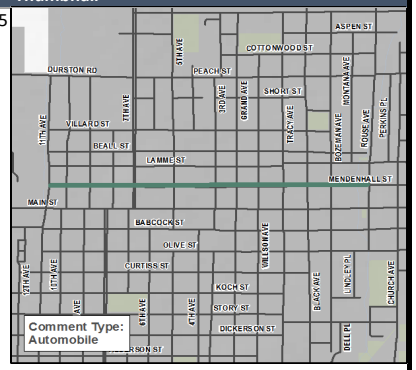
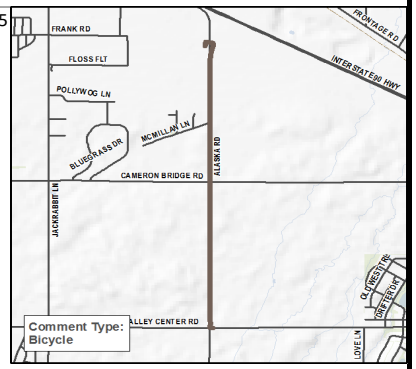
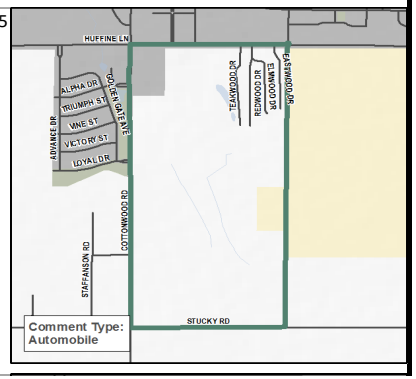
466	979319	Automobile	The one-way directions on Mendenhall and Babcock work very well the way they exist. Do not change them.	1	1	0	24-Nov-15	
467	979320	Bicycle	We almost have a safe bike route from Belgrade to Bozeman, with the exception of Alaska RD between the new interchange and Valley Center. No shoulder, 50mph speed limit, and frequent gravel trucks make this one section hazardous!				24-Nov-15	
468	980144	Automobile	Push Ferguson through to Kagy and/or Stucky.				25-Nov-15	

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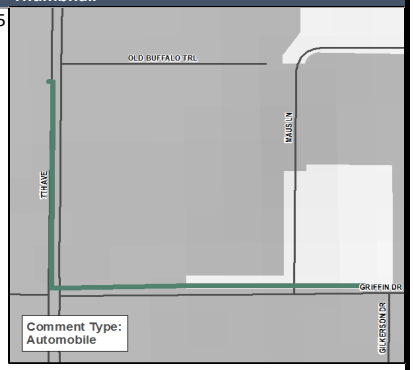
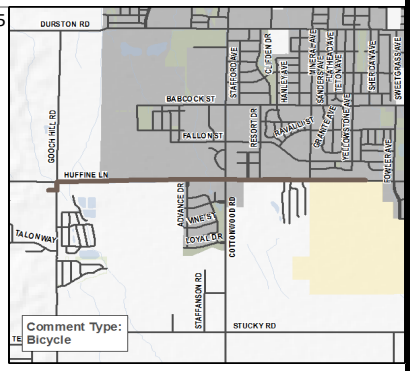
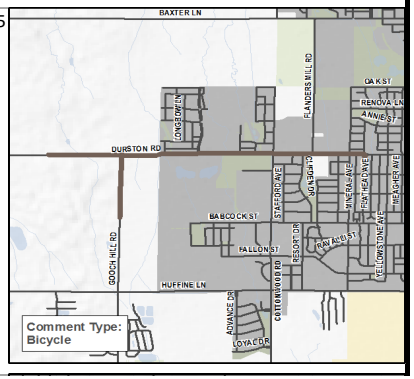
469	980147	Automobile	Left turn only signal at that intersection will help the backup of 'thru traffic' as well				25-Nov-15	
470	981328	Bicycle	Connect bike path from Four Corners to town to increase safety of pedestrians commuting by bicycle	2	2	0	1-Dec-15	
471	981329	Bicycle	There needs to be safe ways for pedestrians to commute into town. this will decrease the number of cars entering town from Four Corners and Gateway	1	1	0	1-Dec-15	

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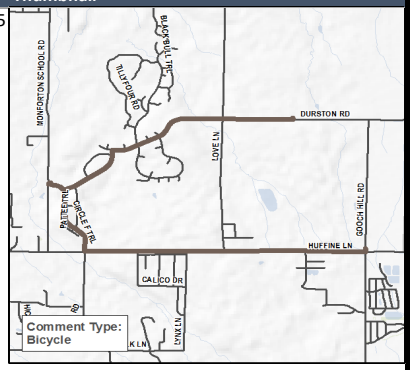
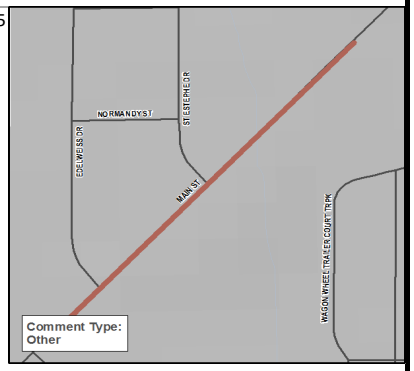
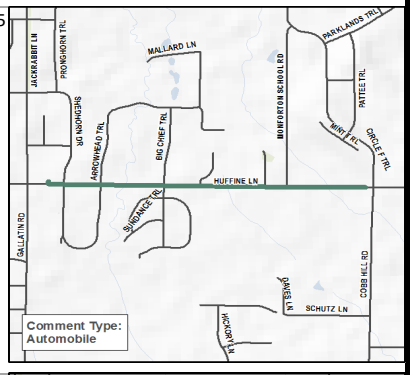
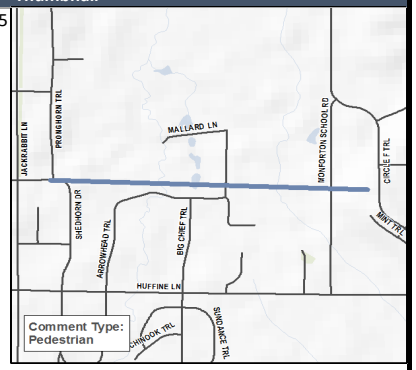
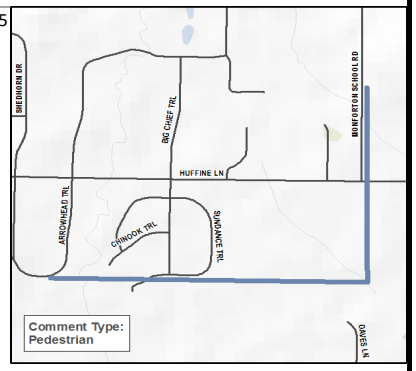
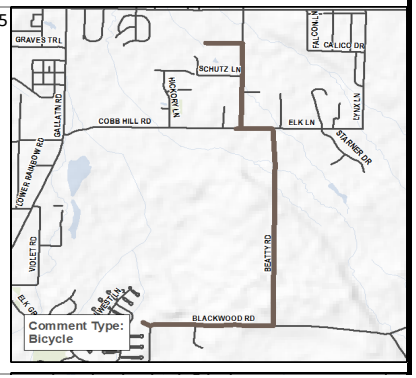
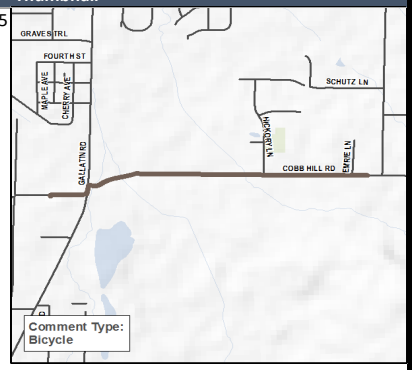
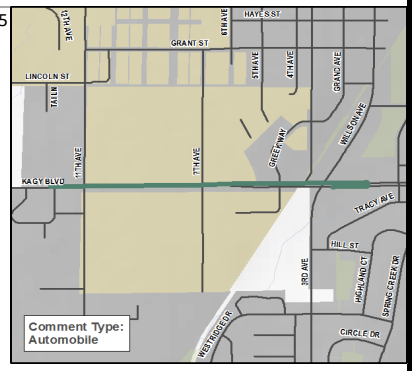
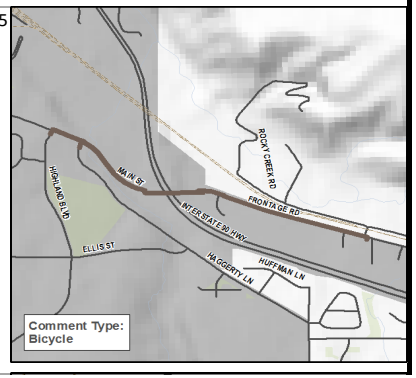
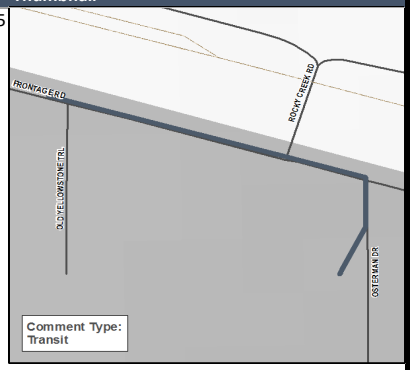
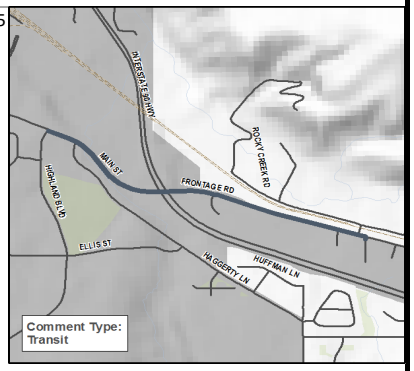
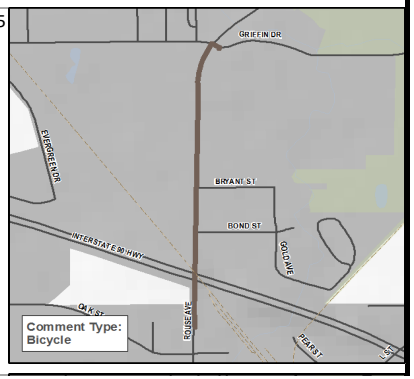
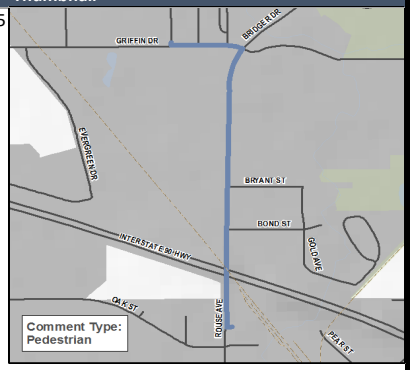
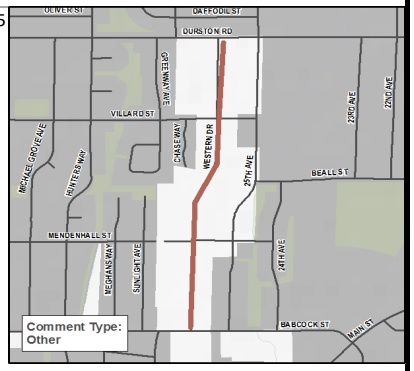
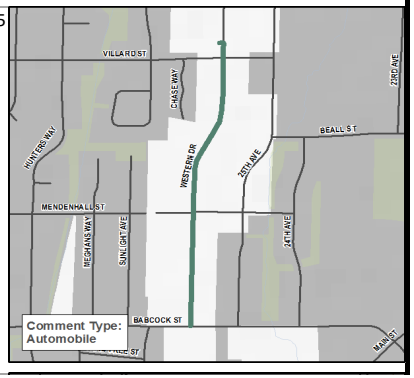
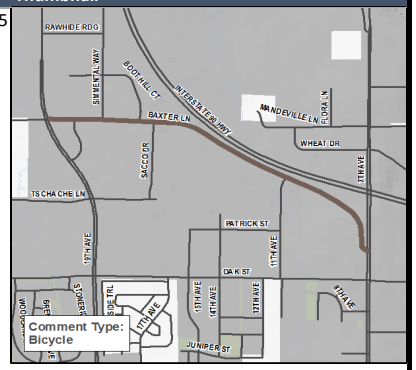
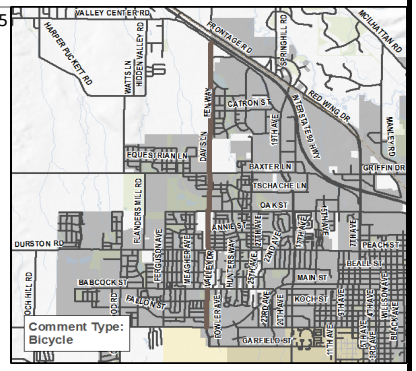
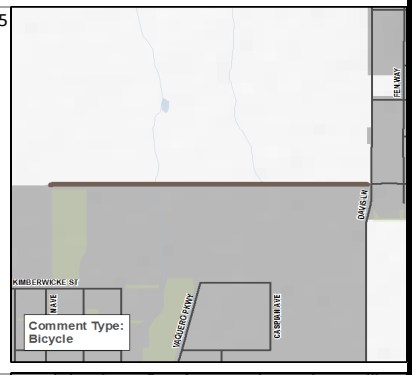
472	981330	Bicycle	Connect the bicycle path from Four Corners to the existing bicycle paths in town.	1	1	0	1-Dec-15	
473	981343	Other	The speed limit is too fast here. With no crosswalks or places for pedestrians to safely cross, the speed limit needs to be slowed.	1	1	0	2-Dec-15	
474	981344	Automobile	Four corners is a community growing at a very quick pace. This area needs to be treated as a community and not a fly-by for traffic. The spped needs to be dropped from 55mph to 45mph, and when closer to the intersection down to 35 mph. Children commute to school along this stretch of road, and the speed of traffic is a danger. With no crosswalks or areas to cross within a mile of the Huffine/Jackrabbit intersection, pedestrians risk their lives by trying to hop across 5 lanes of speeding traffic.	1	1	0	2-Dec-15	

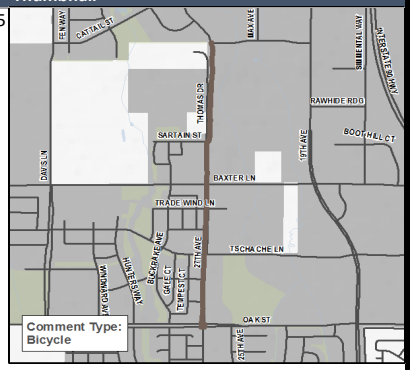
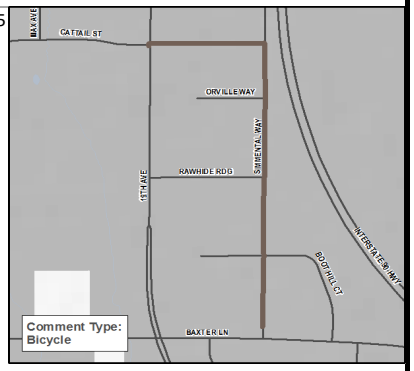
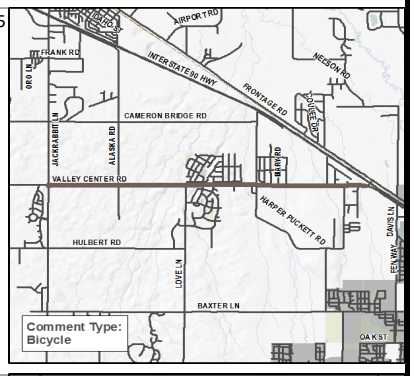
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
475	981345	Pedestrian	There needs to be a pedestrian path that connects sub divisions with school; increase safety and health for growing children.	1	1	0	2-Dec-15	
476	981346	Pedestrian	There needs to be walking paths that connect subdivisions to school and are not within 5 feet of speeding Huffine traffic. This will increase safety and health of children and community members commuting around the Four Corners community.				2-Dec-15	
477	981347	Bicycle	Bicycle paths to connect subdivision to other services such as schools will decrease use of automobiles and increase health. A walkable community is a healthy community; Four Corners is a community.	1	1	0	2-Dec-15	

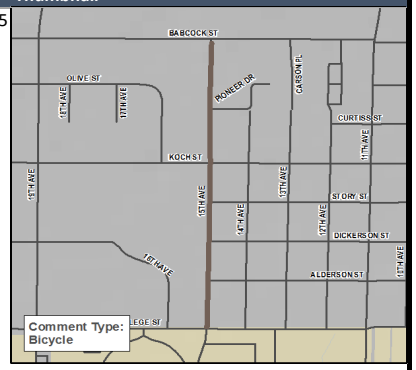
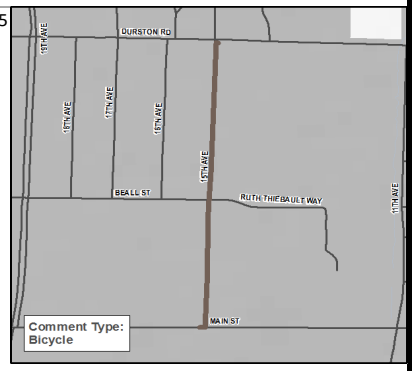
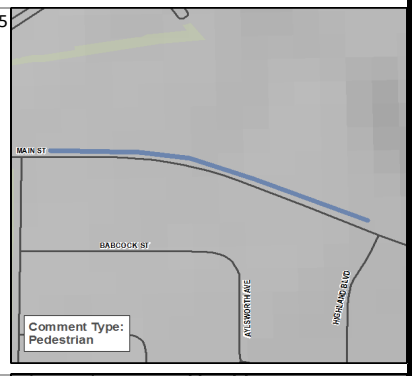
Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
478 981348	Bicycle	Connecting the subdivisions to the school and into Bozeman will decrease automobile traffic and increase health/safety of Four Corners residents/children.				2-Dec-15	
479 981621	Automobile	The city should not allow MSU to close a major thoroughfare before, during, and after football games. It is outrageous that citizens have to either triple their travel time and/or drive completely out of their way when leaving their homes the (often entire day) day of a football game.				3-Dec-15	
480 981692	Bicycle	bike lanes and walking safety to these east frontage road area businesses. Also Gallatin College is going to grow at their East Frontage location.				8-Dec-15	

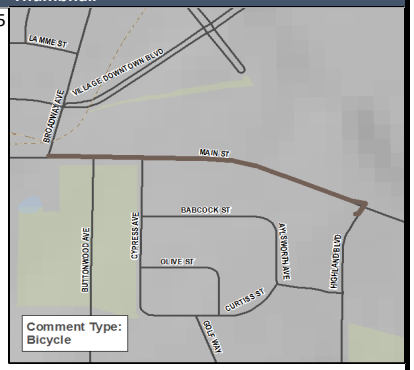
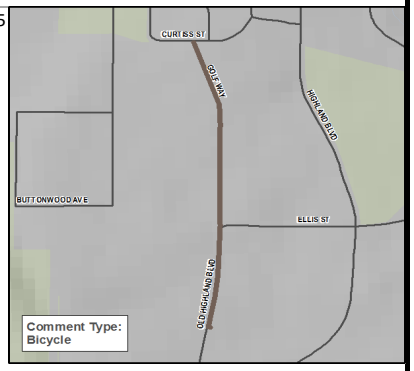
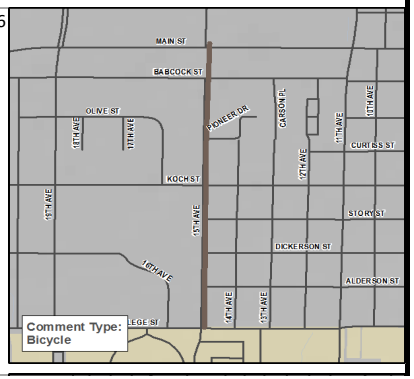
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
481	981693	Transit	Public transportation to these East Frontage road businesses and Gallatin College.				8-Dec-15	
482	981694	Transit	Public transportation out farther to East Frontage road.	2	2	0	8-Dec-15	
483	981695	Bicycle	Bike path that is safe on North Rouse.				8-Dec-15	

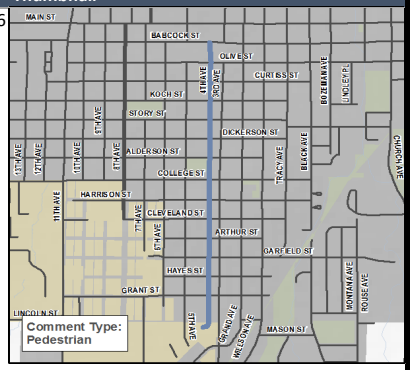
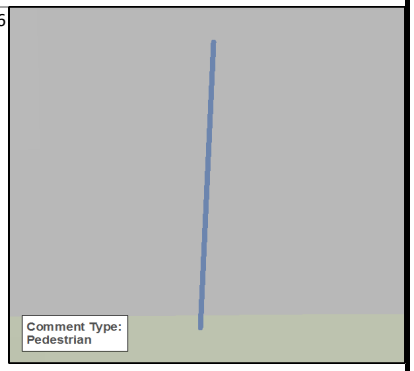
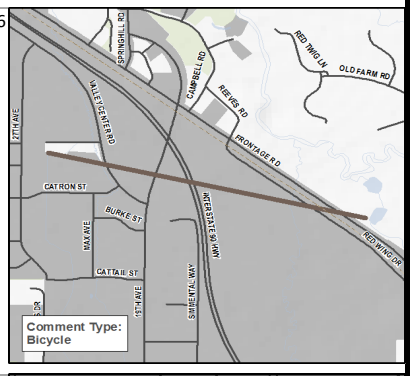
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
484	981696	Pedestrian	Safe walking path for Warming Center residents.	2	2	0	8-Dec-15	
485	981744	Other	Western Dr has no sidewalks or painted lines, yet is definitely used as a collector street. Something should be done (traffic controls?) to ensure safety of residents and address heavy and fast traffic flow, especially at peak traffic times.				10-Dec-15	
486	981745	Automobile	Traffic travels too fast, there are many pedestrians with no sidewalks, including kids. This street was not intended as heavily traveled street. Add 4-way stop signs on Mendenhall and at Villard.	1	1	0	10-Dec-15	

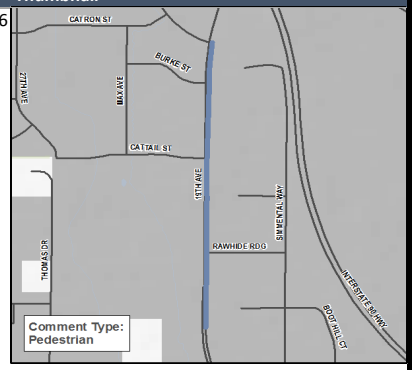
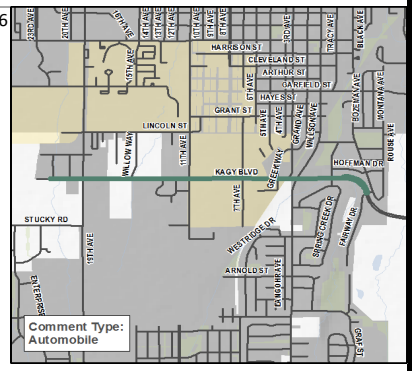
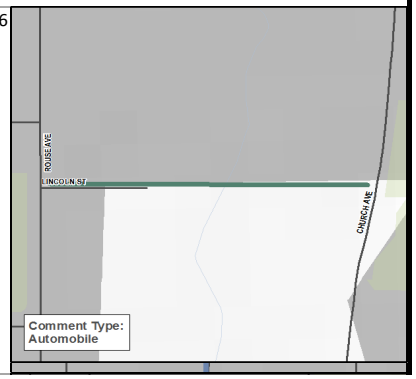
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
487	981870	Bicycle	Baxter Lane should have a shared use path (12-14ft wide) along the north side. this is an ideal east west connector between 7th and 19th. The N side will have limited or no driveways conflicts with the pathway.	1	1	0	14-Dec-15	
488	981871	Bicycle	The entirety of the Fowler/Davis corridor should have a separated, shared use pathway in addition to bicycle lanes. This north south connection is a critical transportation corridor for all modes of transportation.				14-Dec-15	
489	981952	Bicycle	The sidewalk along this section would have been better as a paved two way bicycle/pedestrian route. There are many places in Bozeman that could use two way paved routes but I keep seeing sidewalks put in instead.	1	1	0	19-Dec-15	

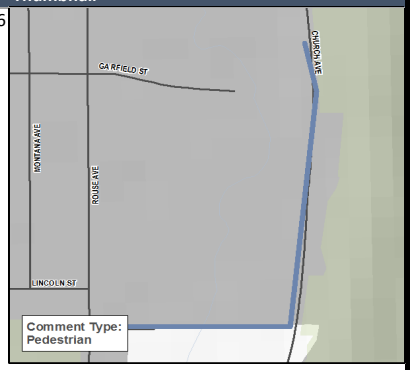
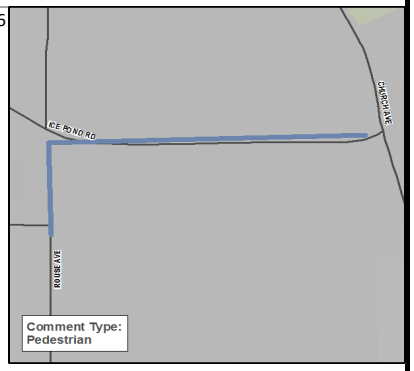
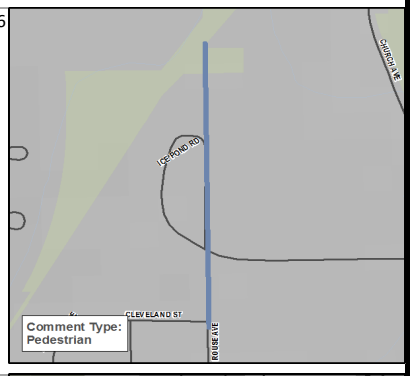
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
490	981953	Bicycle	An excellent route for a paved separate two-way bike/pedestrian path				19-Dec-15	
491	981954	Bicycle	Sidewalks on Simmental would have been better as paved two-way bike/ped paths. Especially along storage unit side where there is little traffic coming in or out along there.				19-Dec-15	
492	981955	Bicycle	Excellent that there is a bike path along Valley Center, but it needs to be cleaned of gravel to be a useful route. I usually ride the road because the bike route is so full of gravel.				19-Dec-15	

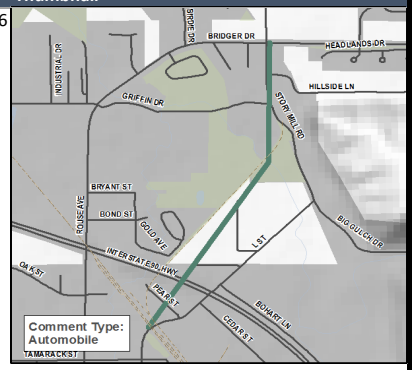
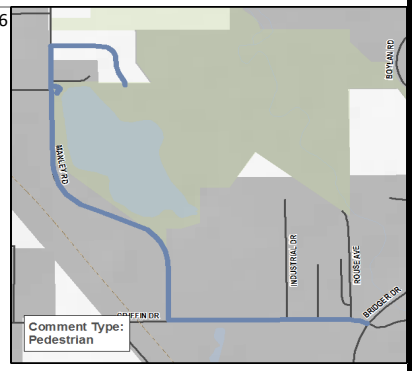
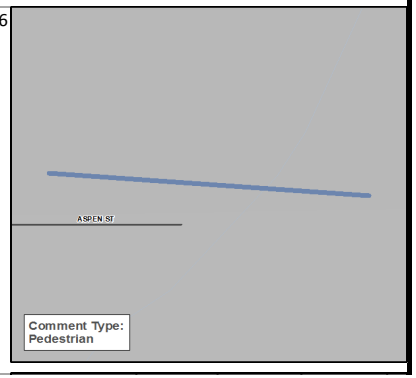
Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
493 981956	Bicycle	There are few good bike routes going north south toward the university from the north side of town. I like 15th avenue, will not ride 19th because of too much traffic. 15th as a designated bike route is needed and it needs to be plowed in the winter.				19-Dec-15	
494 981957	Bicycle	Designate this section as a bike route just as on the north side of Durston. Good route to go to and from the university from the north side of town.				19-Dec-15	
495 981996	Pedestrian	There is no setback between sidewalk and road here. Also there are giant, unused parking lanes out this way that are worth a look too.				22-Dec-15	

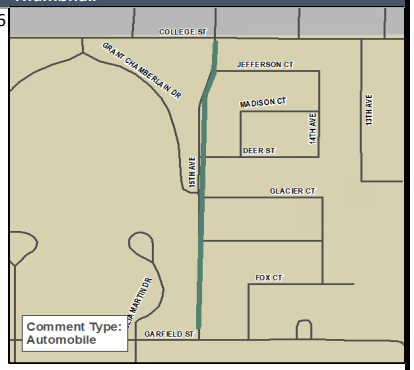
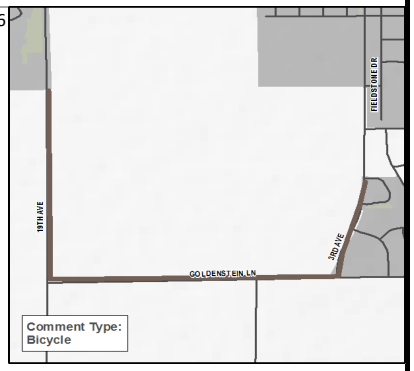
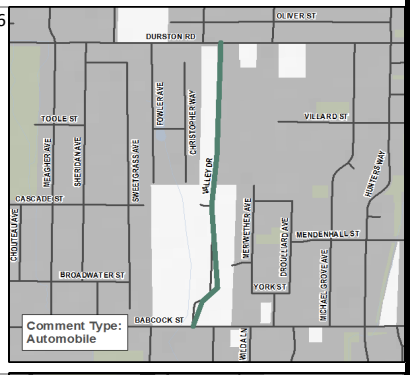
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
496	982044	Bicycle	The separated path on Highland dead ends at E. Main. A bike connection is needed along Main St. between Highland and downtown. The wide shoulders on E main could be used as bike lanes. This will become even more important when Heebs relocates to Highland. It is a long walk from downtown, but relatively short bike ride.				29-Dec-15	
497	982045	Bicycle	This is a nice low stress bike route connecting neighborhoods to downtown. It should be improved/formalized with bike route signs, pavement and entryways on road (Golf Way) east of cemetery. There is a dirt section on corner of Ellis St./Golf Way that should be paved. This would provide a great winter bike route if plowed.	1	1	0	29-Dec-15	
498	999734	Bicycle	Exceptional opportunity for N/s bicycle boulevard - in particular with a bike/ped only pass through between Main and Babcock.				8-Jan-16	

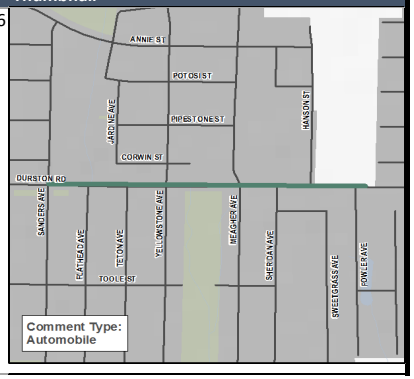
Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
499	999735	Pedestrian	Pedestrian, bike, homeowner "woonerf".				8-Jan-16	
500	999736	Pedestrian	Connector trail between Olive and Bogert Park.	1	1	0	8-Jan-16	
501	999737	Bicycle	Connection between north side and west side Mainstreet-to-Mountains system needed.				8-Jan-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
502	999741	Pedestrian	Priority should be given to closing the gaps in the existing system like the few missing spots along the East side of 19th from Baxter to Valley Center.	-1	2	3	9-Jan-16	
503	999742	Automobile	Make Kagy 5 lanes! MSU is the biggest destination in the county on a daily basis. They are growing fast. Need associated bike lanes and wide pedestrian facilities as well with tunnels or bridges by 11th and 7th.				9-Jan-16	
504	999743	Automobile	Connect this street and make sure there are pedestrian facilities over the creek. S. Bozeman is cut off.				9-Jan-16	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
505 999744	Pedestrian	Install trail/sidewalk connection.				9-Jan-16	
506 999745	Pedestrian	Install sidewalk connection.				9-Jan-16	
507 999746	Pedestrian	Install trail/sidewalk link.	1	1	0	9-Jan-16	

Comment ID		Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
508	999747	Automobile	Upgrade Story Mill/L Street to city standard. Add bike facilities to link with proposed M Trail.				9-Jan-16	
509	999748	Pedestrian	Add sidewalks/ bike lanes from MDT widening of Rouse to the park.	1	1	0	9-Jan-16	
510	999960	Pedestrian	A pedestrian and bike bridge is needed here to connect to existing trail on the east bank of Bozeman Creek. For the past 15 years I have watched a poor lady ride a three wheel trike along Rouse to go to and from her home. A bridge would allow her to safely access the trail and N. Church Ave. The bridge must be installed before N. Rouse gets torn up for upgrades.				12-Jan-16	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
511	1002214 Automobile	Road is in terrible condition and needs to be repaired.				24-Jan-16	
512	1002215 Bicycle	Finish the bike/ped loop here.				24-Jan-16	
513	1002216 Automobile	Upgrade Valley Drive to paved with sidewalks.				24-Jan-16	

Comment ID	Category	Initial Comment	Net Like	Like	Dislike	Create Date	Thumbnail
514	1002217 Automobile	Finish Durston Road widening.				24-Jan-16	

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

All On Forum Responses sorted chronologically

As of March 4, 2016, 5:59 PM

As with any public comment process, participation in Bozeman Online City Hall is voluntary. The responses in this record are not necessarily representative of the whole population, nor do they reflect the opinions of any government agency or elected officials.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As of March 4, 2016, 5:59 PM, this forum had:

Attendees:	519
On Forum Responses:	75
All Responses:	393
Hours of Public Comment:	19.7

This topic started on December 7, 2015, 1:34 PM.

All On Forum Responses sorted chronologically

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

Responses

Do you live in the City of Bozeman?

	%	Count
Yes	80.0%	60
No	20.0%	15

Do you work in the City of Bozeman?

	%	Count
Yes	85.3%	64
No	14.7%	11

Overall, how would you rate the quality of life in Bozeman?

	%	Count
Excellent	40.0%	30
Very Good	48.0%	36
Good	8.0%	6
Fair	4.0%	3

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?

	%	Count
Excellent	2.7%	2
Very Good	12.0%	9
Good	37.3%	28
Fair	40.0%	30

	%	Count
Poor	8.0%	6

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?

a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards)

	%	Count
Very High Priority	36.0%	27
Somewhat High Priority	28.0%	21
Middle Priority	21.3%	16
Somewhat Low Priority	9.3%	7
Very Low Priority	5.3%	4

b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.)

	%	Count
Very High Priority	29.3%	22
Somewhat High Priority	28.0%	21
Middle Priority	26.7%	20
Somewhat Low Priority	6.7%	5
Very Low Priority	9.3%	7

c. Maintenance projects (resurfacing, chip seals, etc.)

	%	Count
Very High Priority	13.3%	10
Somewhat High Priority	33.3%	25
Middle Priority	40.0%	30

	%	Count
Somewhat Low Priority	13.3%	10

d. Pedestrian projects (marked crossings, sidewalks, etc.)

	%	Count
Very High Priority	37.3%	28
Somewhat High Priority	28.0%	21
Middle Priority	24.0%	18
Somewhat Low Priority	8.0%	6
Very Low Priority	2.7%	2

e. Bicycle projects (bike lanes, routes, etc.)

	%	Count
Very High Priority	62.7%	47
Somewhat High Priority	16.0%	12
Middle Priority	10.7%	8
Somewhat Low Priority	6.7%	5
Very Low Priority	4.0%	3

f. Trail projects

	%	Count
Very High Priority	45.3%	34
Somewhat High Priority	24.0%	18
Middle Priority	14.7%	11
Somewhat Low Priority	9.3%	7
Very Low Priority	6.7%	5

g. Transit service improvements (additional routes, increased frequency, etc.)

	%	Count
Very High Priority	33.3%	25
Somewhat High Priority	28.0%	21
Middle Priority	21.3%	16
Somewhat Low Priority	10.7%	8
Very Low Priority	6.7%	5

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?

a. A transportation plan that supports the overall City of Bozeman growth policies.

	%	Count
Very High Priority	52.0%	39
Somewhat High Priority	36.0%	27
Middle Priority	10.7%	8
Somewhat Low Priority	1.3%	1

b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.

	%	Count
Very High Priority	50.7%	38
Somewhat High Priority	32.0%	24
Middle Priority	16.0%	12
Very Low Priority	1.3%	1

c. A transportation plan that has overwhelming community support.

	%	Count
Very High Priority	14.7%	11
Somewhat High Priority	37.3%	28
Middle Priority	37.3%	28
Somewhat Low Priority	8.0%	6
Very Low Priority	2.7%	2

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?

a. Improving the movement of people and goods.

	%	Count
Very High Priority	42.7%	32
Somewhat High Priority	38.7%	29
Middle Priority	16.0%	12
Somewhat Low Priority	1.3%	1
Very Low Priority	1.3%	1

b. Enhancing tourism.

	%	Count
Very High Priority	9.3%	7
Somewhat High Priority	18.7%	14
Middle Priority	41.3%	31
Somewhat Low Priority	17.3%	13
Very Low Priority	13.3%	10

c. A transportation system with a low cost to local residents.

	%	Count
Very High Priority	21.3%	16
Somewhat High Priority	20.0%	15
Middle Priority	34.7%	26
Somewhat Low Priority	14.7%	11
Very Low Priority	9.3%	7

d. Reducing operations and maintenance costs.

	%	Count
Very High Priority	10.7%	8
Somewhat High Priority	26.7%	20
Middle Priority	42.7%	32
Somewhat Low Priority	10.7%	8
Very Low Priority	9.3%	7

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.

	%	Count
Very High Priority	66.7%	50
Somewhat High Priority	21.3%	16
Middle Priority	10.7%	8
Very Low Priority	1.3%	1

b. Optimizing roads for motor vehicle use.

	%	Count
Very High Priority	8.0%	6
Somewhat High Priority	18.7%	14
Middle Priority	33.3%	25
Somewhat Low Priority	28.0%	21
Very Low Priority	12.0%	9

c. Optimizing roads for all users.

	%	Count
Very High Priority	58.7%	44
Somewhat High Priority	21.3%	16
Middle Priority	13.3%	10
Somewhat Low Priority	4.0%	3
Very Low Priority	2.7%	2

d. Improving road surface conditions.

	%	Count
Very High Priority	6.7%	5
Somewhat High Priority	38.7%	29
Middle Priority	44.0%	33
Somewhat Low Priority	10.7%	8

e. Closing gaps in the arterial and collector street network.

	%	Count
Very High Priority	25.3%	19
Somewhat High Priority	32.0%	24
Middle Priority	34.7%	26

	%	Count
Somewhat Low Priority	5.3%	4
Very Low Priority	2.7%	2

f. Closing gaps in the non-motorized network.

	%	Count
Very High Priority	62.7%	47
Somewhat High Priority	10.7%	8
Middle Priority	13.3%	10
Somewhat Low Priority	8.0%	6
Very Low Priority	5.3%	4

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?

a. Adding and improving public transit services (bus) in Bozeman.

	%	Count
Very High Priority	29.3%	22
Somewhat High Priority	34.7%	26
Middle Priority	21.3%	16
Somewhat Low Priority	10.7%	8
Very Low Priority	4.0%	3

b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.

	%	Count
Very High Priority	62.7%	47
Somewhat High Priority	16.0%	12

	%	Count
Middle Priority	16.0%	12
Somewhat Low Priority	1.3%	1
Very Low Priority	4.0%	3

c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.

	%	Count
Very High Priority	53.3%	40
Somewhat High Priority	26.7%	20
Middle Priority	13.3%	10
Somewhat Low Priority	2.7%	2
Very Low Priority	4.0%	3

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).

Goal 1: Maintain the existing transportation system.

	%	Count
Strongly Agree	37.3%	28
Somewhat Agree	30.7%	23
Neutral	25.3%	19
Somewhat Disagree	2.7%	2
Strongly Disagree	4.0%	3

Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.

	%	Count
Strongly Agree	65.3%	49

	%	Count
Somewhat Agree	26.7%	20
Neutral	6.7%	5
Somewhat Disagree	1.3%	1

Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.

	%	Count
Strongly Agree	46.7%	35
Somewhat Agree	29.3%	22
Neutral	20.0%	15
Somewhat Disagree	2.7%	2
Strongly Disagree	1.3%	1

Goal 4: Provide a safe and secure transportation system.

	%	Count
Strongly Agree	69.3%	52
Somewhat Agree	20.0%	15
Neutral	9.3%	7
Strongly Disagree	1.3%	1

Goal 5: Support economic vitality of the community.

	%	Count
Strongly Agree	37.3%	28
Somewhat Agree	41.3%	31
Neutral	17.3%	13
Somewhat Disagree	1.3%	1

	%	Count
Strongly Disagree	2.7%	2

Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.

	%	Count
Strongly Agree	73.3%	55
Somewhat Agree	13.3%	10
Neutral	6.7%	5
Somewhat Disagree	4.0%	3
Strongly Disagree	2.7%	2

Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.

	%	Count
Strongly Agree	53.3%	40
Somewhat Agree	29.3%	22
Neutral	14.7%	11
Somewhat Disagree	1.3%	1
Strongly Disagree	1.3%	1

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?

	%	Count
Has a very large impact	14.7%	11
Has a somewhat large impact	40.0%	30
Has a medium impact	28.0%	21

	%	Count
Has a somewhat small impact	14.7%	11
Has a very minimal or no impact	2.7%	2

As a driver, which type of intersection in Bozeman do you prefer to travel through?

	%	Count
Roundabouts	66.7%	50
Stop signs	1.3%	1
Traffic lights (stop lights)	20.0%	15
No preference	12.0%	9

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?

	%	Count
Very comfortable	76.0%	57
Somewhat comfortable	16.0%	12
Somewhat uncomfortable	5.3%	4
Very uncomfortable	2.7%	2

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?

	%	Count
Very comfortable	41.3%	31
Somewhat comfortable	32.0%	24
Neither comfortable nor uncomfortable	6.7%	5

	%	Count
Somewhat uncomfortable	16.0%	12
Very uncomfortable	4.0%	3

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?

	%	Count
Very comfortable	56.0%	42
Somewhat comfortable	28.0%	21
Neither comfortable nor uncomfortable	9.3%	7
Somewhat uncomfortable	6.7%	5

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?

	%	Count
Very comfortable	5.3%	4
Somewhat comfortable	21.3%	16
Neither comfortable nor uncomfortable	14.7%	11
Somewhat uncomfortable	34.7%	26
Very uncomfortable	24.0%	18

**How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.**

	%	Count
Car, truck, or van	60.0%	45
Bus	1.3%	1
Motorcycle	1.3%	1
Bicycle	25.3%	19
Walked	12.0%	9

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?

	%	Count
One (1) - Travel by Myself	36.0%	27
Two (2) - Myself plus one other person	34.7%	26
Three (3) - Myself plus two other people	2.7%	2
Four (4) - Myself plus three other people	2.7%	2
More than Four (4+) - Myself plus four or more people	1.3%	1
Did Not Drive	22.7%	17

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?

Answered	75
Skipped	0

10 10-15 15 **20** **25** 30 **5** 6 **7** **bike** bus **hour** **min** mins **minutes** **one** **walk** was way

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).

	%	Count
Less than 5 days	58.7%	44
Between 5 and 20 days	20.0%	15
More than 20 days	21.3%	16

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?

a. Commuting to work or school

	%	Count
Very Frequently	38.7%	29
Somewhat Frequently	17.3%	13
Never	44.0%	33

b. Recreation

	%	Count
Very Frequently	38.7%	29
Somewhat Frequently	41.3%	31
Never	20.0%	15

c. Exercise/for my health

	%	Count
Very Frequently	36.0%	27
Somewhat Frequently	45.3%	34
Never	18.7%	14

d. Personal errands (to the store, post office, etc.)

	%	Count
Very Frequently	38.7%	29
Somewhat Frequently	25.3%	19
Never	36.0%	27

e. Required for my job

	%	Count
Very Frequently	1.3%	1
Somewhat Frequently	4.0%	3
Never	94.7%	71

What surface do you prefer to ride on when you use a bicycle for transportation?

	%	Count
Marked bike lanes on paved roads	34.7%	26
Shoulders of paved roads	5.3%	4
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)	29.3%	22
Unpaved bike paths, walking paths, trails	13.3%	10
Unpaved roads (for example dirt, gravel, sand)	1.3%	1
Sidewalks	1.3%	1
I don't ride a bicycle	8.0%	6
Other	6.7%	5

Please rate the following reasons why you would choose not to ride a bicycle for transportation

(strongly agree to strongly disagree).

a. Lack of adequate bike lanes

	%	Count
Strongly Agree	40.0%	30
Somewhat Agree	30.7%	23
Neutral	10.7%	8
Somewhat Disagree	8.0%	6
Strongly Disagree	10.7%	8

b. Lack of a place to store my bike at my destination (bike racks)

	%	Count
Strongly Agree	6.7%	5
Somewhat Agree	9.3%	7
Neutral	33.3%	25
Somewhat Disagree	22.7%	17
Strongly Disagree	28.0%	21

c. Work schedule or family obligations make it impossible

	%	Count
Strongly Agree	17.3%	13
Somewhat Agree	21.3%	16
Neutral	20.0%	15
Somewhat Disagree	13.3%	10
Strongly Disagree	28.0%	21

d. Personal health or disability

	%	Count
Strongly Agree	5.3%	4
Somewhat Agree	9.3%	7
Neutral	10.7%	8
Somewhat Disagree	6.7%	5
Strongly Disagree	68.0%	51

e. Bad weather

	%	Count
Strongly Agree	16.0%	12
Somewhat Agree	34.7%	26
Neutral	21.3%	16
Somewhat Disagree	14.7%	11
Strongly Disagree	13.3%	10

f. Feel unsafe while biking next to / with cars

	%	Count
Strongly Agree	30.7%	23
Somewhat Agree	29.3%	22
Neutral	10.7%	8
Somewhat Disagree	16.0%	12
Strongly Disagree	13.3%	10

g. Distance to destination is too far

	%	Count
Strongly Agree	17.3%	13
Somewhat Agree	18.7%	14

	%	Count
Neutral	25.3%	19
Somewhat Disagree	14.7%	11
Strongly Disagree	24.0%	18

h. No bicycle available

	%	Count
Strongly Agree	4.0%	3
Neutral	8.0%	6
Somewhat Disagree	9.3%	7
Strongly Disagree	78.7%	59

i. Not interested in bicycling

	%	Count
Strongly Agree	5.3%	4
Somewhat Agree	4.0%	3
Neutral	4.0%	3
Somewhat Disagree	8.0%	6
Strongly Disagree	78.7%	59

Do you feel it is easy to find information about the City's bicycle routes and trails?

	%	Count
Yes	61.3%	46
No	38.7%	29

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10

minutes?

	%	Count
Less than 5 days	14.7%	11
Between 5 and 20 days	37.3%	28
More than 20 days	42.7%	32
Did not walk, run, or jog outside	5.3%	4

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?

a. Commuting to work or school

	%	Count
Very Frequently	12.0%	9
Somewhat Frequently	24.0%	18
Never	64.0%	48

b. Recreation

	%	Count
Very Frequently	53.3%	40
Somewhat Frequently	33.3%	25
Never	13.3%	10

c. Exercise/for my health

	%	Count
Very Frequently	54.7%	41
Somewhat Frequently	34.7%	26
Never	10.7%	8

d. Personal errands (to the store, post office, etc.)

	%	Count
Very Frequently	21.3%	16
Somewhat Frequently	34.7%	26
Never	44.0%	33

e. Required for my job

	%	Count
Very Frequently	5.3%	4
Somewhat Frequently	13.3%	10
Never	81.3%	61

What surface do you prefer when walking, running, or jogging?

	%	Count
Paved roads, not on shoulders or lined bike lanes (walking in the same lanes as cars or other vehicles)	1.3%	1
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)	57.3%	43
Unpaved roads (for example dirt, gravel, sand)	6.7%	5
Sidewalks	26.7%	20
Grass	1.3%	1
Other	6.7%	5

Please rate the following reasons why you would choose not to walk, run, or jog more often?

a. Lack of sidewalks

	%	Count
Strongly Agree	10.7%	8
Somewhat Agree	24.0%	18
Neutral	17.3%	13
Somewhat Disagree	22.7%	17
Strongly Disagree	25.3%	19

b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.)

	%	Count
Strongly Agree	17.3%	13
Somewhat Agree	34.7%	26
Neutral	14.7%	11
Somewhat Disagree	16.0%	12
Strongly Disagree	17.3%	13

c. Trails, either a lack of trails or poor trail maintenance

	%	Count
Strongly Agree	17.3%	13
Somewhat Agree	30.7%	23
Neutral	13.3%	10
Somewhat Disagree	21.3%	16
Strongly Disagree	17.3%	13

d. Work schedule or family obligations make it impossible

	%	Count
Strongly Agree	10.7%	8
Somewhat Agree	25.3%	19

	%	Count
Neutral	20.0%	15
Somewhat Disagree	14.7%	11
Strongly Disagree	29.3%	22

e. Personal health or disability

	%	Count
Strongly Agree	5.3%	4
Somewhat Agree	4.0%	3
Neutral	13.3%	10
Somewhat Disagree	12.0%	9
Strongly Disagree	65.3%	49

f. Bad weather

	%	Count
Strongly Agree	9.3%	7
Somewhat Agree	22.7%	17
Neutral	17.3%	13
Somewhat Disagree	13.3%	10
Strongly Disagree	37.3%	28

g. Personal safety (harassment, crime, etc.)

	%	Count
Strongly Agree	2.7%	2
Somewhat Agree	12.0%	9
Neutral	6.7%	5
Somewhat Disagree	17.3%	13

	%	Count
Strongly Disagree	61.3%	46

h. Facility safety (street crossings, lighting, etc.)

	%	Count
Strongly Agree	9.3%	7
Somewhat Agree	24.0%	18
Neutral	22.7%	17
Somewhat Disagree	17.3%	13
Strongly Disagree	26.7%	20

i. Distance to destination is too far

	%	Count
Strongly Agree	16.0%	12
Somewhat Agree	20.0%	15
Neutral	24.0%	18
Somewhat Disagree	20.0%	15
Strongly Disagree	20.0%	15

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.

	%	Count
Yes	20.0%	15
No	80.0%	60

How many days DURING THE LAST 30 DAYS did you use public transit?

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

Answered	75
Skipped	0

0 1 2 **none**

What was the primary purpose of your most recent trip using public transit?

	%	Count
Commuting to work or school	12.0%	9
Personal errands (to the store, post office, etc.)	8.0%	6
Medical services	1.3%	1
Social, personal business	14.7%	11
Other	64.0%	48

Is public transit available within a one-mile radius around where you currently live or stay?

	%	Count
Yes	76.0%	57
No	24.0%	18

Please rate the following reasons that keeps you, if anything, from using public transit more often?

a. Bus doesn't go where I need it to go

	%	Count
Strongly Agree	18.7%	14
Somewhat Agree	21.3%	16
Neutral	28.0%	21
Somewhat Disagree	13.3%	10

	%	Count
Strongly Disagree	18.7%	14

b. Bus doesn't run when I need it to

	%	Count
Strongly Agree	29.3%	22
Somewhat Agree	29.3%	22
Neutral	26.7%	20
Somewhat Disagree	8.0%	6
Strongly Disagree	6.7%	5

c. Work schedule or family obligations make it impossible

	%	Count
Strongly Agree	18.7%	14
Somewhat Agree	12.0%	9
Neutral	21.3%	16
Somewhat Disagree	16.0%	12
Strongly Disagree	32.0%	24

d. Personal health or disability

	%	Count
Neutral	18.7%	14
Somewhat Disagree	2.7%	2
Strongly Disagree	78.7%	59

e. Bad weather

	%	Count
Strongly Agree	1.3%	1
Somewhat Agree	2.7%	2
Neutral	21.3%	16
Somewhat Disagree	5.3%	4
Strongly Disagree	69.3%	52

f. Personal safety (harassment, crime, etc.)

	%	Count
Strongly Agree	1.3%	1
Somewhat Agree	1.3%	1
Neutral	24.0%	18
Somewhat Disagree	5.3%	4
Strongly Disagree	68.0%	51

g. Distance to bus stop is too far

	%	Count
Strongly Agree	20.0%	15
Somewhat Agree	14.7%	11
Neutral	16.0%	12
Somewhat Disagree	10.7%	8
Strongly Disagree	38.7%	29

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

	%	Count
Yes	86.7%	65
No	13.3%	10

All On Forum Responses sorted chronologically

Emma Bode inside Bozeman February 28, 2016, 2:49 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5-10 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Sara Amish inside Bozeman February 26, 2016, 1:48 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Poor

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minuets

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Neutral
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Unpaved roads (for example dirt, gravel, sand)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Somewhat Agree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Paul Gannon inside Bozeman February 26, 2016, 8:25 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Neutral
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Neutral
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
20

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Kristi G outside Bozeman February 25, 2016, 5:16 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - Don't use

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Greg Allred inside Bozeman February 25, 2016, 12:11 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15-20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Darrin A outside Bozeman February 25, 2016, 9:57 AM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Poor

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very Low Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very High Priority
c. Optimizing roads for all users.: Very Low Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Somewhat Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very Low Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Disagree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Neutral
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Neutral
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Neither comfortable nor uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
25

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Shoulders of paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Unpaved roads (for example dirt, gravel, sand)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - don't use

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Disagree
b. Bus doesn’t run when I need it to: Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Eric Bowman inside Bozeman February 24, 2016, 10:46 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Did not walk, run, or jog outside

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - I didn't use it

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Disagree
b. Bus doesn’t run when I need it to: Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Whitney Geiger inside Bozeman February 24, 2016, 10:58 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Somewhat Low Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat Low Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Other - Equally prefer paved and unpaved bike paths

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Did not walk, run, or jog outside

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Other - Not applicable

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Agree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Not applicable

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Robert Moore outside Bozeman February 23, 2016, 11:35 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Fair

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Poor

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat Low Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Very Low Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Disagree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Disagree
Goal 4: Provide a safe and secure transportation system.: Strongly Disagree
Goal 5: Support economic vitality of the community.: Strongly Disagree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Disagree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very minimal or no impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
30

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Agree
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Agree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Very Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Agree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Agree
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
10

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Personal errands (to the store, post office, etc.)

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Somewhat Disagree
e. Bad weather: Somewhat Disagree
f. Personal safety (harassment, crime, etc.): Strongly Agree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

michaelanne beighley inside Bozeman February 23, 2016, 3:36 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10-50 min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

1

What was the primary purpose of your most recent trip using public transit?
Personal errands (to the store, post office, etc.)

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Jan Boyer inside Bozeman February 23, 2016, 10:36 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes (this is slower than normal because I am recovering from an ankle injury and have to walk. Normally I bike more often and is closer to 10 minutes)

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree

c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Somewhat Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

How many days DURING THE LAST 30 DAYS did you use public transit?
1

What was the primary purpose of your most recent trip using public transit?
Personal errands (to the store, post office, etc.)

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Åsa Pape inside Bozeman February 23, 2016, 8:55 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10-15 min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Disagree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - I did not use public transit.

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Ivy Pedersen inside Bozeman February 23, 2016, 8:17 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - I didnt use public transit

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

todd hoitsma inside Bozeman February 22, 2016, 8:24 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - did not use bus

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Amy Hoitsma inside Bozeman February 22, 2016, 8:12 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10-15 minutes by bike. Longer if driving and need to find parking.

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - did not use. I can get to where I need by bike or foot.

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

ryan galloway inside Bozeman February 22, 2016, 4:21 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Very High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Very Frequently

What surface do you prefer to ride on when you use a bicycle for transportation?
Other - Where ever i can manage, usually shoulders, bike lanes, or side streets with little traffic. PLEASE PLOW BIKE LANES MORE

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral

c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Neutral
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Neutral
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - none

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Danny Kaiser inside Bozeman February 22, 2016, 3:02 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
6 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Somewhat Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

None

What was the primary purpose of your most recent trip using public transit?
Other - N/a

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

William Kleindl inside Bozeman February 17, 2016, 10:10 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Three (3) - Myself plus two other people

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Disagree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - do not use I bike or walk occasionally drive

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Jeff Milchen inside Bozeman February 9, 2016, 5:39 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Somewhat Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat Low Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Unpaved roads (for example dirt, gravel, sand)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

1

What was the primary purpose of your most recent trip using public transit?
Personal errands (to the store, post office, etc.)

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Somewhat Disagree
b. Bus doesn’t run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Jennifer Rockne inside Bozeman February 5, 2016, 4:43 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat Low Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - N/A

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Cameron Hildreth inside Bozeman January 8, 2016, 7:45 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
6 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - didnt use

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Melissa Frost inside Bozeman January 8, 2016, 7:05 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes, walking

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Neutral
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Did not use

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Ben Werner inside Bozeman January 8, 2016, 3:18 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5-6 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Neutral

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Other - Trails baby! It's all all the about the trails. This is why I moved my high tech startup to town: The mountains and our trail system.

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Neutral
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - N/A

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Lindsey Hanna inside Bozeman January 7, 2016, 4:59 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - n/a

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Christian Black inside Bozeman January 7, 2016, 4:28 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Very Frequently

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - didn't use public transit

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Disagree
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Kiah Abbey inside Bozeman January 7, 2016, 3:57 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very Low Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Agree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Very Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Nichole Money inside Bozeman January 4, 2016, 12:12 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Fair

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Neutral
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights

(stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Neutral

e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Somewhat Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - Didn't use.

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Chris Thompson outside Bozeman December 28, 2015, 3:19 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Excellent

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Sidewalks

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Neutral
i. Not interested in bicycling: Somewhat Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Grass

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Agree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

15

What was the primary purpose of your most recent trip using public transit?
Personal errands (to the store, post office, etc.)

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Lucian Hand inside Bozeman December 26, 2015, 8:38 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

1

What was the primary purpose of your most recent trip using public transit?
Other - Bridger Bowl

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Agree
b. Bus doesn’t run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Heather Higinbotham inside Bozeman December 22, 2015, 3:40 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Other - Both paved and unpaved bike paths, and back streets with little traffic

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Did not use public transit

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Katie Seipel inside Bozeman December 22, 2015, 2:39 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Other - It really depends on "directness" of the route. Usually I ride with traffic because it is more efficient than any available trails (which are, in bozeman, designed for exercise, not getting from point A to point B).

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral

c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Somewhat Agree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Other - Again, it depends on the nature of the walk. I like direct routes, when I'm going from point A to point B. In which case I'd answer sidewalks, otherwise, I prefer trails.

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Neutral
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

How many days DURING THE LAST 30 DAYS did you use public transit?
0

What was the primary purpose of your most recent trip using public transit?
Other - Never rode it because it's too circuitous.

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Agree
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Lindsay Turnquist inside Bozeman December 22, 2015, 12:29 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
25

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Thomas Eastwood outside Bozeman December 21, 2015, 4:06 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat Low Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Disagree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
30 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - Did not use

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

CAROLYN POISSANT outside Bozeman December 21, 2015, 9:18 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
2

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Jack Tyhler inside Bozeman December 21, 2015, 4:37 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 mins

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Other - Safe separation from bikes & cars is, for me, more important than the type of surface

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Did not use

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Agree
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Lieveka White inside Bozeman December 20, 2015, 11:19 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Somewhat Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Neutral
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 to 15 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Somewhat Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - None

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Somewhat Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Clay Guinn inside Bozeman December 20, 2015, 9:20 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Very Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Very High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Neutral
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Motorcycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
30 min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Don't ride

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Agree
b. Bus doesn’t run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Seth Grossman inside Bozeman December 20, 2015, 8:48 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Poor

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Three (3) - Myself plus two other people

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
25 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Keegan Fields inside Bozeman December 20, 2015, 8:28 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat Low Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Somewhat Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat Low Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat Low Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Neutral
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
25 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Disagree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Somewhat Disagree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - n/a

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Lauren Vinson outside Bozeman December 20, 2015, 8:06 AM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Stop signs

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Four (4) - Myself plus three other people

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Disagree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Na

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Somewhat Disagree
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Sheryl Goff outside Bozeman December 20, 2015, 7:59 AM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Somewhat Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20-30 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Other - Subdivision streets

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Agree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Neutral

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Neutral
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - None

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Hilary Parker inside Bozeman December 20, 2015, 6:10 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Very High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Neutral
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights

(stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
12

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree

e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - Traveling in city other than Bozeman

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Dan Lee inside Bozeman December 20, 2015, 12:41 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Very Low Priority
f. Trail projects: Very Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Very High Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Disagree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 mins

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Shoulders of paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Somewhat Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Somewhat Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
None

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - None

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Personal safety (harassment, crime, etc.): Somewhat Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Sara Erickson inside Bozeman December 20, 2015, 12:26 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat Low Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Somewhat Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Somewhat Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
I don't ride a bicycle

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Agree
i. Not interested in bicycling: Strongly Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - I have never used it

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Lincoln Erickson inside Bozeman December 20, 2015, 12:23 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat Low Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Neutral
i. Not interested in bicycling: Neutral

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Unpaved roads (for example dirt, gravel, sand)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Do not use

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Mark Corner outside Bozeman December 19, 2015, 8:30 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very Low Priority
b. Optimizing roads for motor vehicle use.: Very High Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very Low Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Disagree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
25

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Didn''t Use

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Agree
b. Bus doesn’t run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Carol Larson outside Bozeman December 19, 2015, 8:11 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
Approximately 25 min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
I don't ride a bicycle

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Somewhat Agree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Neutral
i. Not interested in bicycling: Strongly Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Did not walk, run, or jog outside

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Neutral
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Neutral
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Not used

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Thomas kostelnik outside Bozeman December 19, 2015, 1:47 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat Low Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15-30

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Neutral
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Neutral
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
5

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Jennifer MacFarlane outside Bozeman December 19, 2015, 11:58 AM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Disagree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Disagree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
1

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Douglas Stream outside Bozeman December 19, 2015, 7:09 AM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
More than Four (4+) - Myself plus four or more people

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Shoulders of paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Betty Aleagha outside Bozeman December 18, 2015, 10:08 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Very High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Somewhat Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Neutral
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Agree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Did not use

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Somewhat Agree
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Thomas Wilkerson outside Bozeman December 18, 2015, 8:28 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Fair

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very High Priority
c. Optimizing roads for all users.: Somewhat Low Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15 to 20 min

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
I don't ride a bicycle

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Somewhat Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Neutral
i. Not interested in bicycling: Strongly Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Did not walk, run, or jog outside

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Unpaved roads (for example dirt, gravel, sand)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Agree
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Bobby Bear inside Bozeman December 18, 2015, 2:37 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Disagree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Somewhat Disagree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Medical services

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Somewhat Disagree
e. Bad weather: Somewhat Disagree
f. Personal safety (harassment, crime, etc.): Somewhat Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Tom Kujawa inside Bozeman December 18, 2015, 1:40 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS?
If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Shannon Mahoney inside Bozeman December 18, 2015, 1:21 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Disagree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Somewhat Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Very Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

16

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Agree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Taylor Lonsdale inside Bozeman December 18, 2015, 1:16 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Middle Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very minimal or no impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
18

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Disagree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

1

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Scott MacFarlane outside Bozeman December 18, 2015, 12:10 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Four (4) - Myself plus three other people

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
15

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Agree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?

2

What was the primary purpose of your most recent trip using public transit?
Personal errands (to the store, post office, etc.)

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Melani Burnett inside Bozeman December 18, 2015, 11:05 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Excellent

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Very Low Priority
f. Trail projects: Very Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Very Low Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very High Priority
c. Optimizing roads for all users.: Somewhat Low Priority
d. Improving road surface conditions.: Very High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very Low Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very Low Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Neutral
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Disagree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights

(stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Shoulders of paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree

e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Somewhat Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Somewhat Agree
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - I don't ever use public transit. It's a waste of money for the city to provide this.

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Disagree
b. Bus doesn’t run when I need it to: Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

paul burns inside Bozeman December 18, 2015, 10:58 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Walked

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - NA

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Disagree
b. Bus doesn’t run when I need it to: Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Chris Kukulski inside Bozeman December 18, 2015, 10:55 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Neither comfortable nor uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes to work
20 minutes to get the kids to school

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
I don't ride a bicycle

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree

c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - have not used

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Perry Hooker inside Bozeman December 18, 2015, 10:44 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Disagree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Disagree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - n/a

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Sue Pellegrini inside Bozeman December 18, 2015, 9:53 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bus

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
By bus, one hour one way: 30 minutes for the bus ride and 30 minutes to walk to the nearest bus stop to by apartment. On days where the bus was running late 1 hour 45 min one way, as the route was discontinued downtown and I had to transfer to another bus that was not directly going to my destination.

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Disagree

b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Somewhat Agree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Other - All of the above

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Somewhat Agree
f. Bad weather: Strongly Agree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
25

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Joe Gilpin inside Bozeman December 18, 2015, 9:52 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Strongly Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

What was the primary purpose of your most recent trip using public transit?
Other - none

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Ashley Nettles inside Bozeman December 18, 2015, 8:56 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Poor

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
8 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Neutral
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Did not use. Never use.

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Agree
b. Bus doesn’t run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Somewhat Agree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

Jay Sinnott inside Bozeman December 17, 2015, 6:45 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Very Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Somewhat Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Somewhat Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
Yes

How many days DURING THE LAST 30 DAYS did you use public transit?
1

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Teri Ball inside Bozeman December 17, 2015, 6:32 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Somewhat High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
20 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Somewhat Agree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - Have not used it

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Disagree
b. Bus doesn't run when I need it to: Somewhat Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Susan Fraser inside Bozeman December 17, 2015, 3:57 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Middle Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Neutral
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved roads (for example dirt, gravel, sand)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Neutral
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Somewhat Agree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Commuting to work or school

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Strongly Agree
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Chris Naumann inside Bozeman December 17, 2015, 10:30 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Somewhat Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat small impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
5minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - never used public transit

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Jennisse Schule inside Bozeman December 17, 2015, 10:19 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Somewhat High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Middle Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community.

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

For each guideline below, how much of a priority should it be to address now?
a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Did Not Drive

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10-15 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Strongly Disagree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Somewhat Frequently

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Neutral

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - none

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Neutral
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Neutral

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Matthew Thomsen inside Bozeman December 17, 2015, 9:20 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Very High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Somewhat High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Middle Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Middle Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Somewhat High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Neither comfortable nor uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Neither comfortable nor uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Somewhat Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Disagree
c. Work schedule or family obligations make it impossible: Neutral

d. Personal health or disability: Strongly Disagree
e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
No

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Disagree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Agree
b. Bus doesn't run when I need it to: Somewhat Disagree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Somewhat Disagree
g. Distance to bus stop is too far: Somewhat Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

Sam Haraldson inside Bozeman December 17, 2015, 8:48 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Very Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Middle Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat High Priority
b. Enhancing tourism.: Middle Priority
c. A transportation system with a low cost to local residents.: Somewhat High Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Very High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Middle Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Somewhat Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Strongly Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
7

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Between 5 and 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Paved bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Feel unsafe while biking next to / with cars: Somewhat Disagree
g. Distance to destination is too far: Somewhat Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Agree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Strongly Disagree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Agree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - I did not use public transport in the last 30 days

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Somewhat Disagree
b. Bus doesn't run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Ian Maddaus inside Bozeman December 17, 2015, 7:31 AM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
No

Overall, how would you rate the quality of life in Bozeman?
Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very Low Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat Low Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Very High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Middle Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Middle Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Middle Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Somewhat Low Priority
b. Enhancing tourism.: Somewhat Low Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Somewhat Low Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Very Low Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Somewhat Low Priority
e. Closing gaps in the arterial and collector street network.: Very Low Priority
f. Closing gaps in the non-motorized network.: Somewhat High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Neutral
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Neutral
Goal 4: Provide a safe and secure transportation system.: Somewhat Agree
Goal 5: Support economic vitality of the community.: Somewhat Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Bicycle

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
10

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
More than 20 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Very Frequently
b. Recreation: Very Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Very Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Marked bike lanes on paved roads

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Somewhat Disagree

d. Personal health or disability: Somewhat Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Neutral
h. No bicycle available: Somewhat Disagree
i. Not interested in bicycling: Strongly Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Somewhat Frequently
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Agree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Somewhat Agree
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Somewhat Disagree
e. Personal health or disability: Somewhat Disagree
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Somewhat Disagree
h. Facility safety (street crossings, lighting, etc.): Somewhat Disagree
i. Distance to destination is too far: Somewhat Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

0

What was the primary purpose of your most recent trip using public transit?
Other - I don't use it

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Somewhat Agree
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Strongly Disagree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Somewhat Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
No

mike popiel inside Bozeman December 17, 2015, 7:14 AM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Fair

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very Low Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Very High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Very High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Somewhat Low Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat Low Priority
f. Trail projects: Very Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Very Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Very High Priority
c. A transportation plan that has overwhelming community support.: Middle Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very Low Priority
b. Enhancing tourism.: Very Low Priority
c. A transportation system with a low cost to local residents.: Middle Priority
d. Reducing operations and maintenance costs.: Somewhat High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Middle Priority
b. Optimizing roads for motor vehicle use.: Very High Priority
c. Optimizing roads for all users.: Very Low Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat High Priority
f. Closing gaps in the non-motorized network.: Very Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Very Low Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Very Low Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very Low Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Somewhat Disagree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Disagree
Goal 4: Provide a safe and secure transportation system.: Neutral
Goal 5: Support economic vitality of the community.: Neutral
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Disagree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Neutral

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a medium impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
No preference

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Very comfortable

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Very comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat comfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
7 min.

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
I don't ride a bicycle

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Disagree
b. Lack of a place to store my bike at my destination (bike racks): Strongly Disagree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Neutral
e. Bad weather: Strongly Agree
f. Feel unsafe while biking next to / with cars: Somewhat Agree
g. Distance to destination is too far: Strongly Disagree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Strongly Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Between 5 and 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Somewhat Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Paved roads, not on shoulders or lined bike lanes (walking in the same lanes as cars or other vehicles)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Strongly Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Strongly Disagree
c. Trails, either a lack of trails or poor trail maintenance: Strongly Disagree
d. Work schedule or family obligations make it impossible: Strongly Disagree
e. Personal health or disability: Strongly Disagree
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Strongly Disagree
h. Facility safety (street crossings, lighting, etc.): Strongly Disagree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?

never

What was the primary purpose of your most recent trip using public transit?
Other - never used

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Strongly Disagree
b. Bus doesn’t run when I need it to: Somewhat Agree
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Ken Spencer inside Bozeman December 16, 2015, 7:22 PM

Do you live in the City of Bozeman?
Yes

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Excellent

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Poor

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Very High Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Somewhat High Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Very High Priority
e. Bicycle projects (bike lanes, routes, etc.): Somewhat High Priority
f. Trail projects: Somewhat High Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat Low Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Very High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Very Low Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Somewhat High Priority
c. A transportation system with a low cost to local residents.: Somewhat Low Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Middle Priority
c. Optimizing roads for all users.: Somewhat High Priority
d. Improving road surface conditions.: Somewhat High Priority
e. Closing gaps in the arterial and collector street network.: Very High Priority
f. Closing gaps in the non-motorized network.: Very High Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Somewhat High Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Very High Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Disagree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Strongly Agree
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Strongly Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Strongly Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a somewhat large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Roundabouts

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights (stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Somewhat uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
One (1) - Travel by Myself

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
16

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Somewhat Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
Unpaved bike paths, walking paths, trails

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Strongly Agree
b. Lack of a place to store my bike at my destination (bike racks): Somewhat Agree
c. Work schedule or family obligations make it impossible: Somewhat Agree

d. Personal health or disability: Strongly Disagree
e. Bad weather: Somewhat Agree
f. Feel unsafe while biking next to / with cars: Strongly Agree
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Strongly Disagree
i. Not interested in bicycling: Somewhat Disagree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
More than 20 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Very Frequently
c. Exercise/for my health: Very Frequently
d. Personal errands (to the store, post office, etc.): Somewhat Frequently
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Bike paths, walking paths or trails (defined as paths where cars are not allowed to drive)

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Somewhat Disagree
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Somewhat Disagree
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Neutral
f. Bad weather: Somewhat Agree
g. Personal safety (harassment, crime, etc.): Somewhat Agree
h. Facility safety (street crossings, lighting, etc.): Strongly Agree
i. Distance to destination is too far: Strongly Disagree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
0

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Social, personal business

Is public transit available within a one-mile radius around where you currently live or stay?
Yes

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn't go where I need it to go: Strongly Agree
b. Bus doesn't run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Strongly Agree
d. Personal health or disability: Strongly Disagree
e. Bad weather: Strongly Disagree
f. Personal safety (harassment, crime, etc.): Strongly Disagree
g. Distance to bus stop is too far: Strongly Disagree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

Stacy Ulmen inside Bozeman December 8, 2015, 3:00 PM

Do you live in the City of Bozeman?
No

Do you work in the City of Bozeman?
Yes

Overall, how would you rate the quality of life in Bozeman?
Very Good

Thinking about transportation in Bozeman, how would you rate the overall quality of the transportation system in Bozeman?
Good

The following are possible actions to improve Bozeman's transportation system. For each possible action below, how much of a priority should it be to address now?
a. Street reconstructions ("complete streets" including curb, sidewalk, bike lanes, boulevards): Middle Priority
b. Smaller efficiency projects (signal upgrades, signal timing changes, turn lanes, etc.): Somewhat High Priority
c. Maintenance projects (resurfacing, chip seals, etc.): Middle Priority
d. Pedestrian projects (marked crossings, sidewalks, etc.): Middle Priority
e. Bicycle projects (bike lanes, routes, etc.): Middle Priority
f. Trail projects: Somewhat Low Priority
g. Transit service improvements (additional routes, increased frequency, etc.): Somewhat High Priority

The next few guidelines are related to the way transportation fits in with other issues in our community. For each guideline below, how much of a priority should it be to address now?
a. A transportation plan that supports the overall City of Bozeman growth policies.: Somewhat High Priority
b. A transportation plan that focuses on providing improved transportation connections between key areas in Bozeman.: Somewhat High Priority
c. A transportation plan that has overwhelming community support.: Very High Priority

The next guidelines are about a few of the economic aspects of transportation in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Improving the movement of people and goods.: Very High Priority
b. Enhancing tourism.: Very High Priority
c. A transportation system with a low cost to local residents.: Very High Priority
d. Reducing operations and maintenance costs.: Very High Priority

The next few guidelines are related to the safety and convenience of transportation in our community. For each guideline below, how much of a priority should it be to address now?

a. Improving safety at known high crash locations.: Very High Priority
b. Optimizing roads for motor vehicle use.: Somewhat High Priority
c. Optimizing roads for all users.: Middle Priority
d. Improving road surface conditions.: Middle Priority
e. Closing gaps in the arterial and collector street network.: Somewhat Low Priority
f. Closing gaps in the non-motorized network.: Somewhat Low Priority

The last few guidelines involve public transit, bicycling, and walking in Bozeman. For each guideline below, how much of a priority should it be to address now?
a. Adding and improving public transit services (bus) in Bozeman.: Somewhat High Priority
b. Adding and improving bicycle facilities like bicycle lanes, trails, and racks.: Middle Priority
c. Adding and improving pedestrian facilities like sidewalks, trails, and crosswalks.: Middle Priority

Draft transportation goals for the Bozeman community have been developed as part of this planning process. Please rate the draft transportation goals (strongly agree to strongly disagree).
Goal 1: Maintain the existing transportation system.: Strongly Agree
Goal 2: Improve the efficiency, performance and connectivity of a balanced transportation system.: Neutral
Goal 3: Support and promote coordinated land use and transportation planning efforts to manage and develop the transportation system.: Somewhat Agree
Goal 4: Provide a safe and secure transportation system.: Strongly Agree
Goal 5: Support economic vitality of the community.: Strongly Agree
Goal 6: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.: Somewhat Agree
Goal 7: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision making process.: Somewhat Agree

Think now about the ease of travel in Bozeman. How much, if at all, does traffic in Bozeman affect you personally?
Has a very large impact

As a driver, which type of intersection in Bozeman do you prefer to travel through?
Traffic lights (stop lights)

As a driver, how comfortable are you, if at all, travelling through intersections controlled by roundabouts in Bozeman?
Somewhat uncomfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by stop signs in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through intersections controlled by traffic lights

(stop lights) in Bozeman?
Somewhat comfortable

As a driver, how comfortable are you, if at all, travelling through uncontrolled intersections in Bozeman?
Very uncomfortable

How did you most frequently get to your primary daily destination DURING THE LAST 30 DAYS? If you usually used more than one method of transportation during the trip, please select the mode of travel you used for the majority of your trip.
Car, truck, or van

DURING THE LAST 30 DAYS, how many people, including yourself, usually rode to your primary destination in the same car, truck, or van?
Two (2) - Myself plus one other person

DURING THE LAST 30 DAYS, how long (in minutes) does it usually take you to get from your home to your primary destination?
30 minutes

DURING THE LAST 30 DAYS, how may days did you ride a bicycle? (Please do not include stationary bicycles).
Less than 5 days

For each purpose listed below, please identify how frequently you used a bicycle as the primary means of transportation?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer to ride on when you use a bicycle for transportation?
I don't ride a bicycle

Please rate the following reasons why you would choose not to ride a bicycle for transportation (strongly agree to strongly disagree).
a. Lack of adequate bike lanes: Neutral
b. Lack of a place to store my bike at my destination (bike racks): Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral

e. Bad weather: Neutral
f. Feel unsafe while biking next to / with cars: Neutral
g. Distance to destination is too far: Strongly Agree
h. No bicycle available: Neutral
i. Not interested in bicycling: Somewhat Agree

Do you feel it is easy to find information about the City's bicycle routes and trails?
Yes

DURING THE LAST 30 DAYS, how many days did you walk, run, or jog outside for more than 10 minutes?
Less than 5 days

For each purpose listed below please identify how frequently you walked, ran or jogged OVER THE LAST 30 DAYS?
a. Commuting to work or school: Never
b. Recreation: Never
c. Exercise/for my health: Never
d. Personal errands (to the store, post office, etc.): Never
e. Required for my job: Never

What surface do you prefer when walking, running, or jogging?
Sidewalks

Please rate the following reasons why you would choose not to walk, run, or jog more often?
a. Lack of sidewalks: Neutral
b. Sidewalks poorly maintained or inaccessible (not cleared of snow, non ADA accessible, etc.): Neutral
c. Trails, either a lack of trails or poor trail maintenance: Neutral
d. Work schedule or family obligations make it impossible: Neutral
e. Personal health or disability: Neutral
f. Bad weather: Neutral
g. Personal safety (harassment, crime, etc.): Neutral
h. Facility safety (street crossings, lighting, etc.): Neutral
i. Distance to destination is too far: Strongly Agree

During the last 30 days, did you ride on any public transit within Bozeman? Examples of public transit include a Streamline bus or other provider.
No

How many days DURING THE LAST 30 DAYS did you use public transit?
none

Bozeman Transportation Master Plan (TMP) Survey

We want to hear from you about Transportation in the City of Bozeman.

What was the primary purpose of your most recent trip using public transit?
Other - Didn't ride public transit

Is public transit available within a one-mile radius around where you currently live or stay?
No

Please rate the following reasons that keeps you, if anything, from using public transit more often?
a. Bus doesn’t go where I need it to go: Neutral
b. Bus doesn’t run when I need it to: Neutral
c. Work schedule or family obligations make it impossible: Neutral
d. Personal health or disability: Neutral
e. Bad weather: Neutral
f. Personal safety (harassment, crime, etc.): Neutral
g. Distance to bus stop is too far: Strongly Agree

Do you feel it is easy to find information about the availability of transit services and transit routes within the City?
Yes

BOZEMANTMP
TRANSPORTATION MASTER PLAN

PUBLIC ENGAGEMENT PLAN

Technical Memorandum

FINAL

October 2, 2015

prepared by:

Robert Peccia & Associates

www.rpa-hln.com

prepared for:

City of Bozeman & Montana Department of Transportation

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ABBREVIATIONS / ACRONYMS

ADA	Americans with Disabilities Act
FHWA	Federal Highway Administration
MDT	Montana Department of Transportation
PEP	Public Engagement Plan
RPA	Robert Peccia and Associates
TCC	Transportation Coordinating Committee
TMP	Transportation Master Plan
TWG	Technical Working Group

Public Engagement Plan

1.0. INTRODUCTION

The City of Bozeman and the Montana Department of Transportation (MDT) have initiated a community transportation planning process to develop a Transportation Master Plan (TMP). A previous Transportation Plan was completed in 2007 which provides a blueprint for guiding transportation infrastructure investments based on system needs and associated decision making principles. Rapid growth, changes in land use, substantial upgrades to the community's transportation system, and the community's increasing interest in transportation related matters have necessitated a new examination of transportation issues within the Bozeman area.

The development of the TMP will be overseen by a Technical Working Group (TWG) specially appointed for this effort. The TWG will guide work, review deliverables, and provide general oversight capacity on all matters related to the TMP. In addition, the Bozeman Area Transportation Coordinating Committee (TCC) will be apprised of the TMPs development and provide additional guidance as warranted. The TCC is comprised of a multitude of individuals representing various departments of the City of Bozeman, Gallatin County, MDT, Federal Highway Administration (FHWA), and other area stakeholders.

An initial step in the transportation planning process is to develop a Public Engagement Plan (PEP) that will guide public opportunities and input as the TMP develops. This PEP builds on historical processes that the planning partners have used on past planning efforts, and utilizes several traditional and non-traditional public participation strategies. It is the intent of this PEP to identify the appropriate strategies to be used, define the sequencing within which the various strategies will be implemented, and chart out a course of action to be followed as the planning process commences. The process is expected to take approximately twelve (12) months to develop the TMP document.

1.1. Planning Process

The planning process involves early communication with interested parties to help identify needs, constraints and opportunities to determine reasonable improvements given available resources and local support. Community, stakeholder, agency and other interested party involvement are important components in any successful planning process. For this planning process, a number of strategies are proposed to disseminate information and elicit meaningful participation. These opportunities will include:

- Providing information on the critical elements included in the transportation planning process within the TMP study area;
- Providing input and asking questions throughout the planning process; and

- Presenting findings and recommendations.

1.2. Study Area Boundary

A map showing the study area boundary for the TMP is shown as **Figure 1**. The study area includes the Bozeman city limits, as well as those areas with potential to be annexed into the city at a future time. The study area boundary is important as it defines the limit of what will or will not be considered in developing the TMP. Although a travel demand model will be developed which utilizes land use considerations outside of the study area boundary, analysis of "on-the-ground" transportation system conditions on the city's transportation system will only occur within the boundary limits.

The goal of the TWG, TCC and the consultant team is to have significant and ongoing public engagement for this transportation planning process.

1.3. Goals of Community Engagement and Outreach Effort

The goal of the TWG, TCC, and the consultant team is to have significant and ongoing public engagement throughout the transportation planning process. Education and public outreach are essential parts of fulfilling the local entities responsibility to successfully inform the public about the transportation planning process. Both the City of Bozeman and MDT seek to empower the public to voice their ideas and values regarding transportation issues. The entities strive to ensure early and continuous public involvement in all major actions and decisions.

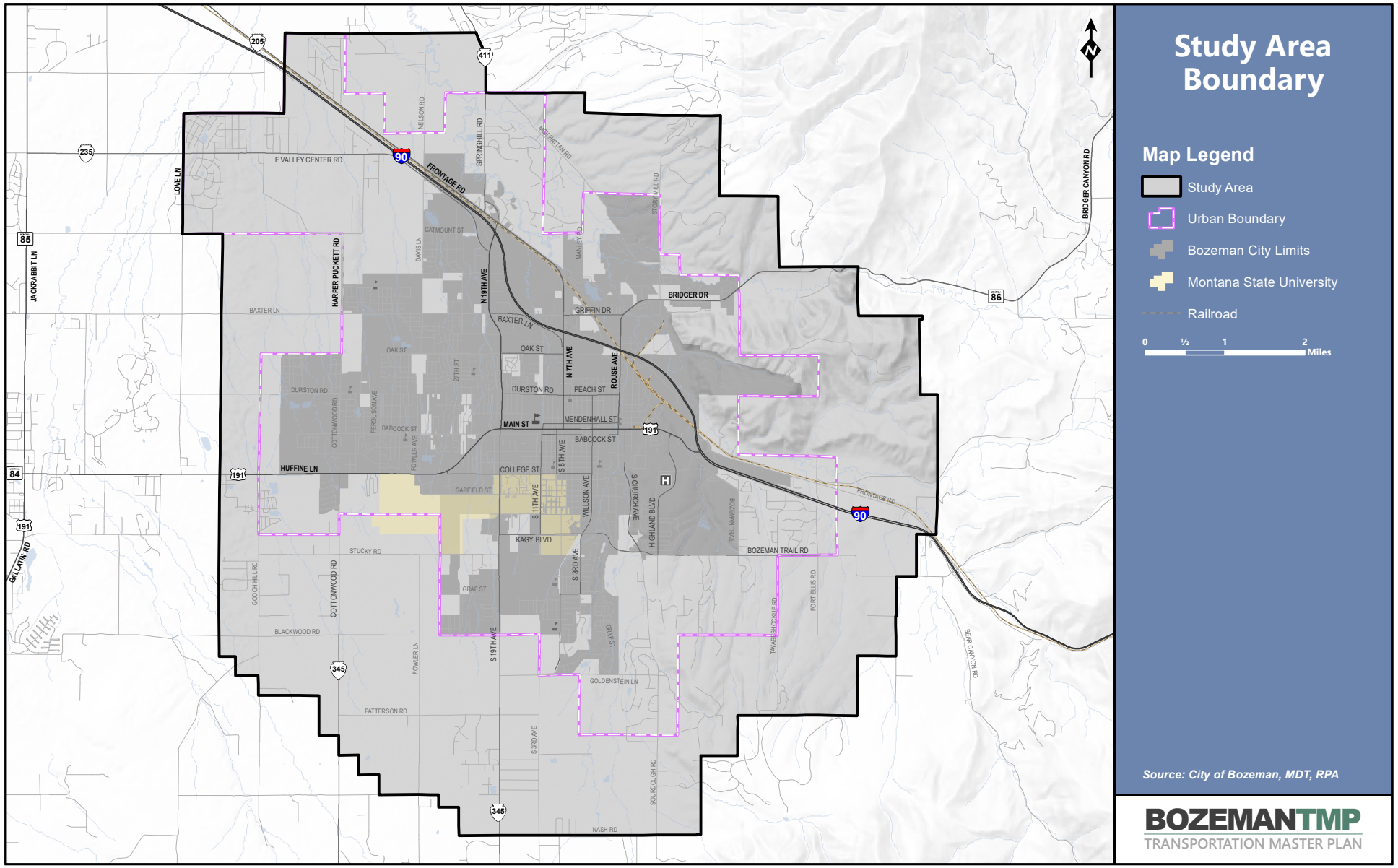

Figure 1: Study Area Boundary

2.0. PARTICIPATION PROCEDURES

The PEP describes the information and input opportunities that will be provided as part of the development of the TMP. This PEP encourages active participation in identifying and commenting on transportation issues at every stage of the planning process. Participant involvement includes:

- The general community – residents of the City of Bozeman and adjacent areas;
- Landowners and business;
- Governmental agencies;
- Stakeholders and outreach groups; and
- Other interested parties.

Bozeman needs the public to be involved in transportation planning because the public has the right to have a strong voice in all matters of public policy, including planning.

Methods for notification of informational meetings and other outreach opportunities, are detailed in this document. The community and interested parties will be kept informed of all aspects of the planning study, and their input will be sought throughout the process via the methods detailed herein.

To participate is to express one's self at the proper time and in the proper forum. Public participation means participation in planning by people (the public) within the Bozeman community, its citizens and entities, by planning and engineering professionals, and by those who are not professional planners or government officials. It is a process of taking part in the transportation planning and decision-making that affects the community.

Efforts to secure participation will be targeted to stakeholders, who are individuals or entities that could be significantly affected by the TMP recommendations or could significantly influence implementation. Stakeholders include, but are not limited to: the general public; low income, minority and disabled communities; neighborhood representatives; business interests; emergency services providers; special transportation interests (such as freight shippers, transit users and bicycle organizations); local officials; private developers; and federal and state transportation agencies.

Bozeman needs the public to be involved in transportation planning because the public has the right to have a strong voice in all matters of public policy, including planning. Additionally, the public can provide varied and unique information needed to develop, maintain, and carry out an effective planning process. Planning staff, consultants, and local officials need comments from those who know the community best: the people who live, work and play there. Public involvement informs and educates the public about transportation planning and creates an informed community, which in turn leads to better planning. Public participation gives the public a sense of ownership of the Plan and fosters cooperation among the public and the project partners.

This PEP contains the following elements:

- **Involvement Opportunities** – Provides the opportunity for the public to be involved in all phases of the planning process;
- **Communication** – Establishes mechanisms for maintaining communications between the public and local officials such as processes like mailings, legal ads, displays and newsletters;
- **Information** – Assures that technical information is available and in a simplified, understandable form;
- **Response to Public Input** – Describes the methods used to respond to comments from the public; and
- **Advisory Committee(s) to this TMP** – The use of the TWG and TCC, and the means of providing input from a cross-section of affected citizens through the TWG and TCC, and various other groups of interest.

2.1. Study Contacts

Contact information for the City of Bozeman (the contracting authority) and the consultant will be provided in all information that is published. This information is provided below.

- **City of Bozeman** – Engineering Department
  20 E. Olive
  P.O. Box 1230
  Bozeman, MT 59771-2263
  Contact: **Rick Hixson, PE** – *City Engineer*
  (406) 582-2280
  rhixson@bozeman.net

- **Robert Peccia and Associates (RPA)** – Consultant
  P.O. Box 5653
  825 Custer Avenue
  Helena, MT 59604
  Contact: **Jeff Key, PE** – *RPA Project Manager*
  (406) 447-5000
  jeff.key@rpa-hln.com

2.2. Publications

Meeting announcements will be developed and advertised at least three weeks prior to informational meetings. The ads will announce the meeting location, time, and date, the format and purpose of the meeting, and the locations where documents may be reviewed (if applicable). The following print newspaper will carry the display ads:

- **Bozeman Daily Chronicle** – print and online: http://www.bozemandailychronicle.com/

In addition, newsletters and/or flyers will be made available approximately one month prior to each informational meeting. The newsletters will describe work in progress, results achieved, preliminary recommendations, and other related topics. Each newsletter and flyer will be delivered to the City of Bozeman, MDT, and select stakeholders for their use in distribution and posting to their individual internet sites.

2.3. Radio and Television

Meetings may also be announced on local radio and/or television stations. This may include the following: KUSM (Montana PBS), KTVM (NBC), KBZK (CBS) and KWYB (ABC/FOX). The TWG will identify the most popular radio and television stations on which announcements will be made. Public television interviews about the TMP may be provided.

2.4. Stakeholder Contact List

A stakeholder contact list will be developed and will include individuals, businesses, or groups identified by the TWG and through the public involvement process. The intent of developing the stakeholder list is to identify individuals and groups with likely project interests and to actively seek out and engage them in the study process. Individuals who attend informational meetings will also be added to the stakeholder list. The groups or businesses (at a minimum) listed below will be included in the initial list, providing that addresses and/or emails are obtainable from each respective group for these purposes.

- Bozeman Deaconess Health Services
- Montana State University
- Bozeman School District
- Gallatin Valley Land Trust
- Downtown Bozeman Partnership
- Bozeman Area Chamber of Commerce
- Gallatin Valley Bike Club
- Bozeman Area Bicycle Advisory Board
- Pedestrian Traffic Safety Committee
- Oracle
- Engineering Consultant Community
- Bike Kitchen
- Streamline
- TIF Boards

- Western Transportation Institute
- Inter-Neighborhood Council
- Bogert Park Neighborhood Association
- Bozeman Creek Neighborhood Association
- University Neighborhood Association
- Marwyn-Lindley Neighbors
- New Hyalite View Network
- Northeast Neighborhood Association
- South Central Association
- Southeast Neighborhood Association
- Others as requested

2.5. Document Availability

Electronic copies of study deliverables and technical memorandums will be posted on the study website at the following address: www.BozemanTMP.com

In addition, updates and notifications will be posted to the study Facebook page at the following address. Users may type "BozemanTMP" in their respective search engines to locate the page.

www.facebook.com/BozemanTMP

Hard copy materials will also be made available at the following location:

- **City of Bozeman**
  Engineering Department
  20 E. Olive
  Bozeman, MT 59771-2263

The following Americans with Disabilities Act (ADA)-required statement will be included on all published materials:

"The City of Bozeman, MDT and RPA attempt to provide accommodations for any known disability that may interfere with a person participating in any service, program, or activity associated with this study. Alternative accessible formats of this information will be provided upon request. For further information, call (406) 447-5000 or (406) 582-2280. Accommodation requests must be made at least 48 hours prior to the scheduled activity and / or meeting."

3.0. ENGAGEMENT OPPORTUNITIES

A proactive approach will be taken to provide an opportunity for the public to be engaged early and with a continuing involvement in all phases of the planning process. For this project, a number of public engagement strategies are proposed to work together to reach the most people possible and elicit meaningful participation. RPA's project manager will be responsible for implementing this Plan and disseminating accurate information and responding to questions. RPA's project manager will have primary responsibility for facilitating the various meetings, setting up the meeting venues, and maintaining an accurate database of interested citizens and officials, and facilitating larger meetings.

The team understands that the interest of the public in transportation issues has increased, and that developing the TMP will provide public outreach opportunities that will:

- Educate the public on the critical elements of planning and engineering the community's transportation system;
- Respond to the increasing interest of the general public to participate in planning of the community; and
- Increase the public's investment in the TMP.

The following sections describe the public outreach activities that will be utilized as part of the public engagement program.

3.1. Easy Access

RPA's lead project staff will be available to all interested parties for the purposes of receiving comments and answering questions. This will be accomplished by several methods, including:

- Telephone number to RPA - published in all materials;
- E-mail access to our lead engineers - published in all materials;

- Website dedicated to the Bozeman TMP (www.BozemanTMP.com);
- Facebook page dedicated to the Bozeman TMP (www.facebook.com/BozemanTMP);
- Direct mailing of TMP materials (as defined) to stakeholders, as requested;
- Regular attendance at all TWG and TCC meetings during the planning process;
- Attendance at City Commission meetings as noted in **Section 3.9** and by special request; and
- Attend other local group meetings as requested.

3.2. Personal Contacts

RPA will make its project manager and lead engineers available for personal contacts or meetings with smaller groups such as emergency services personnel and school district officials for one-on-one communications about the planning process. These interactions will be developed and conducted on a case-by-case basis. Routine contacts for information will not need to be recorded; however, any items of importance will be recorded and passed on to the City and MDT as appropriate.

3.3. Published Information

Newsletters and flyers will be produced that describe work in progress, results achieved, preliminary recommendations, and other related topics. These newsletters will be user-friendly, with little or no engineering jargon. They will be expected to closely mimic technical memorandums, at a lower level of technical content. Each newsletter will be published on the study website. Each newsletter will include an invitation to the public to submit their comments and ideas to the team using any of the easy access methods discussed previously.

3.4. Community Transportation Survey

A comprehensive community transportation survey will be prepared to focus on issues that are critical to the overall transportation planning process. The survey will cover all travel modes – automobile, bicycle, walking and transit – and will garner community opinions on future policy and goals, possible funding mechanisms, and information about barriers to residents using alternatives to driving. The comprehensive community transportation survey is an important mechanism to validate the direction of the TMP and provide justification to staff and elected officials for the eventual recommendations that will be contained in the TMP.

3.5. Monthly TWG Meetings

The TWG is technically oriented and has been established to guide work and review deliverables produced by the consultant team. Monthly TWG meetings will be held to discuss the progress of the study, make presentations, and obtain guidance as appropriate. RPA's project

manager, and any necessary support staff, will attend monthly meetings with the TWG, as scheduled, to make regular presentations covering the current work effort. This element is considered the most important aspect of the exchange of information and ideas during the development of the Plan. During these meetings the issues, problems, and possible solutions will be identified and discussed. These meetings will provide RPA with essential feedback during the development of the Plan. These meetings will also provide the TWG with numerous opportunities to guide the consultant team through the process. It is expected that regular, monthly TWG meetings will be held on the first Thursday of every month, from 2:00 pm to 4:00 pm, for the 12-month duration of the project. This will result in twelve (12) TWG meetings in total. All meetings will be held at City Hall (121 N. Rouse) in the Commission Chambers. The first TWG meeting was held on September 10, 2015.

3.6. TWG Workshop

There will be two TWG workshops held during the planning process. The first TWG workshop will occur after we develop preliminary recommendations. The second will occur near the end of the planning process to discuss priorities and implementation strategies. These workshops will be more detailed than the regular TWG meetings and are an important part of the TWG review process.

3.7. Quarterly TCC Meetings

The TCC is a permanent committee that is composed of technical, planning and/or managerial staff representatives from various governmental agencies (City of Bozeman, MDT, Gallatin County, etc.). There are also citizen and business interests represented, at-large members of the community, and FHWA. Quarterly TCC meetings will be held to discuss the progress of the study, make presentations, and obtain guidance as appropriate. RPA's project manager, and any necessary support staff, will attend these quarterly meetings with the TCC, as scheduled, to make regular presentations covering the current work effort. It is expected that quarterly TCC meetings will be held on the fourth Wednesday of the first month of each quarter beginning at 10:00 am. This will result in four (4) TCC meetings in total. All meetings will be held in the Commission Chambers at City Hall (121 N. Rouse). An introductory TMP presentation was made to the TCC on July 22, 2015.

3.8. Stakeholder Meetings

Additional meetings will be scheduled with local stakeholders and facilitated by RPA, including but not limited to the following:

1. Bozeman Deaconess Health Services
2. Montana State University
3. Bozeman School District

4. Gallatin Valley Land Trust
5. Downtown Bozeman Partnership
6. Bozeman Area Chamber of Commerce
7. Gallatin Valley Bike Club
8. Bozeman Area Bicycle Advisory Board
9. Pedestrian Traffic Safety Committee
10. Oracle
11. Engineering Consultant Community
12. Bike Kitchen
13. Streamline
14. TIF Boards
15. Western Transportation Institute
16. Inter-Neighborhood Council
17. Bogert Park Neighborhood Association
18. Bozeman Creek Neighborhood Association
19. University Neighborhood Association
20. Marwyn-Lindley Neighbors
21. New Hyalite View Network
22. Northeast Neighborhood Association
23. South Central Association
24. Southeast Neighborhood Association

3.9. Meetings with the City Commission and County Commission

Four project status meetings with the City Commission will be held to ensure that the goals, objectives, and decisions are acceptable with the elected officials. A fifth project meeting – the public hearing – will occur with the City Commission when the final TMP is ready for adoption. A presentation to the Gallatin County Commission will occur early in the planning process to inform the County elected officials and staff of the scope of the TMP development.

3.10. Public Meetings

Three formal public meetings will be held for this study. The **first public meeting** will be used to discuss and identify the issues and visioning that will help define community perceptions and goals, as well as identifying issues that should be addressed as part of the planning effort. This meeting will be in the form of a highly participatory community planning workshop knows as a charrette. The charrette is an intensive, broad-based, community driven process that has a record of success by crafting meaningful community engagement and acceptance. This initial effort will consist of a 2- or 3-hour workshop that will be very interactive. The purpose will be to define the transportation planning process, and then engage the community through the execution of the charrette workshop.

The **second public meeting** will occur after completion of all field studies and the identification of the transportation-related problems. The purpose of this gathering will be to review the identified problems with the public to assure that all of the major transportation problems have been included in the analysis. This meeting will be more of a typical public meeting, whereby an informal open house will be held where attendees could visit with study personnel at several displays, followed by a formal presentation and questions and answers.

The **third public meeting** will be in the form of a formal presentation regarding the preliminary recommendations and findings. Individual work stations will be set up for participants to move about to their areas of interest and review and comment on the preliminary findings. This will allow participants to become fully engaged and alleviate possible "confrontational" situations that can occur in large, traditional public forums. The purpose of this venue will be to present the types of recommended improvements and receive initial feedback from the community.

3.11. Public Hearings

One public hearing with the City Commission will be held when the TMP is ready for adoption. The public hearing will occur at a regular City Commission meeting, and will be designed to obtain official comment from the public and City Commission prior to final approval of the document and production of the final report.

3.12. Management Techniques

All of the public participation components described will be conducted using sign-up lists, to make sure that everyone interested in the process can provide contact information for future notifications. Public comments will be collected either by requesting written comments, or writing notes as verbal comments are offered. All such records will be accumulated, reviewed by the TWG, TCC and consultant team, and incorporated into the planning process if appropriate.

3.13. Information

Technical and planning level information related to the data or content used in the development of the TMP will be provided to the public within a reasonable and timely manner. Technical memorandums, meeting announcements, project graphics, and other miscellaneous materials will be available on the study website. In addition, links to the website will be provided via the City of Bozeman website.

3.14. Response To Public Input

Responses to questions and comments from the public concerning the public participation process, technical memorandums, the draft TMP document and other work products will be made via written response in an Appendix to the actual Plan. In some circumstances, the planning consultant team may respond directly to an individual or group by letter or telephone call, or by way of a periodic newsletter.

3.15. Advisory Committees To The TMP

Advisory groups and/or committees that oversee transportation related matters in the community are listed below, and will have some level of involvement as this planning process develops. This list isn't "all-inclusive", as there are numerous other organizations with a high interest in transportation matters. All meetings will operate under the following general parameters:

1. All meetings are open to the public.
2. All committee members and interested members of the public, and the news media (if warranted), will receive agendas and associated documentation by email at least seven (7) days prior to all TWG and TCC meetings. The agendas and associated materials will be distributed by RPA (for the TWG) and the City of Bozeman's assigned project manager (for the TCC).
3. Committee members may propose topics for future meetings.
4. The TWG and TCC are to help guide the TMP development and be fully engaged in the planning process, and participate in a concerted effort with the public.

3.16. Consideration for Traditionally Underserved Populations

It is recognized that additional efforts must be made to involve traditionally underserved segments of the population, including the disabled, minorities, and low-income residents. Including these groups helps to ensure planning that reflects the needs of everyone. The steps listed below will help with these efforts.

- **Plan Meeting Locations Carefully** – Informational meetings will be held in locations that are accessible and compliant with the ADA. If a targeted population is located in a certain geographic part of the City, then the meeting location should be in the proximity of the area for convenience.

- **Seek Help from Community Leaders and Organizations** – To facilitate involvement of traditionally underserved populations, community leaders and organizations that represent these groups will be consulted about how to most effectively reach their members.

- **Be Sensitive to Diverse Audiences** – At informational meetings, study partner staff and the Consultant will attempt to communicate as effectively as possible. Technical jargon will be avoided and appropriate dress and conduct will be adhered to.

3.17. Study Schedule

Strict adherence to the TMP schedule is important to stay on track and keep all interested parties engaged. The schedule for this planning process is shown in **Figure 2**.

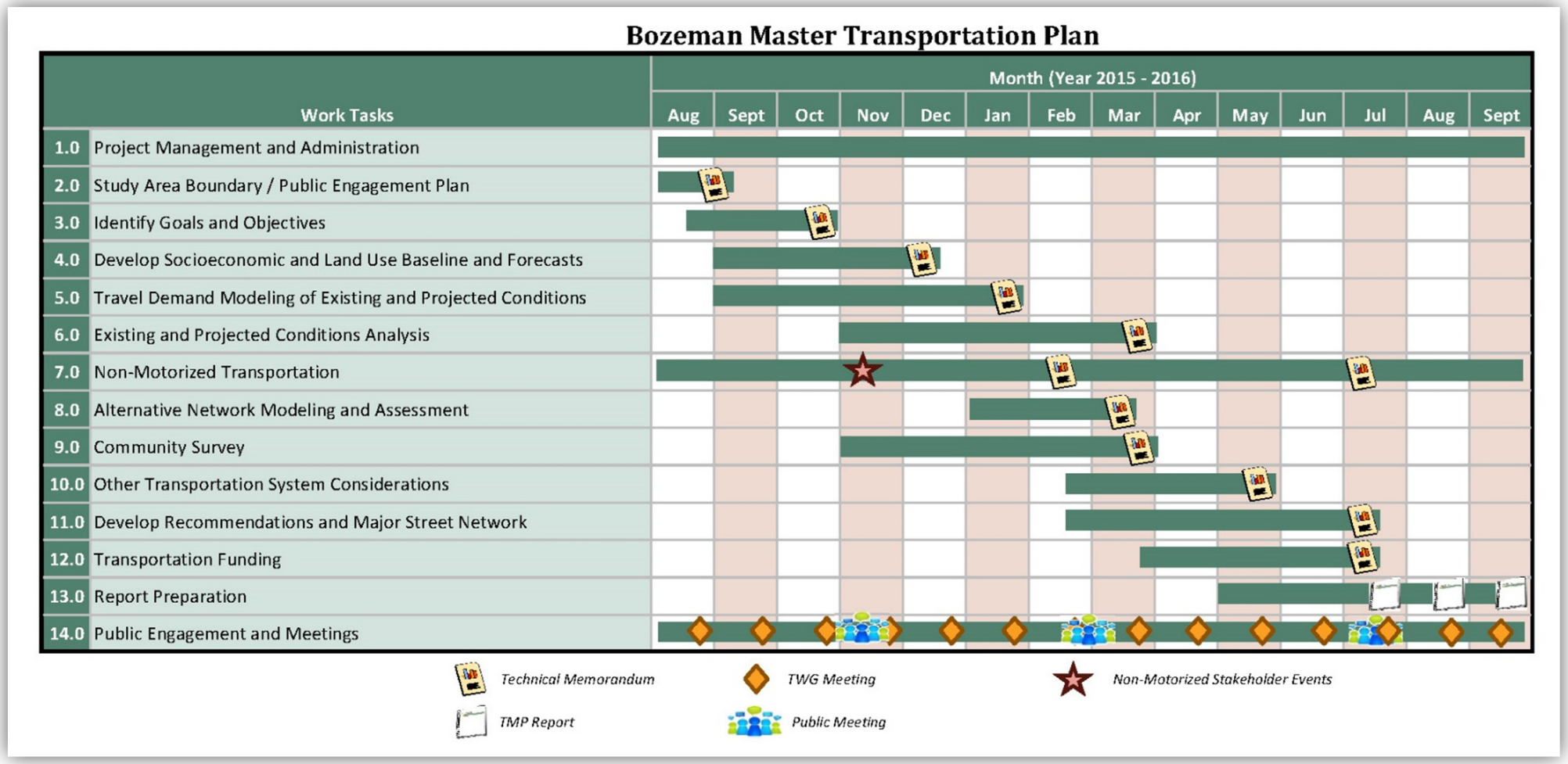

Figure 2: Study Schedule

4.0. OVERALL STUDY COMMUNICATION

This PEP establishes guidelines and procedures for encouraging public participation. The following communication strategies and techniques may be used in their entirety (or partially) to distribute the information to the community at large and seek a higher level of engagement. As many of these techniques that best suit the transportation planning process will be utilized.

- RPA will create and maintain a study website. In addition, the City of Bozeman will have appropriate links to the TMP website from their respective web pages.
- RPA will create and maintain a dedicated Facebook page for the TMP.
- Public service announcements and interviews on radio and television will be conducted to explain the subject matter and promote participation.
- Articles and press releases for the newspaper or other widely circulated publications will be developed.
- Informal presentations will be made at regional sites, open houses, round tables, or other community forums to receive input from the affected community.
- Formal presentations will be made to various service clubs, civic and professional groups.
- Mailings will be made to select individuals, groups or interests that have expressed interest or made comments at meetings.
- "Draft" technical memorandums will be provided on the TMP website and distributed to the TWG and TCC to provide a better understanding of proposed transportation issues and recommendations and, in return, to provide the TWG and TCC representatives with feedback and an opportunity for continual comment.
- Special presentations will be made upon request of community groups and organizations.
- Fact sheets may to be used to explain transportation related issues.
- Special issues "technical memorandums" will be announced or reported at meetings and/or via email on relevant transportation issues.

Public Involvement Key Concepts

Know the Strategy
Ensure that there is a clear strategy for involving the public during the planning process, and will follow through on that process!

Utilize New Approaches and Techniques
New strategies and techniques must be used to improve the Plan's public involvement results.

Be Realistic with Participants
In public meetings, emphasize the long-range nature of the transportation planning process, helping people understand that results may not be seen quickly.

Questions and comments from the interested parties concerning the participation process, draft technical memorandums, draft transportation planning documents, and other work products will be addressed via written response and included in an Appendix to the actual TMP document.

BOZEMANTMP
TRANSPORTATION MASTER PLAN

STUDY AREA BOUNDARY

Technical Memorandum

FINAL

October 2, 2015

prepared by:

Robert Peccia & Associates

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prepared for:

City of Bozeman & Montana Department of Transportation

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The City of Bozeman, MDT and RPA attempt to provide accommodations for any known disability that may interfere with a person participating in any service, program, or activity associated with this study. Alternative accessible formats of this information will be provided upon request. For further information, call (406) 447-5000 or (406) 582-2280. Accommodation requests must be made at least 48 hours prior to the scheduled activity and / or meeting.

ABBREVIATIONS / ACRONYMS

MDT	Montana Department of Transportation
TMP	Transportation Master Plan
TWG	Technical Working Group

Study Area Boundary

1.0. INTRODUCTION

The City of Bozeman and the Montana Department of Transportation (MDT) have initiated a community transportation planning process to develop a Transportation Master Plan (TMP). A previous Transportation Plan was completed in 2007 which provides a blueprint for guiding transportation infrastructure investments based on system needs and associated decision making principles. Rapid growth, changes in land use, substantial upgrades to the community's transportation system, and the community's increasing interest in transportation related matters have necessitated a new examination of transportation issues within the Bozeman area.

Transportation plans generally begin by defining the study area. Sometimes the study area follows governmental boundaries such as city limits, but most often they include some land immediately outside existing city limits in which future growth is seen as likely to occur. As a part of this TMP's development, a cursory review of the preliminary study area boundary provided by the City of Bozeman was undertaken. Subsequently, slight adjustments are recommended to be made to the study area boundary as described in this document.

1.1. Previous Study Area Boundary

The study area boundary for the previous Transportation Plan completed in 2007 is shown on **Figure 1**. The area included Bozeman, Four Corners, Gallatin Gateway, and unincorporated lands where development had been occurring or was anticipated as likely to occur. The previous study area boundary is much larger than that envisioned for this TMP. Generally, the 2007 study area boundary extended to the Gallatin River (to the west), Cottonwood Road (to the south), Spain Bridge Road (to the north), and Bozeman Pass (to the east).

1.2. Deletions to the Study Area Boundary

Much of the unincorporated area contained in the 2007 study area boundary is not included in the new boundary. Generally, the 2007 boundary has been shrunk by approximately two miles from the south, west and north. This has been modified due to Gallatin County being somewhat comfortable with their existing level of transportation planning in these areas. Land use changes within the unincorporated areas will be factored in to this TMPs development, however.

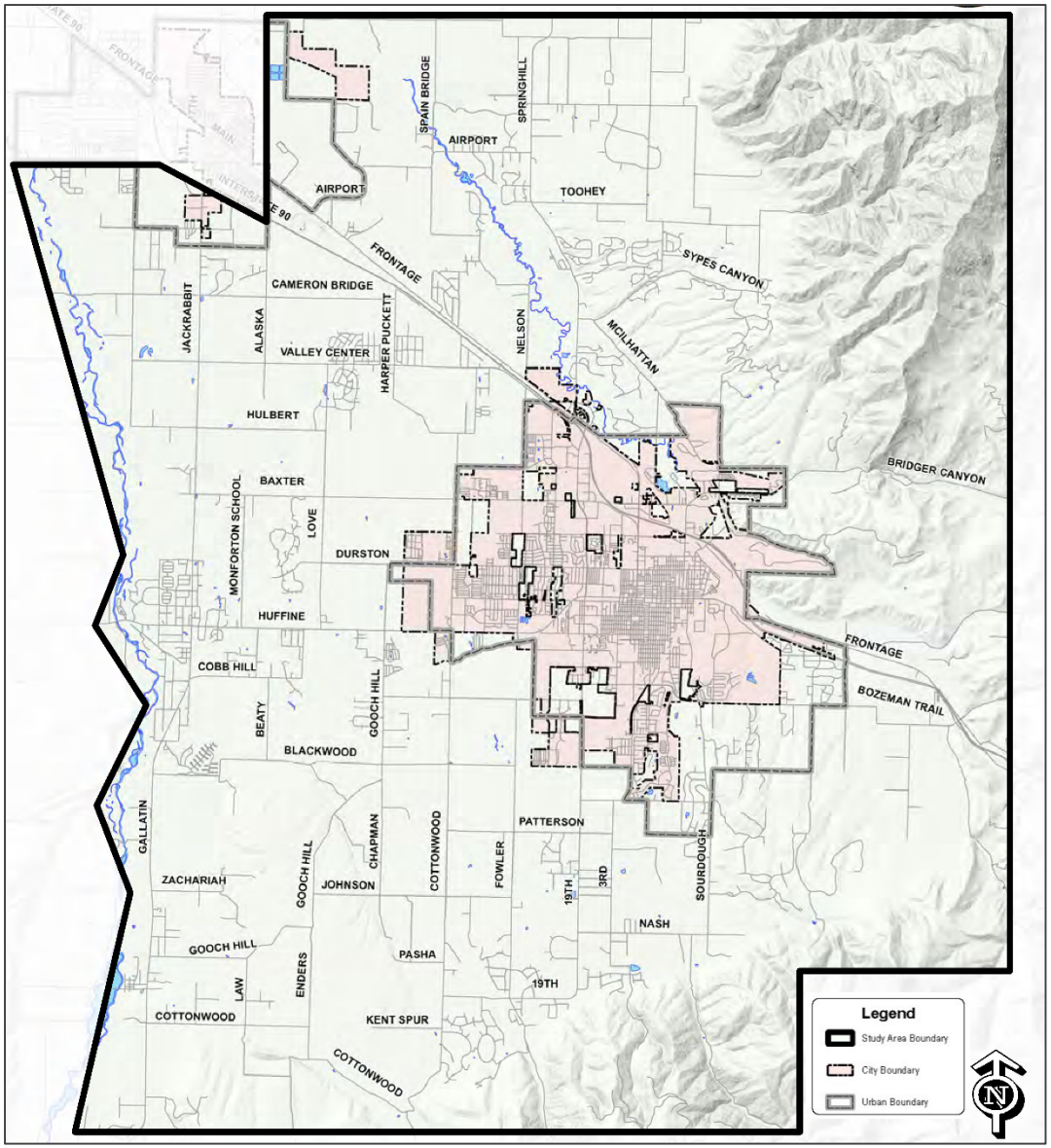


Figure 1: 2007 Study Area Boundary

1.3. Additions to the Study Area Boundary

The study area boundary initially defined for this TMP includes the entire city limits of Bozeman, as well as some unincorporated lands surrounding Bozeman. The study area boundary was based on the boundary found within the current Bozeman Community Plan. After reviewing the study area boundary with the Technical Working Group (TWG), it is recommended to enlarge the study area boundary slightly to fully encompass the 2010 Urban Boundary as defined in the 2010 Census, and to capture some land that is recently being explored for development (by others) north of Interstate 90 and west of Springhill Road, in the vicinity of Nelson Road. This expansion is shown graphically on **Figure 2**.

1.4. New Study Area Boundary

The new study area boundary is shown on **Figure 3** and will be used for all aspects of the TMP process. This study area boundary includes major employers in the area, as well as land that may be used for employment centers in the next twenty years that could possibly be annexed into the city limits. It also includes densely developed residential land uses in the area, and those areas likely to increase the housing supply in the future and subsequently add traffic onto the transportation network. Lastly, the new boundary includes the entire urban boundary limits that resulted from the 2010 Census.

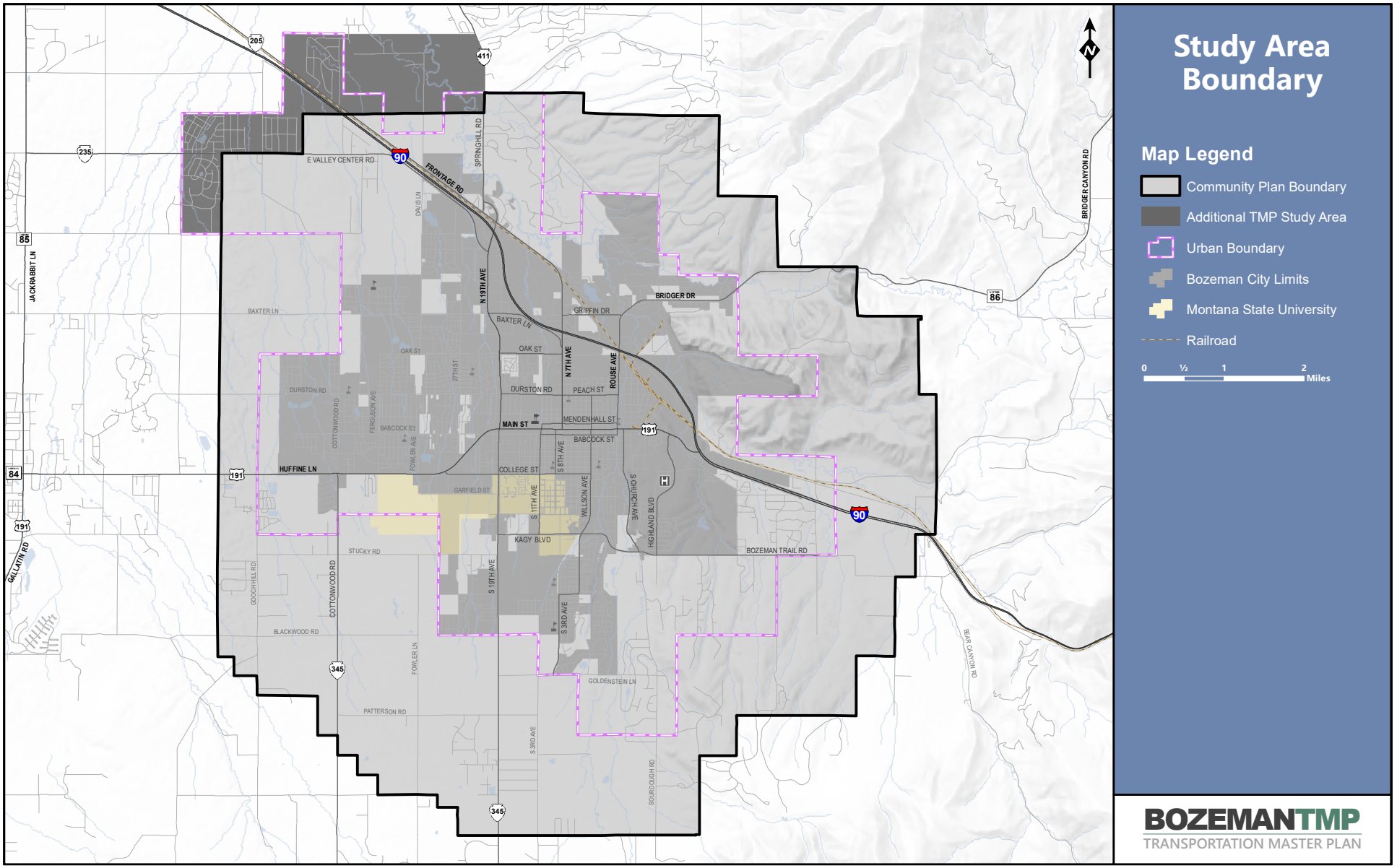


Figure 2: Additions to Study Area Boundary

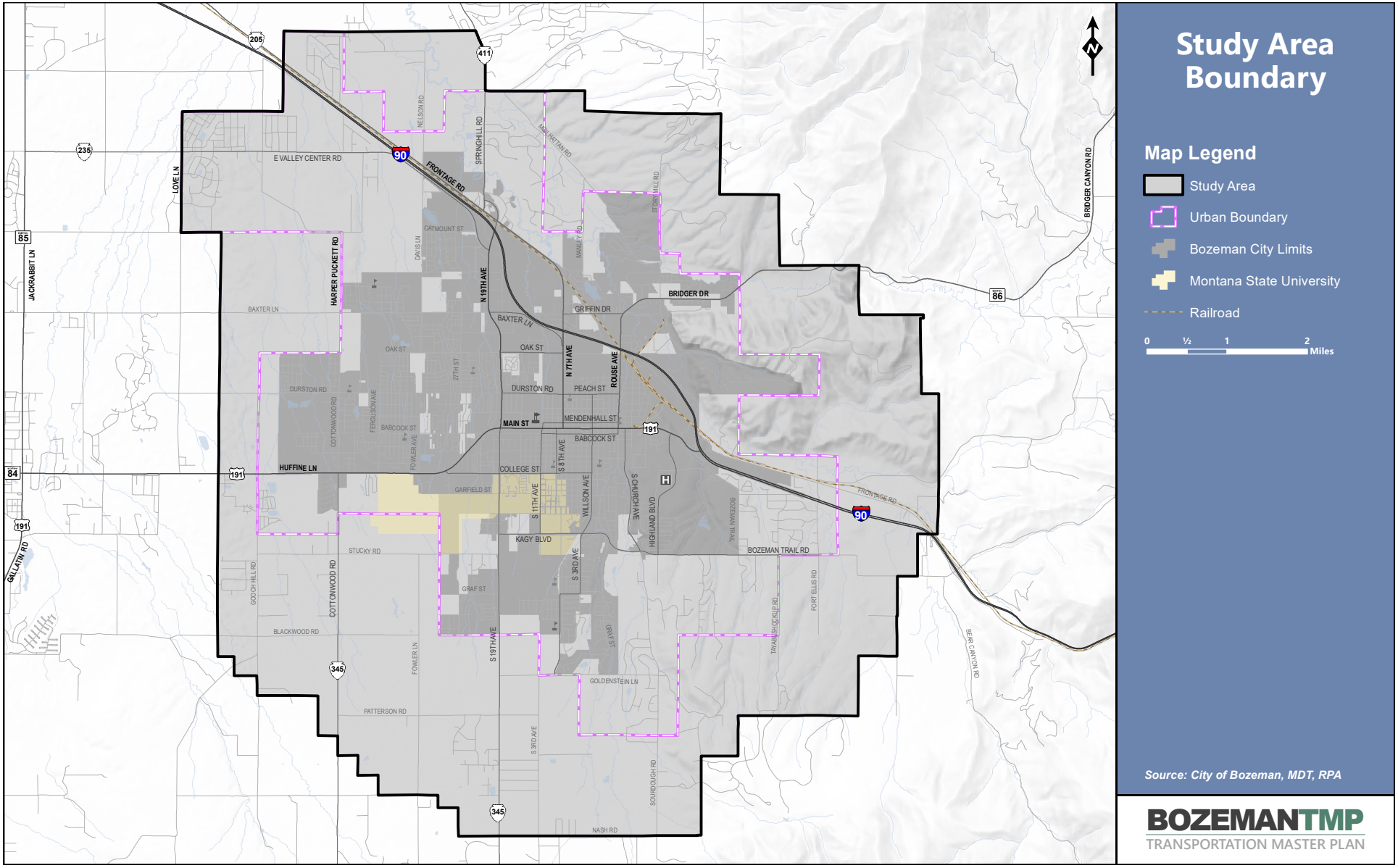
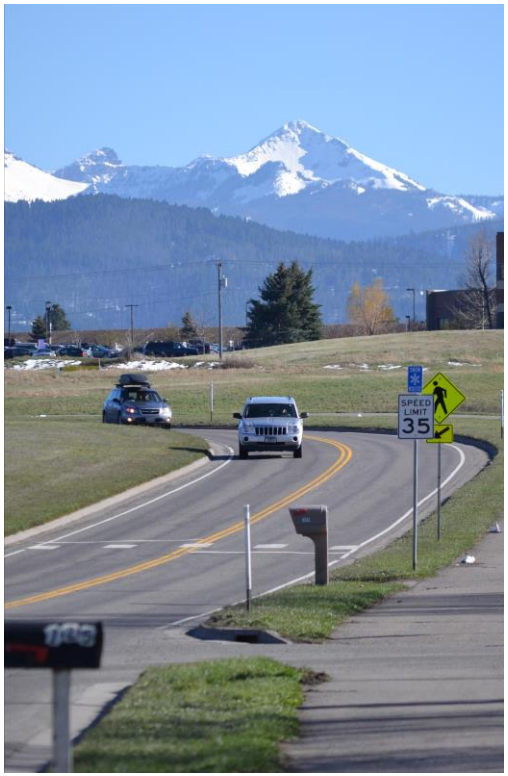


Figure 3: Study Area Boundary

BOZEMANTMP
TRANSPORTATION MASTER PLAN



GOALS AND OBJECTIVES

Technical Memorandum

FINAL

November 25, 2015

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City of Bozeman & Montana Department of Transportation

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ABBREVIATIONS / ACRONYMS

CHSP	Comprehensive Highway Safety Plan
CTSP	Community Transportation Safety Plan
DOT	Department of Transportation
DUI	Driving Under the Influence
EPA	Environmental Protection Agency
HUD	Housing and Urban Development
LED	Light Emitting Diode
MAP-21	Moving Ahead for Progress in the 21st Century Act
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization
MSU	Montana State University
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SOAR	Safe On All Roads
STEP	Selective Traffic Enforcement Program
TDM	Transportation Demand Management
TMP	Transportation Management Plan
TSAC	Transportation Safety Advisory Committee
TWG	Technical Working Group
U.S.	United States

Goals and Objectives

1.0. INTRODUCTION

Development of goals and objectives for the Bozeman Transportation Management Plan (TMP) is a critical first step in the transportation planning process. In addition to capturing all related information from previous community planning efforts, the goals and objectives lay out the general course of action for the TMP development and represent the community's vision for the future transportation system. Accordingly, developing goals and objectives cannot be accomplished within a vacuum. It is an iterative process that continually evolves through guidance provided by the Technical Working Group (TWG), specific stakeholders, the general public, and the elected officials.

The goals and objectives proposed later in **Section 5.1** of this memo are put forth in hopes of accurately reflecting the condition of planning within the general community, and more specifically reflecting the needs and desires relative to transportation. The listed information must be adequately vetted with the public over the course of the entire transportation planning exercise, and will be initiated at the very first public informational meeting.

The goals and objectives developed for the TMP are connected concepts – that is they represent the desired end result of the community's transportation system once projects identified are implemented. Goals and objectives also provide direction on how to get to that end result. Factoring in specific guidance for transportation planning relative to the eight planning factors contained in the Moving Ahead for Progress in the 21st Century Act (MAP-21) legislation, it is clear the importance that the establishment of goals and objectives carries. Collectively, the goals and objectives will inform the planning process and set the course of action for the transportation system for years to come.

Goals represent the overarching statements of the TMP intent and the direct elements of the community's vision.

Objectives are more focused statements of specific actions, measures or procedures that reflect how a particular goal can be attained.

Numerous local planning documents were reviewed to determine what, if any, transportation related goals and objectives have already been developed within the community. The summary of reviewed planning documents on the following pages is intended to portray existing transportation goals and objectives in the broader sense to identify what the community has in place and what diretion the community is heading relative to transportation. Many of the planning documents reviewed have been completed by non-City entities and accordingly may not appear to be "connected" to each other, however all do articulate some vision for community transportation.

2.0. LOCAL PLANNING PROCESSES

2.1. Understanding Commercial Truck Traffic through Downtown Bozeman (June, 2015)

The Understanding Commercial Truck Traffic through Downtown Bozeman report states *"…the primary objective of this project is to gain a better understanding of the commercial truck use of the primary arterial through Downtown Bozeman (Main Street/US 191)."* The study was motivated by anecdotal evidence that heavy vehicles, specifically semi-tractor/trailer combos, comprise a large portion of traffic along Main Street. In addition to identifying the magnitude of heavy vehicle traffic on Main Street, the study also investigated other potential routes for through truck traffic.

The study notes that the City of Bozeman Municipal Code defines a truck route as "a way over certain streets, as designated by ordinance, over and along which trucks coming into, going out of and traveling within the city must operate."[1] However, it is also noted that the City of Bozeman has never designated any truck routes.[2]

For this study, Downtown Bozeman is defined as the Downtown Business Improvement District, the Downtown Tax Improvement District, or the B-3 Zoning District.

As part of the study, a literature review was performed with the intent of identifying cities with similar heavy vehicle issues and documenting the approach each city used to qualitatively define the magnitude of the issues. Eight cities were identified and their experiences summarized. The common theme among each of the eight cities was the interplay between pedestrians and heavy vehicles.

To accurately quantify the number of heavy vehicles using Main Street for through trips, video cameras were utilized to record all traffic from 12:00 PM on September 4th to 11:00 AM on September 15th. Traffic in both directions was recorded at two locations, one at the intersection of Haggerty Lane and Main Street and the other west of the intersection of 19th Avenue and Main Street. Over the course of the data collection effort, approximately 264 hours of footage was collected. From the footage, truck counts were performed for daylight hours between 8:00 AM and 8:00 PM.

[1] Chapter 36, Article 9 – Truck Traffic, City of Bozeman Code of Ordinances, Accessed 9/3/2015, https://www.municode.com/library/mt/bozeman/codes/code_of_ordinances?nodeId=PTIICOOR_CH36TRVE_ART9TRTR_S36.09.010DE
[2] Ulmen, Stacy. Bozeman City Clerk. March 23, 2015

For this research, a "through truck" was defined as "a large commercial truck that crosses from East Main Street to West Main Street in a reasonable amount of time without any stops or detours." The number of through trucks was determined by matching still footage of trucks that appeared at both cameras.

It was found that through trucks accounted for 21 to 71 percent of truck traffic depending upon the day of the week. **Table 2-1** presents a summary of the study findings.

Table 2-1: Through Trucks, Total Trucks, and Percentage

	Through Trucks	Total Truck	Percentage
Friday, 9/5/14	31	150	21
Saturday, 9/6/14	27	38	71
Sunday, 9/7/14	26	37	70
Monday, 9/8/14	37	141	26
Tuesday, 9/9/14	42	142	30
Wednesday, 9/10/14	38	108	35
Thursday, 9/11/14	38	119	31
Friday, 9/12/14	33	61	54

Alternate routes for through truck traffic were investigated in addition to the count data. Three additional routes were examined:

1. Exiting I-90 at N. 7th Avenue and continuing to Main Street,
2. Exiting I-90 at N. 19th Avenue and continuing to Main Street, and
3. Exiting I-90 at Jackrabbit Lane in Belgrade and continuing south to the Four Corners area.

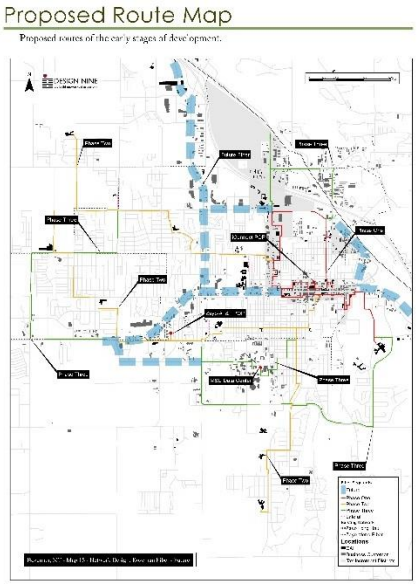
Each route, including the Downtown route was summarized as given in **Table 2-2**. Travel time data were collected based on one trip and may vary based on traffic congestion, weather, road construction, etc.

Table 2-2: Alternative Route Data

Route	Number of Traffic Control Devices	Length (miles)	Travel Time (minutes)
Downtown	24	8.7	20
N. 7th Avenue	19	10.8	17
N. 19th Avenue	17	12.9	15
Jackrabbit Lane	5	18	17

To quantify the impact that large vehicles have on sound levels in the downtown area, point measurements were taken on Main Street. It was found that the sound intensity on Main Street when no traffic was passing the observer ranged from 58 to 61 decibels. When traffic consisted of only passenger vehicles, the sound reading ranged from 69 to 75 decibels. When heavy vehicles passed the observer, the recorded sound levels ranged from 82 to 85 decibels.

2.2. Bozeman Fiber Master Plan and Feasibility Study (January, 2015)



The Bozeman Fiber Master Plan and Feasibility Study was commissioned by the Bozeman City Commission to explore strategies and activities to help get more and better broadband in the city of Bozeman. Increased affordability and availability of broadband delivered services has the potential to increase job creation in the city, help retain existing businesses, and improve the City's ability to attract new businesses and entrepreneurs. The expected outcomes of a fiber network in Bozeman includes increased economic growth through increased business attraction, increased local business expansion, and an increase in good-paying job opportunities. Pertinent to the Bozeman TMP, the Master Plan identifies a core fiber infrastructure network that would be required for implementation. This is important because as roadway transportation projects are developed, attention should be paid during the design and construction process to those locations where a future fiber network may be identified.

2.3. City of Bozeman Department of Community Development 2014 Annual Report (2014)

The City of Bozeman Department of Community Development Annual Report is used to summarize general trends and changes to the Bozeman community including residential and commercial building activity, actions to ensure that programs and regulations are relevant to changing community conditions, demographic trends, city boundary increases, subdivision activity, economic development, and code enforcement activity. The 2014 update summarizes the aforementioned activities for the 2014 calendar year. Annual Report updates are also available for years prior to 2014.

The report states that there are currently ±19,599 dwelling units in the City of Bozeman. Of those units, single-household units account for approximately 38 percent of all units. In 2014, 663 residential and 447 commercial building permits were issued. The approximate valuation of all building permits in 2014 is reported at $311,722,113.

According to the report, the population of the City of Bozeman in 2010 was 37,280 according to the US Census Bureau. The Census Bureau later estimated the population to be 39,860 in 2013. Using recent building construction, the City of Bozeman's estimated population in 2014 is 39,533.

Through annexation, 19.7 acres were incorporated into the City of Bozeman in 2014 according to the report. With the addition of this area, the total area of the City of Bozeman increased to 12,799 acres.

The report summarizes subdivision activity for the 2014 calendar year. A total of 58 subdivision applications and 32 subdivision exemption applications were processed. In addition to subdivision activity, zoning activity is also summarized in the report. A total of 56 zoning site development applications were processed in 2014.

2.4. Bozeman Community Transportation Safety Plan (July, 2013)

The Bozeman Community Transportation Safety Plan (CTSP) addresses the unique nature of urban and suburban traffic safety in the Bozeman Area. According to MDT, more crashes occur in urban areas as compared to rural areas. This fact is due in-part to the increased traffic volumes in urban areas. To address this reality, MDT established a program in which individual communities could apply for assistance to develop a CTSP. The process is data driven and led by community members.

The Plan states that "*...in Bozeman over the past three years (2009 – 2011) an average of one person dies annually and six people suffer incapacitating injuries resulting from traffic crashes. In addition, each year more than 200 people suffer less severe injuries in traffic crashes. The toll on Bozeman is significant in terms of suffering and economic loss.*" In 2012 the City of Bozeman began working to reduce the number of severe injury crashes in the urban area through the development of the CTSP. A Transportation Safety Advisory Committee (TSAC) was established to lead the effort. Through a thorough review of crash data, the TSAC identified the following three areas for focus (i.e. Emphasis Areas) to reduce fatal and incapacitating crashes in Bozeman:

1. Inattentive driving crashes;
2. Lack of occupant protection usage; and
3. Bicycle and pedestrian crashes.

The TSAC identified a goal to reduce fatalities and injuries by 25 percent between 2013 and 2018.

Bozeman Community Transportation Safety Plan Strategies

Inattentive Driving Crashes

1. Publicize the risks of distracted driving and conduct enforcement of distracted driving, including electronic handheld device with driving.
2. Conduct ongoing public education and outreach about safe driving protocols/skills and retaining opportunities.

Seat Belt / Occupant Protection Use

1. Promote seat belt use, through broadened membership partners and increase activity of the Greater Gallatin Safety Coalition.
2. Conduct targeted youth outreach to increase seat belt use.
3. Conduct outreach to Montana State University students on the importance of wearing seat belts in vehicles
4. Conduct general media outreach on the importance of seat belt use focusing on demographic groups with high rates of non-use. Complement outreach with targeted enforcement.
5. Collaborate with judges to ensure the judicial process is supportive of increased enforcement of seat belt non-use.
6. Enact a local ordinance making non-use of a seat belt a primary offense in Bozeman.
7. Conduct increased outreach about the need for vehicle passenger ages 4 to 9 to use booster seats.

Bicycle and Pedestrian Crashes

1. Increase bicycle and pedestrian infrastructure in Bozeman, including bicycle lanes, sidewalks, signage, and pavement markings.
2. Reduce impaired bicycling and walking.
3. Increase reporting of bicycle and pedestrian crashes.
4. Conduct public education about safe operating procedures between bicyclists and pedestrians and vehicles.
5. Increase enforcement of safe behaviors by both drivers around bicyclists and pedestrians and by bicyclist and pedestrians as they enter into the transportation mix.

The CTSP outlines implementation and review measures. The Plan states that the following steps should be undertaken for each emphasis area:

1. Chairs identify the appropriate partners to serve on the Emphasis Area team and coordinate regular team meetings;
2. Teams develop safety targets for each Emphasis Area, e.g. number of fatal and injury crashes involving inattention, unbuckled passengers, or bicycles and pedestrians;
3. Emphasis Area teams identify a strategy leader to carry out each Emphasis Area strategy and associated action steps;
4. Emphasis Area teams conduct regular (e.g. monthly) meetings to coordinate strategy implementation and report progress;
5. Emphasis Area teams report to the TSAC Chairperson, the Bozeman city engineer, on a regular basis (e.g. quarterly); and
6. Emphasis Area teams should develop new strategies for each Emphasis Area as strategies are put into place.

2.5. Streamline 2012 Business Plan (January 6, 2013)

A five-year business plan for Streamline was prepared and focused on the goal of determining how the existing service and organization could be modified to better meet the needs of riders and potential riders in the greater Bozeman area. The plan includes a broad range of recommendations addressing opportunities to improve service for existing riders, increase public awareness of Streamline's services, and serve new riders. Since Streamline was launched in 2006, it has experienced a steady and significant increase in ridership every year and there is no reason to believe this trend will not continue. The plan further states that any improvements or expansion in service or marketing are likely to result in ridership increases.

Streamline's mission is stated on the Streamline website (www.streamlinebus.com/about-streamline-bus/) as follows:

To be the provider of mobility services and alternatives to the single occupancy vehicle in southwest Montana. Streamline will accomplish its mission by providing alternative modes of transportation, including the following:

- *Fixed Route Transportation*
- *Demand-Responsive Transportation*
- *Van Pools*
- *Carpooling services*

Streamline will accomplish its mission by providing services to the following clientele:

- *Montana State University Students*
- *Montana State University Faculty and Staff*
- *Senior Citizens General Public*
- *Persons with Disabilities*
- *Person with Low Incomes*
- *Non-driving high school and middle school students*
- *Downtown shoppers and workers*

2.6. Downtown Bozeman Parking Study (February, 2011)

The Downtown Bozeman Parking Study was conducted to create a clearer picture of the current parking resources, how existing parking is performing, and what future parking needs may be. To answer these questions, the Parking Study generated an inventory of all available parking within the downtown area as well as examined aspects related to parking such as dwell time, turnover, and occupancy rates.

Inventory data were collected in July, 2010. The field inventory data collected included:

- Number of spaces,
- Type of parking (on-street, off-street),
- Ownership of parking (public, private),
- Fees for parking (free, pay, permit),
- Access point/side of street – collected for internal identification and reference purposes, and
- Restrictions (handicapped, time, loading zone).

It was determined that at the time of the Parking Study, there were 5,034 parking stalls available in the downtown area. Given the 31 downtown blocks within the study area, there is an average of 162 stalls per block. The Downtown Parking Garage block has the most available parking stalls at 479 total. The block with the fewest stalls, 85, is to the north east of the intersection of Rouse Avenue and Mendenhall Street, the location of Hawthorne School.

For occupancy data, Montana State University (MSU) undergraduate labor was employed to manually count occupied stalls for both a single weekday, August 11, 2010, and a single weekend, September 11, 2010. Only the ten blocks immediately to the north and south of Main Street, from Grand Avenue to Rouse Avenue, were counted. It was found that weekday occupancy rates at peak times ranged from 82.3 percent to 51.3 percent. Weekend rates ranged from 83.3 percent to 20.3 percent

Turnover rates, or the number of individual vehicles which occupy a particular space over a specific period of time, were determined for select off- and on-street parking areas. A rate of 1.0 would indicate that a stall is used by one vehicle per hour, while a rate of 2.0 would indicate two vehicles per stall per hour. Conversely, a rate of 0.5 would indicate that a stall was occupied by a single vehicle for a duration greater than one hour. The results of the turnover rate analysis are given in **Table 2-3**.

Table 2-3: Turnover Rate Results

Location	Observed Vehicles	Stalls	Study Duration (hrs)	Turnover Rate (Veh/stall/hr)	Date
Mendenhall and Black	127	58	6	0.36	8/11/2010
Mendenhall and Willson NE	90	44	6	0.34	8/17/2010
Mendenhall and Willson NE	105	44	6	0.40	9/16/2010
Mendenhall and Willson SE	114	28	6	0.68	9/23/2010
Tracy on-street	78	11	6	1.18	8/24/2010
Main on-street	129	24	6	0.90	8/23/2010
Rouse and Babcock NW	91	48	6	0.32	10/8/2010
Parking Garage	64*	435	6	0.02	8/11/2010

To assess how well the available parking in Bozeman addressed the need for parking, the Study used the ITE Parking Generation Manual to determine parking demand. The ITE Parking Generation Manual allows one to calculate expected parking demand based on building size and usage. Using a combination of aerial photography, Google street view imagery, and field visits, the total square footage for each building in the downtown area was calculated. Usage information was supplied by the City of Bozeman. It was found that for all of downtown, a surplus of 1,849 stalls exist. However, some blocks have a deficit of stalls. Ultimately, the study determined that *"…it appears the city possess an adequate number of publicly-owned stall."*

2.7. Bozeman Community Climate Action Plan (2011)

The Bozeman Community Climate Action Plan (CCAP)[3] arose out of the Mayor of Bozeman signing the Mayor's Climate Protection Agreement (MCPA) in November 2006. The purpose of this agreement was to engage US cities to decrease their output of gases known to cause global warming. As of 2011, over 1,000 Mayors across the United States signed onto the MCPA thereby committing their cities to attempt to meet measurable goals for greenhouse gas reductions. The Mayors' Community Climate Task Force (MCCTF), a 15 member stakeholder group, was appointed in October 2009 to develop recommendations for the CCAP. After careful consideration and thoughtful planning, the MCCTF proposed a two part approach to achieve Greenhouse Gas (GHG) reduction:

1. Reduce emissions to 10 metric ton per capita by 2020 with aggressive conservation measures.
2. Reduce emissions to 10 percent below 2008 levels by 2025 by developing alternative energy capacity.

Analysis and subsequent recommendations to achieve a reduction in GHG emissions focused on five content areas: (1) Community Engagement & Implementation (2) Residential & Commercial Building, (3) Transportation; (4) Waste, Water & Recycling, and (5) Energy Production.

Pertinent to transportation, the CCAP states that transportation accounted for 19% and 26% of emissions in 2000 and 2008, respectively, and that transportation will continue to become a large source of emissions as Bozeman continues to grow. Three strategies were developed to help reduce emissions relative to transportation, as follows:

1. Support policies for long-term integrated multi-modal transportation and land use planning for a 20-30 year horizon.
2. Develop infrastructure for electric vehicle friendly community and provide incentives for the production, sale and use of clean fuels.
3. Reduce vehicle miles traveled (VMT) and fuel emissions by promoting a pedestrian and bike friendly community.

Furthermore, nine recommendations to achieve a reduction in GHG emissions relative to transportation were developed. It was noted in the recommendations section prelude that smart growth principles of accessibility, walkable neighborhoods, mixed land use, and varied transportation options will all work toward reducing emissions in the transportation sector. The nine recommendations were as follows:

- TSP-1 Expand and improve multi-modal infrastructure
- TSP-2 Allocate one mill levy to Streamline directly
- TSP-3 Install pay electric charging stations
- TSP-4 Adopt an anti-idling ordinance

[3] Bozeman Community Climate Action Plan (2011), https://www.bozeman.net/Smarty/files/92/92587259-fd07-414e-95cb-8c041f22d8a0.pdf

- TSP-5 Bike and showers in lieu of parking requirements
- TSP-6 Interconnect and enhance sidewalk network
- TSP-7 Support a local option gas tax
- TSP-8 Examine emissions from Gallatin Field Airport
- TSP-9 Reform Tax Permitting Process

2.8. City of Bozeman Economic Development Plan (2009)

The City of Bozeman Economic Development Plan was produced in response to recommendations made in the Bozeman 2020 Community Plan. The purpose of the Economic Development Plan was to provide the City of Bozeman with the opportunity to address the community's most pressing economic development needs and to come together behind a strategy for progressive and sustainable change.

Transportation is cited as being a reason that Bozeman is easily accessible for businesses. The easy access for both trucking and railcar transportation is an important factor for business development. Manufacturing and industrial businesses benefit from easy access to freight.

The Plan lists 13 major industry sectors that contribute to the economic vitality of Bozeman. While not directly stated in the plan, transportation is key to the success of each of these sectors. Transportation of goods, mobility of workers, and attraction of customers can hinge on a properly functioning transportation system.

Major Industry Sectors

- Technology
- Retail
- Hospitality, Tourism, and Recreation
- Gallatin Field Airport
- Construction, Land Development, and Real Estate
- Manufacturing
- Montana State University
- Healthcare and Bozeman Deaconess Health Services
- Government
- Finance and Professional Business Services
- Agriculture
- Non-Profit Organizations
- Telecommuters

Assessment of economic development for the plan was performed through an Economic Development Survey. The survey asked respondents, business leaders and stakeholder groups to rate a variety of community aspects on a 1 to 4 scale, with 4 being Excellent. Of interest in a transportation context are the results for infrastructure, development fees and impact fees, and public transportation. Using the results of the survey, economic development initiatives and priorities were ranked. Improving transportation infrastructure ranked as the fifth most important issue.

2.9. Downtown Bozeman Improvement Plan (December, 2009)

The Downtown Bozeman Improvement Plan states that the plan is *"…intended to guide decisions by public bodies, private businesses, and non-profit organizations for at least ten years to come."* The Plan describes downtown as the retail core with bright lights, colorful storefronts and heavier traffic flows. In addition to the retail core, the Plan also includes the transit center, nearby neighborhoods that touch the edge of the retail core, concentrations of employment, public open spaces, and institutions such as the library, and cultural facilities like the Emerson Center.

The Plan gives an overview of possible issues impacting the downtown area. Among those issues are access and circulation. The Plan lists vehicle circulation patterns as encouraging through traffic and high speeds. The Mendenhall/Babcock one-way couplet is specifically called out as making movement within downtown difficult for vehicles and pedestrians. The truck traffic on Main Street is also cited as being at odds with the character of downtown's signature pedestrian nature.

The Plan goes on to further list opportunities for improvement. Of these opportunities, "complete streets" is listed. Under this opportunity, the Plan identifies that most streets in the downtown area are in need of improvements for multi-modal traffic.

Twelve guiding principles are outlined with the intent to provide the philosophical foundation for the Plan and the recommended next steps. Of these 12 principles, the following five can be directly related to transportation within the downtown area:

- All streets and sidewalks in downtown should be designed to make the experience of pedestrians and bicyclists safe, comfortable, and visually appealing.
- Parking should not govern development potential; the amount of parking relative to development should decrease. Parking inventory should be managed so as to ensure convenient access for customers.
- Transit should be expanded to serve downtown more extensively and frequently
- Sustainable methods and techniques should be applied to infrastructure, street design, and redevelopment to contribute to a healthier and greener community.
- Create strong connections between sub-districts, and from downtown to surrounding community.

After establishing the guiding principles for the Plan, a series of strategies are given to improve the downtown area. Of these suggestions, transforming alleys into a more pedestrian friendly environment, reduce truck traffic and invite bicyclists to Main Street, and convert Mendenhall and Babcock to two-way traffic are directly related to transportation. The Plan suggests that the alleys that run parallel to Main Street are underutilized and could be converted to a more pedestrian friendly and usable space through the addition of greenery, proper drainage, and other pedestrian focused amenities. Truck traffic, as cited in the issues section of the Plan, can dissuade usage of Main Street for pedestrian and bicycle usage.

Conversion of the one-way couplet to two-way operation is listed as a possible way to make navigation of downtown simpler for all users. The Plan describes the function of Mendenhall as more of a "major through-way, getting people through downtown, than moving people within downtown." It is also stated that both Mendenhall and Babcock are "very poor pedestrian environments, with narrow or inconsistent sidewalks flanked by long stretches of surface parking lots." The Plan presents three case studies from other two-way street conversions.

2.10. Bozeman Community Plan (June, 2009)

Recognizing that Bozeman is an attractive community and growth trends over the decade(s), the Bozeman Community Plan was prepared to proactively and creatively address issues of development and change while protecting public health, safety, and welfare. Three points within the vision statement for the Plan address transportation related issues:

- Public services and infrastructure support Bozeman's growing population in a cost-effective manner.
- Bozeman's development pattern encourages and enables the use of diverse modes of transportation.
- An actively engaged citizenry has a wide array of opportunities to participate in civic life.

The Community Plan cites results from the 2007 Bozeman Citizen Survey. This survey found that the top five perceived issues in Bozeman are too much growth; traffic congestion; drugs; taxes; and weeds (homelessness and unsupervised youth tied). The Plan gives the following statement as the introduction to Chapter 11: Transportation:

"Safety, choice, and convenience; these are things Bozeman's citizens seek in their travel. A desire for safe and functional bicycle and pedestrian travel options is a common theme of public comment. Transportation shapes a community. Transportation investments should advance the overall goals of the community."

The City of Bozeman's Reasons for Transportation Planning

- Safety for travelers
- Use public places such as trails to create a sense of community and foster social interaction
- Functional and dependable transportation
- Cost effectiveness and efficiency while giving quality services
- Promote an active and healthy citizenry
- Affirm the community's commitment to responsible land use and stewardship of the natural environment
- Support and enhance the community's economy
- Protect and enhance the beauty of the community
- Support sustainability of the community

This Plan further notes that transportation and development have always been closely related. In a historic context, land use was dictated by the effort required to make non-local trips. As such, a compact development pattern emerged. However, as the Plan states, *"…beginning in the 1960s, urban development became increasingly automobile oriented."* This vehicle-centric mentality resulted in development patterns

that were designed to accommodate vehicular transportation over other modes. The resulting development patterns - commercial establishments clustered on major transportation corridors - are not easily traveled without an automobile. Neighborhood isolation, traffic congestion, declining air quality, and inviting visual impacts are all results of this development pattern according to the Plan.

Population growth results in a corresponding increase in the demand for services and residences with the City. The Plan addresses this fundamental relationship by saying that *"…the City's land use and transportation policies encourage well executed increased density in order to ensure the most efficient and cost-effective use of land and public services."*

The Plan suggests that transportation demand management (TDM) strategies could provide a cost effective means of addressing congestion as opposed to the construction of additional travel lanes. TDM is an integrated set of strategies design to reduce congestion. Example of TDM strategies given in the Plan include reducing the number of trips made, shifting travel to less congested times, and shifting the travel mode to higher occupancy vehicles.

The Plan establishes the following transportation related goals:

- Maintain and enhance the functionality of the transportation system.
- Ensure that a variety of travel options exist which allow safe, logical, and balanced transportation choices.
- Encourage transportation options that reduce resource consumption, increase social interaction, support safe neighborhoods, and increase the ability of the existing transportation facilities to accommodate a growing city.
- Establish and maintain an integrated system of transportation and recreational pathways, including streets, bicycle and pedestrian trails, neighborhood parks, green belts and open space.

2.11. Bozeman Municipal Climate Action Plan (June, 2008)

The Bozeman Municipal Climate Action Plan begins with an introduction that notes that *"…if immediate and aggressive policies are not taken to begin mitigating anthropogenic greenhouse gas concentrations, the effects could be devastating to the Bozeman community."* The Plan further warns that *"… for the Bozeman Area, climate change may lead to such tangible, life-impacting alterations as increased catastrophic forest fires, shortened ski seasons, hotter summers, lower summer river levels, and drought."* The Plan divides recommendations into five categories: (1) Planning, Building, and Energy, (2) Transportation and Land Use, (3) Waste Water and Recycling, (4) Education and Outreach, and (5) Implementation.

Transportation related recommendations range from signal timing improvements to increased Streamline funding. Many of the recommendations are geared toward the City-owned vehicle fleet, however, others are meant for the public at large. It was recommended that traffic signals switch to a flashing scheme during the evening hours. A flashing scheme would decrease emission from vehicles by reducing stop and go operations. However, pedestrian safety was cited as a major concern for this type of scheme. In addition to signal timing, the Plan identified roundabouts as a possible intersection treatment that could help to reduce vehicular emissions by reducing stop and go operations. It was recommended that when comparing a signal to a roundabout, both vehicular emission and electrical usage are analyzed.

Transportation Related Climate Protection Task Force Recommendations

- Improve traffic signal operations
- Consider roundabouts
- Modify vehicle purchasing policies (City fleet)
- Establish vehicle tracking method for City fleet
- Increase City fleet average fuel efficiency standards
- Create transportation demand management pilot program
- Anti-idling ordinance
- Green bike program
- Fund LED lighting program
- Streamline Funding

TDM programs were recommended by the Plan as a method to decrease emissions from vehicles. TDM solutions can range from flex work schedules to promoting high-occupancy vehicles. Other recommendations such as anti-idling ordinances, LED lighting programs, and increased funding of Streamline are all geared at reducing emissions related to transportation and the associated infrastructure.

2.12. Greater Bozeman Area Transportation Plan (2007 Update)

Goals and objectives were developed as part of the 2007 Transportation Plan Update to reflect transportation considerations and community desires. The goals and objectives were continuously monitored by local jurisdiction staff to ensure compatibility with the community vision. The developed transportation planning goals and objectives from the 2007 Transportation Plan Update were as follows:

Goal #1: Provide a safe, efficient, accessible, and cost-effective transportation system that offers viable choices for moving people and goods throughout the community.

Objectives:

- Plan and implement a logical, efficient, long-range arterial and collector transportation system to ensure that public and private investments in transportation infrastructure support other land use decisions of the community.
- Plan a logical, efficient long-range arterial system that can be systematically implemented by right-of-way reservations and advance acquisition procedures.
- Meet the current and future needs of the greater Bozeman area that can be maintained with available resources.
- Provide adequate emergency service access to all residents inside and outside of the Study Area Boundary.
- Develop a "Major Street Network" classifying existing roadways by functional usage (as well as future corridors) within the Study Area Boundary.
- Address the needs of business and commerce both locally and regionally.
- Plan for adequate access to high volume traffic generation points.
- Conduct a comprehensive data collection effort that will include vehicular counts, truck counts, bicycle movements and pedestrian usage at the intersections identified for the study.
- Review the most recent three-year accident history and crash statistics to evaluate potential safety problems and possible mitigation efforts that can improve and/or resolve identified concerns on the existing transportation system.
- Examine population and employment growth trends to assess demographic changes and how those changes may affect transportation system users over the twenty year planning horizon.
- Develop a 20-year traffic model that can be used to predict future transportation system needs as growth occurs within the Study Area Boundary limits.
- Identify current and foreseeable traffic problems.

Goal #2: Make transit and non-motorized modes of transportation viable alternatives to the private automobile for travel in and around the community.

Objectives:

- Support alternatives to single occupancy vehicles.
- Establish safe pedestrian and bicycle access in designated areas by:
    - Considering pedestrian/bicycle needs when planning and designing new roads.
    - Considering improvement and dedication of bikeways and pedestrian paths though developing area.
    - Providing widened shoulders where possible to accommodate pedestrians/bicycles on existing roadways, with a preference for physical separation between motorized and non-motorized traffic.
- Encourage mixed-use development that integrates compatible residential, office, and commercial uses to reduce the need for automobile trips.
- Encourage walkable neighborhoods, both within existing developed areas and new residential and commercial subdivisions.
- Recommend policies and decisions to ensure bicyclists and pedestrians can access and conveniently cross all major roadways and highways.
- Identify and incorporate, as applicable, Transportation Demand Management (TDM) strategies to provide alternatives to private vehicle travel.
- Consider equestrian needs, where appropriate, when planning and designing new roads.

Goal #3: Provide an open public involvement process in the development of the transportation system and in the implementation of transportation improvements, and assure that community standards and values, such as aesthetics and neighborhood protection, are incorporated.

Objectives:

- Provide for citizen involvement in the planning and implementation of transportation plans and projects.
- Respect and ensure the areas natural and historic context and minimize adverse impacts to the environment and existing neighborhoods.
- Minimize negative transportation effects upon residential neighborhoods.

- Encourage transportation improvements that preserve the natural panorama of skylines and sightlines, and are compatible with historic resources.
- Evaluate and identify transportation system needs of area schools, and address existing and future transportation issues as appropriate.
- Provide for connecting streets among neighborhoods.
- Meet the unique transportation needs of the areas elderly, disabled and disadvantaged populations

Goal #4: Provide a financially sustainable Transportation Plan that is actively used to guide the transportation decision-making process throughout the course of the next 20 years.

Objectives:

- Review all existing and on-going planning reports and studies for compatibility.
- Conduct a financial analysis to ensure the Plan is financially feasible and sustainable.
- Identify funding mechanisms that may be viable alternatives to the traditional funding programs currently used to fund transportation system improvements.

Goal #5: Identify and protect future road corridors to serve future developments and public lands.

Objectives:

- Develop a Plan to address forecasted transportation growth needs.
- Identify future corridors and future connections to existing roadways in order to secure appropriate right of way and improvements.
- Identify road construction needs to serve developing areas, and encourage development in identified urban areas.

2.13. Bozeman Parks, Recreation, Open Space and Trails Plan (December, 2007)

The Bozeman Parks, Recreation, Open Space and Trail Plan, while focusing primarily on Parks and the general operations of them, includes a chapter dedicated to trails. As this Plan says, *"…trails provide safe transportation corridors for people to move throughout the community on foot or on bike."* The Plan designates five classes of trail with multiple sub groups. These trail types address various transportation and recreation needs and range from paved paths 12-feet in width to narrow semi-separated equestrian trails.

Issues related to the construction and maintenance of shared use paths is presented in the Plan. Four emphasis areas are noted for the identification of corridors that are suitable for shared used paths:

- Availability of street right-of-way;
- Feasibility of development of the facility, most often in undeveloped or underdeveloped areas;
- Proximity to community facilities such as schools, parks, and the public library; and
- Speed and traffic volume on the adjacent street.

Other issues, such as surface material, direction, design, and aesthetics, are noted in the Plan. The choice of surface material is informed by the usage of the trail. For example, an asphalt surface is desirable for joggers, disabled individuals, and other wheeled transportation modes. However, the City Engineering and Street Department prefer concrete due to the superior longevity and ease of maintenance. Debate over the direction of shared use paths, as stated in the Plan, often brings up the question as to whether there should be a path on both sides of a roadway. The plan recommends that based on safety concerns, shared use paths should be installed on both sides of the street when feasible.

2.14. Mandeville Industrial Park Railroad Feasibility Study (March, 2007)

The intent of the Mandeville Industrial Park Railroad Feasibility Study was to determine the feasibility of rail access to the proposed Mandeville Industrial Park, as well as identify rail related transportation issues. The study reviewed three alternatives for rail access including a cost analysis and two site access options concerning rail crossings. The impacts of this development were localized to the study area, north of I-90 between N. 7th and N. 19th Avenues. The study does not identify a preferred option but does outline the pros and cons of each option.

2.15. Design and Connectivity Plan for North 7th Avenue Corridor (October, 2006)

The Design and Connectivity Plan for North 7th Avenue Plan begins by summarizing the current (2006) nature of north 7th Avenue. The goal of the Plan was to develop a framework plan that addresses technical questions about the area, while providing a vision for the future. A key goal is to establish a distinct identity for the corridor and the subareas within it.

The Plan notes that North 7th Avenue is an automobile-oriented corridor; however, it has the potential to become more pedestrian-oriented while serving as an arterial roadway. The following components were considered in the Plan: automobile circulation, bicycle circulation, development patterns, landscape opportunities, pedestrian circulation, public transit, and wayfinding.

The Plan supplies roadway cross sections for the various sections of the North 7th Avenue corridor. Each of the diagrams shows a boulevard separating the sidewalk from the roadway. Additionally, center median landscaping to improve the visual appeal of the corridor.

Other pedestrian options that are suggested include improved definition of crosswalks, bulb-outs, and public transit stops. Bicycle improvement options include bicycle lanes, designation of bicycle routes, and recreational trails. Recommendations for streetscape improvements include decorative paving, lighting, and street furniture.

Specific Issues Identified for North 7th Avenue

- Difficult pedestrian crossing at I-90
- Pedestrian crossings where people feel safe are few
- Poorly defined walkways along the highway and within properties
- School zone crossings are dangerous
- Key intersections are poorly defined, making for difficult pedestrian crossings
- Discontinuity in sidewalks
- Lack of bicycle commuter lanes
- Incomplete bicycle route
- Public wayfinding signs are sparse and difficult to read
- Lack of cross-property access between parcels
- Many curb cuts, which disrupt sidewalks and encourage multiple turning movements that inhibit traffic flow
- Left turn at Durston difficult
- Drainage issues at Durston
- Buildings set back from the street, thereby failing to provide interest at the sidewalk
- Lack of boulevard grass between the sidewalk and street
- Poor maintenance and dusty
- Poor Lighting
- Provide proper lighting and stop lights for large truck traffic on inlets and outlets
- Improper tie-ins with Main, South 8th, and Babcock

3.0. STATE PLANNING PROCESSES

3.1. The Comprehensive State Highway Safety Plan (CHSP)

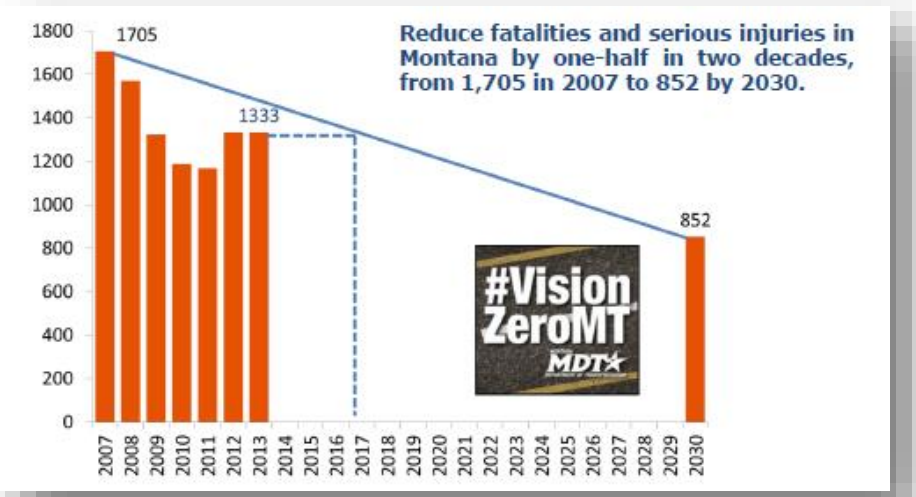
The Montana Comprehensive Highway Safety Plan (CHSP)[4] is just one of many statewide planning level documents that provides guidance and sets policies regarding a multitude of transportation related issues. Perhaps most applicable to the TMP is the focus of the CHSP on comprehensive safety and reducing fatal and serious injury crashes on the State's roadway system. The Montana CHSP sets forth goals and objectives that are both broad and distinct at the same time. The current CHSP, dated May 2015, identifies the following overall safety vision and interim safety goal for the State of Montana:

Vision

The vision for safety on Montana's roadways is clear - Vison Zero: zero fatalities and zero serious injuries.

Goal

To reduce fatalities and incapacitating injuries in the State of Montana by half in two decades, from 1,705 in 2007 to 852 by 2030.



[4] http://www.mdt.mt.gov/publications/docs/plans/chsp/current_chsp.pdf

Vison Zero is a multipronged initiative with the ultimate goal of eliminating deaths and injuries on Montana highways. Vision Zero focuses on three emphasis areas (below) using a combination of Education, Enforcement, Engineering, and Emergency Medical Response strategies:

- **Roadway Departure and Intersection Crashes:** These crashes tend to be severe due to high speeds and rural locations. They account for about 20 percent of all people involved in crashes, but 67 percent of fatalities. The vast majority (96 percent) of roadway departure fatalities and serious injuries occur in rural areas,
- **Impaired Driving Crashes:** These crashes account for only 8 percent of people involved in all crashes but 47 percent of all fatalities and 29 percent of serious injuries. As the blood alcohol concentration (BAC) level goes up in the human body, the physiological effects range from loss of judgment and altered mood to reduced muscle control and deteriorating reaction times. Regardless of which impairing substance a driver is using, the repercussions of impaired driving are a decline in visual functions and multitasking abilities, reduced concentration, impaired perception, and significantly reduced reaction time resulting in an inability to respond to changing conditions.
- **Occupant Protection:** A safety belt, when worn properly, is the single most effective way to save lives and reduce injuries in crashes. Safety belts keep motorists in their seats during a crash and spread the crash forces across the stronger parts of the upper body. Restraint systems are designed to keep occupants inside the vehicle where there is greater protection against bodily injury. Restraints also can prevent injuries in the event of a secondary collision. Occupant protection includes other safety protection devices and restraints, including child safety seats and booster seats that have proven to be highly effective in preventing child deaths and injuries in traffic-related crashes. Unrestrained occupants are significantly overrepresented in fatal and serious injury crashes: compared to all people in crashes, they are almost six times more likely to suffer a fatal or serious injury when involved in a crash. Over half of all passenger vehicle occupants killed in a crash from 2004 through 2013 were not wearing a seat belt.

3.2. Livability for Montana Transportation (March, 2012)

A research project was commissioned by MDT that resulted in report number FHWA/MT-12-001/8210, titled Livability for Montana Transportation[5]. Due to heightened national dialogue on livability, MDT sought to more formally define what it means for Montana and its communities, and understand how livability relates to Montana's transportation needs. The study found that Montana has some unique characteristics that may have a bearing on measures of its livability. For example, sixty-two percent of Montanans live in areas where the population density is 800 people per square mile or higher, but those areas account for only 0.1 percent of the land area. Along with its

[5] FHWA/MT-12-001/8210, Livability for Montana Transportation, http://www.mdt.mt.gov/research/projects/planning/benchmarks.shtml

unique character, the surveys conducted for the study indicate that Montana is also a good place to live. Survey respondents endorsed the belief that MDT projects add value to their quality of life. There were some consistent themes identified through the various tasks of this study. One size does not fit all, and any definition of livability should have some flexibility and scalability based on local needs and a community vision. Well maintained road system, safety, public transportation systems, bike and pedestrian facilities, and winter maintenance are important features of livability for Montana communities.

Based on research and outreach, the research team proposed the following definition for livability in Montana as it relates to transportation:

"Provide a transportation system that emphasizes a safe, maintained road network; allows for multimodal transportation opportunities; and considers local community values."

Furthermore, the following summary offers an expanded definition of livability elements that are a priority for Montana and its residents, as follows:

For Montanans, the most important elements of a livable community, although not necessarily transportation related, are friendly neighbors, rural character, availability of outdoor activities, access to high quality education and health care, abundance of natural scenic beauty, and availability of entertainment and cultural activities. However, transportation aspects that Montanan's perceive bring value to a community include:

- **Primarily**
  - A safe and well-maintained road network
  - Infrastructure and services that match local community values and needs
- **Secondarily**
  - Multi-modal alternatives to automobile travel—access to transit, rail, and air services
  - Bicycle and pedestrian facilities
  - Access to nearby cities and towns for employment, health care services, and recreational activities through personal vehicles, transit, intercity bus or other options
  - Local enhancements that connect residents to the people and activities of their neighborhoods and communities
  - Context-sensitive transportation planning that promotes the character of the community
  - Preservation of the natural resources, scenic views, and rural sense of place that are valued by all Montanans
  - Road surfaces that are well maintained in all weather conditions
  - Transportation Infrastructure that improves local economies

4.0. FEDERAL PLANNING PROCESSES

Various laws and regulations at the federal level assist to inform the development of the TMP. The laws and regulations set forth requirements to be considered in the transportation planning process or to be contained in the TMP. These include MAP-21 planning requirements, livability principles, environmental justice considerations, and potentially others. Transportation planning activities must provide for consideration of all modes of travel, and are to be continuing, cooperative, and comprehensive.

4.1. MAP-21 Planning Factors

MAP-21 was signed into law on July 6, 2012 and replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). MAP-21 creates a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery. Collectively, these items represent national goals for transportation as described in MAP-21.

Title 23 of the United States Code, section 134(f) (revised in SAFETEA-LU section 6001(h)) describes Federal Planning Factors issued by Congress to emphasize planning factors from a national perspective. Under Map-21 these planning factors remain unchanged. The eight planning factors are as follows:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users.
4. Increase the accessibility and mobility of people and for freight.
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
6. Enhance the integration and connectivity of the transportation system, across and between modes, people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.

4.2. Livability Principles from HUD/EPA/USDOT

Many federal partners are leading a growing effort to provide communities with a high quality of life that is increasingly sustainable. Livability is a national movement with local implications that are supported within the Bozeman community. Providing transportation options to improve access to housing, jobs, businesses, services and social activities are fundamental desires of most transportation system user groups. Active transportation results in a physically fit population, minimizes auto emissions, extends the life of transportation infrastructure, and delays the needs for infrastructure improvements. The Department of Housing and Urban Development (HUD), Environmental Protection Agency (EPA), and the US Department of Transportation (USDOT) have developed six guiding principles for communities to consider in their effort to achieve better access to affordable housing, more transportation options, and lower transportation costs, while supporting the environment. These principles are listed below:

1. **Provide more transportation choices.** Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health.
2. **Promote equitable, affordable housing.** Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.
3. **Enhance economic competitiveness.** Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers as well as expanded business access to markets.
4. **Support existing communities.** Target federal funding toward existing communities—through such strategies as transit-oriented, mixed-use development and land recycling—to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.
5. **Coordinate policies and leverage investment.** Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.
6. **Value communities and neighborhoods.** Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.

5.0. RECOMMENDED GOALS AND OBJECTIVES FOR BOZEMAN TMP

Based on a review of relevant planning efforts within the community, five primary principles are suggested to carry forward for the TMP. These principles are founded on the following:

1. The community desires a connected, smarter transportation system through land use and transportation planning. This type of system allows citizens to choose what mode of travel they desire, and makes travel more convenient while promoting an active lifestyle by choice for its citizens.
2. Bozeman provides a stable economic base for a variety of services and industry. The community embraces the opportunity to attract jobs and support ongoing economic vitality.
3. Efficient travel and increased mobility is desirable to minimize transportation and associated costs.
4. Transportation influences quality of life. The community desires a transportation system that is compatible with the environment and context of the Bozeman area, with special consideration given to sustainability and conserving natural and cultural resources.
5. The community desires a safe and secure transportation system, and strives for a reduction in crashes, injuries and fatalities.

5.1. Proposed Goals and Objectives for TMP

GOAL 1: MAINTAIN THE EXISTING TRANSPORTATION SYSTEM.

Bozeman's transportation system is aging, and available funding is not sufficient for the necessary maintenance. There is often competition between funding for new projects as compared to maintenance and operations of the existing system. The short- and mid-term focus should turn to optimizing the existing transportation system to the greatest extent possible.

OBJECTIVES:

- Maintain existing roadway systems to optimize their usefulness and minimize life-cycle costs.
- Monitor the performance of key facilities and work with local and regional partners to identify critical deficiencies in the roadway network.
- Use transportation project selection criteria to identify and prioritize maintenance activities and project development.
- Relieve pressures on the existing transportation system through minor infrastructure improvements, maintenance and system preservation activities rather than expanding the current system.

- Encourage reuse and/or redevelopment around existing transportation facilities.

GOAL 2: IMPROVE THE EFFICIENCY, PERFORMANCE AND CONNECTIVITY OF A BALANCED TRANSPORTATION SYSTEM.

A transportation system that performs well allows users to choose multiple transportation modes and to move through those modes in a safe and efficient manner. An efficient system allows people to move from place to place in as direct a route as possible, allowing them to reduce the amount of time spent in travel, the distance that must be traveled, and the amount of time spent in congested traffic. Connectivity allows citizens to make route decisions and mode choices based on traffic and road conditions, or desired destinations.

OBJECTIVES:

- Ensure the current street network of collectors, minor arterials, principal arterials and the interstate is adequate to safely and efficiently handle projected traffic.
- Promote the development of an effective roadway network through improvements in intersection and roadway capacity.
- Improve opportunities for active transportation (non-motorized) as part of daily travel mode choice within the community by increasing pedestrian, bicycle and transit connections.
- Ensure that mobility-challenged populations, such as low income, persons with disabilities, or senior citizens, have travel options in the Bozeman area.
- Identify and reduce (or eliminate) freight movement impacts on area roadways and identify improvements to eliminate deficiencies with the objective of improving freight movement.

GOAL 3: PROMOTE CONSISTENCY AND COORDINATION BETWEEN LAND USE AND TRANSPORTATION PLANNING TO MANAGE AND DEVELOP THE TRANSPORTATION SYSTEM FOR ALL MODES AND USERS.

Land use decisions affect the quality and quantity of transportation infrastructure throughout the study area. Rural, low-density developments may necessitate transportation features different than urban, high-density developments. Transportation system amenities are not always required to be similar between the different development types and forms. An urban boundary exists as delineated from the 2010 Census. Consistency in infrastructure within the urban boundary should be met if possible for continuity of urban form and function, to the extent that future urban density growth and potential annexation is realized. Additionally, as Bozeman's population ages and the number of persons per household decreases, options in housing and transportation will be needed to meet the demands of the population.

Transportation improvements should be integrated with local land use planning to ensure the proper mix of roads, trails, transit, paths and other bicycle and pedestrian features co-exist.

OBJECTIVES:

- Develop and implement road design and construction standards within the urban area that reflect the potential for annexations of currently unincorporated land. As urban development occurs, ensure that basic transportation amenities are in place within the urban area.
- Recognize that land use policy discussions regarding future development and corresponding density in the "Triangle" between Bozeman, Four Corners and Belgrade are on-going. Land use decisions are tied to the adequacy of transportation infrastructure and may serve to constrain growth depending on policy directions both within and outside of the Bozeman city limits.
- Develop and implement consistent access management and corridor preservation standards, ordinances and plans appropriate to the roadway network and land use within the study area boundary.
- Integrate land use planning and transportation planning to manage and develop the transportation system.
- Use transportation project programming to encourage desired development patterns within the community and ensure new development is adequately served.
- Ensure an environmentally responsible and sound transportation system that minimizes adverse environmental impacts within the community.

GOAL 4: PROVIDE A SAFE AND SECURE TRANSPORTATION SYSTEM.

Most community planning efforts recognize the desire for a safe transportation system. Community safety and security can be improved by transportation efforts in a number of ways. Reducing crashes, improving the ability of emergency responders to quickly and reliably respond to emergencies, and providing evacuation routes in the event of a natural disaster will all assist to improving safety and security. Educational programs that help travelers understand the particular safety concerns associated with various travel modes can also help all users travel with increased confidence and security.

OBJECTIVES:

- Reduce the rates of fatalities and crashes occurring on all transportation facilities.
- Identify barriers to effective and prompt emergency response.
- Implement safety initiatives and educational programs for all modes of transportation.

- Coordinate with freight operators and agencies on projects that can enhance the security of the freight transportation system in the region.

GOAL 5: SUPPORT ECONOMIC VITALITY OF THE COMMUNITY.

All economic activity relies on a functioning, diverse transportation network. Vehicle, freight, air, transit, rail and non-motorized infrastructure all have a purpose to serve when linking economic vitality to the costs of doing business. Transportation in terms of economic vitality is only one component of a successful business environment. High quality schools, diversity in housing types, low debt, availability of infrastructure, and access to a highly educated workforce all contribute to the economic success of a community.

OBJECTIVES:

- Optimize the transportation system to meet the needs of Bozeman and its citizens, including employment centers, and industrial and commercial areas.
- Provide attractive and convenient transportation facilities that attract and retain business, young professionals, families and older adults.
- Facilitate the movement of goods and freight to commercial and industrial centers.

GOAL 6: PROTECT AND ENHANCE ENVIRONMENTAL SUSTAINABILITY, PROVIDE OPPORTUNITIES FOR ACTIVE LIFESTYLES, AND CONSERVE NATURAL AND CULTURAL RESOURCES.

Both the MAP-21 planning factors and the livability principles from HUD/EPA/USDOT point to quality of life concerns in the development of TMP's. Not only are impacts to the environment taken more seriously, but increasingly citizens are demanding a more holistic approach to transportation. The preservation of natural, historic and cultural resources, as well as promoting a healthy, active lifestyle, are priorities of this TMP and current Federal transportation planning guidance.

OBJECTIVES:

- Promote transportation projects, plans and/or programs that encourage reducing fuel consumption, reducing vehicle miles of travel, and thereby minimizing air pollution.

- Coordinate transportation planning activities with appropriate federal, state, and local agencies responsible for land use management, natural resources, environmental protection, conservation, and historic preservation.
- Engage stakeholders and the public in the decision-making stage of the transportation planning process.
- Coordinate transportation planning activities with local and regional land use planning activities, including the City's Community Plan and Gallatin County's Growth Policy (and subsequent updates to both).

GOAL 7: PROMOTE A FINANCIALLY SUSTAINABLE TRANSPORTATION PLAN THAT IS ACTIVELY USED TO GUIDE THE TRANSPORTATION DECISION-MAKING PROCESS.

Transportation facilities that provide options to the public, reduce the time spent traveling, reduce fuel consumption, and make the best use of limited public funds for infrastructure improvements are desirable. Not only are costs related to the cost of building facilities, but there are also associated costs of time spent in vehicles.

OBJECTIVES:

- Identify available funding mechanisms potentially including federal and state gas tax revenue, impact fees, transportation bond issues, local option gas taxes, and other revenue funding sources used in similar cities.
- Encourage cooperation between public, private and non-profit organizations in the development, funding, and management of transportation projects.
- Promote cost-effective recommendations that balance transportation system needs with available funding and expected expenditures.
- As funds become available for transportation projects, place priority for funding on those projects and programs identified in the TMP.

5.2. Alignment of Goals with MAP-21 and Livability Principles

Although technically not required since Bozeman is not a Metropolitan Planning Organization (MPO) as per the 2010 Census, it is still desirable to ensure the alignment of local TMP transportation goals with the MAP-21 planning factors. Additionally, the Livability Principles from HUD/EPA/USDOT, while technically not Federal law, are worthy national transportation process objectives that should be reviewed and considered. **Table 5-1** depicts the relationship between the proposed Bozeman TMP goals, the required MAP-21 planning factors, and the objectives contained in the Livability Principles from HUD/EPA/USDOT.

Table 5-1: Alignment of Goals with MAP-21 and Livability Principles

MAP-21 Planning Factors			**Goal 1**: Maintain the existing transportation system.	**Goal 2**: Improve the efficiency, performance and connectivity of a balanced transportation system.	**Goal 3**: Promote consistency and coordination between land use and transportation planning to manage and develop the transportation system for all modes and users.	**Goal 4**: Provide a safe and secure transportation system.	**Goal 5**: Support economic vitality of the community.	**Goal 6**: Protect and enhance environmental sustainability, provide opportunities for active lifestyles, and conserve natural and cultural resources.	**Goal 7**: Promote a financially sustainable transportation plan that is actively used to guide the transportation decision-making process.
	1	Support the **economic vitality** of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.					✓		✓
	2	Increase the **safety** of the transportation system for motorized and non-motorized users.				✓			
	3	Increase the **security** of the transportation system for motorized and non-motorized users.				✓			
	4	Increase the **accessibility and mobility** of **people and for freight**.		✓	✓		✓		
	5	**Protect and enhance the environment**, promote **energy conservation**, improve the **quality of life**, and promote **consistency between transportation improvements** and State and local planned growth and economic development patterns.			✓			✓	✓

	6	Enhance the **integration and connectivity** of the transportation system, across and between modes, people and freight.		✓	✓				
	7	Promote **efficient system management and operation**.		✓					
	8	Emphasize the **preservation of the existing transportation system**.	✓						
Livability Principles	1	Provide more **transportation choices**.		✓					
	2	Promote equitable, **affordable housing**.		✓	✓				✓
	3	Enhance **economic competitiveness**.					✓		
	4	**Support** existing **communities**.	✓	✓	✓	✓		✓	
	5	Coordinate policies and **leverage investment**.							✓
	6	**Value communities and neighborhoods**.	✓	✓	✓	✓			

BOZEMANTMP
TRANSPORTATION MASTER PLAN

SOCIOECONOMIC DATA AND GROWTH TRENDS

Technical Memorandum
FINAL

February 15, 2016

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ABBREVIATIONS / ACRONYMS

ACS	American Community Survey
BEA	Bureau of Economic Analysis
EPS	Economic Profile System
FHWA	Federal Highway Administration
MDT	Montana Department of Transportation
REMI	Regional Economic Models, Inc.
RPA	Robert Peccia and Associates
TCC	Transportation Coordinating Committee
TMP	Transportation Master Plan
TWG	Technical Working Group
W&P	Woods & Poole Economics, Inc.

Socioeconomic Data and Growth Trends

1.0. INTRODUCTION

Local and regional population and economic characteristics have important influences on motor vehicle travel in the Bozeman area. The study area for the Bozeman Transportation Master Plan (TMP) includes all of the land within the city of Bozeman and encompasses adjacent lands in Gallatin County where suburban development has occurred and will likely occur in the future.

A review of demographics within the study area is appropriate to gain an understanding of historical trends in population, age, employment and other socioeconomic conditions. Understanding the composition of the population is necessary, as the data may influence the types of improvements that are identified. For example, an aging population may indicate a need for specific types of transportation improvements such as transit services and/or non-motorized infrastructure improvements. Additionally, the presence of a disadvantaged population may warrant other considerations.

Existing land uses and potential land use changes have a direct influence on the transportation network and its use. For this reason, it is important to review community development patterns over time and understand where community conditions may be favorable for new residential and commercial growth.

This memorandum discusses the background and assumptions used to project growth in the Bozeman area to the year 2035. By using population, employment and other socioeconomic trends as aids, the future transportation requirements will be defined. A travel demand model (traffic model) of the transportation system for the Bozeman area was built by the Montana Department of Transportation (MDT) and information from this analysis will be used to allocate future residential and employment growth. The changes to the system that are projected to occur by the year 2040 will be incorporated into the model to forecast future transportation conditions. Using the updated model, various scenarios will be developed to test a range of transportation improvements to determine what affects they will have on the transportation system within the Bozeman area.

Although not within the study area, population growth occurring in the incorporated areas of Belgrade, Manhattan, and Three Forks and in the unincorporated Four Corners area is an important consideration for the TMP. Residents of these Gallatin Valley areas work, shop, attend educational institutions, and recreate in Bozeman and their commuting patterns have impacts on the local transportation system.

1.1. Study Area Boundary

A map showing the study area boundary for the TMP is shown as **Figure 1**. The study area includes the Bozeman city limits, other lands within the Urban Boundary, as well as areas with potential to be annexed into the city in the future. The study area boundary is important as it defines the limit of what will or will not be considered in developing the TMP. Although a travel demand model will be developed which utilizes land use considerations outside of the study area boundary, analysis of "on-the-ground" transportation system conditions on the city's transportation system will only occur within the boundary limits.

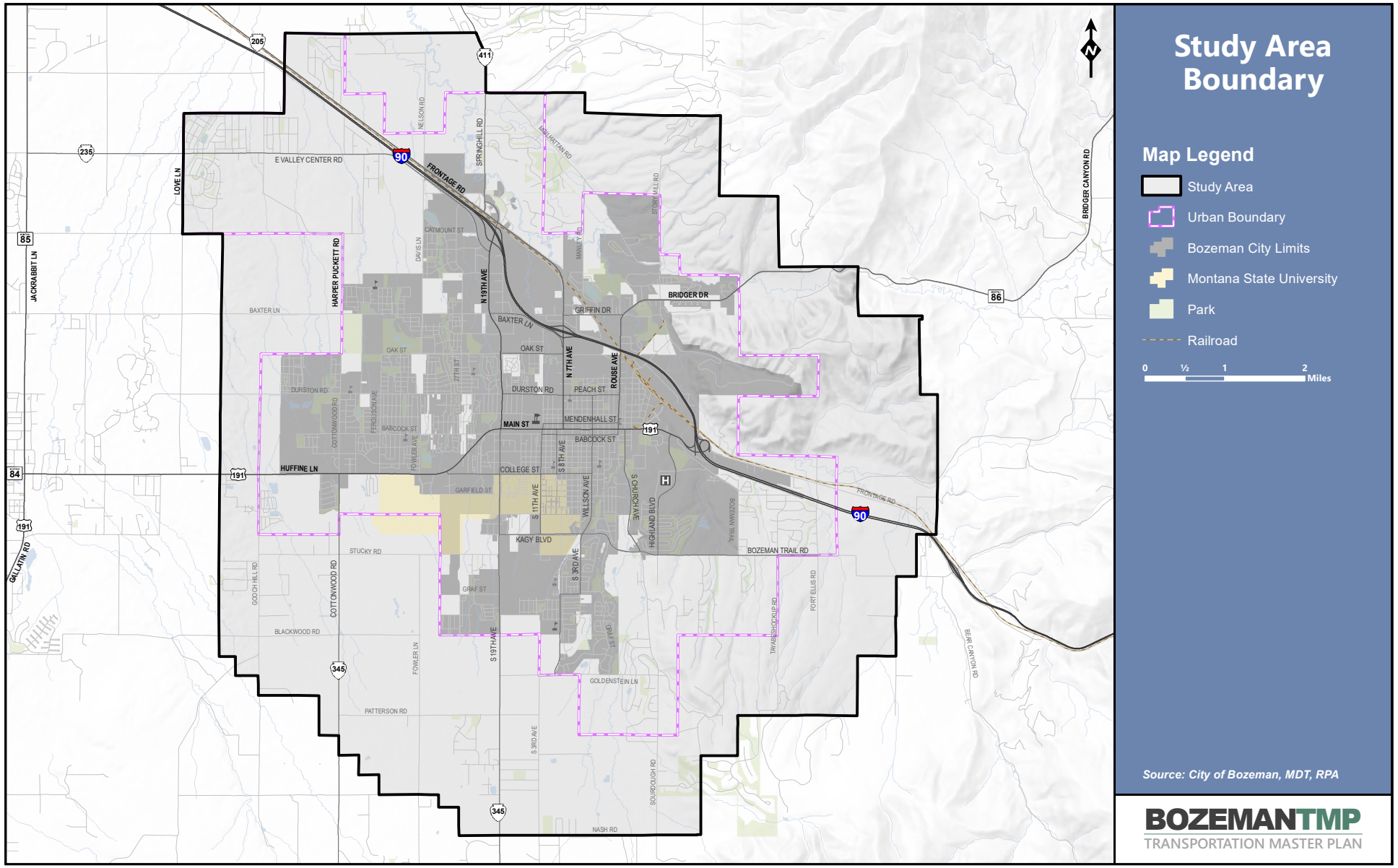


Figure 1: Study Area Boundary

2.0. POPULATION AND DEMOGRAPHIC TRENDS

2.1. Historic Population Trends

Table 1 shows the total populations for Gallatin County, the City of Bozeman, all incorporated areas of the county, and unincorporated areas of the county over the 1970 to 2010 period. Since considerable growth and development seen in Gallatin County occurs in and around incorporated communities of the county, historical population totals for incorporated cities and towns and for unincorporated areas were examined. These population totals were provided to help identify general trends in "urban versus rural" living within the county. The table also shows the overall change (shown as a percentage) in residents of the County, the city of Bozeman, and other geographies since 1970. Population data for the State of Montana and the nation provide benchmarks to help compare local population growth trends.

Between 1970 and 2010, the population of the City of Bozeman doubled from 18,670 to 37,280 and grew at an average rate of about 2.5% per year. Gallatin County's population grew by 2.75 times over the same period at an average rate of about 4.4% per year.

Gallatin County has been one of Montana's fastest growing counties over the last 30 years. In terms of numeric increases, Gallatin County has seen the most new residents of any county in the state since 1980. **Table 1** shows the total population of Gallatin County grew from 32,505 in 1970 to 89,513 in 2010—adding more than 57,000 residents. With the exception of the 1980s, the county's population has increased by more than 30% every decade since 1970. Population growth during the 1980s was still notable and the number of county residents increased by nearly 18% between 1980 and 1990. Likewise, the city of Bozeman experienced significant growth over the 1970-2010 period; however, population increases were not quite at the rates seen for Gallatin County as a whole. Between 1970 and 2010, the city's population grew from 18,670 to 37,280 residents. Population growth slowed to less than 5% during the 1980s similar to the trend seen for Gallatin County but total population increases of between 15% and 35% were seen during the other decades of the 1970-2010 period.

Both the State of Montana and the United States (U.S.) showed population increases during each decade between 1970 and 2010 but the rates of increase were well below those seen in Gallatin County and the city of Bozeman during the period. The population of the U.S. and State of Montana grew by about 52% and 42%, respectively, between 1970 and 2010. Over the same four decades, the population of Gallatin County grew by more than 175% and Bozeman's population doubled.

Historical census data also shows that all other incorporated communities within Gallatin County grew significantly between 1970 and 2010. The population of the city of Belgrade, the second largest incorporated area in the county, grew from just over 1,300 residents in 1970 to a 2010 population of 7,389. The 2010 population in Belgrade was 4.65 times higher than it was in 1970. As **Table 1** shows, other incorporated

communities in the county did not grow as dramatically as Belgrade during the 1970-2010 period; however, notable increases in population were still seen in Manhattan, Three Forks, and West Yellowstone. During the four-decade long period, the populations of the town of Manhattan increased by 86%, the city of Three Forks increased by more than 57%, and the town of West Yellowstone grew by 68%.

The population of unincorporated areas of Gallatin County increased by 311% over the 1970-2010 period, with significant growth seen during the 1970s and after 1990. In 2010, the number of residents living outside incorporated communities in Gallatin County was 40,184—4.1 times higher than in 1970. The majority of the unincorporated area population in 2010 lived in the greater Gallatin Valley area between Bozeman, Belgrade and Four Corners and along the I-90/Frontage Road corridor between Manhattan and Three Forks.

Table 1: Historic Population Data

Area	1970	1980	1990	2000	2010	Change (1970-2010)
Gallatin County	**32,505**	**42,865**	**50,463**	**67,831**	**89,513**	**57,008**
Net Change (%) over Decade	--	*31.9%*	*17.7%*	*34.4%*	*32.0%*	*175.4%*
City of Bozeman	**18,670**	**21,645**	**22,660**	**27,509**	**37,280**	**18,610**
Net Change (%) over Decade	--	*15.9%*	*4.7%*	*21.4%*	*35.5%*	*99.7%*
City of Belgrade	**1,307**	**2,336**	**3,422**	**5,728**	**7,389**	**6,082**
Net Change (%) over Decade	--	*18.5%*	*8.5%*	*28.4%*	*31.4%*	*465.3%*
Town of Manhattan	**816**	**988**	**1,034**	**1,396**	**1,520**	**704**
Net Change (%) over Decade	--	*18.5%*	*8.5%*	*28.4%*	*31.4%*	*86.3%*
City of Three Forks	**1,188**	**1,247**	**1,203**	**1,728**	**1,869**	**681**
Net Change (%) over Decade	--	*18.5%*	*8.5%*	*28.4%*	*31.4%*	*57.3%*
Town of West Yellowstone	**756**	**735**	**913**	**1,177**	**1,271**	**515**
Net Change (%) over Decade	--	*18.5%*	*8.5%*	*28.4%*	*31.4%*	*68.1%*
All Unincorporated Areas of County	**9,768**	**15,914**	**21,231**	**30,293**	**40,184**	**30,416**
Net Change (%) over Decade	--	*62.9%*	*33.4%*	*42.7%*	*32.6%*	*311.4%*
State of Montana	**694,409**	**786,690**	**799,065**	**902,195**	**989,415**	**295,006**
Net Change (%) over Decade	--	*13.4%*	*1.8%*	*12.9%*	*9.7%*	*42.5%*
United States	**203,392,031**	**226,545,805**	**248,709,873**	**281,421,906**	**308,745,538**	**105,353,507**
Net Change (%) over Decade	--	*11.4%*	*9.8%*	*13.2%*	*9.7%*	*51.3%*

Source: U.S. Bureau of the Census, Census of the Population

Table 2 presents historical annual average percent changes in population for Gallatin County, the city of Bozeman, and other local geographies and compares them with the annual rates of change for the State of Montana and the nation over the same time periods. The

table shows that annual population growth rate for Gallatin County has typically been approximately three times higher than annual growth rates seen for the state and nation over the 1970-2010 period. Population growth seen in unincorporated area of the county between 1970 and 2010 averaged about 3.6% per year. Much of the growth seen in the county after 1990 can be attributed to in-migration.

Similarly, the city of Bozeman's population grew at rates significantly higher than those seen for the state and nation. The annual average percent change in population for the city of Bozeman was nearly approximately three times higher than the state's annual average growth rate over the 1970-2010 period. It is notable that the city of Bozeman's population grew at a slightly higher rate during the 2000-2010 period than Gallatin County as a whole and all unincorporated areas of the county. In 2010, about 42% of the county residents lived in the city of Bozeman.

Table 2: Historic Annual Average Growth Rate in Population

Area	Last Four Decades (1970 - 2010)	Last Two Decades (1990 - 2010)	Last Decade (2000 - 2010)
Gallatin County	**2.56%**	**2.91%**	**2.81%**
City of Bozeman	**1.74%**	**2.52%**	**3.09%**
All Incorporated Areas (includes City of Bozeman)	*1.96%*	*2.65%*	*2.77%*
All Unincorporated Areas of County	*3.60%*	*3.24%*	*2.87%*
State of Montana	**0.89%**	**1.07%**	**0.93%**
United States	**1.05%**	**1.09%**	**0.93%**

2.2. Population Changes Since 2010

The Census Bureau releases population estimates each year for various geographies to update information collected in the most recent census. Each new series of data incorporates the latest administrative record data, geographic boundaries, and methodology to provide annual revisions to the decennial census. **Table 3** shows the U.S. Census Bureau estimates of current (as of July 1, 2014) population estimates for Gallatin County, the city of Bozeman, as well as the State of Montana, and the nation. These estimates show populations in the County and City are continuing to increase at rates comparable to those seen during the last decade. The rate of growth continues to outpace that seen for the state and nation. A substantial portion of the growth continues to be due to the migration of new residents into the county.

Table 3: Population Changes Since 2010

Area	2010 Population	Estimate as of July 1, 2014	Total % Change 2010-2014	Annual Average % Change
Gallatin County	89,513	97,308	8.71%	2.11%
City of Bozeman	37,280	41,660	11.75%	2.82%
State of Montana	989,415	1,023,579	3.45%	0.85%
United States	308,745,538	318,857,056	3.27%	0.81%

Source: U.S. Bureau of the Census, Current Estimates Data, available at http://census.missouri.edu/acs/profiles/

2.3. Race and Ethnicity

Table 4 presents the estimated race and ethnicity characteristics of Gallatin County and the city of Bozeman as indicated in the *American Community Survey (ACS)* Profile Report for the 2009-2013 period. Similar statistics are provided for the State of Montana and the U.S. for comparison purposes. The ACS data are period estimates meaning they represent the characteristics of the population and housing over a specific data collection period (5 years in this case). For this reason, the total populations shown differ from those recorded during the 2010 Census or Census Bureau estimates for years after 2010. The percentages listed for ethnic groups presented in the table may not match the Census total percentages and percentages may not add up to 100%.

Table 4: Population Race and Ethnicity Data (2009-2013)

Race/Ethnicity	Gallatin County	City of Bozeman	State of Montana	United States
White	95.3%	92.3%	89.4%	74.0%
Black or African American	0.3%	0.6%	0.4%	12.6%
American Indian and Alaska Native	1.1%	1.8%	6.5%	0.8%
Asian	0.9%	1.8%	0.6%	4.9%
Native Hawaiian and Other Pacific Islander	0.1%	0.0%	0.1%	0.2%
Some Other Race	0.4%	0.5%	0.6%	4.7%
Two or More Races	2.0%	2.9%	2.4%	2.8%
Hispanic or Latino (of any race)	2.9%	3.0%	3.1%	16.6%
Total Population	**91,499**	**38,204**	**998,554**	**311,536,608**

Source: U.S. Bureau of the Census, American Community Survey (ACS) Profile Report: 2009-2013 (5-year estimates), available at http://census.missouri.edu/acs/profiles/

The populations of Gallatin County and the city of Bozeman are predominately white with percentages of minority populations generally similar to those seen for the State of Montana. The racial and ethnic composition of the geographic subdivisions examined are not nearly as diverse as that of the nation as a whole.

2.4. Age Distribution

Table 5 depicts the changes in age distribution for residents of Gallatin County and the city of Bozeman and presents similar data for the State of Montana and the U.S. Three age categories—residents less than 18 years old, residents 18 to 64 years old, and residents over age 65—were considered in the analysis of age distribution.

As shown earlier, the populations of Gallatin County and the city of Bozeman increased significantly between 1980 and 2010. The county's population is younger than that of the state and nation. The data consistently shows Gallatin County and the city had a larger share of residents in the "less than 18 years old" category and fewer residents in the "65 years and over" category than either the state or nation. The age group from 18 to 64 generally represents the working-age population. Although numbers of residents in this broad age group has increased notably in both geographies, the share of residents in the 18-64 age group has changed relatively little over the 1980 to 2010 period. The share of Gallatin County and city of Bozeman residents in this age group has remained considerably above that seen for the state and nation over the same time period.

Changes in the structure of the population also impact another measure of population composition, median age. The median age is the age at the midpoint of the population. Half of the population is older than the median age and half of the population is younger. The median age of Gallatin County residents increased from 25.1 years to 32.5 years between 1980 and 2010. The median ages for residents of the city of Bozeman showed a slightly lower increase in median age over the period—from 23.3 years in 1980 to 27.2 years at the time of the 2010 Census. In both geographies, the median ages of county and city residents were consistently below that seen for the state and nation.

Age group data from the 2000 Census and 2010 Census were reviewed to examine more specifically how age groups have changed in Gallatin County and the city of Bozeman. This review showed the following:

- Changes in age distribution followed the same general patterns (increases/decreases) across all age groups.
- Residents aged 20-34 comprised nearly 29% of the county's population and almost 42% of the city's population in 2010. The share of the population falling within this age group changed little between 2000 and 2010.
- The number of residents aged 55 to 75 increased between 2000 and 2010.
- Residents aged 45 to 64 accounted for about 24% of the county's population and some 17% of the city's population in 2010. This age group generally represents the "Baby Boom" generation and includes people born from mid-1946 to 1964. The Baby Boom is distinguished by a dramatic increase in birth rates following World War II and comprises one of the largest generations in U.S. history. The share of the county and city populations within this age group increased by 4% and 2%, respectively, during the 2000-2010 period.

Table 5: Age Distribution (1980 to 2010)

Area	1980	1990	2000	2010
Gallatin County Median Age	**25.1**	**29.8**	**30.7**	**32.5**
% Less than 18 Years Old	23.8	24.3	22.0	20.9
% 18-64 Years Old	68.7	66.8	69.5	69.6
% 65 Years and Older	7.5	8.9	8.5	9.5
City of Bozeman Median Age	**23.3**	**25.7**	**25.4**	**27.2**
% Less than 18 Years Old	16.8	18.1	16.0	15.7
% 18-64 Years Old	75.2	72.8	76.0	76.2
% 65 Years and Older	8.0	9.1	8.0	8.1
State of Montana Median Age	**29.0**	**33.8**	**37.5**	**39.8**
% Less than 18 Years Old	29.4	27.8	25.5	22.6
% 18-64 Years Old	59.9	58.9	61.1	62.6
% 65 Years and Older	10.7	13.3	13.4	14.8
United States Median Age	**30.0**	**32.9**	**35.3**	**37.2**
% Less than 18 Years Old	28.2	25.6	25.7	24.0
% 18-64 Years Old	60.5	61.8	61.9	63.0
% 65 Years and Older	11.3	12.6	12.4	13.0

Source: U.S. Bureau of the Census, Census of the Population 1980-2010

2.5. Disability Status

The 2009-2013 ACS 5-Year Estimate for Gallatin County and the city of Bozeman was consulted to obtain information about the number of residents with disabilities (which include hearing or vision difficulties, cognitive difficulties, and ambulatory difficulties). This information is important to review since segments of the population with disabilities may require special accommodations for transport or unique considerations in the design of transportation infrastructure.

The ACS data showed that approximately 7-8% of the civilian non-institutionalized populations of the County and city of Bozeman were considered to have one or more disabilities. This data also indicated the following for disabled residents:

- About 2-3% of residents of the County and city of Bozeman under the age of 18 had one or more disabilities;

- About 5-6% of the residents between 18 and 64 years of age (the working-age population) living in Gallatin County and the city of Bozeman had one or more disabilities; and
- Nearly one-third of residents 65 years and older in Gallatin County and the city of Bozeman had one or more disabilities.

2.6. Personal Travel and Commuting Characteristics

According to the ACS profile for the 2009-2013 period, residents in about 96% of all occupied housing units in Gallatin County had access to one or more vehicles to commute to work or meet other personal needs. In the city of Bozeman, 93% of residents had access to at least one vehicle. In comparison, residents of nearly 95% of all occupied housing units in Montana and 91% of all occupied housing units in the nation had access to one or more vehicles.

Information about the number of workers (16 years and older) and their commuting characteristics is also available from the ACS. The ACS information provided estimates of the total share of workers who commute or work at home, the transportation modes used by commuters, and the mean travel times to work for commuters. **Table 6** presents commuting characteristics for workers in the various geographies of Gallatin County. Similar statistics for the State of Montana and the United States are provided for comparison.

The table shows that 81% of commuting workers in Gallatin County rely on personal vehicles or carpools for transportation to work destinations. About 77% of commuting workers in the city of Bozeman drove alone or carpooled. Workers in Gallatin County and the city of Bozeman were more likely to walk to work as compared to all workers in the state and nation. The data also shows workers in the city used public transportation for commuting more than typically seen for all workers in Montana. The table suggests public transportation options are more limited for Montana residents as compared to elsewhere in the United States. Workers in Gallatin County and the city Bozeman also have notably shorter commute times than elsewhere in the state or nation.

The ACS data showed workers in Belgrade, Manhattan, and Three Forks had commute times of 17.2 minutes, 23.6 minutes, and 17.6 minutes, respectively. Due to the relatively small sizes of these communities, these commute times suggest residents are working at jobs outside their communities. Many of these jobs likely exist in the Bozeman area.

Table 6: Mode of Transportation to Work (2009-2013)

Subject	City of Bozeman	Gallatin County	State of Montana	United States
Number of Workers 16 Years and Older	**21,050**	**48,847**	**469,319**	**139,786,640**
Commuted to Work	*94.7%*	*92.5%*	*93.7%*	*95.6%*
Worked at Home	*5.3%*	*7.5%*	*6.3%*	*4.3%*
Transportation Mode				
Drove alone, car, truck, van	*69.5%*	*71.8%*	*75.4%*	*76.3%*
Carpooled	*7.3%*	*9.2%*	*10.1%*	*9.8%*
Public Transportation (excluding taxicabs)	*1.3%*	*0.9%*	*0.8%*	*5.0%*
Walked to Work	*9.8%*	*6.1%*	*4.9%*	*2.8%*
Other means of commuting	*6.8%*	*4.5%*	*2.5%*	*1.8%*
Mean Travel Time to Work	**13.6 min**	**16.8 min**	**18.0 min**	**25.5 min**

Source: U.S. Bureau of the Census, American Community Survey (ACS) Profile Report: 2009-2013 (5-year estimates), available at http://census.missouri.edu/acs/profiles/

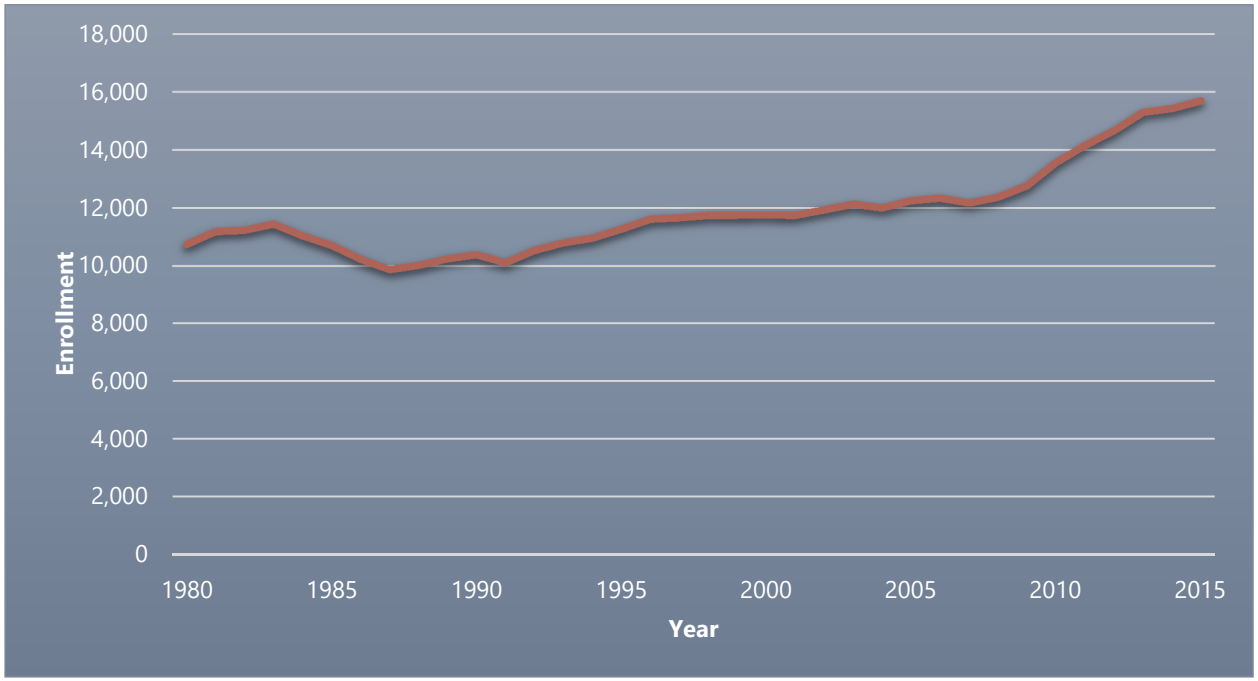
2.7. Montana State University Student Population

Montana State University-Bozeman (MSU) attracts a large number of full-time and part-time students to the city of Bozeman each year. Enrollment at MSU has increased steadily since 1991 and the university has seen record enrollment nine times over the past 10 years. **Figure 2** shows the trend in enrollment at MSU since 1980. As of fall semester 2015, MSU's enrollment was 15,688 including 12,196 (78%) full-time students and 3,492 (22%) part-time students.

The Montana State University Strategic Plan 2012 (available at http://www.montana.edu/strategicplan/documents/montanastate-strategic-plan.pdf) clearly indicates it is a goal of the university to continue growing the student enrollment. The 2012 strategic plan identified a goal of increasing the total student population to 16,000 by the year 2019. It is clear from the recent enrollment numbers that the university is poised to exceed this target population well ahead of that time.

The annual influx of students to MSU means the city of Bozeman and surrounding areas must accommodate this population. Housing opportunities for students are available both on campus and off campus within the greater Bozeman area. With the addition of a new dormitory in 2016, MSU will be capable of housing more than 3,700 students in the residence halls at the university. MSU also offers family and graduate housing in nearly 600 apartments located within walking distance of the campus. Approximately 70 percent of the on-campus population is comprised of freshmen undergraduate students.

Figure 2: Fall Enrollment at Montana State University (1980-2015)



Enrollment at MSU has increased steadily since 1991 and the university has seen record enrollment nine times over the past 10 years. As of fall semester 2015, MSU's enrollment was 15,688. Over the 2005-2015 period MSU's enrollment has grown by 3,438 students.

3.0. HOUSING UNITS AND HOUSEHOLDS

The Census Bureau identifies a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Separate living quarters are those in which the occupants live and eat separately from any other persons in the building and which have direct access from outside of the building or through a common hall. The occupants may be a single family, one person living alone, two or more families living together, or any other group of related or unrelated persons who share living arrangements. A household includes all the persons who occupy a housing unit according to the Census Bureau definition. For purposes of allocating future residential growth, housing units are of interest since they are inputs to the travel demand model (TDM).

3.1. Number of Housing Units

Table 7 lists the number of housing units that existed within Gallatin County and the city of Bozeman during recent decennial censuses. Overall, the number of housing units in the County increased by nearly 146% during the 1980-2010 period with significant increases in the number of housing units recorded during each of the last two decades in the County. This trend is similar for the city of Bozeman which showed a 119% increase in housing units between 1980 and 2010 and a 239% increase in the number of housing units between 2000 and 2010.

Table 7: Number of Housing Units (1980-2010)

Area	1980	1990	2000	2010
Gallatin County				
Population	42,865	50,463	67,831	89,513
Housing Units	17,173	21,350	29,489	42,289
Net Change	--	4,177	8,139	12,800
Population per Housing Unit	**2.50**	**2.36**	**2.30**	**2.12**
City of Bozeman				
Population	21,645	22,660	27,509	37,280
Housing Units	7,971	9,117	11,577	17,464
Net Change	--	1,146	2,460	5,887
Population per Housing Unit	**2.72**	**2.49**	**2.38**	**2.13**
Unincorporated Areas of the County				
Population	15,914	21,231	30,293	40,184
Housing Units	6,949	9,298	13,559	18,826
Net Change	--	2,349	4,261	5,267
Population per Housing Unit	**2.29**	**2.28**	**2.23**	**2.13**

Source: US Bureau of the Census, Census of the Population

Several interesting findings are apparent from the housing unit data presented in **Table 7**:

- 25,116 housing units were added within Gallatin County between 1980 and 2010, with 47% of all the housing units being added in unincorporated areas of the county and 38% of all the housing units added within the city of Bozeman.

- 9,493 housing units were added within the city of Bozeman over the 1980-2010 period.
- 8,347 housing units were added within the city of Bozeman over the 1990-2010 period with more than 70% of these units (5,887) being added between 2000 and 2010.
- In total, there were 12,800 more housing units in the County in 2010 than there were in 2000, with 46% of these housing units being added within the city of Bozeman.
- Of the new housing units added between 2000 and 2010 in the County, 41% were added within unincorporated areas and 59% were added within incorporated cities and towns.
- In 2010, 44.5% of the County's housing units were located in unincorporated areas and 41% of the housing units were located within the city of Bozeman.

Historic census data for Gallatin County areas showed notable increases in the number of housing units in other incorporated communities within the Gallatin Valley. Between 1990 and 2010, nearly 1,900 new housing units were added to the city of Belgrade with 935 new housing units being added during the 2000-2010 period. The town of Manhattan recorded an increase of 589 housing units over the 1990-2010 period with 72% of these housing units (424 units) being added between 2000 and 2010. The number of new housing units in the city of Three Forks did not increase as dramatically as in Belgrade or Manhattan. However, more than 300 new housing units were added in Three Forks over the 1990-2010 period. These communities, particularly Belgrade and Manhattan, are within easy commuting distance of Bozeman and likely offer housing costs lower than those generally available in Bozeman.

3.2. Population Per Housing Unit

The data in **Table 7** shows that the population per housing unit decreased for all geographies considered over the 1980-2010 period. The population per housing unit in Gallatin County and the city of Bozeman were almost the same at 2.12 and 2.13 persons per housing unit, respectively, at the time of the 2010 Census. For comparison, the population per housing unit for the State of Montana was 2.04 according to the 2010 Census.

Because not all housing units are occupied, it is interesting to consider the number of residents per occupied housing unit. At the time of the 2010 Census, more than 86% of the housing units in Gallatin County were occupied and over 90% of those in the city of Bozeman were occupied. If only occupied housing units are considered, the resulting population per housing unit rates are 2.45 people per unit in the County and 2.36 people per unit in the city of Bozeman. The population per occupied housing unit for the State of Montana was 2.41 based on data in the 2010 Census.

4.0. EMPLOYMENT AND INCOME TRENDS

The Bozeman area economy experienced a significant contraction early in the 2008 recession. However, the economy began to turn around in 2010 and has continued upward ever since. According to the *2015 Economic Outllook* (by Paul Polzin, Bureau of Business and Economic Research) only Gallatin County and Yellowstone County significantly exceeded the statewide growth rates during the recovery phase of this business cycle.

Gallatin County is Montana's fourth most populous county, while the city of Bozeman, the county seat, is the state's fourth largest city. As discussed earlier in this memorandum, the city of Bozeman is one of Montana's fastest growing cities and recorded a population increase of more than 35% between 2000 and 2010. The economy of Gallatin County is fairly diverse with construction, government, manufacturing, technology, retail trade, services, and agriculture all playing notable roles. Bozeman's transition into a regional trade and service center provide a solid basis for continued economic growth. Montana State University comprises the largest component of Gallatin County's economic base. Montana State University and the associated Gallatin College are located in Bozeman and have combined annual enrollments approaching 16,000 students.

4.1. Historic Employment in Gallatin County

Employment by industry for Gallatin County for milestone years between 1980 and 2013 is represented in **Table 8**. The most recent available data shows that total full and part-time employment in the county was 70,269 in 2013 with more than 98% of the jobs being non-farm related employment. Total full and part-time employment in Gallatin County in 2013 was 223% higher than that recorded in 1980. This means total employment in the county increased 3.2 times since 1980. Over this 33-year period, the average annual increase in employment in Gallatin County was about 6.8% per year.

The data in **Table 8** shows that between 1980 and 2013, all industry sectors in the county gained jobs with the most notable net increase in employment occurring in the services industry where the total number of jobs increased by 25,300 over the period. Other industry sectors showing sizable increases in employment since 1980 include: construction (net gain of 5,166 jobs); finance, insurance and real estate (net gain of 4,752 jobs); retail trade (net gain of 4,371 jobs) and state and local government (net gain of 3,408 jobs). The industries showing the lowest gains in employment between 1980 and 2013 were federal and civilian government, the military, agriculture and forestry, mining, and transportation.

Table 8: Employment Trends for Gallatin County (1980–2013)

Employment	1980	1990	2000	2010	2013	Net Change (1980 - 2013)	% Change (1980 - 2013)
Total Full and Part-time Employment	**21,731**	**31,744**	**51,116**	**63,768**	**70,269**	**48,538**	**223.4%**
Farm Employment	*1,075*	*1,128*	*1,377*	*1,116*	*1,134*	*59*	*0.2%*
Non-Farm Employment	*20,656*	*30,616*	*49,739*	*62,652*	*69,135*	*48,479*	*234.7%*
Employment by Industry							
Agricultural Services & Forestry	180	363	826	537	625	445	247.2%
Mining	106	175	171	391	610	504	475.5%
Construction	1,222	1,782	4,748	5,626	6,388	5,166	422.7%
Manufacturing	1,325	2,021	3,120	2,624	3,189	1,864	140.7%
Transportation & Public Utilities	772	1,025	1,511	1,332	1,701	929	120.3
Wholesale Trade	511	1,094	1,678	1,675	1,901	1,350	245.0%
Retail Trade	4,311	6,263	10,618	8,117	8,682	4,371	101.4%
Finance, Insurance & Real Estate	1,633	2,316	3,512	6,049	6,385	4,752	291.0%
Services	4,461	8,408	15,048	26,450	29,769	25,308	567.3%
Federal & Civilian Government	567	610	580	670	620	53	9.3%
Military	279	404	374	447	468	189	67.7%
State & Local Government	5,249	6,155	7,553	8,734	8,657	3,408	64.9%

Source: U.S. Department of Commerce Bureau of Economic Analysis – Table CA25 and Table CA25N.

4.2. Employment Trends By Industry

Table 9 presents data on the estimated number of civilian employees (age 16 years and older) and the industries in which they are employed in the State of Montana, Gallatin County and the city of Bozeman. The data in the table, taken from 2009-2013 ACS profile for these geographies, also includes employment estimates by industry. As the table shows, the employed population in Gallatin County for the period is estimated at 50,021 with about 43% of the employed persons in the county being residents of the city of Bozeman.

The employment by industry data from the 2009-2013 ACS for the various geographies of Gallatin County generally supports the information presented earlier in **Table 8**. The majority of the employment in the County and city of Bozeman is associated with education

and the service industries, retail trade, and professional, management and administrative occupations. The employment data in **Table 9** suggests that more about one-third of the County's employment occurs in the city of Bozeman.

Table 9: Civilian Employment by Industry (2009-2013)

Industry	State of Montana		Gallatin County		City of Bozeman	
Agriculture, forestry, fishing, hunting, and mining	34,395	7.2%	2,092	4.2%	499	2.3%
Construction	37,617	7.9%	4,195	8.4%	1,247	5.8%
Manufacturing	22,278	4.7%	2,997	6.0%	1,369	6.3%
Wholesale Trade	11,647	2.4%	1,153	2.3%	484	2.2%
Retail Trade	57,294	12.0%	6,529	13.1%	2,951	13.6%
Transportation, warehousing, and public utilities	23,539	4.9%	1,508	3.0%	485	2.2%
Information	8,771	1.8%	721	1.4%	293	1.4%
Finance and Insurance, and real estate and rental and leasing	26,771	5.6%	2,682	5.4%	1,132	5.2%
Professional, scientific, management and administrative	39,604	8.3%	6,049	12.1%	2,613	12.1%
Education services, health care, and social assistance	108,670	22.8%	11,379	22.7%	5,544	25.6%
Arts, entertainment, and recreation, and accommodation, and food services	54,179	11.4%	6,827	13.6%	3,385	15.6%
Other services, except public administration	21,844	4.6%	2,038	4.1%	895	4.1%
Public administration	30,406	6.4%	1,851	3.7%	750	3.5%
Total Employed Population 16 year of age and older	**477,015**		**50,021**		**21,647**	

Source: U.S. Bureau of the Census, American Community Survey (ACS) Profile Report: 2009-2013 (5-year estimates), available at http://census.missouri.edu/acs/profiles/

It is worth noting the difference in the total employed population for Gallatin County presented in **Table 9** and the full and part-time employment total presented for the county in **Table 8**. The data in **Table 8** shows employment by industry in the county and does not consider where employees reside. **Table 9** provides estimates of the employment by industry for residents of Gallatin County. With that in mind, the employment data suggests there are a substantial number of jobs being filled by persons living outside Gallatin County.

Information obtained from Headwaters Economics Inc. Economic Profile System (EPS) in 2015 verifies that workers from neighboring counties are coming to Gallatin County for work. The *Profile of Socioeconomic Measures* report produced by the EPS shows that from 1990 to 2013, the outflow of earnings grew by 224% and the net residential adjustment (inflow less outflow) changed from 0.0% to -0.6% of

personal income. These measures describe the flow of earnings into the county by residents who work in neighboring counties ("inflow" of earnings because they bring money home); the flow of earnings by residents from neighboring counties who commute into the county for work ("outflow") of earnings because they take their earnings with them); and the difference between the two ("net residential adjustment"). If net residential adjustment is positive (inflow exceeds outflow), it means county residents commute outside the county for work and bring in more personal income than leaves the county in net terms. If net residential adjustment is negative (outflow exceeds inflow), it means the economy of the county attracts workers from nearby counties and loses more personal income than it brings into the county in net terms.

Montana State University is the largest employer in Gallatin County. As of fall 2014, MSU employed 3,092 permanent faculty and staff, and 649 graduate teaching and research assistants. Of the 3,092 permanent employees, 2,321 were classified as full time and 771 were part time employees. Classified, professional, and service staff at MSU numbered nearly 1,900 in 2014. The Bozeman Public School District, Gallatin County, and City of Bozeman are also large public employers in the county.

The most recent *Montana County Flier* publication for Gallatin County (February 2012) prepared by the Montana Department of Labor and Industry, Research and Analysis Bureau identifies large private employers in the County including:

- Bozeman Deaconess Hospital (1,000+ employees);
- Right Now Technologies (500-999 employees);
- Walmart (250-499 employees); and
- 17 other businesses with 100 to 249 employees.

4.3. Current Employment Statistics

Unemployment rates are represented in **Table 10** and are current as of August 2015. The data shows unemployment rates for Gallatin County and Bozeman lower than comparable rates for the State of Montana (3.7%) and for the United States (5.2%).

Table 10: Employment Statistics (August 2015)

Area	Total Labor Force	Employed	Unemployed	Unemployment Rate
Gallatin County	59,639	57,943	1,696	2.8%
City of Bozeman	26,873	26,234	639	2.4%
State of Montana	531,246	511,514	19,732	3.7%
United States	157,390,000	149,228,000	8,162,000	5.2%

Source: MT Department of Labor and Industry, Research and Analysis Bureau – Labor Force Statistics, August 2015 (data is not seasonally adjusted) available at https://data.datamontana.us/Employment/Labor-Force-by-Area/2t9m-tkyy. Please note these Local Area Unemployment Statistics (LAUS) are variable and represent monthly and annual labor force estimates and unemployment rate statistics.

4.4. Income Levels

Estimates of median household income and per capita income for Gallatin County, the city of Bozeman, and other geographies are available in the 2009-2013 ACS profile and shown in **Table 11**. The ACS shows estimated median household incomes for Gallatin County and the city of Bozeman as $52,833 and $44,615, respectively. The median household income level of county residents was higher than that of the state as a whole but slightly below that of the nation. The median household income of city of Bozeman residents was below that of the county, state, and nation. In general, households within Gallatin County earned about 14% more than what is earned by an average Montana household during the period.

Per capita income levels in Gallatin County were similar of those of the nation but notably higher than those for Montana as a whole. The per capita income of city residents was estimated to be higher than for state residents as a whole but below the per capita income level seen for all county residents and the nation as a whole.

Estimates of per capita personal income for 2013 are available from the U.S. Department of Commerce, Bureau of Economic Analysis (BEA) for the nation, states, and counties. Personal income is the income received by all persons from all sources. Per capita personal income is calculated as the total personal income of the residents of an area divided by the population of the area. BEA data for 2013 shows the estimated per capita personal income for residents of Gallatin County is slightly above that for all residents of the State of Montana but is about 10% below that estimated for the nation as a whole.

Table 11: Income Levels (2009-2013)

Area	Median Household Income	Per Capita Income	2013 Per Capita Personal Income
Gallatin County	$52,833	$28,939	$40,670
City of Bozeman	$44,615	$26,335	*No Data*
State of Montana	$46,230	$25,373	$39,366
United States	$53,046	$28,155	$44,765

Sources: US Bureau of the Census, American Community Survey (ACS) Profile Report: 2009-2013 (5-year estimates), available at http://census.missouri.edu/acs/profiles/
U.S. Department of Commerce, Bureau of Economic Analysis (BEA) News Release – Local Area Personal Income (November 20, 2014) available at http://www.bea.gov/newsreleases/regional/lapi/2014/pdf/lapi1114.pdf

4.5. Poverty Status

Table 12 presents poverty statistics for various geographies in Gallatin County and comparable statistics for the State of Montana and the nation. According to the 2009-2013 ACS profile, the number of county residents living below the poverty line was below that seen for the State (14.8%) and nation (14.9%). However, the ACS estimates show the number of city of Bozeman residents living in poverty was higher than the county as a whole, and the state and nation. The county (including the city of Bozeman) had fewer residents under the age of 18 years and over the age of 65 living in poverty than seen for the state and nation.

Table 12: Poverty Status (2009-2013)

Area	Persons Living in Poverty (%)	Persons Under 18 in Poverty (%)	Persons over 65 in Poverty (%)
Gallatin County	14.1	12.5	5.4
City of Bozeman	21.2	13.5	7.5
State of Montana	15.2	20.1	8.4
United States	14.9	20.8	9.4

Source: U.S. Bureau of the Census, American Community Survey (ACS) Profile Report: 2009-2013 (5-year estimates), available at http://census.missouri.edu/acs/profiles/

5.0. EXISTING LAND USE AND DEVELOPMENT

5.1. Existing Land Use

Land use plays a critical role in shaping transportation networks. Land use decisions affect the transportation system and can increase viable options for people to access work and recreation sites, goods, services, and other resources in the community. In turn, the existing and future transportation system may be impacted by the location, type, and design of land use developments through changes in travel demands, travel mode choices, and travel patterns.

5.1.1. Historic Development Patterns and Current Land Uses

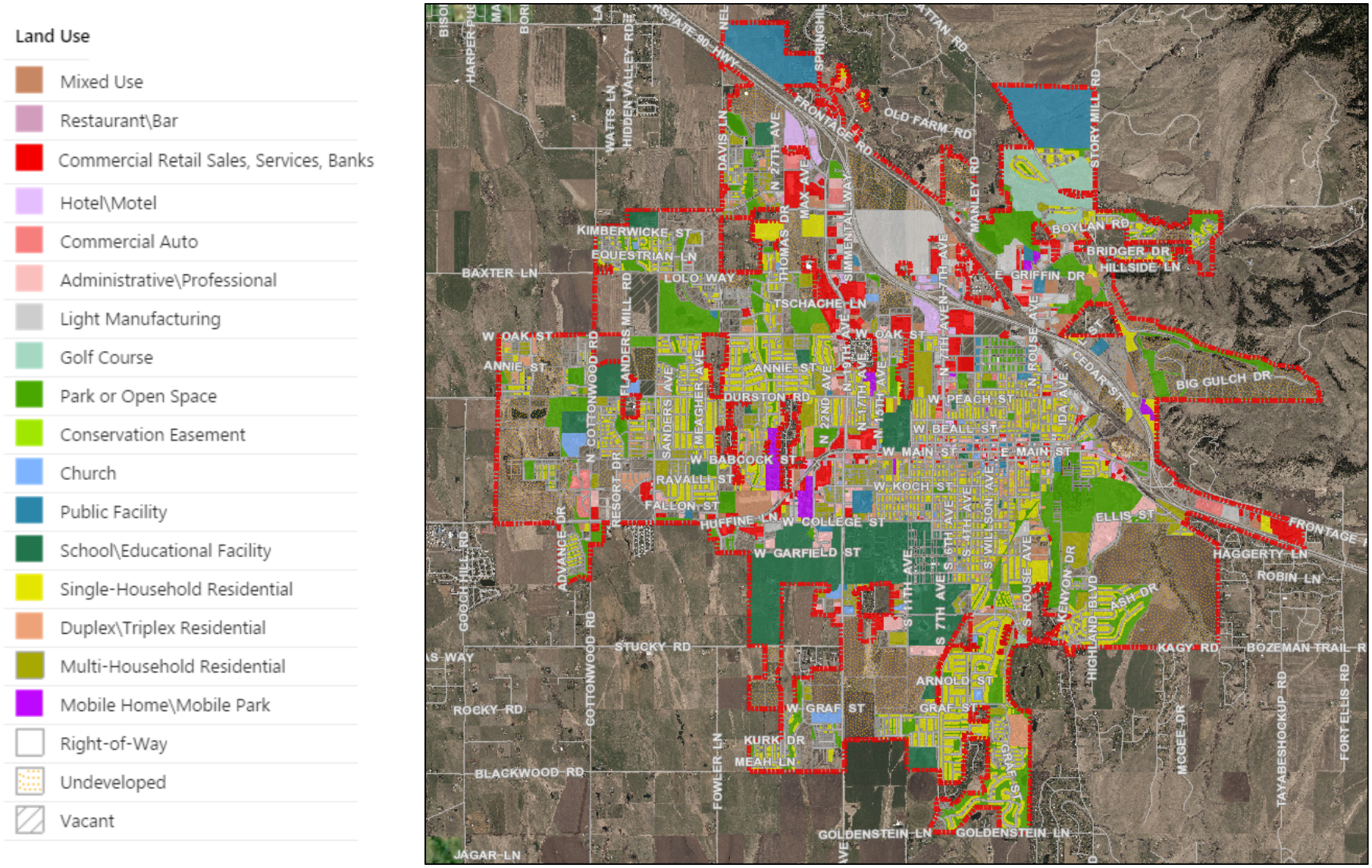
Bozeman's developed land use pattern has evolved steadily from the time of first settlement. The historic development of the city of Bozeman was centered on the commercial core of Main Street and later included the industrial core established around the railroad yard. The city developed around a street and block pattern that served residents by providing for most basic needs within relatively close proximity to residential areas. This pattern flourished for many years and maintained a thriving central core area within the city.

The development pattern changed as automobiles became commonplace and allowed people to move greater distances over a shorter period. The newfound mobility served to create commercial corridors as business owners relocated to or expanded on parcels of less expensive land on the edges of town. The development of I-90 along the north edge of the city reinforced the commercial corridor pattern seen in the community. Commercial development, with concentrations of motels/hotels and other services, was spurred in areas along East Main Street and North 7th Avenue (and later North 19th Avenue) where interchanges were constructed along I-90.

The periods of rapid residential growth seen in the Bozeman area from 1980 forward resulted in significant new residential areas on former agricultural lands that surrounded the city. This growth has manifested itself through numerous large residential developments, primarily on lands adjoining the north, west, and southwest portions of the city and through infill developments in other areas of the city. Residential and commercial development on lands near Montana State University has also been notable in recent years.

Today, the city is seeing substantial redevelopment and enhancements within its historic downtown core area and East Main Street. This activity has contributed to making downtown Bozeman a very vibrant area. Rapid expansion of commercial uses has also continued along North 19th Avenue and portions of West Main Street. Most other major streets in the city also have some level of commercial development.

Figure 3 depicts current land uses for the community as compiled by the city of Bozeman GIS Department.



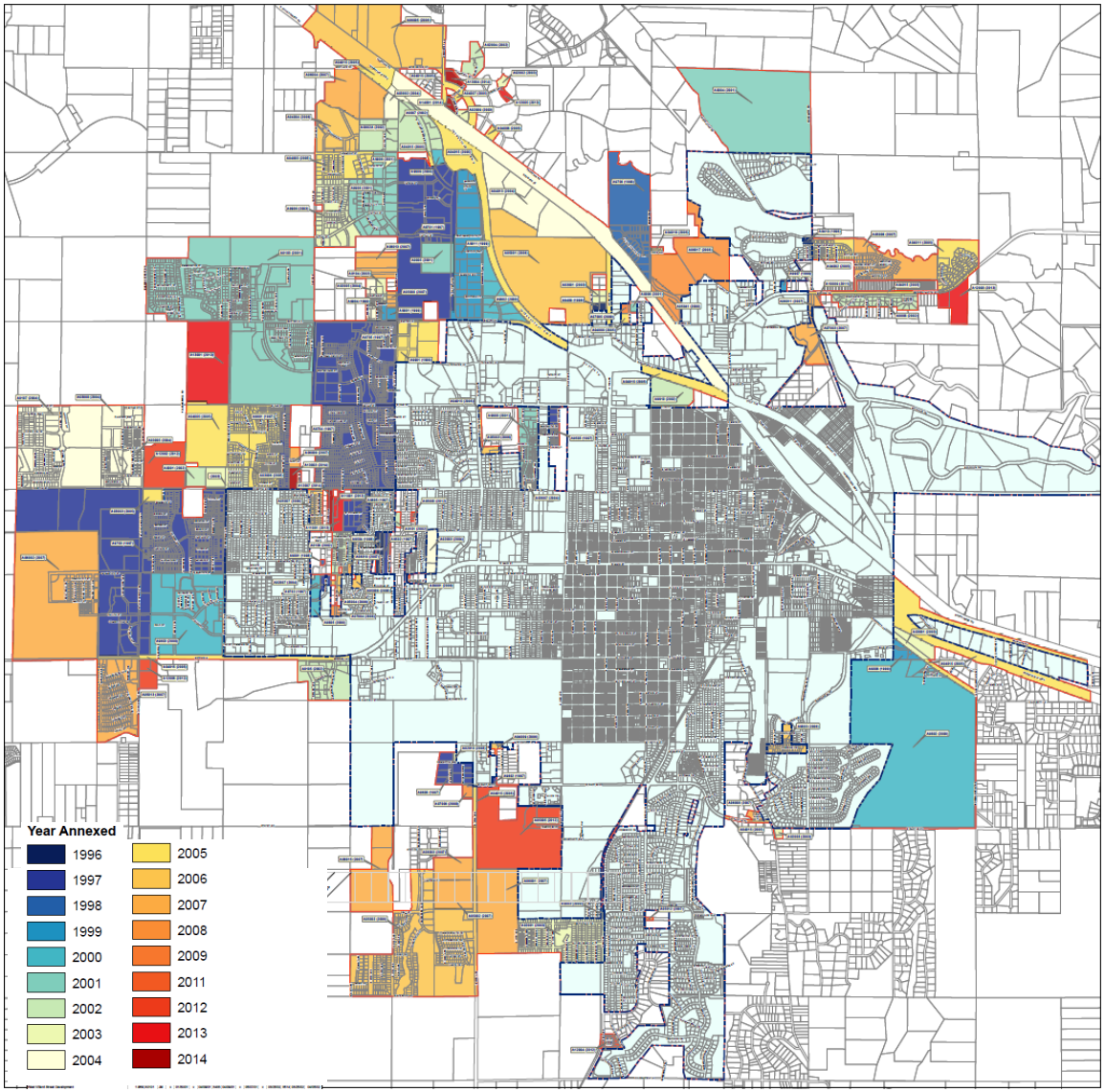
Source: City of Bozeman GIS Department, accessed February 15, 2016, http://gisweb.bozeman.net/Html5Viewer/?viewer=maps

Figure 3: Existing Land Use in the City of Bozeman (2015)

5.1.2. Recent Annexations

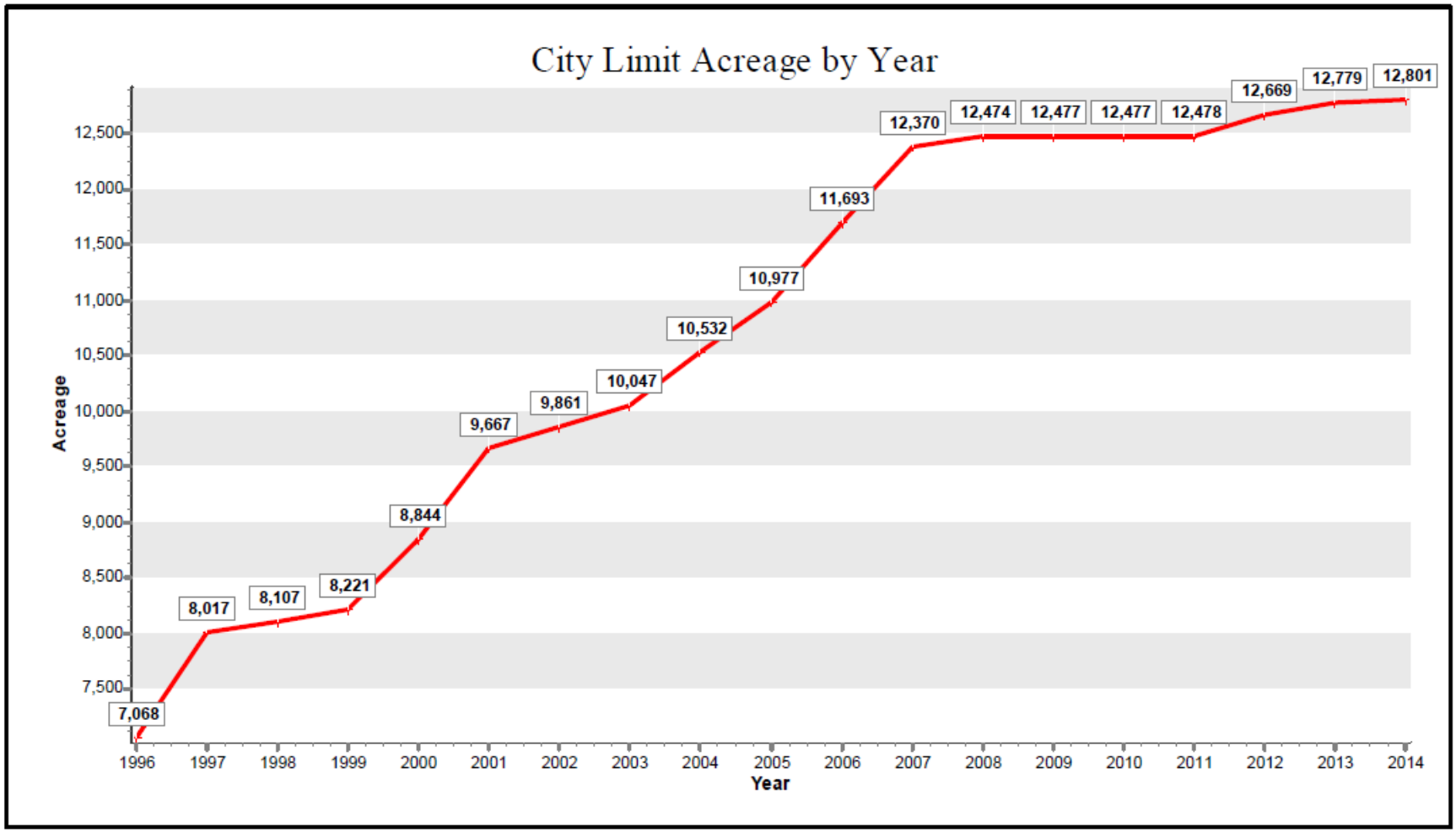
The city of Bozeman has increased in size over the years due to annexations. Annexations are typically done to accommodate new developments and/or extend municipal services. **Figures 4** and **5** show annexations from 1996 through 2014. The light blue area in the map shows the municipal boundaries as of 1996 and the colored areas represent annexed lands for subsequent years with orange to red colors representing the most recent annexations.

In 1996, the City encompassed about 7,100 acres, Between 1999 and 2007, the city annexed nearly 4,150 acres. As of the end of 2014, the municipal boundaries of Bozeman covered about 12,800 acres. It is apparent from the map that most lands annexed since 1996 were on the north and west perimeters of the city.



Source: City of Bozeman GIS Department (2015), http://www.bozeman.net/Smarty/media/GIS_Media/maps/Annexation_Map.pdf

Figure 4: City of Bozeman Annexations (1996-2014)

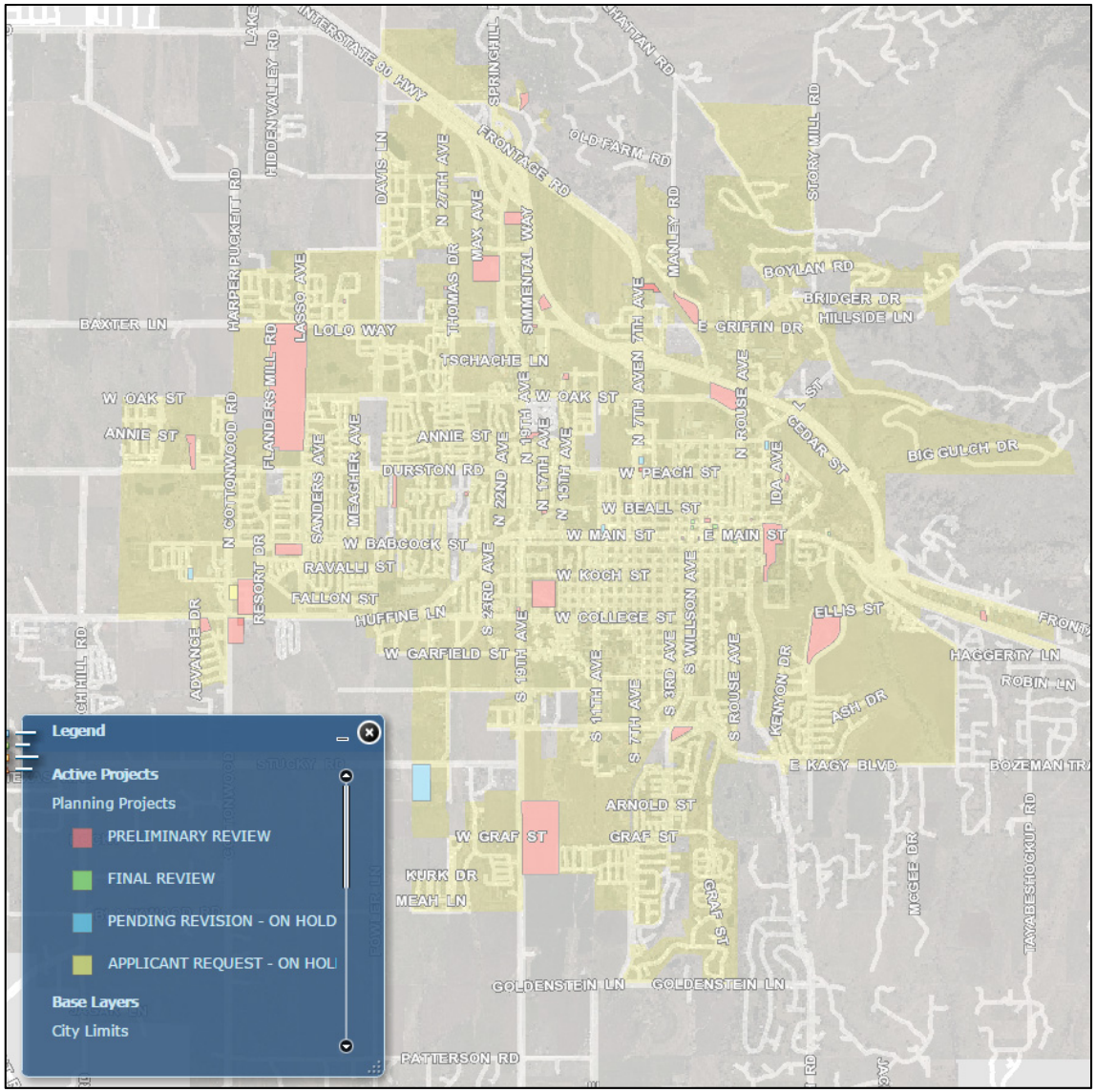


Source: City of Bozeman GIS Department (2015), http://www.bozeman.net/Smarty/media/GIS_Media/maps/Annexation_Map.pdf

Figure 5: City of Bozeman Acreage

5.1.3. Current Development Projects

The city of Bozeman's GIS Department has created an interactive map showing development projects currently underway within the Bozeman area. **Figure 6** shows a map of active planning projects in the area. These projects cover the 2006 through 2015 period and include a wide variety of planning actions ranging from zoning variances and conditional use permits for individual properties to small commercial projects and pending subdivisions or annexations. The figure is presented to provide some indication of the location of recent and ongoing development activities. It is apparent that these activities are occurring throughout the community.



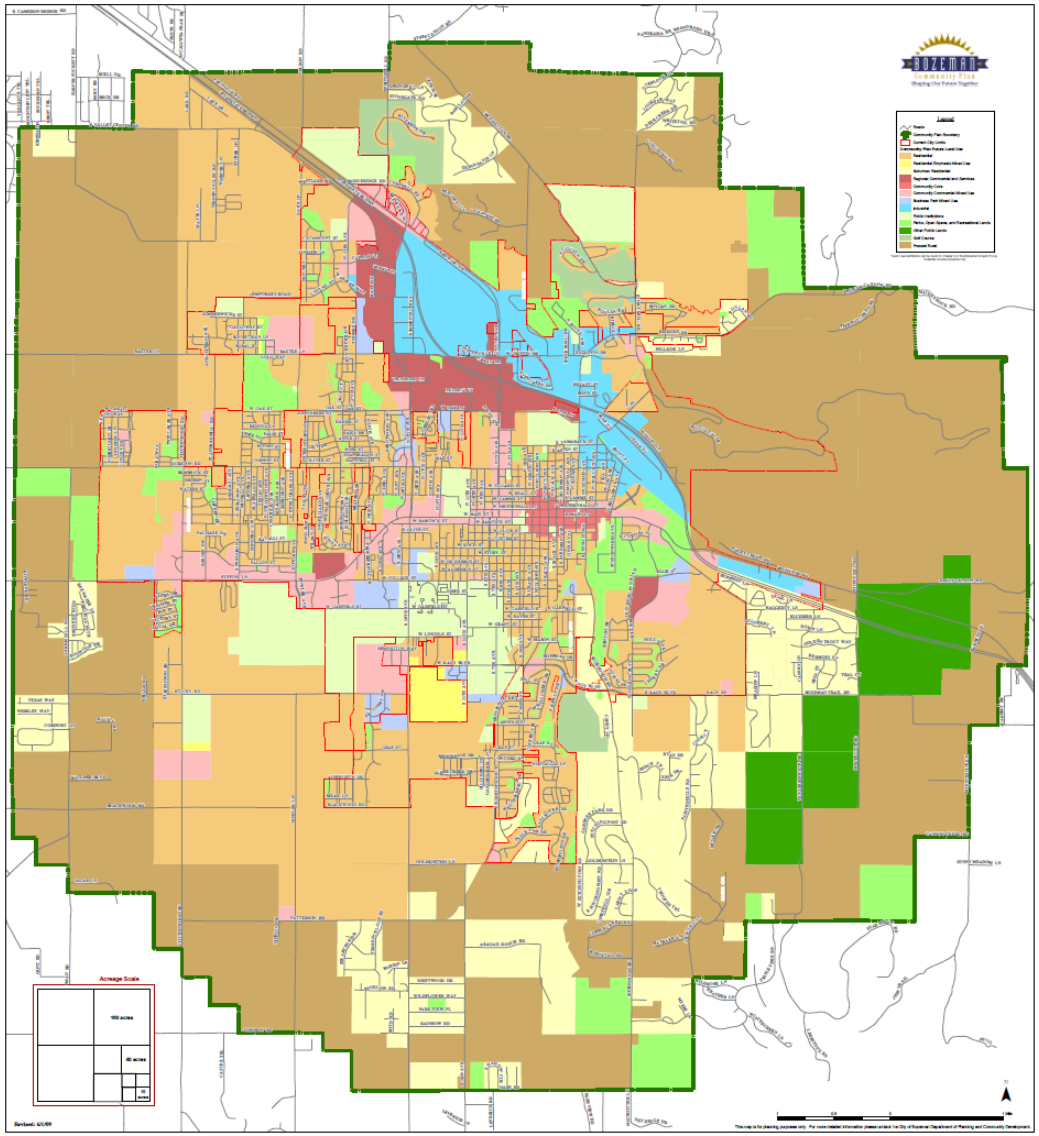
Source: City of Bozeman GIS Department, accessed February 15, 2016, http://gis.bozeman.net/flexviewers/planning/

Figure 6: Current Development Projects

5.2. Future Land Use

Figure 7 presents a future land use map for the Bozeman area taken from the Bozeman Community Plan adopted in 2009. In general, the future land use plan for the city seeks to move away from the auto-oriented development pattern of the past, increased the urban density by implementing more mixed use developments that combine uses on one site or within one building and more efficiently use land. Center-based commercial development is viewed as desirable. The city also seeks to create more options in housing choice, location, and cost.

*Land Use Definitions can be found in Chapter 3 of the Bozeman Growth Po icy. Available at www.bozeman.net



Source: Bozeman Community Plan (2009), accessed February 15, 2016, http://www.bozeman.net/Smarty/files/e6/e6a049b8-fad5-4886-b7f5-3ebfbd2f4556.pdf

Figure 7: Future Land Use Map for the Bozeman Area

6.0. FUTURE PROJECTIONS

6.1. Population and Housing Projections

Projections are estimates of the population for future dates. They illustrate reasonable estimates of future population based on assumptions about current or expected demographic trends. Population projections (along with forecasts of the number of future housing units or households and employment conditions) are used to help predict future travel patterns and assess the performance of the transportation system.

6.1.1. Gallatin County

Several sources of population projections for Gallatin County were examined to help understand potential growth within the County. These sources consisted of both published community planning documents and recognized sources for demographic projections. These projections are briefly discussed in the following paragraphs and summarized in **Table 13**.

- *Gallatin County Growth Policy* (2003)
- *Greater Bozeman Area Transportation Plan (2007 Update)*
- *Bozeman Community Plan (2009)*
- Regional Economic Models, Inc.
- Woods & Poole Economics, Inc.

The *Gallatin County Growth Policy* projected the County's population through the year 2030. The *Growth Policy* showed an estimated population of 82,000 for the year 2010 and projected the county's population to be 116,000 by the year 2030. The *Growth Policy* did not project populations beyond 2030.

The *Greater Bozeman Area Transportation Plan (2007 Update)* included projections of the County's population through the year 2030 based on Low, Moderate, and High growth scenarios. The Low Growth scenario reflected fairly flat population trends experienced during the 1980s. The Moderate Growth scenario reflected Woods & Poole projections for Gallatin County available at the time. The High Growth scenario was established to reflect population growth trends seen between 1990 and 2005. The *Transportation Plan* update projected the following 2030 populations for Gallatin County—117,824 residents (Low Growth), 135,986 residents (Moderate Growth), and 163,863 residents (High Growth). The Moderate Growth scenario was identified as the most likely to occur and its associated population and employment projections were used as the basis for transportation modeling.

Appendix B of the *Bozeman Community Plan* approved in 2009 includes a section devoted to population projections for both Gallatin County and the city of Bozeman. The sources of the projections were identified as the city of Bozeman's 2007 *Wastewater Facility Plan* and

projections made by NPA Data Services Inc, in 2006. The *Bozeman Community Plan* presents population projections for each 5-year period from 2010 to 2025. Gallatin County's population was estimated at 88,300 for 2010 with steady increases to a year 2025 population of 116,450. It should be noted that the Montana Department of Commerce Census & Economic Information Center (CEIC) contracted with NPA Data Services to provide population projections for all Montana counties during the time the *Bozeman Community Plan* was developed. Population data from the 2010 Census was not available at the time the planning document was produced.

In April 2013, the CEIC released projections developed by Regional Economic Models, Inc. (eREMI) which provided complete annual demographic forecasts through the year 2060 for the State of Montana and each county. The eREMI model projects Gallatin County's population to be 122,432 by the year 2040. This projection suggests the county's population would be about 37% higher than the population at the time of the 2010 Census. The projection represents a 30-year increase of 32,919 people over the 2010 Census population and an average annual increase in population of 1.05 percent for the period.

Woods & Poole Economics, Inc. (W&P) produces long-term economic and demographic projections for every county in the U.S. The W&P database for Gallatin County includes population projections through 2050 and projects the county's population to be 176,191 by 2040. This projection suggests the county's population would be about 97% higher than it was at the time of the 2010 Census. The projection represents a 30-year increase of 86,678 people over the 2010 Census population and an average annual increase in population of 2.28 percent over the 30 year period.

Table 13: Population Projections for Gallatin County

Estimate or Projection Source	2010	2014	2015	2020	2025	2030	2035	2040	AAGR
U.S. Census Bureau/CEIC Estimate	89,513	97,308	--	--	--	--	--	*167,438**	2.11%
Gallatin County Growth Policy	82,000	--	--	--	--	116,000		*137,969**	1.75%
Greater Bozeman Area Transportation Plan									
Low Growth Projection	84,935	--	92,177	100,037	108,567	117,824	--	*138,774**	1.65%
Moderate Growth Projection	87,406	--	97,618	109,023	121,760	135,986	--	*169,618**	2.23%
High Growth Projection	90,727	--	105,187	121,930	141,350	163,863	--	*220,218**	3.00%
Bozeman Community Plan	88,300	--	97,780	107,100	116,450	--	--	*153,574**	1.86%
eREMI Model	89,616	95,470	97,197	105,568	112,302	116,627	119,368	122,432	1.05%
Woods & Poole Economics, Inc.	**89,587**	**96,989**	**99,352**	**112,214**	**126,452**	**142,028**	**158,662**	**176,191**	**2.28%**

** Estimated using average annual growth rate (AAGR).*

For the purposes of the Bozeman TMP, the W&P projections were selected as the preferred set of population projections for Gallatin County. With a projected year 2040 population of more than 176,000, these projections reflect sustained and significant growth in Gallatin County and are generally in line with the "Moderate Growth Projection" presented in the *Greater Bozeman Area Transportation Plan (2007 Update)*.

6.1.2. City of Bozeman

Population projections for the city of Bozeman are not available from eREMI or W&P, so the principal sources of projections for the city's population are other published community planning documents including:

- *Bozeman Wastewater Collection Facilities Plan Update (2015)*
- *Bozeman Integrated Water Resource Plan (2013)*
- *Bozeman Community Plan (2009)*
- *Fire Protection Master Plan (2006)*
- *Bozeman Water Facility Plan* (2005)
- *Bozeman 20/20 Community Plan (2001)*

Population projections from these sources are shown in **Table 14**. Please note the projections made in the *Greater Bozeman Area Transportation Plan (2007 Update)* were for Gallatin County only and does not include projections specific to the city of Bozeman.

It is apparent from a review of **Table 14** that substantial variation exists between the population projections for the city. This is due in part to the fact that several of the planning documents were produced before 2010 Census data became available that firmly established populations for all geographies of the county. Planning studies prior to the 2010 Census data had to rely on older Census data or other information to help estimate population growth trends. Several planning documents also presented projections based on a range of growth rates to help frame the magnitude of future growth. More recent planning studies containing population projections for the city have the advantage of additional information from the 2010 Census information and current estimates of population from the CEIC to establish growth trends and project future populations.

Table 14: Population Projections for the City of Bozeman

Estimate or Projection Source	2010	2014	2015	2020	2024	2025	2030	2034	2035	2040	AAGR
U.S. Census Bureau/CEIC Estimate	37,280	41,660	--	--		--	--	--	--	*85,763**	2.82%
Bozeman Community Plan	42,700	--	54,500	69,500	--	88,700	--	--	--	*184,255**	4.99%
Bozeman Integrated Water Resource Plan											
Moderate Projection (2% annual growth)	--	--	41,160	45,444	--	50,174	55,396	--	61,161	67,527	2.00%
High Projection(3% annual growth)	--	--	42,383	49,133	--	56,959	66,031	--	76,548	88,740	3.00%
Bozeman Wastewater Collection Facilities Plan Update	--	41,056	--	--	55,176	--	--	63,964	--	*73,064**	2.24%
Bozeman Water Facility Plan	42,700	--	54,500	69,500	--	88,700	--	--	--	*184,255**	4.99%
Bozeman Fire Protection Master Plan											
Census Based Projection	--	34,029	--	--	37,747	--	--	--	--	*44,559**	1.04%
Development Based Projection	--	42,400	--	--	49,400	--	--	--	--	*63,082**	1.54%
Wastewater Facilities Plan/Bozeman Community Plan (2008)	44,500	--	56,800	72,500	--	92,500	--	--	--	*192,275**	5.00%
Bozeman 20/20 Community Plan, 2001	39,600	--	43,120	46,600	--	--	--	--	--	*64,531**	1.64%
Woods & Poole Economics, Inc.**	***37,280***	***40,798***	***41,728***	***46,708***	***51,116***	***52,281***	***58,520***	***64,042***	***65,503***	***73,319***	**2.28%**

** Estimated using average annual growth rate (AAGR).*
*** Estimated using 2010 Census and Woods & Pool Economics, Inc. AAGR calculate for Gallatin County.*

While the W&P projections are not available specifically for the city of Bozeman, the 2.28% AAGR calculated for Gallatin County was applied to city of Bozeman population for reference purposes. This method results in a projected city of Bozeman population of approximately 73,000 for the year 2040.

6.1.3. Bozeman TMP Study Area

The share of the population living within the TMP study area was estimated using Census population data. GIS analysis was used to identify the total population within all census blocks entirely within or crossed by the study area boundary. This analysis established the study area population to be 49,814 in 2010 and 56,924 in 2014. The population of the TMP study area accounted for about 56 percent of the County's total population in 2010 and 57 percent in 2014.

For future projections, the percentage of population within the TMP study area in the year 2014 was held constant through the year 2040. **Table 15** shows, the projected population of the TMP study area through the year 2040. The table shows the population of the TMP study area is projected to be more than 100,000 residents by 2040, which account for approximately 57% of the county's projected population.

The number of housing units is a key component in the traffic model. Housing units distribute people throughout the network to given locations. They represent the population and act as a hub for traffic within the network. Having a realistic value for number of people per housing unit helps distribute the traffic more accurately. However, it is often quite difficult to precisely represent the population through housing units. This is in part because the number of people per housing units varies based on location and can change at any time.

According to the 2014 baseline conditions, Gallatin County had 99,586 residents distributed among 47,048 housing units. Within the study area, the baseline conditions show a population of 56,924 distributed among 26,035 housing units. The number of occupants per housing unit under baseline conditions is 2.12 and 2.19, respectively, for Gallatin County and the study area.

The number of housing units within Gallatin County and the TMP study area by the year 2040 was determined by dividing the total populations for these geographies by the occupancy. Applying this occupancy rate to the projected 2040 population for Gallatin County results in 83,239 housing units; an increase of 36,191 from the year 2014. For the TMP study area, an increase of 20,027 housing units is projected for the year 2040. **Table 15** shows population and housing unit projections for Gallatin County and the TMP study area for the year 2040.

Table 15: Population and Housing Unit Projections

Area	2010 (Census)	2014 (Baseline)	2040 (Projection)	Net Change (2014-2040)
Gallatin County				
Population	89,513	99,586	176,191	76,605
Housing Units	42,289	47,048	83,239	36,191
Population per Housing Unit				**2.12**
TMP Study Area				
Population	49,814	56,924	100,712	43,788
Housing Units	22,783	26,035	46,062	20,027
Population per Housing Unit				**2.19**
Outside Study Area				
Population	39,699	42,662	75,479	32,817
Housing Units	19,506	21,013	37,177	16,164
Population per Housing Unit				**2.03**

6.2. Employment Projections

Employment numbers are used in the traffic model to help distribute vehicle traffic as accurately as possible within the street and road network. Places with high levels of employment will tend to generate high levels of vehicle traffic. The traffic generated is based in part on the employment type: retail, service, or basic.

6.2.1. Gallatin County

Table 16 presents full and part-time employment data for Gallatin County over the 2010 to 2040 period. In 2010, the total employment for Gallatin County was estimated to be 63,768 with farm and nonfarm employment totaling 1,116 and 62,652, respectively. Future employment projections for Gallatin County to the year 2050 are available from Wood's and Poole Economics, Inc. The W&P projections show that total nonfarm employment in the county may reach 127,937 by 2040—56,868 more jobs than seen in 2014. This represents a total overall increase of approximately 80 percent in nonfarm employment over the 2014-2040 period and an average increase in employment of just under 2.3 percent per year. The W&P employment projections clearly suggest Gallatin County will continue to see steady and significant job growth in the future.

Table 16: Employment Projections to 2040 for Gallatin County

Employment Projection	2010	2014	2015	2020	2030	2040	Net Change (2014-2040)	AAGR (2014-2040)
Total Full and Part-time Employment	63,768	72,210	74,182	8,411	105,604	129,184	56,974	2.26%
Farm Employment	1,116	1,141	1,148	1,180	1,225	1,247	106	0.34%
Nonfarm Employment	**62,652**	**71,069**	**73,034**	**82,931**	**104,379**	**127,937**	**56,868**	**2.29%**

NOTES:
1. Employment data for 2010 was obtained from US Department of Commerce Bureau of Economic Analysis – Table CA25 and Table CA25N.
2. Employment data for years 2015 through 2014 were obtained from the Woods & Poole Economics, Inc. dataset for Gallatin County. Montana.

6.2.2. Bozeman TMP Study Area

The total employment within the TMP study area was extracted from the MDT traffic model. Similar to the process followed to establish baseline population data, GIS analysis was used to identify the total employment within all census blocks entirely within or crossed by the study area boundary. This analysis of the model established the total employment for the study area to be 38,387 in 2014. This means that 62.83% of employment in Gallatin County occurred within the TMP study area.

Table 17 presents employment projections for the year 2040. Future employment was projected using the AAGR established by W&P data discussed in the previous section (2.29%). Applying this growth rate to the 2014 baseline employment numbers from the model resulted in 30,288 new jobs within the TMP study area. Outside of the study area, 17,970 new jobs are projected for the purposes of the model. The percent distribution of retail, service, and basic job classifications was held constant for year 2040 projections.

Table 17: Employment Projections to 2040 for the TMP Study Area

Area	2010	2014 (Baseline)	2040 (Projection)*	Net Change (2014 - 2040)
Gallatin County				
Retail	22,810	33,671	60,238	26,567
Service	12,825	13,645	24,411	10,766
Basic	12,915	13,847	24,772	10,925
Total	**48,550**	**61,163**	**109,421**	**48,258**
TMP Study Area				
Retail	15,004	21,720	38,857	17,137
Service	9,196	10,050	17,979	7,929
Basic	6,067	6,617	11,838	5,221
Total	**30,267**	**38,387**	**68,675**	**30,288**
Outside Study Area				
Retail	7,806	11,951	21,380	9,429
Service	3,629	3,595	6,431	2,836
Basic	6,848	7,230	12,935	5,705
Total	**18,283**	**22,776**	**40,746**	**17,970**

** 2040 projections were based on a 2.29% per year AAGR as calculated based on Woods & Poole projections.*

6.3. Allocation of Future Growth

Modeling of future travel patterns out to the year 2040 planning horizon using MDT's traffic model required identification of future socioeconomic characteristics within each census tract and census block. County population and employment projections were translated into predictions of increases in housing and employment within Gallatin County and the TMP study area.

To accomplish this task, an initial allocation of future housing and employment growth within the study area was made based on a review of existing land use and zoning maps for Bozeman and surrounding county area, draft versions of city and county growth policy updates, and other community planning documents. These planning documents helped identify where residential, commercial and industrial development has occurred in the Bozeman area and provided information about where future residential and commercial growth is

expected in the community. The initial allocation of future housing units and employment attempted to reflect known patterns of growth and potential new growth areas within the study area.

After the initial assignment of housing and employment through the year 2040 was made, a land use workshop was held with various city and county staff on January 20, 2016 to discuss and reach consensus on the distribution of future housing and employment growth within the study area. This enabled local staff to consider and revise the growth assignments as needed based on their knowledge of recent land use trends, land availability and development limitations, land use regulations, planned public improvements, and known development proposals.

Figure 8 shows areas where future housing units are expected to be developed by the year 2040. As discussed previously, 20,027 new housing units were allocated within the study area. An additional 16,164 units were distributed outside of the study area and within the County based on a growth rate applied to select census blocks.

Similarly, **Figure 9** shows where the projected increases in jobs is anticipated through the year 2040. Within the study area, 30,288 new jobs were allocated. An additional 17,970 new jobs were distributed outside of the study area and within the County by applying a growth rate to select census blocks.

Note that for purposes of the traffic model Montana State University is considered to be a special generator, and as such does not necessitate development of conventional housing or job allocations. An average annual growth rate of 1.5% per year was applied to the MSU student population to accommodate projected increases. This AAGR is based on the last 26 years of student growth at MSU.

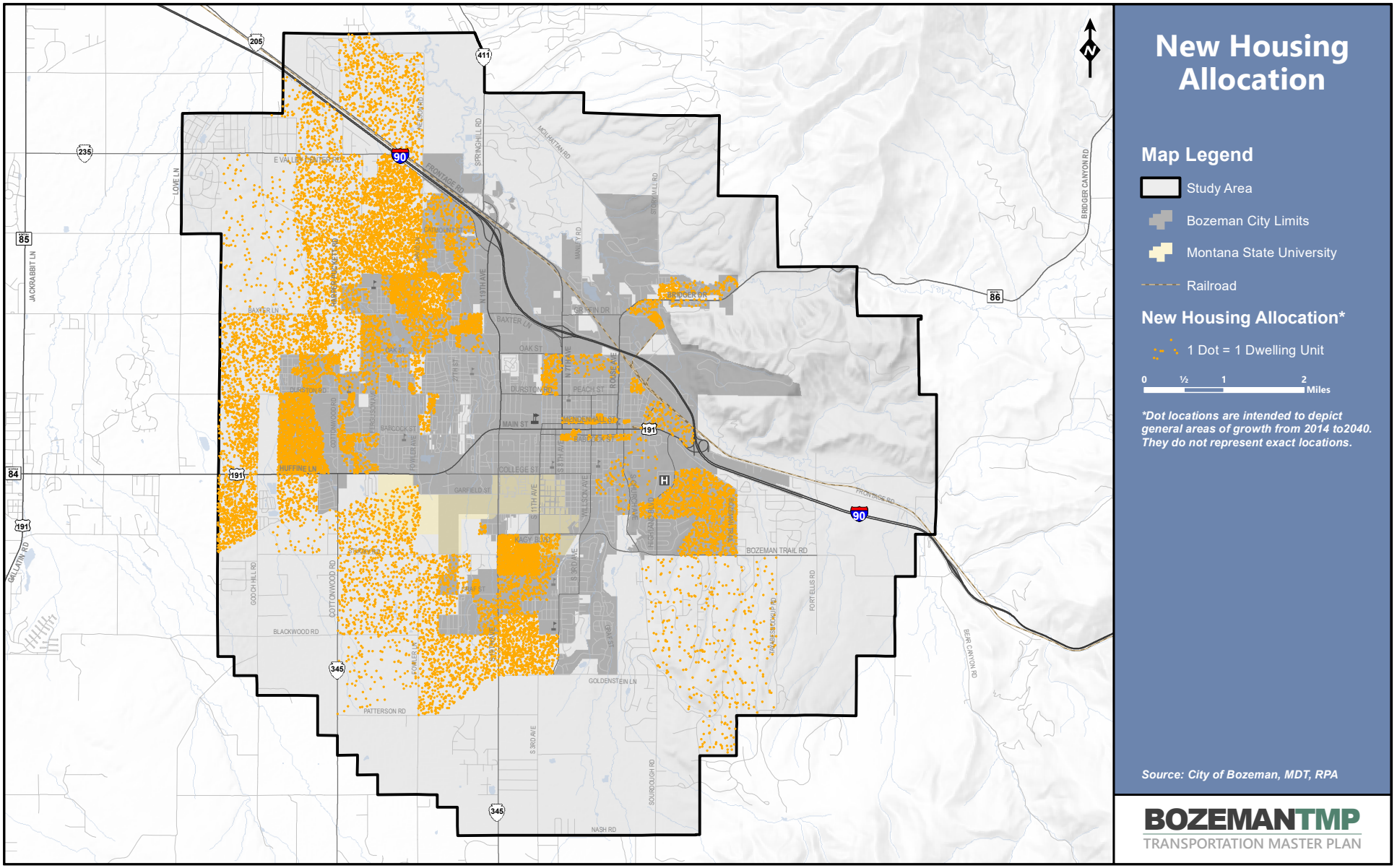


Figure 8: New Housing Allocation (2014 – 2040)

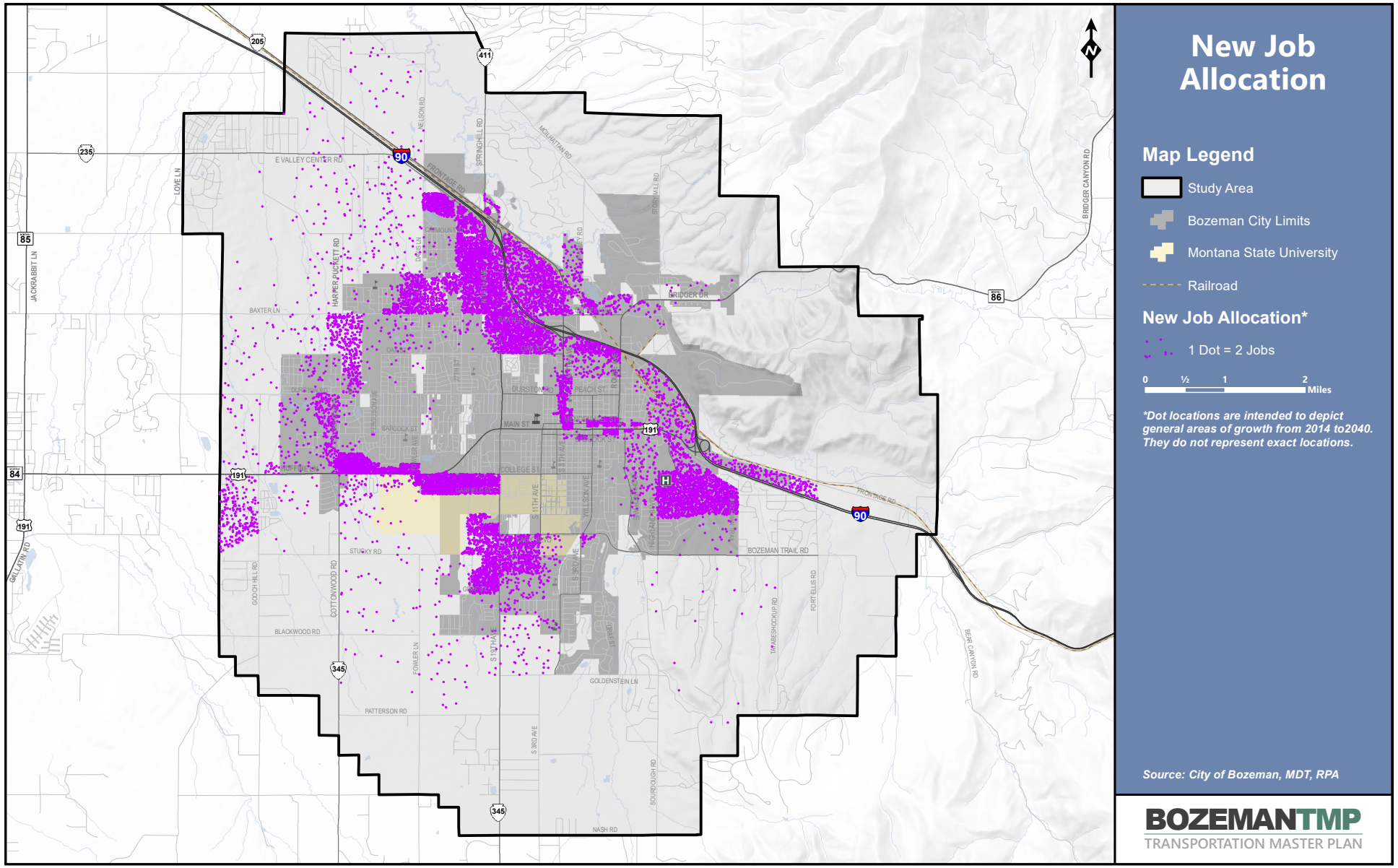


Figure 9: New Job Allocation (2014 - 2040)

BOZEMANTMP
TRANSPORTATION MASTER PLAN

EXISTING AND PROJECTED CONDITIONS

Technical Memorandum

FINAL

May 23, 2016

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City of Bozeman & Montana Department of Transportation

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Appendices

Appendix A: Existing Intersection Levels of Service (LOS)

Appendix B: Bozeman Committed Projects

Appendix C: Projected Intersection Levels of Service (LOS)

Abbreviations / Acronyms

AADT	Annual Average Daily Traffic
ACS	American Community Survey
ASMSU	Associated Students of Montana State University
AWS	All-way Stop
BABAB	Bozeman Area Bicycle Advisory Board
BNSF	BNSF Railway
CIP	Capital Improvement Plan
DHV	Design Hourly Vehicle
ECB	Exceeds Computational Bounds
FRA	Federal Railroad Administration
GIS	Geographic Information System
GVLT	Gallatin Valley Land Trust
HRDC	Human Resource Development Council
lbs	Pounds
LOS	Level of Service
LTS	Level of Traffic Stress
MDT	Montana Department of Transportation
mph	miles per hour
MRL	Montana Rail Link
MSU	Montana State University

NHTS	National Household Travel Survey
PDO	Property Damage Only
RPA	Robert Peccia and Associates
sec	Seconds
TAZ	Transportation Analysis Zone
TMP	Transportation Master Plan
TWS	Two-way Stop
TWLTL	Two-way Left-Turn Lane
v/c	Volume to Capacity Ratio
VMT	Vehicle Miles Traveled
vpd	Vehicles per day

Existing and Projected Conditions

1.0. INTRODUCTION

To clearly understand a transportation network, it is important to evaluate the existing and projected conditions and the potential problem areas that may exist. To achieve this task for the Bozeman network, it was necessary to collect information on many aspects of the transportation system. Existing traffic data were used to establish existing conditions on major road segments within the study area. The existing data were forecasted out to the year 2040 using growth rates derived from a travel demand model built for Gallatin County. Utilizing the existing and projected data, the operational characteristics and potential traffic issues over the planning horizon were determined. A variety of data were used to help evaluate the system, including:

- Existing functional classification,
- Existing traffic data,
- Existing bicycle and pedestrian data,
- Existing roadway corridor size,
- Current intersection turning movement counts,
- Current traffic signal operation information,
- Existing intersection and roadway configurations, and
- Historic crash data.

2.0. EXISTING TRANSPORTATION SYSTEM

Current information about the transportation system was analyzed to establish the existing traffic conditions and to determine potential problem areas. Existing data were provided by the Montana Department of Transportation (MDT) and the City of Bozeman. Additional data were collected in the fall of 2015 to supplement the available information. Using a combination of the supplied and collected data, the existing operational characteristics of the transportation network was determined.

2.1. Transportation Network

2.1.1. Major Street Network

In order to understand a community's existing transportation system, it is necessary to first identify which roadways will be evaluated as part of the larger planning effort. A community's transportation system is made up of a hierarchy or roadways, with each roadway being classified according to certain parameters including, but not limited to, geometric configuration, traffic volumes, spacing in the community's transportation grid, speed, and adjacent land use. Functional classification is a method of classifying roads by the service they provide as part of the overall roadway network. Most travel involves movement through a network of roads. Functional classification defines the nature of traveling within a network in a logical and efficient manner by defining the part that any particular road or street should play in serving the flow of trips through the entire network.

For this evaluation, emphasis was placed on roadways that are functionally classified as collectors, minor arterials, or principal arterials within the study area. These functional classifications are not limited to the "urban" or "rural" settings. The local streets, the lowest ranking roadways, are not examined due to the assumption that if the major street network (i.e. collectors and above) is functioning to an acceptable level, the local roadways are not being used beyond their intended function. However, if problems begin to occur on the major street network, then the resulting issues will begin to infiltrate neighborhood routes (i.e. local streets). As such, the overall health of a community's transportation system can be characterized by the health of the major street network.

Included in the current study area are roadways with functional classifications of interstate system, principal arterial, minor arterial, collector routes, and local streets. Rural roadways in the study area generally carry a smaller volume than their urban counterparts. Although traffic volumes may differ on urban and rural sections of a roadway, it is important to maintain coordinated right-of-way standards to allow for efficient operation and urban development. The following list provides general descriptions of these functional classifications:

Interstate Highway – I-90

Interstate Highways

The main purpose of an interstate highway is to provide for regional and interstate transportation of people and goods. Primary users are all types, including local residents, commuters, travelers, and freight operators. Interstate highways are characterized by having fully controlled access (provided by a limited number of interchanges), high design speeds, and a high level of driver comfort and safety. The interstate system has been designed as a high-speed facility with all road intersections being grade separated. Interstate 90 traverses the study area as a four-lane divided highway.

Principal Arterial – 19th Avenue

Principal Arterial System

The purpose of the principal arterial is to serve the major centers of activity, the highest traffic volume corridors, and the longest trip distances in an area. This classification of roadway carries a high proportion of the total traffic. Most of the vehicles entering and leaving the area utilize principal arterials. Significant intra-area travel, such as between central business districts and outlying residential areas and between major suburban centers, is served by principal arterials.

The spacing between principal arterials may vary from less than one mile in highly developed areas, to five miles or more on the urban fringes. Principal arterials connect to other principal arterials or to the interstate system. The major purpose of the principal arterial is to provide expedient movement of traffic, not access to abutting lands.

Minor Arterial – Durston Road

Minor Arterial Street System

The minor arterial street system interconnects with and augments the principal arterial system. They accommodate trips of moderate length at a somewhat lower level of travel mobility as compared to principal arterials, and they distribute travel to smaller geographic areas. With an emphasis on traffic mobility, minor arterials include all arterials not classified as principal arterials while providing some access to adjacent lands.

The spacing of minor arterial streets may vary from several blocks to half a mile in highly developed areas of a town, to several miles in the urban fringes. They are normally spaced more than one mile apart in fully developed areas.

Collector Street – Ferguson Avenue

Collector Street System

The collector street network serves a joint purpose – provide equal priority to the movement of traffic and to access residential, business, and industrial areas. This type of roadway differs from those of the arterial system in that collector roadways may traverse residential neighborhoods. The collector system distributes trips from the arterials to the user's ultimate destinations. The collector streets also collect traffic from local streets in the residential neighborhoods, and channel the traffic to the arterial system.

The actual location of collectors should be flexible to best serve developing areas and the public. The collector street system should intersect arterial streets at a uniform spacing of one-half to

Local Street – Sanders Avenue

one-quarter mile in order to maintain good progression on the arterial network. Ideally, collectors should be no longer than one to two miles and should be continuous for their entire length.

Local Street System

The local street network comprises all facilities not included in the higher systems. The primary purpose of local streets is to permit direct access to abutting lands and connections to higher systems. Usually service to through-traffic movements is intentionally discouraged either through low speed limits or other traffic calming measures.

Figures 2.1 and **2.2** present the major street network as contained in the adopted *Greater Bozeman Area Transportation Plan (2007 Update)*. The figures show existing roadway classifications along with future extensions of major streets. Note that the functional classifications shown in the figures may not represent the "Federally approved" functional classification system, rather, they show the locally adopted classifications. These classifications are used for planning purposes and may not be representative of actual conditions.

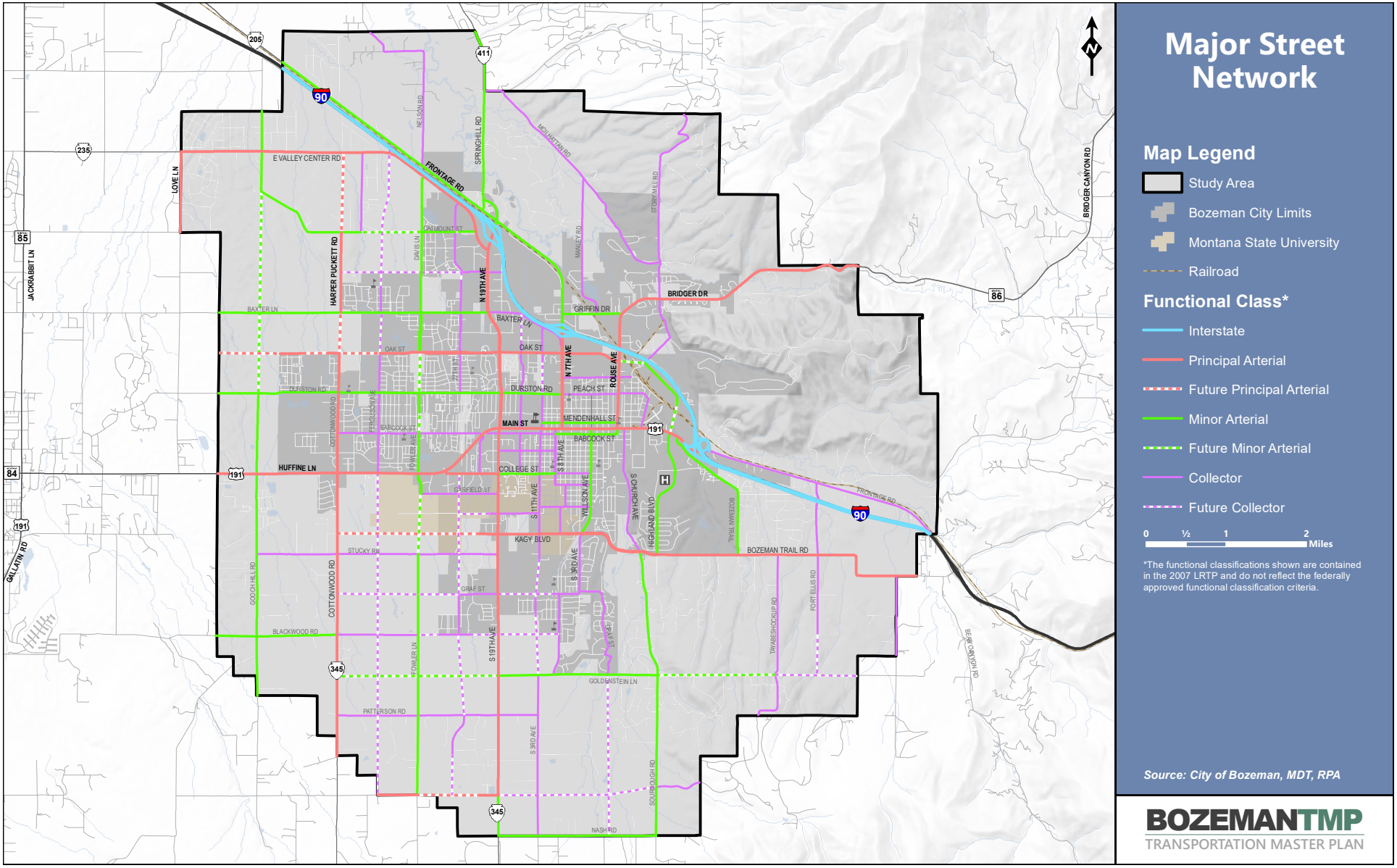


Figure 2.1: Major Street Network

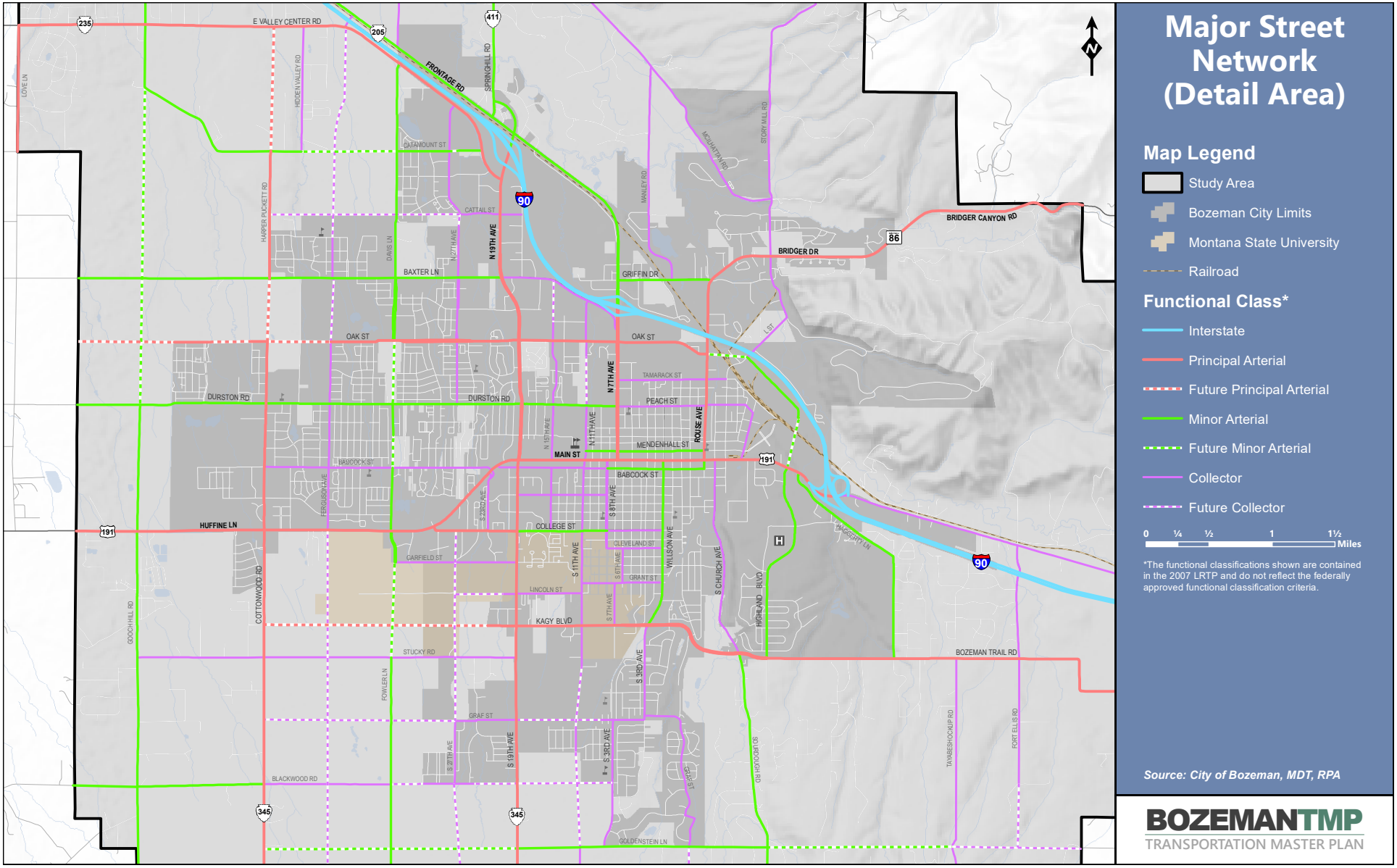


Figure 2.2: Major Street Network (Detail Area)

2.1.2. Active Transportation Network

2.1.2.1 Bicycle Facilities

The City of Bozeman has made great progress on its active transportation network since the *Greater Bozeman Area Transportation Plan (2007 Update)* and the *2007 Parks, Recreations, and Open Space Plan*. All facility types have approximately doubled or more in this intervening period. The increase in facilities has likely resulted in measured increases in bicycling in Bozeman. Bicycle commuting mode share increased from 4.7 percent of commute trips to 6.3 percent of commute trips between 2000 and 2010. The City of Bozeman measured an instantaneous increase in bicycling and walking along West Babcock Street in 2007 of 256 percent when bike lanes and sidewalks were installed. **Figure 2.3** shows recent increases in bicycle facilities by type. For the unpaved trails, 2007 baseline data was not available so 2005 data was utilized.

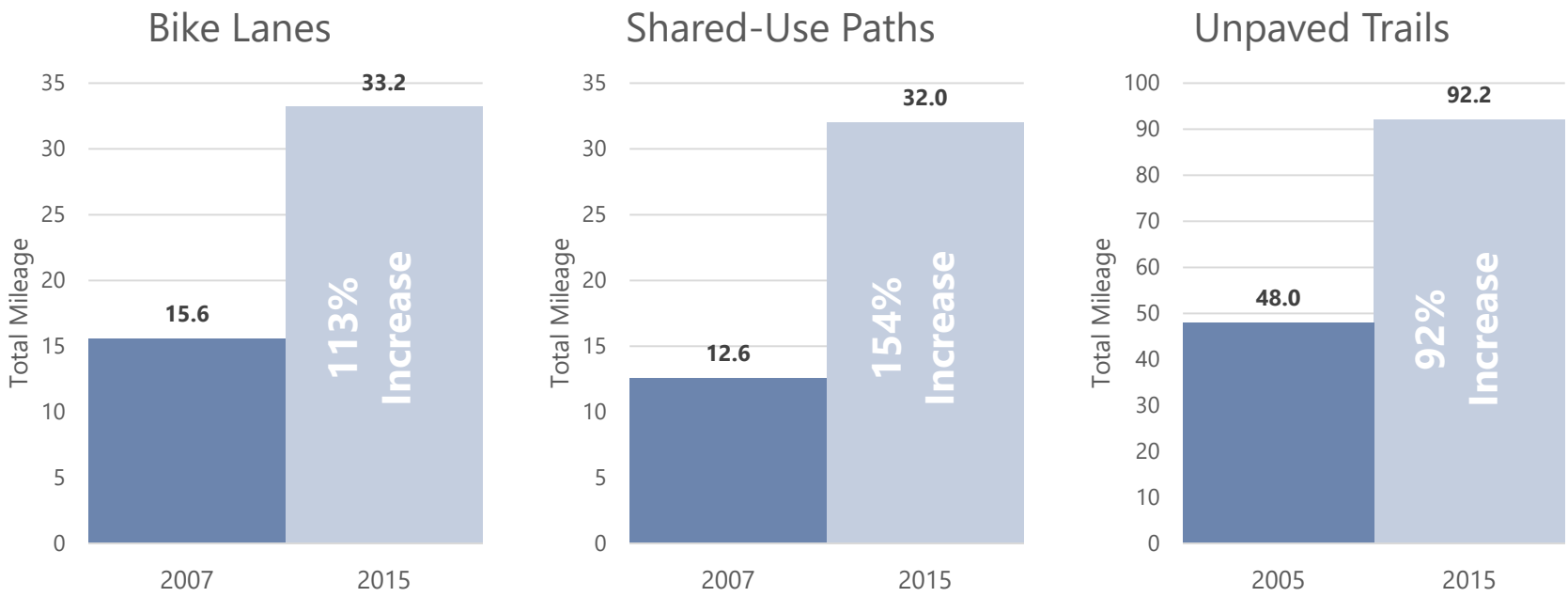


Figure 2.3: Increase in Bicycle Facilities

The following list describes the various bicycle facilities found in Bozeman and other cities. **Figure 2.4** shows the existing bicycle facilities within the TMP study area.

Bike Route Signage – Grand Avenue

Bike Routes

Bike routes include paved shoulders and shared roadways where bicyclists and cars operate within the same travel lane, either side by side or in single file depending on roadway configuration. The most basic type of bikeway is a signed shared roadway. This facility is used to connect other bikeways – usually bike lanes - or designate preferred routes through high-demand corridors. Bozeman has a network of signed bike routes that operate both as shared roadways and, in some instances, with paved shoulders. Some of these roadways, such as Mendenhall Street, have shared lane markings installed which raise the visibility of bicycling and promote safer behavior by both bicyclists and motorists. Bozeman has approximately 18 miles of bike routes officially designated through signage.

Bike Lanes

Bike lanes are a type of separated bikeway that uses signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movement by both bicyclists and motorists. Bozeman has approximately 33 miles of on-street bike lanes.

Bike Lane – Peach Street

Shared-use Path – College Street

Shared-use Paths

Shared-use paths are off-street paved trails that are designated for the use of bicyclists, pedestrians, and other non-motorized users such as skateboarders and rollerbladers. Examples include the Oak Street shared-use path and the College Street to Huffine Lane pathway. Bozeman has approximately 32 miles of shared-use paths.

Natural Surface Trails

Natural surface trails are present in nearly every part of Bozeman. These facilities link neighborhoods, provide connections along streams (West Side Trail) and follow old railroad alignments like the Gallagator Trail and Story Mill Spur. These facilities fulfill, along with the rest of the sidewalk and shared use path network, both transportation and recreational functions. Bozeman has an extensive network that is constantly being expanded through developer built trails and other initiatives led by the City of Bozeman and Gallatin Valley Land Trust (GVLT). Much of the trail system has wayfinding and kiosks with maps and other information. Bozeman has approximately 92 miles of unpaved natural surface trails.

Natural Surface Trail – Gallatin Valley Regional Park

Bicycle Boulevard – Minneapolis, MN

Bicycle Boulevards

While not fully developed in Bozeman, bicycle boulevards are streets that are comfortable for most bicyclists to ride on due to low motorized traffic volumes and speeds. They are designated and designed to give bicycle travel priority. Bicycle boulevards are designated with signs, pavement markings, and wayfinding elements. Additionally, they create safe, convenient bicycle crossings of busy arterial streets. If necessary, they can also employ speed or volume management techniques to keep them comfortable for bicyclists by reducing speeds and cut-through traffic. The City of Bozeman has not officially designated any streets as bicycle boulevards, however, there are many streets that currently have many of these features including pavement markings, wayfinding signage, and even a diverter (South 6th Avenue).

Separated Bike Lanes

While not currently found in Bozeman, separated bike lanes combine the user experience of a separate path with the on-street infrastructure of conventional bike lanes through various forms of physical separation from adjacent traffic. Two such facilities are currently in place in Missoula.

Separated Bike Lane – Missoula, MT

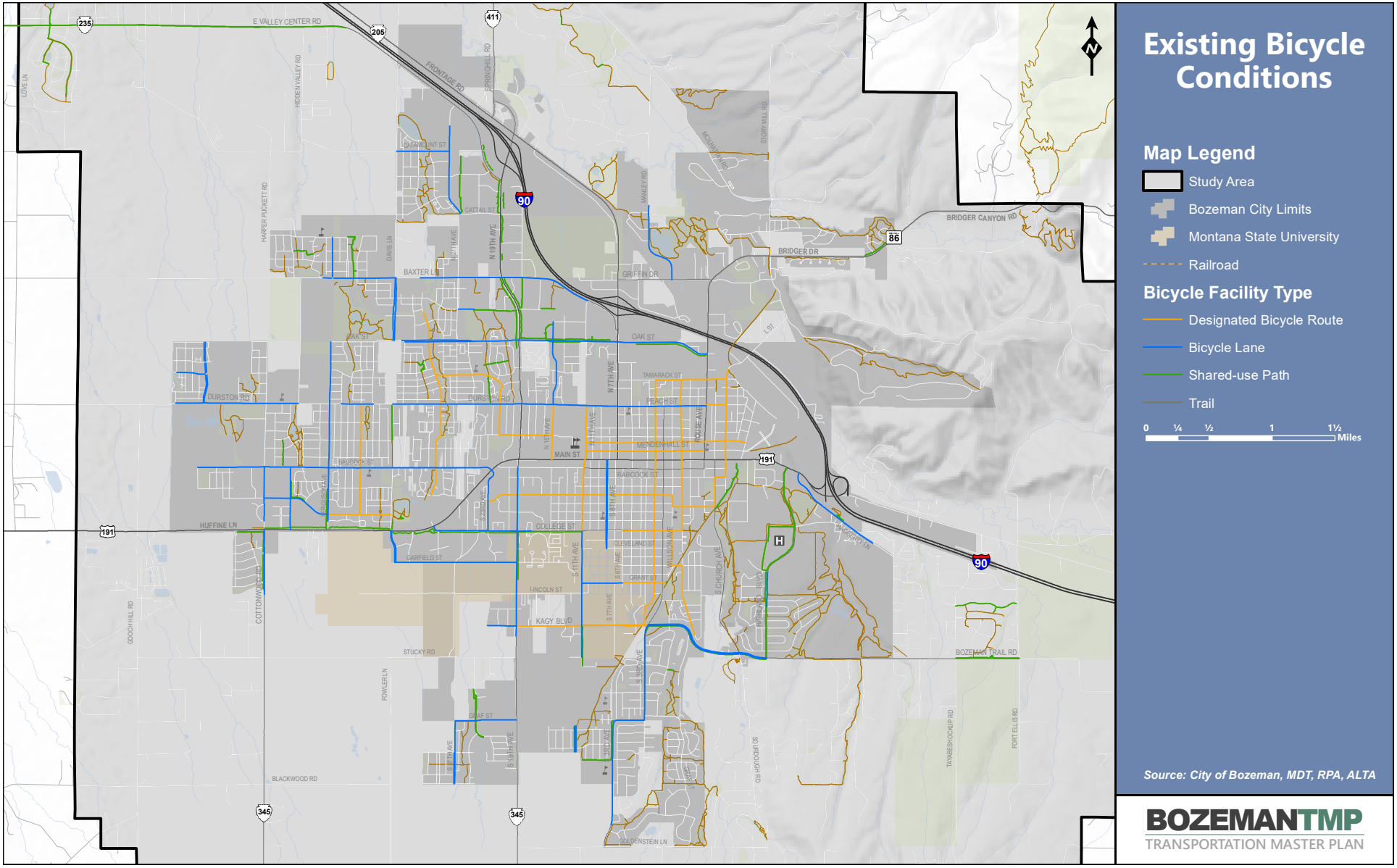


Figure 2.4: Existing Bicycle Conditions

2.1.2.2 Pedestrian Facilities

Bozeman's pedestrian facilities are generally good, with plentiful sidewalks that are typically in good condition. The City does have several challenges to achieving a fully connected pedestrian network. The following list describes these challenges. **Figure 2.5** presents the existing pedestrian network within the TMP study area.

Street Lacking Sidewalk

Neighborhoods Lacking Sidewalks

Many County subdivisions and some City neighborhoods lack sidewalks completely. Most of these areas were constructed in the 1970s and 1980s. The City has made attempts to bring sidewalks to some of these neighborhoods and met resistance from some of the residents.

Incomplete Subdivisions

The responsibility to construct sidewalks currently lies at the individual lot level when the lot is developed. This has resulted in piecemeal sidewalk connectivity in subdivisions that have not yet been fully built out. Developers are required to construct the sidewalks after three years if the lots are not developed. However, the economic down-turn of 2008 through 2013 left many developers bankrupt and resulted in significant gaps in the sidewalk network. This deficiency is not shown in **Figure 2.5** as it is fluid and changing regularly.

Gap in Pedestrian Network

Missing Sidewalk on Collector Street

Arterials and Collectors

Several of Bozeman's arterials and collectors were originally constructed to County standards many years ago. As the city has grown, many of these streets have been reconstructed to newer standards to include sidewalks. Many streets, such as West Babcock Street from 11th to 19th Avenues, have never been reconstructed.

Old Infrastructure

Many of Bozeman's older neighborhoods still have their original sidewalks, some of which have been in place for more than a century. While many are in good condition, some are cracked, heaved by tree roots, or lack accessible ramps at street corners. The City has been addressing these issues and making steady annual progress, however, there is a backlog that will still require many years of effort. According to section 12.20.035 of the Bozeman Municipal Code, the City may notify property owners that repairs are necessary and the property owner has 30 days for repair or replacement.

Root Heaving on Old Infrastructure

Flashing Beacons at Crosswalk

Crossings

Many of Bozeman's signalized and unsignalized pedestrian crossings could benefit from enhancements which would make the crossing more visible to motorists and more comfortable to pedestrians and trail users. Many key pedestrian desire lines, such as mid-block trail crossings, are not accommodated.

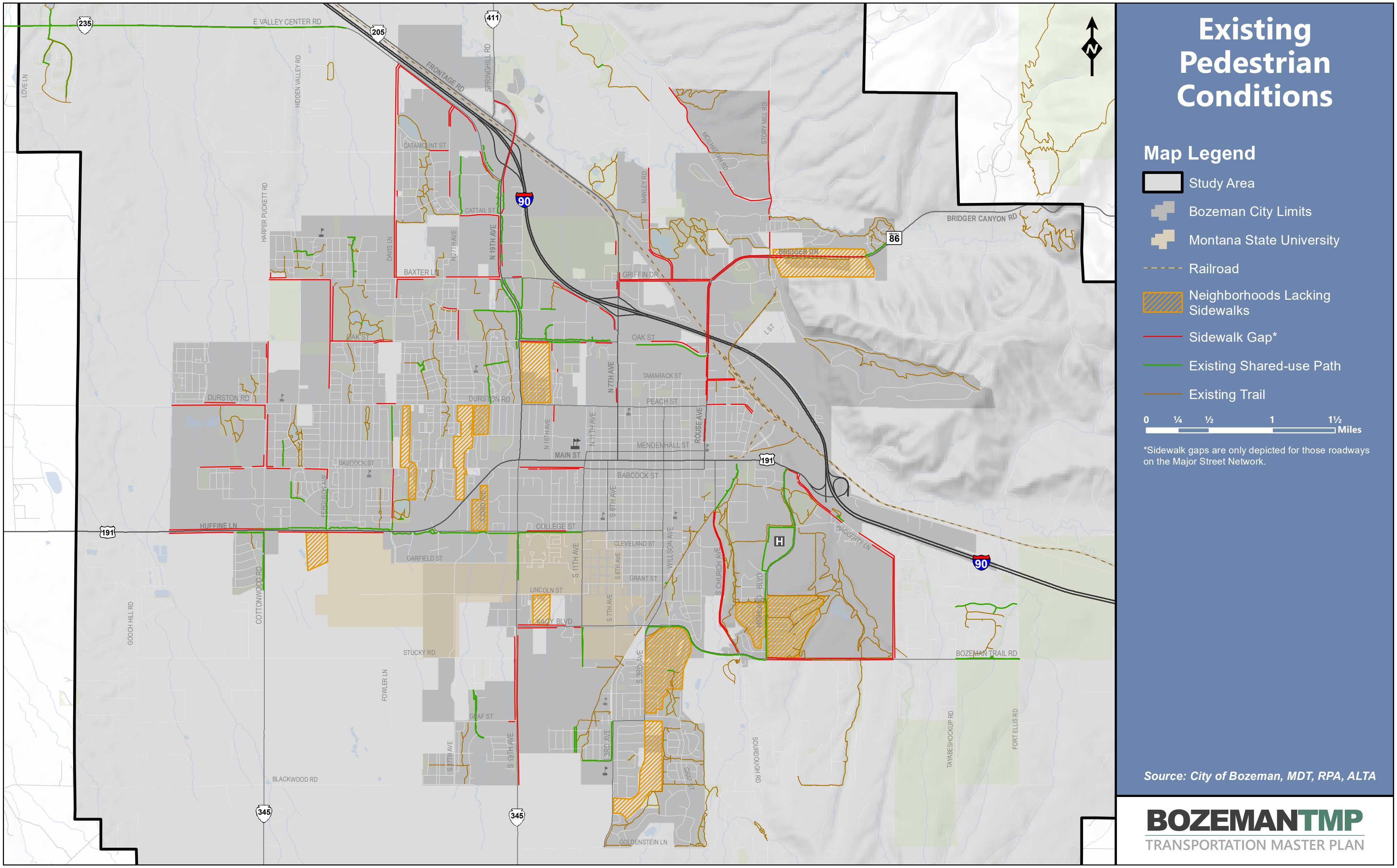


Figure 2.5: Existing Pedestrian Conditions

2.1.2.3 Transit Facilities

Streamline provides fixed route public transportation in Bozeman, Belgrade, and Livingston. Streamline began as a partnership between the Human Resource Development Council (HRDC), District IX, and the Associated Students of Montana State University (ASMSU). The partnership now includes the cities of Bozeman and Belgrade and the President's Office at Montana State University. Streamline was recently honored as one of five urban transit systems throughout the nation to be awarded an Outstanding Service Award by the Federal Transit Administration.

Streamline Bus

Riders are overwhelmingly MSU students, faculty, and staff. This is both because universities tend to generate significant ridership, and because Streamline's service is MSU-centric with routes and schedules designed to serve MSU students and employees. Streamline is fare free for all routes. Current routes provided by Streamline are described below[1]:

- **Daytime (Fixed Route):** Three daytime routes service Bozeman on one-hour headways between 6:30 AM and 7:15 PM, Monday through Friday. During the MSU school year, two routes are run at half-hour headways during the AM, between 6:30 AM and 9:30 AM, and PM, between 4:00 PM and 6:30 PM, peak hours.
- **Latenight (Deviated Fixed Route):** The Latenight routes were added in FY 2008. These two routes run between 9:00 PM and 2:30 AM, Thursday, Friday, and Saturday only when MSU is in session. One route provides half-hour service between MSU and downtown, while the other route provides one-hour service to a wider service area including Valley West and other areas north of Main Street. To ensure the safety of those on the bus, a security individual rides on all Latenight busses.
- **Bridger Bowl/Bohart Ranch (Deviated Fixed Route, Seasonal):** Operated during ski season, the Bridger Bowl/Bohart Ranch routes provide rides to and from Bridger Bowl and Bohart ranch between 8:00 AM and 4:45 PM on weekends only. This route is intended to address parking and congestion issues at the respective ski areas. A park-and-ride lot is available at the Gallatin County Fairgrounds.

[1] Streamline, Routes & Schedules, http://www.streamlinebus.com/routes-schedules/, accessed 03/29/2016.

- **Saturday Service (Fixed Route):** Saturday service is provided for the same four in town routes as the Daytime service from 7:30 AM to 6:15 PM on Saturdays. All routes operate at one-hour headways.
- **Livingston Commuter (Fixed Route):** The Livingston Commuter route consists of an AM and PM route to/from Livingston. The AM route departs Bozeman at 5:50 AM and returns at 7:30. The PM route picks up passengers around Bozeman between 4:35 and 5:25 PM before traveling to Livingston for a 6:10 PM stop.
- **Belgrade Commuter (Fixed Route):** The Belgrade Commuter route, called the Greenline Express, was created to meet increasing demand for public commuter service between Belgrade and Bozeman. Beginning in Belgrade every weekday, the first bus leaves from Belgrade at 6:35 AM and heads into Bozeman with several stops along the way before reaching MSU. The Greenline makes six trips a day – two in the morning, two in the afternoon, and two in the evening – with the last stop in Belgrade at 7:00 PM.

Streamline Ridership Trends

Ridership data are collected by the drivers when a passenger boards the bus. Monthly ridership data for all routes between fiscal year 2007 and 2015 were provided by Streamline. These data do not provide information for boardings and alightings at specific stops, rather the data are categorized as daytime, late night, Livingston, Bridger Bowl/Bohart Ranch, and Gardner/Mammoth. The Bridger Bowl/Bohart Ranch line runs on weekends during the ski season, approximately from early December to early April. The Gardner/Mammoth route was tested in fiscal year 2011, however, due to low ridership the route was canceled. Both the Bridger Bowl/Bohart Ranch and Gardner/Mammoth routes are not included in the following analysis. Furthermore, fiscal year 2010 was the first year to have weekday, Saturday, late night, and Livingston service, as such, the following analysis will include data from fiscal year 2010 to 2015.

Streamline ridership trends can be summarized on a year-to-year and a month-to-month basis. Data show that total ridership has increased year-to-year from 2010 until 2014. A slight decrease in ridership was seen in 2015. The average annual growth rate based on simple compound growth is 7.5 percent. **Figure 2.6** presents the total combined ridership for the weekday, Saturday, late night, and Livingston routes. Individually, the Saturday and late night categories showed increasing ridership in fiscal year 2015.

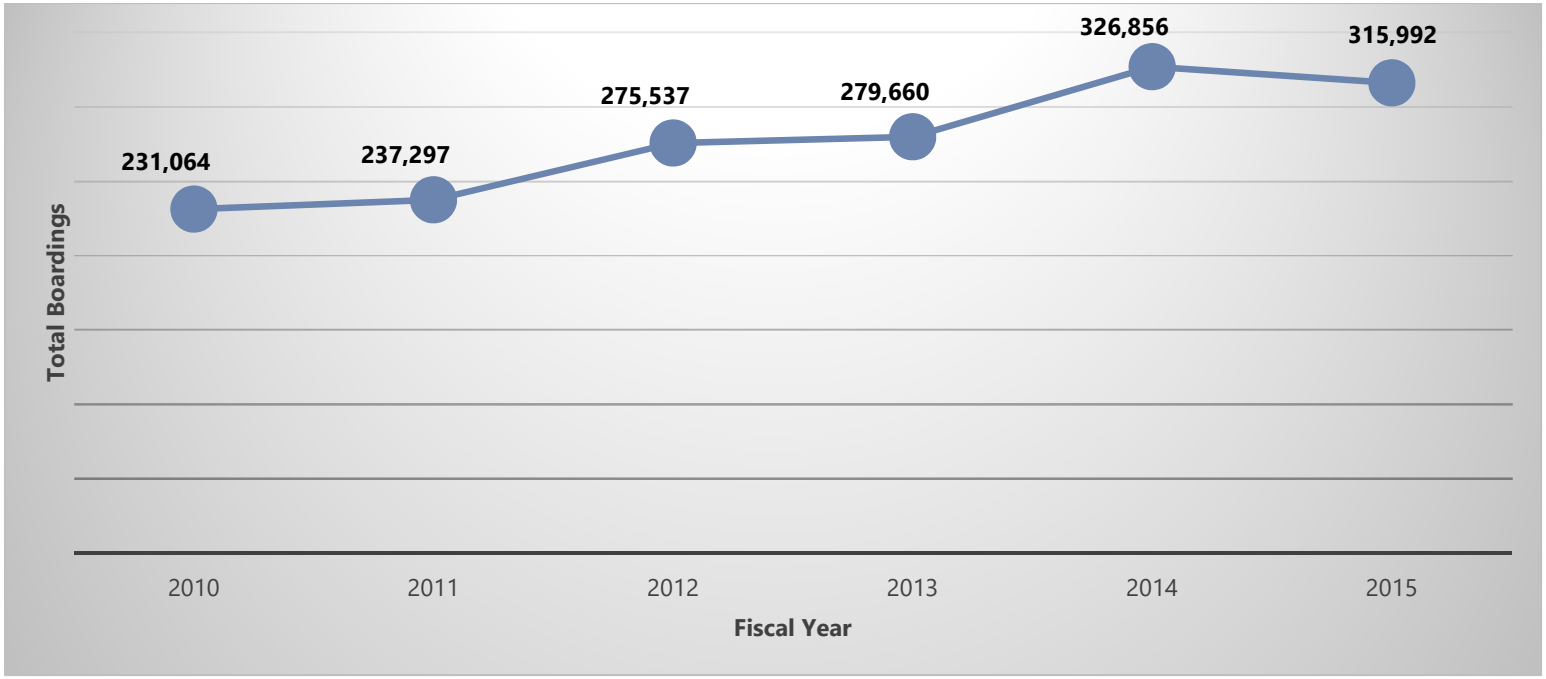


Figure 2.6: Yearly Ridership

On a month-by-month basis, seasonal variation in ridership can be seen with winter months generally having greater ridership as compared to summer months. It can also be seen that ridership in December decreases as compared to November and January. This trend could be attributed to the holiday season and university students returning home for winter break. The daytime, Saturday, and Livingston categories show less seasonal variation, possible due to more non-university users. The late night category shows the greatest variation throughout the year with peaks in April and October and a low in July. Weather and availability of other transportation modes may also contribute seasonal variation of ridership. **Figure 2.7** shows the average percentage of boardings for each month.

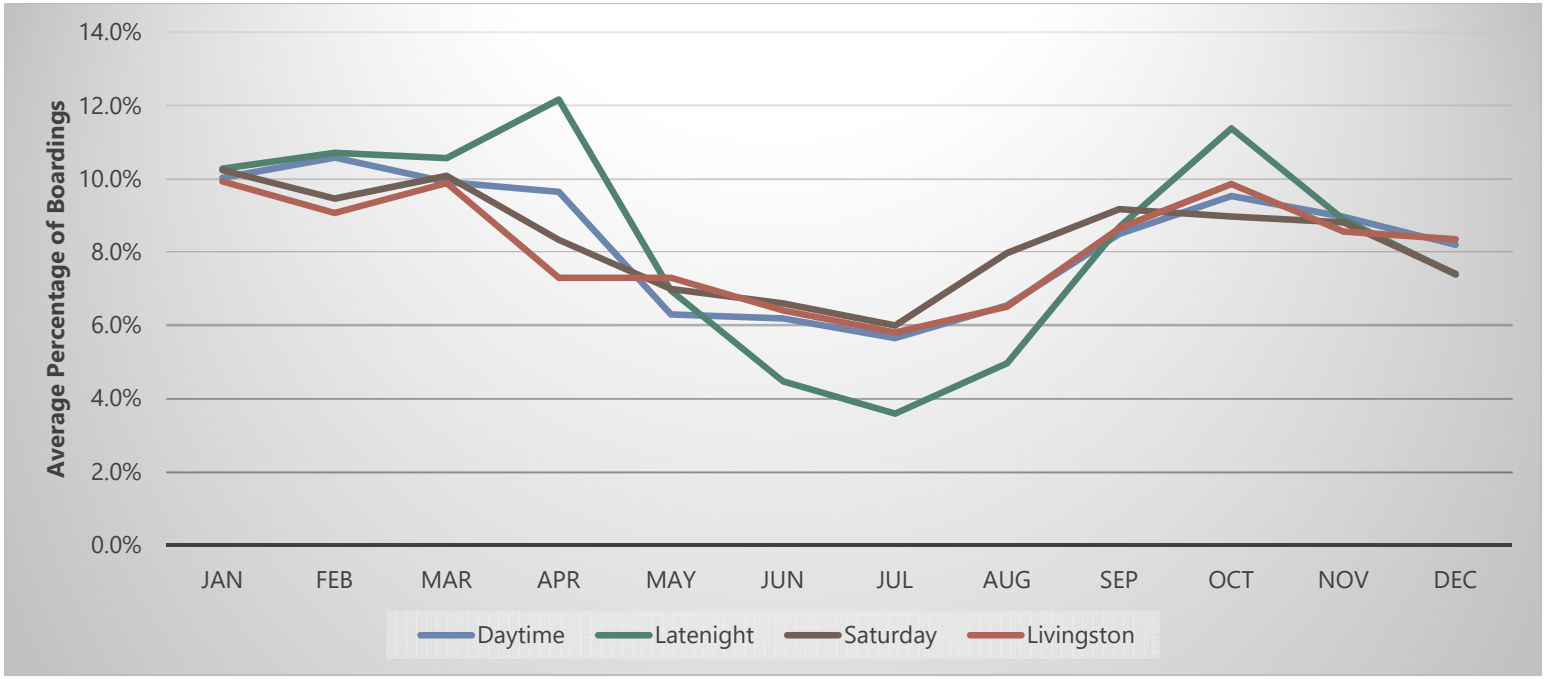


Figure 2.7: Monthly Ridership

Pedestrian and Bicycle Connectivity to Transit

Streamline's five weekday lines are all one-way loops and have been adjusted over the years to become more efficient and beneficial to the community. Bus stop amenities are varied and range from high-quality custom designed shelters with benches and information to simple bus stop signs with a route timetable. Walking and bicycling are natural compliments to transit use. Transit use can be improved by high-quality pedestrian and bicycle facilities that can fill in the "first or last mile" of transit journeys. For the most part pedestrian amenities are present along bus routes, with some exceptions, such as along collector or arterial roads that have not fully been built out yet.

2.1.2.4 Active Transportation Facility Maintenance

Active transportation facilities are maintained in different ways by different departments and groups within the City of Bozeman. The following describes current maintenance activities for active transportation facilities:

- **On-Street Pavement Markings:** Bike lane and crosswalk striping is replaced in conjunction with the overall pavement marking replacement. The City of Bozeman contracts restriping annually. Some pavement markings have been installed as recessed thermoplastic which lasts much longer. For example, when South 3rd Avenue was chip sealed in 2013, the existing thermoplastic pavement markings that were applied in the late 1990s were still in good condition. Streets are snow plowed by MDT and City crews. The City of Bozeman has worked in recent years to improve plowing of bike lanes so that they are functional during the winter months and to sweep them clear of debris in the spring.

- **Paved Shared-Use Paths:** Most of Bozeman's asphalt shared-use paths are under 15 years old, however, some are reaching the point where surface preservation is needed. One of the issues faced is the varying quality of construction as many of these facilities were built by developers. There are multiple examples of asphalt trails deteriorating due to improper construction. The City of Bozeman has responded to some spot location for repairs, however, there is no substantial funding or program in place to conduct maintenance. Parks and Recreation and the Streets Departments have worked together to manage the inventory of asphalt shared-use paths. Various departments including Streets, Forestry, Cemetery, and Parks and Recreation have plowing responsibilities. Parks has taken a larger role and has received additional equipment from the Streets Department.

- **Natural Surface Trails:** Natural surface trails are a cost effective facility type with nearly 100 miles of facilities in place. The City's Parks and Recreation Department has a "Trail Boss" position which organizes and conducts maintenance on 67 miles of natural surface trail – including 66 bridges. Additionally, the City of Bozeman partners with the GVLT for maintenance. GVLT maintains trails that are in the County and organizes volunteer work days on City trails. Natural surface trails are not maintained during the winter months.

2.1.2.5 Active Transportation Programs and Events

Since 2007, there have been many new programs created and sustained by a variety of groups within Bozeman. **Table 2.1** summarizes these programs.

Table 2.1: Active Transportation Programs and Events

Program	Summary	Group/Agency
Bike Counts	Each September since 2011 the Bozeman Area Bicycle Advisory Board (BABAB) has organized volunteers to count bicycles at 15 locations around Bozeman. The counts are conducted in accordance with the National Bicycle and Pedestrian Documentation Project.	BABAB
Bike Swap	Each May the Gallatin Valley Fairgrounds are utilized to sell used bicycle equipment. The event is well attended each year.	Gallatin Valley Bike Club
Bike to Work Week	Each May volunteers and local businesses work together to encourage and reward individuals for biking to work. "Energizer Stations" each morning provide free coffee and breakfast treats to participating bicyclists. Additionally, other bicycle themed events are organized.	BABAB, MSU
Bike Training/Education	Classes involving teaching the rules of the road, proper riding technique and bicycle safety are periodically taught at a variety of venues.	BABAB, MSU, Bike Kitchen
Bozeman Biking Website	The City of Bozeman hosts a website (http://www.bozeman.net/bicycles) that has some materials in development including the recommendations from the League of American Bicyclists. There are two other websites that could cause redundancy and confusion among users.	BABAB
Community Bikes	Complete bicycles are provided to individuals who are endorsed by a selection of participating local community organizations.	Bike Kitchen, Human Resource Development Council, Gallatin Valley Food Bank, Thrive, Haven, etc.
Community Shop	The Bike Kitchen has open tools and repair stands available any time during regular hours for members of the public to conduct and learn bicycle repair.	Bike Kitchen
Discovery Walks	In 2015, there were 15 community walks with a theme: art, history, bird watching, etc. The program reached 267 participants over 38 free guided walks. This has resulted in getting more people to know the trail system.	GVLT
Earn a Bike	Volunteers at the Bike Kitchen can pick out a bike frame and build a complete bicycle from it after 16 hours of volunteer time.	Bike Kitchen
High School Driver's Education and Safety	BABAB developed a presentation aimed at raising awareness of bicycling issues for the Bozeman High School Driver's Education class. The program was initiated in 2013. Furthermore, BABAB has a high school ambassador who has organized events targeted at Bozeman High students.	BABAB
Speed Enforcement	Mobile speed trailers are relocated frequently around Bozeman to remind drivers of the speed limit. Permanent radar speed signs are installed near most of the city's elementary schools.	Bozeman Police Department
Tail/Bike Maps	Both GVLT and the BABAB publish a hard copy paper map of the City of Bozeman. The maps contain similar information, with the GVLT map costing $3 and focusing on the trail system. The BABAB map focuses more on bicycle facilities and is free. There is no user friendly on-line map as of 2015.	GVLT, BABAB

Program	Summary	Group/Agency
Trail Ambassadors	Volunteers are present at trailheads and on the trail system to assist users with wayfinding, etiquette, and handing out dog bags and leashes. In 2015, there were 225 hours of patrols and 2,748 contacts made with the public	GVLT
Trail Volunteers	GVLT organizes volunteers to help maintain the trail system. GVLT oversees the work and the City provides materials. In fiscal year 2015, there were 753 volunteers amassing 2,823 volunteer hours.	GVLT, City of Bozeman
Trail Wayfinding	In 2015, GVLT added or replaced 575 signs for the trail wayfinding totems. GVLT has also installed 25 kiosks with 15 additional kiosks to be installed in the future.	GVLT
Trails Rx	In 2015, 15 health providers "prescribed" physical activity on the trail system. GVLT has provided the providers with trail maps, handouts, etc.	GVLT

2.1.1. Freight and Rail Network

Freight and Heavy Vehicles

The City of Bozeman is situated near the junction of Interstate 90 (I-90), US Highway 191 (US 191), and State Highway 84. I-90 connects Bozeman with Billings and Interstate 94 to the east and Butte and Interstate 15 to the west. US 191 extends south to West Yellowstone were it connects to US Highway 20. State Highway 84 travels west to its junction with US Highway 287 in Norris. Each of these routes serve regional, national, and international trade. As such, it is important that delivery vehicles are able to travel through the area in a safe and effective manner.

Within the study area, of major concern is the volume of heavy vehicle traffic in downtown Bozeman. A 2015 study found that of the approximately 300 heavy vehicles that use Main Street on a typical weekday, approximately 39 percent are through trips.[2] No truck routes are designated within the City of Bozeman. Roadway capacity, functional classification, and geography generally dictate which routes heavy vehicles use. Heavy vehicle traffic on major roadways within the study area is summarized in **Table 2.2**.

[2] *Understanding Commercial Truck Traffic Through Downtown Bozeman*, Prepared for the Downtown Bozeman Partnership by the Western Transportation Institute, June 2015

Table 2.2: Heavy Vehicle Traffic at Select Locations

Location	2014 AADT	Percent Heavy Vehicles	2014 Heavy Vehicles (per day average)
I-90 east of Main St.	15,330	14.2	2,178
I-90 btwn Main St and 7th Ave	16,820	12.5	2,097
I-90 btwn 7th Ave and 19th Ave	17,940	12.6	2,257
I-90 west of 19th Ave	19,050	11.8	2,257
Main St east of Highland Blvd*	12,680	3.1	392
Main St west of 19th Ave*	22,920	1.7	476
Huffine Ln west of Cottonwood Road*	23,000	2.1	476
19th Ave north of Baxter Ln*	25,030	1.9	260
7th Ave north of Oak St*	21,190	1.5	312
Oak St west of 7th Ave*	16.300	1.8	295
Durston Rd west of 7th Ave*	11,170	1.2	139
19th Ave north of College St*	17,120	1.5	254
Kagy Blvd east of 19th Ave*	13,560	1.1	150

** MDT does not collect classification data at these locations due to heavy traffic. Heavy vehicle percentages are derived based on adjustment formulas.*

The specific location of trucking activity centers can greatly affect the transportation network as a whole. For example, if a business wishes to receive daily deliveries from heavy vehicles, they would need to ensure that the trucks have a safe location to unload goods. If a loading dock or large parking area were not available, it is possible the truck would have to stop in the roadway while unloading (note that the latter does occur in some areas of Bozeman's downtown). This would block traffic and may create a safety hazard. Many businesses that generate a high volume of truck traffic tend to be located in industrial or commercial areas that allow for large unloading areas. While not exhaustive, **Figure 2.8** presents the locations of trucking activity centers located within the study area boundary.

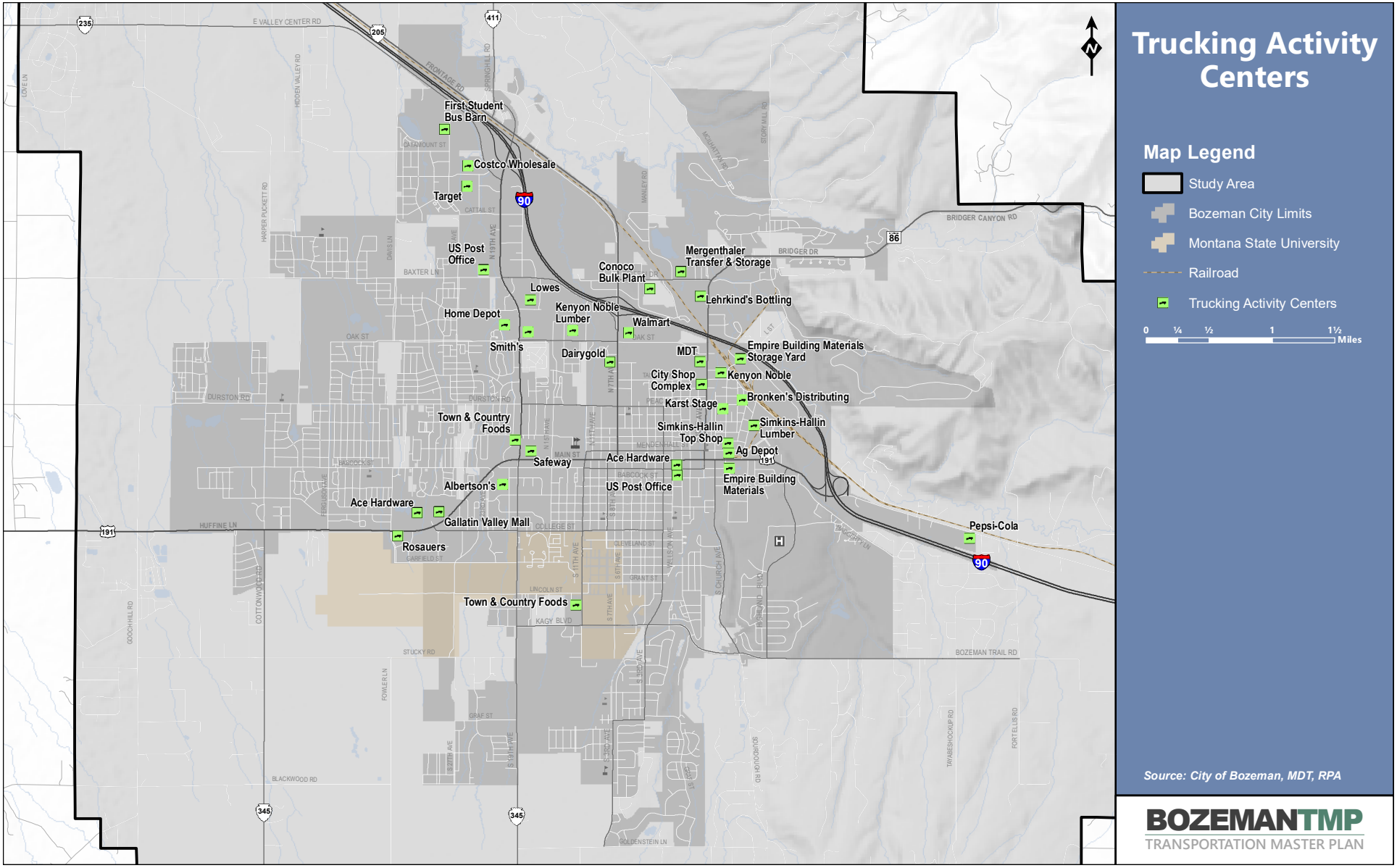


Figure 2.8: Trucking Activity Centers

Rail

The main rail line through Bozeman is currently owned by BNSF Railway (BNSF) and is leased to Montana Rail Link (MRL). The line is designated as Subdivision Two – Spurling to Helena. Speed limits range from 10 to 45 miles per hour on the main track and 10 to 35 miles per hour on turnouts, sidings, and other track. The section of track through Bozeman is designated as a Federal Railroad Administration Excepted Track, effectively limiting operations to a maximum of 10 miles per hour.

Data on the current number of daily trains through Bozeman are unavailable, however, in 2006, a total of 5,669 trains passed through Bozeman for an average of 16 trains per day[3]. MRL operates one local train from Livingston to Logan and back to Livingston Monday through Friday. This local train accounts for 520 trains per year. The number of cars in the local train is dictated by lumber pickups in Bozeman but averages about five cars per train. Through trains average approximately 110 cars per train

In Bozeman, railroad siding locations for loading and offloading (including local car gathering) currently only exist at the Idaho Pole site on North Wallace Street. The prospective Mandeville industrial park would include the second site.

A total of nine at grade crossings exist within the study area. Traffic control at these sites varies and includes crossbucks, gates, or post with flashing lights. **Figure 2.9** displays the location and traffic control for each at-grade rail crossing within the study area.

[3] *Mandeville Industrial Park Railroad Feasibility Study*, Prepared for the City of Bozeman by Great West Engineering, March 27, 2007

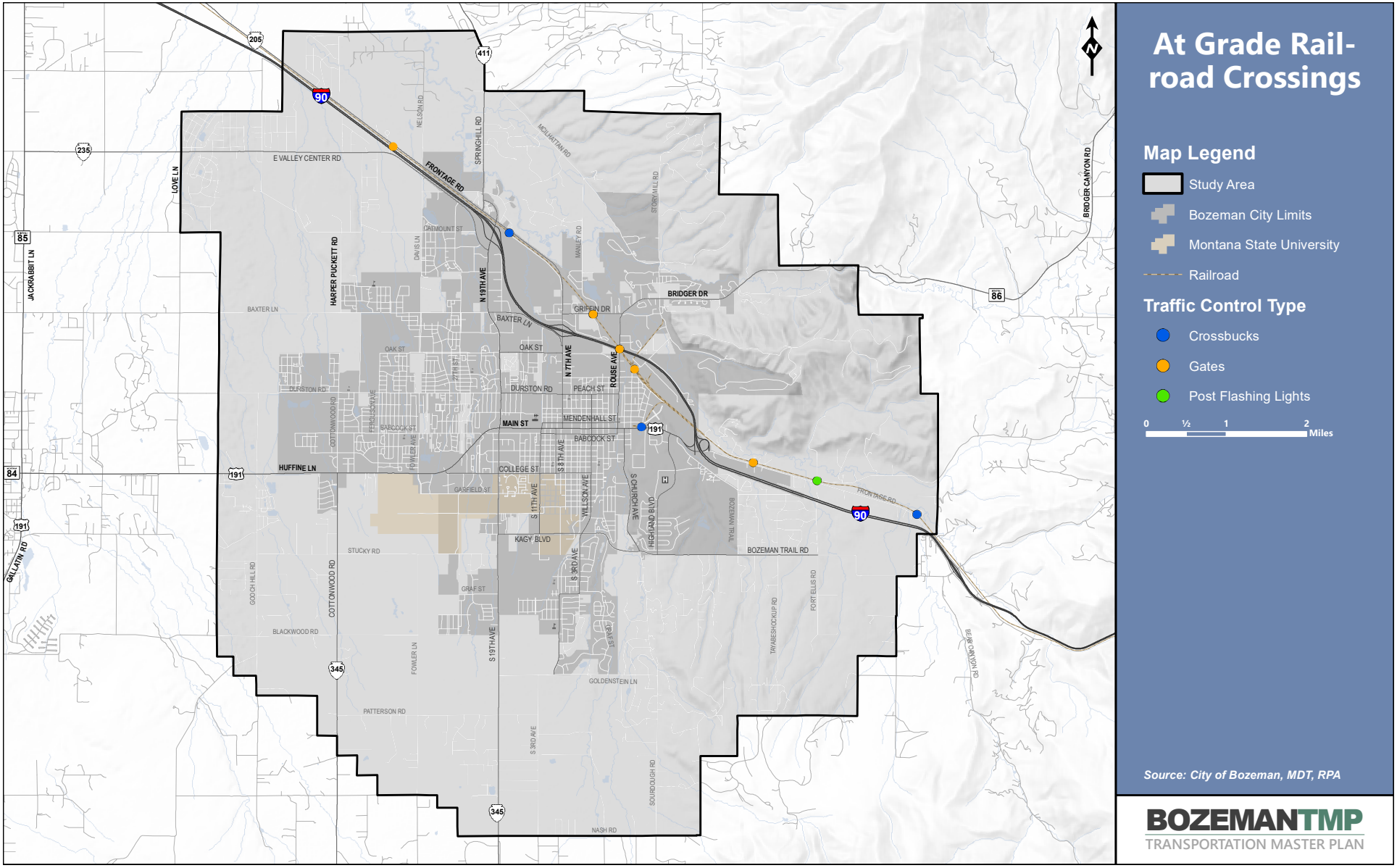


Figure 2.9: At Grade Railroad Crossings

2.2. Transportation Conditions

2.2.1. Existing Roadway Volumes and Capacity

Existing roadway traffic data were collected by MDT and the City of Bozeman. The data were used to establish traffic conditions and to provide reliable data on historic traffic volumes. Average annual daily traffic (AADT) counts for the year 2014 were used to represent existing conditions. The existing facility size for the major street network is presented in **Figure 2.10**. The existing AADT along the major street network is presented in **Figure 2.11**.

The capacity of the roadways is of critical importance when looking at the growth of the community. As traffic volumes increase, vehicle flow deteriorates. When traffic volumes approach and exceed the available capacity, users experience congestion and vehicle delay. As such, it is important to investigate the size and configuration of the existing roadways and to determine if these roads need to be expanded to accommodate the existing or projected traffic demands. The capacity of a roadway is based on a number of features including the number of lanes, intersection function, access and intersection spacing, vehicle fleet mix, roadway geometrics, and vehicle speeds. Individual roadway capacity varies greatly and should be calculated on an individual basis. However, for planning and comparison purposes, theoretical roadway capacities were developed based on simplistic roadway configurations. **Table 2.3** presents the capacities that have been used for this work. The values given in **Table 2.3** are not intended to be used to set any thresholds for roadway performance, but rather provide general information to be used for comparison purposes.

Table 2.3: Theoretical Roadway Capacity

Road Configuration	Capacity (vpd)*
2 Lane	12,000
2 Lane – Divided/TWLTL†	18,000
4 Lane	24,000
4 Lane – Divided/TWLTL†	32,000
Interstate	68,000

** Values represent planning level daily capacities developed for this TMP and are intended for comparison purposes only. Actual physical roadway capacity can vary greatly depending on roadway design features and access control.*
† Two-way Left-turn Lane

A roadway's capacity, and volume-to-capacity (v/c) ratio, can be used as a comparison tool when looking at the transportation system. The v/c ratio of a roadway is defined as the traffic volume on the roadway divided by the capacity of the roadway. **Figure 2.12** presents the resultant v/c ratios for the existing major street network. The v/c ratios help identify potential capacity deficiencies on the transportation system.

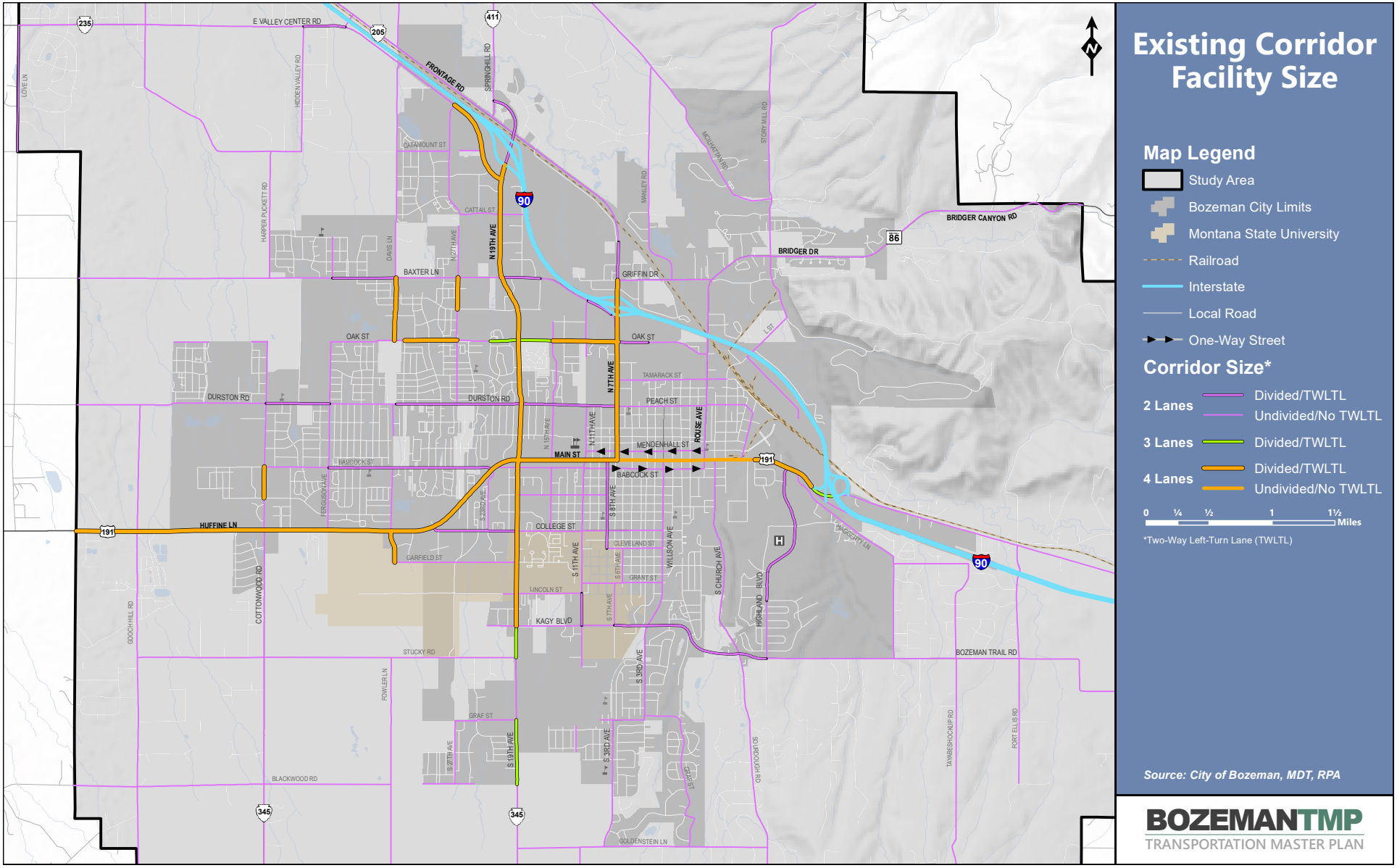


Figure 2.10: Existing Corridor Facility Size

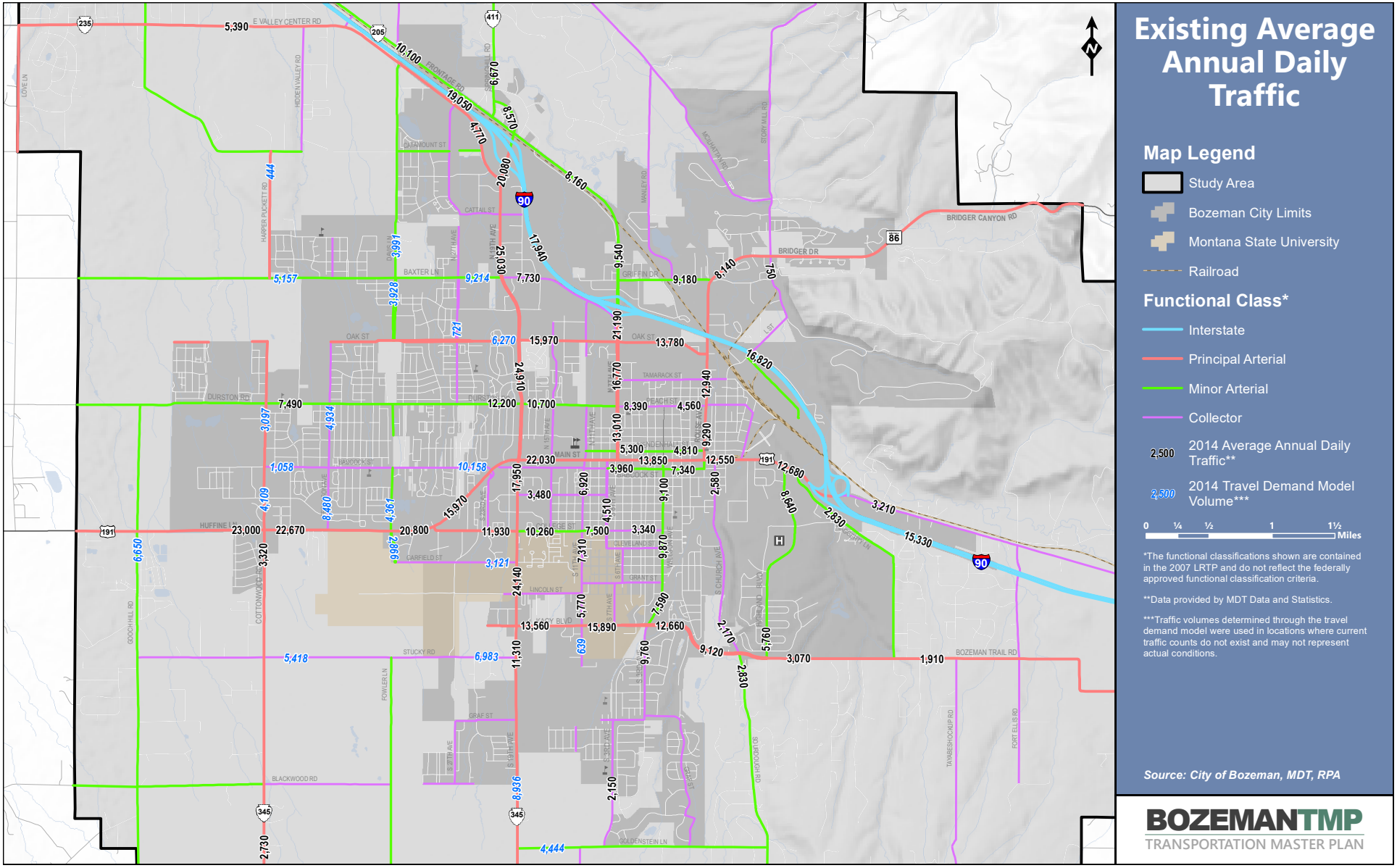


Figure 2.11: Existing Average Annual Daily Traffic

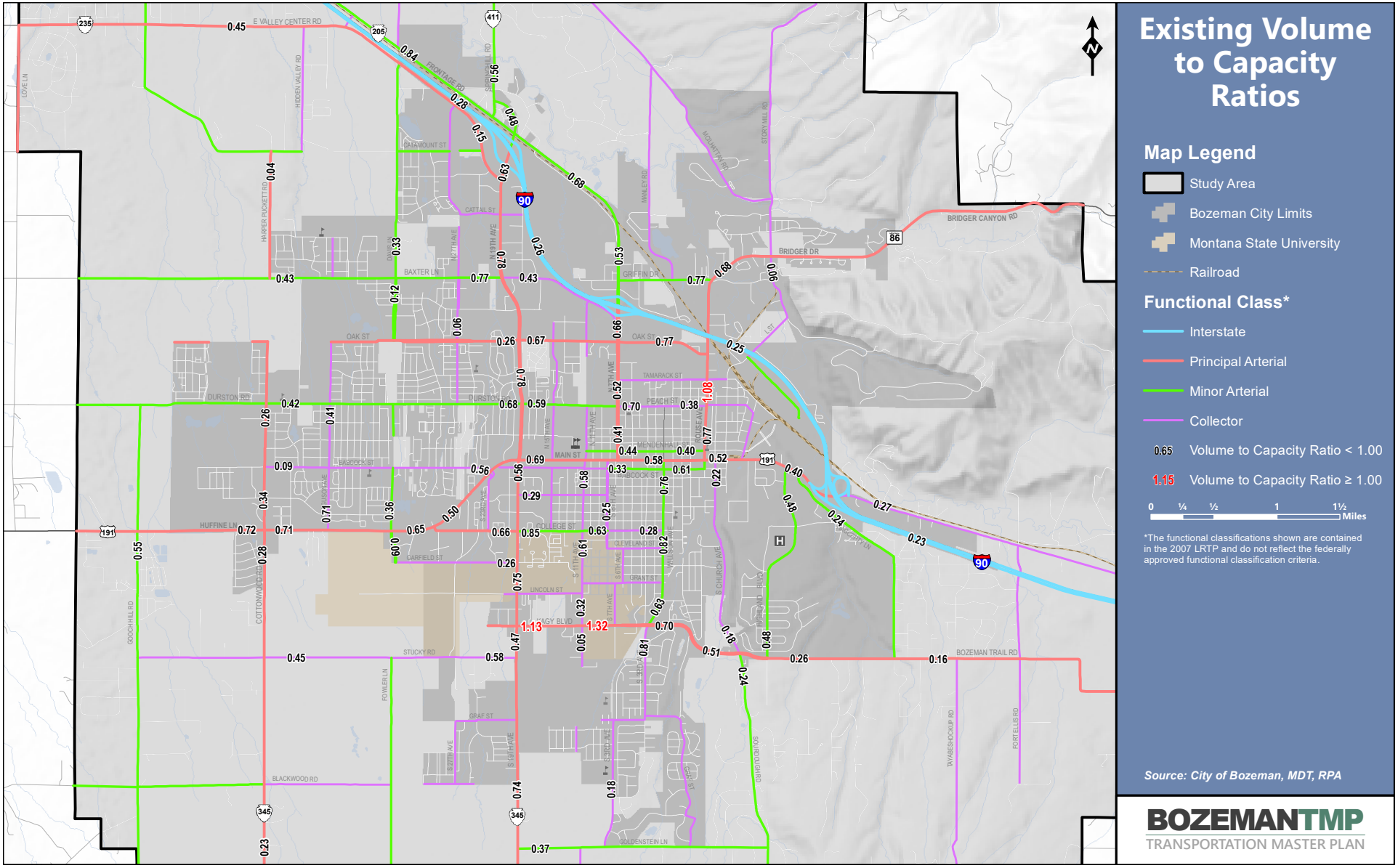


Figure 2.12: Existing Volume to Capacity Ratios

2.2.2. Active Transportation Data

Providing an accurate picture of pedestrian and bicycle activity within any community is difficult. Data are typically not available or not comprehensive enough to form a complete picture of active transportation behavior. Data for vehicles is, by comparison, more readily available. Both MDT and the City of Bozeman have collected regular pedestrian and bicyclist data for years, allowing long-term trends to be understood. Overall, Bozeman exhibits high levels of walking and bicycling by national standards. Bozeman is comparable to Missoula within the State of Montana. The following subsections summarize available data pertaining to active transportation.

2.2.2.1 Journey to Work/Commuting (ACS) 2010-2014 Data

The US Census has long been one of the only readily available sources of data to measure general levels of transportation choices. The data are limited to commute based trips to work and do not reflect the spectrum of potential trip types available. The American Community Survey (ACS) has supplemented the 10-year cycle of the US Census to provide additional annual data. For communities the size of Bozeman, annual data are not statistically valid, therefore five-year averages are used. This method provides some insight, however, it is slow to note changes over time. For walking and bicycling, the margins of error are over one percent. **Table 2.4** compares the City of Bozeman to Gallatin County and the State of Montana. City of Bozeman data are visualized in **Figure 2.13** by census block to show how patterns of resident commuting change depending on location. Neighborhoods near the historic core of Bozeman and those near MSU exhibit high overall active transportation modes, totaling over half of all commute trips south of Main Street. These levels reduce to approximately 30 and 15 percent as the census block generally gets farther away from downtown. It should be noted that the Valley West Area census block, defined by neighborhoods north of Huffine Lane and west of 19th Avenue, shows much lower levels of active transportation based on commuting. This could indicate needs with infrastructure or encouragement as the majority of this area is not any farther away from major destinations in Bozeman.

Table 2.4: Commute Mode Share and Travel Time

Mode Share	State of Montana	Gallatin County	City of Bozeman
Walking*	4.8%	6.0%	9.5%
Biking*	1.3%	3.1%	5.5%
Driving†	85.6%	81.7%	77.9%
Drove Alone	*75.3%*	*73.0%*	*71.3%*
Transit	0.9%	0.9%	1.3%
Travel Time to Work (mean)	18.0 min	16.8 min	14.6 min

Data: American Community Survey (ACS) Five Year Estimates, 2010-2015
** Due to small sample sizes the margin of error is approximately 1.2 percent for walking and 1.4 percent for bicycling*
† Driving mode share combines single occupancy vehicles and carpools

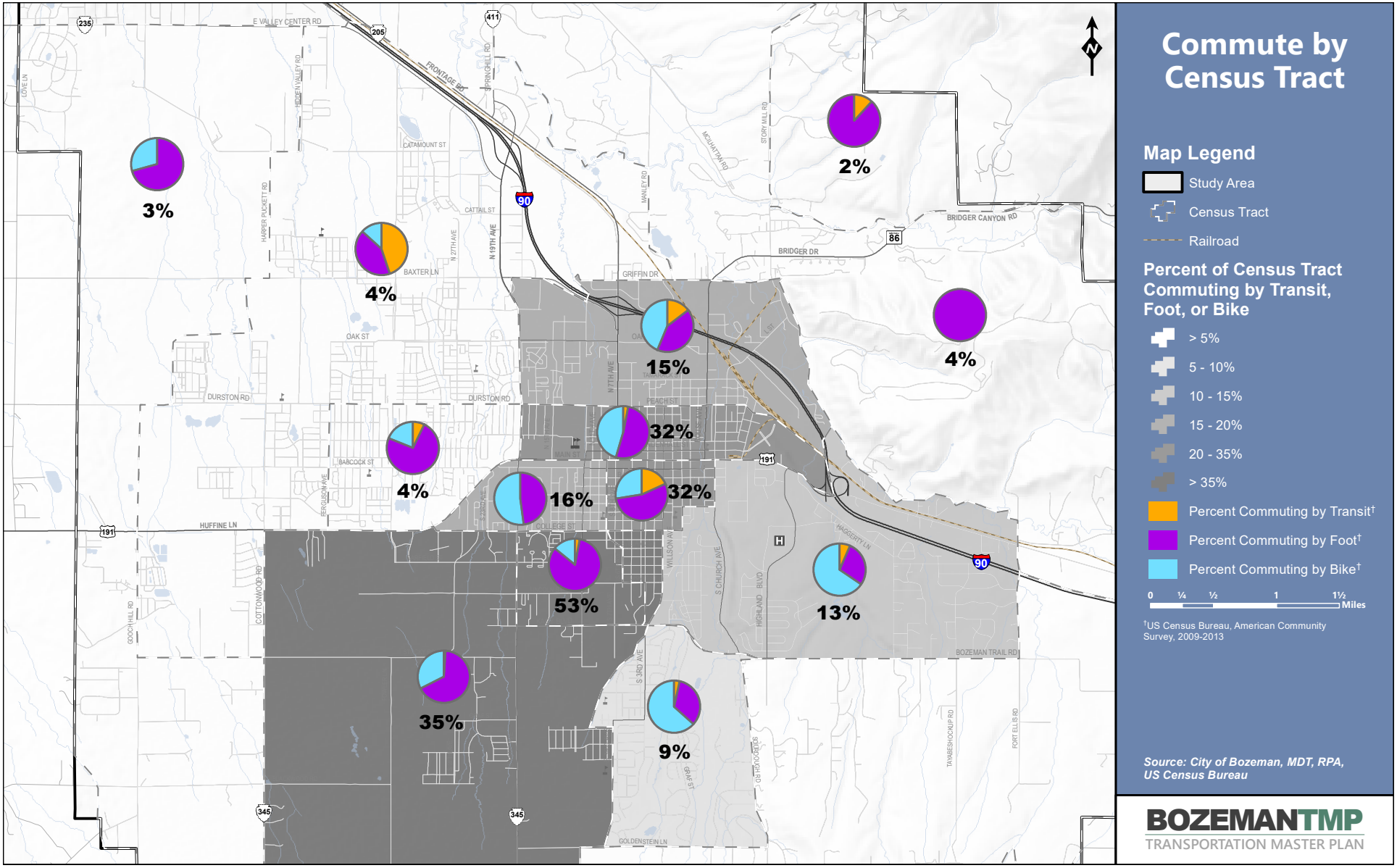


Figure 2.13: Commute by Census Tract

Commuting patterns have changed slightly when compared with those of the 2000 Census. While the margin for error inherent in the ACS is significant, it is likely that walking has gone down slightly or is statistically similar to the year 2000. A decrease could be due to a larger number of households being constructed at a greater distance to destinations over the interceding years. Bicycling has increased slightly and transit use has fluctuated between 1.3 to 2.0 percent over the past several years within the five-year ACS averages. Overall, active forms of transportation have seen a slight increase over the past 15 years. **Figure 2.14** compares the year 2000 mode shares against the ACS years 2010-2014 shares.

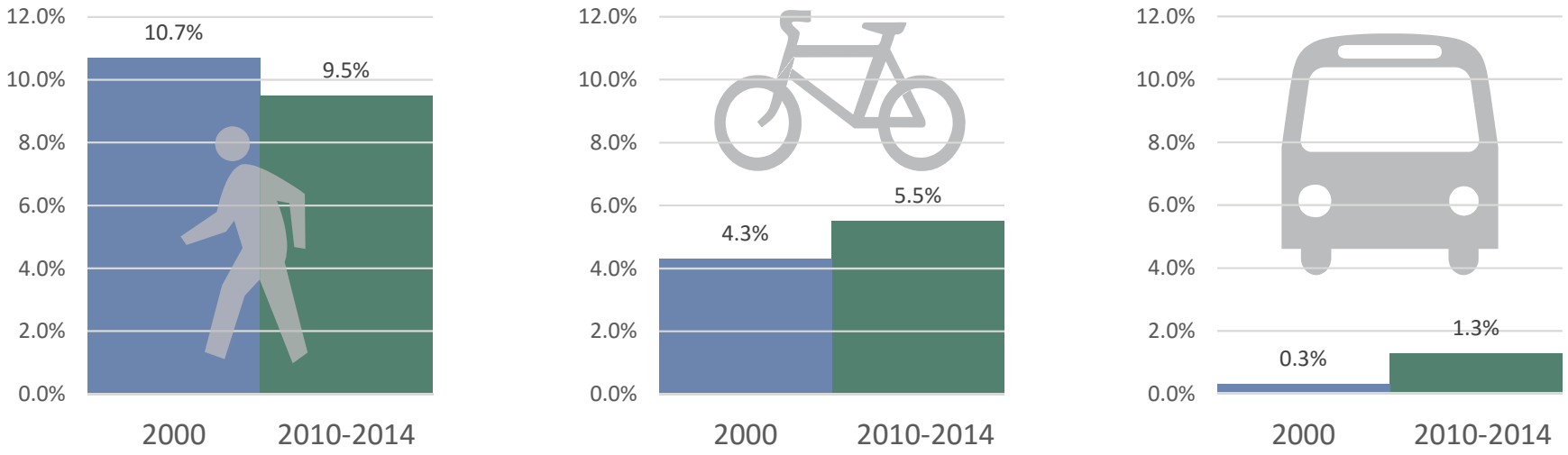


Figure 2.14: Commute Mode Share Changes from Year 2000

It is interesting to compare commute mode share from Bozeman with other peer cities. Each of the cities depicted in **Figure 2.15** are college towns in a northern climate. Davis, California was included as a similar city that has invested heavily in active transportation since the 1960s.

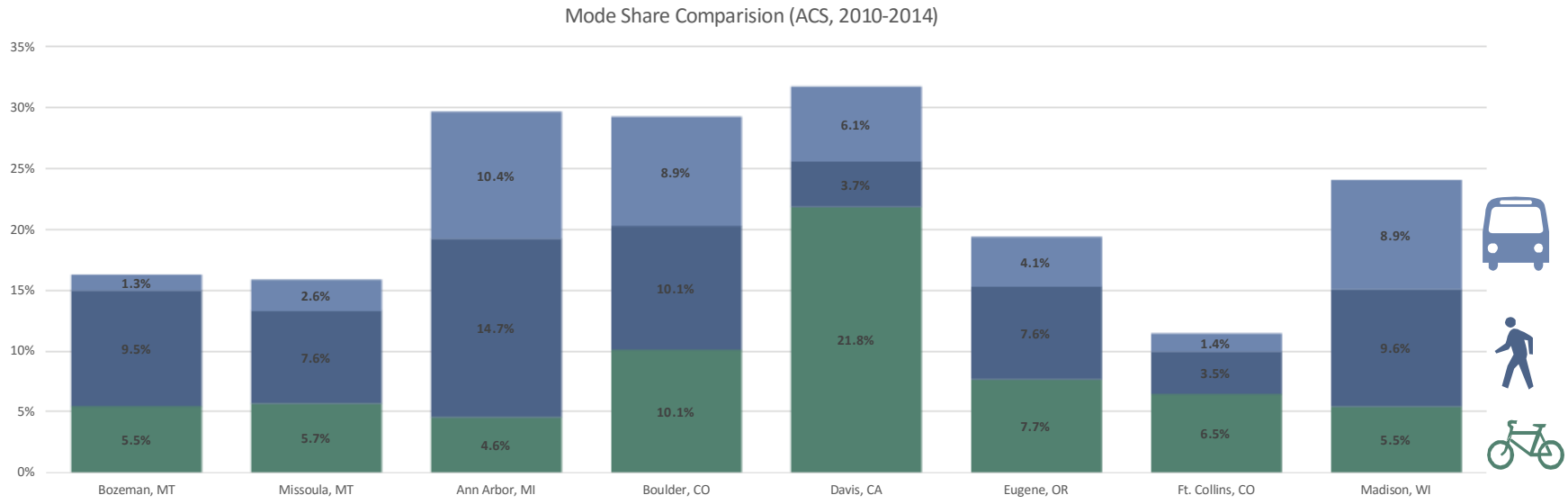


Figure 2.15: Peer Cities Commute Mode Share

2.2.2.2 National Household Travel Survey (NHTS) 2009 Data

Data from the National Household Travel Survey (NHTS) provides mode share data aggregated at the national level for all trips and not just commute to work trips. For example, NHTS indicates that for every one bike to work trip, there are another 1.6 utilitarian bike trips (shopping, personal trips, transporting others, medical or dental visits, meals, or other reasons), 0.5 bike to school trips, and 4.8 social or recreational trips. Overall bike to work trips represent only approximately 7.5 percent of all bike trips nationally. It should be noted that approximately 41 percent of bike trips counted by NHTS are return home trips, indicating many bicyclists perform part of their round trip by other means. While it is likely that travel patterns in Bozeman, particularly recreational based travel, do not match the national averages, it is very likely that the ACS commute mode share noted in **Table 2.2** under represents overall mode share and the overall levels of walking and bicycling in Bozeman.

2.2.2.3 Bozeman Bike Counts

The Bozeman Bicycle Advisory Board (BABAB) has organized annual volunteer based counts at 15 locations throughout Bozeman during the second week of September. This has allowed annual comparisons of locations, however, the weather and air quality can have a profound impact on the observed numbers. During the 2012 count for example, Bozeman was experiencing poor air quality due to area and regional fires and the counts were lower. In 2014 and 2015, the count week overlapped with significant rain on all three days. Numbers from these

efforts yielded approximately 40 to 60 percent fewer bicyclists counted. Due to the limited number of days, weather variability, and short count period, it is difficult to make conclusions about overall trends in bicycle use. Some of the numbers, however, are interesting. For example, on Tuesday, September 10th, 2013 volunteers counted 2,500 bicyclists from 5:00 to 7:00 PM across the 15 count locations. When considering the many other locations throughout Bozeman that were not counted, it stands to reason that many thousands of bicycle trips were taken that day. One relationship that can be visualized is the impact good or bad weather has on bicycling in Bozeman. Current weather was recorded for each count day. These temperature data are plotted against the number of bicyclists counted (including some interpolation for missing data) in **Figure 2.16**. The weather is noted in the data points to show that low temperatures and rain depress count numbers while warmer temperatures increase these numbers. Significant wind seems to potentially have the ability to also impact count numbers. Smoke from local fires had only a minor impact on counts as compared to similar temperature days.

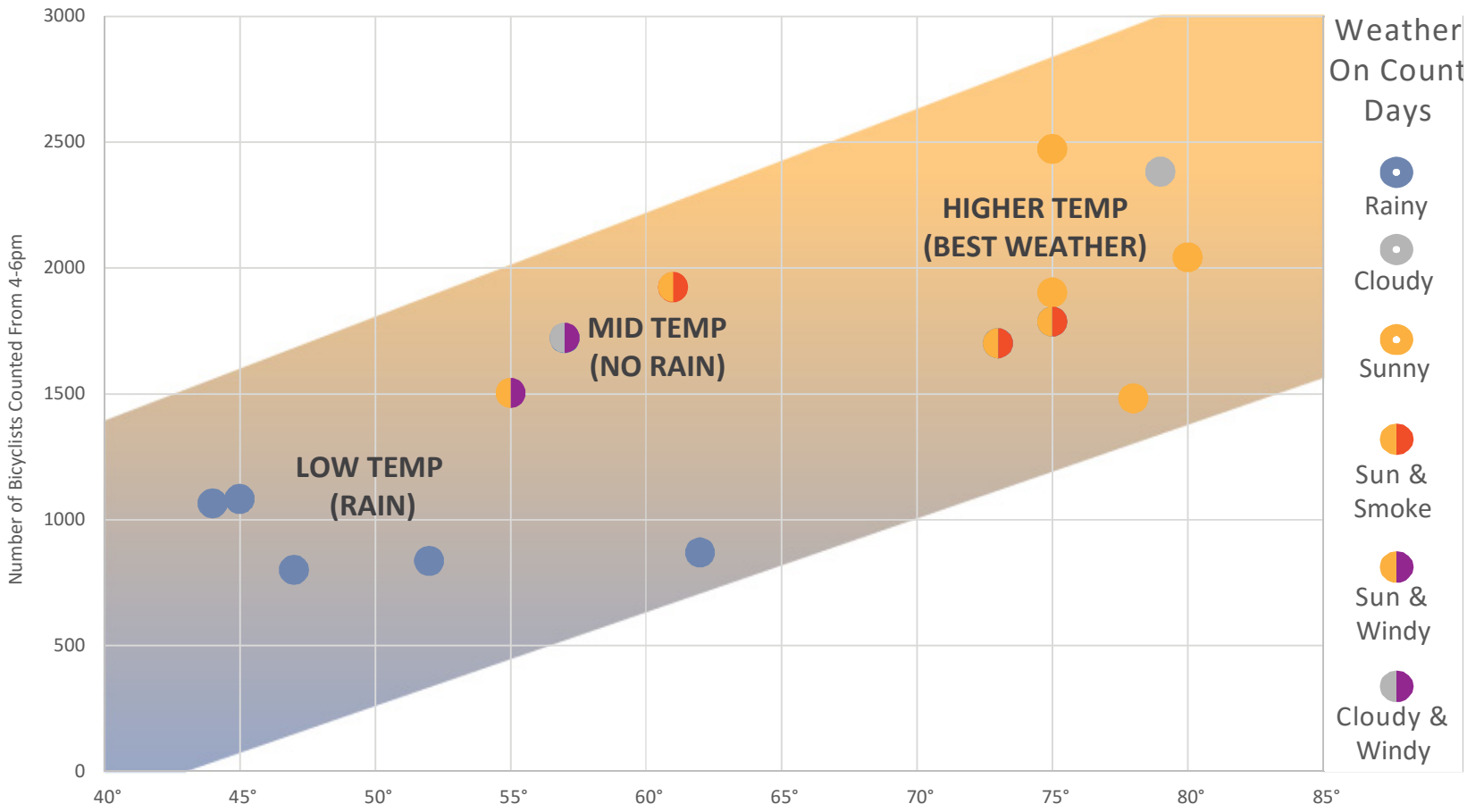


Figure 2.16: Annual Bozeman Bike Counts (2011-2015)

2.2.2.4 Seasonal Variation

Climates like Bozeman experience variable seasonal conditions characterized by long winter and shoulder seasons and a short summer. Data from cities in similar climates show significant differences in walking and bicycling rates throughout the year. **Figure 2.17** shows data taken in Missoula in 2015 with a continuous automatic counter near the University of Montana. Bicycling rates peak sharply from June through September before dropping off in the winter months. Walking rates are more consistent over the year indicating less sensitivity to cold and snow conditions than bicycling.

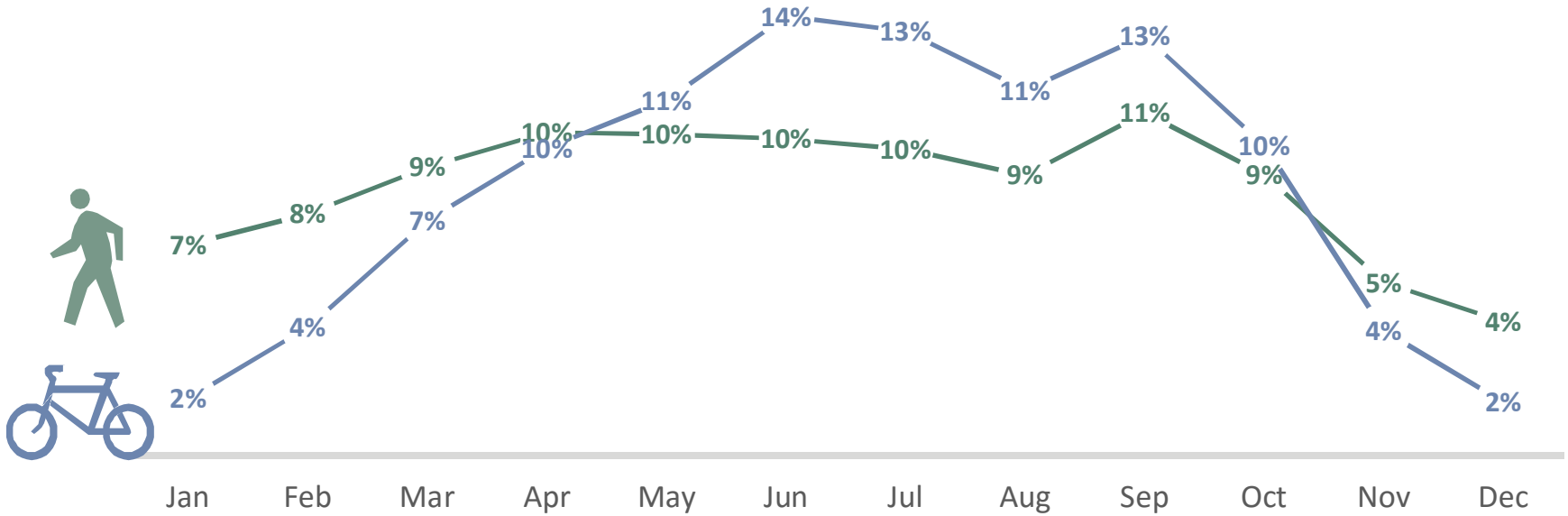


Figure 2.17: Seasonal Variations in Walking and Bicycling (Missoula – 2015)

Traffic counts conducted as part of the data collection phase of this TMP included pedestrian and bicyclists. While these data are not comprehensive or city-wide, they do provide a snapshot of mode share at intersections and the variability in mode share around the city. Mode share at four intersections is presented in **Figure 2.18**.

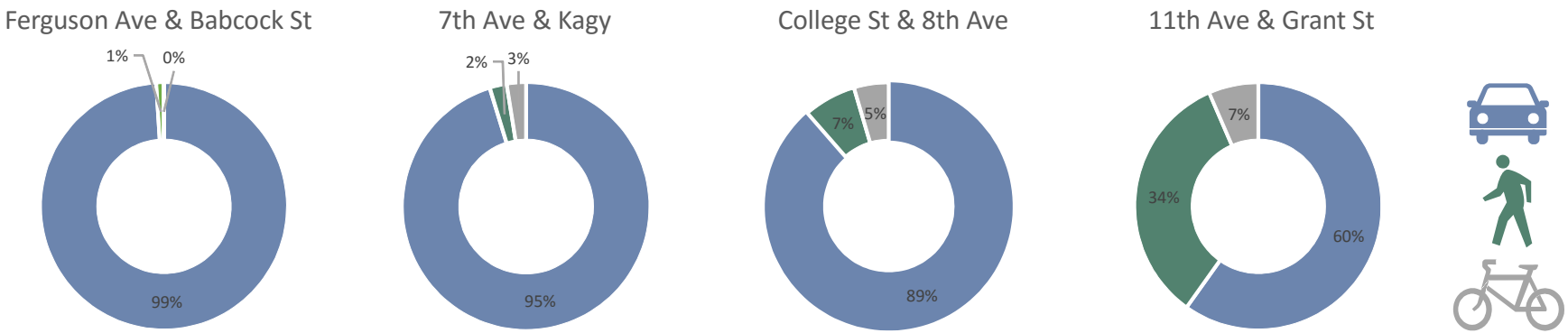


Figure 2.18: Mode Share at Select Intersections

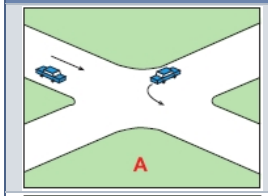
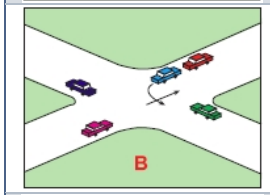
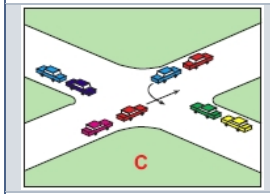
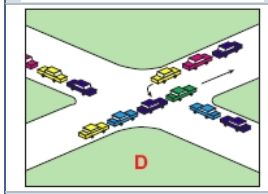
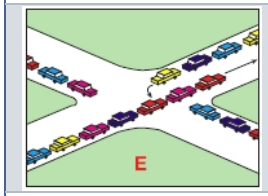
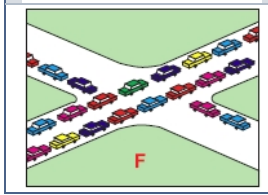
2.2.3. Intersection Operations

Urban road systems are ultimately controlled by the efficiency of the major intersection. High amounts of vehicle delay at major intersections directly reduces the number of vehicles that can be accommodated along the road during peak hours. As a result of this strong impact on corridor function, intersection improvements can be a cost-effective means of increasing a corridor's traffic volume capacity. In some circumstances, corridor expansion projects may be able to be delayed with targeted intersection improvements. Due to the significant portion of total expense for road construction projects used for project design, construction mobilization, and adjacent area rehabilitation, a careful analysis must be made of the expected service life from intersection improvements. If adequate design life can be achieved with only improvements to the intersections, then a corridor expansion may not be the most effective solution. With that in mind, it is important to determine how well the major intersections are functioning by evaluating their performance.

Intersection performance is evaluated in terms of vehicle delay. The amount of vehicle delay experienced at an intersection correlates to a measure called level of service (LOS). LOS is used as a means for identifying intersections that are experiencing operational difficulties, as well as a means to compare multiple intersections. The LOS scale represents the full range of operating conditions. The scale is based on the ability of an intersection or street segment to accommodate the amount of traffic using the intersection. The scale ranges from "A" which indicates little, if any, vehicle delay, to "F" which indicates significant vehicle delay and traffic congestion. **Table 2.5** portrays a graphical representation of LOS.

The LOS at 63 intersections within the study area was calculated. Data were collected during the fall of 2015 at 30 of the 63 intersections (11 signalized and 19 unsignalized locations). Each intersection was counted during the peak hours, defined as 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Additionally, peak hour turning movement counts were obtained from MDT for 15 study intersections (10 signalized and 5 unsignalized locations). Data at these locations were collected on various dates over the past few years. The remaining intersection counts were provided by various sources and were collected as part of recent planning efforts. Intersections where peak hour turning data were collected are presented in **Figure 2.19**.

Table 2.5: Intersection LOS Descriptions

LOS	Description	Average Delay per Veh. (sec)	
		Signalized	Unsignalized
	Traffic moves freely, low volumes accompany the free flow condition. At signalized intersections, progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. At unsignalized intersections, nearly all drivers find freedom of operation with very little time spent waiting for an acceptable gap. Very seldom is there more than one vehicle in queue.	< 10	<10
	Traffic moves fairly freely, volumes are somewhat low. At signalized intersections, there is good progression and/or short cycle lengths. Vehicles generally clear on one green phase. At unsignalized intersections, some drivers begin to consider the average control delay an inconvenience, but acceptable gaps are still very easy to find. Occasionally there is more than one vehicle in queue.	10 to 20	10 to 15
	Traffic moves smoothly, volumes are beginning to increase. At signalized intersections, higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping. At unsignalized intersections, average control delay becomes noticeable to most drivers, even though acceptable gaps are found on a regular basis. It is not uncommon for an arriving driver to find a standing queue of at least one additional vehicle.	20 to 35	15 to 25
	Traffic approaching unstable flow, the influence of congestion becomes more noticeable. At signalized intersections, longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. At unsignalized intersections, average control delay is long enough to be an irritation to most drivers. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives	35 to 50	25 to 35
	Unstable traffic flow, volumes at or near capacity. At signalized intersections, the high delays generally indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences. At unsignalized intersections, drivers find the length of the average control delay approaching intolerable levels. Acceptable gaps are hard to find because there is a standing queue of vehicle already waiting when the driver arrives.	50 to 80	35 to 50
	Saturation condition, volumes are over capacity. This is considered to be unacceptable to most drivers. This condition occurs with oversaturation. At signalized intersections, it may occur at high volume/capacity ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values. At unsignalized intersections, delays are high because acceptable gaps are hard to find. Acceptable gaps are hard to find because there is a standing queue of vehicles already waiting when the driver arrives.	> 80	> 50

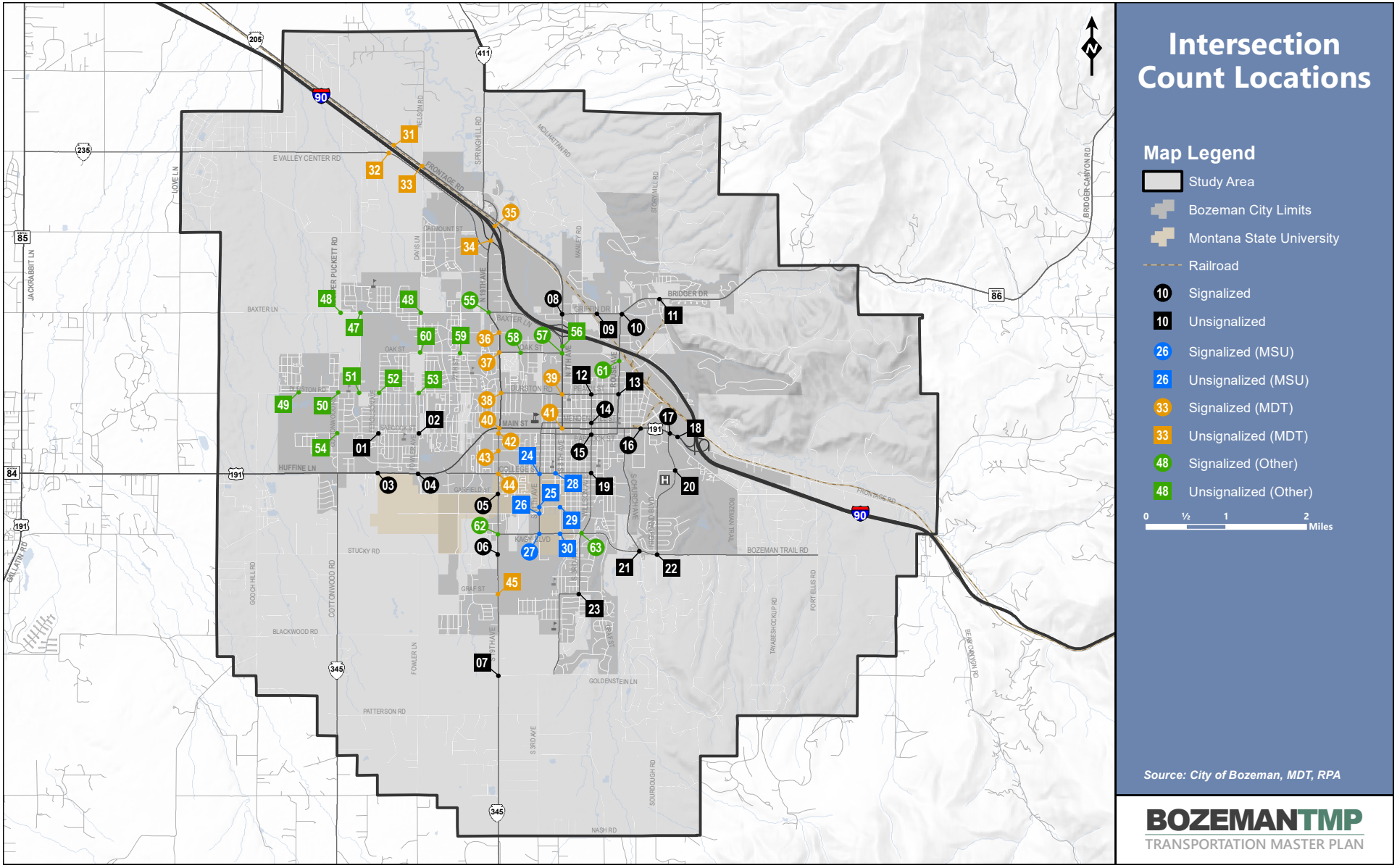


Figure 2.19: Intersection Count Locations

2.2.3.1 Signalized Intersections

For signalized intersections, the LOS is based on the average stopped delay per vehicle. The relationship between LOS and average stopped delay per vehicle was previously identified in **Table 2.5**. The procedures used to evaluate signalized intersections use detailed information on geometry, lane use, signal timing, peak hour volumes, arrival types, and other parameters. An intersection is determined to be functioning adequately if it is operating at LOS C or better. **Table 2.6** presents the LOS and average vehicle delay for the signalized intersections during the AM and PM peak hours. The existing intersection LOS is shown in **Figure 2.20**. Detailed results for individual turning movements are provided in **Appendix A**.

Table 2.6: Existing Signalized Intersection Level of Service

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
03	Ferguson Avenue and Huffine Lane	15.4	B	13.6	B
04	Fowler Avenue and Huffine Lane	25.8	C	26.5	C
05	19th Avenue and Garfield Street	13.0	B	12.6	B
06	19th Avenue and Stucky Road	12.2	B	12.6	B
08	7th Avenue and Griffin Drive	13.4	B	24.9	C
10	Rouse Avenue and Griffin Drive	12.9	B	13.7	B
14	Willson Avenue and Mendenhall Street	13.5	B	18.0	B
15	Willson Avenue and Babcock Street	11.9	B	12.5	B
16	Broadway Avenue and Main Street	7.8	A	9.7	A
17	Highland Boulevard and Main Street	14.1	B	36.7	**D**
27	11th Avenue and Kagy Boulevard	22.6	C	28.5	C
35	19th Avenue and I-90 WB Ramp	12.7	B	15.5	B
36	19th Avenue and Tschache Way	27.5	C	14.5	B
37	19th Avenue and Oak Street	27.6	C	24.5	C
38	19th Avenue and Durston Road	20.8	C	27.6	C
39	7th Avenue and Durston Road/Peach Street	28.1	C	32.7	C
40	19th Avenue and Main Street	44.6	**D**	53.2	**D**
41	7th Avenue and Main Street	14.4	B	12.7	B
42	19th Avenue and Babcock Street	*Data Unavailable*		23.4	C
43	19th Avenue and Koch Street	9.6	A	10.4	B
44	19th Avenue and College Street	20.5	C	20.8	C
50	Cottonwood Road and Durston Road	19.4	B	18.7	B
55	19th Avenue and Baxter Lane	24.0	C	24.5	C
57	7th Avenue and Oak Street	21.9	C	44.6	**D**
58	15th Avenue and Oak Street	18.1	B	16.9	B
61	Rouse Avenue and Oak Street	14.5	B	13.2	B
62	19th Avenue and Kagy Boulevard	14.8	B	18.5	B
63	Willson Avenue/3rd Avenue and Kagy Boulevard	27.0	C	24.7	C

2.2.3.2 Unsignalized intersections

LOS for two-way stop (TWS) controlled intersections are based on the delay experienced by each movement individually within the intersections, rather than on the average stopped delay per vehicle at the intersection. This difference from the method used for signalized intersections is necessary since the operating characteristics of stop-controlled intersection are substantially different. Driver expectation and perceptions are entirely different. For two-way stop-controlled intersections, the through traffic on the major (uncontrolled) street experiences no delay at the intersection. Conversely, vehicles turning left from the minor street experience more delay than other movements and at time can experience significant delay. Vehicles on the minor street which are turning right or going across the major street experience less delay than those turning left from the same approach. Due to this situation, the LOS is based on the average delay incurred at the worst performing movement.

For all-way stop (AWS) and roundabout controlled intersections, LOS is based on average vehicle delay experienced at the intersection. This methodology is similar to that of signalized intersections. The results of the LOS analysis for the unsignalized intersections are presented in **Table 2.7**. The existing intersection LOS is shown in **Figures 2.20**. Detailed results for individual turning movements are provided in **Appendix A**.

Table 2.7: Unsignalized Intersection Level of Service

ID	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS
01	Ferguson Avenue and Babcock Street	TWS	50.6	F	67.4	F
02	Fowler Avenue and Babcock Street	TWS	20.5	C	45.0	E
07	19th Avenue and Goldenstein Lane	TWS	21.4	C	18.1	C
09	Manely Road and Griffin Drive	TWS	28.3	D	20.3	C
11	Story Mill Road and Bridger Drive	TWS	17.6	C	18.0	C
12	Willson Avenue and Peach Street	TWS	14.5	B	18.9	C
13	Rouse Avenue and Peach Street	TWS	81.0	F	74.4	F
18	Haggerty Lane and Main Street	TWS	78.9	F	519.4	F
19	Willson Avenue and College Street	TWS	45.4	E	56.1	F
20	Highland Boulevard and Ellis Street	TWS	35.1	E	93.0	F
21	Sourdough Road and Kagy Boulevard	TWS	78.2	F	103.4	F
22	Highland Boulevard and Kagy Boulevard	TWS	72.7	F	59.8	F
23	Wagon Wheel Road and 3rd Avenue	AWS	15.3	C	9.1	A
24	11th Avenue and College Street	Roundabout	8.3	A	14.8	B
25	11th Avenue and Grant Street	AWS	10.6	B	15.8	C
26	11th Avenue and Lincoln Street	AWS	11.2	B	14.4	B
28	8th Avenue and College Street	AWS	12.9	B	17.9	C
29	7th Avenue and Grant Street	AWS	9.2	A	10.3	B
30	7th Avenue and Kagy Boulevard	TWS	87.2	F	71.1	F
31	Valley Center Spur and Frontage Road	TWS	15.9	C	25.0	C
32	Valley Center Spur and Valley Center Road	TWS	18.8	C	19.7	C
33	Nelson Road and Frontage Road	TWS	19.4	C	19.7	C
34	19th Avenue and I-90 EB Ramp	TWS	41.5	E	91.8	F
45	19th Avenue and Graf Street	TWS	17.4	C	16.1	C
46	Harper Puckett Road and Baxter Lane	TWS	11.0	B	11.2	B
47	Flanders Mill Road and Baxter Lane	TWS	13.7	B	16.0	C
48	Davis Lane and Baxter Lane	AWS	54.6	F	32.8	D
49	Laurel Parkway and Durston Road	AWS	10.6	B	11.2	B
51	Flanders Mill Road and Durston Road	TWS	26.3	D	34.8	D
52	Ferguson Avenue and Durston Road	AWS	17.9	C	25.4	D
53	Fowler Avenue and Durston Road	TWS	14.6	B	16.8	C
54	Cottonwood Road and Babcock Street	TWS	17.0	C	23.9	C
56	7th Avenue and Baxter Lane	TWS	25.4	D	23.5	C
59	27th Avenue and Oak Street	TWS	25.9	D	34.1	D
60	Davis Street and Oak Street	TWS	46.6	E	26.5	D

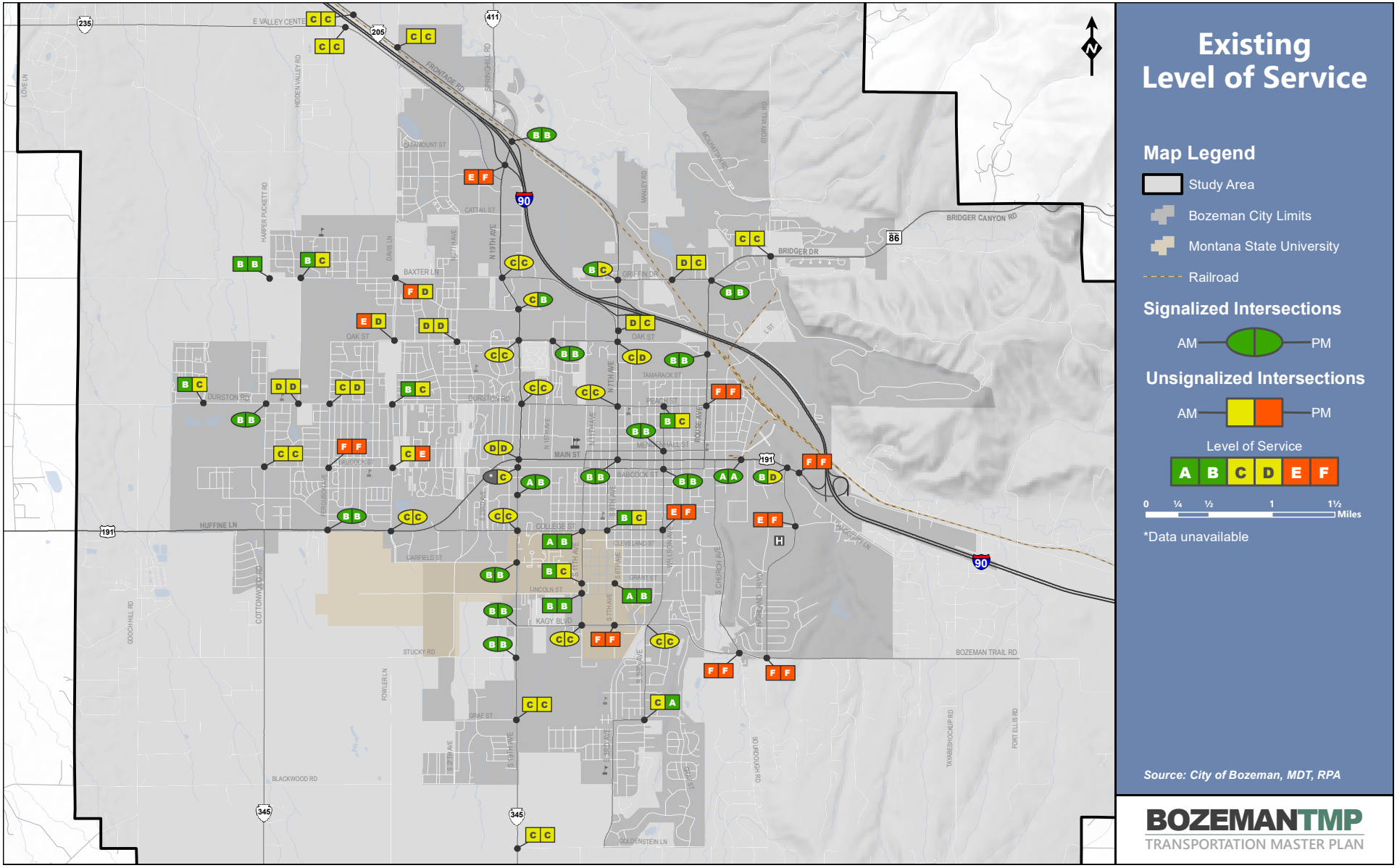


Figure 2.20: Existing Intersection Level of Service

2.2.4. Bicycle Operations

Vehicular LOS has been a standard metric to evaluate transportation networks for decades. Transportation professionals have struggled over the years to develop a comparable means of evaluation for pedestrians and bicyclists. For these modes, it is the qualitative metrics, or how a street feels that may determine how it performs. As shown previously in **Figure 2.13**, levels of walk and bicycle commuting varies around Bozeman. Particularly notable is the area of Bozeman north of Huffine Lane and west of 19th Avenue. Despite being within a generally comfortable distance for bicycling, the bike to work rate in this area is 0.5 percent (less than the national average of 0.6 percent). One explanation for this disparity with other parts of Bozeman may be found by examining how the streets feel to many of the residents. One tool to analyze the level of traffic stress has been outlined in the *Mineta Transportation Institute Report 11-19*[4]. A level of traffic stress (LTS) for bicyclists is determined based on factors including posted speed limit, street width, and the presence and character of bicycles lanes. The combinations of these criteria separates the bicycle network into one of four scores:

LTS 1: Low-stress roadway suitable for all ages and abilities,
LTS 2: Roadway comfortably ridden by the mainstream adult population,
LTS 3: Roadway ridden by the "enthused and confident" cyclists, and
LTS 4: Roadway ridden by the "strong and fearless" cyclists.

In general, a separated bicycle facility would qualify as a low-stress (LTS 1) bikeway, while a roadway shared with motor vehicle traffic operating at high speed would receive a higher stress score. The results of the LTS analysis help identify existing areas with a high level of stress as well as focus areas for improvement. Local streets with low traffic and low volume can be quite comfortable to most bicyclists despite being a shared lane environment. The LTS analysis is specifically focused on the street environment. Adjacent shared-use offer a more comfortable facility type that is not reflected in the LTS score. The results of the LTS analysis are presented in **Figure 2.21.**

LTS provides an intuitive framework to describe the benefits of bicycling infrastructure and to demonstrate that some roadways may require more intervention than others to provide a truly comfortable experience. For example, the only time a standard bike lane is considered an LTS 1 facility is a six-foot wide facility on a roadway with a posted speed limit of 30 miles per hour or lower. The best LTS score achievable on a roadway with four or more travel lanes without installing a separated bike lane is LTS 3. Newer areas of Bozeman typically are surrounded by wider and faster roadways. Nineteenth Avenue and Huffine Lane essentially create a barrier around Valley West that discourages many people from choosing to travel by bicycle. Incomplete roadways such as Durston Road, Oak Street, and Baxter Lane also create impediments for many residents.

[4] Mineta Transportation Institute, Report 11-19, Low-stress Bicycling and Network Connectivity, May 2012
http://transweb.sjsu.edu/PDFs/research/1005-low-stress-bicycling-network-connectivity.pdf

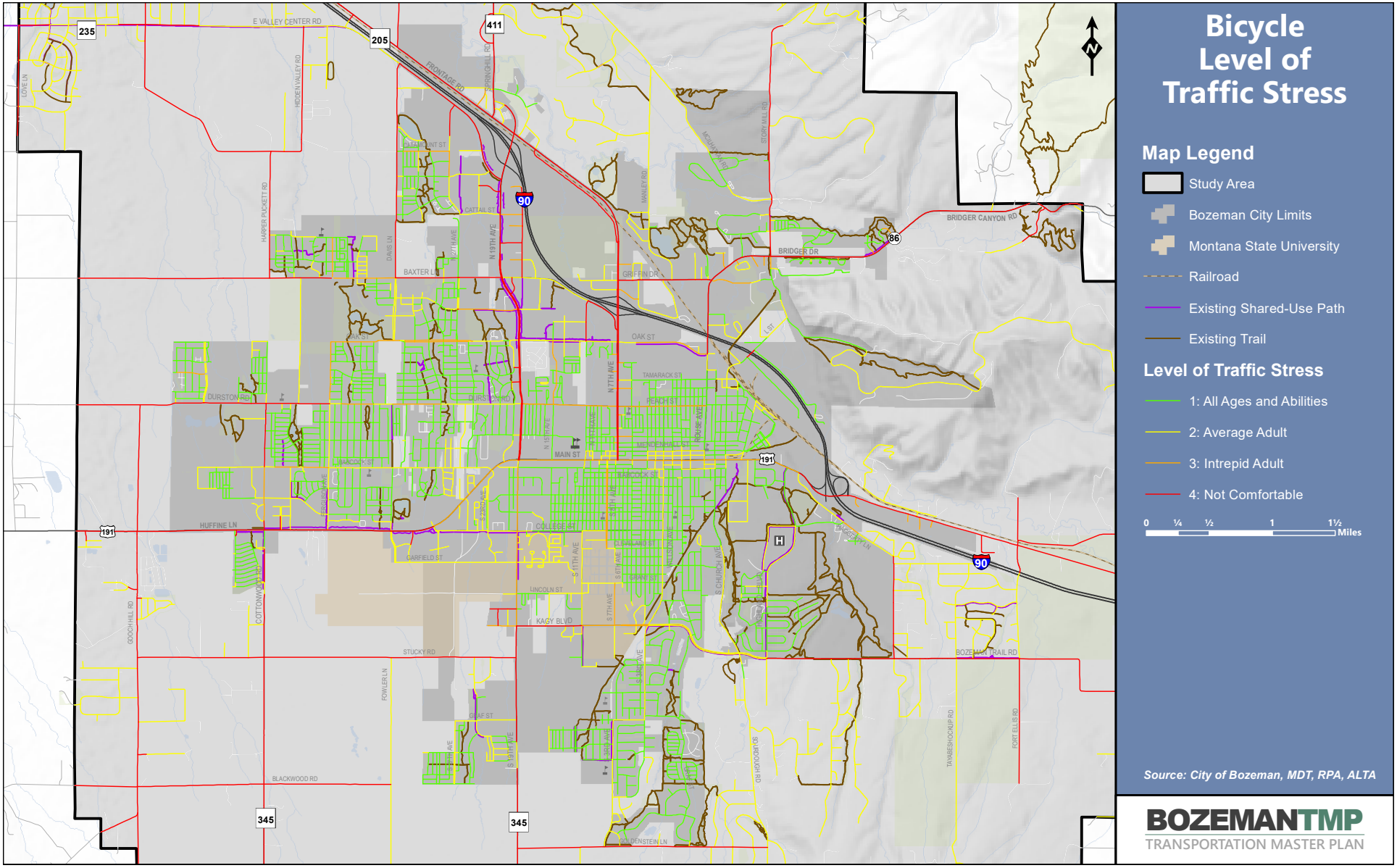


Figure 2.21: Bicycle Level of Traffic Stress

3.0. PROJECTED TRANSPORTATION SYSTEM

An analysis of the projected transportation system was performed to estimate how traffic patterns and characteristics may change from the existing conditions. The inputs for this analysis include the existing conditions and potential growth in housing and jobs out to the year 2040. Provided in this section is a description of the traffic modeling effort that was conducted to project the potential future travel conditions. Using the results of the traffic model, it is possible to identify future capacity constraints and other areas of concern.

3.1. Travel Demand Model Development

A travel demand model was developed by MDT for Gallatin County. The model was developed using *TransCAD* software. To reflect current conditions, the model used a combination of Census Bureau, GeoResults, Department of Labor and Industry, and Gallatin County structure file data to represent the 2014 socioeconomic baseline model conditions for use in the travel demand model. A comparison of the model and the true existing conditions was performed to validate the model. If any discrepancies were found, the model was "calibrated" to better match existing conditions.

Once validated, the model was used to project conditions for the year 2040 planning horizon. Additional housing and jobs were added to the system to analyze the projected traffic conditions. Census blocks and census tracts were used to distribute the population and employment growth that was projected to occur between 2014 and 2040. In addition, known roadway infrastructure projects expected to be constructed within the next five years were included as part of the projected conditions model. **Appendix B** contains a list and description of the known "committed" projects.

One assumption that was built into the model is that traffic characteristics will remain similar to those that are seen today. Many factors can influence this assumption, such a fuel prices, technological advances, and other unknown circumstances. Another assumption of the model is that the socioeconomic projections will be realized by the year 2040. Ultimately, the projected conditions model was used as a planning tool to help evaluate how traffic patterns might be affected by anticipated future development.

3.2. Projected Roadway Volumes and Capacity

Projected traffic volumes were estimated using the travel demand model. A comparison of the existing and projected conditions models was made to determine the percent change in traffic volume. The percent change was then applied to known existing AADT count sites to reflect projected daily traffic volumes. Presented in **Figure 3.1** are the resulting projected daily traffic volumes within the study area. Similarly, **Figure 3.2** presents the projected v/c ratios. It must be noted that the volumes shown in **Figure 3.1** and the v/c ratios shown in **Figure 3.2** are based on the "existing plus committed" roadway network. In other words, these are the projected volumes and projected v/c ratios if no changes to the transportation system, other than those currently committed to, are implemented.

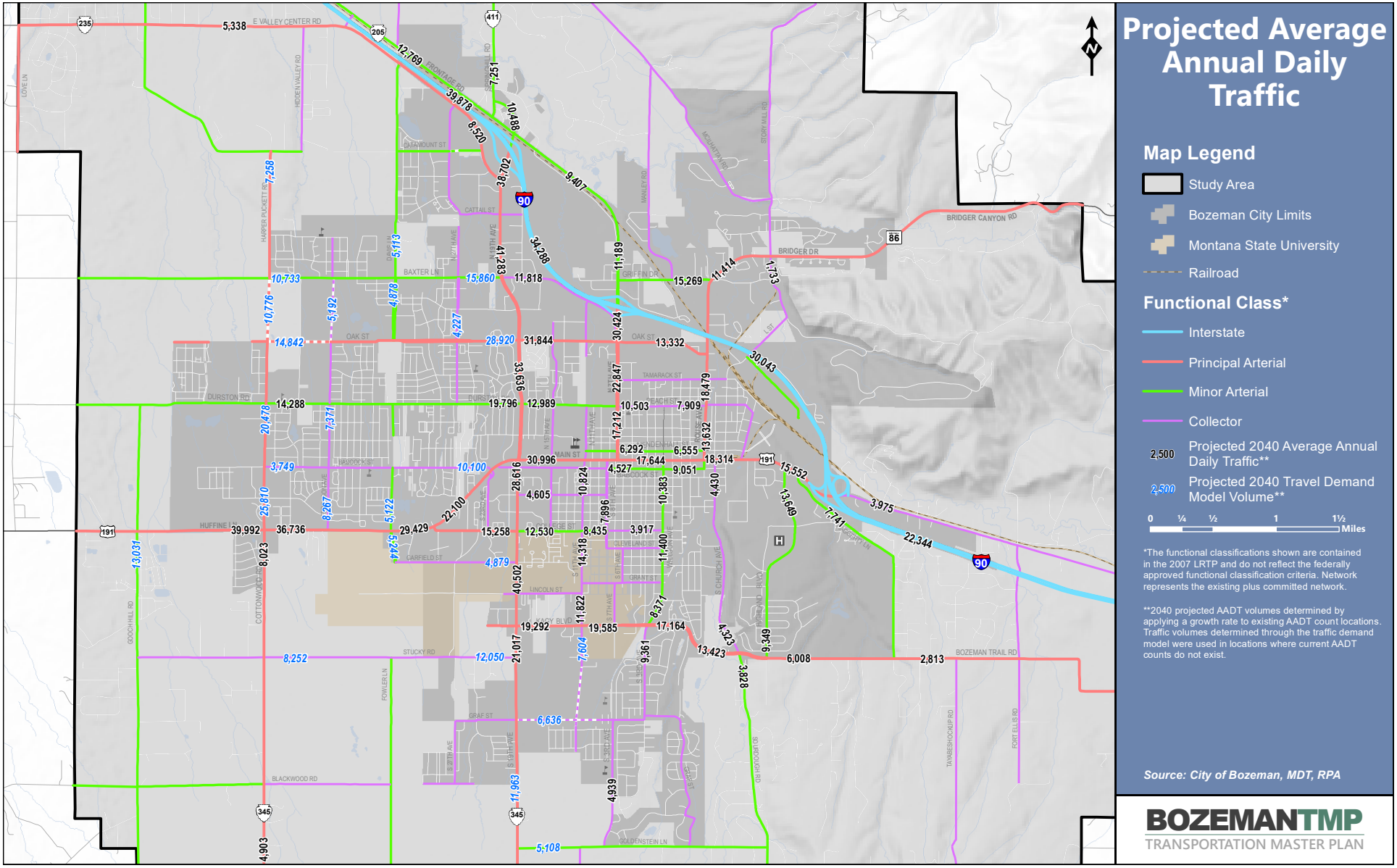


Figure 3.1: Projected Average Annual Daily Traffic

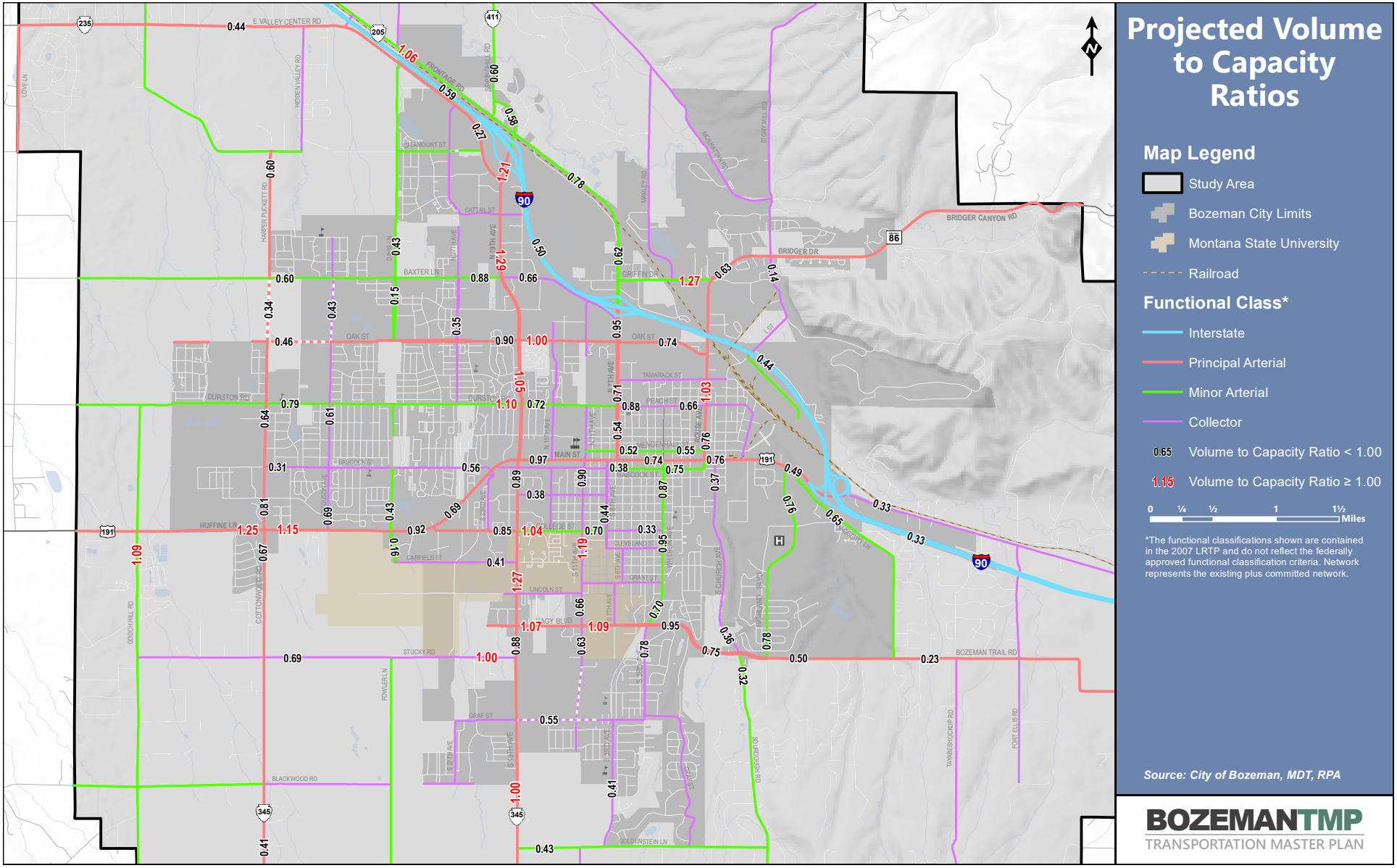


Figure 3.2: Projected Volume to Capacity Ratios

3.3. Projected Intersection Levels of Service

Projections for intersection traffic volumes were made for the 63 intersections analyzed previously in **Section 2.2.3**. These projections were based on the percent growth rates calculated from the travel demand model between the years 2014 and 2040. The growth rate was determined for each intersection as a whole. Intersections that are scheduled for reconfiguration or reconstruction, as per the City's Capital Improvement Plan (CIP), were changed to reflect the future configuration of the intersection. Note that changes in travel patterns and volumes resulting from new road connections and revised intersection configurations make traffic volume predictions difficult, and in some cases may not represent the ultimate future volumes that may be realized at a given location.

The results of this analysis are tabulated in **Tables 3.1** and **3.2** for signalized and unsignalized intersections, respectively. Intersections with updated configurations are denoted with bold intersection names in **Tables 3.1** and **3.2**. A graphical representation of the LOS analysis is presented in **Figure 3.3**. Detailed results for individual turning movements are provided in **Appendix C**.

Table 3.1: Projected Signalized Intersection Level of Service

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
03	Ferguson Avenue and Huffine Lane	20.6	C	27.7	C
04	Fowler Avenue and Huffine Lane	23.3	C	43.5	D
05	19th Avenue and Garfield Street	20.7	C	118.0	F
06	19th Avenue and Stucky Road	31.4	C	27.8	C
08	7th Avenue and Griffin Drive	17.4	C	80.0	F
10	Rouse Avenue and Griffin Drive	19.2	C	15.1	B
13	**Rouse Avenue and Peach Street**	22.0	C	20.6	C
14	Willson Avenue and Mendenhall Street	14.2	B	18.3	B
15	Willson Avenue and Babcock Street	12.5	B	13.6	B
16	Broadway Avenue and Main Street	10.5	B	17.5	B
17	Highland Boulevard and Main Street	19.4	B	117.3	F
27	11th Avenue and Kagy Boulevard	34.6	C	239.1	F
30	**7th Avenue and Kagy Boulevard**	7.9	A	10.7	B
34	**19th Avenue and I-90 EB Ramp**	44.4	D	228.9	F
35	19th Avenue and I-90 WB Ramp	21.2	C	69.4	F
36	19th Avenue and Tschache Way	16.9	B	31.8	C
37	19th Avenue and Oak Street	31.9	C	82.8	F
38	19th Avenue and Durston Road	27.4	C	54.0	D
39	7th Avenue and Durston Road/Peach Street	38.3	D	52.7	D
40	19th Avenue and Main Street	54.0	D	62.2	E
41	7th Avenue and Main Street	14.3	B	19.7	B

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
42	19th Avenue and Babcock Street	Data Unavailable		35.5	D
43	19th Avenue and Koch Street	12.7	B	16.3	B
44	19th Avenue and College Street	30.1	C	37.8	D
45	**19th Avenue and Graf Street**	66.2	E	22.7	C
48	**Davis Lane and Baxter Lane**	18.2	B	14.2	B
49	**Laurel Parkway and Durston Road**	19.0	B	13.7	B
50	**Cottonwood Road and Durston Road**	89.5	F	70.2	E
54	**Cottonwood Road and Babcock Street**	32.2	C	52.8	D
55	19th Avenue and Baxter Lane	71.7	E	69.9	E
57	7th Avenue and Oak Street	27.5	C	39.7	D
58	15th Avenue and Oak Street	16.6	B	22.5	C
59	**27th Avenue and Oak Street**	427.4	F	321.4	F
61	Rouse Avenue and Oak Street	18.9	B	16.9	B
62	19th Avenue and Kagy Boulevard	31.3	C	42.5	D
63	Willson Avenue/3rd Avenue and Kagy Boulevard	28.8	C	30.3	C

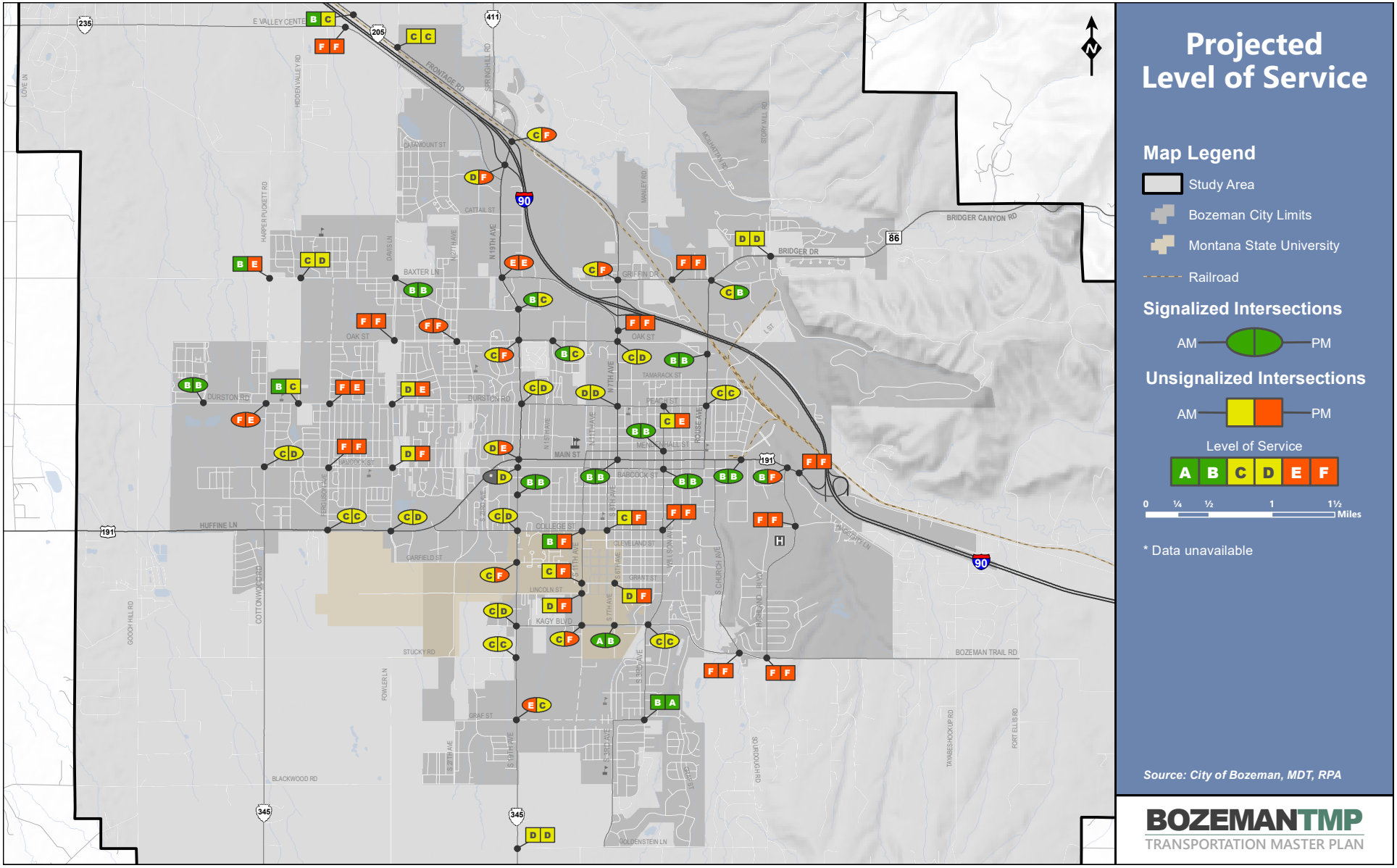
*Note: **Bold** intersection names denote intersections with future configurations.*

Table 3.2: Projected Unsignalized Intersection Level of Service

ID	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS
01	Ferguson Avenue and Babcock Street	TWS	144.1	F	ECB	F
02	Fowler Avenue and Babcock Street	TWS	25.8	D	83.6	F
07	**19th Avenue and Goldenstein Lane**	TWS	33.8	D	28.6	D
09	Manely Road and Griffin Drive	TWS	336.6	F	67.5	F
11	**Story Mill Road and Bridger Drive**	TWS	32.3	D	34.1	D
12	Willson Avenue and Peach Street	TWS	17.8	C	41.8	E
18	Haggerty Lane and Main Street	TWS	473.6	F	3,131.6	F
19	Willson Avenue and College Street	TWS	56.6	F	105.4	F
20	Highland Boulevard and Ellis Street	TWS	83.8	F	2,083.4	F
21	Sourdough Road and Kagy Boulevard	TWS	1,427.8	F	ECB	F
22	Highland Boulevard and Kagy Boulevard	TWS	ECB	F	1,392.0	F
23	Wagon Wheel Road and 3rd Avenue	AWS	10.8	B	9.1	A
24	11th Avenue and College Street	Roundabout	11.1	B	85.9	F
25	11th Avenue and Grant Street	AWS	22.3	C	234.6	F
26	11th Avenue and Lincoln Street	AWS	30.1	D	103.2	F
28	8th Avenue and College Street	AWS	20.3	C	99.1	F

ID	Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
			Delay (sec)	LOS	Delay (sec)	LOS
29	7th Avenue and Grant Street	AWS	26.2	D	123.1	F
31	Valley Center Spur and Frontage Road	TWS	13.1	B	20.4	C
32	Valley Center Spur and Valley Center Road	TWS	185.0	F	500.3	F
33	Nelson Road and Frontage Road	TWS	19.3	C	22.2	C
46	**Harper Puckett Road and Baxter Lane**	Roundabout	14.3	B	38.9	E
47	Flanders Mill Road and Baxter Lane	TWS	18.8	C	31.7	D
51	**Flanders Mill Road and Durston Road**	Roundabout	14.0	B	16.2	C
52	**Ferguson Avenue and Durston Road**	Roundabout	39.9	F	37.4	E
53	Fowler Avenue and Durston Road	TWS	30.0	D	43.7	E
56	7th Avenue and Baxter Lane	TWS	143.5	F	206.3	F
60	**Davis Street and Oak Street**	Roundabout	300.2	F	230.0	F

*Note: **Bold** intersection names denote intersections with future configurations.*
** ECB – Delay exceeds the computational bounds of the software.*


Projected Level of Service
Map Legend
Study Area
Bozemen City Limits
Montana State University
Railroad
Signalized Intersections
AM
PM
Unsignalized Intersections
AM
PM
Level of Service
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* Data unavailable
Source: City of Bozeman, MDT, RPA
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SPRINGHILL RD
HODGEN VALLEY RD
HARPER PUCKETT RD
BATEMOUNT ST
CATTAIL ST
BAXTER LN
OAK ST
DURSTON RD
HUFFINE LN
GARFIELD ST
BABCOCK ST
MAIN ST
COLLEGE ST
LINCOLN ST
KAGY BLVD
STUCKY RD
BLACKWOOD RD
GOOCH HILL RD
COTTONWOOD RD
FOWLER LN
GRAE ST
GOLDENSTEIN LN
GRIFFIN DR
TAMARACK ST
MENDENHALL ST
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3.4. Active Transportation Benefits

With pedestrian and bicycle mode shares higher than most of the other communities in the United States, Bozeman enjoys substantial benefits that are directly attributable to these active modes. This benefits analysis was conducted with a combination of available local data as well as data collected from similar peer communities and national sources of data such as the USDOT TIGER BCA Resource Guide (2014), the National Household Transportation Survey (2009), the National Center for Safe Routes to School travel data (2010), the American Community Survey, and the Automobile Association of America. For Bozeman, the peer communities of Crested Butte, CO; Durango, CO; Ashland, OR; Corvallis, OR; Eugene, OR; and Madison, WI were analyzed. Several types of benefits were evaluated including health, environmental, and transportation. The impact analysis uses a standard methodology for calculating health, environmental, and transportation related benefits. All projections are based on the most recent five-year estimates from the ACS, which are then extrapolated through the use of various multipliers derived from national studies and quantified in terms of monetary value where appropriate. The estimated monetary values are then calibrated to baseline values and compared to bicycle and walk mode commute splits of peer cities. This analysis was bolstered by local enrollment numbers for the Bozeman Unified School District and Montana State University. These figures were significantly different than was recorded in the American Community Survey. Further, this analysis is likely to under represent the existing levels of walking and bicycling as it is heavily influenced by the National Household Transportation Survey. It is likely that the typical Bozeman resident walks and bicycles more than the average American. A local comprehensive travel survey would provide better Bozeman specific data.

Future estimates were derived from an estimate of future mode share in Bozeman based on the peer city analysis. Low, mid, and high mode share growth scenarios were considered for 2040, the planning horizon of this TMP. Bozeman's projected population at 2040 is included in this analysis. The estimates presented in **Table 3.3** are not intended to be mode share targets or policy, but they are useful in quantifying some of the benefit of continuing Bozeman's upward trajectory of active transportation mode share.

Table 3.3: Projected Mode Share

Source	Existing		Projected Low-Growth		Projected Mid-Growth		Projected High-Growth	
	Bike (%)	Walk (%)	Bike (%)	Walk (%)	Bike (%)	Walk (%)	Bike (%)	Walk (%)
Est. Commute Mode Share (ACS)	5.8	9.8	6.3	9.8	7.7	10.4	11.4	12.0
Est. Overall Mode Share for all Trip Purposes (ACS + NHTS)	8.2	26.4	8.8	26.4	10.8	28.2	16.1	32.5

3.4.1. Health Benefits

Bozeman's existing levels of walking and bicycling equate to a great deal of physical activity. The Benefit Impact Model quantifies the existing estimated hour of physical activity and projected increases of mode share. Benefits include improved community health and reduced household healthcare spending. The primary inputs into the health components of the Benefit Impact Model were derived from 2009 to 2013 ACS journey to work data, 2009 NHTS, and historic Safe Routes to School data. Existing bicycle and walk commute data were multiplied by national trip purpose ratios to generate mode split data that include all trip purposes. These balanced mode split data were indexed against the mode split data of Bozeman's peer cities and multiplied by various health factors. **Table 3.4** tabulates the estimated health benefits.

Table 3.4: Health Benefit Estimate

Type	Existing		Low-Growth		Mid-Growth		High-Growth	
	Bike	Walk	Bike	Walk	Bike	Walk	Bike	Walk
Annual Trips	4,958,000	10,013,000	5,341,000	10,013,000	6,564,000	10,677,000	9,726,000	12,299,000
Annual Miles	11,233,000	7,027,000	11,732,000	7,027,000	13,326,000	7,235,000	17,445,000	7,743,000
Annual Hours of Physical Activity	1,123,000	2,342,000	1,173,000	2,342,000	1,333,000	2,412,000	1,745,000	2,581,000
Rec. Physical Activity Minimum Met	8,638	18,015	9,023	18,015	10,254	18,554	13,423	19,854
Regional Physical Activity Need Met	22.6%	47.2%	23.6%	47.2%	26.8%	48.6%	35.1%	52.0%
Healthcare Cost Savings	$291,000	$401,000	$313,000	$401,000	$385,000	$428,000	$571,000	$493,000

3.4.2. Environmental Benefits

The existing levels of walking and bicycling provide environmental benefits to the community by not being emissions generating trips. Building off of the health benefits analysis and the mode share growth scenarios, the implications for hydrocarbon, particulate matter, nitrous oxides, carbon monoxide, and carbon dioxide can be estimated. This analysis uses national methodologies to determine trip replacement. Every walking or bicycling trip is not equal to a vehicle trip. Based on a review of air emissions studies, each pound of emissions was assigned an equivalent dollar amount based on how much it would cost to clean up the pollutant or the cost equivalent of how much damage the pollutant causes to the environment. Other potential ecological services associated with the bicycle projects such as water regulation, carbon sequestration, carbon storage, and waste treatment exist but the quantifiable value of these services are negligible on the overall impact. **Table 3.5** presents the estimated environmental benefits of active transportation modes.

Table 3.5: Environmental Benefit Estimates

Type	Existing		Low-Growth		Mid-Growth		High-Growth	
	Bike	Walk	Bike	Walk	Bike	Walk	Bike	Walk
CO_2 Emissions Reduced (lbs)	5,960,000	5,960,000	6,420,000	5,960,000	7,891,000	6,355,000	11,691,000	7,320,000
Other Vehicle Emissions Reduced (lbs)	136,000	102,000	146,000	102,000	180,000	109,000	266,000	125,000
Total Vehicle Emissions Cost Reduced	$140,000	$105,000	$151,000	$105,000	$185,000	$112,000	$275,000	$129,000

3.4.3. Transportation Benefits

The most readily identifiable benefits of active transportation exist in its ability to increase transportation options and access to activity centers for Bozeman residents and visitors. While money rarely changes hands, real savings can be estimated from the reduced costs associated with congestion, vehicle crashes, road maintenance, and household vehicle operations.

Using the same annual vehicle miles travelled (VMT) reduction estimates highlighted in the health and environmental components, transportation-related costs savings were calculated. By multiplying the amount of VMT reduced by established multipliers for traffic congestion, vehicle collisions, road maintenance, and vehicle operating costs, monetary values were assigned to the transportation-related benefits. This analysis is the most conceptual of the three and actual savings may not result in the estimates given in **Table 3.6**.

Table 3.6: Transportation Benefit Estimates

Type	Existing		Low-Growth		Mid-Growth		High-Growth	
	Bike	Walk	Bike	Walk	Bike	Walk	Bike	Walk
Annual VMT Reduced	4,185,000	3,141,000	4,508,000	3,141,000	5,541,000	3,349,000	8,211,000	3,857,000
Reduced Traffic Congestion Costs	$293,000	$220,000	$316,000	$220,000	$388,000	$234,000	$575,000	$270,000
Reduced Vehicle Crash Cost	$2,093,000	$1,570,000	$2,254,000	$1,570,000	$2,771,000	$1,674,000	$4,105,000	$1,929,000
Reduced Road Maintenance Costs	$628,000	$471,000	$676,000	$471,000	$831,000	$502,000	$1,232,000	$579,000
Household Vehicle Operation Cost Savings	$2,386,000	$1,790,000	$2,570,000	$1,790,000	$3,159,000	$1,909,000	$4,680,000	$2,199,000

3.4.4. Total Benefits

Further improving the walking and bicycling system in Bozeman will result in more trips being taken via these modes. Increases in mode share can yield significant annual benefits to Bozeman and its residents. As summarized in **Table 3.7**, the city currently experiences approximately $10-million in annual benefits from active modes of transportation and could experience a further $500,000 to $6.6 million in additional benefits depending on population growth and varying levels of future mode share increases.

Table 3.7: Total Benefit Estimates

Type	Existing		Low-Growth		Mid-Growth		High-Growth	
	Bike	Walk	Bike	Walk	Bike	Walk	Bike	Walk
Health Benefits	$291,000	$401,000	$313,000	$401,000	$385,000	$428,000	$571,000	$493,000
Environmental Benefits	$140,000	$105,000	$151,000	$105,000	$185,000	$112,000	$275,000	$129,000
Transportation Benefits	$5,400,000	$4,051,000	$5,816,000	$4,051,000	$7,149,000	$4,319,000	$10,592,000	$4,977,000
Total Benefits	$10,388,000		$10,837,000		$12,578,000		$17,037,000	
Total Additional Benefits	-		$499,000		$2,190,000		$6,649,000	

The monetary benefits provided in **Table 3.7** combine multiple sources of small amounts of savings. Using the methodology to estimate reductions in vehicle miles traveled, estimates for the overall benefits to the future capacity of Bozeman's streets can also be estimated. For this analysis, Streamline transit ridership data was included and annual growth projections were given for 2%, 3.5% and 5% to represent the low, mid and high growth scenarios. Transit's vehicle trip replacement was also accounted for as only a portion of transit trips may be a direct replacement of a vehicle trip. The purpose of this analysis is to estimate the potential 'load' that active modes of transportation could carry on Bozeman's network. Assuming active modes increase, streets in Bozeman would be carrying more people with fewer vehicles. Such a scenario could negate or substantially delay the need for expensive intersection and roadway capacity projects.

Table 3.8: Potential Vehicle Trip Reduction from Increased Active Transportation Mode Share in 2040

Active Transportation Growth Scenario	Vehicle Miles Traveled Reduced	Total Annual Trips Reduced (estimated)	Daily Trips Reduced
Low Growth	8,740,000	2,914,000	8,000
Mid Growth	10,483,000	3,395,000	10,000
High Growth	14,361,000	4,787,000	14,000

Based on the data in **Table 3.8**, it can be estimated that under the high growth scenario, active modes could be carrying 14,000 trips per day in Bozeman. For perspective, this is roughly equivalent to the number of vehicles per day travelling on Kagy Boulevard in 2015. This value is an average and would be higher during the summer months and lower during the winter months. This makes sense as in 2013 on a nice day in September, 2,500 bicyclists alone were manually counted over a 2 hour period at only 15 locations around Bozeman. This benefit would be distributed over the network. Improving active transportation mode share and overall mobility can be accomplished by completing gaps in the network, improving intersections and overcoming some of the barriers which seem to be suppressing mode share in certain areas of Bozeman such as Valley West.

4.0. SAFETY

Crash data within the study area were analyzed to determine problem areas, "hot-spot" crash locations, and behavioral characteristics. Trend analysis comparisons were also made for Gallatin County and the State of Montana to help identify unique trends. The following sections provide an analysis of available crash data to help identify crash trends and contributing factors.

Improving transportation safety requires more than just fixing a road or increasing police patrols. In order to be most effective, safety improvements need to consider the "Four E's" of transportation safety: Education, Enforcement, Engineering, and Emergency Services.

4.1. Study Area Crash Analysis

Crash data were provided by the MDT Traffic and Safety Bureau for the five-year period between January 1st, 2010 and December 31st, 2014. The crash reports are a summation of information from the scene of the crash provided by the responding officer. As such, some of the information contained in the crash reports may be subjective.

According to the MDT crash database, there were 3,763 crashes reported within the study area during the analysis time period. The number of crashes per year increased from 747 crashes in 2010 to 825 crashes in 2012. After 2012 the number of yearly crashes decreased to 633 crashes in 2014. The number of injury crashes followed a similar trend to that of the total crashes with 191 crashes in 2010, peaking in 2012 with 246 crashes, and decreasing to 194 crashes in 2014. The number of non-injury crashes per year in 2010 was 556 crashes and increased to a peak in 2011 with 605 crashes before decreasing to 436 crashes in 2014. **Figure 4.1** presents the total, injury, and non-injury crashes per year for the five-year analysis period.

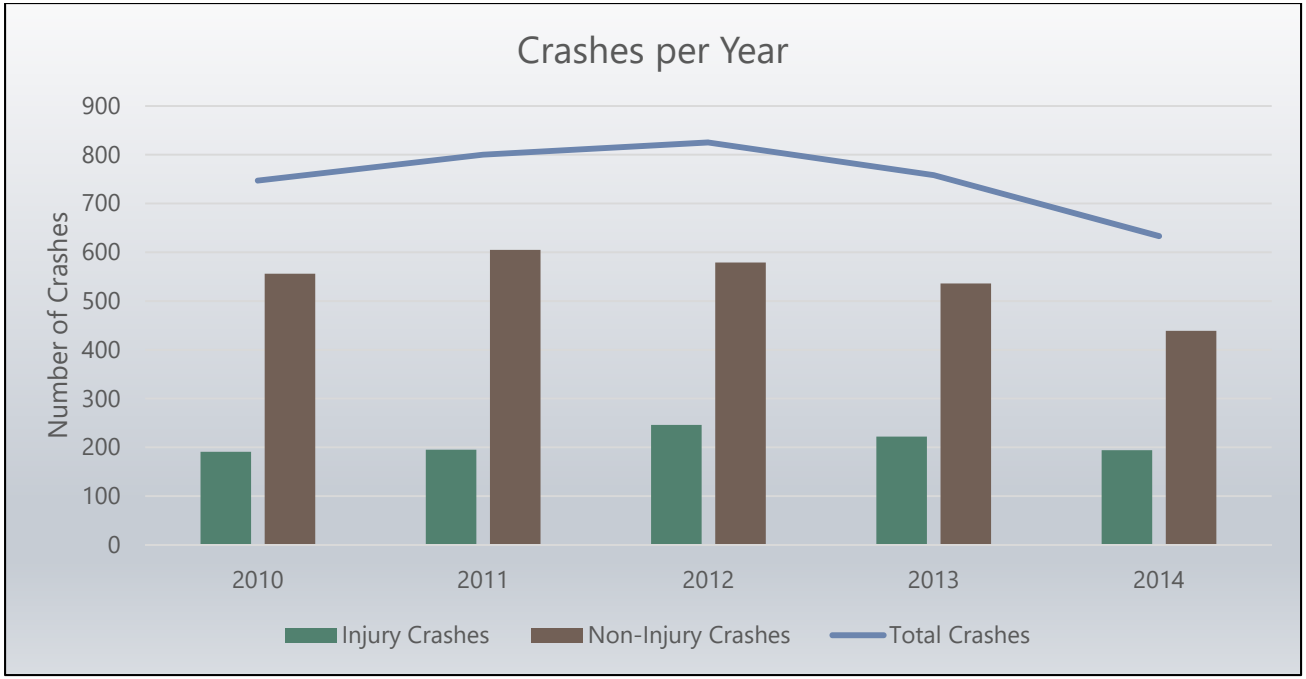


Figure 4.1: Crashes per Year

The spatial distribution of all crashes was plotted based on the reported crash locations. The number of crashes per area were then tallied and symbolized in **Figures 4.2** and **4.3**. Locations with higher traffic volumes appear to have a higher number of crashes. Detailed intersection crash analysis is presented in **Section 4.1.5**.

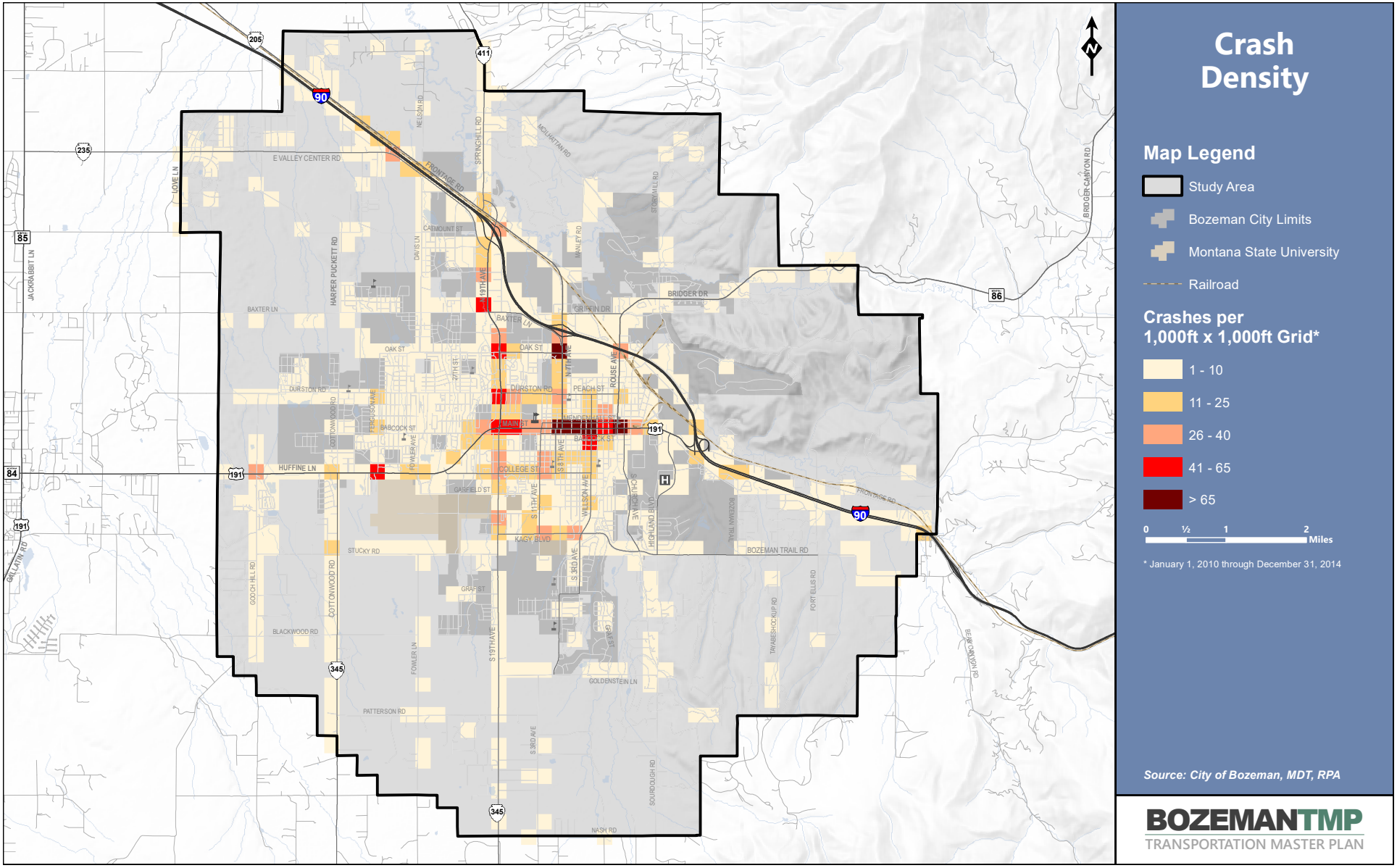


Figure 4.2: Crash Density

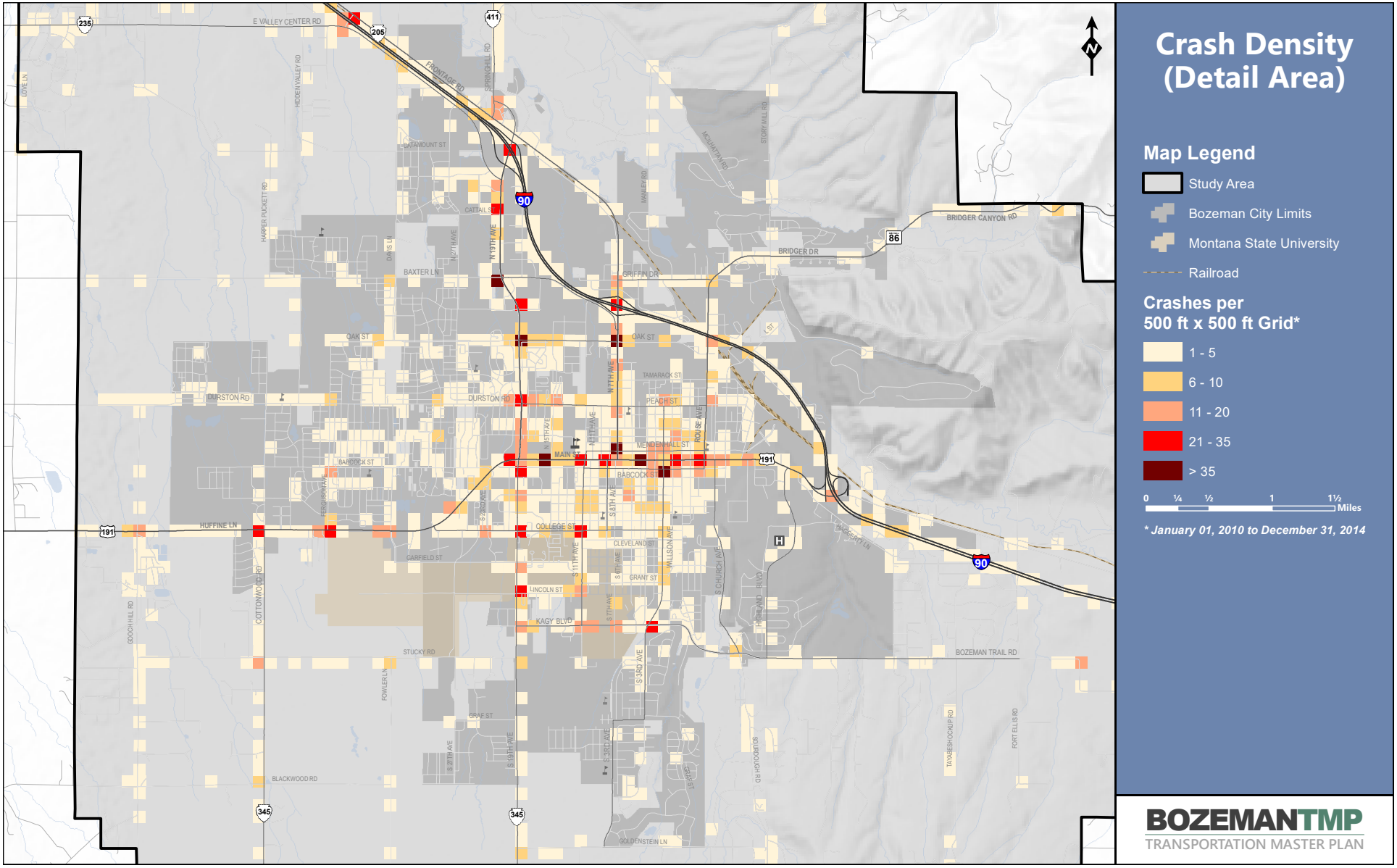


Figure 4.3: Crash Density (Detail Area)

4.1.1. Crash Period

Crash data for the study area were evaluated based on the period of time when the crash occurred. With regards to the time of day, two prominent peaks can be seen: one around 8:00 AM and the other around 5:00 PM. Around 50 percent of the reported crashes occurred between the hours of 12:00 PM and 7:00 PM. The PM peak hours (4:00 PM to 7:00 PM) accounted for approximately 22 percent of all reported crashes. The distribution of injury and non-injury crashes generally follows the same pattern as total crashes. The time of day distribution is presented in **Figure 4.4**.

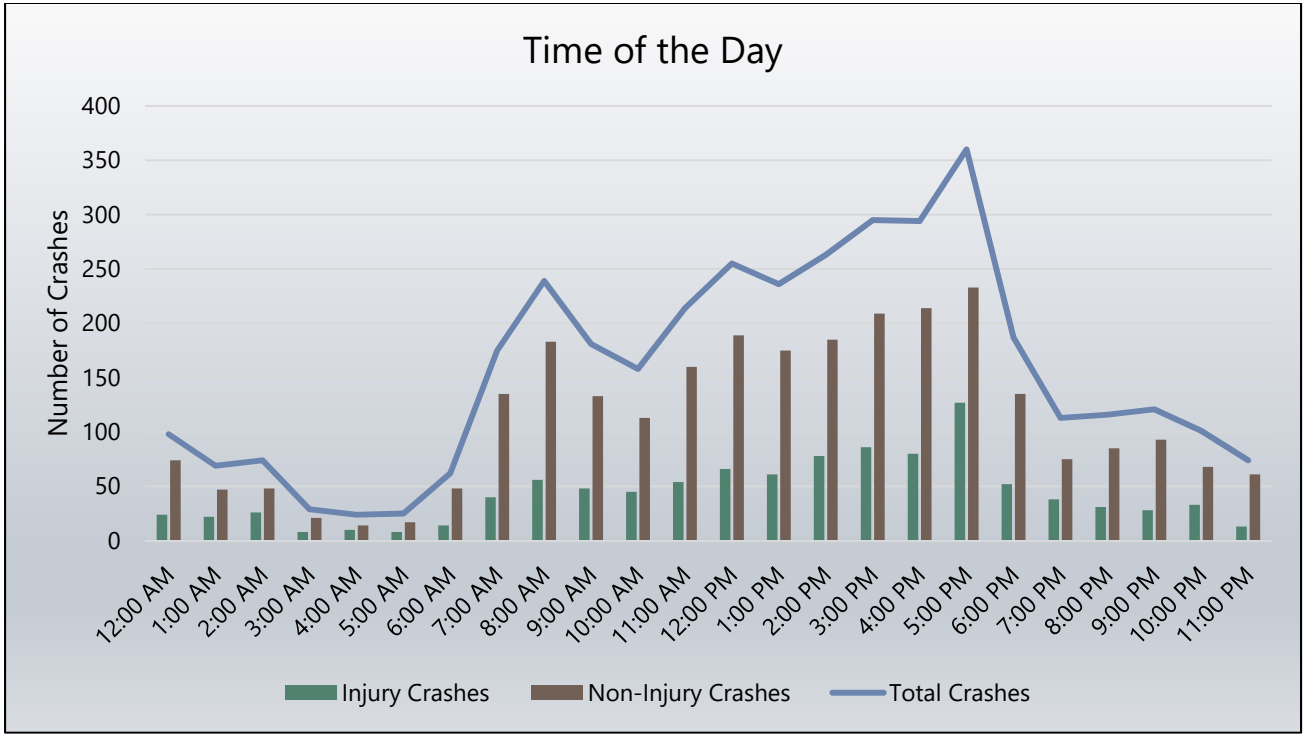


Figure 4.4: Crash Time of Day Distribution

The month of December represents the month with the highest reported number of crashes. November and January had the next two highest number of reported crashes. Approximately 35 percent of all crashes occurred during these three months. Inclement weather conditions often exist from November to January which can contribute to an increase in the number of crashes. **Figure 4.5** shows the distribution of reported crashes based on the month of the year in which the crash occurred.

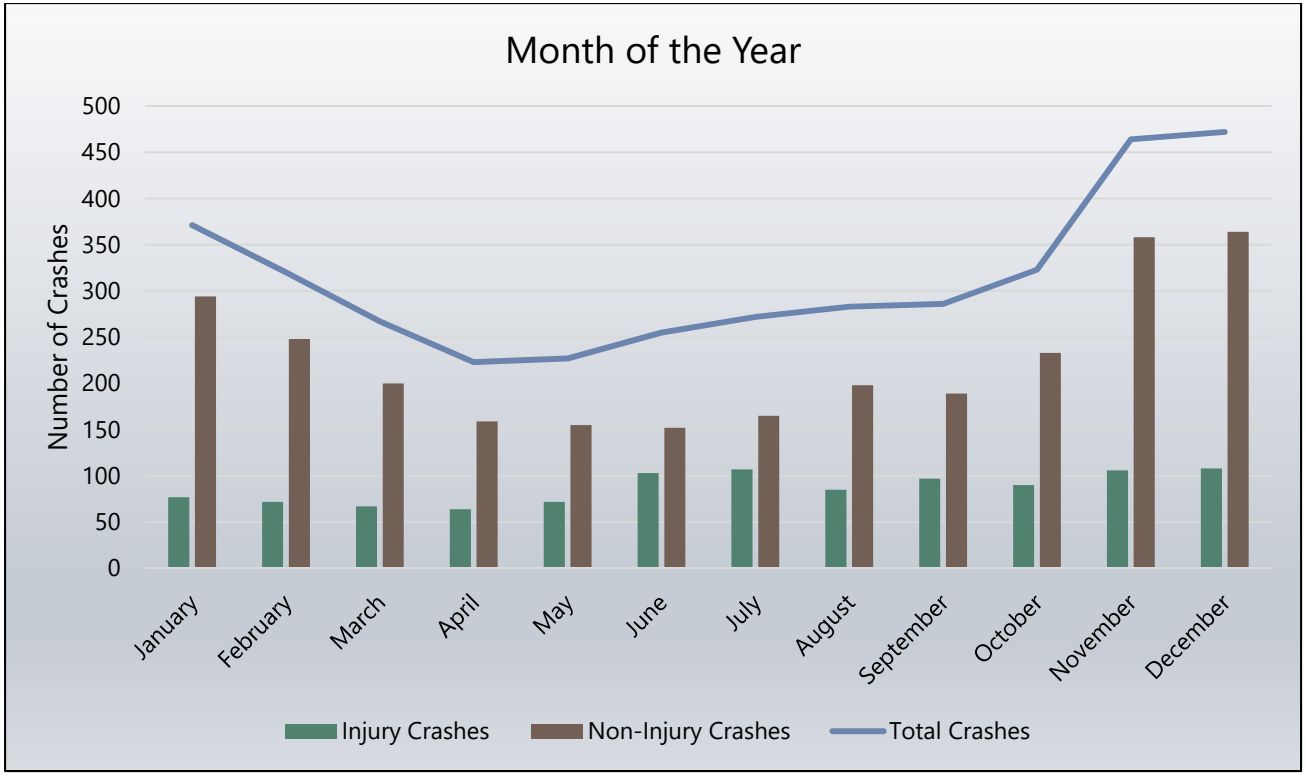


Figure 4.5: Crash Month of the Year Distribution

With respect to the day of the week in which crashes occurred, weekdays had a higher number of crashes than weekends. Friday had the highest number of reported crashes, accounting for nearly 18 percent of all crashes. Weekend crashes accounted for approximately 22 percent of all crashes. The distribution of crashes based on day of the week in which the crash occurred is presented in **Figure 4.6**.

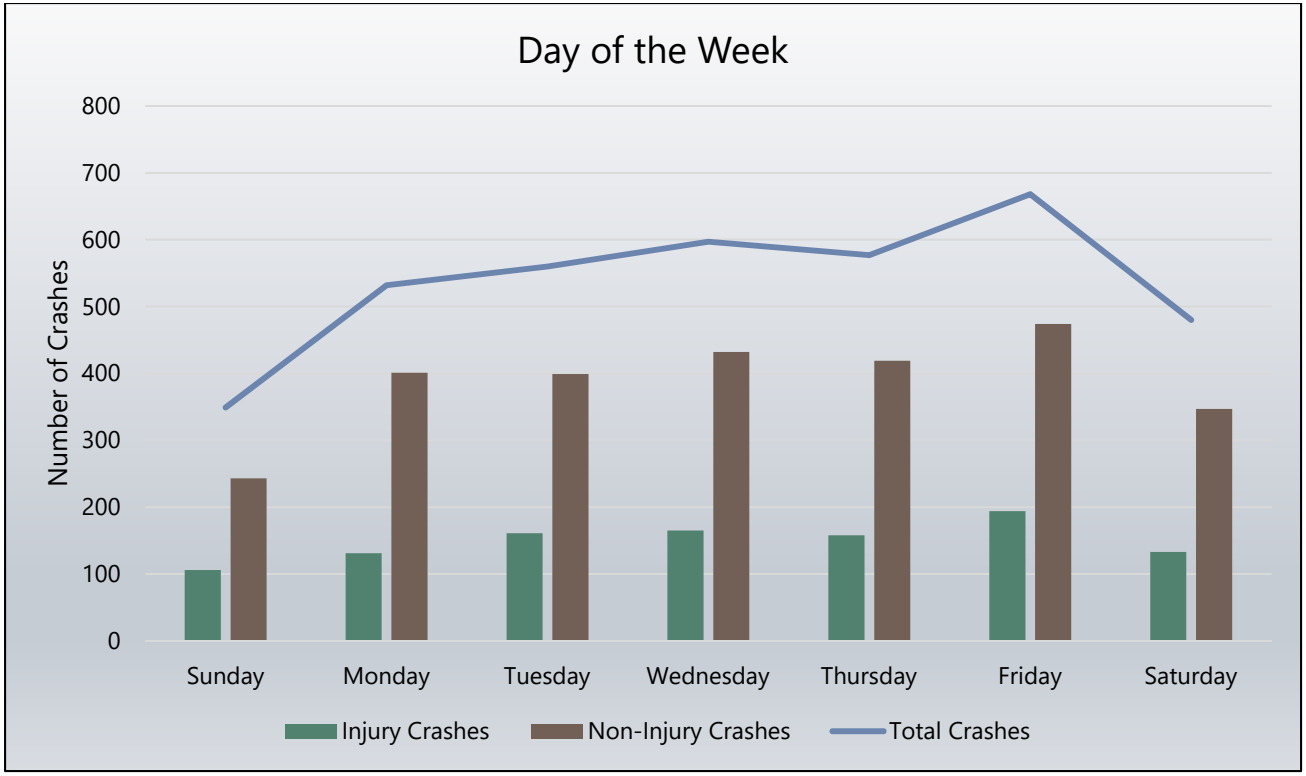


Figure 4.6: Crash Day of Week Distribution

4.1.2. Environmental Factors

Crash data were reviewed to determine if any trends exist in relation to environmental factors such as weather, roadway surface, and lighting conditions. The weather condition was reported as clear in about 50 percent of all crashes. Cloudy weather accounted for an additional 33 percent of crashes. With respect to the road surface condition, about 59 percent of crashes were reported as having occurred on dry roads, while 7 percent of crashes were reported as having occurred on icy or frost covered roads. Seventy percent of crashes were reported as having occurred under daylight conditions. An additional 15 percent were reported as occurring under dark, not lighted conditions. **Figure 4.7** presents the distribution of crashes based on environmental factors.

In summarizing the environmental factors, several factors were combined for the sake of clarity. For weather conditions, the "other" category includes blowing snow; sleet/hail/freezing; rain/drizzle; fog, smog, or smoke; severe crosswinds, blowing sand, soil, and dirt; and

unknown. For road surface conditions, the "other" category includes mud, dirt, or gravel; other; sand; and unknown. For lighting conditions, the "other" category includes dusk, dawn, dark-unknown lighting, and unknown.

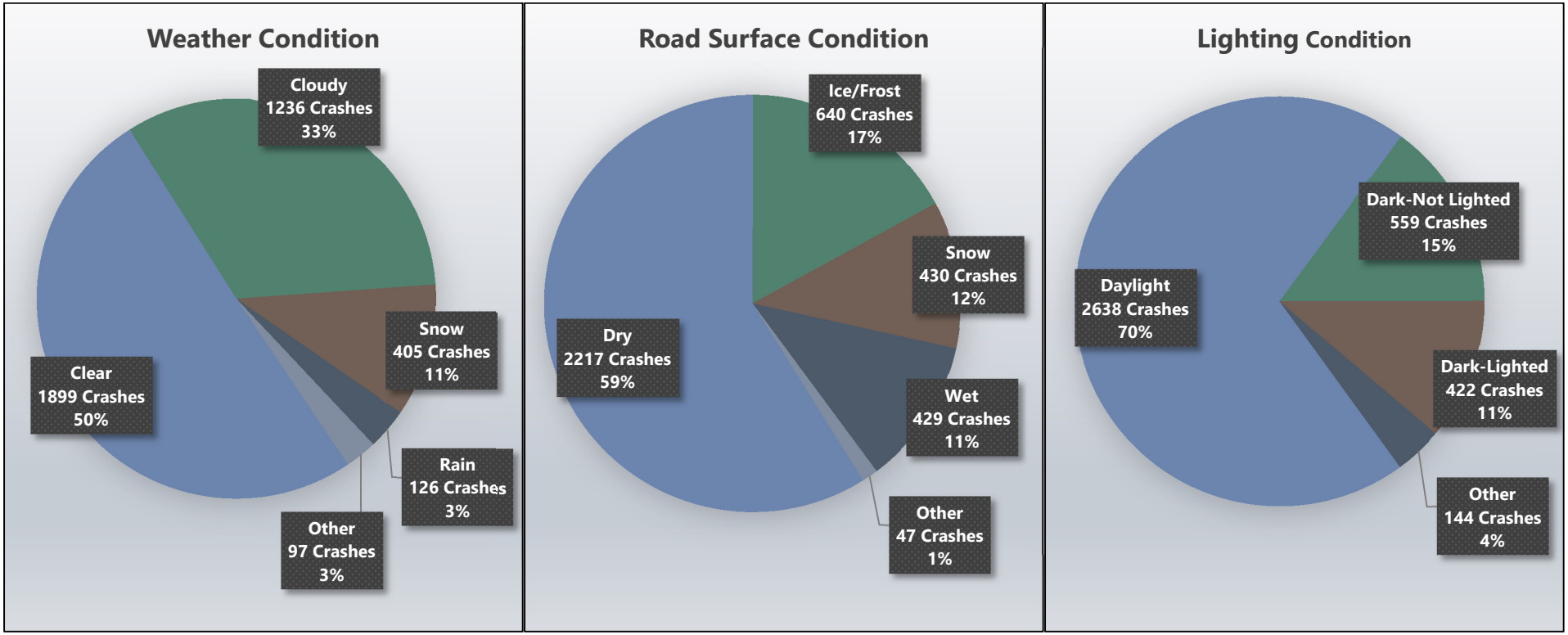


Figure 4.7: Weather Condition (Left), Road Surface (Center), and Lighting Condition (Right) Summaries

The charts presented in **Figure 4.7** show the breakdown of crashes based on a single attribute, for example Weather Condition. **Table 4.1** was produced to better understand the relationship between the three environmental factors. The data tabulated in **Table 4.1** represents the number of crashes that occurred under a particular combination of all three of the environmental factors. For example, there were 135 crashes reported to have occurred during clear weather on icy or frost covered roads during daylight conditions. From **Table 4.1**, it can be seen that most of the reported crashes, 1,043 crashes, occurred during clear weather on dry roads during daylight conditions.

Table 4.1: Relationship between Environmental Conditions

Weather Condition	Road Surface Condition					Total
Lighting Condition	Dry	Ice/Frost	Snow	Wet	Other	
Clear	1,457	220	123	83	16	1,899
Daylight	1,043	135	79	50	9	1,316
Dark – Not Lighted	205	34	12	8	5	264
Dark – Lighted	162	37	24	17	2	242
Other	47	14	8	8		77
Cloudy	740	236	94	152	14	1,236
Daylight	599	158	67	118	9	951
Dark – Not Lighted	82	46	16	15	4	163
Dark – Lighted	43	20	8	16	1	88
Other	16	12	3	3		34
Snow	8	150	185	52	10	405
Daylight	5	78	103	42	8	236
Dark – Not Lighted		38	49	6	2	95
Dark – Lighted	3	29	23	1		56
Other		5	10	3		18
Rain	3			122	1	126
Daylight	2			79		81
Dark – Not Lighted				24		24
Dark – Lighted	1			14		15
Other				5	1	6
Other	9	34	28	20	6	97
Daylight	5	23	16	10		54
Dark – Not Lighted	1	6	6			13
Dark – Lighted	3	4	5	8	1	21
Other		1	1	2	5	9
Grand Total	**2,217**	**640**	**430**	**429**	**47**	**3,763**

4.1.3. Crash Type

Approximately 36 percent, or 1,352 crashes, were reported to have occurred at non-junction locations while about 55 percent, or 2,072 crashes, were reported to have occurred in an intersection or were intersection related. Crashes occurring on the roadway accounted for 81 percent of crashes for a total of 3,037 crashes. About 16 percent of crashes – 585 crashes – occurred on the shoulder of the roadway. **Figure 4.8** shows the distribution of crashes and their respective relationship to junctions and the roadway.

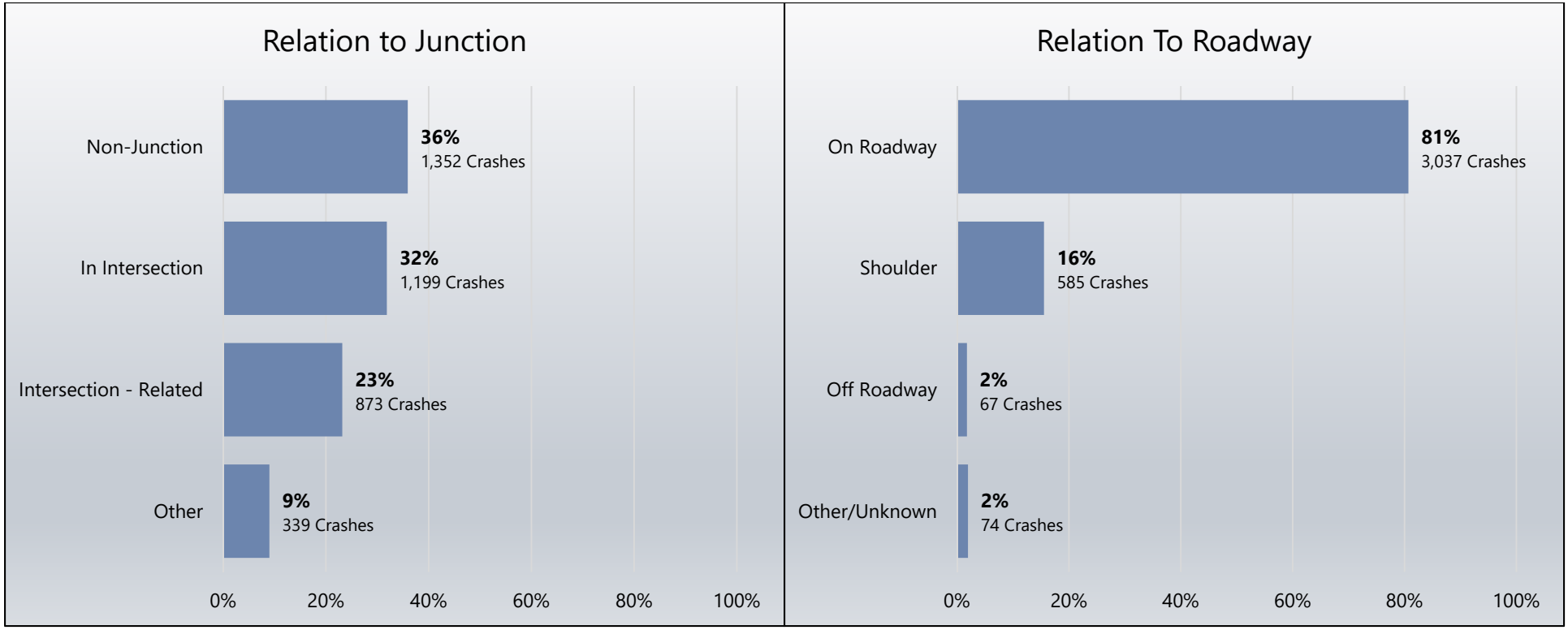


Figure 4.8: Crash Relation to Junction (Left) and Roadway (Right)

Crashes can be categorized as either single or multi-vehicle crashes. Multi-vehicle crashes accounted for 74 percent of all reported crashes with a total of 2,789 crashes. Single vehicle crashes represented 26 percent of crashes with 972 total crashes. Two crashes were reported with an unknown crash type.

The most common multi-vehicle crashes were rear-end crashes, accounting for 40 percent of all multi-vehicle crashes. Right angle and sideswipe, same direction crashes were listed as the manner of crash in 856 and 280 crashes, respectively. With respect to single vehicle crashes, fixed object crashes were the most commonly reported crash with 519 crashes, accounting for 53 percent of all single vehicle crashes. Roll over and wild animal crashes were the next two most common crashes with 169 and 140 crashes, respectively. **Figure 4.9** presents the distribution of both multiple and single vehicle crashes within the study area.

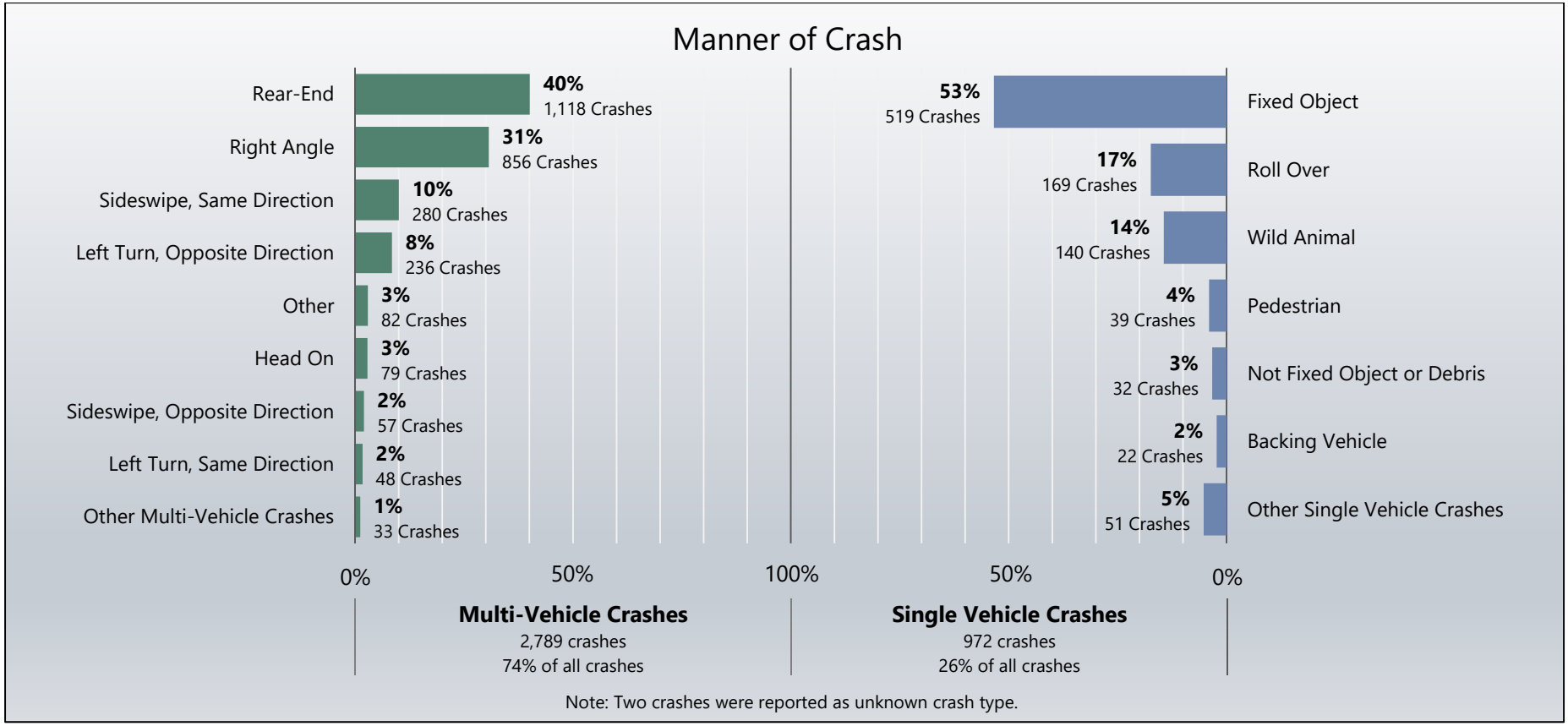


Figure 4.9: Manner of Crash

4.1.4. Crash Severity

Crash severity is categorized based on the most severe injury of the crash. For example if a crash results in two possible injuries and an incapacitating injury, the crash is reported as an incapacitating injury crash. The distribution of reported crash severity is presented in **Figure 4.10**. The locations of the incapacitating and fatal injury crashes are shown in **Figure 4.11**. An incapacitating injury is defined as an injury, other than a fatality, which prevents the injured individual from walking, driving, or normally continuing the activities they were capable of performing before the injury.

During the five year analysis period, there were a total of 1,032 injury and 16 fatal crashes, accounting for 27 and 0.4 percent of all crashes, respectively. As a result of multiple individuals being injured in a single crash, a total of 1,355 individuals were injured during the crash analysis period. Furthermore, 16 individuals sustained fatal injuries during the same period.

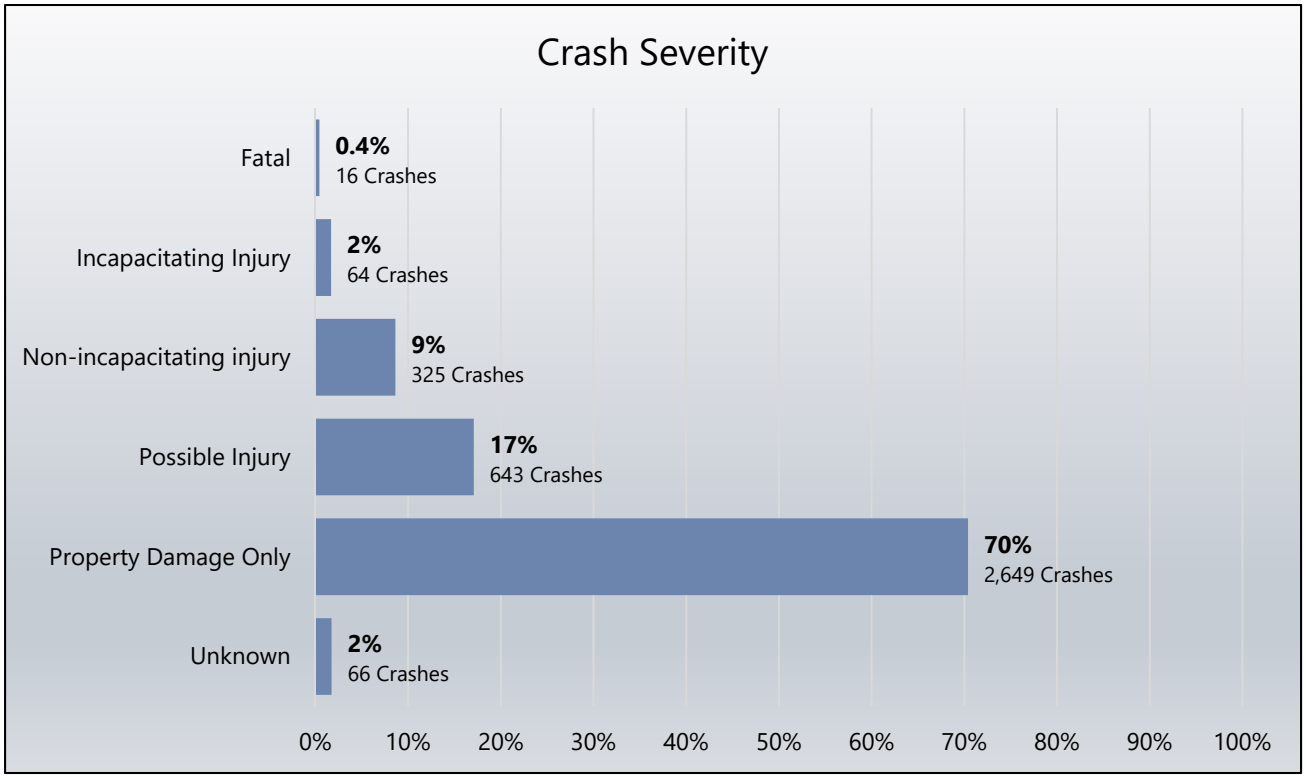


Figure 4.10: Crash Severity

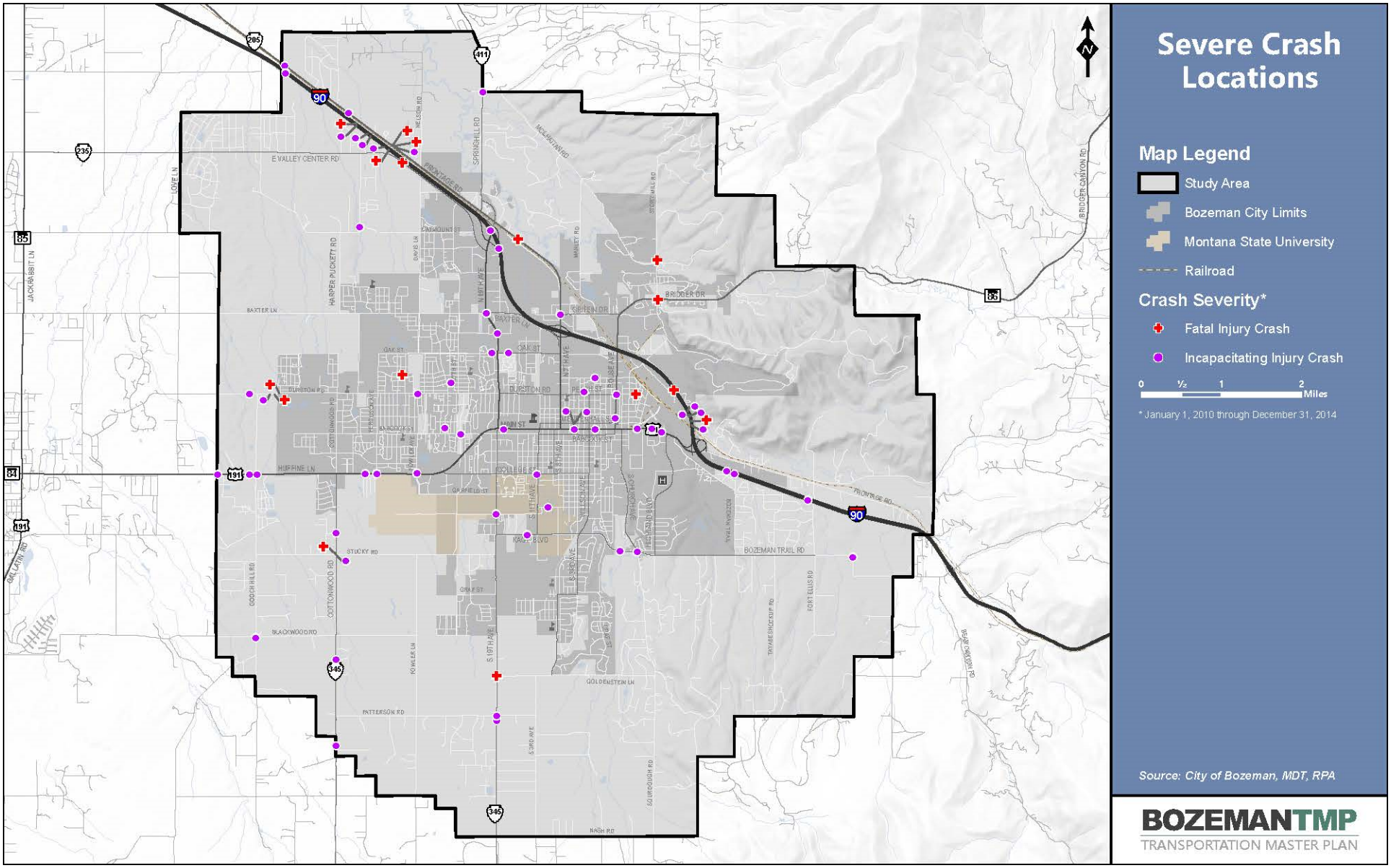


Figure 4.11: Severe Crash Locations

4.1.5. Intersection Crashes

The 63 intersection that were studied for LOS were also investigated for crashes. The crash information was analyzed to identify those intersections with crash characteristics that may warrant further study.

The number of crashes at each intersection was determined spatially from the GIS crash database. Any crash located within 150 feet was counted for that intersection. Intersection traffic volumes were determined from PM peak hour turning movement counts. A design hourly vehicle (DHV) factor of 8.61 percent was applied to the peak hour counts to estimate daily traffic volumes based on the average DHV determined from count locations with 24 hours of data.

Crash rates were used to represent the number of crashes against the daily traffic volume. The rate is expressed as the number of crashes per million entering vehicles. **Equation 1** was used to calculated crash rate.

The severity index was calculated by applying multipliers to crashes based on severity. For the severity index, crashes were broken into three categories of severity: property damage only (PDO), non-incapacitating injury, and fatal or incapacitating injury crashes. Each of these three types was given a different multiplier: 1.0 for PDO, 3.0 for injury, and 8.0 for fatal or incapacitating injury crashes. **Equation 2** was used to calculate the severity index. **Table 4.2** presents the crash rates and severity indices for each of the study intersections.

Equation 1:

$$\frac{Total\ Number\ of\ Crashes\ \times 1{,}000{,}000\ Vehicles}{Vehicles\ per\ day\ \times Number\ of\ Years\ \times 365\ days\ per\ year} = Crash\ Rate$$

Equation 2:

$$\frac{(\#PDO \times 1.0) + (\#Injury \times 3.0) + (\#Fatal\ of\ Incap \times 8.0)}{Total\ Number\ of\ Crashes} = Severity\ Index$$

Table 4.2: Intersection Crash Rate, Severity Index, and Severity Rate

ID	Intersection	Total Crashes	Fatal/Incapacitating Injury Crashes	Injury Crashes	PDO	Crash Rate	Severity Index	Severity Rate
01	Ferguson Avenue and Babcock Street	18	0	8	10	0.70	1.89	1.32
02	Fowler Avenue and Babcock Street	2	0	1	1	0.10	2.00	0.19
03	Ferguson Avenue and Huffine Lane	22	1	7	14	0.35	1.95	0.68
04	Fowler Avenue and Huffine Lane	10	1	3	6	0.15	5.60	0.35
05	19th Avenue and Garfield Street	12	0	4	8	0.21	1.67	0.35
06	19th Avenue and Stucky Road	8	0	2	6	0.27	1.50	0.41
07	19th Avenue and Goldenstein Lane	9	1	3	5	0.58	2.44	1.41
08	7th Avenue and Griffin Drive	12	1	4	7	0.35	2.25	0.78
09	Manely Road and Griffin Drive	3	0	1	2	0.16	1.67	0.27
10	Rouse Avenue and Griffin Drive	5	0	0	5	0.22	1.00	0.22
11	Story Mill Road and Bridger Drive	5	1	2	2	0.37	3.20	1.20
12	Willson Avenue and Peach Street	11	0	5	6	0.72	1.91	1.38
13	Rouse Avenue and Peach Street	8	1	5	2	0.29	3.13	0.92
14	Willson Avenue and Mendenhall Street	6	0	2	4	0.27	1.67	0.45
15	Willson Avenue and Babcock Street	21	0	8	13	0.74	1.76	1.30
16	Broadway Avenue and Main Street	11	1	1	9	0.30	1.82	0.54
17	Highland Boulevard and Main Street	1	0	0	1	0.02	1.00	0.02
18	Haggerty Lane and Main Street	7	0	3	4	0.19	1.86	0.36
19	Willson Avenue and College Street	8	0	5	3	0.27	2.25	0.61
20	Highland Boulevard and Ellis Street	3	0	0	3	0.12	1.00	0.12
21	Sourdough Road and Kagy Boulevard	9	1	2	6	0.31	2.22	0.68
22	Highland Boulevard and Kagy Boulevard	2	0	0	2	0.09	1.00	0.09
23	Wagon Wheel Road and 3rd Avenue	0	0	0	0	0.00	0.00	0.00
24	11th Avenue and College Street	17	1	1	15	0.42	1.53	0.65
25	11th Avenue and Grant Street	7	0	1	6	0.32	1.29	0.41
26	11th Avenue and Lincoln Street	6	0	2	4	0.25	1.67	0.42
27	11th Avenue and Kagy Boulevard	14	0	0	14	0.34	1.00	0.34
28	8th Avenue and College Street	5	0	0	5	0.22	1.00	0.22
29	7th Avenue and Grant Street	4	0	1	3	0.30	1.50	0.45
30	7th Avenue and Kagy Boulevard	15	0	1	14	0.47	1.13	0.53
31	Valley Center Spur and Frontage Road	22	3	8	11	1.16	2.68	3.11
32	Valley Center Spur and Valley Center Road	12	0	1	11	0.63	1.17	0.74
33	Nelson Road and Frontage Road	0	0	0	0	0.00	0.00	0.00
34	19th Avenue and I-90 EB Ramp	3	0	0	3	0.07	1.00	0.07

ID	Intersection	Total Crashes	Fatal/Incapacitating Injury Crashes	Injury Crashes	PDO	Crash Rate	Severity Index	Severity Rate
35	19th Avenue and I-90 WB Ramp	1	0	0	1	0.03	1.00	0.03
36	19th Avenue and Tschache Way	27	2	6	19	0.51	1.96	1.00
37	19th Avenue and Oak Street	38	0	13	25	0.52	1.68	0.88
38	19th Avenue and Durston Road	29	0	7	22	0.42	1.48	0.63
39	7th Avenue and Durston Road/Peach Street	18	0	5	13	0.36	1.56	0.56
40	19th Avenue and Main Street	12	0	4	8	0.14	1.67	0.24
41	7th Avenue and Main Street	7	0	2	5	0.19	1.57	0.30
42	19th Avenue and Babcock Street	16	0	3	13	0.44	1.38	0.60
43	19th Avenue and Koch Street	12	0	4	8	0.30	1.67	0.50
44	19th Avenue and College Street	30	0	12	18	0.54	1.80	0.96
45	19th Avenue and Graf Street	1	0	1	0	0.06	1.00	0.06
46	Harper Puckett Road and Baxter Lane	3	0	0	3	0.34	1.00	0.34
47	Flanders Mill Road and Baxter Lane	2	0	0	2	0.15	1.00	0.15
48	Davis Lane and Baxter Lane	10	0	3	7	0.39	1.60	0.62
49	Laurel Parkway and Durston Road	2	1	1	0	0.11	5.50	0.60
50	Cottonwood Road and Durston Road	5	0	0	5	0.20	1.00	0.20
51	Flanders Mill Road and Durston Road	0	0	0	0	0.00	0.00	0.00
52	Ferguson Avenue and Durston Road	10	0	0	10	0.35	1.00	0.35
53	Fowler Avenue and Durston Road	2	1	1	0	0.11	5.50	0.60
54	Cottonwood Road and Babcock Street	2	0	0	2	0.11	1.00	0.11
55	19th Avenue and Baxter Lane	38	2	13	23	0.55	2.05	1.13
56	7th Avenue and Baxter Lane	10	0	3	7	0.17	1.60	0.28
57	7th Avenue and Oak Street	51	0	17	34	0.68	1.67	1.14
58	15th Avenue and Oak Street	8	0	5	3	0.21	2.25	0.48
59	27th Avenue and Oak Street	5	0	0	5	0.23	1.00	0.23
60	Davis Lane and Oak Street	5	0	1	4	0.23	1.40	0.33
61	Rouse Avenue and Oak Street	1	0	0	1	0.03	1.00	0.03
62	19th Avenue and Kagy Boulevard	13	0	5	8	0.31	1.77	0.54
63	Willson Avenue/3rd Avenue and Kagy Boulevard	22	0	8	14	0.46	1.73	0.80

4.2. Bicyclist and Pedestrian Crash Analysis

Bicycle and pedestrian crash data are part of the same data set as the vehicular crash data. All pedestrian crashes have the reported crash type listed as pedestrian. Bicycle crashes, however, could be listed as right angle, sideswipe, etc. crashes. As such, it was necessary to investigate the vehicles involved in the crash. Any crash listing a bicycle as being involved in a crash has been included in this analysis. Note that each crash used for this analysis was also included in the prior study area crash analysis.

Pedestrian and bicycle crash data are typically underreported as many minor collisions that do not involve injury or significant property damage are unlikely to be reported to the police. Crash data were reviewed for the five year period between January 1st, 2010 to December 31st, 2014 and some interesting trends were noted. **Figure 4.12** provides a summary of this analysis. The vast majority of pedestrian and bicycle involved crashes occur at intersection or driveways; essentially, places where vehicle turning movements conflict. Most of these intersection are on Bozeman's arterial and collector system. Many crashes occurred due to impaired driving (also impaired walking in the case of 19 percent of pedestrian crashes).

88 CRASHES INVOLVING BICYCLISTS

47 CRASHES INVOLVING PEDESTRIANS

16 INCAPACITATING OR FATAL INJURIES
12% OF TOTAL BIKE/PED CRASHES (1 FATAL)

11% OCCURRED WHEN IT WAS **DARK OUTSIDE** 8 OUT OF 10 (80%) IN UNLIT AREAS

25% OCCURRED WHEN IT WAS **DARK OUTSIDE** 7 OUT OF 12 (58%) IN UNLIT AREAS

78% OCCURRED AT **INTERSECTIONS OR DRIVEWAYS**

64% OCCURRED AT **INTERSECTIONS OR DRIVEWAYS**

59% INVOLVED IMPAIRED DRIVING BY THE **MOTORIST**

36% INVOLVED IMPAIRED DRIVING BY THE **MOTORIST**

23% OCCURRED WITHIN **A BICYCLE LANE**

19% INVOLVED IMPAIRED **PEDESTRIANS**

WHERE DO CRASHES OCCUR?

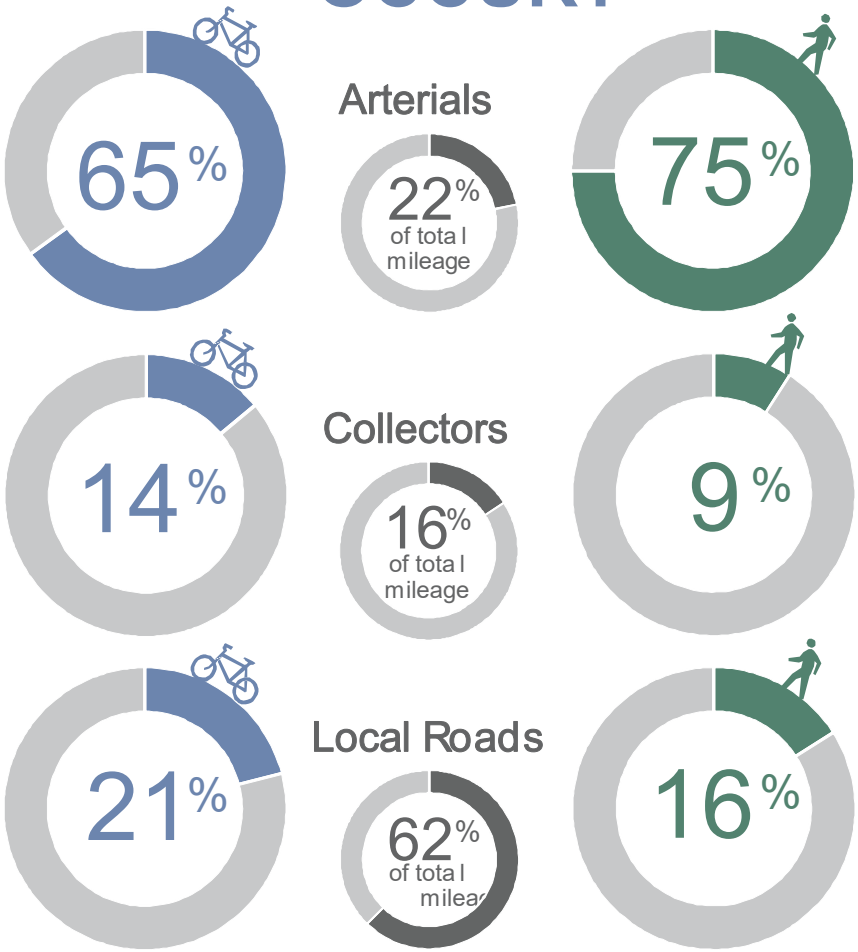


Figure 4.12: Bicyclist and Pedestrian Crash Statistics

4.3. Safety Data Trend Analysis

The MDT Highway Traffic Safety Section supplied crash statistics for January 1st, 2010 to December 31st, 2014. A safety data trend analysis was conducted to compare the crash characteristics of the Study Area, Gallatin County, and the State of Montana.

4.3.1. Impairment

Of the reported crashes, Gallatin County had a higher rate of alcohol/drug related crashes (10.6 percent) as compared to the State of Montana (9.7 percent). The rate of impaired driving crashes within the study area was lower than both the County and the State with 7.6 percent of reported crashes involving an impaired driver. **Table 4.3** tabulates the total reported crashes and the percentage of crashes involving an impaired driver.

Table 4.3: Crash Statistics for Alcohol/drug Related Crashes

Location	Total Crashes	Impaired Driver Involved	
Study Area	3,763	287	7.6%
Gallatin County	8,167	863	10.6%
State of Montana	102,187	9,869	9.7%

4.3.2. Safety Belt Use

Safety belt use data were reported on a per individual basis. As such, individuals involved in some crashes did not have the option to use a safety belt, for example motorcycles, pedestrians, or bicyclists. The data were adjusted to account for these users. Safety belt usage data for the State of Montana are unavailable. Safety belt usage was found to be higher in the study area than Gallatin County with 90.8 and 89.8 percent of individuals using safety belts, respectively. **Table 4.4** gives statistics for safety belt use.

Table 4.4: Crash Statistics for Safety Belt Use

Location	Number of Individuals	Using Restraints		Not Using Restraints		Unknown	
Study Area	8,882	8,061	90.8%	383	4.3%	438	4.9%
Gallatin County	17,452	15,669	89.8%	840	4.85	943	5.4%

4.3.3. Driver Age

Analysis of driver's age shows that drivers between 18 and 25 years of age were the most commonly reported ages for the study area, Gallatin County, and the State of Montana. Within the study area, 32 percent of drivers were reported to be within the 18 to 25 years of age range. **Figure 4.13** shows the percent of drivers by age for the study area, Gallatin County, and the State of Montana.

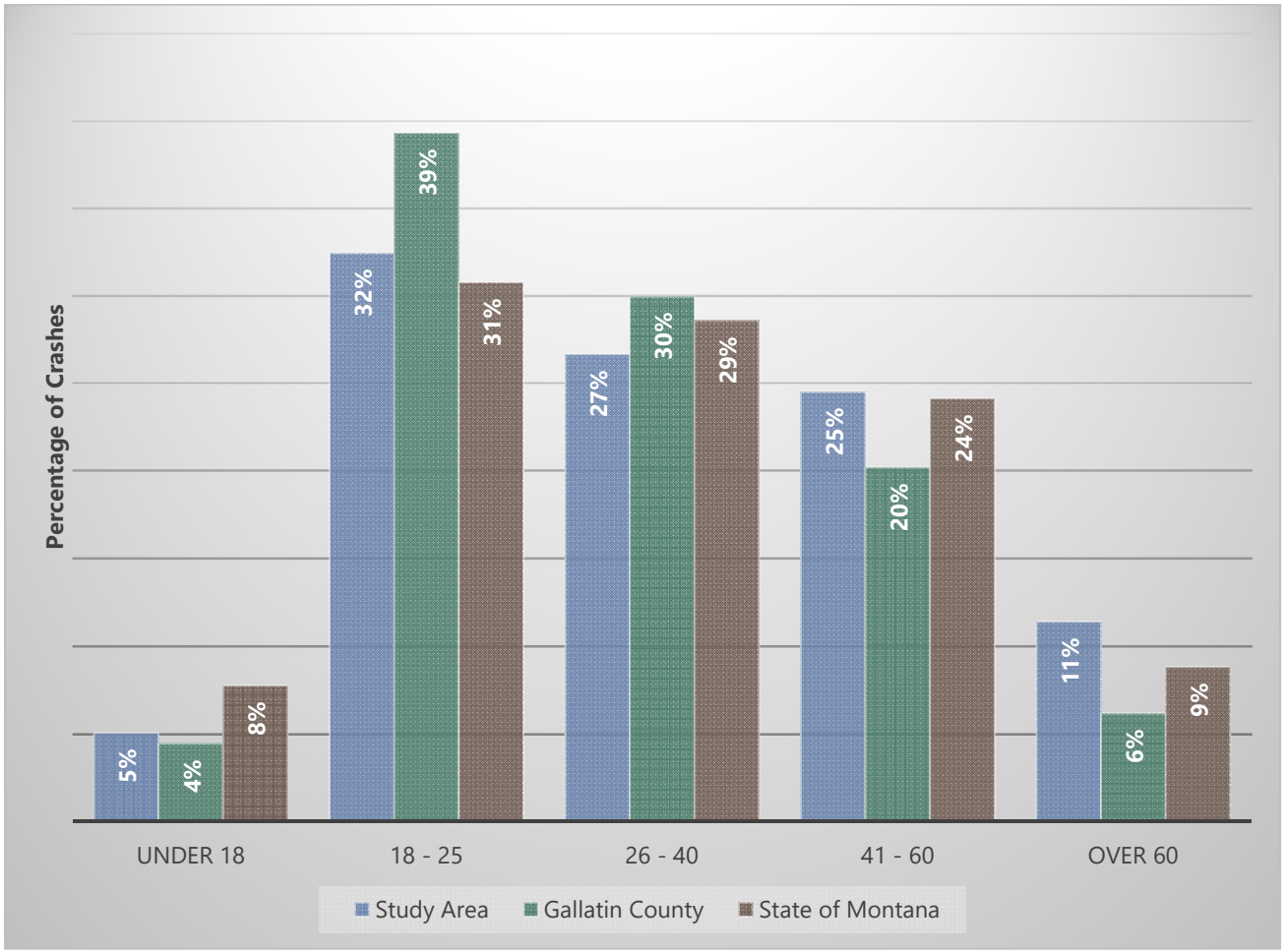


Figure 4.13: Driver's Age Statistics

4.3.4. Vehicle Type

Motorcycles were involved in 1.5 percent of crashes within the study area, which is lower than both Gallatin County (1.7 percent) and the State of Montana (1.9 percent). Large vehicles, i.e. semi-trucks, were involved in 1.8 percent of crashes within the study area. Large vehicles accounted for 4.9 and 6.3 percent of crashes in Gallatin County and the State of Montana, respectively. **Table 4.5** presents crash statistics based on vehicle type.

Table 4.5: Crash Statistics for Vehicle Type

Location	Total Crashes	Motorcycle Crashes		Large Vehicle Crashes	
Study Area	3,763	58	1.5%	66	1.8%
Gallatin County	8,167	142	1.7%	401	4.9%
State of Montana	102,187	1,974	1.9%	6,397	6.3%

4.3.5. Crash Severity

Comparison of crash severity statistics revealed that fatal and incapacitating injury crashes accounted for a lower percentage of crashes with in the study area as compared to both Gallatin County and the State of Montana. Less than 1.0 percent of crashes resulted in a fatality for the study area, Gallatin County, and the State of Montana. **Table 4.6** tabulates the number and percentage of fatal and incapacitating injury crashes that occurred within the study area, Gallatin County, and the State of Montana.

Table 4.6: Crash Severity Statistics

Location	Total Crashes	Fatal Crashes		Incapacitating Injury Crashes	
Study Area	3,763	16	0.4%	64	1.7%
Gallatin County	8,167	48	0.6%	193	2.4%
State of Montana	102,187	922	0.9%	4,023	3.9%

5.0. AREAS OF CONCERN

This section provides a list and description of areas of concern and consideration within the study area. These areas were identified through review of existing traffic data, travel demand model projections, field review, public databases, and other resources. More discussion has been provided in the previous sections, and it is reiterated here as appropriate.

5.1. Existing Transportation Conditions

The following roadways are currently exceeding capacity (v/c ≥ 1) – refer to **Figure 2.12**:

- Kagy Boulevard – South 19th Avenue to South 7th Avenue
- Rouse Avenue – Peach Street to Bond Street

The following roadways are currently approaching capacity (0.85 ≤ v/c < 1.00) – refer to **Figure 2.12**:

- College Street – South 19th Avenue to South 15th Avenue
- Frontage Road – Valley Center Cut Across to Study Area Boundary
- Kagy Boulevard – South 7th Avenue to Willson / South 3rd Avenue
- Rouse Avenue – Bond Street to Griffin Drive

The following intersections experience a LOS of D or worse under existing conditions:

Signalized (see **Table 2.6** and **Figure 2.20**)

- Highland Boulevard and Main Street (ID 17)
- 19th Avenue and Main Street (ID 40)
- North 7th Avenue and Oak Street (ID 57)

Unsignalized (see **Table 2.7** and **Figure 2.20**)

- Ferguson Avenue and Babcock Street (ID 01)
- Fowler Avenue and Babcock Street (ID 02)
- Manely Road and Griffin Drive (ID 09)
- Rouse Avenue and Peach Street (ID 13)
- Haggerty Lane and Main Street (ID 18)
- Willson Avenue and College Street (ID 19)

- Highland Boulevard and Ellis Street (ID 20)
- Sourdough Road and Kagy Boulevard (ID 21)
- Highland Boulevard and Kagy Boulevard (ID 22)
- South 7th Avenue and Kagy Boulevard (ID 30)
- North 19th Avenue and I-90 EB Ramp (ID 34)
- Davis Lane and Baxter Lane (ID 48)
- Flanders Mill Road and Durston Road (ID 51)
- Ferguson Avenue and Durston Road (ID 52)
- North 7th Avenue and Baxter Lane (ID 56)
- North 27th Avenue and Oak Street (ID 59)
- Davis Street and Oak Street (ID 60)

5.2. Projected Transportation Conditions

The following roadways are projected to exceed capacity (v/c ≥ 1) – refer to **Figure 3.2**:

- College Street – South 19th Avenue to South 15th Avenue
- Durston Road – North 25th Avenue North 19th Avenue
- Frontage Road (S-205) – Nelson Road to Springhill Road
- Griffin Drive – North 7th Avenue to Rouse Avenue
- Huffine Lane – Fowler Avenue to Study Area Boundary
- Kagy Boulevard – South 19th Avenue to South 7th Avenue
- Main Street – North 7th Avenue to North 5th Avenue
- North 19th Avenue – Main Street to Interstate 90
- Rouse Avenue – Oak Street to Griffin Drive
- South 19th Avenue – College Street to Kagy Boulevard
- South 11th Avenue – College Street to Grant Street

The following roadways are projected to approach (0.85 ≤ v/c < 1.00) – refer to **Figure 3.2**:

- Baxter Lane – North 27th Avenue to North 19th Avenue
- College Street – South 15th Avenue to South 11th Avenue
- Durston Road – North 27th Avenue to North 25th Avenue

- Durston Road – North 15th Avenue to North 11th Avenue
- Gooch Hill Road – Huffine Lane to Stucky Road
- Huffine Lane – Fowler Avenue to North 19th Avenue
- Kagy Boulevard – North 7th Avenue to Tracy Avenue
- Main Street – North 19th Avenue to North 7th Avenue
- North 7th Avenue – Interstate 90 to Oak Street
- Oak Street – North 27th Avenue to North 19th Avenue
- Oak Street – North 19th Avenue to North 7th Avenue/Walmart Approach
- Peach Street – North 7th Avenue to North 5th Avenue
- South 19th Avenue – College Street to Main Street
- South 19th Avenue – Kagy Boulevard to Graf Street
- South 11th Avenue – College Street to Babcock Street
- Stucky Road – South 19th Avenue to Wagon Wheel Road
- Willson Avenue – Garfield Street to Babcock Street

The following intersections are projected to experience a LOS of D or worse by the year 2040:

Signalized (see **Table 3.1** and **Figure 3.3**)

- Fowler Avenue and Huffine Lane (ID 04)
- South 19th Avenue and Garfield Street (ID 05)
- North 7th Avenue and Griffin Drive (ID 08)
- Highland Boulevard and Main Street (ID 17)
- South 11th Avenue and Kagy Boulevard (ID 27)
- North 19th Avenue and I-90 EB Ramp (ID 34)
- North 19th Avenue and I-90 WB Ramp (ID 35)
- North 19th Avenue and Oak Street (ID 37)
- North 19th Avenue and Durston Road (ID 38)
- North 7th Avenue and Durston / Peach (ID 39)
- 19th Avenue and Main Street (ID 40)
- South 19th Avenue and Babcock Street (ID 42)
- South 19th Avenue and College Street (ID 44)

- South 19th Avenue and Graf Street (ID 45)
- Cottonwood Road and Durston Road (ID 50)
- Cottonwood Road and Babcock Street (ID 54)
- North 19th Avenue and Baxter Lane (ID 55)
- North 7th Avenue and Oak Street (ID 57)
- North 27th Avenue and Oak Street (ID 59)
- South 19th Avenue and Kagy Boulevard (ID 62)

Unsignalized (see **Table 3.2** and **Figure 3.3**)

- Ferguson Avenue and Babcock Street (ID 01)
- Fowler Avenue and Babcock Street (ID 02)
- South 19th Avenue and Goldenstein Lane (ID 07)
- Manely Road and Griffin Drive (ID 09)
- Story Mill Road and Bridger Drive (ID 11)
- Willson Avenue and Peach Street (ID 12)
- Haggerty Lane and Main Street (ID 18)
- Willson Avenue and College Street (ID 19)
- Highland Boulevard and Ellis Street (ID 20)
- Sourdough Road and Kagy Boulevard (ID 21)
- Highland Boulevard and Kagy Boulevard (ID 22)
- South 11th Avenue and College Street (ID 24)
- South 11th Avenue and Grant Street (ID 25)
- South 11th Avenue and Lincoln Street (ID 26)
- South 8th Avenue and College Street (ID 28)
- South 7th Avenue and Grant Street (ID 29)
- Valley Center Spur and Valley Center Road (ID 32)
- Harper Puckett Road and Baxter Lane (ID 46)
- Flanders Mill Road and Baxter Lane (ID 47)
- Ferguson Avenue and Durston Road (ID 52)
- Fowler Avenue and Durston Road (ID 53)
- North 7th Avenue and Baxter Lane (ID 56)

- Davis Street and Oak Street (ID 60)

5.3. Safety

Identification of possible safety concerns can be approached in multiple ways. Firstly, overall crash density, as shown in **Figures 4.2** and **4.3**, can be used to identify possible locations with crash concerns. This approach, however, does not take the amount of traffic into account. Accordingly, the second method is to use the intersection crash severity rate as presented in **Table 4.2**. This method does not account for crashes that may be occurring away from intersections. This leads to the third approach, plotting the spatial extent of severe crashes as in **Figure 4.11**. A combination of these three methods can identify locations with possible safety concerns.

5.3.1. Crash Density

In reference to **Figures 4.2** and **4.3**, the areas with high crash density (number of crashes occurring in a given area during the crash analysis period) tend to follow the major routes throughout the study area. Specific areas that have high crash densities are:

- North 19th Avenue and Baxter Lane,
- North 19th Avenue and Oak Street,
- North 7th Avenue and Oak Street,
- West of 15th Avenue and Main Street,
- North 7th Avenue and Mendenhall,
- 3rd Avenue and Main Street, and
- Willson Avenue and Babcock Street.

Each of these locations has more than 35 crashes per 500 by 500-foot area during the crash analysis period. Additionally, each of these locations are along roads with high traffic volumes, therefore, more crashes are expected.

5.3.2. Intersection Crash Severity Rate

The intersection crash severity rate, as presented in **Section 4.1.5** accounts for the exposure or traffic volume at a given location. For example, an intersection with a high number of PDO crashes and a high traffic volume would have a low severity rate. Alternately, an intersection with a fatal crash and low traffic volume would have a high severity rate. **Table 5.1** presents the intersections with crash severity rates greater than 1.00.

Table 5.1: High Crash Severity Locations

ID	Intersection	Crash Rate	Severity Index	Severity Rate
01	Ferguson Avenue and Babcock	0.70	1.89	1.32
07	19th Avenue and Goldenstein Lane	0.58	2.44	1.41
11	Story Mill Road and Bridger Drive	0.37	3.20	1.20
12	Willson Avenue and Peach Street	0.72	1.91	1.38
15	Wilson Avenue and Babcock Street	0.74	1.76	1.30
31	Valley Center Spur and Frontage Road	1.16	2.68	3.11
36	19th Avenue and Tschache Way	0.51	1.96	1.00
55	19th Avenue and Baxter Lane	0.55	2.05	1.13
57	7th Avenue and Oak Street	0.68	1.67	1.14

5.3.3. Severe Crash Locations

Plotting the location of severe crashes, those resulting in a fatal or incapacitating injury, may reveal locations with safety concerns. These locations may not be apparent though the previous two analysis techniques due to the location not being at an intersection or at a location with a high number of non-injury crashes. The following locations were identified based on the number of severe crashes occurring at the location:

- Interstate 90 west of the East Main interchange,
- Interstate 90 west of the Valley Center Spur overpass,
- Intersection of Valley Center Spur and Frontage Road,
- The chicane on Durston Road west of Laurel Parkway, and
- Intersection of Cottonwood Road and Stucky Road.

5.3.4. Summary

Each of the three previous methods identified locations and intersection with possible crash concerns. Some of the intersections were listed in two of the three lists, these include:

- North 19th Avenue and Baxter Lane,
- North 7th Avenue and Oak Street,
- Willson Avenue and Babcock Street, and
- Valley Center Spur and Frontage Road.

Additionally, the severe crash clusters on Interstate 90 and at the chicane on Durston Road represent possible safety concerns. Both of the severe crash clusters on Interstate 90 are located at or near a bridge structure. The chicane on Durston Road is a sudden transition from a rural to an urban area with poor sightlines and complicated road geometry.

5.3.5. Pedestrians and Bicyclists

Bicycle and pedestrian crash data are part of the same data set as the vehicular crash data. All pedestrian crashes have the reported crash type listed as pedestrian. Bicycle crashes, however, could be listed as right angle, sideswipe, etc. crashes. Pedestrian and bicycle crash data are typically underreported as many minor collisions that do not involve injury or significant property damage are unlikely to be reported to the police. Crash data were reviewed for the five year period between January 1st, 2010 to December 31st, 2014 and some interesting trends noted as follows (refer to **Figure 4.12** for a complete summary):

- There were 88 crashes involving bicyclists, and 47 crashes involving pedestrians, in the analysis period.
- Of the 135 toatal bicycle and pedestrian crashes in the analysis period, 16 crashes (12%) resulted in incapacitating or fatal injuries.
- 78% of bicycle crashes, and 64% of pedestrian crashes, occurred at intersections or driveways.
- 23% of bicycle crashes occurred within a bicycle lane.
- 19% of pedestrian crashes involved impaired pedestrians.

The vast majority of pedestrian and bicycle involved crashes occur at intersection or driveways; essentially, places where vehicle turning movements conflict. Most of these intersection are on Bozeman's arterial and collector system. Many crashes are occurring due to impaired driving / impaired walking. The crash data indicate a focus on intersection safety may yield reductions in the number of future crashes. Additionally, as so few pedestrian and bicycle crashes occur on local streets, they may be another place to invest future improvements such as bicycle boulevards and arterial crossing improvements for pedestrians and bicyclists.

5.4. Alternative Transportation Modes

5.4.1. Pedestrian

Bozeman City residents have a developed pedestrian system (see **Figure 2.5** for Existing Pedestrian Conditions), but there are still opportunities present for advancement. Through the existing conditions analysis and public involvement the main themes of pedestrian problems are summarized below:

- Lack of ADA compatible curb ramps throughout much of the city.
- Old, deteriorating sections of sidewalk.
- Lack of vegetation maintenance.

- Snow removal in winter.
- Longstanding gaps in the pedestrian network.
- Short-term gaps in the pedestrian network in new development areas by piecemeal building.
- Difficult crossing locations of major streets.
- Large distances between legal crossings of major streets
- Lack of full integration with transit – sidewalk connections, shelters.

5.4.2. Bicycle

People that bicycle make up a diverse group with widely varying needs and preferences. A solution for some will still leave others unserved. For example, the construction of bike lanes will be a boon to confident cyclists and those that prefer direct routes with few interruptions, however less confident bicyclists will not feel comfortable next to vehicle traffic and will prefer a separated pathway or a parallel lower traffic route. Conversely, a shared-use path will encourage less confident cyclists and other recreational users, but if it is the sole bicycle facility confident cyclists will prefer to ride in the unimproved roadway, away from slow moving pedestrians and complicated crossings of roads and driveways. To meet the needs of all cyclists, a balanced approach to solving bicycle facility concerns is required.

The City of Bozeman has seen a rapid increase in bicycle facilities in recent years (see **Figure 2.4** for Existing Bicycle Conditions). Many of the east-west arterials to the north side of Main Street have had bicycle lanes installed including Durston Road, Oak Street, Babcock Street, Baxter Lane, Ferguson Ave and others. Shared use path corridors have also been developed and expanded including the North 19th Avenue corridor, the Highland Boulevard corridor, and along West College Street. Through the existing conditions analysis and public involvement the main themes of bicycle problems are summarized below:

- Bike lanes not available on all arterial routes including:
  - *North Rouse Avenue*
  - *Kagy Boulevard*
  - *Huffine / Main Street*
  - *North 7th Avenue*
  - *North and South 19th Avenue*
  - *Cottonwood Road*
  - *Davis Lane*
  - *Willson Avenue*
  - *College Street*
  - *South 8th Avenue*

  - *Valley Center Drive*
- Existing bike lane network has numerous gaps.
- Many unimproved roadways have no shoulder.
- Bike lanes and shoulders covered in debris.
- Pavement quality including potholes and cracking on many bike routes.
- Difficult crossings of major roadways at unsignalized intersections along high desire corridors including:
  - *West Koch Street and South 19th Avenue*
  - *West Koch Street and South 11th Avenue*
  - *West Lamme Street and North 7th Avenue*
  - *West Lamme Street and North Rouse Avenue*
  - *West College Street and South Willson Avenue*
- Some bike lanes are not routinely plowed in winter.
- Shortage or lack of bicycle parking at bicyclists' destination.
- Shortage or lack of bicycle parking at major transit stops.
- Shortage or lack of wayfinding signage on bicycle routes to major destinations.
- Shortage or lack of bicycle lanes to Downtown Bozeman (Main Street, Mendenhall Street and Babcock Street).
- Shortage or lack of bicycle lanes to Montana State University.
- Shortage or lack of dedicated bicycle facilities along high profile routes such as Bozeman-Belgrade, and Bozeman-Four Corners.
- General perception of lack of safety for adults and children.
- General perception of lack of adequate bicycle connections from new residential areas to commercial areas.
- Need for better education for bicyclists and motorists.

5.4.3. Transit

Streamline plans for increased ridership as more people use the service and as funding allows for the increase of services through increased daily hours and expanded weekend service. Streamline works very closely with a variety of partners to determine needs and changes. The following areas of concern have been identified through prior transit planning and public feedback associated with this citywide planning process.

5.4.3.1 Service Gaps

- Higher service frequency
- Unserved portions of Bozeman

  - Northeast trailer parks
  - South of campus
  - Business park southwest of campus hosting RightNow Technologies, one of the largest employers
  - New growth areas in northwest
- Underserved areas

5.4.3.2 Information Gaps

- Lack of knowledge in the community regarding Streamline.
- Difficulty among some potential users in understanding time tables and planning trips.

5.4.3.3 Resource Gaps

- Lack of benches and bus shelters
- Bus stop interaction with development
- Bus stop placement
- Bus stop elements

Appendix A

EXISTING INTERSECTION LEVEL OF SERVICE (LOS)

Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Existing AM.pdf

Scenario 1: Existing - AM
3/16/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	01 - Ferguson Avenue / Babcock Street	Two-way stop	HCM 2010	WB Left	0.297	50.6	F
2	02 - Fowler Avenue / Babcock Street	Two-way stop	HCM 2010	NB Left	0.186	20.5	C
3	03 - Ferguson Avenue / Huffine Lane	Signalized	HCM 2010	SB Left	0.443	15.4	B
4	04 - Fowler Avenue / Huffine Lane	Signalized	HCM 2010	WB Left	0.367	25.8	C
5	05 - 19th Avenue / Garfield Street	Signalized	HCM 2010	EB Left	0.348	13.0	B
6	06 - 19th Avenue / Stucky Road	Signalized	HCM 2010	EB Left	0.435	12.2	B
7	07 - 19th Avenue / Goldenstein Lane	Two-way stop	HCM 2010	WB Left	0.086	21.4	C
8	08 - 7th Avenue / Griffin Drive	Signalized	HCM 2010	WB Left	0.507	13.4	B
9	09 - Manley Road / Griffin Drive	Two-way stop	HCM 2010	SB Left	0.386	28.3	D
10	10 - Rouse Avenue / Griffin Drive	Signalized	HCM 2010	EB Left	0.255	12.9	B
11	11 - Story Mill Road / Bridger Drive	Two-way stop	HCM 2010	NB Left	0.027	17.6	C
12	12 - Wilson Avenue / Peach Street	Two-way stop	HCM 2010	NB Thru	0.027	14.5	B
13	13 - Rouse Avenue / Peach Street	Two-way stop	HCM 2010	EB Left	0.318	81.0	F
14	14 - Willson Avenue / Mendenhall Street	Signalized	HCM 2010	WB Right	0.226	13.5	B
15	15 - Willson Avenue / Babcock Street	Signalized	HCM 2010	EB Right	0.299	11.9	B
16	16 - Broadway Avenue / Main Street	Signalized	HCM 2010	SB Left	0.308	7.8	A
17	17 - Highland Boulevard / Main Street	Signalized	HCM 2010	NEB Left	0.496	14.1	B

18	18 - Haggerty Lane / Main Street	Two-way stop	HCM 2010	NEB Thru	0.000	78.9	F
19	19 - Willson Avenue / College Street	Two-way stop	HCM 2010	WB Left	0.011	45.4	E
20	20 - Highland Boulevard / Ellis Street	Two-way stop	HCM 2010	WB Thru	0.082	35.1	E
21	21 - Sourdough Road / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	0.491	78.2	F
22	22 - Highland Boulevard / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	0.036	72.7	F
23	23 - Wagon Wheel Road / 3rd Avenue	All-way stop	HCM 2010	EB Left		15.3	C
27	25 - 11th Avenue / Grant Street	All-way stop	HCM 2010	SB Thru		10.6	B
28	26 - 11th Avenue / Lincoln Street	All-way stop	HCM 2010	EB Right		11.2	B
29	27 - 11th Avenue / Kagy Boulevard	Signalized	HCM 2010	WB Thru	0.519	22.6	C
30	28 - 8th Avenue / College Street	All-way stop	HCM 2010	WB Thru		12.9	B
31	29 - 7th Avenue / Grant Street	All-way stop	HCM 2010	WB Left		9.2	A
32	30 - 7th Avenue / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	0.038	87.2	F
33	31 - Valley Center Spur / Frontage Road	Two-way stop	HCM 2010	NEB Left	0.172	15.9	C
34	32 - Valley Center Spur / Valley Center Road	Two-way stop	HCM 2010	SB Left	0.326	18.8	C
35	33 - Nelson Road / Frontage Road	Two-way stop	HCM 2010	SWB Left	0.222	19.4	C
36	34 - 19th Avenue / I-90 EB Ramp	Two-way stop	HCM 2010	SEB Left	0.183	41.5	E
37	35 - 19th Avenue / I-90 WB Ramp	Signalized	HCM 2010	NWB Left	0.481	12.7	B
38	36 - 19th Avenue / Tschache Way	Signalized	HCM 2010	WB Left	0.361	27.5	C
39	37 - 19th Avenue / Oak Street	Signalized	HCM 2010	EB Thru	0.512	27.6	C
40	38 - 19th Avenue / Durston Road	Signalized	HCM 2010	EB Thru	0.452	20.8	C
41	39 - 7th Avenue / Durston Road / Peach Street	Signalized	HCM 2010	EB Thru	0.474	28.1	C

42	40 - 19th Avenue / Main Street	Signalized	HCM 2010	NB Left	0.523	44.6	D
43	41 - 7th Avenue / Main Street	Signalized	HCM 2010	SB Left	0.319	14.4	B
44	42 - 19th Avenue / Babcock Street	Signalized	HCM 2010		0.000	0.0	A
45	43 - 19th Avenue / Koch Street	Signalized	HCM 2010	EB Right	0.305	9.6	A
46	44 - 19th Avenue / College Street	Signalized	HCM 2010	EB Thru	0.431	20.5	C
47	45 - 19th Avenue / Graf Street	Two-way stop	HCM 2010	EB Left	0.152	17.4	C
48	46 - Harper Puckett Road / Baxter Lane	Two-way stop	HCM 2010	SB Left	0.101	11.0	B
49	47 - Flanders Mill Road / Baxter Lane	Two-way stop	HCM 2010	NB Left	0.070	13.7	B
50	48 - Davis Lane / Baxter Lane	All-way stop	HCM 2010	EB Thru		54.6	F
51	49 - Laurel Parkway / Durston Road	All-way stop	HCM 2010	SB Left		10.6	B
52	50 - Cottonwood Road / Durston Road	Signalized	HCM 2010	EB Thru	0.526	19.4	B
53	51 - Flanders Mill Road / Durston Road	Two-way stop	HCM 2010	SB Left	0.278	26.3	D
54	52 - Ferguson Avenue / Durston Road	All-way stop	HCM 2010	EB Thru		17.9	C
55	53 - Fowler Avenue / Durston Road	Two-way stop	HCM 2010	NB Left	0.023	14.6	B
56	54 - Cottonwood Road / Babcock Street	Two-way stop	HCM 2010	WB Left	0.160	17.0	C
58	55 - 19th Avenue / Baxter Lane	Signalized	HCM 2010	WB Left	0.558	24.0	C
59	56 - 7th Avenue / Baxter Lane	Two-way stop	HCM 2010	EB Right	0.636	25.4	D
60	57 - 7th Avenue / Oak Street	Signalized	HCM 2010	WB Thru	0.522	21.9	C
61	58 - 15th Avenue / Oak Street	Signalized	HCM 2010	WB Left	0.258	18.1	B
62	59 - 27th Avenue / Oak Street	Two-way stop	HCM 2010	SB Left	0.112	25.9	D
63	60 - Davis Lane / Oak Street	Two-way stop	HCM 2010	SB Left	0.701	46.6	E

64	61 - Rouse Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.360	14.5	B
65	62 - 19th Avenue / Kagy Boulevard	Signalized	HCM 2010	WB Left	0.471	14.8	B
66	63 - Willson Avenue / Kagy Boulevard	Signalized	HCM 2010	SWB Thru	0.650	27.0	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 01 - Ferguson Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	50.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.297

Intersection Setup

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	14	182	41	63	428	10	16	73	77	26	34	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	7.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	182	41	63	428	10	16	73	77	26	34	43
Peak Hour Factor	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970	0.7970
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	55	12	19	129	3	5	22	23	8	11	13
Total Analysis Volume [veh/h]	17	219	49	76	516	12	19	88	93	33	43	54
Pedestrian Volume [ped/h]	0			5			0			5		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.06	0.01	0.00	0.12	0.39	0.17	0.30	0.19	0.07
d_M, Delay for Movement [s/veh]	8.49	0.00	0.00	7.95	0.00	0.00	49.13	43.01	33.42	50.56	23.92	12.98
Movement LOS	A	A	A	A	A	A	E	E	D	F	C	B
95th-Percentile Queue Length [veh]	1.11	1.11	1.11	2.54	2.54	2.54	4.53	4.53	4.53	1.14	1.01	1.01
95th-Percentile Queue Length [ft]	27.65	27.65	27.65	63.62	63.62	63.62	113.29	113.29	113.29	28.40	25.26	25.26
d_A, Approach Delay [s/veh]	0.51			1.00			39.13			26.14		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	9.82											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: 02 - Fowler Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	20.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.186

Intersection Setup

Name	Fowler Avenue		Babcock Street		Babcock Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Babcock Street		Babcock Street	
Base Volume Input [veh/h]	50	75	256	179	126	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.40	0.00	0.80	0.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	75	256	179	126	158
Peak Hour Factor	0.8940	0.8940	0.8940	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	14	21	69	48	34	42
Total Analysis Volume [veh/h]	56	84	275	192	135	170
Pedestrian Volume [ped/h]	9		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.13	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	20.54	14.00	0.00	0.00	8.80	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.32	1.32	0.00	0.00	0.43	0.00
95th-Percentile Queue Length [ft]	32.88	32.88	0.00	0.00	10.64	0.00
d_A, Approach Delay [s/veh]	16.62		0.00		3.89	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.85					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 3: 03 - Ferguson Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	110.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Base Volume Input [veh/h]	311	202	201	862	522	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	4.50	1.50	1.90	2.50	0.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	202	201	862	522	122
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	82	54	54	231	140	33
Total Analysis Volume [veh/h]	330	214	215	924	559	131
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	15	0	0	60	60	0
Maximum Green [s]	30	0	0	90	90	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	30	0	0	65	65	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	20	20	65	65	65	65
g / C, Green / Cycle	0.21	0.21	0.69	0.69	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.18	0.14	0.25	0.26	0.16	0.08
s, saturation flow rate [veh/h]	1804	1545	851	3550	3529	1602
c, Capacity [veh/h]	377	323	584	2435	2421	1099
d1, Uniform Delay [s]	36.38	34.51	10.30	6.34	5.57	5.10
k, delay calibration	0.20	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.34	2.33	1.78	0.45	0.22	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

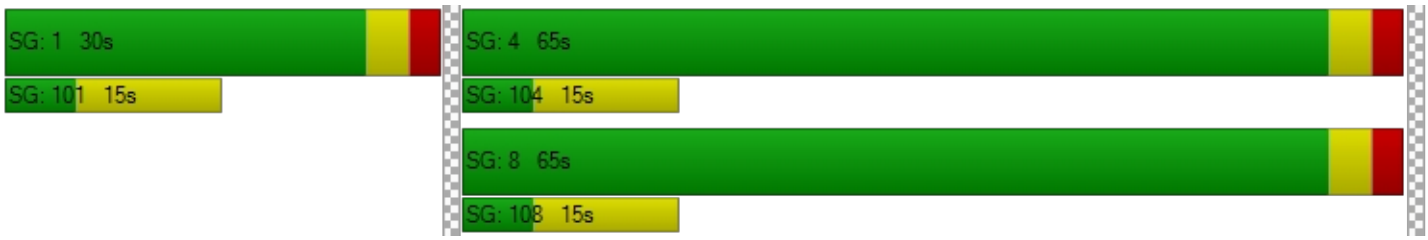
X, volume / capacity	0.88	0.66	0.37	0.38	0.23	0.12
d, Delay for Lane Group [s/veh]	47.72	36.84	12.08	6.79	5.79	5.33
Lane Group LOS	D	D	B	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	8.46	4.68	2.51	3.52	1.86	0.84
50th-Percentile Queue Length [ft]	211.56	117.10	62.74	87.88	46.57	20.89
95th-Percentile Queue Length [veh]	13.23	8.23	4.52	6.33	3.35	1.50
95th-Percentile Queue Length [ft]	330.83	205.83	112.93	158.18	83.83	37.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.72	36.84	12.08	6.79	5.79	5.33
Movement LOS	D	D	B	A	A	A
d_A, Approach Delay [s/veh]	43.44		7.79		5.70	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	15.36					
Intersection LOS	B					
Intersection V/C	0.443					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 04 - Fowler Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	25.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

Intersection Setup

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	253.00	100.00	100.00	76.00	100.00	100.00	100.00	100.00	280.00	365.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Base Volume Input [veh/h]	145	42	7	84	198	34	19	654	307	6	420	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.40	0.00	0.00	0.00	0.50	0.00	0.00	2.70	1.30	0.00	3.10	4.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	42	7	84	198	34	19	654	307	6	420	24
Peak Hour Factor	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650	0.8650
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	42	12	2	24	57	10	5	183	86	2	118	7
Total Analysis Volume [veh/h]	168	49	8	97	229	39	21	733	344	7	471	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	15	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	0	90	0	0	90	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	37	0	0	37	0	0	53	0	0	53	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	57	57	57	57	57	57	23	23	23	23	23	23
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.63	0.63	0.26	0.26	0.26	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.15	0.03	0.00	0.07	0.07	0.07	0.02	0.21	0.22	0.01	0.14	0.14
s, saturation flow rate [veh/h]	1113	1900	1615	1378	1891	1797	914	3522	1594	735	1843	1808
c, Capacity [veh/h]	700	1191	1012	876	1185	1126	212	923	418	132	483	474
d1, Uniform Delay [s]	10.41	6.43	6.30	8.62	6.75	6.76	33.75	30.94	31.25	39.27	28.37	28.39
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.06	0.01	0.26	0.20	0.21	0.20	1.60	4.13	0.17	0.87	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

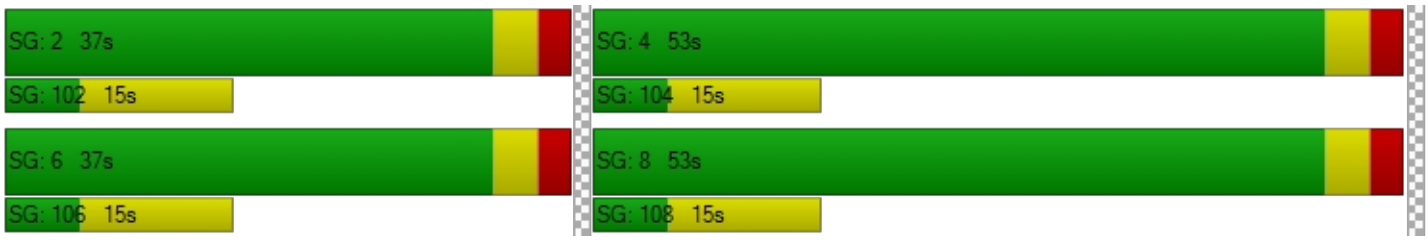
X, volume / capacity	0.24	0.04	0.01	0.11	0.11	0.12	0.10	0.79	0.82	0.05	0.52	0.52
d, Delay for Lane Group [s/veh]	11.22	6.50	6.31	8.87	6.95	6.97	33.95	32.54	35.37	39.44	29.23	29.28
Lane Group LOS	B	A	A	A	A	A	C	C	D	D	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.77	0.34	0.06	0.86	1.01	0.98	0.41	7.42	7.32	0.15	4.64	4.58
50th-Percentile Queue Length [ft]	44.34	8.61	1.39	21.48	25.15	24.50	10.26	185.52	182.95	3.75	116.08	114.54
95th-Percentile Queue Length [veh]	3.19	0.62	0.10	1.55	1.81	1.76	0.74	11.89	11.75	0.27	8.18	8.09
95th-Percentile Queue Length [ft]	79.81	15.49	2.50	38.66	45.27	44.09	18.47	297.21	293.86	6.76	204.43	202.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.22	6.50	6.31	8.87	6.96	6.97	33.95	32.54	35.37	39.44	29.25	29.28
Movement LOS	B	A	A	A	A	A	C	C	D	D	C	C
d_A, Approach Delay [s/veh]	10.02			7.47			33.46			29.40		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	25.79											
Intersection LOS	C											
Intersection V/C	0.367											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: 05 - 19th Avenue / Garfield Street

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.348

Intersection Setup

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	280.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Base Volume Input [veh/h]	245	607	9	45	720	53	32	25	542	8	12	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.10	0.00	0.00	0.80	0.00	0.00	0.00	0.60	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	245	607	9	45	720	53	32	25	542	8	12	31
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	166	2	12	196	14	9	7	154	2	3	9
Total Analysis Volume [veh/h]	267	662	10	49	785	58	36	28	616	9	14	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	1			4			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	6	0	4	0
Auxiliary Signal Groups									6,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	45	0	10	45	0	0	30	45	0	30	0
Maximum Green [s]	30	90	0	30	90	0	0	45	90	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	13	61	0	24	72	0	0	35	72	0	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	80	69	69	80	67	67	30	30	102	30	30
g / C, Green / Cycle	0.67	0.57	0.57	0.67	0.56	0.56	0.25	0.25	0.85	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.33	0.18	0.18	0.05	0.23	0.23	0.03	0.01	0.39	0.01	0.03
s, saturation flow rate [veh/h]	821	1879	1868	896	1885	1834	1373	1900	1583	1403	1665
c, Capacity [veh/h]	551	1078	1072	612	1052	1024	349	475	1346	372	416
d1, Uniform Delay [s]	9.51	13.28	13.28	7.46	15.13	15.14	38.39	34.25	2.21	36.54	34.77
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.03	0.76	0.76	0.06	1.16	1.20	0.13	0.05	1.12	0.03	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.31	0.31	0.08	0.41	0.41	0.10	0.06	0.46	0.02	0.12
d, Delay for Lane Group [s/veh]	12.54	14.04	14.05	7.52	16.29	16.34	38.52	34.31	3.33	36.57	34.90
Lane Group LOS	B	B	B	A	B	B	D	C	A	D	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.04	4.87	4.85	0.42	6.87	6.72	0.88	0.64	2.55	0.21	1.13
50th-Percentile Queue Length [ft]	76.01	121.72	121.14	10.59	171.65	167.98	21.96	15.88	63.82	5.29	28.27
95th-Percentile Queue Length [veh]	5.47	8.49	8.46	0.76	11.16	10.97	1.58	1.14	4.60	0.38	2.04
95th-Percentile Queue Length [ft]	136.81	212.19	211.39	19.07	279.09	274.26	39.53	28.59	114.88	9.51	50.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.54	14.04	14.05	7.52	16.31	16.34	38.52	34.31	3.33	36.57	34.90	34.90
Movement LOS	B	B	B	A	B	B	D	C	A	D	C	C
d_A, Approach Delay [s/veh]	13.61			15.83			6.47			35.16		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	12.98											
Intersection LOS	B											
Intersection V/C	0.348											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: 06 - 19th Avenue / Stucky Road

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.435

Intersection Setup

Name	19th Avenue		19th Avenue		Stucky Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	19th Avenue		19th Avenue		Stucky Road	
Base Volume Input [veh/h]	62	479	182	232	361	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.40	3.80	0.00	0.00	2.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	479	182	232	361	41
Peak Hour Factor	0.8570	1.0000	1.0000	1.0000	1.0000	0.8570
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	17	115	44	56	87	11
Total Analysis Volume [veh/h]	69	460	175	223	347	46
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	0	22	22	0	38	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	36	36	36	36	14	14
g / C, Green / Cycle	0.60	0.60	0.60	0.60	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.10	0.14	0.19	0.03
s, saturation flow rate [veh/h]	1209	1892	1830	1615	1810	1577
c, Capacity [veh/h]	726	1135	1098	969	422	368
d1, Uniform Delay [s]	7.92	6.34	5.31	5.57	21.82	18.16
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.26	1.08	0.31	0.55	4.04	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

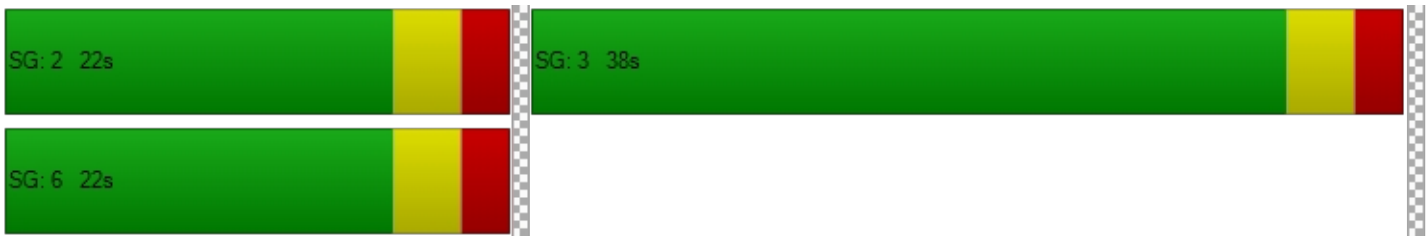
X, volume / capacity	0.10	0.41	0.16	0.23	0.82	0.12
d, Delay for Lane Group [s/veh]	8.18	7.42	5.62	6.12	25.86	18.31
Lane Group LOS	A	A	A	A	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.45	2.62	0.82	1.12	4.73	0.49
50th-Percentile Queue Length [ft]	11.20	65.55	20.54	28.03	118.33	12.14
95th-Percentile Queue Length [veh]	0.81	4.72	1.48	2.02	8.30	0.87
95th-Percentile Queue Length [ft]	20.16	117.98	36.97	50.45	207.52	21.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.18	7.42	5.62	6.12	25.86	18.31
Movement LOS	A	A	A	A	C	B
d_A, Approach Delay [s/veh]	7.52		5.90		24.97	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	12.23					
Intersection LOS	B					
Intersection V/C	0.435					

Sequence

Ring 1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 07 - 19th Avenue / Goldenstein Lane

Control Type:	Two-way stop	Delay (sec / veh):	21.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.086

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name						
Base Volume Input [veh/h]	335	73	105	91	22	179
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.00	2.90	0.00	0.00	0.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	335	73	105	91	22	179
Peak Hour Factor	0.8110	0.8110	0.8110	0.8110	0.8110	0.8110
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000
Total 15-Minute Volume [veh/h]	99	22	31	27	7	55
Total Analysis Volume [veh/h]	397	86	124	108	27	221
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.12	0.00	0.09	0.36
d_M, Delay for Movement [s/veh]	0.00	0.00	8.78	0.00	21.43	15.80
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.82	0.82	2.25	2.25
95th-Percentile Queue Length [ft]	0.00	0.00	20.48	20.48	56.23	56.23
d_A, Approach Delay [s/veh]	0.00		4.70		16.41	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	5.36					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: 08 - 7th Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	13.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	9	210	351	122	266	6	7	12	24	228	4	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	6.20	2.80	9.00	4.90	16.70	14.30	8.30	12.00	16.70	0.00	6.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	210	351	122	266	6	7	12	24	228	4	60
Peak Hour Factor	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120	0.8120
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	62	104	36	79	2	2	4	7	67	1	18
Total Analysis Volume [veh/h]	11	248	415	144	314	7	9	15	30	270	5	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			1			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	0	0	30	0	0	20	0	0	20	0
Maximum Green [s]	0	60	0	0	60	0	0	45	0	0	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	35	0	0	35	0	0	25	0	0	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	30	30	30	30	20	20
g / C, Green / Cycle	0.50	0.50	0.50	0.50	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.15	0.26	0.14	0.18	0.03	0.24
s, saturation flow rate [veh/h]	1771	1571	1055	1804	1593	1425
c, Capacity [veh/h]	949	787	523	904	600	581
d1, Uniform Delay [s]	8.74	10.16	13.25	9.09	13.83	17.67
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.21
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	2.52	1.30	1.09	0.06	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.53	0.28	0.36	0.09	0.60
d, Delay for Lane Group [s/veh]	9.45	12.69	14.55	10.19	13.90	19.59
Lane Group LOS	A	B	B	B	B	B
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.83	3.62	1.42	2.40	0.47	4.08
50th-Percentile Queue Length [ft]	45.82	90.41	35.61	59.91	11.78	102.00
95th-Percentile Queue Length [veh]	3.30	6.51	2.56	4.31	0.85	7.34
95th-Percentile Queue Length [ft]	82.48	162.74	64.09	107.83	21.21	183.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.45	9.45	12.69	14.55	10.19	10.19	13.90	13.90	13.90	19.59	19.59	19.59
Movement LOS	A	A	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	11.44			11.54			13.90			19.59		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	13.39											
Intersection LOS	B											
Intersection V/C	0.507											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: 09 - Manley Road / Griffin Drive

Control Type:	Two-way stop	Delay (sec / veh):	28.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.386

Intersection Setup

Name	Manley Road		Griffin Drive		Griffin Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	0
Pocket Length [ft]	100.00	90.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Manley Road		Griffin Drive		Griffin Drive	
Base Volume Input [veh/h]	83	45	123	316	222	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	11.10	1.60	4.10	8.60	2.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	45	123	316	222	46
Peak Hour Factor	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	24	13	36	91	64	13
Total Analysis Volume [veh/h]	96	52	142	366	257	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.07	0.11	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	28.34	10.28	8.24	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.73	0.23	2.00	2.00	0.00	0.00
95th-Percentile Queue Length [ft]	43.30	5.70	50.08	50.08	0.00	0.00
d_A, Approach Delay [s/veh]	21.99		2.30		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.58					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: 10 - Rouse Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.255

Intersection Setup

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	275.00	130.00	100.00	100.00	70.00	100.00	70.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Base Volume Input [veh/h]	122	5	175	139	159	5	1	206	111	5	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.80	0.00	9.70	7.90	4.40	0.00	100.00	2.90	5.40	0.00	28.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	5	175	139	159	5	1	206	111	5	7	1
Peak Hour Factor	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590	0.9590
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	1	44	35	40	1	0	52	28	1	2	0
Total Analysis Volume [veh/h]	122	5	175	139	159	5	1	206	111	5	7	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	8	3	8	0	0	4	0	0	2	0
Auxiliary Signal Groups			6,8									
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	30	10	30	0	0	30	0	0	30	0
Maximum Green [s]	0	60	60	25	60	0	0	60	0	0	60	0
Amber [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	35	55	13	55	0	0	42	0	0	35	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No	No	No	No			No			No	
Maximum Recall		No	No	No	No			No			No	
Pedestrian Recall		No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	C
L, Total Lost Time per Cycle [s]	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	30	85	50	50	37	37	37	30
g / C, Green / Cycle	0.33	0.94	0.56	0.56	0.41	0.41	0.41	0.33
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.11	0.09	0.00	0.11	0.07	0.01
s, saturation flow rate [veh/h]	1311	1472	1230	1810	621	1846	1532	1090
c, Capacity [veh/h]	515	1390	717	1006	291	764	634	419
d1, Uniform Delay [s]	23.16	0.16	9.98	9.77	19.59	17.40	16.67	20.34
k, delay calibration	0.11	0.11	0.44	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	0.04	0.53	0.35	0.02	0.87	0.60	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

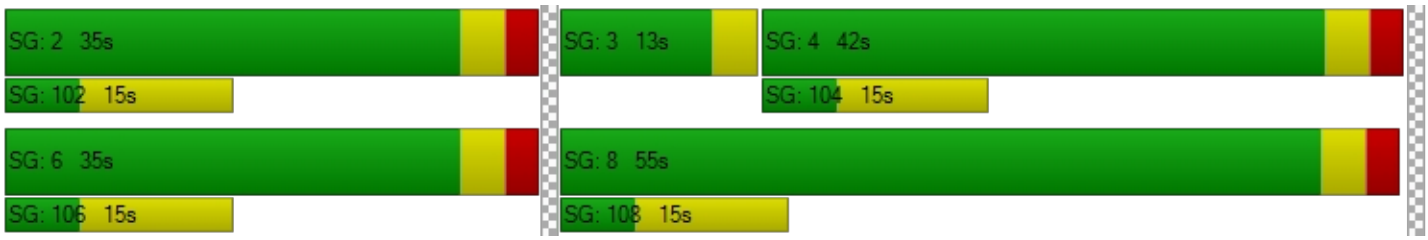
X, volume / capacity	0.25	0.13	0.19	0.16	0.00	0.27	0.18	0.03
d, Delay for Lane Group [s/veh]	23.41	0.20	10.51	10.12	19.61	18.27	17.27	20.37
Lane Group LOS	C	A	B	B	B	B	B	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.06	0.02	1.35	1.58	0.02	2.91	1.51	0.18
50th-Percentile Queue Length [ft]	51.54	0.39	33.80	39.51	0.38	72.76	37.83	4.61
95th-Percentile Queue Length [veh]	3.71	0.03	2.43	2.84	0.03	5.24	2.72	0.33
95th-Percentile Queue Length [ft]	92.77	0.70	60.84	71.11	0.69	130.98	68.09	8.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.41	23.41	0.20	10.51	10.12	10.12	19.61	18.27	17.27	20.37	20.37	20.37
Movement LOS	C	C	A	B	B	B	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	9.96			10.30			17.93			20.37		
Approach LOS	A			B			B			C		
d_I, Intersection Delay [s/veh]	12.92											
Intersection LOS	B											
Intersection V/C	0.255											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: 11 - Story Mill Road / Bridger Drive

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Base Volume Input [veh/h]	7	15	14	4	41	93	61	121	4	41	172	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	6.70	0.00	25.00	0.00	4.30	8.20	7.40	25.00	0.00	0.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	15	14	4	41	93	61	121	4	41	172	3
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	4	4	1	11	25	17	33	1	11	47	1
Total Analysis Volume [veh/h]	8	16	15	4	45	102	67	132	4	45	188	3
Pedestrian Volume [ped/h]	0			0			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.02	0.01	0.11	0.12	0.05	0.00	0.00	0.03	0.00	0.00
d_M, Delay for Movement [s/veh]	17.64	14.72	9.60	16.85	15.69	11.12	7.81	0.00	0.00	7.54	0.00	0.00
Movement LOS	C	B	A	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.27	0.27	0.27	0.95	0.95	0.95	0.53	0.53	0.53	0.58	0.58	0.58
95th-Percentile Queue Length [ft]	6.75	6.75	6.75	23.66	23.66	23.66	13.27	13.27	13.27	14.40	14.40	14.40
d_A, Approach Delay [s/veh]	13.35			12.63			2.58			1.44		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	5.23											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 12: 12 - Wilson Avenue / Peach Street

Control Type:	Two-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.027

Intersection Setup

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	44	10	14	2	3	2	0	232	71	19	139	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	2.80	0.00	4.30	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	10	14	2	3	2	0	232	71	19	139	0
Peak Hour Factor	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170	0.8170
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	13	3	4	1	1	1	0	68	21	6	41	0
Total Analysis Volume [veh/h]	52	12	16	2	4	2	0	273	83	22	163	0
Pedestrian Volume [ped/h]	3			4			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.03	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	14.46	14.53	11.42	13.52	13.64	9.24	7.54	0.00	0.00	8.04	0.00	0.00
Movement LOS	B	B	B	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.58	0.58	0.58	0.05	0.05	0.05	0.00	0.00	0.00	0.54	0.54	0.54
95th-Percentile Queue Length [ft]	14.61	14.61	14.61	1.25	1.25	1.25	0.00	0.00	0.00	13.51	13.51	13.51
d_A, Approach Delay [s/veh]	13.86			12.51			0.00			0.96		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	2.20											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 13: 13 - Rouse Avenue / Peach Street

Control Type:	Two-way stop	Delay (sec / veh):	81.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.318

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	56	334	9	70	421	69	29	52	75	5	51	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	1.40	0.70	1.40	0.00	5.80	1.30	0.00	0.00	0.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	334	9	70	421	69	29	52	75	5	51	122
Peak Hour Factor	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210	0.9210
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	15	87	2	18	110	18	8	14	20	1	13	32
Total Analysis Volume [veh/h]	58	348	9	73	439	72	30	54	78	5	53	127
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.06	0.00	0.00	0.32	0.30	0.13	0.05	0.30	0.18
d_M, Delay for Movement [s/veh]	8.58	0.00	0.00	8.18	0.00	0.00	81.02	62.92	48.91	50.84	36.70	21.40
Movement LOS	A	A	A	A	A	A	F	F	E	F	E	C
95th-Percentile Queue Length [veh]	1.87	1.87	1.87	2.73	2.73	2.73	5.14	5.14	5.14	2.98	2.98	2.98
95th-Percentile Queue Length [ft]	46.83	46.83	46.83	68.14	68.14	68.14	128.47	128.47	128.47	74.53	74.53	74.53
d_A, Approach Delay [s/veh]	1.20			1.02			59.53			26.58		
Approach LOS	A			A			F			D		
d_I, Intersection Delay [s/veh]	11.63											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 14: 14 - Willson Avenue / Mendenhall Street

Control Type:	Signalized	Delay (sec / veh):	13.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.226

Intersection Setup

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Base Volume Input [veh/h]	53	107	0	0	97	10	0	0	0	72	238	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	0.00	2.00	2.00	4.10	0.00	2.00	2.00	2.00	0.00	0.50	5.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	107	0	0	97	10	0	0	0	72	238	17
Peak Hour Factor	0.8950	0.8950	1.0000	1.0000	0.8950	0.8950	1.0000	1.0000	1.0000	0.8950	0.8950	0.8950
Other Adjustment Factor	0.9600	0.9600	1.0000	1.0000	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	14	29	0	0	26	3	0	0	0	19	64	5
Total Analysis Volume [veh/h]	57	115	0	0	104	11	0	0	0	77	255	18
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	7			7			9			9		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	0	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	0	0	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Split [s]	0	28	0	0	28	0	0	0	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		C	C
L, Total Lost Time per Cycle [s]	5.00	5.00		5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00		3.00	3.00
g_i, Effective Green Time [s]	35	35		15	15
g / C, Green / Cycle	0.58	0.58		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07		0.11	0.11
s, saturation flow rate [veh/h]	1481	1615		1666	1517
c, Capacity [veh/h]	940	938		421	383
d1, Uniform Delay [s]	5.86	5.67		18.84	18.84
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.43	0.27		0.71	0.78
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.12		0.44	0.44
d, Delay for Lane Group [s/veh]	6.29	5.94		19.55	19.62
Lane Group LOS	A	A		B	B
Critical Lane Group	Yes	No		No	Yes
50th-Percentile Queue Length [veh]	0.89	0.57		2.06	1.88
50th-Percentile Queue Length [ft]	22.27	14.36		51.47	47.08
95th-Percentile Queue Length [veh]	1.60	1.03		3.71	3.39
95th-Percentile Queue Length [ft]	40.09	25.84		92.64	84.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.29	6.29	0.00	0.00	5.94	5.94	0.00	0.00	0.00	19.55	19.59	19.62
Movement LOS	A	A			A	A				B	B	B
d_A, Approach Delay [s/veh]	6.29			5.94			0.00			19.58		
Approach LOS	A			A			A			B		
d_I, Intersection Delay [s/veh]	13.53											
Intersection LOS	B											
Intersection V/C	0.226											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 15: 15 - Willson Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.299

Intersection Setup

Name	Willson Avenue			Willson Avenue			Babcock Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	125.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Babcock Street					
Base Volume Input [veh/h]	0	229	217	22	234	0	17	337	51	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	1.30	0.50	9.10	2.10	2.00	0.00	0.60	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	229	217	22	234	0	17	337	51	0	0	0
Peak Hour Factor	1.0000	0.8990	0.8990	0.8990	0.8990	1.0000	0.8990	0.8990	0.8990	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	61	58	6	62	0	5	90	14	0	0	0
Total Analysis Volume [veh/h]	0	245	232	23	250	0	18	360	54	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			8			1			7		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	15	0	0	0	0
Maximum Green [s]	0	45	0	0	45	0	0	60	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	0	28	0	0	32	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	35	35	35	35	15	15	
g / C, Green / Cycle	0.58	0.58	0.58	0.58	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.15	0.16	0.02	0.15	0.14	0.14	
s, saturation flow rate [veh/h]	1688	1441	950	1675	1693	1474	
c, Capacity [veh/h]	980	836	560	972	428	373	
d1, Uniform Delay [s]	6.18	6.30	8.86	6.21	19.37	19.41	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.61	0.82	0.14	0.64	1.04	1.24	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

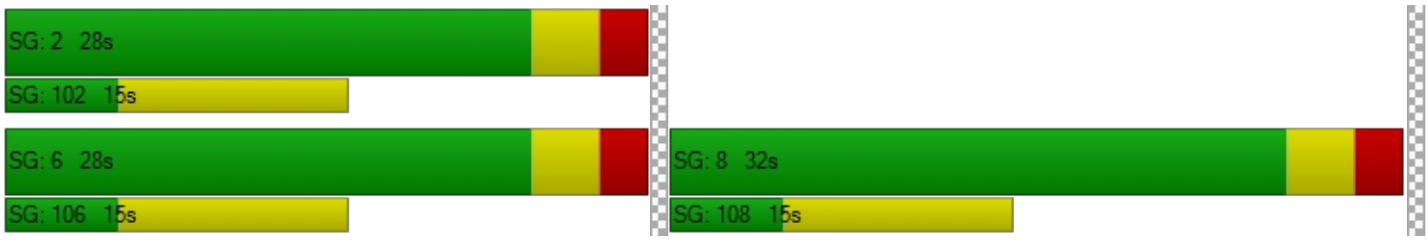
X, volume / capacity	0.25	0.28	0.04	0.26	0.54	0.54	
d, Delay for Lane Group [s/veh]	6.79	7.12	9.00	6.85	20.41	20.65	
Lane Group LOS	A	A	A	A	C	C	
Critical Lane Group	No	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	1.34	1.32	0.16	1.37	2.67	2.38	
50th-Percentile Queue Length [ft]	33.42	33.01	4.09	34.32	66.71	59.55	
95th-Percentile Queue Length [veh]	2.41	2.38	0.29	2.47	4.80	4.29	
95th-Percentile Queue Length [ft]	60.15	59.42	7.37	61.77	120.08	107.19	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	6.79	7.12	9.00	6.85	0.00	20.41	20.51	20.65	0.00	0.00	0.00
Movement LOS		A	A	A	A		C	C	C			
d_A, Approach Delay [s/veh]	6.95			7.03			20.52			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	11.93											
Intersection LOS	B											
Intersection V/C	0.299											

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: 16 - Broadway Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	7.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.308

Intersection Setup

Name	Broadway Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

volumes

Name	Broadway Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	93	23	41	508	524	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	8.60	3.60	0.00	2.10	4.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	23	41	508	524	114
Peak Hour Factor	0.8880	0.8880	0.8880	0.8880	0.8880	0.8880
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	25	6	11	139	143	31
Total Analysis Volume [veh/h]	101	25	45	555	572	125
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4		5		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	15	0	0	30	30	0
Maximum Green [s]	30	0	0	90	90	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	21	0	0	39	39	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	13	37	37	37	37
g / C, Green / Cycle	0.22	0.61	0.61	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.09	0.20	0.20	0.21	0.22
s, saturation flow rate [veh/h]	1465	1472	1556	1675	1573
c, Capacity [veh/h]	326	969	951	1023	961
d1, Uniform Delay [s]	19.85	5.49	5.65	5.73	5.83
k, delay calibration	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.75	0.81	0.89	0.91	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

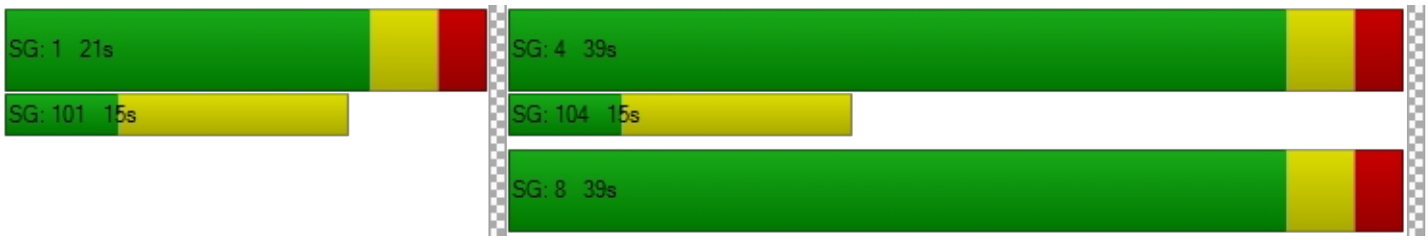
X, volume / capacity	0.39	0.30	0.32	0.34	0.36
d, Delay for Lane Group [s/veh]	20.60	6.29	6.54	6.64	6.89
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.46	1.49	1.59	1.83	1.88
50th-Percentile Queue Length [ft]	36.51	37.24	39.87	45.76	47.09
95th-Percentile Queue Length [veh]	2.63	2.68	2.87	3.29	3.39
95th-Percentile Queue Length [ft]	65.73	67.03	71.77	82.37	84.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.60	20.60	6.29	6.43	6.74	6.89
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	20.60		6.42		6.77	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	7.85					
Intersection LOS	A					
Intersection V/C	0.308					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: 17 - Highland Boulevard / Main Street

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.496

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Main Street			Main Street		
Base Volume Input [veh/h]	173	1	129	0	0	0	379	463	0	0	287	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	2.00	3.90	2.00	2.00	2.00	1.90	2.80	2.00	2.00	3.10	1.10
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	1	129	0	0	0	379	463	0	0	287	264
Peak Hour Factor	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940	0.7940
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	52	0	39	0	0	0	116	141	0	0	88	81
Total Analysis Volume [veh/h]	209	1	156	0	0	0	463	566	0	0	351	323
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	30	0	0	30	0
Maximum Green [s]	0	45	0	0	45	0	25	60	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	15	50	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	16	16	16	44	44	44	30	30	30
g / C, Green / Cycle	0.22	0.22	0.22	0.63	0.63	0.63	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.00	0.44	0.15	0.15	0.00	0.19	0.21
s, saturation flow rate [veh/h]	1414	1564	1863	1044	1848	1848	842	1843	1566
c, Capacity [veh/h]	375	350	468	704	1170	1170	385	790	671
d1, Uniform Delay [s]	26.79	23.43	0.00	8.25	5.56	5.56	0.00	14.12	14.40
k, delay calibration	0.50	0.50	0.50	0.22	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.88	4.11	0.00	2.16	0.11	0.11	0.00	0.39	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.45	0.00	0.66	0.24	0.24	0.00	0.44	0.48
d, Delay for Lane Group [s/veh]	32.67	27.54	0.00	10.42	5.66	5.66	0.00	14.51	14.93
Lane Group LOS	C	C	A	B	A	A	A	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.75	2.53	0.00	3.09	1.46	1.46	0.00	3.65	3.45
50th-Percentile Queue Length [ft]	93.80	63.17	0.00	77.33	36.48	36.48	0.00	91.33	86.19
95th-Percentile Queue Length [veh]	6.75	4.55	0.00	5.57	2.63	2.63	0.00	6.58	6.21
95th-Percentile Queue Length [ft]	168.85	113.71	0.00	139.20	65.67	65.67	0.00	164.40	155.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.67	27.54	27.54	0.00	0.00	0.00	10.42	5.66	5.66	0.00	14.51	14.93
Movement LOS	C	C	C	A	A	A	B	A	A	A	B	B
d_A, Approach Delay [s/veh]	30.47			0.00			7.80			14.71		
Approach LOS	C			A			A			B		
d_I, Intersection Delay [s/veh]	14.06											
Intersection LOS	B											
Intersection V/C	0.496											

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: 18 - Haggerty Lane / Main Street

Control Type:	Two-way stop	Delay (sec / veh):	78.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Haggerty Lane						Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

volumes

Name	Haggerty Lane						Main Street			Main Street		
Base Volume Input [veh/h]	62	0	49	1	0	0	92	773	2	2	332	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	2.00	0.00	0.00	0.00	3.30	2.50	0.00	0.00	3.30	3.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	0	49	1	0	0	92	773	2	2	332	83
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	19	0	15	0	0	0	29	243	1	1	105	26
Total Analysis Volume [veh/h]	77	0	61	1	0	0	116	974	3	3	418	105
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.60	0.00	0.08	0.01	0.00	0.00	0.11	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	63.67	78.87	40.69	49.62	51.83	12.33	8.94	0.00	0.00	10.06	0.00	0.00
Movement LOS	F	F	E	E	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh]	4.19	4.19	4.19	0.04	0.04	0.04	0.38	0.00	0.00	1.70	0.85	0.00
95th-Percentile Queue Length [ft]	104.69	104.69	104.69	0.93	0.93	0.93	9.48	0.00	0.00	42.43	21.22	0.00
d_A, Approach Delay [s/veh]	53.51			49.62			0.95			0.06		
Approach LOS	F			E			A			A		
d_I, Intersection Delay [s/veh]	4.84											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: 19 - Willson Avenue / College Street

Control Type:	Two-way stop	Delay (sec / veh):	45.4
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Base Volume Input [veh/h]	158	471	50	19	302	53	1	1	66	1	4	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	1.30	2.00	5.30	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	471	50	19	302	53	1	1	66	1	4	18
Peak Hour Factor	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	130	14	5	83	15	0	0	18	0	1	5
Total Analysis Volume [veh/h]	175	520	55	21	334	59	1	1	73	1	5	21
Pedestrian Volume [ped/h]	5			4			0			3		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.11	0.01	0.04	0.04
d_M, Delay for Movement [s/veh]	8.62	0.00	0.00	8.77	0.00	0.00	41.40	36.77	11.18	45.39	37.26	13.05
Movement LOS	A	A	A	A	A	A	E	E	B	E	E	B
95th-Percentile Queue Length [veh]	4.91	4.91	4.91	2.14	2.14	2.14	0.43	0.43	0.43	0.31	0.31	0.31
95th-Percentile Queue Length [ft]	122.65	122.65	122.65	53.55	53.55	53.55	10.75	10.75	10.75	7.65	7.65	7.65
d_A, Approach Delay [s/veh]	2.01			0.44			11.92			18.73		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.44											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 20: 20 - Highland Boulevard / Ellis Street

Control Type:	Two-way stop	Delay (sec / veh):	35.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.082

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Base Volume Input [veh/h]	5	253	49	74	300	257	18	2	4	28	10	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.80	0.00	1.40	2.60	1.20	0.00	0.00	25.00	0.00	0.00	2.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	253	49	74	300	257	18	2	4	28	10	34
Peak Hour Factor	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600	0.7600
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	80	15	23	95	81	6	1	1	9	3	11
Total Analysis Volume [veh/h]	6	320	62	93	379	325	24	3	5	37	13	45
Pedestrian Volume [ped/h]	3			0			1			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.08	0.00	0.00	0.16	0.02	0.01	0.21	0.08	0.07
d_M, Delay for Movement [s/veh]	9.02	0.00	0.00	8.31	0.00	0.00	33.36	28.61	16.91	32.98	35.15	17.62
Movement LOS	A	A	A	A	A	A	D	D	C	D	E	C
95th-Percentile Queue Length [veh]	0.02	0.00	0.00	0.26	0.00	0.00	0.65	0.65	0.65	1.56	1.56	1.56
95th-Percentile Queue Length [ft]	0.50	0.00	0.00	6.41	0.00	0.00	16.33	16.33	16.33	39.07	39.07	39.07
d_A, Approach Delay [s/veh]	0.14			0.97			30.34			26.00		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	3.25											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 21: 21 - Sourdough Road / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	78.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Base Volume Input [veh/h]	67	42	79	36	315	31	26	560	20	5	21	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	1.30	0.00	0.60	0.00	0.00	0.70	0.00	0.00	0.00	3.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	67	42	79	36	315	31	26	560	20	5	21	30
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	18	11	21	10	85	8	7	151	5	1	6	8
Total Analysis Volume [veh/h]	72	45	85	39	340	33	28	604	22	5	23	32
Pedestrian Volume [ped/h]	0			0			0			5		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	No			No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No			No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.49	0.23	0.12	0.04	0.00	0.00	0.02	0.01	0.00	0.04	0.12	0.07
d_M, Delay for Movement [s/veh]	78.23	72.28	58.92	8.92	0.00	0.00	8.08	0.00	0.00	40.05	27.75	16.48
Movement LOS	F	F	F	A	A	A	A	A	A	E	D	C
95th-Percentile Queue Length [veh]	6.71	6.71	6.71	0.13	0.00	0.00	0.07	0.00	0.00	0.86	0.86	0.86
95th-Percentile Queue Length [ft]	167.65	167.65	167.65	3.18	0.00	0.00	1.80	0.00	0.00	21.53	21.53	21.53
d_A, Approach Delay [s/veh]	68.78			0.84			0.35			22.77		
Approach LOS	F			A			A			C		
d_I, Intersection Delay [s/veh]	11.92											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 22: 22 - Highland Boulevard / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	72.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	2	2	0	7	0	331	319	71	1	1	270	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.60	0.30	0.00	0.00	0.00	0.40	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	2	0	7	0	331	319	71	1	1	270	21
Peak Hour Factor	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630	0.8630
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	1	0	2	0	92	89	20	0	0	75	6
Total Analysis Volume [veh/h]	2	2	0	8	0	368	355	79	1	1	300	23
Pedestrian Volume [ped/h]	0			1			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.01	0.00	0.05	0.00	0.50	0.29	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	72.73	31.41	10.98	36.16	35.28	16.48	9.04	0.00	0.00	7.35	0.00	0.00
Movement LOS	F	D	B	E	E	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.15	0.15	0.15	3.47	3.47	3.47	1.19	0.00	0.00	0.80	0.80	0.80
95th-Percentile Queue Length [ft]	3.86	3.86	3.86	86.79	86.79	86.79	29.63	0.00	0.00	20.03	20.03	20.03
d_A, Approach Delay [s/veh]	52.07			16.90			7.38			0.02		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	8.59											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue

Control Type:	All-way stop	Delay (sec / veh):	15.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	115.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Base Volume Input [veh/h]	7	163	33	171	275	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.40	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	163	33	171	275	3
Peak Hour Factor	0.6270	0.6270	0.6270	0.6270	0.6270	0.6270
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	65	13	65	105	1
Total Analysis Volume [veh/h]	11	260	51	262	421	5
Pedestrian Volume [ped/h]	0		0		3	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.24	0.29	1.98	5.07
95th-Percentile Queue Length [ft]	55.98	7.27	49.38	126.85
Approach Delay [s/veh]	13.35	11.66		19.28
Approach LOS	B	B		C
Intersection Delay [s/veh]	15.33			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 27: 25 - 11th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Base Volume Input [veh/h]	5	101	96	79	109	39	10	47	18	50	36	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	1.00	0.00	0.00	0.00	0.00	2.10	0.00	2.00	2.80	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	101	96	79	109	39	10	47	18	50	36	40
Peak Hour Factor	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330	0.7330
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	33	31	26	36	13	3	16	6	16	12	13
Total Analysis Volume [veh/h]	7	132	126	103	143	51	14	64	25	65	47	52
Pedestrian Volume [ped/h]	154			130			106			65		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.61	2.02	0.56	0.96
95th-Percentile Queue Length [ft]	40.30	50.51	13.91	24.12
Approach Delay [s/veh]	10.47	11.43	9.53	10.16
Approach LOS	B	B	A	B
Intersection Delay [s/veh]	10.64			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 28: 26 - 11th Avenue / Lincoln Street

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Base Volume Input [veh/h]	31	126	24	3	129	27	73	38	208	13	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	0.80	0.00	0.00	0.80	11.10	1.40	0.00	0.50	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	126	24	3	129	27	73	38	208	13	8	7
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	37	7	1	38	8	22	11	62	4	2	2
Total Analysis Volume [veh/h]	37	149	28	4	153	32	87	45	247	16	10	9
Pedestrian Volume [ped/h]	35			36			48			110		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.21	1.16	1.02	0.15	2.78	0.17
95th-Percentile Queue Length [ft]	5.26	28.88	25.54	3.74	69.55	4.23
Approach Delay [s/veh]	10.48		10.25		12.23	8.81
Approach LOS	B		B		B	A
Intersection Delay [s/veh]	11.16					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: 27 - 11th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	200.00	100.00	100.00	115.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	10	41	7	52	55	42	141	520	74	17	513	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.40	0.00	7.70	1.80	4.80	2.10	1.00	0.00	0.00	0.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	41	7	52	55	42	141	520	74	17	513	103
Peak Hour Factor	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	13	2	15	16	12	42	155	22	5	153	31
Total Analysis Volume [veh/h]	12	51	9	62	65	50	168	619	88	20	610	123
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			1			23			49		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	15	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	25	60	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	13	60	0	0	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	23	23	23	23	47	47	34	34
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.59	0.59	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.05	0.07	0.17	0.38	0.03	0.40
s, saturation flow rate [veh/h]	1275	1779	1203	1700	961	1841	753	1834
c, Capacity [veh/h]	338	510	355	488	454	1082	228	785
d1, Uniform Delay [s]	26.21	21.05	25.61	21.81	13.55	11.02	27.40	21.79
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.13	0.11	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.47	1.07	1.14	2.30	0.82	0.16	12.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

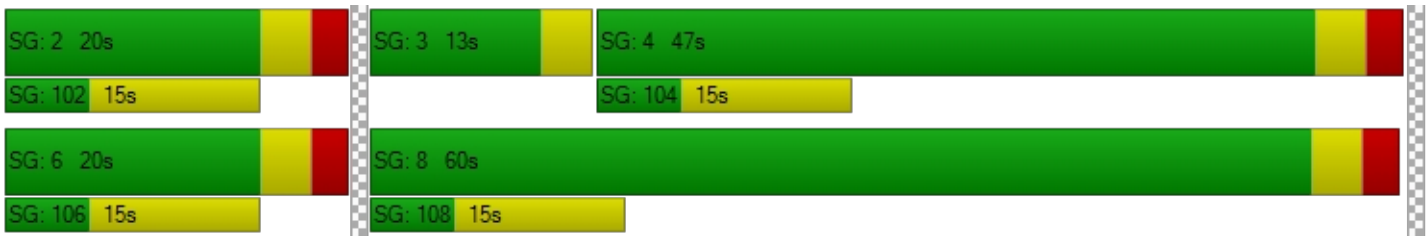
X, volume / capacity	0.04	0.12	0.17	0.24	0.37	0.65	0.09	0.93
d, Delay for Lane Group [s/veh]	26.41	21.52	26.68	22.95	15.85	11.84	27.57	34.12
Lane Group LOS	C	C	C	C	B	B	C	C
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	0.20	0.87	1.05	1.75	1.46	7.46	0.32	14.70
50th-Percentile Queue Length [ft]	5.00	21.76	26.20	43.77	36.44	186.53	8.11	367.47
95th-Percentile Queue Length [veh]	0.36	1.57	1.89	3.15	2.62	11.94	0.58	20.99
95th-Percentile Queue Length [ft]	9.01	39.17	47.15	78.78	65.58	298.52	14.59	524.66

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.41	21.52	21.52	26.68	22.95	22.95	15.85	11.84	11.84	27.57	34.12	34.12
Movement LOS	C	C	C	C	C	C	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	22.33			24.26			12.61			33.95		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	22.64											
Intersection LOS	C											
Intersection V/C	0.519											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: 28 - 8th Avenue / College Street

Control Type:	All-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	8th Avenue			8th Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	8th Avenue			8th Avenue			College Street			College Street		
Base Volume Input [veh/h]	68	35	2	23	106	45	59	123	77	4	253	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	1.30	0.00	0.40	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	35	2	23	106	45	59	123	77	4	253	52
Peak Hour Factor	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180	0.8180
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	20	10	1	7	31	13	17	36	23	1	74	15
Total Analysis Volume [veh/h]	80	41	2	27	124	53	69	144	90	5	297	61
Pedestrian Volume [ped/h]	5			11			21			20		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.80	1.44	2.36	3.20
95th-Percentile Queue Length [ft]	20.08	35.93	58.95	79.95
Approach Delay [s/veh]	10.94	11.66	12.74	14.26
Approach LOS	B	B	B	B
Intersection Delay [s/veh]	12.85			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 31: 29 - 7th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	7th Avenue		Grant Street		Grant Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	7th Avenue		Grant Street		Grant Street	
Base Volume Input [veh/h]	59	37	84	87	112	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.70	1.20	1.10	0.00	1.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	37	84	87	112	78
Peak Hour Factor	0.7230	0.7230	0.7230	0.7230	0.7230	0.7230
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	20	12	28	29	37	26
Total Analysis Volume [veh/h]	78	49	112	116	149	104
Pedestrian Volume [ped/h]	12		100		160	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.63	1.09	1.41
95th-Percentile Queue Length [ft]	15.63	27.16	35.16
Approach Delay [s/veh]	8.95	8.79	9.80
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.24		
Intersection LOS	A		

Intersection Level Of Service Report
Intersection 32: 30 - 7th Avenue / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	87.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.038

Intersection Setup

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	2	12	2	1	7	38	127	401	19	29	637	111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	5.30	1.60	1.70	5.30	0.00	0.40	1.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	12	2	1	7	38	127	401	19	29	637	111
Peak Hour Factor	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	3	1	0	2	10	35	110	5	8	175	31
Total Analysis Volume [veh/h]	2	14	2	1	8	42	140	441	21	32	700	122
Pedestrian Volume [ped/h]	4			6			29			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.19	0.00	0.02	0.10	0.11	0.17	0.00	0.00	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	87.24	67.76	24.51	70.92	57.07	16.00	10.45	0.00	0.00	8.37	0.00	0.00
Movement LOS	F	F	C	F	F	C	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.82	0.82	0.82	0.39	0.39	0.38	7.08	7.08	7.08	8.18	8.18	8.18
95th-Percentile Queue Length [ft]	20.48	20.48	20.48	9.63	9.63	9.54	177.00	177.00	177.00	204.48	204.48	204.48
d_A, Approach Delay [s/veh]	65.12			23.52			2.43			0.31		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	2.69											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: 31 - Valley Center Spur / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	15.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.172

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	825.00	100.00	100.00	615.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	64	101	61	66	236	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	2.00	4.90	6.10	5.90	4.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	101	61	66	236	103
Peak Hour Factor	0.8130	0.8130	0.8130	0.8130	0.8130	0.8130
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	20	31	20	21	76	33
Total Analysis Volume [veh/h]	79	124	79	85	305	133
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.17	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.91	12.98	8.50	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.50	1.50	0.23	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	37.56	37.56	5.76	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.12		4.10		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.40					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 34: 32 - Valley Center Spur / Valley Center Road

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.326

Intersection Setup

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	120.00	430.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Base Volume Input [veh/h]	105	62	104	217	70	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	4.80	1.00	4.10	15.80	1.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	62	104	217	70	60
Peak Hour Factor	0.8310	0.8310	0.8310	0.8310	0.8310	0.8310
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	32	19	33	69	22	19
Total Analysis Volume [veh/h]	126	75	131	274	88	76
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.08	0.09	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	18.77	9.28	7.79	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.39	0.27	0.30	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	34.83	6.66	7.60	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.23		2.52		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.30					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 35: 33 - Nelson Road / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	19.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.222

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	575.00	600.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	53	25	139	11	6	448
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	1.40	0.00	0.00	0.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	25	139	11	6	448
Peak Hour Factor	0.7450	0.7450	0.7450	0.7450	0.7450	0.7450
Other Adjustment Factor	1.0000	1.0000	1.0900	1.0900	1.0900	1.0900
Total 15-Minute Volume [veh/h]	18	8	51	4	2	164
Total Analysis Volume [veh/h]	71	34	203	16	9	655
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.04	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	19.44	12.51	0.00	0.00	7.66	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.04	1.04	0.00	0.00	0.02	0.00
95th-Percentile Queue Length [ft]	26.01	26.01	0.00	0.00	0.50	0.00
d_A, Approach Delay [s/veh]	17.19		0.00		0.10	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.90					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 36: 34 - 19th Avenue / I-90 EB Ramp

Control Type:	Two-way stop	Delay (sec / veh):	41.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.183

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	270.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

volumes

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Base Volume Input [veh/h]	0	308	200	103	440	0	0	0	0	18	0	302
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	6.20	12.00	2.90	2.20	2.00	2.00	2.00	2.00	5.60	2.00	4.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	308	200	103	440	0	0	0	0	18	0	302
Peak Hour Factor	1.0000	0.8070	0.8070	0.8070	0.8070	1.0000	1.0000	1.0000	1.0000	0.8070	1.0000	0.8070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	95	62	32	136	0	0	0	0	6	0	94
Total Analysis Volume [veh/h]	0	382	248	128	545	0	0	0	0	22	0	374
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.14	0.01	0.00	0.00	0.00	0.00	0.18	0.00	0.70
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	9.39	0.00	0.00	0.00	0.00	0.00	41.48	0.00	26.14
Movement LOS		A	A	A	A					E		D
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	0.00	0.64	0.00	5.53
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	11.65	0.00	0.00	0.00	0.00	0.00	15.95	0.00	138.23
d_A, Approach Delay [s/veh]	0.00			1.79			0.00			26.99		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	7.00											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 37: 35 - 19th Avenue / I-90 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	275.00	100.00	100.00	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Base Volume Input [veh/h]	160	170	0	0	467	12	81	0	19	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.60	2.40	2.00	2.00	1.30	0.00	13.50	2.00	5.30	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	170	0	0	467	12	81	0	19	0	0	0
Peak Hour Factor	0.7950	0.7950	1.0000	1.0000	0.7950	0.7950	0.7950	1.0000	0.7950	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	53	0	0	147	4	25	0	6	0	0	0
Total Analysis Volume [veh/h]	201	214	0	0	587	15	102	0	24	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	7	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	10	30	0	0	30	0	15	0	0	0	0	0
Maximum Green [s]	25	60	0	0	60	0	45	0	0	0	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Split [s]	13	48	0	0	35	0	22	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No			No		No					
Maximum Recall	No	No			No		No					
Pedestrian Recall	No	No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	54	54	42	6	6	
g / C, Green / Cycle	0.78	0.78	0.59	0.08	0.08	
(v / s)_i Volume / Saturation Flow Rate	0.24	0.13	0.36	0.07	0.02	
s, saturation flow rate [veh/h]	834	1670	1681	1435	1380	
c, Capacity [veh/h]	626	1294	995	118	114	
d1, Uniform Delay [s]	5.04	2.04	9.09	31.72	29.99	
k, delay calibration	0.50	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.35	0.28	2.73	16.28	0.91	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.32	0.17	0.61	0.86	0.21	
d, Delay for Lane Group [s/veh]	6.39	2.31	11.82	48.00	30.90	
Lane Group LOS	A	A	B	D	C	
Critical Lane Group	Yes	No	Yes	Yes	No	
50th-Percentile Queue Length [veh]	0.58	0.46	5.47	2.18	0.39	
50th-Percentile Queue Length [ft]	14.45	11.51	136.78	54.50	9.87	
95th-Percentile Queue Length [veh]	1.04	0.83	9.31	3.92	0.71	
95th-Percentile Queue Length [ft]	26.01	20.72	232.68	98.11	17.76	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.39	2.31	0.00	0.00	11.82	11.82	48.00	0.00	30.90	0.00	0.00	0.00
Movement LOS	A	A			B	B	D		C			
d_A, Approach Delay [s/veh]	4.29			11.82			44.74			0.00		
Approach LOS	A			B			D			A		
d_I, Intersection Delay [s/veh]	12.71											
Intersection LOS	B											
Intersection V/C	0.481											

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: 36 - 19th Avenue / Tschache Way

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.361

Intersection Setup

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	200.00	275.00	100.00	175.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Base Volume Input [veh/h]	29	405	11	17	899	18	25	12	55	5	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.40	9.10	11.80	2.10	16.70	12.00	8.30	1.80	0.00	50.00	33.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	405	11	17	899	18	25	12	55	5	4	6
Peak Hour Factor	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820	0.8820
Other Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	119	3	5	265	5	7	3	16	1	1	2
Total Analysis Volume [veh/h]	34	478	13	20	1060	21	28	14	62	6	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	68.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	10	0	0	10	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	13	51	0	19	57	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	33	33	40	31	31	9	9	9	9
g / C, Green / Cycle	0.44	0.36	0.36	0.44	0.34	0.34	0.10	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.04	0.14	0.01	0.02	0.30	0.02	0.02	0.05	0.00	0.01
s, saturation flow rate [veh/h]	757	3432	1480	934	3543	1384	1272	1534	1344	1148
c, Capacity [veh/h]	313	1247	538	449	1221	477	166	147	120	110
d1, Uniform Delay [s]	17.58	21.20	18.41	14.60	27.58	19.62	40.02	38.72	42.52	37.19
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.19	0.02	0.04	2.03	0.04	0.48	2.82	0.17	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.38	0.02	0.04	0.87	0.04	0.17	0.52	0.05	0.11
d, Delay for Lane Group [s/veh]	17.73	21.39	18.43	14.64	29.60	19.66	40.50	41.54	42.69	37.63
Lane Group LOS	B	C	B	B	C	B	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.40	3.65	0.17	0.23	10.56	0.29	0.61	1.69	0.13	0.25
50th-Percentile Queue Length [ft]	9.92	91.27	4.34	5.73	263.96	7.33	15.18	42.33	3.36	6.32
95th-Percentile Queue Length [veh]	0.71	6.57	0.31	0.41	15.89	0.53	1.09	3.05	0.24	0.45
95th-Percentile Queue Length [ft]	17.86	164.28	7.81	10.32	397.19	13.19	27.33	76.19	6.05	11.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.73	21.39	18.43	14.64	29.60	19.66	40.50	41.54	41.54	42.69	37.63	37.63
Movement LOS	B	C	B	B	C	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	21.08			29.14			41.26			39.32		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	27.55											
Intersection LOS	C											
Intersection V/C	0.361											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: 37 - 19th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	400.00	100.00	400.00	275.00	100.00	250.00	200.00	100.00	100.00	225.00	100.00	225.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	39	312	169	240	705	80	61	313	44	113	167	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	7.70	1.80	2.50	2.90	2.50	0.00	1.30	2.30	4.40	7.80	6.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	312	169	240	705	80	61	313	44	113	167	88
Peak Hour Factor	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	11	89	48	68	201	23	17	89	13	31	46	24
Total Analysis Volume [veh/h]	45	356	193	274	805	91	70	357	50	125	185	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	40.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups			2,7			3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	30	5	30	30	5	15	0	5	15	15
Maximum Green [s]	25	90	90	25	90	90	25	45	0	25	45	45
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	8	40	40	8	40	40	13	94	0	8	89	89
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	88	80	90	88	81	92	52	44	52	43	53
g / C, Green / Cycle	0.59	0.53	0.60	0.59	0.54	0.61	0.35	0.29	0.35	0.29	0.35
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.12	0.26	0.23	0.06	0.05	0.22	0.12	0.06	0.06
s, saturation flow rate [veh/h]	718	3359	1586	1067	3516	1576	1298	1836	1042	3356	1512
c, Capacity [veh/h]	410	1786	949	651	1887	962	460	541	229	966	536
d1, Uniform Delay [s]	14.49	18.40	13.77	17.83	20.87	12.08	33.36	47.90	43.50	40.24	33.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.33	0.29	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.54	0.25	0.48	2.00	0.71	0.13	0.41	2.13	2.01	0.10	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

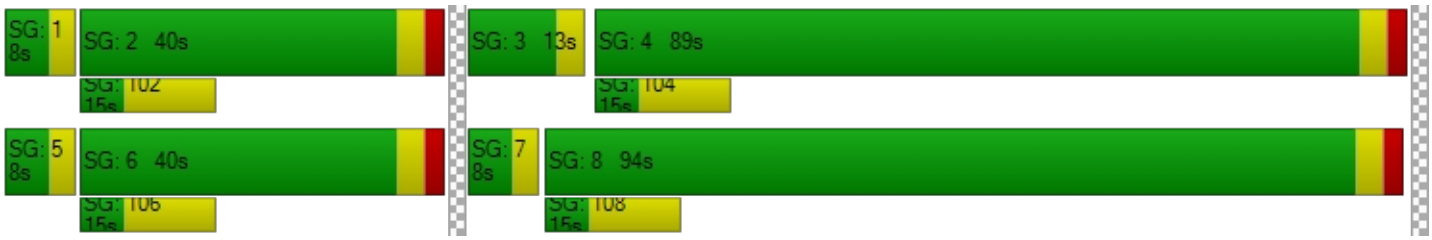
X, volume / capacity	0.11	0.20	0.20	0.42	0.43	0.09	0.15	0.75	0.54	0.19	0.18
d, Delay for Lane Group [s/veh]	15.03	18.65	14.25	19.83	21.57	12.21	33.77	50.04	45.51	40.34	34.12
Lane Group LOS	B	B	B	B	C	B	C	D	D	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.73	3.37	3.16	5.02	8.74	1.32	1.82	14.19	3.40	2.64	2.60
50th-Percentile Queue Length [ft]	18.15	84.18	79.12	125.60	218.50	33.07	45.55	354.73	85.04	65.90	64.99
95th-Percentile Queue Length [veh]	1.31	6.06	5.70	8.70	13.59	2.38	3.28	20.37	6.12	4.74	4.68
95th-Percentile Queue Length [ft]	32.67	151.53	142.41	217.50	339.71	59.53	81.98	509.18	153.06	118.61	116.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.03	18.65	14.25	19.83	21.57	12.21	33.77	50.04	50.04	45.51	40.34	34.12
Movement LOS	B	B	B	B	C	B	C	D	D	D	D	C
d_A, Approach Delay [s/veh]	16.95			20.44			47.65			40.45		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	27.63											
Intersection LOS	C											
Intersection V/C	0.512											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: 38 - 19th Avenue / Durston Road

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.452

Intersection Setup

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	90.00	100.00	100.00	250.00	100.00	100.00	325.00	100.00	420.00	140.00	100.00	50.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Base Volume Input [veh/h]	73	402	53	135	670	61	114	367	142	54	158	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.40	4.50	3.80	6.60	2.20	3.30	0.90	0.80	0.00	1.90	3.80	9.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	402	53	135	670	61	114	367	142	54	158	81
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	19	106	14	35	176	16	29	94	36	14	40	21
Total Analysis Volume [veh/h]	77	423	56	142	705	64	116	374	145	55	161	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	28.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	0	5	30	0	5	15	15	5	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	8	35	0	8	35	0	14	39	39	8	33	33
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	53	45	45	53	45	45	27	21	31	27	18	28
g / C, Green / Cycle	0.58	0.50	0.50	0.58	0.50	0.50	0.30	0.23	0.34	0.30	0.20	0.31
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.13	0.15	0.21	0.21	0.08	0.20	0.09	0.05	0.09	0.06
s, saturation flow rate [veh/h]	825	1818	1745	966	1859	1805	1379	1885	1615	1139	1830	1471
c, Capacity [veh/h]	496	900	864	601	920	893	456	434	551	289	373	463
d1, Uniform Delay [s]	9.28	13.25	13.26	8.97	14.54	14.54	23.45	33.28	21.46	23.90	31.26	22.40
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.21	0.11	0.50	0.11	0.11	0.38
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	0.74	0.78	0.92	1.43	1.48	0.57	5.19	1.16	0.32	0.79	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.27	0.27	0.24	0.42	0.42	0.25	0.86	0.26	0.19	0.43	0.18
d, Delay for Lane Group [s/veh]	9.95	13.99	14.04	9.89	15.98	16.02	24.02	38.47	22.62	24.22	32.05	23.04
Lane Group LOS	A	B	B	A	B	B	C	D	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.70	2.92	2.83	1.32	5.17	5.03	1.87	8.27	2.35	0.85	3.09	1.34
50th-Percentile Queue Length [ft]	17.39	72.94	70.80	32.92	129.22	125.76	46.77	206.70	58.63	21.22	77.19	33.43
95th-Percentile Queue Length [veh]	1.25	5.25	5.10	2.37	8.90	8.71	3.37	12.98	4.22	1.53	5.56	2.41
95th-Percentile Queue Length [ft]	31.30	131.29	127.44	59.26	222.43	217.71	84.19	324.60	105.53	38.19	138.95	60.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.95	14.01	14.04	9.89	16.00	16.02	24.02	38.47	22.62	24.22	32.05	23.04
Movement LOS	A	B	B	A	B	B	C	D	C	C	C	C
d_A, Approach Delay [s/veh]	13.45			15.05			32.21			28.11		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.84											
Intersection LOS	C											
Intersection V/C	0.452											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.474

Intersection Setup

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	70.00	100.00	100.00	50.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Base Volume Input [veh/h]	36	308	19	73	552	81	103	250	78	21	106	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	4.50	0.00	1.40	3.60	2.50	0.00	1.20	2.60	9.50	4.70	14.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	308	19	73	552	81	103	250	78	21	106	35
Peak Hour Factor	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060
Other Adjustment Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Total 15-Minute Volume [veh/h]	10	84	5	20	151	22	27	66	20	6	28	9
Total Analysis Volume [veh/h]	39	337	21	80	603	89	108	262	82	22	111	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	30	0	5	30	0	0	15	0	0	15	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	35	0	8	35	0	0	37	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	49	41	41	49	42	42	21	21	15
g / C, Green / Cycle	0.49	0.41	0.41	0.49	0.42	0.42	0.21	0.21	0.15
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.10	0.07	0.17	0.06	0.06	0.19	0.10
s, saturation flow rate [veh/h]	892	1818	1781	1111	3492	1576	1810	1802	1737
c, Capacity [veh/h]	435	748	733	572	1475	666	389	388	258
d1, Uniform Delay [s]	14.41	19.23	19.25	14.12	20.16	17.68	32.75	38.06	40.17
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.14	0.14
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	0.76	0.79	0.51	0.84	0.42	0.38	8.84	3.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

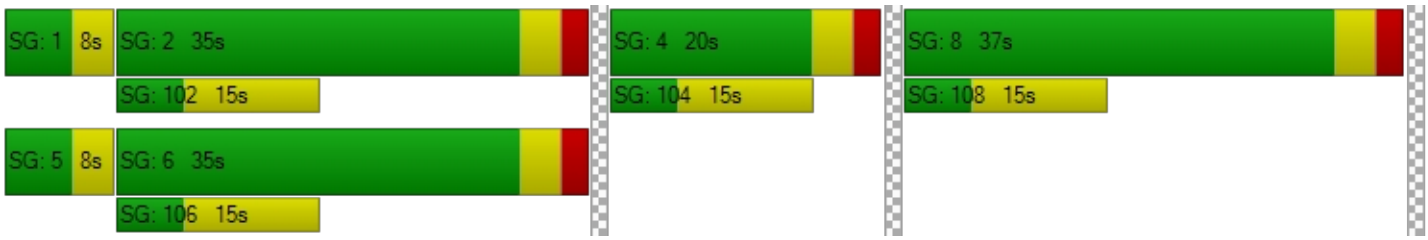
X, volume / capacity	0.09	0.24	0.24	0.14	0.41	0.13	0.28	0.89	0.66
d, Delay for Lane Group [s/veh]	14.82	20.00	20.03	14.63	21.00	18.09	33.13	46.90	43.90
Lane Group LOS	B	B	C	B	C	B	C	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	0.50	2.85	2.82	1.03	4.96	1.32	2.22	9.00	4.18
50th-Percentile Queue Length [ft]	12.57	71.22	70.41	25.85	123.98	32.90	55.39	225.03	104.51
95th-Percentile Queue Length [veh]	0.91	5.13	5.07	1.86	8.61	2.37	3.99	13.92	7.52
95th-Percentile Queue Length [ft]	22.63	128.19	126.74	46.53	215.28	59.22	99.71	348.04	188.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.82	20.01	20.03	14.63	21.00	18.09	33.13	46.90	46.90	43.90	43.90	43.90
Movement LOS	B	C	C	B	C	B	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	19.50			20.00			43.61			43.90		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	28.12											
Intersection LOS	C											
Intersection V/C	0.474											

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: 40 - 19th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	44.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.523

Intersection Setup

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	113.00	200.00	100.00	100.00	250.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Base Volume Input [veh/h]	60	323	120	107	655	203	142	753	42	103	350	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.70	0.80	0.90	2.30	3.90	3.50	1.30	0.00	1.00	2.80	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	323	120	107	655	203	142	753	42	103	350	61
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	15	82	30	27	166	51	36	191	11	26	89	15
Total Analysis Volume [veh/h]	61	327	122	108	664	206	144	763	43	104	355	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	170
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	84.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups			2,7			3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	5	15	15	5	15	15	5	15	0	5	15	15
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	14	58	58	23	67	67	27	76	0	13	62	62
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	3.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	1.00	1.00	3.00	3.00	1.00	3.00	3.00	1.00	3.00	3.00
g_i, Effective Green Time [s]	11	53	68	20	62	103	24	71	71	10	57	109
g / C, Green / Cycle	0.06	0.31	0.40	0.12	0.36	0.61	0.14	0.42	0.42	0.06	0.34	0.64
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.08	0.06	0.19	0.13	0.05	0.22	0.22	0.03	0.10	0.04
s, saturation flow rate [veh/h]	1440	3522	1602	1793	3536	1554	2702	1876	1841	3479	3519	1615
c, Capacity [veh/h]	119	1098	641	211	1290	942	392	783	769	205	1180	1036
d1, Uniform Delay [s]	79.61	44.38	33.12	70.42	42.24	15.22	68.05	36.81	36.81	77.61	41.77	11.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.04	0.69	0.66	8.61	1.47	0.53	2.64	2.45	2.50	8.74	0.66	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.30	0.19	0.51	0.51	0.22	0.37	0.52	0.52	0.51	0.30	0.06
d, Delay for Lane Group [s/veh]	94.66	45.08	33.78	79.03	43.71	15.75	70.69	39.26	39.31	86.36	42.42	11.49
Lane Group LOS	F	D	C	E	D	B	E	D	D	F	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.16	5.44	3.48	4.96	11.35	3.87	3.05	13.32	13.08	2.48	5.73	0.94
50th-Percentile Queue Length [ft]	79.01	136.09	86.95	124.04	283.68	96.86	76.28	333.02	327.06	61.90	143.37	23.46
95th-Percentile Queue Length [veh]	5.69	9.27	6.26	8.61	16.87	6.97	5.49	19.31	19.01	4.46	9.66	1.69
95th-Percentile Queue Length [ft]	142.23	231.74	156.51	215.36	421.79	174.35	137.30	482.66	475.36	111.43	241.55	42.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	94.66	45.08	33.78	79.03	43.71	15.75	70.69	39.29	39.31	86.36	42.42	11.49
Movement LOS	F	D	C	E	D	B	E	D	D	F	D	B
d_A, Approach Delay [s/veh]	48.30			41.72			44.05			47.51		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.62											
Intersection LOS	D											
Intersection V/C	0.523											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 43: 41 - 7th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.319

Intersection Setup

Name	7th Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	7th Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	169	219	118	302	233	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	3.60	1.70	3.50	3.00	3.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	169	219	118	302	233	59
Peak Hour Factor	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540
Other Adjustment Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Total 15-Minute Volume [veh/h]	46	60	32	82	63	16
Total Analysis Volume [veh/h]	184	238	129	329	254	64
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	1	6	3	8	4	0
Auxiliary Signal Groups		3,6				
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	5	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	2.0	2.0	2.0	2.0	2.0	0.0
Split [s]	27	27	18	38	20	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	No	Yes	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	10	26	11	45	45	29	29
g / C, Green / Cycle	0.16	0.41	0.17	0.69	0.69	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.08	0.11	0.10	0.10	0.10
s, saturation flow rate [veh/h]	1590	1403	1601	1652	1503	1660	1550
c, Capacity [veh/h]	255	570	270	1239	1031	731	682
d1, Uniform Delay [s]	25.90	13.81	24.43	3.62	3.55	11.27	11.35
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.82	0.49	1.31	0.06	0.28	0.68	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

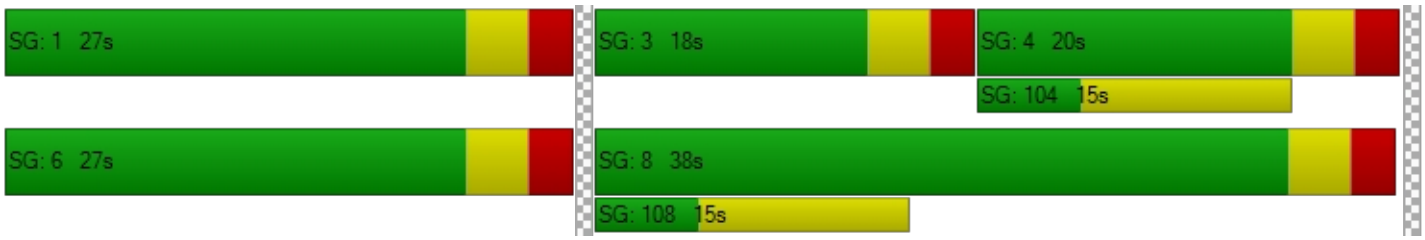
X, volume / capacity	0.72	0.42	0.48	0.15	0.14	0.22	0.23
d, Delay for Lane Group [s/veh]	29.73	14.30	25.74	3.67	3.83	11.95	12.15
Lane Group LOS	C	B	C	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.83	2.33	1.80	0.59	0.52	1.41	1.43
50th-Percentile Queue Length [ft]	70.76	58.14	44.91	14.86	13.04	35.21	35.77
95th-Percentile Queue Length [veh]	5.09	4.19	3.23	1.07	0.94	2.54	2.58
95th-Percentile Queue Length [ft]	127.37	104.66	80.84	26.75	23.48	63.38	64.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.73	14.30	25.74	3.74	12.03	12.15
Movement LOS	C	B	C	A	B	B
d_A, Approach Delay [s/veh]	21.02		9.94		12.05	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	14.40					
Intersection LOS	B					
Intersection V/C	0.319					

Sequence

Ring 1	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: 42 - 19th Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	39.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	108	0	0	108	0	0	12	0	0	12	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	103	103	103	103	103	7	7
g / C, Green / Cycle	0.84	0.84	0.84	0.84	0.84	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1296	1710	1710	1710	1710	1710	1710
c, Capacity [veh/h]	1123	1432	1432	1432	1432	127	127
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A		A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: 43 - 19th Avenue / Koch Street

Control Type:	Signalized	Delay (sec / veh):	9.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.305

Intersection Setup

Name				19th Avenue								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	160.00	100.00	100.00	330.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name				19th Avenue								
Base Volume Input [veh/h]	10	447	26	42	687	18	27	53	94	27	16	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	1.70	3.80	0.00	1.60	0.00	3.70	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	447	26	42	687	18	27	53	94	27	16	18
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	3	115	7	11	177	5	7	14	25	7	4	5
Total Analysis Volume [veh/h]	10	461	27	43	709	19	29	56	100	28	17	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	73.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	58	0	0	58	0	0	32	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	68	68	68	68	68	68	12	12
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.76	0.76	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.01	0.13	0.13	0.05	0.20	0.20	0.11	0.05
s, saturation flow rate [veh/h]	671	1868	1832	922	1870	1853	1694	1185
c, Capacity [veh/h]	527	1413	1386	715	1414	1401	271	215
d1, Uniform Delay [s]	5.12	3.08	3.08	4.58	3.32	3.32	37.92	35.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.27	0.27	0.16	0.44	0.45	3.03	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

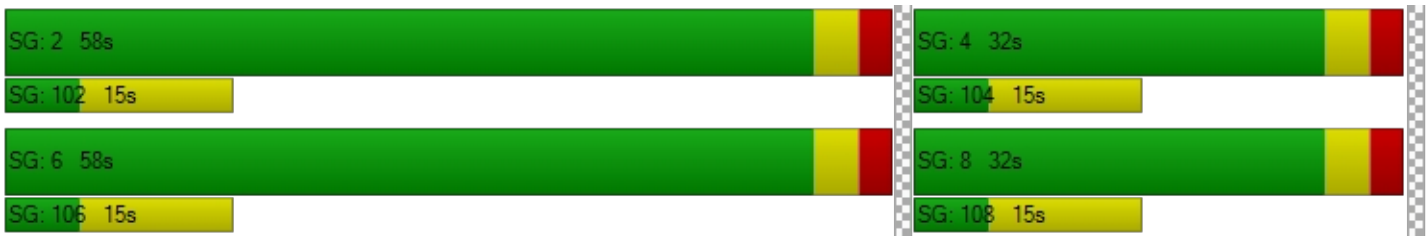
X, volume / capacity	0.02	0.17	0.17	0.06	0.26	0.26	0.68	0.30
d, Delay for Lane Group [s/veh]	5.19	3.34	3.35	4.74	3.76	3.77	40.95	35.89
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.07	1.01	0.99	0.25	1.62	1.61	4.13	1.30
50th-Percentile Queue Length [ft]	1.63	25.13	24.83	6.30	40.48	40.17	103.32	32.38
95th-Percentile Queue Length [veh]	0.12	1.81	1.79	0.45	2.91	2.89	7.44	2.33
95th-Percentile Queue Length [ft]	2.93	45.24	44.69	11.33	72.86	72.30	185.98	58.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.19	3.35	3.35	4.74	3.77	3.77	40.95	40.95	40.95	35.89	35.89	35.89
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	3.39			3.82			40.95			35.89		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	9.56											
Intersection LOS	A											
Intersection V/C	0.305											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: 44 - 19th Avenue / College Street

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.431

Intersection Setup

Name	19th Avenue						College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	450.00	100.00	100.00	330.00	100.00	100.00	300.00	100.00	300.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue						College Street			College Street		
Base Volume Input [veh/h]	120	407	88	168	529	33	67	329	218	63	150	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	1.00	0.00	0.60	1.00	3.00	1.50	0.00	0.00	0.00	1.30	5.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	407	88	168	529	33	67	329	218	63	150	53
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	34	115	25	47	149	9	19	93	61	18	42	15
Total Analysis Volume [veh/h]	135	459	99	189	597	37	76	371	246	71	169	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	38.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	0	5	30	0	5	15	15	5	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	8	35	0	8	35	0	11	39	39	8	36	36
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	52	44	44	52	44	44	28	21	31	28	20	30
g / C, Green / Cycle	0.58	0.49	0.49	0.58	0.49	0.49	0.31	0.23	0.34	0.31	0.23	0.34
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.15	0.20	0.17	0.17	0.06	0.20	0.15	0.06	0.09	0.04
s, saturation flow rate [veh/h]	914	1881	1767	967	1881	1843	1327	1900	1615	1173	1876	1528
c, Capacity [veh/h]	556	925	869	591	925	906	445	435	549	304	425	516
d1, Uniform Delay [s]	9.32	13.73	13.74	9.49	14.02	14.02	22.70	33.26	23.13	23.85	29.58	20.54
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.17	0.11	0.50	0.11	0.11	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.04	0.87	0.94	1.42	1.03	1.05	0.27	4.86	2.64	0.39	0.60	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.31	0.31	0.32	0.35	0.35	0.17	0.85	0.45	0.23	0.40	0.12
d, Delay for Lane Group [s/veh]	10.36	14.60	14.68	10.91	15.05	15.07	22.98	38.12	25.77	24.24	30.18	20.71
Lane Group LOS	B	B	B	B	B	B	C	D	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.27	3.55	3.36	1.84	4.05	3.97	1.18	8.15	4.36	1.10	3.13	0.88
50th-Percentile Queue Length [ft]	31.67	88.64	84.12	45.89	101.20	99.33	29.48	203.87	108.99	27.47	78.19	21.94
95th-Percentile Queue Length [veh]	2.28	6.38	6.06	3.30	7.29	7.15	2.12	12.84	7.78	1.98	5.63	1.58
95th-Percentile Queue Length [ft]	57.01	159.55	151.41	82.60	182.15	178.79	53.06	320.95	194.60	49.45	140.74	39.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.36	14.63	14.68	10.91	15.06	15.07	22.98	38.12	25.77	24.24	30.18	20.71
Movement LOS	B	B	B	B	B	B	C	D	C	C	C	C
d_A, Approach Delay [s/veh]	13.81			14.11			32.08			26.88		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.52											
Intersection LOS	C											
Intersection V/C	0.431											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 47: 45 - 19th Avenue / Graf Street

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.152

Intersection Setup

Name	19th Avenue		19th Avenue		Graf Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0
Pocket Length [ft]	400.00	100.00	100.00	380.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	19th Avenue		19th Avenue		Graf Street	
Base Volume Input [veh/h]	22	502	180	14	45	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.60	5.50	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	502	180	14	45	2
Peak Hour Factor	0.8690	0.8690	0.8690	0.8690	0.8690	0.8690
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	140	50	4	13	1
Total Analysis Volume [veh/h]	25	560	201	16	52	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	7.69	0.00	0.00	0.00	17.43	9.31
Movement LOS	A	A	A	A	C	A
95th-Percentile Queue Length [veh]	0.06	0.00	0.00	0.00	0.53	0.01
95th-Percentile Queue Length [ft]	1.40	0.00	0.00	0.00	13.28	0.18
d_A, Approach Delay [s/veh]	0.33		0.00		17.13	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.30					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 48: 46 - Harper Puckett Road / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.101

Intersection Setup

Name	Harper Puckett Road		Baxter Lane		Baxter Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Harper Puckett Road		Baxter Lane		Baxter Lane	
Base Volume Input [veh/h]	57	18	13	121	108	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.30	0.00	0.00	1.70	3.70	7.10
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	57	18	13	121	108	14
Peak Hour Factor	0.8360	0.8360	0.8360	0.8360	0.8360	0.8360
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	17	5	4	35	31	4
Total Analysis Volume [veh/h]	68	22	15	139	124	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.02	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.03	9.61	7.50	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.42	0.42	0.35	0.35	0.00	0.00
95th-Percentile Queue Length [ft]	10.60	10.60	8.85	8.85	0.00	0.00
d_A, Approach Delay [s/veh]	10.68		0.73		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.80					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: 47 - Flanders Mill Road / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	13.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Base Volume Input [veh/h]	30	101	137	84	87	111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.20	4.80	3.30	4.50
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	101	137	84	87	111
Peak Hour Factor	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	9	29	38	23	24	30
Total Analysis Volume [veh/h]	34	115	150	92	95	122
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.14	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	13.67	10.52	0.00	0.00	7.95	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.77	0.77	0.00	0.00	0.59	0.59
95th-Percentile Queue Length [ft]	19.19	19.19	0.00	0.00	14.73	14.73
d_A, Approach Delay [s/veh]	11.24		0.00		3.48	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.00					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 50: 48 - Davis Lane / Baxter Lane

Control Type:	All-way stop	Delay (sec / veh):	54.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	138	85	41	17	168	84	57	295	70	25	205	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	85	41	17	168	84	57	295	70	25	205	12
Peak Hour Factor	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290	0.8290
Other Adjustment Factor	1.0900	1.0900	1.0900	1.0900	1.0900	1.0900	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	28	13	6	55	28	17	89	21	8	62	4
Total Analysis Volume [veh/h]	181	112	54	22	221	110	69	356	84	30	247	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.66	0.40	7.12	17.16	4.92
95th-Percentile Queue Length [ft]	141.38	10.03	177.98	428.98	122.90
Approach Delay [s/veh]	28.84		35.70	101.03	27.29
Approach LOS	D		E	F	D
Intersection Delay [s/veh]	54.65				
Intersection LOS	F				

Intersection Level Of Service Report
Intersection 51: 49 - Laurel Parkway / Durston Road

Control Type:	All-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Laurel Parkway		Durston Road		Durston Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	35.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Laurel Parkway		Durston Road		Durston Road	
Base Volume Input [veh/h]	187	13	5	241	170	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.40	3.50	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	13	5	241	170	34
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	50	3	1	62	44	9
Total Analysis Volume [veh/h]	200	14	5	248	175	35
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.50	0.06	1.52	1.16
95th-Percentile Queue Length [ft]	37.60	1.46	37.90	29.09
Approach Delay [s/veh]	11.69		10.35	9.75
Approach LOS	B		B	A
Intersection Delay [s/veh]	10.59			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 52: 50 - Cottonwood Road / Durston Road

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Base Volume Input [veh/h]	32	6	176	16	13	1	2	307	163	168	162	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	0.00	3.90	0.00	0.00	0.00	0.00	0.30	0.00	1.80	3.80	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	6	176	16	13	1	2	307	163	168	162	8
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	9	2	47	4	3	0	1	79	42	43	42	2
Total Analysis Volume [veh/h]	34	6	188	17	14	1	2	316	168	173	167	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	6	34	0	6	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	24	24	27	20	26	25
g / C, Green / Cycle	0.40	0.40	0.45	0.34	0.44	0.42
(v / s)_i Volume / Saturation Flow Rate	0.16	0.03	0.00	0.30	0.18	0.11
s, saturation flow rate [veh/h]	1456	1213	1106	1606	940	1634
c, Capacity [veh/h]	644	571	536	541	349	682
d1, Uniform Delay [s]	12.98	11.21	12.17	18.92	13.82	11.45
k, delay calibration	0.50	0.50	0.11	0.16	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	0.19	0.00	7.83	1.09	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

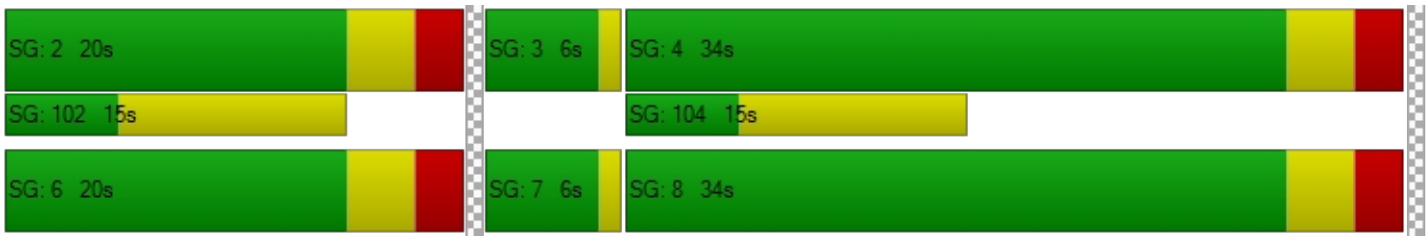
X, volume / capacity	0.35	0.06	0.00	0.89	0.50	0.26
d, Delay for Lane Group [s/veh]	14.50	11.39	12.17	26.75	14.91	11.64
Lane Group LOS	B	B	B	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	2.21	0.26	0.01	6.85	1.37	1.38
50th-Percentile Queue Length [ft]	55.18	6.60	0.34	171.25	34.21	34.49
95th-Percentile Queue Length [veh]	3.97	0.48	0.02	11.14	2.46	2.48
95th-Percentile Queue Length [ft]	99.33	11.89	0.60	278.55	61.58	62.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.50	14.50	14.50	11.39	11.39	11.39	12.17	26.75	26.75	14.91	11.64	11.64
Movement LOS	B	B	B	B	B	B	B	C	C	B	B	B
d_A, Approach Delay [s/veh]	14.50			11.39			26.69			13.27		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	19.43											
Intersection LOS	B											
Intersection V/C	0.526											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 53: 51 - Flanders Mill Road / Durston Road

Control Type:	Two-way stop	Delay (sec / veh):	26.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.278

Intersection Setup

Name	Flanders Mill Road		Durston Road		Durston Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

volumes

Name	Flanders Mill Road		Durston Road		Durston Road	
Base Volume Input [veh/h]	65	99	94	432	347	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	6.10	1.10	1.90	2.30	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	99	94	432	347	41
Peak Hour Factor	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	17	26	24	110	88	10
Total Analysis Volume [veh/h]	69	105	95	438	352	42
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.16	0.08	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	26.34	17.24	8.35	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.16	2.16	0.26	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	53.96	53.96	6.62	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	20.85		1.49		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.02					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 54: 52 - Ferguson Avenue / Durston Road

Control Type:	All-way stop	Delay (sec / veh):	17.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Ferguson Avenue			Ferguson Avenue			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Ferguson Avenue			Ferguson Avenue			Durston Road			Durston Road		
Base Volume Input [veh/h]	68	114	53	2	166	107	154	189	133	74	198	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	0.00	3.60	1.80	3.20	0.00	1.50	0.00	1.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	114	53	2	166	107	154	189	133	74	198	4
Peak Hour Factor	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650	0.9650
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	17	28	13	1	43	28	38	47	33	18	49	1
Total Analysis Volume [veh/h]	68	113	53	2	172	111	153	188	132	74	197	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.30	3.06	5.06	0.87	3.04
95th-Percentile Queue Length [ft]	57.55	76.40	126.46	21.80	76.00
Approach Delay [s/veh]	15.44	16.86	20.04		17.31
Approach LOS	C	C	C		C
Intersection Delay [s/veh]	17.88				
Intersection LOS	C				

Intersection Level Of Service Report
Intersection 55: 53 - Fowler Avenue / Durston Road

Control Type:	Two-way stop	Delay (sec / veh):	14.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Fowler Avenue		Durston Road		Durston Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Durston Road		Durston Road	
Base Volume Input [veh/h]	8	20	422	1	2	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.10
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	20	422	1	2	275
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	5	110	0	1	71
Total Analysis Volume [veh/h]	9	22	438	1	2	286
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.04	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	14.59	11.20	0.00	0.00	8.19	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.19	0.19	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft]	4.63	4.63	0.00	0.00	0.13	0.00
d_A, Approach Delay [s/veh]	12.19		0.00		0.06	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.52					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 56: 54 - Cottonwood Road / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.160

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Pocket Length [ft]	265.00	100.00	100.00	210.00	100.00	210.00	100.00	100.00	100.00	50.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	6	199	32	21	313	12	17	12	5	50	5	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	0.30	8.30	5.90	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	199	32	21	313	12	17	12	5	50	5	12
Peak Hour Factor	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	57	9	6	90	3	5	3	1	14	1	3
Total Analysis Volume [veh/h]	7	228	37	24	359	14	19	14	6	57	6	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.02	0.00	0.00	0.06	0.04	0.01	0.16	0.02	0.02
d_M, Delay for Movement [s/veh]	8.03	0.00	0.00	7.80	0.00	0.00	16.20	15.42	10.69	17.01	14.81	9.61
Movement LOS	A	A	A	A	A	A	C	C	B	C	B	A
95th-Percentile Queue Length [veh]	0.02	0.00	0.00	0.06	0.00	0.00	0.18	0.15	0.15	0.56	0.10	0.10
95th-Percentile Queue Length [ft]	0.44	0.00	0.00	1.40	0.00	0.00	4.41	3.74	3.74	14.07	2.57	2.57
d_A, Approach Delay [s/veh]	0.21			0.47			15.07			15.50		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	2.58											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 58: 55 - 19th Avenue / Baxter Lane

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	325.00	100.00	100.00	300.00	100.00	100.00	245.00	100.00	100.00	150.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	75	342	48	120	986	63	117	214	179	60	134	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.50	2.10	1.60	2.10	0.00	0.90	1.90	1.70	6.70	6.00	2.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	342	48	120	986	63	117	214	179	60	134	46
Peak Hour Factor	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	20	89	13	31	258	16	30	55	46	16	35	12
Total Analysis Volume [veh/h]	78	358	50	126	1032	66	121	222	185	62	139	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	36.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	15	0	0	15	15
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	13	35	0	22	44	0	0	38	0	0	38	38
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
g_i, Effective Green Time [s]	54	44	44	54	42	42	31	31	31	31	43
g / C, Green / Cycle	0.57	0.46	0.46	0.57	0.45	0.45	0.33	0.33	0.33	0.33	0.45
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.11	0.11	0.30	0.30	0.10	0.24	0.07	0.08	0.03
s, saturation flow rate [veh/h]	734	1836	1758	1100	1861	1822	1258	1726	931	1792	1580
c, Capacity [veh/h]	417	847	811	677	829	812	378	562	156	584	718
d1, Uniform Delay [s]	12.05	15.54	15.56	9.72	20.80	20.81	30.32	28.26	42.48	23.41	14.58
k, delay calibration	0.50	0.50	0.50	0.14	0.50	0.50	0.11	0.20	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.99	0.69	0.73	0.17	4.26	4.37	0.48	3.33	1.63	0.21	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.24	0.25	0.19	0.67	0.67	0.32	0.72	0.40	0.24	0.07
d, Delay for Lane Group [s/veh]	13.04	16.22	16.29	9.89	25.06	25.18	30.81	31.59	44.11	23.62	14.62
Lane Group LOS	B	B	B	A	C	C	C	C	D	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.81	2.81	2.73	1.18	10.25	10.07	2.35	8.47	1.48	2.28	0.58
50th-Percentile Queue Length [ft]	20.17	70.13	68.17	29.55	256.19	251.87	58.74	211.68	37.04	57.05	14.46
95th-Percentile Queue Length [veh]	1.45	5.05	4.91	2.13	15.50	15.28	4.23	13.24	2.67	4.11	1.04
95th-Percentile Queue Length [ft]	36.30	126.23	122.70	53.19	387.44	382.00	105.74	330.99	66.66	102.70	26.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.04	16.25	16.29	9.89	25.11	25.18	30.81	31.59	31.59	44.11	23.62	14.62
Movement LOS	B	B	B	A	C	C	C	C	C	D	C	B
d_A, Approach Delay [s/veh]	15.74			23.55			31.41			26.99		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	24.04											
Intersection LOS	C											
Intersection V/C	0.558											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 59: 56 - 7th Avenue / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.636

Intersection Setup

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	80.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Base Volume Input [veh/h]	160	590	17	60	863	135	0	0	266	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.70	5.90	6.70	2.90	4.40	2.00	2.00	4.10	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	590	17	60	863	135	0	0	266	0	0	49
Peak Hour Factor	0.8660	0.8660	0.8660	0.8660	0.8660	0.8660	1.0000	1.0000	0.8660	1.0000	1.0000	0.8660
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	165	5	17	242	38	0	0	74	0	0	14
Total Analysis Volume [veh/h]	179	661	19	67	967	151	0	0	295	0	0	57
Pedestrian Volume [ped/h]	0			0			3			2		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.01	0.00	0.08	0.01	0.00	0.00	0.00	0.64	0.00	0.00	0.09
d_M, Delay for Movement [s/veh]	13.53	0.00	0.00	9.46	0.00	0.00	0.00	0.00	25.38	0.00	0.00	11.04
Movement LOS	B	A	A	A	A	A			D			B
95th-Percentile Queue Length [veh]	1.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	4.35	0.00	0.00	0.29
95th-Percentile Queue Length [ft]	31.15	0.00	0.00	6.21	0.00	0.00	0.00	0.00	108.76	0.00	0.00	7.15
d_A, Approach Delay [s/veh]	2.82			0.53			25.38			11.04		
Approach LOS	A			A			D			B		
d_I, Intersection Delay [s/veh]	4.66											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 60: 57 - 7th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	100.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	63	359	51	207	651	204	252	224	113	37	142	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	5.60	3.90	4.30	2.30	5.40	2.00	4.90	3.50	8.10	8.50	7.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	63	359	51	207	651	204	252	224	113	37	142	89
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	106	15	61	193	60	71	63	32	11	41	26
Total Analysis Volume [veh/h]	75	425	60	245	771	242	284	252	127	43	163	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	6	3	8	8	7	4	0
Auxiliary Signal Groups			2,7			6,8			5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	30	30	10	30	30	8	15	15	8	15	0
Maximum Green [s]	25	90	90	25	90	90	25	45	45	25	45	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	14	36	36	13	35	35	11	30	30	11	30	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00
g_i, Effective Green Time [s]	46	33	45	46	34	72	34	24	39	34	23
g / C, Green / Cycle	0.52	0.37	0.50	0.52	0.38	0.80	0.37	0.27	0.43	0.37	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.04	0.22	0.22	0.16	0.22	0.14	0.08	0.04	0.16
s, saturation flow rate [veh/h]	931	3426	1554	1126	3536	1532	1287	1811	1560	1191	1640
c, Capacity [veh/h]	483	1268	769	620	1324	1233	434	493	678	431	414
d1, Uniform Delay [s]	12.51	20.39	11.95	12.78	22.53	2.04	24.23	27.70	15.68	18.80	30.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.19	0.11	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.71	0.20	1.88	1.88	0.36	7.47	0.82	0.24	0.10	1.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.34	0.08	0.40	0.58	0.20	0.65	0.51	0.19	0.10	0.64
d, Delay for Lane Group [s/veh]	13.19	21.10	12.14	14.66	24.40	2.40	31.70	28.52	15.92	18.90	31.88
Lane Group LOS	B	C	B	B	C	A	C	C	B	B	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.82	3.24	0.65	2.96	6.62	0.70	5.22	4.60	1.60	0.58	5.22
50th-Percentile Queue Length [ft]	20.39	81.03	16.23	73.99	165.58	17.43	130.49	115.03	40.11	14.39	130.49
95th-Percentile Queue Length [veh]	1.47	5.83	1.17	5.33	10.84	1.25	8.97	8.12	2.89	1.04	8.97
95th-Percentile Queue Length [ft]	36.70	145.86	29.22	133.18	271.09	31.37	224.16	202.97	72.20	25.90	224.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.19	21.10	12.14	14.66	24.40	2.40	31.70	28.52	15.92	18.90	31.88	31.88
Movement LOS	B	C	B	B	C	A	C	C	B	B	C	C
d_A, Approach Delay [s/veh]	19.08			18.27			27.47			30.07		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	21.93											
Intersection LOS	C											
Intersection V/C	0.522											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 61: 58 - 15th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.258

Intersection Setup

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	105.00	100.00	100.00	120.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	52	4	57	8	11	15	9	561	145	34	284	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	0.00	3.50	0.00	0.00	6.70	0.00	1.40	2.80	2.90	5.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	4	57	8	11	15	9	561	145	34	284	2
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	15	1	16	2	3	4	2	154	40	9	78	1
Total Analysis Volume [veh/h]	58	4	64	9	12	17	10	618	160	37	313	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	0	45	0	0	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	34	34	34	34	21	21	21	21	21	21
g / C, Green / Cycle	0.52	0.52	0.52	0.52	0.33	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.01	0.02	0.01	0.21	0.22	0.05	0.09	0.09
s, saturation flow rate [veh/h]	1377	1629	1354	1722	1081	1874	1743	685	1799	1795
c, Capacity [veh/h]	790	851	762	899	345	607	564	174	583	581
d1, Uniform Delay [s]	8.71	7.74	8.80	7.54	20.14	18.92	18.94	28.30	16.28	16.29
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.18	0.03	0.07	0.03	1.25	1.36	0.60	0.25	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

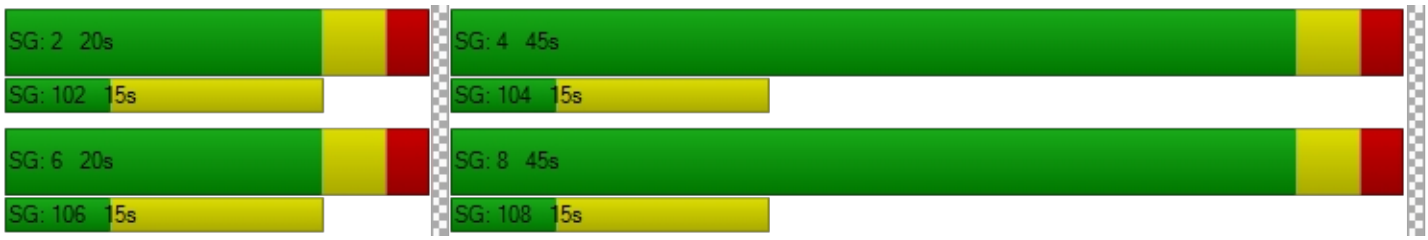
X, volume / capacity	0.07	0.08	0.01	0.03	0.03	0.66	0.67	0.21	0.27	0.27
d, Delay for Lane Group [s/veh]	8.89	7.92	8.83	7.61	20.18	20.18	20.29	28.90	16.53	16.53
Lane Group LOS	A	A	A	A	C	C	C	C	B	B
Critical Lane Group	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.42	0.45	0.06	0.19	0.12	4.98	4.66	0.56	1.65	1.64
50th-Percentile Queue Length [ft]	10.50	11.31	1.62	4.67	2.92	124.53	116.58	13.91	41.17	41.12
95th-Percentile Queue Length [veh]	0.76	0.81	0.12	0.34	0.21	8.64	8.20	1.00	2.96	2.96
95th-Percentile Queue Length [ft]	18.91	20.36	2.92	8.40	5.25	216.04	205.12	25.04	74.11	74.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.89	7.92	7.92	8.83	7.61	7.61	20.18	20.22	20.29	28.90	16.53	16.53
Movement LOS	A	A	A	A	A	A	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	8.37			7.90			20.23			17.83		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	18.08											
Intersection LOS	B											
Intersection V/C	0.258											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: 59 - 27th Avenue / Oak Street

Control Type:	Two-way stop	Delay (sec / veh):	25.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.112

Intersection Setup

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	18	54	51	23	46	29	40	358	29	15	218	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.10	1.90	2.00	0.00	0.00	0.00	0.00	1.40	0.00	6.70	7.30	3.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	54	51	23	46	29	40	358	29	15	218	28
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	15	14	6	12	8	11	96	8	4	59	8
Total Analysis Volume [veh/h]	19	58	55	25	49	31	43	385	31	16	234	30
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	1	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.19	0.08	0.11	0.16	0.04	0.03	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	25.00	21.70	15.62	25.85	21.21	14.19	7.84	0.00	0.00	8.27	0.00	0.00
Movement LOS	D	C	C	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.54	1.54	1.54	1.28	1.28	1.28	0.10	0.00	0.00	0.43	0.21	0.00
95th-Percentile Queue Length [ft]	38.56	38.56	38.56	32.09	32.09	32.09	2.54	0.00	0.00	10.70	5.35	0.00
d_A, Approach Delay [s/veh]	19.64			20.24			0.73			0.47		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	5.31											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 63: 60 - Davis Lane / Oak Street

Control Type:	Two-way stop	Delay (sec / veh):	46.6
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	Davis Lane		Oak Street		Oak Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

volumes

Name	Davis Lane		Oak Street		Oak Street	
Base Volume Input [veh/h]	150	156	136	258	172	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.50	6.60	2.30	5.80	5.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	156	136	258	172	122
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	46	40	77	51	36
Total Analysis Volume [veh/h]	179	186	162	307	205	145
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.70	0.25	0.14	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	46.61	11.32	8.52	0.00	0.00	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh]	4.71	0.97	1.93	1.93	0.00	0.00
95th-Percentile Queue Length [ft]	117.85	24.17	48.18	48.18	0.00	0.00
d_A, Approach Delay [s/veh]	28.63		2.94		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	9.99					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 64: 61 - Rouse Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.360

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Pocket Length [ft]	210.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	190.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Base Volume Input [veh/h]	119	315	0	0	317	94	139	4	194	2	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.10	3.20	0.00	0.00	4.40	5.30	2.20	0.00	3.60	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	315	0	0	317	94	139	4	194	2	1	0
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	82	0	0	83	25	37	1	52	1	0	0
Total Analysis Volume [veh/h]	124	328	0	0	330	98	148	4	206	2	1	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	8	8	0	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	17	63	0	0	46	0	0	27	27	0	27	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No	No		No	
Maximum Recall	No	No			No			No	No		No	
Pedestrian Recall	No	No			No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	66	66	51	51	51	14	31	14
g / C, Green / Cycle	0.74	0.74	0.57	0.57	0.57	0.15	0.34	0.15
(v / s)_i Volume / Saturation Flow Rate	0.12	0.20	0.00	0.20	0.07	0.12	0.15	0.01
s, saturation flow rate [veh/h]	992	1657	962	1638	1380	1228	1403	508
c, Capacity [veh/h]	721	1219	514	929	783	267	482	145
d1, Uniform Delay [s]	4.46	3.93	0.00	10.55	9.07	37.01	22.72	32.76
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.41	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.54	0.00	1.06	0.33	1.90	2.24	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.27	0.00	0.36	0.13	0.57	0.43	0.02
d, Delay for Lane Group [s/veh]	4.98	4.47	0.00	11.61	9.39	38.91	24.96	32.82
Lane Group LOS	A	A	A	B	A	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.61	1.70	0.00	3.55	0.91	3.33	3.57	0.06
50th-Percentile Queue Length [ft]	15.14	42.51	0.00	88.79	22.70	83.20	89.15	1.43
95th-Percentile Queue Length [veh]	1.09	3.06	0.00	6.39	1.63	5.99	6.42	0.10
95th-Percentile Queue Length [ft]	27.25	76.52	0.00	159.83	40.86	149.75	160.46	2.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.98	4.47	4.47	0.00	11.61	9.39	38.91	38.91	24.96	32.82	32.82	32.82
Movement LOS	A	A	A	A	B	A	D	D	C	C	C	C
d_A, Approach Delay [s/veh]	4.61			11.10			30.88			32.82		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	14.50											
Intersection LOS	B											
Intersection V/C	0.360											

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 65: 62 - 19th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.471

Intersection Setup

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	350.00	100.00	300.00	350.00	100.00	100.00	150.00	100.00	150.00	135.00	100.00	135.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	34	360	322	349	252	21	24	26	7	135	24	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	0.80	0.90	2.30	4.00	9.50	4.20	7.70	0.00	4.40	0.00	0.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	360	322	349	252	21	24	26	7	135	24	260
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	9	100	90	97	70	6	7	8	2	38	7	73
Total Analysis Volume [veh/h]	38	402	359	390	281	23	28	30	8	151	27	290
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	69.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	8	35	0	27	54	0	0	28	0	0	28	28
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
g_i, Effective Green Time [s]	65	47	47	65	59	59	15	15	15	15	15	35
g / C, Green / Cycle	0.72	0.52	0.52	0.72	0.65	0.65	0.17	0.17	0.17	0.17	0.17	0.39
(v / s)_i Volume / Saturation Flow Rate	0.03	0.11	0.22	0.33	0.08	0.08	0.02	0.02	0.00	0.11	0.01	0.18
s, saturation flow rate [veh/h]	1107	3589	1601	1177	1827	1779	1349	1764	1615	1342	1900	1609
c, Capacity [veh/h]	867	1852	826	885	1192	1161	274	296	271	270	318	635
d1, Uniform Delay [s]	3.68	11.86	13.58	5.03	5.93	5.93	33.66	31.73	31.34	37.34	31.64	20.10
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	0.27	1.66	1.59	0.22	0.23	0.16	0.15	0.04	1.80	0.11	1.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

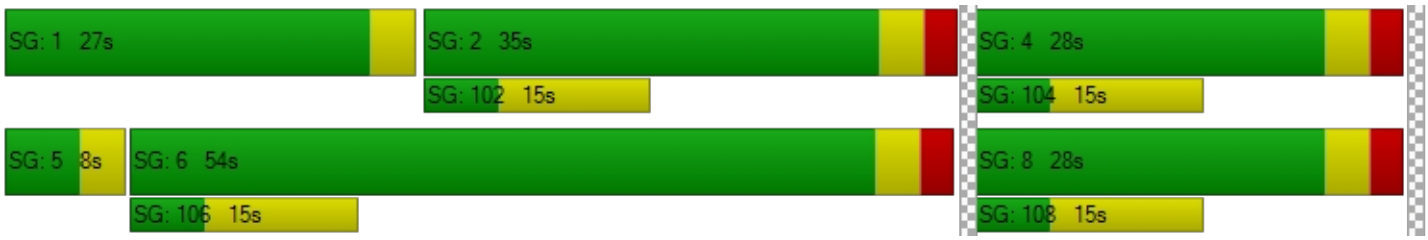
X, volume / capacity	0.04	0.22	0.43	0.44	0.13	0.13	0.10	0.10	0.03	0.56	0.08	0.46
d, Delay for Lane Group [s/veh]	3.77	12.13	15.25	6.63	6.15	6.16	33.82	31.88	31.39	39.15	31.75	21.16
Lane Group LOS	A	B	B	A	A	A	C	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.18	2.15	4.64	2.43	1.04	1.02	0.54	0.56	0.15	3.30	0.50	4.53
50th-Percentile Queue Length [ft]	4.53	53.76	115.93	60.72	26.10	25.52	13.55	13.99	3.69	82.42	12.53	113.13
95th-Percentile Queue Length [veh]	0.33	3.87	8.17	4.37	1.88	1.84	0.98	1.01	0.27	5.93	0.90	8.01
95th-Percentile Queue Length [ft]	8.15	96.77	204.22	109.30	46.98	45.94	24.39	25.18	6.64	148.35	22.56	200.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.77	12.13	15.25	6.63	6.16	6.16	33.82	31.88	31.39	39.15	31.75	21.16
Movement LOS	A	B	B	A	A	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.13			6.42			32.64			27.57		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	14.81											
Intersection LOS	B											
Intersection V/C	0.471											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: 63 - Willson Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	170.00	100.00	100.00	325.00	100.00	100.00	350.00	100.00	110.00	160.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Base Volume Input [veh/h]	390	331	107	80	117	73	85	283	94	90	405	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.40	2.10	0.90	3.80	3.40	0.00	1.20	0.70	1.10	3.30	1.20	1.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	390	331	107	80	117	73	85	283	94	90	405	152
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	110	93	30	23	33	21	24	80	26	25	114	43
Total Analysis Volume [veh/h]	439	373	121	90	132	82	96	319	106	101	456	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	20	20	8	20	20	8	45	0	17	54	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	38	31	31	38	16	26	42	34	34	42	34
g / C, Green / Cycle	0.43	0.34	0.34	0.43	0.18	0.29	0.46	0.37	0.37	0.46	0.38
(v / s)_i Volume / Saturation Flow Rate	0.29	0.20	0.08	0.08	0.07	0.05	0.10	0.17	0.07	0.09	0.35
s, saturation flow rate [veh/h]	1531	1861	1601	1095	1838	1615	933	1887	1597	1144	1791
c, Capacity [veh/h]	702	640	551	424	339	475	282	706	597	515	677
d1, Uniform Delay [s]	19.81	24.21	20.94	16.91	32.26	23.62	19.51	21.22	18.89	14.64	26.80
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.13	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.18	3.84	0.92	1.14	3.36	0.17	0.71	0.45	0.14	0.22	9.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.58	0.22	0.21	0.39	0.17	0.34	0.45	0.18	0.20	0.93
d, Delay for Lane Group [s/veh]	23.99	28.05	21.86	18.05	35.62	23.79	20.22	21.67	19.03	14.86	36.47
Lane Group LOS	C	C	C	B	D	C	C	C	B	B	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	7.47	6.99	1.91	1.22	2.81	1.30	1.13	4.99	1.47	1.17	14.04
50th-Percentile Queue Length [ft]	186.85	174.68	47.73	30.49	70.24	32.49	28.20	124.79	36.83	29.13	351.00
95th-Percentile Queue Length [veh]	11.96	11.32	3.44	2.20	5.06	2.34	2.03	8.66	2.65	2.10	20.19
95th-Percentile Queue Length [ft]	298.93	283.06	85.91	54.88	126.44	58.48	50.76	216.39	66.29	52.44	504.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.99	28.05	21.86	18.05	35.62	23.79	20.22	21.67	19.03	14.86	36.47	36.47
Movement LOS	C	C	C	B	D	C	C	C	B	B	D	D
d_A, Approach Delay [s/veh]	25.34			27.23			20.87			33.47		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.01											
Intersection LOS	C											
Intersection V/C	0.650											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

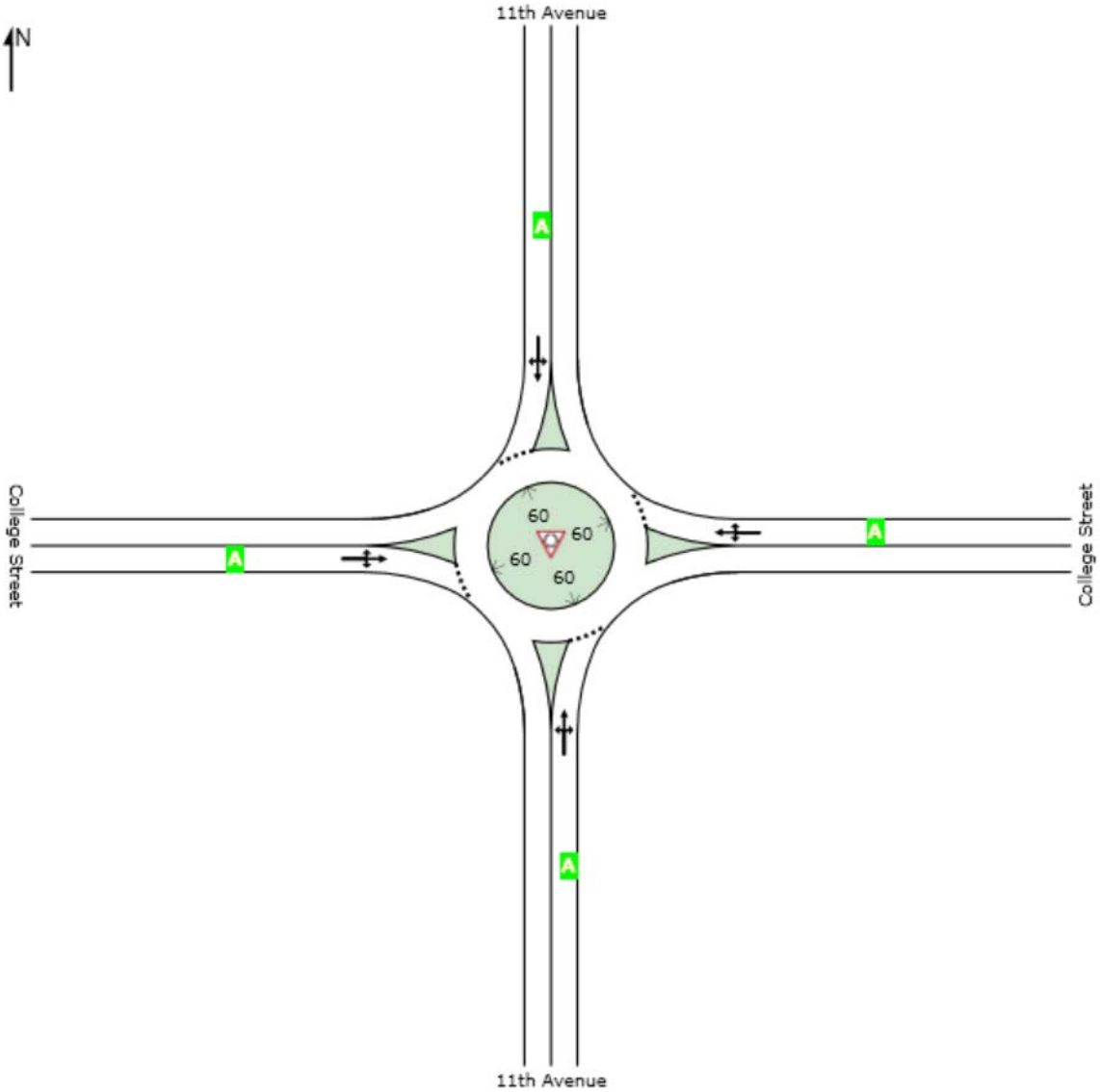
LEVEL OF SERVICE

Site: AM-2015-11th Avenue / College Street

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	A	A	A	A	A



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: AM-2015-11th Avenue / College Street

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 11th Avenue											
3	L2	73	0.0	0.215	6.1	LOS A	0.7	18.8	0.43	0.38	23.5
8	T1	93	1.3	0.215	6.1	LOS A	0.7	18.8	0.43	0.38	23.3
18	R2	31	0.0	0.215	6.1	LOS A	0.7	18.8	0.43	0.38	22.9
Approach		198	0.6	0.215	6.1	LOS A	0.7	18.8	0.43	0.38	23.3
East: College Street											
1	L2	57	0.0	0.411	7.8	LOS A	1.8	46.2	0.40	0.31	26.9
6	T1	228	0.5	0.411	7.8	LOS A	1.8	46.2	0.40	0.31	27.0
16	R2	153	0.0	0.411	7.8	LOS A	1.8	46.2	0.40	0.31	26.5
Approach		438	0.3	0.411	7.8	LOS A	1.8	46.2	0.40	0.31	26.8
North: 11th Avenue											
7	L2	89	0.0	0.454	9.0	LOS A	2.1	52.8	0.51	0.47	26.4
4	T1	195	0.6	0.454	9.0	LOS A	2.1	52.8	0.51	0.47	26.5
14	R2	156	0.0	0.454	9.0	LOS A	2.1	52.8	0.51	0.47	26.0
Approach		440	0.3	0.454	9.0	LOS A	2.1	52.8	0.51	0.47	26.3
West: College Street											
5	L2	66	0.0	0.446	8.9	LOS A	2.0	49.8	0.49	0.44	26.5
2	T1	263	1.8	0.446	8.9	LOS A	2.0	49.8	0.49	0.44	26.6
12	R2	99	1.2	0.446	8.9	LOS A	2.0	49.8	0.49	0.44	26.1
Approach		429	1.4	0.446	8.9	LOS A	2.0	49.8	0.49	0.44	26.5
All Vehicles		1504	0.6	0.454	8.3	LOS A	2.1	52.8	0.46	0.40	26.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Existing PM.pdf

Scenario 2: Existing - PM
4/1/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	01 - Ferguson Avenue / Babcock Street	Two-way stop	HCM 2010	WB Left	0.498	67.4	F
2	02 - Fowler Avenue / Babcock Street	Two-way stop	HCM 2010	NB Left	0.610	45.0	E
3	03 - Ferguson Avenue / Huffine Lane	Signalized	HCM 2010	SB Right	0.468	13.6	B
4	04 - Fowler Avenue / Huffine Lane	Signalized	HCM 2010	EB Left	0.508	26.5	C
5	05 - 19th Avenue / Garfield Street	Signalized	HCM 2010	EB Left	0.500	12.6	B
6	06 - 19th Avenue / Stucky Road	Signalized	HCM 2010	EB Left	0.418	12.6	B
7	07 - 19th Avenue / Goldenstein Lane	Two-way stop	HCM 2010	WB Left	0.088	18.1	C
8	08 - 7th Avenue / Griffin Drive	Signalized	HCM 2010	SB Left	0.706	24.9	C
9	09 - Manley Road / Griffin Drive	Two-way stop	HCM 2010	SB Left	0.217	20.3	C
10	10 - Rouse Avenue / Griffin Drive	Signalized	HCM 2010	EB Left	0.294	13.7	B
11	11 - Story Mill Road / Bridger Drive	Two-way stop	HCM 2010	NB Left	0.029	18.0	C
12	12 - Wilson Avenue / Peach Street	Two-way stop	HCM 2010	NB Left	0.279	18.9	C
13	13 - Rouse Avenue / Peach Street	Two-way stop	HCM 2010	EB Left	0.346	74.4	F
14	14 - Willson Avenue / Mendenhall Street	Signalized	HCM 2010	WB Right	0.443	18.0	B
15	15 - Willson Avenue / Babcock Street	Signalized	HCM 2010	EB Right	0.370	12.5	B
16	16 - Broadway Avenue / Main Street	Signalized	HCM 2010	SB Left	0.439	9.7	A
17	17 - Highland Boulevard / Main Street	Signalized	HCM 2010	NEB Left	0.640	36.7	D

18	18 - Haggerty Lane / Main Street	Two-way stop	HCM 2010	NEB Thru	0.000	519.3	F
19	19 - Willson Avenue / College Street	Two-way stop	HCM 2010	WB Left	0.000	56.1	F
20	20 - Highland Boulevard / Ellis Street	Two-way stop	HCM 2010	EB Left	0.860	93.0	F
21	21 - Sourdough Road / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	0.503	103.4	F
22	22 - Highland Boulevard / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	0.030	59.8	F
23	23 - Wagon Wheel Road / 3rd Avenue	All-way stop	HCM 2010	EB Left		9.1	A
27	25 - 11th Avenue / Grant Street	All-way stop	HCM 2010	NB Thru		15.8	C
28	26 - 11th Avenue / Lincoln Street	All-way stop	HCM 2010	NB Thru		14.4	B
29	27 - 11th Avenue / Kagy Boulevard	Signalized	HCM 2010	NB Left	0.744	28.5	C
30	28 - 8th Avenue / College Street	All-way stop	HCM 2010	EB Thru		17.9	C
31	29 - 7th Avenue / Grant Street	All-way stop	HCM 2010	EB Thru		10.3	B
32	30 - 7th Avenue / Kagy Boulevard	Two-way stop	HCM 2010	SB Left	0.344	71.1	F
33	31 - Valley Center Spur / Frontage Road	Two-way stop	HCM 2010	NEB Left	0.389	25.0	C
34	32 - Valley Center Spur / Valley Center Road	Two-way stop	HCM 2010	SB Left	0.322	19.7	C
35	33 - Nelson Road / Frontage Road	Two-way stop	HCM 2010	SWB Left	0.057	19.7	C
36	34 - 19th Avenue / I-90 EB Ramp	Two-way stop	HCM 2010	SEB Left	0.320	91.8	F
37	35 - 19th Avenue / I-90 WB Ramp	Signalized	HCM 2010	NWB Left	0.519	15.5	B
38	36 - 19th Avenue / Tschache Way	Signalized	HCM 2010	EB Left	0.422	14.5	B
39	37 - 19th Avenue / Oak Street	Signalized	HCM 2010	WB Left	0.556	24.5	C
40	38 - 19th Avenue / Durston Road	Signalized	HCM 2010	EB Left	0.562	27.6	C
41	39 - 7th Avenue / Durston Road / Peach Street	Signalized	HCM 2010	WB Thru	0.586	32.7	C

42	40 - 19th Avenue / Main Street	Signalized	HCM 2010	NB Left	0.698	53.2	D
43	41 - 7th Avenue / Main Street	Signalized	HCM 2010	SB Left	0.398	12.7	B
44	42 - 19th Avenue / Babcock Street	Signalized	HCM 2010	WB Right	0.351	23.4	C
45	43 - 19th Avenue / Koch Street	Signalized	HCM 2010	EB Right	0.344	10.4	B
46	44 - 19th Avenue / College Street	Signalized	HCM 2010	WB Thru	0.443	20.8	C
47	45 - 19th Avenue / Graf Street	Two-way stop	HCM 2010	EB Left	0.088	16.1	C
48	46 - Harper Puckett Road / Baxter Lane	Two-way stop	HCM 2010	SB Left	0.067	11.2	B
49	47 - Flanders Mill Road / Baxter Lane	Two-way stop	HCM 2010	NB Left	0.177	16.0	C
50	48 - Davis Lane / Baxter Lane	All-way stop	HCM 2010	EB Thru		32.8	D
51	49 - Laurel Parkway / Durston Road	All-way stop	HCM 2010	WB Thru		11.2	B
52	50 - Cottonwood Road / Durston Road	Signalized	HCM 2010	EB Thru	0.504	18.7	B
53	51 - Flanders Mill Road / Durston Road	Two-way stop	HCM 2010	SB Left	0.261	34.8	D
54	52 - Ferguson Avenue / Durston Road	All-way stop	HCM 2010	NB Thru		25.4	D
55	53 - Fowler Avenue / Durston Road	Two-way stop	HCM 2010	NB Left	0.010	16.8	C
56	54 - Cottonwood Road / Babcock Street	Two-way stop	HCM 2010	EB Left	0.124	23.9	C
58	55 - 19th Avenue / Baxter Lane	Signalized	HCM 2010	WB Left	0.523	24.5	C
59	56 - 7th Avenue / Baxter Lane	Two-way stop	HCM 2010	EB Right	0.628	23.5	C
60	57 - 7th Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.816	44.6	D
61	58 - 15th Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.385	16.9	B
62	59 - 27th Avenue / Oak Street	Two-way stop	HCM 2010	SB Left	0.092	34.1	D
63	60 - Davis Lane / Oak Street	Two-way stop	HCM 2010	SB Left	0.322	26.5	D

64	61 - Rouse Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.460	13.2	B
65	62 - 19th Avenue / Kagy Boulevard	Signalized	HCM 2010	WB Left	0.497	18.5	B
66	63 - Willson Avenue / Kagy Boulevard	Signalized	HCM 2010	EB Thru	0.506	24.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 01 - Ferguson Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	67.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	64	400	43	38	340	12	4	64	44	47	90	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.80	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	400	43	38	340	12	4	64	44	47	90	73
Peak Hour Factor	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730	0.8730
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	110	12	10	93	3	1	18	12	13	26	21
Total Analysis Volume [veh/h]	70	440	47	42	374	13	4	70	48	54	103	84
Pedestrian Volume [ped/h]	0			3			0			4		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.04	0.00	0.00	0.05	0.37	0.07	0.50	0.54	0.14
d_M, Delay for Movement [s/veh]	8.24	0.00	0.00	8.47	0.00	0.00	65.25	38.02	24.11	67.43	47.75	34.99
Movement LOS	A	A	A	A	A	A	F	E	C	F	E	D
95th-Percentile Queue Length [veh]	2.59	2.59	2.59	1.93	1.93	1.93	2.55	2.55	2.55	2.24	4.52	4.52
95th-Percentile Queue Length [ft]	64.65	64.65	64.65	48.37	48.37	48.37	63.81	63.81	63.81	56.02	113.10	113.10
d_A, Approach Delay [s/veh]	1.04			0.83			33.44			47.71		
Approach LOS	A			A			D			E		
d_I, Intersection Delay [s/veh]	12.24											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: 02 - Fowler Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	45.0
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name	Fowler Avenue		Babcock Street		Babcock Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Babcock Street		Babcock Street	
Base Volume Input [veh/h]	163	151	170	79	119	286
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.60	0.00	0.80	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	151	170	79	119	286
Peak Hour Factor	0.8580	0.8580	0.8580	0.8580	0.8580	0.8580
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	47	44	48	22	33	80
Total Analysis Volume [veh/h]	190	176	190	88	133	320
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.61	0.22	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	45.03	37.92	0.00	0.00	8.11	0.00
Movement LOS	E	E	A	A	A	A
95th-Percentile Queue Length [veh]	7.87	7.87	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft]	196.74	196.74	0.00	0.00	8.59	0.00
d_A, Approach Delay [s/veh]	41.61		0.00		2.38	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	14.86					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 3: 03 - Ferguson Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	110.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Base Volume Input [veh/h]	259	222	157	952	1065	328
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.40	2.80	1.90	1.00	1.80	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	259	222	157	952	1065	328
Peak Hour Factor	0.9360	0.9360	0.9360	0.9360	0.9360	0.9360
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	66	57	41	247	276	85
Total Analysis Volume [veh/h]	266	228	163	987	1104	340
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	15	0	0	60	60	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	4.0	0.0	0.0	4.0	4.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	34	0	0	66	66	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.0	0.0	0.0	4.0	4.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	17	17	71	71	71	71
g / C, Green / Cycle	0.17	0.17	0.71	0.71	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.32	0.28	0.31	0.21
s, saturation flow rate [veh/h]	1802	1571	509	3582	3554	1613
c, Capacity [veh/h]	315	275	346	2525	2505	1137
d1, Uniform Delay [s]	39.93	39.81	15.63	6.00	6.31	5.51
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	6.36	4.53	0.46	0.56	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.83	0.47	0.39	0.44	0.30
d, Delay for Lane Group [s/veh]	46.05	46.17	20.16	6.46	6.88	6.19
Lane Group LOS	D	D	C	A	A	A
Critical Lane Group	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	6.79	5.83	2.81	3.76	4.43	2.49
50th-Percentile Queue Length [ft]	169.86	145.86	70.23	94.05	110.77	62.27
95th-Percentile Queue Length [veh]	11.07	9.80	5.06	6.77	7.88	4.48
95th-Percentile Queue Length [ft]	276.73	244.89	126.42	169.29	197.07	112.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.05	46.17	20.16	6.46	6.88	6.19
Movement LOS	D	D	C	A	A	A
d_A, Approach Delay [s/veh]	46.10		8.40		6.71	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	13.64					
Intersection LOS	B					
Intersection V/C	0.468					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: 04 - Fowler Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	26.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	253.00	100.00	100.00	76.00	100.00	100.00	100.00	100.00	280.00	365.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Base Volume Input [veh/h]	293	292	33	92	148	28	114	844	294	24	768	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.30	3.00	1.10	0.00	0.00	0.60	1.60	0.00	4.50	1.80	0.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	292	33	92	148	28	114	844	294	24	768	156
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	76	76	9	24	39	7	29	213	74	6	194	39
Total Analysis Volume [veh/h]	305	304	34	96	154	29	115	852	297	24	775	157
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	60	0	0	60	0
Maximum Green [s]	0	45	0	0	45	0	0	90	0	0	90	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	62	0	0	62	0	0	68	0	0	68	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	60	60	60	60	60	60	60	60	60	60	60	60
g / C, Green / Cycle	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.25	0.16	0.02	0.09	0.05	0.05	0.19	0.24	0.18	0.04	0.26	0.26
s, saturation flow rate [veh/h]	1216	1894	1568	1080	1900	1798	606	3561	1615	629	1866	1759
c, Capacity [veh/h]	558	872	721	420	874	827	218	1649	748	234	864	814
d1, Uniform Delay [s]	29.88	22.57	19.37	31.31	19.92	19.95	43.00	24.64	22.97	34.69	25.23	25.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.82	1.10	0.12	1.27	0.24	0.27	1.98	0.25	0.34	0.19	0.59	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

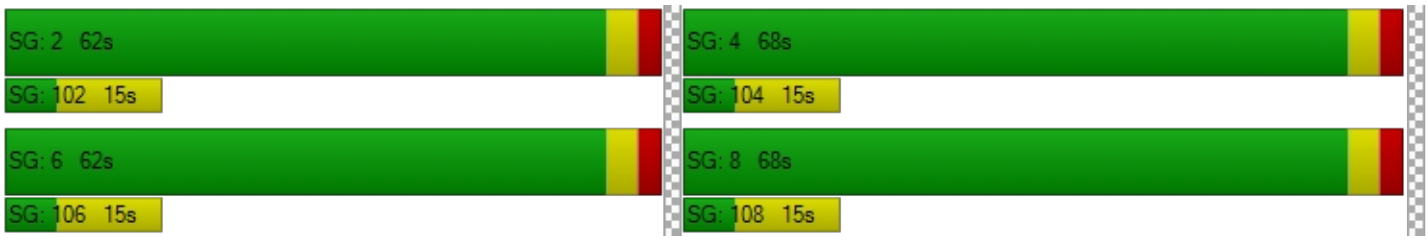
X, volume / capacity	0.55	0.35	0.05	0.23	0.11	0.11	0.53	0.52	0.40	0.10	0.56	0.56
d, Delay for Lane Group [s/veh]	33.70	23.67	19.49	32.58	20.16	20.21	44.98	24.89	23.31	34.88	25.82	25.86
Lane Group LOS	C	C	B	C	C	C	D	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	8.03	6.27	0.60	2.36	1.68	1.64	3.47	9.32	6.09	0.59	10.82	10.20
50th-Percentile Queue Length [ft]	200.85	156.82	15.03	59.04	41.92	40.93	86.65	232.92	152.21	14.67	270.51	255.10
95th-Percentile Queue Length [veh]	12.68	10.38	1.08	4.25	3.02	2.95	6.24	14.32	10.13	1.06	16.22	15.44
95th-Percentile Queue Length [ft]	317.06	259.51	27.05	106.27	75.45	73.67	155.98	358.07	253.37	26.40	405.38	386.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.70	23.67	19.49	32.58	20.18	20.21	44.98	24.89	23.31	34.88	25.83	25.86
Movement LOS	C	C	B	C	C	C	D	C	C	C	C	C
d_A, Approach Delay [s/veh]	28.21			24.45			26.35			26.06		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	26.47											
Intersection LOS	C											
Intersection V/C	0.508											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: 05 - 19th Avenue / Garfield Street

Control Type:	Signalized	Delay (sec / veh):	12.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	280.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Base Volume Input [veh/h]	488	863	16	57	710	52	34	23	364	11	21	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	488	863	16	57	710	52	34	23	364	11	21	66
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	218	4	14	180	13	9	6	96	3	6	17
Total Analysis Volume [veh/h]	494	874	16	58	719	53	36	24	384	12	22	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			1			1			4		
Bicycle Volume [bicycles/h]	3			3			2			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	6	0	4	0
Auxiliary Signal Groups									6,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	60	0	10	60	0	0	20	60	0	20	0
Maximum Green [s]	30	90	0	30	90	0	0	45	90	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	27	82	0	13	68	0	0	25	68	0	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	90	78	78	90	73	73	20	20	98	20	20
g / C, Green / Cycle	0.75	0.65	0.65	0.75	0.61	0.61	0.17	0.17	0.81	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.55	0.23	0.24	0.08	0.21	0.21	0.03	0.01	0.24	0.01	0.06
s, saturation flow rate [veh/h]	898	1900	1886	760	1900	1848	1324	1900	1595	1409	1655
c, Capacity [veh/h]	686	1242	1233	592	1149	1117	194	317	1297	256	276
d1, Uniform Delay [s]	7.49	9.41	9.42	4.64	11.80	11.82	49.84	42.20	2.76	44.83	44.12
k, delay calibration	0.50	0.50	0.50	0.37	0.50	0.50	0.11	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.41	0.81	0.82	0.24	0.80	0.83	0.46	0.10	0.58	0.07	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.36	0.36	0.10	0.34	0.34	0.19	0.08	0.30	0.05	0.33
d, Delay for Lane Group [s/veh]	13.90	10.22	10.24	4.88	12.61	12.65	50.29	42.30	3.35	44.90	44.82
Lane Group LOS	B	B	B	A	B	B	D	D	A	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.92	5.33	5.31	0.37	5.31	5.20	1.03	0.61	1.89	0.32	2.48
50th-Percentile Queue Length [ft]	123.11	133.25	132.70	9.16	132.67	129.89	25.67	15.35	47.32	7.94	61.97
95th-Percentile Queue Length [veh]	8.56	9.12	9.09	0.66	9.08	8.93	1.85	1.11	3.41	0.57	4.46
95th-Percentile Queue Length [ft]	214.09	227.91	227.16	16.50	227.12	223.34	46.20	27.63	85.18	14.29	111.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.90	10.23	10.24	4.88	12.63	12.65	50.29	42.30	3.35	44.90	44.82	44.82
Movement LOS	B	B	B	A	B	B	D	D	A	D	D	D
d_A, Approach Delay [s/veh]	11.54			12.09			9.26			44.83		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	12.59											
Intersection LOS	B											
Intersection V/C	0.500											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: 06 - 19th Avenue / Stucky Road

Control Type:	Signalized	Delay (sec / veh):	12.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.418

Intersection Setup

Name	19th Avenue		19th Avenue		Stucky Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	19th Avenue		19th Avenue		Stucky Road	
Base Volume Input [veh/h]	26	240	433	309	334	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	0.70	0.60	0.90	5.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	240	433	309	334	35
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	7	60	109	78	84	9
Total Analysis Volume [veh/h]	26	242	436	311	336	35
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	0	21	21	0	39	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	4.0	0.0	4.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	34	34	34	34	14	14
g / C, Green / Cycle	0.57	0.57	0.57	0.57	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.03	0.13	0.23	0.19	0.19	0.02
s, saturation flow rate [veh/h]	968	1877	1887	1605	1793	1528
c, Capacity [veh/h]	502	1076	1082	920	407	346
d1, Uniform Delay [s]	11.30	6.27	7.11	6.78	22.07	18.36
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.48	1.12	1.00	4.31	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

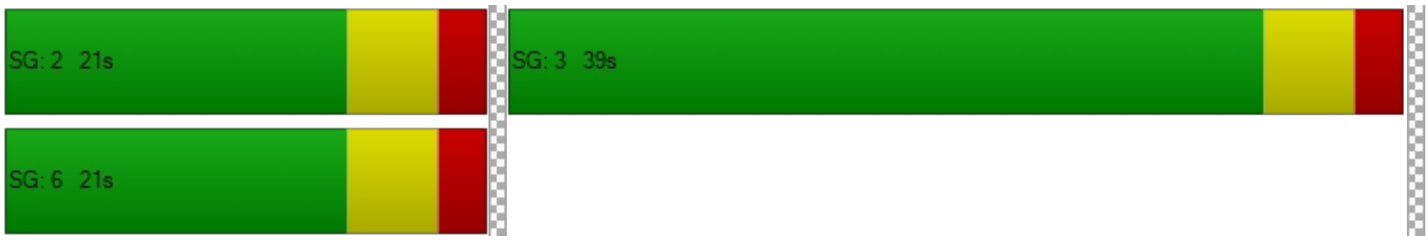
X, volume / capacity	0.05	0.22	0.40	0.34	0.83	0.10
d, Delay for Lane Group [s/veh]	11.50	6.76	8.23	7.77	26.38	18.48
Lane Group LOS	B	A	A	A	C	B
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	0.22	1.32	2.73	1.88	4.63	0.37
50th-Percentile Queue Length [ft]	5.49	32.91	68.19	47.03	115.68	9.27
95th-Percentile Queue Length [veh]	0.40	2.37	4.91	3.39	8.15	0.67
95th-Percentile Queue Length [ft]	9.88	59.24	122.75	84.65	203.87	16.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.50	6.76	8.23	7.77	26.38	18.48
Movement LOS	B	A	A	A	C	B
d_A, Approach Delay [s/veh]	7.22		8.04		25.64	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	12.59					
Intersection LOS	B					
Intersection V/C	0.418					

Sequence

Ring 1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 07 - 19th Avenue / Goldenstein Lane

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.088

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name						
Base Volume Input [veh/h]	135	31	158	290	25	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	0.00	1.30	1.70	4.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	31	158	290	25	95
Peak Hour Factor	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	8	41	75	7	26
Total Analysis Volume [veh/h]	140	32	164	300	27	102
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.12	0.00	0.09	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	7.89	0.00	18.09	10.44
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	1.45	1.45	0.75	0.75
95th-Percentile Queue Length [ft]	0.00	0.00	36.37	36.37	18.71	18.71
d_A, Approach Delay [s/veh]	0.00		2.79		12.04	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.72					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: 08 - 7th Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	22	373	214	74	292	6	4	7	29	467	5	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	6.10	9.60	1.70	0.00	0.00	0.00	3.40	2.10	0.00	2.10
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	373	214	74	292	6	4	7	29	467	5	144
Peak Hour Factor	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760	0.8760
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	6	102	59	20	80	2	1	2	8	128	1	39
Total Analysis Volume [veh/h]	24	409	235	81	320	7	5	8	33	512	5	158
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	3			3			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	0	0	30	0	0	20	0	0	20	0
Maximum Green [s]	0	60	0	0	60	0	0	45	0	0	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	35	0	0	35	0	0	45	0	0	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	31	31	31	31	39	39
g / C, Green / Cycle	0.39	0.39	0.39	0.39	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.24	0.16	0.09	0.18	0.03	0.47
s, saturation flow rate [veh/h]	1831	1485	905	1860	1756	1437
c, Capacity [veh/h]	761	579	245	725	902	777
d1, Uniform Delay [s]	19.38	17.69	30.16	18.07	10.90	19.90
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.40
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.07	2.11	3.58	2.02	0.02	10.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

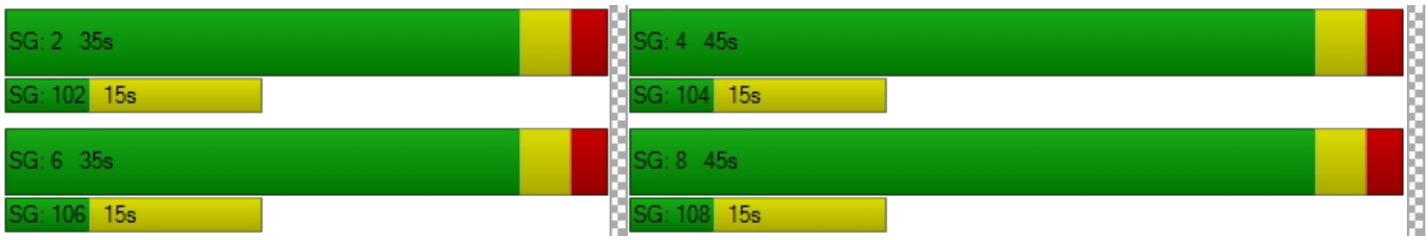
X, volume / capacity	0.57	0.41	0.33	0.45	0.05	0.87
d, Delay for Lane Group [s/veh]	22.45	19.80	33.74	20.09	10.92	30.38
Lane Group LOS	C	B	C	C	B	C
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	6.67	3.32	1.63	4.64	0.41	13.13
50th-Percentile Queue Length [ft]	166.67	83.01	40.64	116.11	10.26	328.15
95th-Percentile Queue Length [veh]	10.90	5.98	2.93	8.18	0.74	19.07
95th-Percentile Queue Length [ft]	272.53	149.41	73.15	204.47	18.46	476.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.45	22.45	19.80	33.74	20.09	20.09	10.92	10.92	10.92	30.38	30.38	30.38
Movement LOS	C	C	B	C	C	C	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	21.52			22.80			10.92			30.38		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	24.87											
Intersection LOS	C											
Intersection V/C	0.706											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: 09 - Manley Road / Griffin Drive

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.217

Intersection Setup

Name	Manley Road		Griffin Drive		Griffin Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	0
Pocket Length [ft]	100.00	90.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Manley Road		Griffin Drive		Griffin Drive	
Base Volume Input [veh/h]	55	110	52	241	366	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.90	7.70	3.80	1.10	1.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	110	52	241	366	54
Peak Hour Factor	0.8160	0.8160	0.8160	0.8160	0.8160	0.8160
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	16	32	15	71	108	16
Total Analysis Volume [veh/h]	65	129	61	284	431	64
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.21	0.06	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	20.29	12.62	8.68	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.81	0.81	1.46	1.46	0.00	0.00
95th-Percentile Queue Length [ft]	20.19	20.21	36.62	36.62	0.00	0.00
d_A, Approach Delay [s/veh]	15.19		1.53		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	3.36					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 10: 10 - Rouse Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.294

Intersection Setup

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	275.00	130.00	100.00	100.00	70.00	100.00	70.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Base Volume Input [veh/h]	108	9	192	163	223	9	1	212	157	8	9	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	11.10	6.30	1.80	1.30	11.10	0.00	1.90	2.50	12.50	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	9	192	163	223	9	1	212	157	8	9	1
Peak Hour Factor	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890	0.8890
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	2	52	44	60	2	0	57	42	2	3	0
Total Analysis Volume [veh/h]	117	10	207	176	241	10	1	229	170	9	10	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	8	3	8	0	0	4	0	0	2	0
Auxiliary Signal Groups			6,8									
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	30	10	30	0	0	30	0	0	30	0
Maximum Green [s]	0	60	60	25	60	0	0	60	0	0	60	0
Amber [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	35	55	19	55	0	0	36	0	0	35	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No	No	No	No			No			No	
Maximum Recall		No	No	No	No			No			No	
Pedestrian Recall		No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	C
L, Total Lost Time per Cycle [s]	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	30	85	50	50	35	35	35	30
g / C, Green / Cycle	0.33	0.94	0.56	0.56	0.39	0.39	0.39	0.33
(v / s)_i Volume / Saturation Flow Rate	0.11	0.14	0.13	0.13	0.00	0.12	0.11	0.02
s, saturation flow rate [veh/h]	1124	1519	1313	1863	1147	1865	1572	1154
c, Capacity [veh/h]	451	1435	745	1035	417	725	611	443
d1, Uniform Delay [s]	23.49	0.16	10.29	10.27	22.45	19.16	18.84	20.70
k, delay calibration	0.11	0.11	0.27	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	0.05	0.41	0.56	0.01	1.14	1.13	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

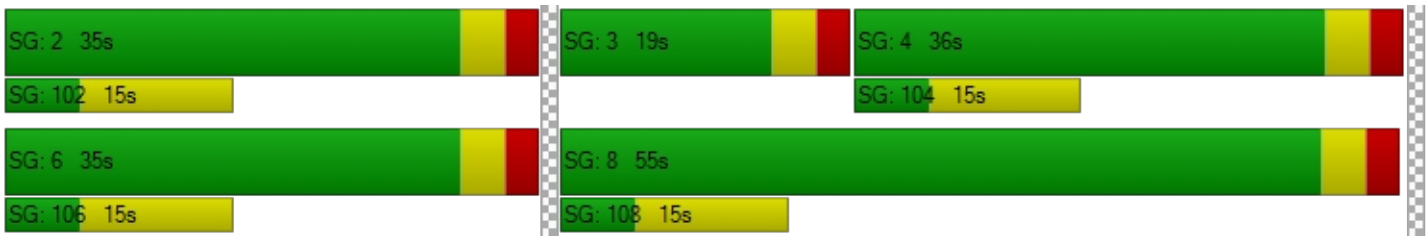
X, volume / capacity	0.28	0.14	0.24	0.24	0.00	0.32	0.28	0.05
d, Delay for Lane Group [s/veh]	23.82	0.21	10.70	10.83	22.46	20.30	19.97	20.74
Lane Group LOS	C	A	B	B	C	C	B	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.10	0.02	1.69	2.55	0.02	3.46	2.55	0.28
50th-Percentile Queue Length [ft]	52.56	0.46	42.27	63.65	0.40	86.52	63.78	7.09
95th-Percentile Queue Length [veh]	3.78	0.03	3.04	4.58	0.03	6.23	4.59	0.51
95th-Percentile Queue Length [ft]	94.60	0.82	76.09	114.56	0.72	155.73	114.80	12.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.82	23.82	0.21	10.70	10.83	10.83	22.46	20.30	19.97	20.74	20.74	20.74
Movement LOS	C	C	A	B	B	B	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	9.19			10.77			20.17			20.74		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	13.68											
Intersection LOS	B											
Intersection V/C	0.294											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: 11 - Story Mill Road / Bridger Drive

Control Type:	Two-way stop	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.029

Intersection Setup

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Base Volume Input [veh/h]	8	33	44	5	21	69	91	166	10	18	161	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	2.50	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	33	44	5	21	69	91	166	10	18	161	4
Peak Hour Factor	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950	0.8950
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	9	12	1	6	19	24	45	3	5	43	1
Total Analysis Volume [veh/h]	9	35	47	5	23	74	98	178	11	19	173	4
Pedestrian Volume [ped/h]	0			0			6			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.09	0.05	0.02	0.06	0.09	0.07	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	18.00	15.89	10.63	17.24	15.58	10.28	7.74	0.00	0.00	7.61	0.00	0.00
Movement LOS	C	C	B	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.63	0.63	0.63	0.57	0.57	0.57	0.76	0.76	0.76	0.49	0.49	0.49
95th-Percentile Queue Length [ft]	15.72	15.72	15.72	14.36	14.36	14.36	19.04	19.04	19.04	12.20	12.20	12.20
d_A, Approach Delay [s/veh]	13.38			11.81			2.64			0.74		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	4.92											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 12: 12 - Wilson Avenue / Peach Street

Control Type:	Two-way stop	Delay (sec / veh):	18.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.279

Intersection Setup

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	106	29	27	0	5	4	2	223	67	15	238	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.90	6.00	0.00	1.70	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	29	27	0	5	4	2	223	67	15	238	2
Peak Hour Factor	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	28	8	7	0	1	1	1	60	18	4	64	1
Total Analysis Volume [veh/h]	114	31	29	0	6	4	2	240	72	16	256	2
Pedestrian Volume [ped/h]	4			3			4			3		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.07	0.04	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	18.90	18.67	14.86	14.95	14.12	9.80	7.75	0.00	0.00	7.92	0.00	0.00
Movement LOS	C	C	B	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.83	1.83	1.83	0.06	0.06	0.06	0.94	0.94	0.94	0.84	0.84	0.84
95th-Percentile Queue Length [ft]	45.67	45.67	45.67	1.54	1.54	1.54	23.44	23.44	23.44	20.90	20.90	20.90
d_A, Approach Delay [s/veh]	18.18			12.39			0.05			0.46		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	4.44											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 13: 13 - Rouse Avenue / Peach Street

Control Type:	Two-way stop	Delay (sec / veh):	74.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.346

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	55	336	9	57	416	70	35	51	74	3	54	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.60	0.00	0.00	0.50	1.40	0.00	2.00	0.00	0.00	0.00	0.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	336	9	57	416	70	35	51	74	3	54	121
Peak Hour Factor	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340	0.9340
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	14	86	2	15	107	18	9	13	19	1	14	31
Total Analysis Volume [veh/h]	57	345	9	59	428	72	36	52	76	3	56	124
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.05	0.00	0.00	0.35	0.26	0.13	0.03	0.29	0.18
d_M, Delay for Movement [s/veh]	8.54	0.00	0.00	8.11	0.00	0.00	74.43	58.05	45.79	44.63	33.16	19.45
Movement LOS	A	A	A	A	A	A	F	F	E	E	D	C
95th-Percentile Queue Length [veh]	1.82	1.82	1.82	2.48	2.48	2.48	4.98	4.98	4.98	2.66	2.66	2.66
95th-Percentile Queue Length [ft]	45.46	45.46	45.46	61.95	61.95	61.95	124.58	124.58	124.58	66.48	66.48	66.48
d_A, Approach Delay [s/veh]	1.18			0.86			55.96			24.06		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	11.04											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 14: 14 - Willson Avenue / Mendenhall Street

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Base Volume Input [veh/h]	78	136	0	0	140	45	0	0	0	137	434	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.20	2.00	2.00	0.70	2.20	2.00	2.00	2.00	0.00	1.20	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	136	0	0	140	45	0	0	0	137	434	71
Peak Hour Factor	0.8240	0.8240	1.0000	1.0000	0.8240	0.8240	1.0000	1.0000	1.0000	0.8240	0.8240	0.8240
Other Adjustment Factor	0.9600	0.9600	1.0000	1.0000	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	23	40	0	0	41	13	0	0	0	40	126	21
Total Analysis Volume [veh/h]	91	158	0	0	163	52	0	0	0	160	506	83
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	20			6			32			20		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	0	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	0	0	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	0	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		C	C
L, Total Lost Time per Cycle [s]	5.00	5.00		5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00		3.00	3.00
g_i, Effective Green Time [s]	33	33		17	17
g / C, Green / Cycle	0.54	0.54		0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.20	0.13		0.24	0.24
s, saturation flow rate [veh/h]	1227	1621		1656	1472
c, Capacity [veh/h]	749	881		480	426
d1, Uniform Delay [s]	8.17	7.20		19.90	19.92
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.19	0.66		3.66	4.18
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

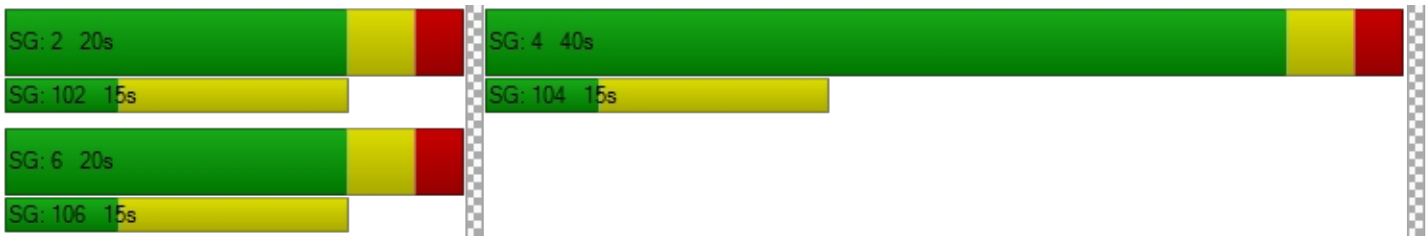
X, volume / capacity	0.33	0.24		0.83	0.83
d, Delay for Lane Group [s/veh]	9.36	7.86		23.56	24.10
Lane Group LOS	A	A		C	C
Critical Lane Group	Yes	No		No	Yes
50th-Percentile Queue Length [veh]	1.62	1.33		5.16	4.67
50th-Percentile Queue Length [ft]	40.57	33.15		128.90	116.65
95th-Percentile Queue Length [veh]	2.92	2.39		8.88	8.21
95th-Percentile Queue Length [ft]	73.03	59.67		222.00	205.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9.36	9.36	0.00	0.00	7.86	7.86	0.00	0.00	0.00	23.56	23.85	24.10
Movement LOS	A	A			A	A				C	C	C
d_A, Approach Delay [s/veh]	9.36			7.86			0.00			23.81		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	18.02											
Intersection LOS	B											
Intersection V/C	0.443											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: 15 - Willson Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

Intersection Setup

Name	Willson Avenue			Willson Avenue			Babcock Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	125.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Babcock Street					
Base Volume Input [veh/h]	0	284	189	49	344	0	33	348	99	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.20	1.10	2.00	0.30	2.00	0.00	0.30	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	284	189	49	344	0	33	348	99	0	0	0
Peak Hour Factor	1.0000	0.9240	0.9240	0.9240	0.9240	1.0000	0.9240	0.9240	0.9240	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	74	49	13	89	0	9	90	26	0	0	0
Total Analysis Volume [veh/h]	0	295	196	51	357	0	34	362	103	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	1			19			16			11		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	15	0	0	0	0
Maximum Green [s]	0	45	0	0	45	0	0	60	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	0	28	0	0	32	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	35	35	35	35	15	15	
g / C, Green / Cycle	0.58	0.58	0.58	0.58	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.18	0.14	0.05	0.21	0.16	0.16	
s, saturation flow rate [veh/h]	1673	1430	970	1705	1694	1437	
c, Capacity [veh/h]	971	829	551	989	429	364	
d1, Uniform Delay [s]	6.42	6.13	9.80	6.69	19.88	19.95	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.81	0.67	0.33	1.02	1.50	1.84	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

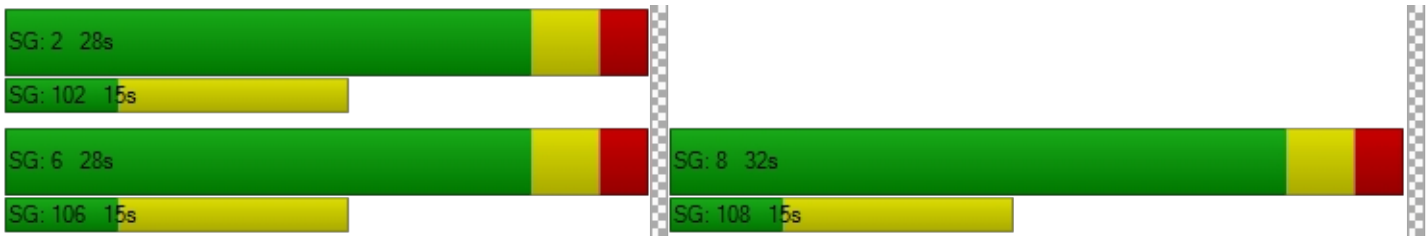
X, volume / capacity	0.30	0.24	0.09	0.36	0.62	0.64	
d, Delay for Lane Group [s/veh]	7.22	6.80	10.13	7.71	21.38	21.79	
Lane Group LOS	A	A	B	A	C	C	
Critical Lane Group	No	No	No	Yes	No	Yes	
50th-Percentile Queue Length [veh]	1.68	1.08	0.39	2.13	3.23	2.83	
50th-Percentile Queue Length [ft]	42.02	27.06	9.84	53.15	80.76	70.69	
95th-Percentile Queue Length [veh]	3.03	1.95	0.71	3.83	5.81	5.09	
95th-Percentile Queue Length [ft]	75.64	48.71	17.70	95.67	145.36	127.24	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.22	6.80	10.13	7.71	0.00	21.38	21.52	21.79	0.00	0.00	0.00
Movement LOS		A	A	B	A		C	C	C			
d_A, Approach Delay [s/veh]	7.05			8.01			21.57			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	12.51											
Intersection LOS	B											
Intersection V/C	0.370											

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: 16 - Broadway Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.439

Intersection Setup

Name	Broadway Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

volumes

Name	Broadway Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	140	31	73	685	675	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	0.00	1.40	1.30	1.90	1.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	31	73	685	675	138
Peak Hour Factor	0.8790	0.8790	0.8790	0.8790	0.8790	0.8790
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	38	8	20	189	186	38
Total Analysis Volume [veh/h]	153	34	81	756	745	152
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	12		5		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	15	0	0	15	15	0
Maximum Green [s]	30	0	0	90	90	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	21	0	0	44	44	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	15	40	40	40	40
g / C, Green / Cycle	0.22	0.62	0.62	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.32	0.32	0.27	0.28
s, saturation flow rate [veh/h]	1594	1075	1536	1678	1578
c, Capacity [veh/h]	360	735	953	1041	979
d1, Uniform Delay [s]	22.07	6.23	6.89	6.39	6.54
k, delay calibration	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.16	2.15	1.99	1.30	1.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

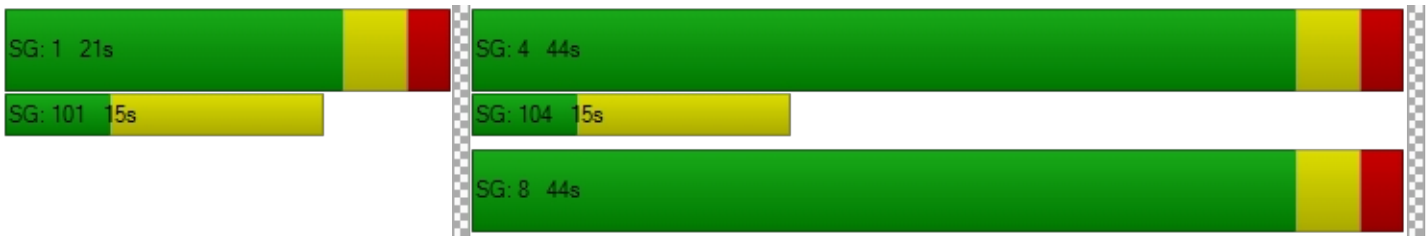
X, volume / capacity	0.52	0.47	0.52	0.43	0.46
d, Delay for Lane Group [s/veh]	23.23	8.39	8.88	7.69	8.09
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh]	2.47	2.15	3.38	2.79	2.89
50th-Percentile Queue Length [ft]	61.81	53.82	84.45	69.77	72.30
95th-Percentile Queue Length [veh]	4.45	3.88	6.08	5.02	5.21
95th-Percentile Queue Length [ft]	111.25	96.88	152.01	125.58	130.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.23	23.23	8.39	8.71	7.85	8.09
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	23.23		8.68		7.89	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	9.73					
Intersection LOS	A					
Intersection V/C	0.439					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: 17 - Highland Boulevard / Main Street

Control Type:	Signalized	Delay (sec / veh):	36.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Highland Boulevard						Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard						Main Street			Main Street		
Base Volume Input [veh/h]	341	0	363	3	6	8	155	428	0	1	612	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.60	2.00	0.80	0.00	0.00	0.00	1.90	2.80	0.00	0.00	2.00	1.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	341	0	363	3	6	8	155	428	0	1	612	180
Peak Hour Factor	0.8720	1.0000	0.8720	1.0000	1.0000	1.0000	0.8720	0.8720	1.0000	1.0000	0.8720	0.8720
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	94	0	100	1	2	2	43	119	0	0	170	50
Total Analysis Volume [veh/h]	375	0	400	3	6	8	172	476	0	1	681	200
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	3	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	30	0	0	30	0
Maximum Green [s]	0	45	0	0	45	0	25	60	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	47	0	0	47	0	13	48	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	42	42	42	43	43	43	30	30	30
g / C, Green / Cycle	0.44	0.44	0.44	0.45	0.45	0.45	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.29	0.28	0.02	0.21	0.14	0.14	0.00	0.27	0.27
s, saturation flow rate [veh/h]	1272	1425	1005	828	1663	1663	839	1676	1547
c, Capacity [veh/h]	403	631	490	343	752	752	247	529	489
d1, Uniform Delay [s]	36.83	20.49	15.76	20.17	16.66	16.66	30.16	30.60	30.60
k, delay calibration	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.33	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	30.28	4.79	0.13	1.14	0.24	0.24	0.01	12.06	12.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.63	0.03	0.50	0.32	0.32	0.00	0.87	0.87
d, Delay for Lane Group [s/veh]	67.11	25.29	15.89	21.31	16.90	16.90	30.16	42.66	43.58
Lane Group LOS	E	C	B	C	B	B	C	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	12.21	7.41	0.22	2.34	3.27	3.27	0.02	11.33	10.59
50th-Percentile Queue Length [ft]	305.14	185.23	5.52	58.53	81.70	81.70	0.46	283.35	264.84
95th-Percentile Queue Length [veh]	17.94	11.87	0.40	4.21	5.88	5.88	0.03	16.86	15.93
95th-Percentile Queue Length [ft]	448.38	296.83	9.94	105.36	147.06	147.06	0.84	421.38	398.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.11	25.29	25.29	15.89	15.89	15.89	21.31	16.90	16.90	30.16	42.96	43.58
Movement LOS	E	C	C	B	B	B	C	B	B	C	D	D
d_A, Approach Delay [s/veh]	45.52			15.89			18.07			43.09		
Approach LOS	D			B			B			D		
d_I, Intersection Delay [s/veh]	36.72											
Intersection LOS	D											
Intersection V/C	0.640											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: 18 - Haggerty Lane / Main Street

Control Type:	Two-way stop	Delay (sec / veh):	519.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Haggerty Lane						Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

volumes

Name	Haggerty Lane						Main Street			Main Street		
Base Volume Input [veh/h]	97	0	95	1	0	1	69	496	1	2	811	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.10	0.00	0.00	0.00	0.00	2.60	0.00	0.00	2.10	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	0	95	1	0	1	69	496	1	2	811	150
Peak Hour Factor	0.8010	1.0000	0.8010	1.0000	1.0000	1.0000	0.8010	0.8010	1.0000	1.0000	0.8010	0.8010
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	29	0	28	0	0	0	21	150	0	0	246	45
Total Analysis Volume [veh/h]	116	0	114	1	0	1	84	601	1	2	982	182
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.64	0.00	0.25	0.01	0.00	0.00	0.14	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	513.41	519.35	470.29	47.38	68.73	10.45	11.88	0.00	0.00	8.66	0.00	0.00
Movement LOS	F	F	F	E	F	B	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	18.29	18.29	18.29	0.04	0.04	0.04	0.48	0.00	0.00	4.03	2.01	0.00
95th-Percentile Queue Length [ft]	457.13	457.13	457.13	0.99	0.99	0.99	11.95	0.00	0.00	100.64	50.32	0.00
d_A, Approach Delay [s/veh]	492.04			28.92			1.45			0.01		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	54.82											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: 19 - Willson Avenue / College Street

Control Type:	Two-way stop	Delay (sec / veh):	56.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Base Volume Input [veh/h]	124	458	20	19	522	70	4	3	139	0	5	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.90	0.00	0.00	0.40	1.40	0.00	0.00	1.40	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	124	458	20	19	522	70	4	3	139	0	5	25
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	115	5	5	131	18	1	1	35	0	1	7
Total Analysis Volume [veh/h]	125	461	20	19	525	70	4	3	140	0	5	26
Pedestrian Volume [ped/h]	4			13			0			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.00	0.00	0.02	0.01	0.00	0.04	0.02	0.27	0.00	0.04	0.05
d_M, Delay for Movement [s/veh]	9.17	0.00	0.00	8.39	0.00	0.00	44.92	38.12	15.84	56.09	36.15	12.27
Movement LOS	A	A	A	A	A	A	E	E	C	F	E	B
95th-Percentile Queue Length [veh]	4.37	4.37	4.37	3.71	3.71	3.71	1.43	1.43	1.43	0.29	0.29	0.29
95th-Percentile Queue Length [ft]	109.22	109.22	109.22	92.84	92.84	92.84	35.78	35.78	35.78	7.13	7.13	7.13
d_A, Approach Delay [s/veh]	1.89			0.26			17.08			16.12		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	3.09											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 20: 20 - Highland Boulevard / Ellis Street

Control Type:	Two-way stop	Delay (sec / veh):	93.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Base Volume Input [veh/h]	2	455	53	51	289	23	140	3	10	51	3	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	1.90	0.00	1.00	4.30	0.00	33.30	0.00	0.00	0.00	0.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	455	53	51	289	23	140	3	10	51	3	112
Peak Hour Factor	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	117	14	13	74	6	37	1	3	14	1	30
Total Analysis Volume [veh/h]	2	466	54	52	296	24	149	3	11	54	3	120
Pedestrian Volume [ped/h]	20			1			7			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.05	0.00	0.00	0.86	0.01	0.02	0.24	0.01	0.21
d_M, Delay for Movement [s/veh]	7.92	0.00	0.00	8.58	0.00	0.00	92.96	88.57	77.38	28.46	26.75	18.85
Movement LOS	A	A	A	A	A	A	F	F	F	D	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.16	0.00	0.00	6.65	6.65	6.65	2.32	2.32	2.32
95th-Percentile Queue Length [ft]	0.12	0.00	0.00	3.88	0.00	0.00	166.32	166.32	166.32	58.11	58.11	58.11
d_A, Approach Delay [s/veh]	0.03			1.20			91.83			21.92		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	15.65											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: 21 - Sourdough Road / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	103.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.503

Intersection Setup

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Base Volume Input [veh/h]	45	38	57	37	487	54	56	435	15	22	56	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.70	0.00	0.00	0.00	1.20
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	38	57	37	487	54	56	435	15	22	56	84
Peak Hour Factor	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470	0.9470
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	11	10	14	9	123	14	14	110	4	6	14	21
Total Analysis Volume [veh/h]	46	39	58	38	494	55	57	441	15	22	57	85
Pedestrian Volume [ped/h]	0			0			1			17		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	No			No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No			No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.50	0.23	0.10	0.04	0.00	0.00	0.06	0.00	0.00	0.21	0.34	0.14
d_M, Delay for Movement [s/veh]	103.42	85.15	70.55	8.45	0.00	0.00	8.70	0.00	0.00	67.42	55.22	39.69
Movement LOS	F	F	F	A	A	A	A	A	A	F	F	E
95th-Percentile Queue Length [veh]	5.76	5.76	5.76	0.11	0.00	0.00	0.18	0.00	0.00	4.53	4.53	4.53
95th-Percentile Queue Length [ft]	144.07	144.07	144.07	2.73	0.00	0.00	4.38	0.00	0.00	113.24	113.24	113.24
d_A, Approach Delay [s/veh]	85.11			0.55			0.97			48.81		
Approach LOS	F			A			A			E		
d_I, Intersection Delay [s/veh]	14.92											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 22: 22 - Highland Boulevard / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	59.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.030

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	2	3	1	18	3	346	361	195	4	0	148	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.30	0.60	0.00	0.00	0.00	0.70	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	3	1	18	3	346	361	195	4	0	148	14
Peak Hour Factor	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410	0.9410
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	1	0	5	1	88	92	50	1	0	38	4
Total Analysis Volume [veh/h]	2	3	1	18	3	353	368	199	4	0	151	14
Pedestrian Volume [ped/h]	0			3			5			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.02	0.00	0.12	0.02	0.40	0.26	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	59.77	29.53	10.83	34.97	33.80	15.10	8.44	0.00	0.00	7.61	0.00	0.00
Movement LOS	F	D	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.16	0.16	0.16	3.28	3.28	3.28	1.05	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	3.89	3.89	3.89	81.90	81.90	81.90	26.17	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	36.49			16.21			5.44			0.00		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	8.41											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	115.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Base Volume Input [veh/h]	2	64	135	200	161	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	64	135	200	161	2
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	19	38	56	45	1
Total Analysis Volume [veh/h]	2	74	151	223	180	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.34	0.80	1.10	1.02
95th-Percentile Queue Length [ft]	8.62	20.05	27.45	25.39
Approach Delay [s/veh]	8.47	8.87		9.79
Approach LOS	A	A		A
Intersection Delay [s/veh]	9.09			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 27: 25 - 11th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Base Volume Input [veh/h]	17	234	120	73	210	42	30	39	24	92	60	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	234	120	73	210	42	30	39	24	92	60	106
Peak Hour Factor	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	5	63	32	20	56	11	8	11	7	25	16	28
Total Analysis Volume [veh/h]	18	252	129	78	226	45	34	44	27	99	65	114
Pedestrian Volume [ped/h]	116			204			111			86		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.35	3.54	0.71	2.52
95th-Percentile Queue Length [ft]	108.68	88.59	17.87	63.08
Approach Delay [s/veh]	17.50	16.20	11.27	14.48
Approach LOS	C	C	B	B
Intersection Delay [s/veh]	15.78			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 28: 26 - 11th Avenue / Lincoln Street

Control Type:	All-way stop	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Base Volume Input [veh/h]	159	276	26	8	225	84	88	59	97	37	64	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	276	26	8	225	84	88	59	97	37	64	13
Peak Hour Factor	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930	0.8930
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	74	7	2	60	23	24	16	26	10	18	4
Total Analysis Volume [veh/h]	171	297	28	9	242	90	95	63	104	41	72	15
Pedestrian Volume [ped/h]	42			48			69			73		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.42	3.60	2.44	0.52	2.34	0.93
95th-Percentile Queue Length [ft]	35.44	90.01	60.91	12.94	58.48	23.20
Approach Delay [s/veh]	15.75		13.59		14.24	11.85
Approach LOS	C		B		B	B
Intersection Delay [s/veh]	14.42					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 29: 27 - 11th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	200.00	100.00	100.00	115.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	90	99	49	165	82	168	126	477	520	20	499	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.00	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.60	0.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	99	49	165	82	168	126	477	520	20	499	116
Peak Hour Factor	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	24	26	13	42	21	42	32	120	131	5	126	29
Total Analysis Volume [veh/h]	94	104	51	166	83	169	127	481	524	20	503	117
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2			19			18			43		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	85
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	15	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	25	60	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	21	0	0	21	0	26	64	0	0	38	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	3.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	1.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	16	16	16	16	10	59	46	46
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.11	0.69	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.14	0.15	0.07	0.59	0.04	0.34
s, saturation flow rate [veh/h]	1134	1699	1177	1642	1810	1703	570	1821
c, Capacity [veh/h]	118	325	195	314	202	1177	117	991
d1, Uniform Delay [s]	42.07	30.59	39.87	32.84	36.05	9.89	39.21	13.40
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.35	0.11	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.67	4.95	34.96	19.18	3.18	5.76	0.69	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

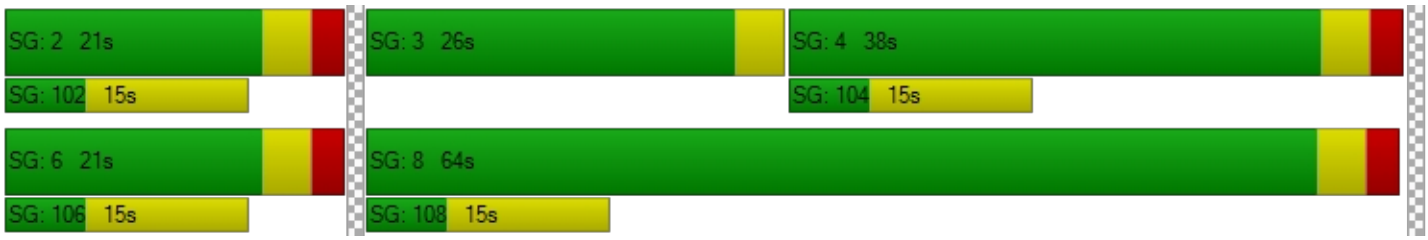
X, volume / capacity	0.80	0.48	0.85	0.80	0.63	0.85	0.17	0.63
d, Delay for Lane Group [s/veh]	83.74	35.54	74.82	52.03	39.23	15.66	39.89	14.46
Lane Group LOS	F	D	E	D	D	B	D	B
Critical Lane Group	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.31	3.22	5.33	6.51	2.65	12.65	0.42	7.68
50th-Percentile Queue Length [ft]	82.75	80.38	133.29	162.63	66.22	316.19	10.59	192.04
95th-Percentile Queue Length [veh]	5.96	5.79	9.12	10.69	4.77	18.48	0.76	12.23
95th-Percentile Queue Length [ft]	148.95	144.68	227.97	267.20	119.20	462.00	19.07	305.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	83.74	35.54	35.54	74.82	52.03	52.03	39.23	15.66	15.66	39.89	14.46	14.46
Movement LOS	F	D	D	E	D	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	53.74			61.08			18.30			15.25		
Approach LOS	D			E			B			B		
d_I, Intersection Delay [s/veh]	28.45											
Intersection LOS	C											
Intersection V/C	0.744											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: 28 - 8th Avenue / College Street

Control Type:	All-way stop	Delay (sec / veh):	17.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	8th Avenue			8th Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	8th Avenue			8th Avenue			College Street			College Street		
Base Volume Input [veh/h]	69	126	7	39	65	55	127	250	77	6	236	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.80	0.00	0.00	0.00	0.00	0.80	0.40	0.00	0.00	0.40	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	126	7	39	65	55	127	250	77	6	236	38
Peak Hour Factor	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220	0.9220
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	18	33	2	10	17	14	33	65	20	2	61	10
Total Analysis Volume [veh/h]	72	131	7	41	68	57	132	260	80	6	246	40
Pedestrian Volume [ped/h]	18			12			29			33		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.81	1.26	6.68	2.66
95th-Percentile Queue Length [ft]	45.18	31.57	166.98	66.49
Approach Delay [s/veh]	13.71	12.34	23.71	14.55
Approach LOS	B	B	C	B
Intersection Delay [s/veh]	17.87			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 31: 29 - 7th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	7th Avenue		Grant Street		Grant Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	7th Avenue		Grant Street		Grant Street	
Base Volume Input [veh/h]	100	125	192	49	39	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.50	0.00	0.00	0.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	125	192	49	39	127
Peak Hour Factor	0.8190	0.8190	0.8190	0.8190	0.8190	0.8190
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	29	37	56	14	11	37
Total Analysis Volume [veh/h]	117	147	225	57	46	149
Pedestrian Volume [ped/h]	28		129		74	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.59	1.72	1.10
95th-Percentile Queue Length [ft]	39.79	42.92	27.41
Approach Delay [s/veh]	10.40	10.49	9.85
Approach LOS	B	B	A
Intersection Delay [s/veh]	10.29		
Intersection LOS	B		

Intersection Level Of Service Report
Intersection 32: 30 - 7th Avenue / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	71.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.344

Intersection Setup

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	0	7	38	30	13	86	37	663	4	8	568	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.60	6.70	0.00	0.00	2.70	0.60	0.00	0.00	0.90	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	7	38	30	13	86	37	663	4	8	568	50
Peak Hour Factor	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310	0.9310
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	0	2	10	8	3	22	10	171	1	2	146	13
Total Analysis Volume [veh/h]	0	8	41	31	13	89	38	684	4	8	586	52
Pedestrian Volume [ped/h]	2			2			42			2		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.09	0.34	0.10	0.20	0.04	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	59.09	35.65	15.25	71.12	58.79	14.98	9.00	0.00	0.00	8.98	0.00	0.00
Movement LOS	F	E	C	F	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.55	0.55	0.55	1.88	1.88	0.73	7.89	7.89	7.89	6.14	6.14	6.14
95th-Percentile Queue Length [ft]	13.65	13.65	13.65	46.99	46.99	18.23	197.18	197.18	197.18	153.61	153.61	153.61
d_A, Approach Delay [s/veh]	18.58			32.35			0.47			0.11		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	3.62											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 33: 31 - Valley Center Spur / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	25.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.389

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	825.00	100.00	100.00	615.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	108	76	142	298	158	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.90	1.30	0.70	2.60	1.30	1.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	76	142	298	158	112
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	29	20	40	84	44	31
Total Analysis Volume [veh/h]	116	81	159	335	177	126
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.39	0.09	0.13	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	24.98	17.07	8.25	0.00	0.00	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.55	2.55	0.43	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	63.63	63.63	10.75	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	21.72		2.66		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.63					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 34: 32 - Valley Center Spur / Valley Center Road

Control Type:	Two-way stop	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	120.00	430.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Base Volume Input [veh/h]	109	135	70	195	264	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	5.20	2.90	6.60	3.00	1.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	135	70	195	264	121
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	29	36	19	54	73	34
Total Analysis Volume [veh/h]	116	143	78	217	294	135
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.21	0.07	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.65	11.75	8.44	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.36	0.80	0.22	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	34.07	19.88	5.57	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.29		2.23		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.70					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 35: 33 - Nelson Road / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.057

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	575.00	600.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	12	12	481	49	18	241
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	8.30	2.70	0.00	5.60	2.50
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	12	481	49	18	241
Peak Hour Factor	0.8260	0.8260	0.8260	0.8260	0.8260	0.8260
Other Adjustment Factor	1.0000	1.0000	1.0900	1.0900	1.0900	1.0900
Total 15-Minute Volume [veh/h]	4	4	159	16	6	80
Total Analysis Volume [veh/h]	15	15	635	65	24	318
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.03	0.01	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	19.67	13.74	0.00	0.00	9.20	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.29	0.29	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	7.26	7.26	0.00	0.00	2.10	0.00
d_A, Approach Delay [s/veh]	16.71		0.00		0.65	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.67					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 36: 34 - 19th Avenue / I-90 EB Ramp

Control Type:	Two-way stop	Delay (sec / veh):	91.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.320

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	270.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

volumes

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Base Volume Input [veh/h]	0	877	200	45	486	0	0	0	0	17	0	279
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.20	3.50	0.00	1.80	2.00	2.00	2.00	2.00	5.90	2.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	877	200	45	486	0	0	0	0	17	0	279
Peak Hour Factor	1.0000	0.8790	0.8790	0.8790	0.8790	1.0000	1.0000	1.0000	1.0000	0.8790	1.0000	0.8790
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	249	57	13	138	0	0	0	0	5	0	79
Total Analysis Volume [veh/h]	0	998	228	51	553	0	0	0	0	19	0	317
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.09	0.01	0.00	0.00	0.00	0.00	0.32	0.00	0.60
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	11.86	0.00	0.00	0.00	0.00	0.00	91.76	0.00	21.48
Movement LOS		A	A	B	A					F		C
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	1.15	0.00	3.91
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	7.26	0.00	0.00	0.00	0.00	0.00	28.71	0.00	97.79
d_A, Approach Delay [s/veh]	0.00			1.00			0.00			25.45		
Approach LOS	A			A			A			D		
d_I, Intersection Delay [s/veh]	4.23											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 37: 35 - 19th Avenue / I-90 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	275.00	100.00	100.00	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Base Volume Input [veh/h]	424	500	0	0	313	26	208	0	60	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	1.00	2.00	2.00	0.90	7.70	2.40	2.00	1.70	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	424	500	0	0	313	26	208	0	60	0	0	0
Peak Hour Factor	0.8920	0.8920	1.0000	1.0000	0.8920	0.8920	0.8920	1.0000	0.8920	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	140	0	0	88	7	58	0	17	0	0	0
Total Analysis Volume [veh/h]	475	561	0	0	351	29	233	0	67	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	7	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	10	30	0	0	30	0	15	0	0	0	0	0
Maximum Green [s]	25	60	0	0	60	0	45	0	0	0	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Split [s]	15	50	0	0	35	0	20	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No			No		No					
Maximum Recall	No	No			No		No					
Pedestrian Recall	No	No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	49	49	34	11	11	
g / C, Green / Cycle	0.70	0.70	0.49	0.16	0.16	
(v / s)_i Volume / Saturation Flow Rate	0.44	0.33	0.23	0.15	0.05	
s, saturation flow rate [veh/h]	1078	1693	1672	1590	1429	
c, Capacity [veh/h]	760	1184	811	251	226	
d1, Uniform Delay [s]	6.39	4.73	12.01	29.08	26.04	
k, delay calibration	0.50	0.50	0.50	0.16	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	3.85	1.36	1.94	18.97	0.73	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.62	0.47	0.47	0.93	0.30	
d, Delay for Lane Group [s/veh]	10.24	6.10	13.95	48.05	26.77	
Lane Group LOS	B	A	B	D	C	
Critical Lane Group	Yes	No	Yes	Yes	No	
50th-Percentile Queue Length [veh]	2.81	2.92	3.93	5.01	1.00	
50th-Percentile Queue Length [ft]	70.26	72.98	98.37	125.26	24.88	
95th-Percentile Queue Length [veh]	5.06	5.25	7.08	8.68	1.79	
95th-Percentile Queue Length [ft]	126.46	131.36	177.06	217.04	44.78	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.24	6.10	0.00	0.00	13.95	13.95	48.05	0.00	26.77	0.00	0.00	0.00
Movement LOS	B	A			B	B	D		C			
d_A, Approach Delay [s/veh]	8.00			13.95			43.30			0.00		
Approach LOS	A			B			D			A		
d_I, Intersection Delay [s/veh]	15.49											
Intersection LOS	B											
Intersection V/C	0.519											

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: 36 - 19th Avenue / Tschache Way

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.422

Intersection Setup

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	200.00	275.00	100.00	175.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Base Volume Input [veh/h]	65	1089	48	73	797	57	102	22	56	76	26	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	0.00	0.70	0.00	1.00	0.00	3.60	0.00	0.00	3.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	1089	48	73	797	57	102	22	56	76	26	89
Peak Hour Factor	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750
Other Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	290	13	19	213	15	26	6	14	19	7	23
Total Analysis Volume [veh/h]	69	1162	51	78	850	61	105	23	57	78	27	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	15	0	0	15	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	13	55	0	13	55	0	0	27	0	0	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	70	58	58	70	59	59	15	15	15	15
g / C, Green / Cycle	0.74	0.61	0.61	0.74	0.62	0.62	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.08	0.32	0.03	0.12	0.24	0.04	0.08	0.05	0.06	0.07
s, saturation flow rate [veh/h]	814	3585	1615	675	3592	1615	1281	1688	1339	1672
c, Capacity [veh/h]	625	2203	993	511	2220	998	182	263	216	261
d1, Uniform Delay [s]	4.38	10.44	7.29	5.81	9.08	7.21	43.50	35.53	40.45	36.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	0.91	0.10	0.63	0.50	0.12	2.86	0.64	1.02	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.53	0.05	0.15	0.38	0.06	0.58	0.30	0.36	0.45
d, Delay for Lane Group [s/veh]	4.73	11.35	7.38	6.44	9.58	7.32	46.37	36.17	41.47	37.64
Lane Group LOS	A	B	A	A	A	A	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.35	6.54	0.41	0.42	4.16	0.49	2.58	1.68	1.78	2.55
50th-Percentile Queue Length [ft]	8.75	163.41	10.26	10.42	103.93	12.21	64.55	41.88	44.48	63.75
95th-Percentile Queue Length [veh]	0.63	10.73	0.74	0.75	7.48	0.88	4.65	3.02	3.20	4.59
95th-Percentile Queue Length [ft]	15.75	268.23	18.47	18.75	187.07	21.97	116.19	75.38	80.06	114.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.73	11.35	7.38	6.44	9.58	7.32	46.37	36.17	36.17	41.47	37.64	37.64
Movement LOS	A	B	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.83			9.20			41.96			39.16		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	14.49											
Intersection LOS	B											
Intersection V/C	0.422											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: 37 - 19th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	400.00	100.00	400.00	275.00	100.00	250.00	200.00	100.00	100.00	225.00	100.00	225.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	115	836	205	186	645	75	148	227	56	248	423	262
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	0.90	2.60	1.30	1.10	3.20	0.00	4.40	1.40	3.50	0.50	2.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	836	205	186	645	75	148	227	56	248	423	262
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	30	222	54	49	171	20	39	60	15	64	109	67
Total Analysis Volume [veh/h]	122	887	217	197	684	80	157	241	59	255	435	270
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups			2,7			3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	30	5	30	30	5	15	0	5	15	15
Maximum Green [s]	30	90	90	30	90	90	20	45	0	20	45	45
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	12	38	38	9	35	35	15	50	0	8	43	43
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	53	44	54	53	44	57	42	34	42	32	43
g / C, Green / Cycle	0.50	0.42	0.51	0.50	0.42	0.54	0.40	0.32	0.40	0.30	0.41
(v / s)_i Volume / Saturation Flow Rate	0.14	0.25	0.14	0.25	0.19	0.05	0.14	0.17	0.22	0.12	0.17
s, saturation flow rate [veh/h]	889	3585	1574	781	3578	1565	1135	1759	1158	3600	1577
c, Capacity [veh/h]	443	1499	808	373	1504	842	469	571	423	1088	642
d1, Uniform Delay [s]	15.13	23.61	14.42	17.47	21.81	11.81	21.17	28.87	28.77	29.06	22.27
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.54	1.72	0.82	5.27	0.99	0.05	1.92	0.75	1.44	0.24	2.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.59	0.27	0.53	0.45	0.10	0.33	0.53	0.60	0.40	0.42
d, Delay for Lane Group [s/veh]	16.66	25.34	15.23	22.74	22.80	11.86	23.09	29.62	30.22	29.30	24.28
Lane Group LOS	B	C	B	C	C	B	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.70	8.65	3.02	3.11	6.12	0.90	2.76	6.21	4.53	4.36	5.06
50th-Percentile Queue Length [ft]	42.59	216.18	75.60	77.67	153.12	22.54	69.05	155.19	113.29	109.08	126.57
95th-Percentile Queue Length [veh]	3.07	13.47	5.44	5.59	10.18	1.62	4.97	10.29	8.02	7.79	8.75
95th-Percentile Queue Length [ft]	76.66	336.75	136.09	139.81	254.59	40.57	124.28	257.34	200.57	194.72	218.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.66	25.34	15.23	22.74	22.80	11.86	23.09	29.62	29.62	30.22	29.30	24.28
Movement LOS	B	C	B	C	C	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	22.69			21.88			27.37			28.13		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.52											
Intersection LOS	C											
Intersection V/C	0.556											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: 38 - 19th Avenue / Durston Road

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	90.00	100.00	100.00	250.00	100.00	100.00	325.00	100.00	420.00	140.00	100.00	50.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Base Volume Input [veh/h]	178	918	62	96	763	139	145	251	103	80	368	117
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.50	1.60	1.00	0.80	0.00	0.00	0.80	1.00	0.00	0.50	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	178	918	62	96	763	139	145	251	103	80	368	117
Peak Hour Factor	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	47	241	16	25	201	37	37	64	26	20	94	30
Total Analysis Volume [veh/h]	187	965	65	101	802	146	148	256	105	82	375	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	0	5	30	0	5	15	15	5	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	8	36	0	9	37	0	8	77	77	8	77	77
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	76	67	67	76	68	68	44	36	46	44	36	47
g / C, Green / Cycle	0.59	0.52	0.52	0.59	0.53	0.53	0.34	0.27	0.35	0.34	0.27	0.36
(v / s)_i Volume / Saturation Flow Rate	0.27	0.28	0.28	0.15	0.26	0.26	0.13	0.14	0.07	0.07	0.20	0.07
s, saturation flow rate [veh/h]	696	1872	1831	665	1885	1785	1132	1885	1599	1233	1891	1615
c, Capacity [veh/h]	402	970	948	379	991	939	266	517	561	354	518	580
d1, Uniform Delay [s]	14.83	20.91	20.92	14.04	19.71	19.71	38.44	39.62	29.29	31.15	42.71	28.85
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.84	2.13	2.18	1.71	1.74	1.84	8.16	0.74	0.74	0.33	1.93	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

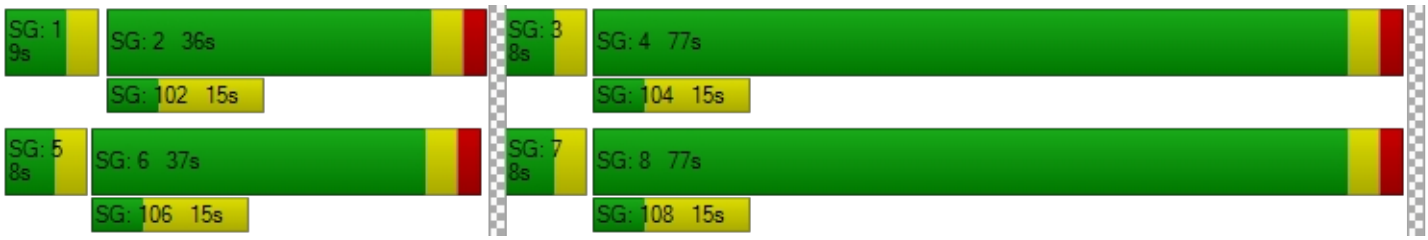
X, volume / capacity	0.47	0.54	0.54	0.27	0.49	0.49	0.56	0.50	0.19	0.23	0.72	0.21
d, Delay for Lane Group [s/veh]	18.67	23.04	23.10	15.75	21.45	21.55	46.60	40.36	30.02	31.48	44.64	29.65
Lane Group LOS	B	C	C	B	C	C	D	D	C	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.94	11.04	10.83	1.47	9.83	9.34	4.00	7.01	2.42	1.84	11.19	2.73
50th-Percentile Queue Length [ft]	73.40	276.01	270.78	36.68	245.71	233.44	100.08	175.34	60.58	46.12	279.67	68.30
95th-Percentile Queue Length [veh]	5.29	16.49	16.23	2.64	14.97	14.35	7.21	11.36	4.36	3.32	16.67	4.92
95th-Percentile Queue Length [ft]	132.13	412.24	405.72	66.03	374.25	358.73	180.14	283.92	109.05	83.01	416.80	122.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.67	23.07	23.10	15.75	21.49	21.55	46.60	40.36	30.02	31.48	44.64	29.65
Movement LOS	B	C	C	B	C	C	D	D	C	C	D	C
d_A, Approach Delay [s/veh]	22.39			20.94			40.04			39.67		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	27.59											
Intersection LOS	C											
Intersection V/C	0.562											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	70.00	100.00	100.00	50.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Base Volume Input [veh/h]	72	681	34	64	489	189	194	233	57	23	233	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	1.60	1.00	0.50	1.00	0.40	0.00	0.00	0.40	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	681	34	64	489	189	194	233	57	23	233	72
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Total 15-Minute Volume [veh/h]	20	185	9	17	133	51	51	61	15	6	61	19
Total Analysis Volume [veh/h]	78	741	37	70	532	206	203	243	60	24	243	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	30	0	5	30	0	0	5	0	0	5	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	35	0	8	35	0	0	24	0	0	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	45	38	38	45	38	38	19	19	21
g / C, Green / Cycle	0.45	0.38	0.38	0.45	0.38	0.38	0.19	0.19	0.21
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.21	0.09	0.15	0.13	0.11	0.17	0.19
s, saturation flow rate [veh/h]	998	1881	1850	822	3582	1607	1792	1829	1816
c, Capacity [veh/h]	452	710	698	356	1347	604	338	345	382
d1, Uniform Delay [s]	16.55	24.49	24.49	17.44	22.86	22.33	37.10	39.43	38.40
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.17	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.83	3.08	3.14	1.23	0.87	1.53	1.71	10.56	12.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

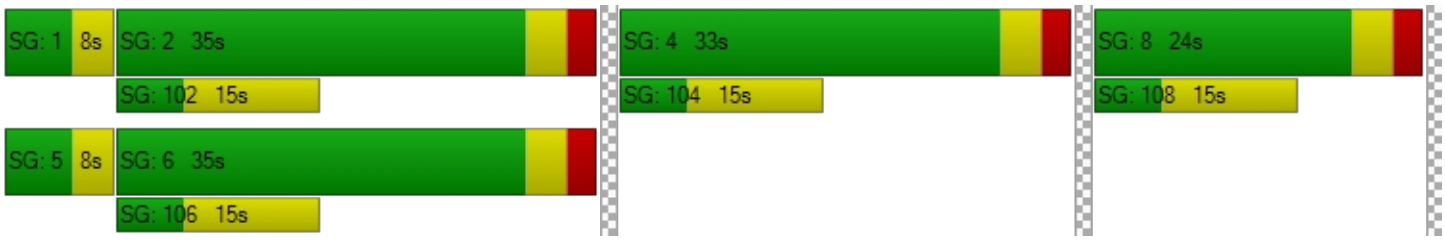
X, volume / capacity	0.17	0.55	0.55	0.20	0.40	0.34	0.60	0.88	0.89
d, Delay for Lane Group [s/veh]	17.38	27.58	27.63	18.67	23.73	23.86	38.81	49.99	50.64
Lane Group LOS	B	C	C	B	C	C	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	1.11	7.74	7.62	1.02	4.67	3.67	4.66	8.15	9.34
50th-Percentile Queue Length [ft]	27.78	193.43	190.53	25.56	116.73	91.65	116.41	203.64	233.43
95th-Percentile Queue Length [veh]	2.00	12.30	12.15	1.84	8.21	6.60	8.20	12.83	14.35
95th-Percentile Queue Length [ft]	50.01	307.48	303.71	46.01	205.33	164.97	204.88	320.65	358.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.38	27.60	27.63	18.67	23.73	23.86	38.81	49.99	49.99	50.64	50.64	50.64
Movement LOS	B	C	C	B	C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	26.67			23.33			45.50			50.64		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	32.65											
Intersection LOS	C											
Intersection V/C	0.586											

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: 40 - 19th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	53.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	113.00	200.00	100.00	100.00	250.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Base Volume Input [veh/h]	122	629	107	129	499	307	371	601	31	175	754	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.40	0.00	0.00	1.40	1.30	1.60	0.80	0.00	0.00	0.80	0.50
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	629	107	129	499	307	371	601	31	175	754	190
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	31	158	27	32	125	77	93	151	8	44	189	48
Total Analysis Volume [veh/h]	123	632	107	130	501	308	373	604	31	176	757	191
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups			2,7			3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	25	54	54	23	52	52	40	84	0	19	63	63
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	3.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	1.00	1.00	3.00	3.00	1.00	3.00	3.00	1.00	3.00	1.00
g_i, Effective Green Time [s]	22	49	70	20	47	112	37	79	79	16	58	123
g / C, Green / Cycle	0.12	0.27	0.39	0.11	0.26	0.62	0.21	0.44	0.44	0.09	0.32	0.68
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.07	0.07	0.14	0.19	0.14	0.17	0.17	0.05	0.21	0.12
s, saturation flow rate [veh/h]	1417	3603	1615	1810	3568	1594	2752	1885	1853	3514	3589	1607
c, Capacity [veh/h]	197	981	628	201	932	992	575	827	813	312	1156	1098
d1, Uniform Delay [s]	77.87	57.81	36.00	76.62	57.16	15.92	67.56	34.14	34.14	78.65	52.40	10.24
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.92	3.26	0.59	14.97	2.22	0.81	5.58	1.37	1.39	7.18	2.90	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

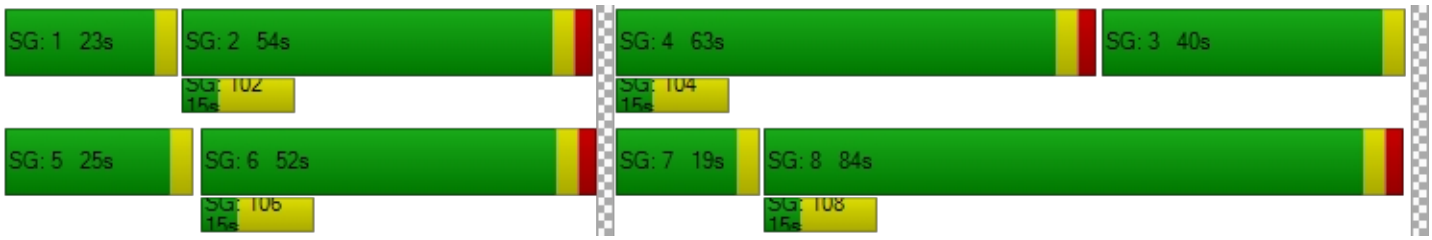
X, volume / capacity	0.62	0.64	0.17	0.65	0.54	0.31	0.65	0.39	0.39	0.56	0.65	0.17
d, Delay for Lane Group [s/veh]	91.78	61.07	36.58	91.59	59.39	16.73	73.14	35.50	35.53	85.83	55.29	10.59
Lane Group LOS	F	E	D	F	E	B	E	D	D	F	E	B
Critical Lane Group	No	Yes	No	No	No	Yes	No	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	6.36	13.28	3.27	6.66	10.21	6.33	8.51	10.02	9.86	4.26	15.34	2.91
50th-Percentile Queue Length [ft]	159.03	332.09	81.84	166.43	255.35	158.36	212.82	250.62	246.47	106.61	383.44	72.80
95th-Percentile Queue Length [veh]	10.50	19.26	5.89	10.89	15.46	10.46	13.30	15.22	15.01	7.65	21.76	5.24
95th-Percentile Queue Length [ft]	262.43	481.52	147.30	272.21	386.38	261.55	332.45	380.43	375.21	191.28	544.00	131.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	91.78	61.07	36.58	91.59	59.39	16.73	73.14	35.51	35.53	85.83	55.29	10.59
Movement LOS	F	E	D	F	E	B	E	D	D	F	E	B
d_A, Approach Delay [s/veh]	62.41			49.86			49.44			52.48		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	53.25											
Intersection LOS	D											
Intersection V/C	0.698											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: 41 - 7th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.398

Intersection Setup

Name	7th Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	7th Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	219	286	328	333	407	141
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.50	2.40	0.60	1.50	1.70	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	219	286	328	333	407	141
Peak Hour Factor	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830
Other Adjustment Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Total 15-Minute Volume [veh/h]	52	68	78	79	96	33
Total Analysis Volume [veh/h]	207	271	310	315	385	133
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Overlap	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	6	3	8	4	0
Auxiliary Signal Groups		3,6				
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	2.0	2.0	2.0	2.0	2.0	0.0
Split [s]	32	32	13	33	20	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	0.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	28	44	44	44	27	27
g / C, Green / Cycle	0.17	0.44	0.67	0.67	0.67	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.13	0.19	0.11	0.24	0.18	0.15	0.17
s, saturation flow rate [veh/h]	1620	1419	1081	989	1533	1681	1542
c, Capacity [veh/h]	285	618	786	736	1028	691	634
d1, Uniform Delay [s]	25.32	12.82	4.40	4.72	4.28	13.33	13.55
k, delay calibration	0.11	0.11	0.11	0.17	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.55	0.49	0.09	0.39	0.62	1.55	1.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.44	0.15	0.32	0.26	0.37	0.41
d, Delay for Lane Group [s/veh]	28.87	13.31	4.49	5.11	4.91	14.88	15.50
Lane Group LOS	C	B	A	A	A	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	3.13	2.53	0.42	0.91	1.18	2.67	2.76
50th-Percentile Queue Length [ft]	78.36	63.34	10.41	22.73	29.43	66.78	68.91
95th-Percentile Queue Length [veh]	5.64	4.56	0.75	1.64	2.12	4.81	4.96
95th-Percentile Queue Length [ft]	141.04	114.02	18.73	40.92	52.97	120.21	124.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.87	13.31	4.79	4.94	15.08	15.50
Movement LOS	C	B	A	A	B	B
d_A, Approach Delay [s/veh]	20.05		4.90		15.19	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	12.66					
Intersection LOS	B					
Intersection V/C	0.398					

Sequence

Ring 1	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 44: 42 - 19th Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

Intersection Setup

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	30	781	35	0	595	51	18	59	44	24	27	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	2.90	2.00	1.00	0.00	0.00	1.70	0.00	0.00	0.00	1.80
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	781	35	0	595	51	18	59	44	24	27	56
Peak Hour Factor	0.9300	0.9300	0.9300	1.0000	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	8	204	9	0	155	13	5	15	11	6	7	15
Total Analysis Volume [veh/h]	31	815	37	0	621	53	19	62	46	25	28	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	161	0	0	161	0	0	19	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	156	156	156	156	156	14	14
g / C, Green / Cycle	0.87	0.87	0.87	0.87	0.87	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.04	0.26	0.26	0.20	0.20	0.09	0.10
s, saturation flow rate [veh/h]	699	1683	1657	1693	1647	1359	1156
c, Capacity [veh/h]	614	1459	1436	1467	1428	129	114
d1, Uniform Delay [s]	3.01	2.15	2.15	2.00	2.01	83.90	83.87
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	0.51	0.52	0.37	0.39	76.00	76.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.29	0.29	0.23	0.24	0.99	0.97
d, Delay for Lane Group [s/veh]	3.16	2.66	2.67	2.36	2.40	159.89	160.24
Lane Group LOS	A	A	A	A	A	F	F
Critical Lane Group	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.22	2.39	2.35	1.74	1.76	8.70	7.66
50th-Percentile Queue Length [ft]	5.57	59.69	58.87	43.51	43.92	217.49	191.44
95th-Percentile Queue Length [veh]	0.40	4.30	4.24	3.13	3.16	13.54	12.20
95th-Percentile Queue Length [ft]	10.03	107.44	105.97	78.32	79.06	338.42	304.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.16	2.67	2.67	0.00	2.38	2.40	159.89	159.89	159.89	160.24	160.24	160.24
Movement LOS	A	A	A		A	A	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	2.68			2.38			159.89			160.24		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	23.44											
Intersection LOS	C											
Intersection V/C	0.351											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: 43 - 19th Avenue / Koch Street

Control Type:	Signalized	Delay (sec / veh):	10.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.344

Intersection Setup

Name				19th Avenue								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	160.00	100.00	100.00	330.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name				19th Avenue								
Base Volume Input [veh/h]	55	805	52	57	563	22	29	53	79	34	76	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.50	3.80	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	805	52	57	563	22	29	53	79	34	76	50
Peak Hour Factor	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290	0.9290
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	14	210	14	15	147	6	8	14	21	9	20	13
Total Analysis Volume [veh/h]	57	841	54	60	588	23	31	57	85	36	79	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	0	0	30	0	0	5	0	0	5	0
Maximum Green [s]	0	90	0	0	90	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	61	0	0	61	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	69	69	69	69	69	69	11	11
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.76	0.76	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.24	0.09	0.16	0.16	0.11	0.10
s, saturation flow rate [veh/h]	809	1891	1851	632	1883	1858	1646	1596
c, Capacity [veh/h]	621	1439	1409	482	1434	1415	257	252
d1, Uniform Delay [s]	5.31	3.37	3.37	6.56	3.06	3.06	38.16	38.09
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.57	0.58	0.53	0.34	0.35	3.04	2.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.31	0.31	0.12	0.21	0.21	0.67	0.66
d, Delay for Lane Group [s/veh]	5.60	3.94	3.95	7.09	3.41	3.41	41.20	41.05
Lane Group LOS	A	A	A	A	A	A	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.38	2.05	2.01	0.48	1.26	1.25	3.88	3.74
50th-Percentile Queue Length [ft]	9.50	51.21	50.25	12.01	31.52	31.19	96.92	93.54
95th-Percentile Queue Length [veh]	0.68	3.69	3.62	0.87	2.27	2.25	6.98	6.74
95th-Percentile Queue Length [ft]	17.10	92.18	90.46	21.63	56.73	56.15	174.45	168.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.60	3.95	3.95	7.09	3.41	3.41	41.20	41.20	41.20	41.05	41.05	41.05
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	4.05			3.74			41.20			41.05		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.36											
Intersection LOS	B											
Intersection V/C	0.344											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 46: 44 - 19th Avenue / College Street

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name	19th Avenue						College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	450.00	100.00	100.00	330.00	100.00	100.00	300.00	100.00	300.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue						College Street			College Street		
Base Volume Input [veh/h]	289	548	70	106	550	52	76	247	147	108	337	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.00	0.00	0.40	0.00	0.00	0.00	0.70	0.00	0.00	0.90
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	289	548	70	106	550	52	76	247	147	108	337	113
Peak Hour Factor	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	72	136	17	26	137	13	19	61	36	27	84	28
Total Analysis Volume [veh/h]	287	544	69	105	546	52	75	245	146	107	335	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	0	5	30	0	5	15	15	5	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	8	35	0	10	37	0	8	34	34	11	37	37
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	54	45	45	54	46	46	26	17	27	26	19	30
g / C, Green / Cycle	0.60	0.50	0.50	0.60	0.51	0.51	0.29	0.19	0.30	0.29	0.21	0.33
(v / s)_i Volume / Saturation Flow Rate	0.30	0.17	0.17	0.11	0.16	0.16	0.06	0.13	0.09	0.08	0.18	0.07
s, saturation flow rate [veh/h]	942	1870	1797	951	1892	1835	1214	1900	1604	1321	1900	1601
c, Capacity [veh/h]	597	935	899	599	970	940	303	364	486	375	393	529
d1, Uniform Delay [s]	9.98	13.51	13.51	8.27	12.74	12.75	25.00	33.75	24.06	24.85	34.35	21.69
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.44	0.11	0.50	0.11	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.76	0.96	1.00	0.64	0.84	0.87	1.72	2.16	1.59	0.41	5.26	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.33	0.33	0.18	0.31	0.31	0.25	0.67	0.30	0.29	0.85	0.21
d, Delay for Lane Group [s/veh]	12.74	14.47	14.51	8.91	13.59	13.62	26.72	35.92	25.65	25.26	39.61	22.30
Lane Group LOS	B	B	B	A	B	B	C	D	C	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.87	3.85	3.71	0.89	3.58	3.49	1.31	5.10	2.55	1.74	7.47	1.76
50th-Percentile Queue Length [ft]	71.64	96.30	92.82	22.33	89.47	87.19	32.86	127.47	63.86	43.58	186.82	43.99
95th-Percentile Queue Length [veh]	5.16	6.93	6.68	1.61	6.44	6.28	2.37	8.80	4.60	3.14	11.96	3.17
95th-Percentile Queue Length [ft]	128.96	173.34	167.07	40.20	161.05	156.94	59.15	220.04	114.95	78.44	298.90	79.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.74	14.49	14.51	8.91	13.60	13.62	26.72	35.92	25.65	25.26	39.61	22.30
Movement LOS	B	B	B	A	B	B	C	D	C	C	D	C
d_A, Approach Delay [s/veh]	13.93			12.90			31.22			33.34		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	20.83											
Intersection LOS	C											
Intersection V/C	0.443											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 47: 45 - 19th Avenue / Graf Street

Control Type:	Two-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.088

Intersection Setup

Name	19th Avenue		19th Avenue		Graf Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	400.00	100.00	100.00	380.00	175.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	19th Avenue		19th Avenue		Graf Street	
Base Volume Input [veh/h]	15	249	448	54	29	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.60	0.00	3.40	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	249	448	54	29	11
Peak Hour Factor	0.9330	0.9330	0.9330	0.9330	0.9330	0.9330
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	65	116	14	8	3
Total Analysis Volume [veh/h]	16	259	466	56	31	12
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.09	0.02
d_M, Delay for Movement [s/veh]	8.47	0.00	0.00	0.00	16.14	11.35
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.05	0.00	0.00	0.00	0.29	0.06
95th-Percentile Queue Length [ft]	1.15	0.00	0.00	0.00	7.15	1.58
d_A, Approach Delay [s/veh]	0.49		0.00		14.80	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 48: 46 - Harper Puckett Road / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

Name	Harper Puckett Road		Baxter Lane		Baxter Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Harper Puckett Road		Baxter Lane		Baxter Lane	
Base Volume Input [veh/h]	39	8	13	153	140	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	0.00	0.00	0.00	0.70	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	8	13	153	140	59
Peak Hour Factor	0.9280	0.9280	0.9280	0.9280	0.9280	0.9280
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	11	2	3	40	36	15
Total Analysis Volume [veh/h]	42	9	13	158	145	61
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.01	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.15	9.57	7.64	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.25	0.25	0.42	0.42	0.00	0.00
95th-Percentile Queue Length [ft]	6.22	6.22	10.60	10.60	0.00	0.00
d_A, Approach Delay [s/veh]	10.87		0.58		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.53					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 49: 47 - Flanders Mill Road / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.177

Intersection Setup

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Base Volume Input [veh/h]	69	100	161	53	105	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	0.00	0.00	0.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	100	161	53	105	161
Peak Hour Factor	0.9060	0.9060	0.9060	0.9060	0.9060	0.9060
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	19	28	43	14	28	43
Total Analysis Volume [veh/h]	76	110	171	56	111	171
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.13	0.00	0.00	0.08	0.00
d_M, Delay for Movement [s/veh]	16.01	11.88	0.00	0.00	7.90	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.30	1.30	0.00	0.00	0.79	0.79
95th-Percentile Queue Length [ft]	32.47	32.47	0.00	0.00	19.63	19.63
d_A, Approach Delay [s/veh]	13.57		0.00		3.11	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.89					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 50: 48 - Davis Lane / Baxter Lane

Control Type:	All-way stop	Delay (sec / veh):	32.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	81	160	30	20	186	71	81	209	58	47	230	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	160	30	20	186	71	81	209	58	47	230	47
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0900	1.0900	1.0900	1.0900	1.0900	1.0900	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	48	9	6	56	21	22	57	16	13	63	13
Total Analysis Volume [veh/h]	97	191	36	24	222	85	89	229	64	51	252	51
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.18	0.25	6.08	8.00	6.81
95th-Percentile Queue Length [ft]	129.42	6.32	152.10	200.08	170.26
Approach Delay [s/veh]	27.11		31.00	38.53	33.42
Approach LOS	D		D	E	D
Intersection Delay [s/veh]	32.78				
Intersection LOS	D				

Intersection Level Of Service Report
Intersection 51: 49 - Laurel Parkway / Durston Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Laurel Parkway		Durston Road		Durston Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	35.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Laurel Parkway		Durston Road		Durston Road	
Base Volume Input [veh/h]	111	14	12	229	251	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.90	0.00	0.00	0.90	0.00	1.40
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	14	12	229	251	144
Peak Hour Factor	0.9240	0.9240	0.9240	0.9240	0.9240	0.9240
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	30	4	3	59	65	37
Total Analysis Volume [veh/h]	120	15	12	238	261	150
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.82	0.07	1.48	2.92
95th-Percentile Queue Length [ft]	20.53	1.69	37.05	72.90
Approach Delay [s/veh]	10.71		10.26	11.92
Approach LOS	B		B	B
Intersection Delay [s/veh]	11.19			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 52: 50 - Cottonwood Road / Durston Road

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.504

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Base Volume Input [veh/h]	94	16	165	12	12	4	5	251	86	174	312	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	16	165	12	12	4	5	251	86	174	312	25
Peak Hour Factor	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	25	4	45	3	3	1	1	65	22	45	81	7
Total Analysis Volume [veh/h]	102	17	179	13	13	4	5	261	89	181	325	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	26	0	0	26	0	6	28	0	6	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	29	29	22	15	21	20
g / C, Green / Cycle	0.48	0.48	0.36	0.25	0.35	0.33
(v / s)_i Volume / Saturation Flow Rate	0.21	0.02	0.01	0.21	0.17	0.21
s, saturation flow rate [veh/h]	1419	1312	942	1637	1068	1678
c, Capacity [veh/h]	760	715	287	414	358	552
d1, Uniform Delay [s]	10.16	8.30	20.85	21.35	17.37	17.12
k, delay calibration	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	0.11	0.02	4.79	1.11	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.04	0.02	0.85	0.51	0.64
d, Delay for Lane Group [s/veh]	11.68	8.41	20.88	26.14	18.48	18.34
Lane Group LOS	B	A	C	C	B	B
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	2.48	0.20	0.04	4.81	1.72	3.87
50th-Percentile Queue Length [ft]	61.97	4.99	1.04	120.26	42.93	96.69
95th-Percentile Queue Length [veh]	4.46	0.36	0.07	8.41	3.09	6.96
95th-Percentile Queue Length [ft]	111.55	8.98	1.87	210.19	77.28	174.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.68	11.68	11.68	8.41	8.41	8.41	20.88	26.14	26.14	18.48	18.34	18.34
Movement LOS	B	B	B	A	A	A	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	11.68			8.41			26.06			18.39		
Approach LOS	B			A			C			B		
d_I, Intersection Delay [s/veh]	18.74											
Intersection LOS	B											
Intersection V/C	0.504											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 53: 51 - Flanders Mill Road / Durston Road

Control Type:	Two-way stop	Delay (sec / veh):	34.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.261

Intersection Setup

Name	Flanders Mill Road		Durston Road		Durston Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

volumes

Name	Flanders Mill Road		Durston Road		Durston Road	
Base Volume Input [veh/h]	40	111	105	427	450	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.50	0.60	1.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	111	105	427	450	62
Peak Hour Factor	0.8740	0.8740	0.8740	0.8740	0.8740	0.8740
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	11	32	29	117	124	17
Total Analysis Volume [veh/h]	46	127	115	469	494	68
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.23	0.11	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	34.81	20.90	8.98	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.58	2.58	0.38	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	64.61	64.61	9.50	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	24.60		1.77		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.01					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 54: 52 - Ferguson Avenue / Durston Road

Control Type:	All-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Ferguson Avenue			Ferguson Avenue			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Ferguson Avenue			Ferguson Avenue			Durston Road			Durston Road		
Base Volume Input [veh/h]	128	172	72	3	154	155	150	126	95	82	219	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	1.80	0.00	0.00	0.60	0.60	1.30	0.00	0.00	0.00	0.50	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	128	172	72	3	154	155	150	126	95	82	219	9
Peak Hour Factor	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610	0.9610
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	32	43	18	1	40	40	37	31	24	20	55	2
Total Analysis Volume [veh/h]	128	172	72	3	160	161	150	126	95	82	219	9
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.70	4.78	4.35	0.71	4.93
95th-Percentile Queue Length [ft]	167.52	119.40	108.66	17.70	123.20
Approach Delay [s/veh]	30.88	23.62	21.37		25.62
Approach LOS	D	C	C		D
Intersection Delay [s/veh]	25.42				
Intersection LOS	D				

Intersection Level Of Service Report
Intersection 55: 53 - Fowler Avenue / Durston Road

Control Type:	Two-way stop	Delay (sec / veh):	16.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name	Fowler Avenue		Durston Road		Durston Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Durston Road		Durston Road	
Base Volume Input [veh/h]	3	6	381	7	19	456
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	6	381	7	19	456
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	2	97	2	5	116
Total Analysis Volume [veh/h]	3	6	389	7	19	466
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	16.83	10.59	0.00	0.00	8.12	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.06	0.06	0.00	0.00	0.05	0.00
95th-Percentile Queue Length [ft]	1.44	1.44	0.00	0.00	1.23	0.00
d_A, Approach Delay [s/veh]	12.67		0.00		0.32	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.30					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 56: 54 - Cottonwood Road / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	23.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.124

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Pocket Length [ft]	265.00	100.00	100.00	210.00	100.00	210.00	100.00	100.00	100.00	50.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	8	353	76	23	282	11	22	14	7	26	11	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.60	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	353	76	23	282	11	22	14	7	26	11	24
Peak Hour Factor	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050	0.8050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	110	24	7	88	3	7	4	2	8	3	7
Total Analysis Volume [veh/h]	10	439	94	29	350	14	27	17	9	32	14	30
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.03	0.00	0.00	0.12	0.07	0.01	0.13	0.05	0.05
d_M, Delay for Movement [s/veh]	8.01	0.00	0.00	8.54	0.00	0.00	23.86	20.60	11.21	21.93	18.87	11.67
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh]	0.03	0.00	0.00	0.09	0.00	0.00	0.42	0.27	0.27	0.44	0.33	0.33
95th-Percentile Queue Length [ft]	0.63	0.00	0.00	2.14	0.00	0.00	10.43	6.64	6.64	11.11	8.16	8.16
d_A, Approach Delay [s/veh]	0.15			0.63			20.67			17.31		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	2.57											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 58: 55 - 19th Avenue / Baxter Lane

Control Type:	Signalized	Delay (sec / veh):	24.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.523

Intersection Setup

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	325.00	100.00	100.00	300.00	100.00	100.00	245.00	100.00	100.00	150.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	110	1053	126	137	850	128	79	175	101	88	226	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.70	2.20	1.10	1.60	1.30	4.60	1.00	3.40	1.80	0.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	1053	126	137	850	128	79	175	101	88	226	172
Peak Hour Factor	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	28	268	32	35	216	33	20	44	25	22	57	43
Total Analysis Volume [veh/h]	112	1071	128	139	864	130	79	176	102	89	227	173
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	15	0	0	15	15
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	13	64	0	13	64	0	0	43	0	0	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
g_i, Effective Green Time [s]	78	65	65	78	65	65	32	32	32	32	47
g / C, Green / Cycle	0.65	0.54	0.54	0.65	0.54	0.54	0.27	0.27	0.27	0.27	0.39
(v / s)_i Volume / Saturation Flow Rate	0.15	0.32	0.33	0.21	0.27	0.27	0.07	0.16	0.08	0.12	0.11
s, saturation flow rate [veh/h]	747	1881	1811	649	1879	1795	1157	1706	1082	1866	1605
c, Capacity [veh/h]	479	1013	975	410	1016	970	229	460	173	504	634
d1, Uniform Delay [s]	9.95	18.90	18.95	12.03	17.37	17.37	46.94	38.21	52.39	36.42	24.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.14	2.64	2.78	2.23	1.76	1.85	0.89	1.28	2.34	0.63	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.60	0.60	0.34	0.50	0.50	0.34	0.60	0.51	0.45	0.27
d, Delay for Lane Group [s/veh]	11.09	21.55	21.72	14.27	19.13	19.22	47.83	39.49	54.73	37.05	25.69
Lane Group LOS	B	C	C	B	B	B	D	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.21	11.99	11.66	1.59	9.14	8.77	2.23	7.30	2.73	5.64	3.54
50th-Percentile Queue Length [ft]	30.27	299.84	291.49	39.80	228.55	219.17	55.67	182.40	68.22	140.96	88.58
95th-Percentile Queue Length [veh]	2.18	17.67	17.26	2.87	14.10	13.62	4.01	11.73	4.91	9.53	6.38
95th-Percentile Queue Length [ft]	54.48	441.83	431.49	71.64	352.51	340.57	100.20	293.14	122.79	238.31	159.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.09	21.62	21.72	14.27	19.16	19.22	47.83	39.49	39.49	54.73	37.05	25.69
Movement LOS	B	C	C	B	B	B	D	D	D	D	D	C
d_A, Approach Delay [s/veh]	20.73			18.57			41.34			36.25		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	24.53											
Intersection LOS	C											
Intersection V/C	0.523											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 59: 56 - 7th Avenue / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	80.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Base Volume Input [veh/h]	292	799	45	100	812	191	0	0	308	0	0	188
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.60	0.00	0.00	0.80	2.10	2.00	2.00	1.60	2.00	2.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	799	45	100	812	191	0	0	308	0	0	188
Peak Hour Factor	0.9380	0.9380	0.9380	0.9380	0.9380	0.9380	1.0000	1.0000	0.9380	1.0000	1.0000	0.9380
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	75	207	12	26	210	49	0	0	79	0	0	50
Total Analysis Volume [veh/h]	302	826	47	103	840	198	0	0	315	0	0	200
Pedestrian Volume [ped/h]	0			0			1			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.45	0.01	0.00	0.13	0.01	0.00	0.00	0.00	0.63	0.00	0.00	0.35
d_M, Delay for Movement [s/veh]	14.70	0.00	0.00	10.31	0.00	0.00	0.00	0.00	23.53	0.00	0.00	14.60
Movement LOS	B	A	A	B	A	A			C			B
95th-Percentile Queue Length [veh]	2.34	0.00	0.00	0.45	0.00	0.00	0.00	0.00	4.28	0.00	0.00	1.56
95th-Percentile Queue Length [ft]	58.53	0.00	0.00	11.33	0.00	0.00	0.00	0.00	107.02	0.00	0.00	38.88
d_A, Approach Delay [s/veh]	3.78			0.93			23.53			14.60		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	5.59											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 60: 57 - 7th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	44.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	100.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	186	765	132	184	621	351	232	227	156	126	321	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.30	21.70	3.70	5.20	17.60	10.00	6.60	6.40	4.40	3.60	9.10	5.60
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	765	132	184	621	351	232	227	156	126	321	197
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	219	38	53	178	100	63	62	42	35	89	55
Total Analysis Volume [veh/h]	213	876	151	211	711	402	253	247	170	140	357	219
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	6	3	8	8	7	4	0
Auxiliary Signal Groups			2,7			3,6			5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	30	30	10	30	30	8	15	15	8	15	0
Maximum Green [s]	25	90	90	25	90	90	25	45	45	25	45	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	13	48	48	13	48	48	15	65	65	14	64	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00
g_i, Effective Green Time [s]	63	50	65	63	50	67	67	54	69	67	52
g / C, Green / Cycle	0.45	0.35	0.46	0.45	0.35	0.48	0.48	0.39	0.49	0.48	0.37
(v / s)_i Volume / Saturation Flow Rate	0.24	0.29	0.10	0.26	0.23	0.27	0.26	0.14	0.11	0.12	0.35
s, saturation flow rate [veh/h]	896	2973	1557	814	3076	1468	965	1786	1547	1213	1632
c, Capacity [veh/h]	327	1002	694	264	1037	673	281	722	792	565	639
d1, Uniform Delay [s]	30.08	43.62	23.84	33.45	40.02	28.27	32.57	28.80	18.75	20.00	40.05
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.11	0.34
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.68	10.54	0.72	21.80	3.69	3.88	33.23	0.28	0.62	0.23	13.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

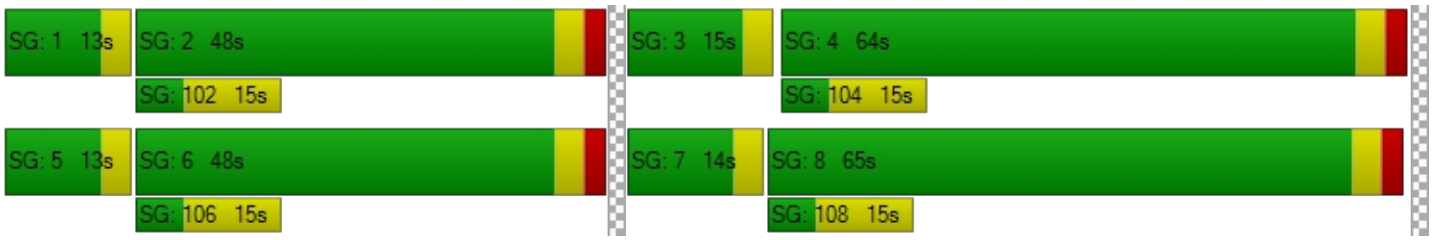
X, volume / capacity	0.65	0.87	0.22	0.80	0.69	0.60	0.90	0.34	0.21	0.25	0.90
d, Delay for Lane Group [s/veh]	39.76	54.16	24.56	55.25	43.71	32.15	65.80	29.08	19.37	20.23	53.52
Lane Group LOS	D	D	C	E	D	C	E	C	B	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.41	15.28	3.15	6.08	10.81	10.42	7.73	6.06	3.34	2.66	21.48
50th-Percentile Queue Length [ft]	135.21	381.90	78.69	151.98	270.33	260.54	193.23	151.60	83.59	66.61	536.88
95th-Percentile Queue Length [veh]	9.22	21.69	5.67	10.12	16.21	15.72	12.29	10.10	6.02	4.80	29.08
95th-Percentile Queue Length [ft]	230.56	542.15	141.65	253.07	405.16	392.89	307.22	252.56	150.47	119.90	726.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.76	54.16	24.56	55.25	43.71	32.15	65.80	29.08	19.37	20.23	53.52	53.52
Movement LOS	D	D	C	E	D	C	E	C	B	C	D	D
d_A, Approach Delay [s/veh]	48.08			42.04			40.48			47.01		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.57											
Intersection LOS	D											
Intersection V/C	0.816											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: 58 - 15th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.385

Intersection Setup

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	105.00	100.00	100.00	120.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	197	11	85	9	8	11	8	527	76	51	768	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	2.40	11.10	0.00	0.00	0.00	2.10	0.00	0.00	1.30	20.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	11	85	9	8	11	8	527	76	51	768	5
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	55	3	24	3	2	3	2	145	21	14	211	1
Total Analysis Volume [veh/h]	221	12	96	10	9	12	9	580	84	56	846	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	24	0	0	24	0	0	36	0	0	36	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	30	30	30	30	20	20	20	20	20	20
g / C, Green / Cycle	0.51	0.51	0.51	0.51	0.33	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.16	0.07	0.01	0.01	0.01	0.18	0.18	0.07	0.23	0.23
s, saturation flow rate [veh/h]	1399	1642	1175	1726	658	1861	1780	784	1876	1871
c, Capacity [veh/h]	781	831	643	873	177	610	583	226	614	613
d1, Uniform Delay [s]	9.90	7.84	9.33	7.42	25.39	16.58	16.60	24.18	17.56	17.56
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.91	0.32	0.04	0.05	0.12	0.79	0.84	0.57	1.42	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

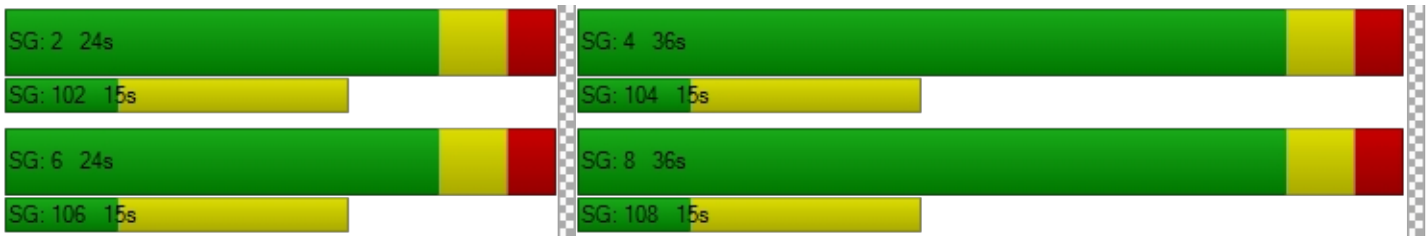
X, volume / capacity	0.28	0.13	0.02	0.02	0.05	0.56	0.56	0.25	0.69	0.69
d, Delay for Lane Group [s/veh]	10.81	8.17	9.37	7.47	25.50	17.38	17.44	24.75	18.98	18.98
Lane Group LOS	B	A	A	A	C	B	B	C	B	B
Critical Lane Group	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.75	0.69	0.07	0.13	0.12	3.58	3.45	0.73	4.84	4.82
50th-Percentile Queue Length [ft]	43.68	17.35	1.80	3.16	2.96	89.48	86.17	18.27	120.88	120.60
95th-Percentile Queue Length [veh]	3.15	1.25	0.13	0.23	0.21	6.44	6.20	1.32	8.44	8.43
95th-Percentile Queue Length [ft]	78.63	31.23	3.25	5.68	5.33	161.06	155.11	32.89	211.03	210.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.81	8.17	8.17	9.37	7.47	7.47	25.50	17.40	17.44	24.75	18.98	18.98
Movement LOS	B	A	A	A	A	A	C	B	B	C	B	B
d_A, Approach Delay [s/veh]	9.94			8.08			17.52			19.34		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	16.93											
Intersection LOS	B											
Intersection V/C	0.385											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: 59 - 27th Avenue / Oak Street

Control Type:	Two-way stop	Delay (sec / veh):	34.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.092

Intersection Setup

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	3	34	38	15	51	52	24	237	16	79	412	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.90	0.00	0.00	0.00	0.00	0.00	0.80	0.00	1.30	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	34	38	15	51	52	24	237	16	79	412	55
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	9	10	4	14	14	6	63	4	21	110	15
Total Analysis Volume [veh/h]	3	36	40	16	54	55	26	252	17	84	438	59
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	1	1	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.16	0.05	0.09	0.23	0.09	0.02	0.00	0.00	0.06	0.00	0.00
d_M, Delay for Movement [s/veh]	30.86	24.44	12.78	34.08	29.01	19.39	8.42	0.00	0.00	7.96	0.00	0.00
Movement LOS	D	C	B	D	D	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.89	0.89	0.89	1.98	1.98	1.98	0.07	0.00	0.00	0.86	0.43	0.00
95th-Percentile Queue Length [ft]	22.13	22.13	22.13	49.40	49.40	49.40	1.85	0.00	0.00	21.46	10.73	0.00
d_A, Approach Delay [s/veh]	18.78			25.42			0.74			1.15		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	5.14											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 63: 60 - Davis Lane / Oak Street

Control Type:	Two-way stop	Delay (sec / veh):	26.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

Intersection Setup

Name	Davis Lane		Oak Street		Oak Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

volumes

Name	Davis Lane		Oak Street		Oak Street	
Base Volume Input [veh/h]	74	178	162	193	312	97
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.10	4.90	1.00	0.00	0.30
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	178	162	193	312	97
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	47	43	51	83	26
Total Analysis Volume [veh/h]	79	189	172	205	332	103
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.28	0.16	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	26.46	12.53	8.84	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.34	1.17	1.52	1.52	0.00	0.00
95th-Percentile Queue Length [ft]	33.43	29.15	37.98	37.98	0.00	0.00
d_A, Approach Delay [s/veh]	16.64		4.03		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.54					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 64: 61 - Rouse Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Pocket Length [ft]	210.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	190.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Base Volume Input [veh/h]	218	341	0	1	418	171	117	0	159	0	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.50	1.20	0.00	0.00	1.20	0.00	1.70	0.00	6.30	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	218	341	0	1	418	171	117	0	159	0	0	1
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	98	0	0	120	49	34	0	47	0	0	0
Total Analysis Volume [veh/h]	251	393	0	1	482	197	138	0	187	0	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	8	8	0	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	25	74	0	0	49	0	0	21	21	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No	No		No	
Maximum Recall	No	No			No			No	No		No	
Pedestrian Recall	No	No			No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	73	73	56	56	56	12	31	12
g / C, Green / Cycle	0.76	0.76	0.59	0.59	0.59	0.13	0.32	0.13
(v / s)_i Volume / Saturation Flow Rate	0.26	0.23	0.00	0.29	0.14	0.09	0.14	0.00
s, saturation flow rate [veh/h]	984	1690	906	1690	1454	1618	1367	1429
c, Capacity [veh/h]	715	1290	522	1004	863	288	440	226
d1, Uniform Delay [s]	5.25	3.47	12.24	10.96	9.06	38.98	25.31	35.86
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.16	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.36	0.61	0.01	1.65	0.62	1.23	0.96	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.30	0.00	0.48	0.23	0.48	0.42	0.00
d, Delay for Lane Group [s/veh]	6.61	4.08	12.25	12.60	9.67	40.21	26.27	35.86
Lane Group LOS	A	A	B	B	A	D	C	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.27	1.94	0.01	5.73	1.93	3.11	3.37	0.02
50th-Percentile Queue Length [ft]	31.71	48.54	0.29	143.22	48.21	77.65	84.31	0.51
95th-Percentile Queue Length [veh]	2.28	3.50	0.02	9.65	3.47	5.59	6.07	0.04
95th-Percentile Queue Length [ft]	57.08	87.38	0.52	241.36	86.78	139.77	151.76	0.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.61	4.08	4.08	12.25	12.60	9.67	40.21	40.21	26.27	35.86	35.86	35.86
Movement LOS	A	A	A	B	B	A	D	D	C	D	D	D
d_A, Approach Delay [s/veh]	5.06			11.75			32.19			35.86		
Approach LOS	A			B			C			D		
d_I, Intersection Delay [s/veh]	13.18											
Intersection LOS	B											
Intersection V/C	0.460											

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 65: 62 - 19th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

Intersection Setup

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	350.00	100.00	300.00	350.00	100.00	100.00	150.00	100.00	150.00	135.00	100.00	135.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	6	270	231	309	313	8	53	23	24	279	16	461
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.70	1.30	6.50	1.00	0.00	0.00	4.30	0.00	1.10	0.00	0.70
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	270	231	309	313	8	53	23	24	279	16	461
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	70	60	81	82	2	14	6	7	73	4	120
Total Analysis Volume [veh/h]	6	282	241	322	327	8	58	25	26	291	17	481
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	8	21	0	23	36	0	0	46	0	0	46	46
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
g_i, Effective Green Time [s]	55	32	32	55	51	51	25	25	25	25	25	50
g / C, Green / Cycle	0.61	0.36	0.36	0.61	0.57	0.57	0.28	0.28	0.28	0.28	0.28	0.55
(v / s)_i Volume / Saturation Flow Rate	0.01	0.08	0.15	0.25	0.09	0.09	0.04	0.01	0.02	0.21	0.01	0.30
s, saturation flow rate [veh/h]	1085	3592	1594	1292	1881	1865	1418	1822	1615	1393	1900	1604
c, Capacity [veh/h]	738	1284	570	849	1067	1058	433	511	453	421	533	888
d1, Uniform Delay [s]	7.00	20.17	21.89	8.69	9.26	9.26	26.48	23.62	23.67	32.41	23.50	12.80
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.39	2.30	1.29	0.32	0.32	0.14	0.04	0.05	2.03	0.02	2.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

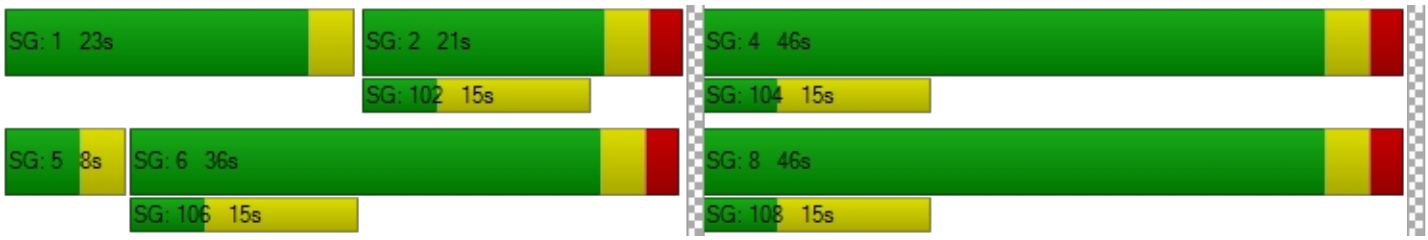
X, volume / capacity	0.01	0.22	0.42	0.38	0.16	0.16	0.13	0.05	0.06	0.69	0.03	0.54
d, Delay for Lane Group [s/veh]	7.02	20.56	24.19	9.98	9.57	9.58	26.62	23.66	23.73	34.44	23.53	15.17
Lane Group LOS	A	C	C	A	A	A	C	C	C	C	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.05	2.08	4.10	3.05	1.56	1.55	0.98	0.39	0.41	6.12	0.26	6.28
50th-Percentile Queue Length [ft]	1.14	52.11	102.52	76.20	38.96	38.69	24.45	9.71	10.14	152.96	6.57	156.99
95th-Percentile Queue Length [veh]	0.08	3.75	7.38	5.49	2.81	2.79	1.76	0.70	0.73	10.18	0.47	10.39
95th-Percentile Queue Length [ft]	2.06	93.81	184.54	137.15	70.13	69.64	44.02	17.48	18.26	254.38	11.82	259.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.02	20.56	24.19	9.98	9.57	9.58	26.62	23.66	23.73	34.44	23.53	15.17
Movement LOS	A	C	C	A	A	A	C	C	C	C	C	B
d_A, Approach Delay [s/veh]	22.06			9.77			25.25			22.45		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	18.50											
Intersection LOS	B											
Intersection V/C	0.497											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: 63 - Willson Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	170.00	100.00	100.00	325.00	100.00	100.00	350.00	100.00	110.00	160.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Base Volume Input [veh/h]	155	162	69	141	228	77	136	418	259	122	364	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	0.60	0.00	3.50	0.40	0.00	0.00	0.20	0.40	0.00	0.30	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	155	162	69	141	228	77	136	418	259	122	364	115
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	41	43	18	37	60	20	36	110	68	32	96	30
Total Analysis Volume [veh/h]	163	171	73	149	240	81	143	440	273	129	384	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	8	8	7	4	1	5	2	0	1	6	0
Auxiliary Signal Groups			5,8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	79	79	12	83	8	8	21	0	8	21	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	36	24	34	36	28	38	74	66	66	74	66
g / C, Green / Cycle	0.30	0.20	0.29	0.30	0.24	0.32	0.61	0.55	0.55	0.61	0.55
(v / s)_i Volume / Saturation Flow Rate	0.13	0.09	0.05	0.11	0.13	0.05	0.15	0.23	0.17	0.12	0.28
s, saturation flow rate [veh/h]	1250	1889	1615	1345	1892	1615	982	1896	1609	1033	1817
c, Capacity [veh/h]	326	383	462	387	446	516	551	1038	881	608	995
d1, Uniform Delay [s]	36.81	41.94	32.04	32.48	40.12	29.27	11.44	16.00	14.80	10.63	17.02
k, delay calibration	0.50	0.11	0.42	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.82	0.62	0.63	1.01	0.65	1.14	1.27	0.92	0.79	1.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

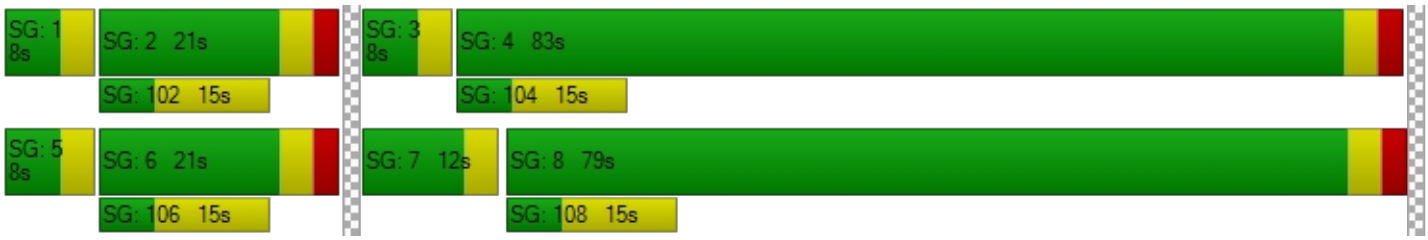
X, volume / capacity	0.50	0.45	0.16	0.38	0.54	0.16	0.26	0.42	0.31	0.21	0.51
d, Delay for Lane Group [s/veh]	42.21	42.76	32.66	33.10	41.12	29.92	12.58	17.27	15.72	11.42	18.87
Lane Group LOS	D	D	C	C	D	C	B	B	B	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.14	4.54	1.68	3.38	6.33	1.78	1.72	7.36	4.24	1.52	9.04
50th-Percentile Queue Length [ft]	103.54	113.57	41.98	84.62	158.34	44.56	43.09	183.89	105.88	38.00	226.05
95th-Percentile Queue Length [veh]	7.45	8.04	3.02	6.09	10.46	3.21	3.10	11.80	7.61	2.74	13.97
95th-Percentile Queue Length [ft]	186.36	200.95	75.56	152.31	261.52	80.21	77.56	295.08	190.25	68.40	349.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.21	42.76	32.66	33.10	41.12	29.92	12.58	17.27	15.72	11.42	18.87	18.87
Movement LOS	D	D	C	C	D	C	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	40.73			36.65			15.99			17.35		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	24.71											
Intersection LOS	C											
Intersection V/C	0.506											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



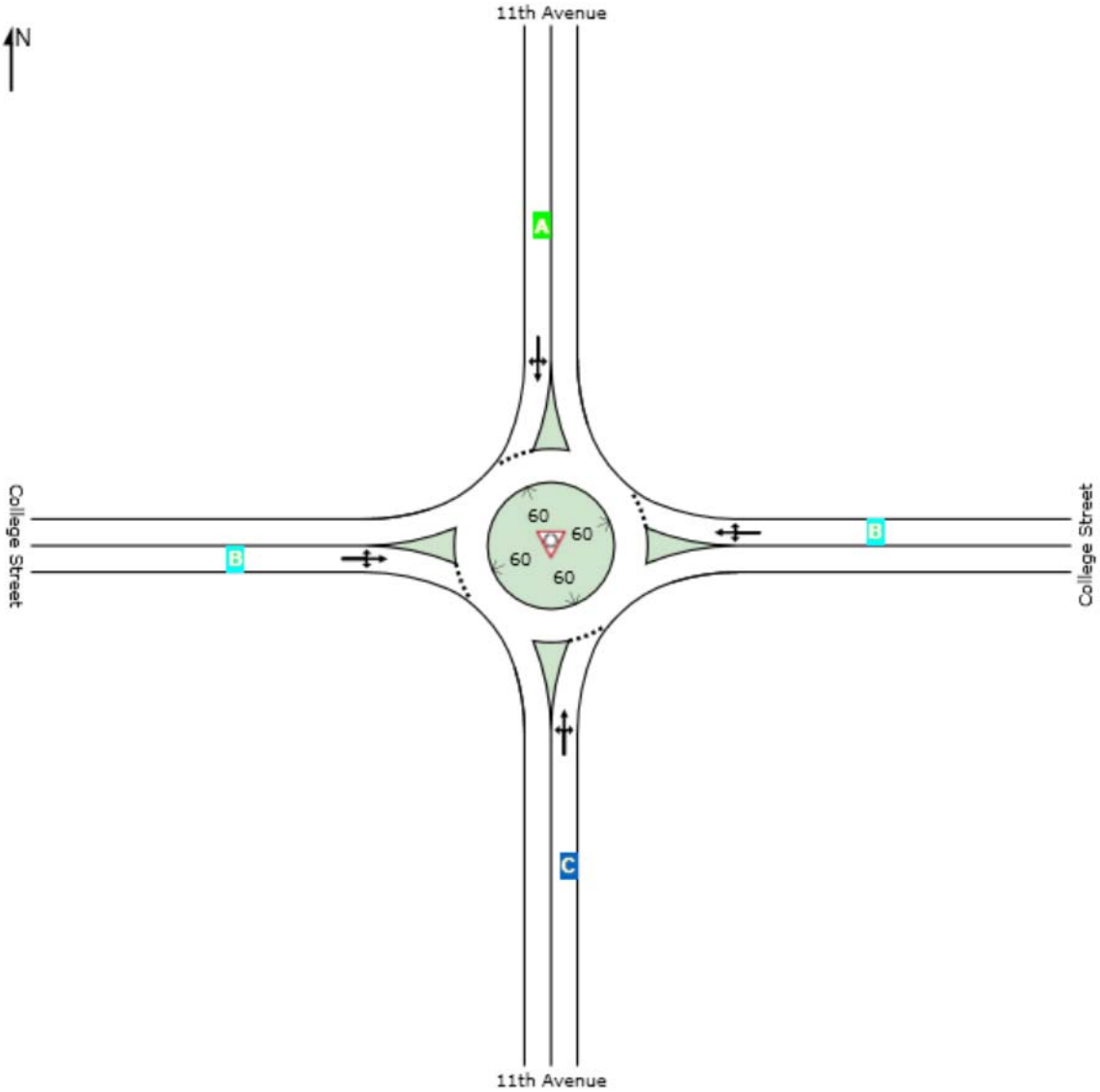
LEVEL OF SERVICE

Site: PM-2015-11th Avenue / College Street

New Site
Roundabout

All Movement Classes

	South	East	North	West	Intersection
LOS	C	B	A	B	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: PM-2015-11th Avenue / College Street

New Site
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 11th Avenue											
3	L2	170	1.2	0.811	23.5	LOS C	7.8	197.0	0.86	1.08	20.0
8	T1	282	0.7	0.811	23.5	LOS C	7.8	197.0	0.86	1.08	19.8
18	R2	248	1.2	0.811	23.5	LOS C	7.8	197.0	0.86	1.08	19.5
Approach		699	1.0	0.811	23.5	LOS C	7.8	197.0	0.86	1.08	19.8
East: College Street											
1	L2	90	0.0	0.465	10.3	LOS B	2.2	54.1	0.59	0.63	26.0
6	T1	215	0.0	0.465	10.3	LOS B	2.2	54.1	0.59	0.63	26.1
16	R2	84	0.0	0.465	10.3	LOS B	2.2	54.1	0.59	0.63	25.6
Approach		390	0.0	0.465	10.3	LOS B	2.2	54.1	0.59	0.63	26.0
North: 11th Avenue											
7	L2	79	0.0	0.350	8.0	LOS A	1.4	34.0	0.51	0.49	26.7
4	T1	157	0.0	0.350	8.0	LOS A	1.4	34.0	0.51	0.49	26.8
14	R2	73	1.4	0.350	8.0	LOS A	1.4	34.0	0.51	0.49	26.3
Approach		309	0.3	0.350	8.0	LOS A	1.4	34.0	0.51	0.49	26.6
West: College Street											
5	L2	87	0.0	0.555	10.9	LOS B	3.1	79.2	0.55	0.53	25.9
2	T1	324	1.3	0.555	10.9	LOS B	3.1	79.2	0.55	0.53	26.0
12	R2	136	0.0	0.555	10.9	LOS B	3.1	79.2	0.55	0.53	25.5
Approach		547	0.8	0.555	10.9	LOS B	3.1	79.2	0.55	0.53	25.9
All Vehicles		1945	0.6	0.811	14.8	LOS B	7.8	197.0	0.66	0.74	23.4

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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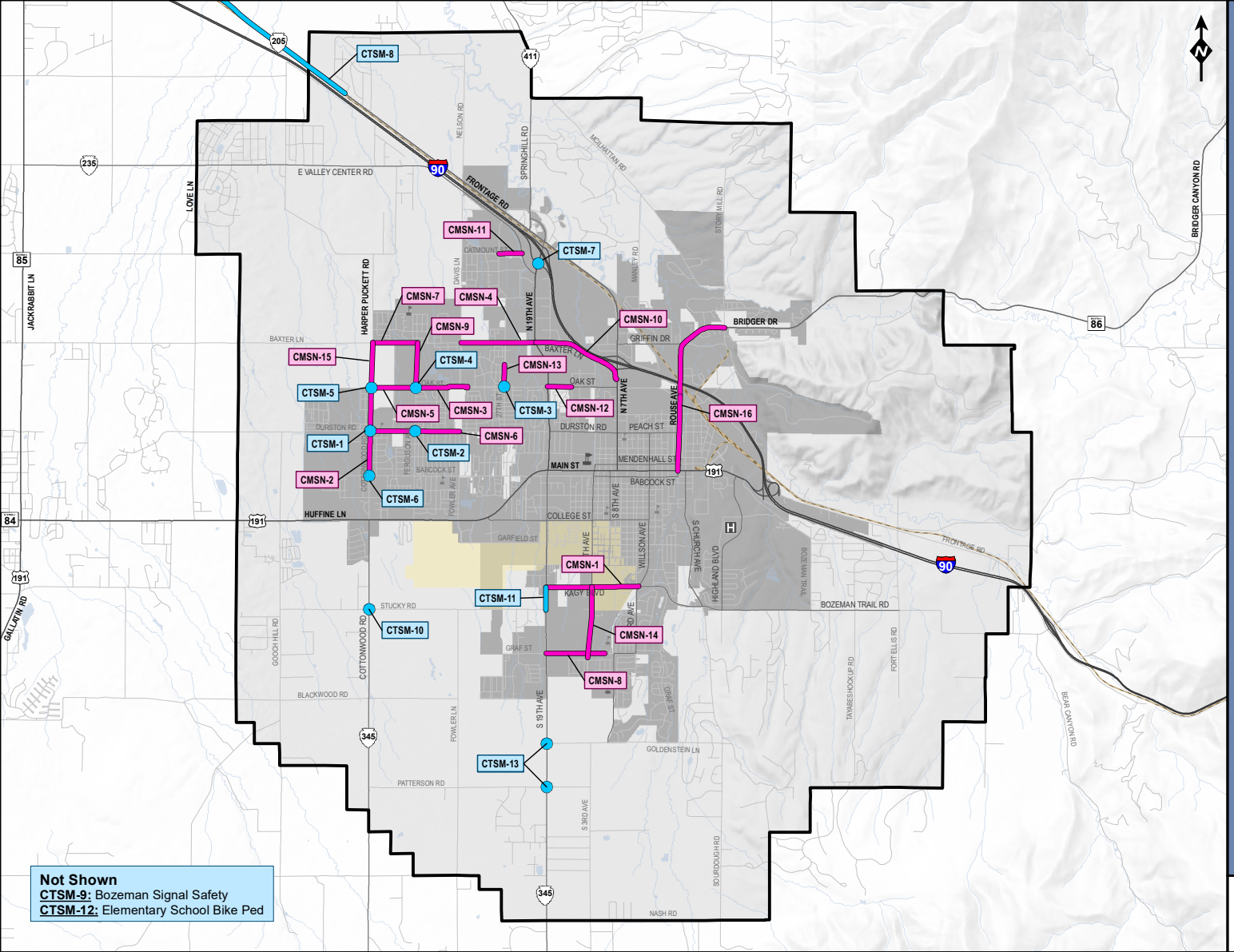
Appendix B

BOZEMAN COMMITTED PROJECTS

FINAL COMMITTED PROJECTS (FY 16 thru FY 20)

TMP ID	Title	Description	Cost	YOE	Project ID	Source
CMSN-1	Kagy Boulevard (Willson Avenue to S. 19th Avenue)	This project consists of widening Kagy Boulevard, from the intersection of S. 19th Avenue to Willson Avenue, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median.	$8,000,000	FY20	SIF009	City
CMSN-2	Cottonwood (Babcock to Durston)	This project consists of widening Cottonwood Road, from West Babcock Street to Durston, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor on the west side of the city.	$2,555,883	FY20	SIF036	City
CMSN-3	Oak (New Holland to Ferguson)	This project is the completion of the street segment of Oak Street, from New Holland to Ferguson, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Currently, the south half of the street is missing, creating a bottleneck in the street network.	$2,000,000	FY18	SIF046	City
CMSN-4	Baxter (19th to Davis)	Complete Baxter Road, from 19th to Davis, to a **three-lane urban minor arterial standard** including sidewalks, parking, medians, boulevards and bike lanes.	$1,500,000	FY17	SIF055	City
CMSN-5	Oak (Ferguson to Cottonwood)	This Project is the completion of the street segment of Oak Street, from Cottonwood to Ferguson, to a **five-lane urban principal arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median.	$1,000,000	FY18	SIF057	City
CMSN-6	Durston (Cottonwood to Fowler)	Complete Durston Road, from Fowler Lane to Cottonwood, to a **three-lane urban minor arterial standard** including sidewalks, parking, medians, boulevards and bike lanes.	$1,613,000	FY18	SIF062	City
CMSN-7	Baxter (Ferguson to Cottonwood)	Complete Baxter, from Ferguson to Cottonwood, to a **three-lane urban minor arterial standard** including sidewalks, parking, medians, boulevards and bike lanes.	$1,500,000	FY17	SIF072	City
CMSN-8	Graf St Extension (Ritter to 19th)	Complete Graf, from Ritter to 19th, to a **two-lane urban collector standard** with bike lanes.	$1,035,000	FY17	SIF077	City
CMSN-9	Ferguson (Baxter to Oak)	Complete Ferguson, from Baxter to Oak, to a **two-lane urban collector standard** with bike lanes, curb and gutter, boulevards, parking and sidewalks.	$1,000,000	FY18	SIF080	City
CMSN-10	Baxter (7th to 19th)	Complete Baxter, from 7th to 19th, to a **three-lane urban collector standard** including sidewalks on both sides and bike lanes.	???	FY17	SIF085	City
CMSN-11	Catamount St (27th to Valley Center)	Complete Catamount, from 27th to Valley Center, to a **two-lane urban minor arterial standard** including bike lanes.	$600,000	FY17	SIF087	City
CMSN-12	Oak Street (15th to 19th)	Complete Oak, from 15th to 19th, to a **five-lane urban principal arterial standard** including addition of 1 lane (5 lanes total), bike lanes and sidewalks on the south side.	???	FY17	SIF093	City
CMSN-13	N 27th (Oak to Tschache)	Complete N 27th, from Oak to Tschache, to a **five-lane urban collector standard** including medians for power poles.	$350,000	FY18	SIF099	City
CMSN-14	S 11th Ave (Kagy Blvd to Graf St Extension)	Complete S 11th, from Kagy to Graf, to a **two-lane urban collector standard** including sidewalks, curb and gutter and bike lanes.	$2,640,000	FY19	SIF102	City
CMSN-15	Cottonwood (Durston to Oak)	Complete the construction of Cottonwood Road, from Durston Road to Oak Street, to a **five lane urban arterial standard**. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor on the west side of the city.	$2,476,666	FY20	SIF105	City
CMSN-16	Rouse-Oak/Story Mill - Bozeman	Reconstruction - with added capacity; to a **three-lane rural principal arterial standard.**	$10,665,195	FY16	UPN4805	MDT
	Rouse Ave - Bozeman	Reconstruction - with added capacity; to a **three-lane urban principal arterial standard.**	$9,185,756	FY16	UPN4805	MDT
CTSM-1	Cottonwood and Durston (Intersection)	Further improvements to the intersection in conjunction with the improvements to Cottonwood from Babcock to Baxter.	$200,000	FY17	SIF027	City
CTSM-2	Ferguson and Durston (Intersection)	Control of the intersection of Ferguson & Durston. Includes the installation of a traffic signal or roundabout. Future development and the resulting increased traffic indicate that intersection improvements will be needed.	$2,256,220	FY18	SIF039	City
CTSM-3	N. 27th and Oak (Intersection)	Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met.	$1,000,000	FY18	SIF058	City
CTSM-4	Oak and Ferguson (Intersection)	Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met.	$1,000,000	FY18	SIF061	City
CTSM-5	Oak and Cottonwood (Intersection)	Identified in the 2007 Transportation Plan Update. Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met.	$3,428,401	FY19	SIF098	City
CTSM-6	Cottonwood and Babcock (Intersection)	Installation of a traffic signal when warrants are met.	$1,435,336	FY20	SIF104	City
CTSM-7	19th Street Interchange. Signal - Boz (2)	Signal on I-90 EB off-ramp	$1,494,900	FY19	UPN8999	MDT
CTSM-8	SF 129 - Slope Flatting Belgrade (1)	Slope flattening from RP 22.5-24.3 on P-205	$3,716,816	FY20	UPN8031	MDT
CTSM-9	Bozeman Signal Safety	Upgrade signals in 4 systems (Main Street, West Main St., Bozeman Radio System, Isolated Intersections) and signals along Huffine Lane, and Jackrabbit (Baxter & Durston) - Flashing yellow areas. Adding a protective left turn phase signal at signal of Ferguson and Huffine	$1,635,776	FY17	UPN8642	MDT
CTSM-10	Cottonwood & Stucky (Intersection)	Roundabout installation	$3,158,260	FY18	UPN8190	MDT
CTSM-11	S 19th Ave (Kagy to Stucky)	Mill/fill, seal and cover, pavement markings	$957,951	FY16	UPN8786	MDT
CTSM-12	Elementary School Bike Ped - Bozeman	Sidewalks, shared use path, bike racks and bike rack pads. Chief Joseph Middle School, Hyalite Elementary, Morning Star Elementary, Whitter Elementary, and Hawthorn Elementary	$282,500	FY16	UPN8688	MDT
CTSM-13	S. 19th intersections w/ Patterson and Goldstein	Install a southbound right turn lane at Patterson; install southbound left turn lane at Goldenstein	$2,144,443	FY16	UPN8033	MDT



Not Shown
CTSM-9: Bozeman Signal Safety
CTSM-12: Elementary School Bike Ped

Committed Projects

Map Legend

- Study Area
- Bozeman City Limits
- Montana State University
- Railroad

Improvement Type

- Committed Major Street Network Project
- Committed Transportation System Management Project

0 ½ 1 2 Miles

Source: City of Bozeman, MDT, RPA

BOZEMANTMP
TRANSPORTATION MASTER PLAN

Appendix C

PROJECTED INTERSECTION LEVEL OF SERVICE (LOS)

Bozeman TMP

Vistro File: F:\...\BozemanTMP_LOS_+Future.vistro
Report File: F:\...\Projected AM.pdf

Scenario 3: Projected - AM
4/1/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	01 - Ferguson Avenue / Babcock Street	Two-way stop	HCM 2010	WB Left	0.652	144.1	F
2	02 - Fowler Avenue / Babcock Street	Two-way stop	HCM 2010	NB Left	0.257	25.8	D
3	03 - Ferguson Avenue / Huffine Lane	Signalized	HCM 2010	SB Left	0.654	20.6	C
4	04 - Fowler Avenue / Huffine Lane	Signalized	HCM 2010	WB Left	0.540	23.3	C
5	05 - 19th Avenue / Garfield Street	Signalized	HCM 2010	EB Left	0.730	20.7	C
6	06 - 19th Avenue / Stucky Road	Signalized	HCM 2010	NB Thru	0.845	31.4	C
7	07 - 19th Avenue / Goldenstein Lane	Two-way stop	HCM 2010	WB Left	0.146	33.8	D
8	08 - 7th Avenue / Griffin Drive	Signalized	HCM 2010	WB Left	0.661	17.4	B
9	09 - Manley Road / Griffin Drive	Two-way stop	HCM 2010	SB Left	1.477	336.6	F
10	10 - Rouse Avenue / Griffin Drive	Signalized	HCM 2010	EB Left	0.531	19.2	B
11	11 - Story Mill Road / Bridger Drive	Two-way stop	HCM 2010	NB Left	0.075	32.3	D
12	12 - Wilson Avenue / Peach Street	Two-way stop	HCM 2010	NB Left	0.178	17.8	C
13	13 - Rouse Avenue / Peach Street	Signalized	HCM 2010	EB Left	0.671	22.0	C
14	14 - Willson Avenue / Mendenhall Street	Signalized	HCM 2010	WB Right	0.285	14.2	B
15	15 - Willson Avenue / Babcock Street	Signalized	HCM 2010	EB Right	0.344	12.5	B
16	16 - Broadway Avenue / Main Street	Signalized	HCM 2010	SB Left	0.457	10.5	B
17	17 - Highland Boulevard / Main Street	Signalized	HCM 2010	NEB Left	0.628	19.4	B

18	18 - Haggerty Lane / Main Street	Two-way stop	HCM 2010	NEB Thru	0.000	473.6	F
19	19 - Willson Avenue / College Street	Two-way stop	HCM 2010	WB Left	0.014	56.6	F
20	20 - Highland Boulevard / Ellis Street	Two-way stop	HCM 2010	WB Thru	0.170	83.8	F
21	21 - Sourdough Road / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	2.788	1,427.8	F
22	22 - Highland Boulevard / Kagy Boulevard	Two-way stop	HCM 2010	NB Thru	0.074	10,000.0	F
23	23 - Wagon Wheel Road / 3rd Avenue	All-way stop	HCM 2010	EB Left		10.8	B
27	25 - 11th Avenue / Grant Street	All-way stop	HCM 2010	SB Thru		22.3	C
28	26 - 11th Avenue / Lincoln Street	All-way stop	HCM 2010	EB Right		30.1	D
29	27 - 11th Avenue / Kagy Boulevard	Signalized	HCM 2010	EB Left	0.767	34.6	C
30	28 - 8th Avenue / College Street	All-way stop	HCM 2010	WB Thru		20.3	C
31	29 - 7th Avenue / Grant Street	All-way stop	HCM 2010	WB Left		26.2	D
32	30 - 7th Avenue / Kagy Boulevard	Signalized	HCM 2010	NB Left	0.580	7.9	A
33	31 - Valley Center Spur / Frontage Road	Two-way stop	HCM 2010	NEB Left	0.110	13.1	B
34	32 - Valley Center Spur / Valley Center Road	Two-way stop	HCM 2010	SB Left	1.206	185.0	F
35	33 - Nelson Road / Frontage Road	Two-way stop	HCM 2010	SWB Left	0.221	19.3	C
36	34 - 19th Avenue / I-90 EB Ramp	Signalized	HCM 2010	SEB Right	0.884	44.4	D
37	35 - 19th Avenue / I-90 WB Ramp	Signalized	HCM 2010	NWB Left	0.662	21.2	C
38	36 - 19th Avenue / Tschache Way	Signalized	HCM 2010	EB Right	0.544	16.9	B
39	37 - 19th Avenue / Oak Street	Signalized	HCM 2010	EB Thru	0.703	31.9	C
40	38 - 19th Avenue / Durston Road	Signalized	HCM 2010	EB Thru	0.656	27.4	C
41	39 - 7th Avenue / Durston Road / Peach Street	Signalized	HCM 2010	EB Thru	0.609	38.3	D

42	40 - 19th Avenue / Main Street	Signalized	HCM 2010	NB Left	0.760	54.0	D
43	41 - 7th Avenue / Main Street	Signalized	HCM 2010	SB Left	0.390	14.2	B
44	42 - 19th Avenue / Babcock Street	Signalized	HCM 2010		0.000	0.0	A
45	43 - 19th Avenue / Koch Street	Signalized	HCM 2010	EB Right	0.495	12.7	B
46	44 - 19th Avenue / College Street	Signalized	HCM 2010	EB Thru	0.639	30.1	C
47	45 - 19th Avenue / Graf Street	Signalized	HCM 2010	EB Left	0.875	66.1	E
49	47 - Flanders Mill Road / Baxter Lane	Two-way stop	HCM 2010	NB Left	0.143	18.8	C
50	48 - Davis Lane / Baxter Lane	Signalized	HCM 2010	WB Left	0.512	18.2	B
51	49 - Laurel Parkway / Durston Road	Signalized	HCM 2010	SB Left	0.449	19.0	B
52	50 - Cottonwood Road / Durston Road	Signalized	HCM 2010	NB Right	0.857	89.5	F
55	53 - Fowler Avenue / Durston Road	Two-way stop	HCM 2010	NB Left	0.097	30.0	D
56	54 - Cottonwood Road / Babcock Street	Signalized	HCM 2010	WB Left	0.778	32.2	C
58	55 - 19th Avenue / Baxter Lane	Signalized	HCM 2010	EB Thru	0.964	71.7	E
59	56 - 7th Avenue / Baxter Lane	Two-way stop	HCM 2010	EB Right	1.186	143.5	F
60	57 - 7th Avenue / Oak Street	Signalized	HCM 2010	WB Thru	0.589	27.5	C
61	58 - 15th Avenue / Oak Street	Signalized	HCM 2010	WB Left	0.468	16.6	B
62	59 - 27th Avenue / Oak Street	Signalized	HCM 2010	EB Left	3.769	427.4	F
64	61 - Rouse Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.574	18.9	B
65	62 - 19th Avenue / Kagy Boulevard	Signalized	HCM 2010	WB Left	0.796	31.3	C
66	63 - Willson Avenue / Kagy Boulevard	Signalized	HCM 2010	WB Thru	0.698	28.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 01 - Ferguson Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	144.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	14	182	41	63	428	10	16	73	77	26	34	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	7.00
Growth Rate	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	246	55	85	578	14	22	99	104	35	46	58
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	64	14	22	151	4	6	26	27	10	13	16
Total Analysis Volume [veh/h]	20	257	57	89	603	15	23	103	109	38	50	63
Pedestrian Volume [ped/h]	0			5			0			5		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.07	0.01	0.00	0.21	0.60	0.22	0.65	0.28	0.09
d_M, Delay for Movement [s/veh]	8.78	0.00	0.00	8.11	0.00	0.00	129.37	117.17	103.56	144.07	31.93	16.64
Movement LOS	A	A	A	A	A	A	F	F	F	F	D	C
95th-Percentile Queue Length [veh]	1.54	1.54	1.54	3.73	3.73	3.73	9.77	9.77	9.77	2.71	1.64	1.64
95th-Percentile Queue Length [ft]	38.52	38.52	38.52	93.15	93.15	93.15	244.28	244.28	244.28	67.83	40.93	40.93
d_A, Approach Delay [s/veh]	0.53			1.02			112.05			53.77		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	24.77											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: 02 - Fowler Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	25.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.257

Intersection Setup

Name	Fowler Avenue		Babcock Street		Babcock Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Babcock Street		Babcock Street	
Base Volume Input [veh/h]	50	75	256	179	126	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.40	0.00	0.80	0.60
Growth Rate	1.18	1.18	1.18	1.18	1.18	1.18
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	89	302	211	149	186
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	16	24	79	55	39	49
Total Analysis Volume [veh/h]	64	97	315	220	155	194
Pedestrian Volume [ped/h]	9		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.26	0.16	0.00	0.00	0.15	0.00
d_M, Delay for Movement [s/veh]	25.83	17.16	0.00	0.00	9.15	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	1.98	1.98	0.00	0.00	0.53	0.00
95th-Percentile Queue Length [ft]	49.44	49.44	0.00	0.00	13.34	0.00
d_A, Approach Delay [s/veh]	20.61		0.00		4.06	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.53					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 3: 03 - Ferguson Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	110.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Base Volume Input [veh/h]	311	202	201	862	522	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	4.50	1.50	1.90	2.50	0.80
Growth Rate	1.50	1.50	1.50	1.50	1.50	1.50
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	467	303	302	1293	783	183
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	122	79	80	341	206	48
Total Analysis Volume [veh/h]	487	316	318	1363	826	193
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	15	0	8	30	30	0
Maximum Green [s]	60	0	30	90	90	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	44	0	11	46	35	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	1.0	3.0	3.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	27	27	53	53	39	39
g / C, Green / Cycle	0.30	0.30	0.59	0.59	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.27	0.20	0.35	0.38	0.23	0.12
s, saturation flow rate [veh/h]	1804	1545	907	3550	3529	1602
c, Capacity [veh/h]	548	469	528	2078	1538	698
d1, Uniform Delay [s]	29.89	27.43	12.35	12.56	18.71	16.29
k, delay calibration	0.17	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.74	1.69	5.01	1.63	1.35	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

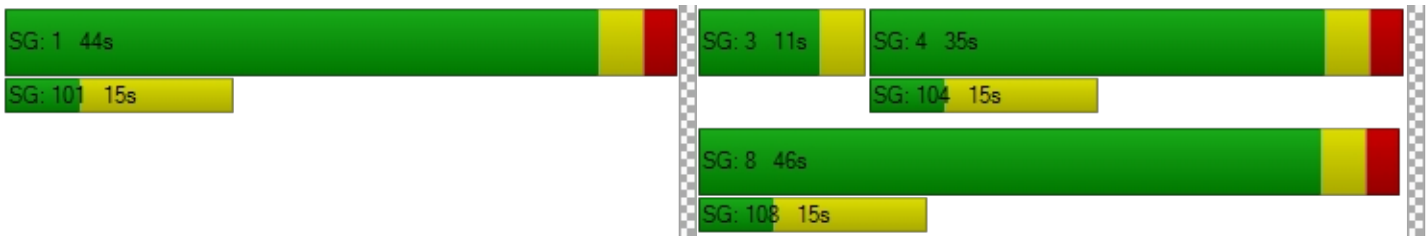
X, volume / capacity	0.89	0.67	0.60	0.66	0.54	0.28
d, Delay for Lane Group [s/veh]	37.63	29.12	17.36	14.20	20.06	17.28
Lane Group LOS	D	C	B	B	C	B
Critical Lane Group	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.88	6.00	3.62	8.72	6.34	2.65
50th-Percentile Queue Length [ft]	272.08	150.00	90.56	218.08	158.53	66.35
95th-Percentile Queue Length [veh]	16.29	10.02	6.52	13.57	10.47	4.78
95th-Percentile Queue Length [ft]	407.33	250.42	163.00	339.18	261.77	119.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.63	29.12	17.36	14.20	20.06	17.28
Movement LOS	D	C	B	B	C	B
d_A, Approach Delay [s/veh]	34.28		14.80		19.53	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	20.64					
Intersection LOS	C					
Intersection V/C	0.654					

Sequence

Ring 1	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 04 - Fowler Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	23.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	253.00	100.00	100.00	76.00	100.00	100.00	100.00	100.00	280.00	365.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Base Volume Input [veh/h]	145	42	7	84	198	34	19	654	307	6	420	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.40	0.00	0.00	0.00	0.50	0.00	0.00	2.70	1.30	0.00	3.10	4.20
Growth Rate	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	218	63	11	126	297	51	29	981	461	9	630	36
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	59	17	3	34	81	14	8	259	122	2	166	9
Total Analysis Volume [veh/h]	237	68	12	137	323	55	31	1034	486	9	664	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	15	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	0	90	0	0	90	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	21	0	0	21	0	0	69	0	0	69	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	47	47	47	47	47	47	33	33	33	33	33	33
g / C, Green / Cycle	0.52	0.52	0.52	0.52	0.52	0.52	0.36	0.36	0.36	0.36	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.24	0.04	0.01	0.10	0.10	0.10	0.04	0.29	0.30	0.02	0.19	0.19
s, saturation flow rate [veh/h]	1007	1900	1615	1354	1891	1796	757	3522	1594	554	1843	1808
c, Capacity [veh/h]	509	995	846	711	990	941	242	1286	582	141	673	660
d1, Uniform Delay [s]	19.37	10.59	10.28	14.29	11.37	11.38	28.96	25.67	26.09	36.22	22.45	22.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.04	0.13	0.03	0.60	0.44	0.47	0.24	1.22	3.24	0.19	0.64	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.07	0.01	0.19	0.19	0.20	0.13	0.80	0.83	0.06	0.53	0.53
d, Delay for Lane Group [s/veh]	22.41	10.72	10.31	14.89	11.80	11.85	29.19	26.90	29.33	36.41	23.09	23.11
Lane Group LOS	C	B	B	B	B	B	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.98	0.67	0.12	1.71	2.06	1.98	0.56	9.73	9.61	0.18	5.82	5.72
50th-Percentile Queue Length [ft]	99.46	16.80	2.90	42.84	51.38	49.58	13.95	243.27	240.27	4.62	145.43	142.98
95th-Percentile Queue Length [veh]	7.16	1.21	0.21	3.08	3.70	3.57	1.00	14.85	14.69	0.33	9.77	9.64
95th-Percentile Queue Length [ft]	179.02	30.25	5.23	77.11	92.48	89.25	25.10	371.17	367.37	8.31	244.32	241.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.41	10.72	10.31	14.89	11.82	11.85	29.19	26.90	29.33	36.41	23.10	23.11
Movement LOS	C	B	B	B	B	B	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	19.45			12.64			27.70			23.27		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	23.33											
Intersection LOS	C											
Intersection V/C	0.540											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: 05 - 19th Avenue / Garfield Street

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	280.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Base Volume Input [veh/h]	245	607	9	45	720	53	32	25	542	8	12	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.10	0.00	0.00	0.80	0.00	0.00	0.00	0.60	0.00	0.00	0.00
Growth Rate	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	397	983	15	73	1166	86	52	41	878	13	19	50
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	256	4	19	304	22	14	11	239	4	5	14
Total Analysis Volume [veh/h]	414	1026	16	76	1217	90	57	45	954	14	21	54
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	1			4			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	6	0	4	0
Auxiliary Signal Groups									6,8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	45	0	10	45	0	0	30	45	0	30	0
Maximum Green [s]	30	90	0	30	90	0	0	45	90	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	33	107	0	13	87	0	0	35	87	0	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	115	102	102	115	93	93	30	30	128	30	30
g / C, Green / Cycle	0.74	0.66	0.66	0.74	0.60	0.60	0.19	0.19	0.82	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.62	0.28	0.28	0.11	0.35	0.35	0.04	0.02	0.60	0.01	0.05
s, saturation flow rate [veh/h]	672	1879	1868	666	1885	1834	1342	1900	1583	1381	1661
c, Capacity [veh/h]	474	1241	1234	492	1127	1096	238	368	1304	269	322
d1, Uniform Delay [s]	28.75	12.37	12.38	6.93	19.31	19.39	59.51	51.63	6.08	55.10	52.79
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.59	1.05	1.06	0.67	2.23	2.34	0.52	0.15	3.65	0.08	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.42	0.42	0.15	0.59	0.59	0.24	0.12	0.73	0.05	0.23
d, Delay for Lane Group [s/veh]	48.34	13.42	13.44	7.60	21.54	21.72	60.03	51.77	9.73	55.18	53.15
Lane Group LOS	D	B	B	A	C	C	E	D	A	E	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	6.99	8.84	8.82	0.74	15.34	15.12	2.06	1.48	12.58	0.48	2.53
50th-Percentile Queue Length [ft]	174.85	221.07	220.41	18.60	383.42	377.98	51.50	37.06	314.47	11.90	63.34
95th-Percentile Queue Length [veh]	11.33	13.72	13.69	1.34	21.76	21.50	3.71	2.67	18.40	0.86	4.56
95th-Percentile Queue Length [ft]	283.28	342.99	342.14	33.47	543.99	537.40	92.70	66.71	459.89	21.42	114.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.34	13.43	13.44	7.60	21.62	21.72	60.03	51.77	9.73	55.18	53.15	53.15
Movement LOS	D	B	B	A	C	C	E	D	A	E	D	D
d_A, Approach Delay [s/veh]	23.35			20.86			14.24			53.47		
Approach LOS	C			C			B			D		
d_I, Intersection Delay [s/veh]	20.74											
Intersection LOS	C											
Intersection V/C	0.730											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: 06 - 19th Avenue / Stucky Road

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	19th Avenue		19th Avenue		Stucky Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	19th Avenue		19th Avenue		Stucky Road	
Base Volume Input [veh/h]	62	479	182	232	361	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.40	3.80	0.00	0.00	2.40
Growth Rate	1.79	1.79	1.79	1.79	1.79	1.79
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	857	326	415	646	73
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	29	224	85	108	169	19
Total Analysis Volume [veh/h]	116	894	340	433	674	76
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	0	22	22	0	73	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	47	47	47	47	38	38
g / C, Green / Cycle	0.49	0.49	0.49	0.49	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.47	0.19	0.27	0.37	0.05
s, saturation flow rate [veh/h]	1040	1892	1830	1615	1810	1577
c, Capacity [veh/h]	412	936	905	799	724	631
d1, Uniform Delay [s]	24.51	23.01	14.91	16.59	27.23	17.95
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.71	20.42	1.19	2.64	6.03	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

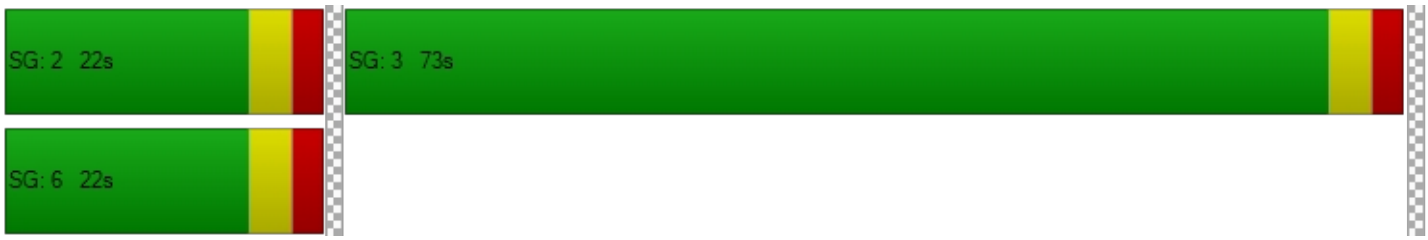
X, volume / capacity	0.28	0.96	0.38	0.54	0.93	0.12
d, Delay for Lane Group [s/veh]	26.22	43.43	16.10	19.22	33.26	18.03
Lane Group LOS	C	D	B	B	C	B
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.15	23.01	4.66	6.76	15.13	1.05
50th-Percentile Queue Length [ft]	53.75	575.15	116.52	169.10	378.16	26.23
95th-Percentile Queue Length [veh]	3.87	30.87	8.20	11.03	21.50	1.89
95th-Percentile Queue Length [ft]	96.75	771.81	205.04	275.73	537.62	47.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.22	43.43	16.10	19.22	33.26	18.03
Movement LOS	C	D	B	B	C	B
d_A, Approach Delay [s/veh]	41.45		17.85		31.72	
Approach LOS	D		B		C	
d_I, Intersection Delay [s/veh]	31.37					
Intersection LOS	C					
Intersection V/C	0.845					

Sequence

Ring 1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 07 - 19th Avenue / Goldenstein Lane

Control Type:	Two-way stop	Delay (sec / veh):	33.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.146

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name						
Base Volume Input [veh/h]	335	73	105	91	22	179
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.00	2.90	0.00	0.00	0.60
Growth Rate	1.41	1.41	1.41	1.41	1.41	1.41
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	472	103	148	128	31	252
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000
Total 15-Minute Volume [veh/h]	123	27	39	33	8	68
Total Analysis Volume [veh/h]	493	107	154	134	34	274
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.16	0.00	0.15	0.51
d_M, Delay for Movement [s/veh]	0.00	0.00	9.40	0.00	33.78	24.96
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.56	0.00	4.62	4.62
95th-Percentile Queue Length [ft]	0.00	0.00	14.03	0.00	115.46	115.46
d_A, Approach Delay [s/veh]	0.00		5.02		25.93	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	7.89					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 8: 08 - 7th Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	9	210	351	122	266	6	7	12	24	228	4	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	6.20	2.80	9.00	4.90	16.70	14.30	8.30	12.00	16.70	0.00	6.70
Growth Rate	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	309	516	179	391	9	10	18	35	335	6	88
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	81	135	47	102	2	3	5	10	87	2	23
Total Analysis Volume [veh/h]	14	322	538	187	408	9	11	20	38	350	6	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			1			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	65
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	0	0	30	0	0	20	0	0	20	0
Maximum Green [s]	0	60	0	0	60	0	0	45	0	0	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	36	0	0	36	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	33	33	33	33	22	22
g / C, Green / Cycle	0.50	0.50	0.50	0.50	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.19	0.34	0.19	0.23	0.04	0.32
s, saturation flow rate [veh/h]	1765	1571	986	1804	1625	1405
c, Capacity [veh/h]	943	788	449	905	624	583
d1, Uniform Delay [s]	9.94	12.27	17.29	10.50	14.60	20.59
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.32
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.05	4.75	2.83	1.69	0.08	6.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.68	0.42	0.46	0.11	0.77
d, Delay for Lane Group [s/veh]	10.99	17.03	20.12	12.18	14.67	26.76
Lane Group LOS	B	B	C	B	B	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.80	6.03	2.42	3.73	0.66	6.91
50th-Percentile Queue Length [ft]	69.94	150.71	60.47	93.25	16.51	172.72
95th-Percentile Queue Length [veh]	5.04	10.05	4.35	6.71	1.19	11.22
95th-Percentile Queue Length [ft]	125.89	251.37	108.84	167.85	29.71	280.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.99	10.99	17.03	20.12	12.18	12.18	14.67	14.67	14.67	26.76	26.76	26.76
Movement LOS	B	B	B	C	B	B	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	14.71			14.64			14.67			26.76		
Approach LOS	B			B			B			C		
d_I, Intersection Delay [s/veh]	17.39											
Intersection LOS	B											
Intersection V/C	0.661											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: 09 - Manley Road / Griffin Drive

Control Type:	Two-way stop	Delay (sec / veh):	336.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.477

Intersection Setup

Name	Manley Road		Griffin Drive		Griffin Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	0
Pocket Length [ft]	100.00	90.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Manley Road		Griffin Drive		Griffin Drive	
Base Volume Input [veh/h]	83	45	123	316	222	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	11.10	1.60	4.10	8.60	2.20
Growth Rate	1.71	1.71	1.71	1.71	1.71	1.71
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	77	210	540	380	79
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	37	20	55	141	99	21
Total Analysis Volume [veh/h]	148	80	219	563	397	82
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.48	0.13	0.20	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	336.57	11.92	9.15	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh]	11.02	0.46	6.59	6.59	0.00	0.00
95th-Percentile Queue Length [ft]	275.40	11.46	164.68	164.68	0.00	0.00
d_A, Approach Delay [s/veh]	222.66		2.56		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	35.44					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 10: 10 - Rouse Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	275.00	130.00	100.00	100.00	70.00	100.00	70.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Base Volume Input [veh/h]	122	5	175	139	159	5	1	206	111	5	7	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.80	0.00	9.70	7.90	4.40	0.00	100.00	2.90	5.40	0.00	28.60	0.00
Growth Rate	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	8	278	221	253	8	2	328	176	8	11	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	2	73	58	66	2	1	86	46	2	3	1
Total Analysis Volume [veh/h]	202	8	290	231	264	8	2	342	184	9	12	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	6	3	8	0	0	4	0	0	2	0
Auxiliary Signal Groups			6									
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	5	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	30	30	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	58	58	12	32	0	0	20	0	0	58	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No	No	No	No			No			No	
Maximum Recall		No	No	No	No			No			No	
Pedestrian Recall		No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	28	28	52	52	41	41	41	28
g / C, Green / Cycle	0.31	0.31	0.58	0.58	0.45	0.45	0.45	0.31
(v / s)_i Volume / Saturation Flow Rate	0.27	0.20	0.21	0.15	0.00	0.19	0.12	0.09
s, saturation flow rate [veh/h]	767	1472	1104	1811	562	1846	1532	252
c, Capacity [veh/h]	314	453	643	1053	284	839	696	133
d1, Uniform Delay [s]	29.68	26.87	9.97	9.28	18.34	16.45	15.23	24.83
k, delay calibration	0.11	0.11	0.13	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.45	1.52	0.42	0.59	0.04	1.47	0.93	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

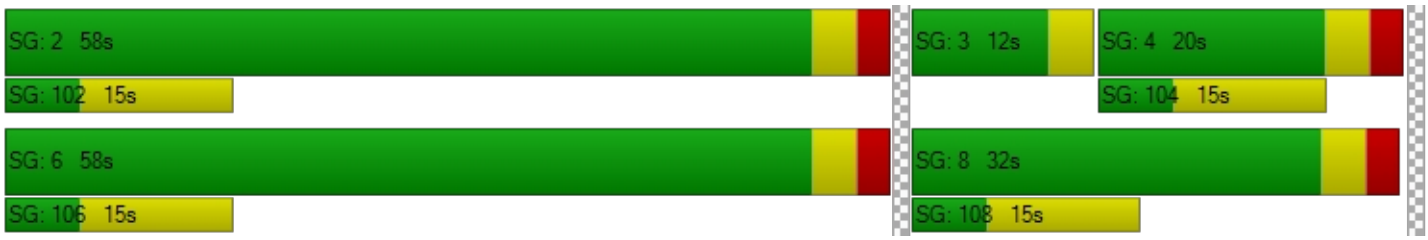
X, volume / capacity	0.67	0.64	0.36	0.26	0.01	0.41	0.26	0.17
d, Delay for Lane Group [s/veh]	32.13	28.39	10.39	9.88	18.38	17.92	16.16	25.44
Lane Group LOS	C	C	B	A	B	B	B	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	4.39	5.40	2.11	2.60	0.03	4.87	2.43	0.36
50th-Percentile Queue Length [ft]	109.65	134.99	52.68	65.05	0.74	121.63	60.81	8.99
95th-Percentile Queue Length [veh]	7.82	9.21	3.79	4.68	0.05	8.48	4.38	0.65
95th-Percentile Queue Length [ft]	195.51	230.26	94.82	117.10	1.34	212.07	109.46	16.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.13	32.13	28.39	10.39	9.88	9.88	18.38	17.92	16.16	25.44	25.44	25.44
Movement LOS	C	C	C	B	A	A	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	29.96			10.11			17.31			25.44		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	19.17											
Intersection LOS	B											
Intersection V/C	0.531											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: 11 - Story Mill Road / Bridger Drive

Control Type:	Two-way stop	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.075

Intersection Setup

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Base Volume Input [veh/h]	7	15	14	4	41	93	61	121	4	41	172	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	6.70	0.00	25.00	0.00	4.30	8.20	7.40	25.00	0.00	0.60	0.00
Growth Rate	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	23	22	6	64	144	95	188	6	64	267	5
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	6	6	2	17	38	25	49	2	17	70	1
Total Analysis Volume [veh/h]	11	24	23	6	67	150	99	196	6	67	279	5
Pedestrian Volume [ped/h]	0			0			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.09	0.03	0.03	0.25	0.20	0.08	0.00	0.00	0.05	0.00	0.00
d_M, Delay for Movement [s/veh]	32.27	21.36	12.07	28.61	24.97	16.54	8.15	0.00	0.00	7.74	0.00	0.00
Movement LOS	D	C	B	D	C	C	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.70	0.70	0.70	2.51	2.51	2.51	0.26	0.00	0.00	1.01	1.01	1.01
95th-Percentile Queue Length [ft]	17.44	17.44	17.44	62.69	62.69	62.69	6.48	0.00	0.00	25.34	25.34	25.34
d_A, Approach Delay [s/veh]	19.75			19.40			2.68			1.48		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	7.28											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 12: 12 - Wilson Avenue / Peach Street

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.178

Intersection Setup

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	44	10	14	2	3	2	0	232	71	19	139	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	2.80	0.00	4.30	0.00
Growth Rate	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	14	20	3	4	3	0	325	99	27	195	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	16	4	5	1	1	1	0	85	26	7	51	0
Total Analysis Volume [veh/h]	65	15	21	3	4	3	0	339	103	28	203	0
Pedestrian Volume [ped/h]	3			4			2			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.04	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	17.78	17.56	13.41	15.77	15.51	9.54	7.63	0.00	0.00	8.29	0.00	0.00
Movement LOS	C	C	B	C	C	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.97	0.97	0.97	0.07	0.07	0.07	0.00	0.00	0.00	0.77	0.77	0.77
95th-Percentile Queue Length [ft]	24.34	24.34	24.34	1.83	1.83	1.83	0.00	0.00	0.00	19.30	19.30	19.30
d_A, Approach Delay [s/veh]	16.84			13.80			0.00			1.00		
Approach LOS	C			B			A			A		
d_I, Intersection Delay [s/veh]	2.64											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 13: 13 - Rouse Avenue / Peach Street

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	56	334	9	70	421	69	29	52	75	5	51	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	1.40	0.70	1.40	0.00	5.80	1.30	0.00	0.00	0.80
Growth Rate	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	524	14	110	661	108	46	82	118	8	80	192
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	23	137	4	29	172	28	12	21	31	2	21	50
Total Analysis Volume [veh/h]	92	547	15	115	690	113	48	86	123	8	83	200
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	63	0	0	63	0	0	27	0	0	27	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	58	58	58	58	22	22	22	22
g / C, Green / Cycle	0.64	0.64	0.64	0.64	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.15	0.33	0.15	0.48	0.05	0.14	0.01	0.19
s, saturation flow rate [veh/h]	620	1687	765	1657	1002	1464	1072	1520
c, Capacity [veh/h]	258	1087	420	1068	130	358	183	372
d1, Uniform Delay [s]	26.80	8.53	16.34	11.04	42.71	29.97	37.02	31.56
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.80	1.76	1.61	4.90	7.96	6.81	0.45	13.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.52	0.27	0.75	0.37	0.58	0.04	0.76
d, Delay for Lane Group [s/veh]	30.60	10.29	17.95	15.93	50.67	36.78	37.46	45.27
Lane Group LOS	C	B	B	B	D	D	D	D
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.88	5.59	1.68	10.81	1.34	4.58	0.18	6.98
50th-Percentile Queue Length [ft]	47.12	139.79	41.92	270.20	33.48	114.48	4.54	174.52
95th-Percentile Queue Length [veh]	3.39	9.47	3.02	16.20	2.41	8.09	0.33	11.31
95th-Percentile Queue Length [ft]	84.81	236.74	75.45	404.99	60.26	202.21	8.17	282.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.60	10.29	10.29	17.95	15.93	15.93	50.67	36.78	36.78	37.46	45.27	45.27
Movement LOS	C	B	B	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.15			16.19			39.37			45.06		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	22.02											
Intersection LOS	C											
Intersection V/C	0.671											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 14: 14 - Willson Avenue / Mendenhall Street

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.285

Intersection Setup

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Base Volume Input [veh/h]	53	107	0	0	97	10	0	0	0	72	238	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	0.00	2.00	2.00	4.10	0.00	2.00	2.00	2.00	0.00	0.50	5.90
Growth Rate	1.28	1.28	1.00	1.00	1.28	1.28	1.00	1.00	1.00	1.28	1.28	1.28
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	137	0	0	124	13	0	0	0	92	305	22
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	1.0000	1.0000	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	18	36	0	0	32	3	0	0	0	24	80	6
Total Analysis Volume [veh/h]	71	143	0	0	129	14	0	0	0	96	318	23
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	7			7			9			9		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	0	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	0	0	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Split [s]	0	28	0	0	28	0	0	0	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		C	C
L, Total Lost Time per Cycle [s]	5.00	5.00		5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00		3.00	3.00
g_i, Effective Green Time [s]	35	35		15	15
g / C, Green / Cycle	0.58	0.58		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.15	0.09		0.14	0.14
s, saturation flow rate [veh/h]	1447	1614		1667	1516
c, Capacity [veh/h]	920	937		422	383
d1, Uniform Delay [s]	6.05	5.80		19.41	19.41
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.59	0.35		1.09	1.20
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.23	0.15		0.54	0.54
d, Delay for Lane Group [s/veh]	6.64	6.14		20.49	20.61
Lane Group LOS	A	A		C	C
Critical Lane Group	Yes	No		No	Yes
50th-Percentile Queue Length [veh]	1.15	0.73		2.67	2.44
50th-Percentile Queue Length [ft]	28.76	18.27		66.75	61.11
95th-Percentile Queue Length [veh]	2.07	1.32		4.81	4.40
95th-Percentile Queue Length [ft]	51.76	32.88		120.15	110.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.64	6.64	0.00	0.00	6.14	6.14	0.00	0.00	0.00	20.49	20.56	20.61
Movement LOS	A	A			A	A				C	C	C
d_A, Approach Delay [s/veh]	6.64			6.14			0.00			20.55		
Approach LOS	A			A			A			C		
d_I, Intersection Delay [s/veh]	14.21											
Intersection LOS	B											
Intersection V/C	0.285											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 15: 15 - Willson Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.344

Intersection Setup

Name	Willson Avenue			Willson Avenue			Babcock Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	125.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Babcock Street					
Base Volume Input [veh/h]	0	229	217	22	234	0	17	337	51	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	1.30	0.50	9.10	2.10	2.00	0.00	0.60	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.18	1.18	1.18	1.18	1.00	1.18	1.18	1.18	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	270	256	26	276	0	20	398	60	0	0	0
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	70	67	7	72	0	5	104	16	0	0	0
Total Analysis Volume [veh/h]	0	282	267	27	288	0	21	415	63	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			8			1			7		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	15	0	0	0	0
Maximum Green [s]	0	45	0	0	45	0	0	60	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	0	28	0	0	32	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	35	35	35	35	15	15	
g / C, Green / Cycle	0.58	0.58	0.58	0.58	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.17	0.19	0.03	0.17	0.16	0.16	
s, saturation flow rate [veh/h]	1688	1441	918	1675	1693	1473	
c, Capacity [veh/h]	980	836	533	972	428	373	
d1, Uniform Delay [s]	6.35	6.49	9.37	6.38	19.85	19.89	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.74	1.01	0.18	0.78	1.46	1.73	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

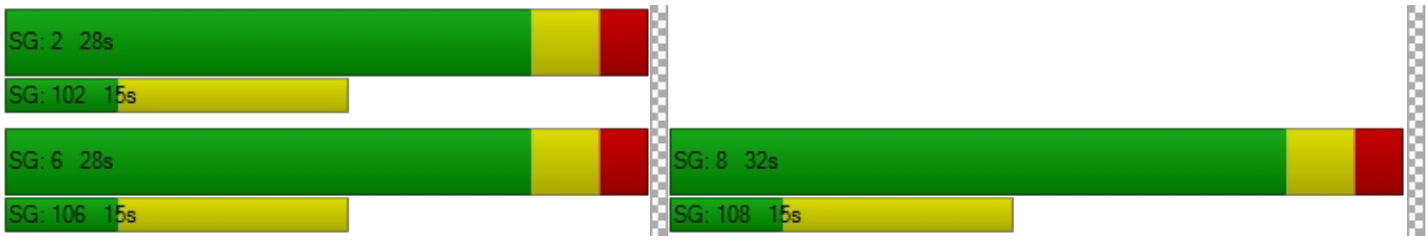
X, volume / capacity	0.29	0.32	0.05	0.30	0.62	0.63	
d, Delay for Lane Group [s/veh]	7.09	7.49	9.55	7.16	21.31	21.63	
Lane Group LOS	A	A	A	A	C	C	
Critical Lane Group	No	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh]	1.58	1.57	0.20	1.63	3.19	2.84	
50th-Percentile Queue Length [ft]	39.62	39.32	5.02	40.77	79.79	71.09	
95th-Percentile Queue Length [veh]	2.85	2.83	0.36	2.94	5.74	5.12	
95th-Percentile Queue Length [ft]	71.32	70.77	9.04	73.39	143.62	127.96	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.09	7.49	9.55	7.16	0.00	21.31	21.44	21.63	0.00	0.00	0.00
Movement LOS		A	A	A	A		C	C	C			
d_A, Approach Delay [s/veh]	7.28			7.37			21.46			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	12.49											
Intersection LOS	B											
Intersection V/C	0.344											

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: 16 - Broadway Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	10.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name	Broadway Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

volumes

Name	Broadway Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	93	23	41	508	524	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	8.60	3.60	0.00	2.10	4.40
Growth Rate	1.54	1.54	1.54	1.54	1.54	1.54
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	35	63	782	807	176
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	37	9	17	206	213	46
Total Analysis Volume [veh/h]	149	37	66	825	851	186
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4		5		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	15	0	0	30	30	0
Maximum Green [s]	30	0	0	90	90	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	20	0	0	40	40	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	14	36	36	36	36
g / C, Green / Cycle	0.24	0.59	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.13	0.32	0.32	0.31	0.33
s, saturation flow rate [veh/h]	1465	1196	1556	1675	1573
c, Capacity [veh/h]	354	778	921	991	931
d1, Uniform Delay [s]	19.77	6.69	7.39	7.24	7.46
k, delay calibration	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	2.27	2.33	1.97	2.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

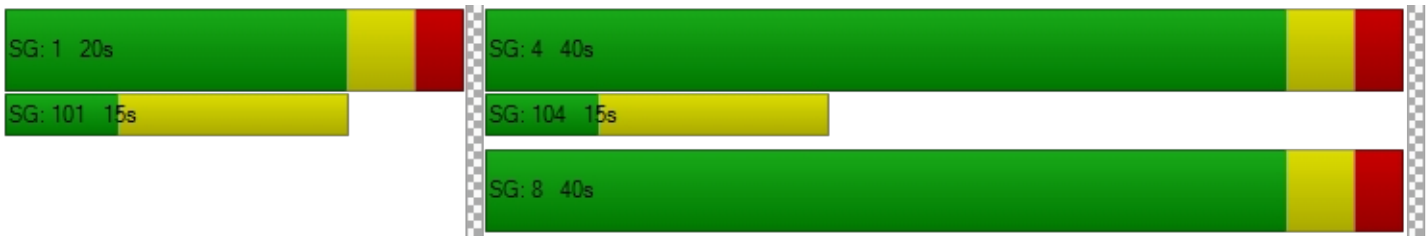
X, volume / capacity	0.53	0.50	0.55	0.52	0.56
d, Delay for Lane Group [s/veh]	20.98	8.96	9.71	9.22	9.86
Lane Group LOS	C	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.20	2.44	3.49	3.47	3.63
50th-Percentile Queue Length [ft]	55.07	60.98	87.25	86.74	90.86
95th-Percentile Queue Length [veh]	3.97	4.39	6.28	6.24	6.54
95th-Percentile Queue Length [ft]	99.13	109.77	157.05	156.12	163.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.98	20.98	8.96	9.42	9.47	9.86
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	20.98		9.38		9.54	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	10.48					
Intersection LOS	B					
Intersection V/C	0.457					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: 17 - Highland Boulevard / Main Street

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Main Street			Main Street		
Base Volume Input [veh/h]	173	1	129	0	0	0	379	463	0	0	287	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	2.00	3.90	2.00	2.00	2.00	1.90	2.80	2.00	2.00	3.10	1.10
Growth Rate	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	254	1	190	0	0	0	557	681	0	0	422	388
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	66	0	50	0	0	0	147	180	0	0	111	102
Total Analysis Volume [veh/h]	265	1	198	0	0	0	587	718	0	0	445	409
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	30	0	0	30	0
Maximum Green [s]	0	45	0	0	45	0	25	60	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	15	50	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	15	15	15	45	45	45	30	30	30
g / C, Green / Cycle	0.21	0.21	0.21	0.64	0.64	0.64	0.43	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.19	0.13	0.00	0.60	0.19	0.19	0.00	0.24	0.26
s, saturation flow rate [veh/h]	1414	1564	1863	971	1848	1848	731	1843	1566
c, Capacity [veh/h]	366	335	451	651	1188	1188	332	790	671
d1, Uniform Delay [s]	28.56	24.76	0.00	11.40	5.54	5.54	0.00	15.07	15.47
k, delay calibration	0.50	0.50	0.50	0.41	0.11	0.11	0.11	0.12	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.85	7.54	0.00	15.40	0.14	0.14	0.00	0.69	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.59	0.00	0.90	0.30	0.30	0.00	0.56	0.61
d, Delay for Lane Group [s/veh]	40.40	32.30	0.00	26.80	5.68	5.68	0.00	15.76	16.71
Lane Group LOS	D	C	A	C	A	A	A	B	B
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.43	3.53	0.00	6.34	1.86	1.86	0.00	4.98	4.79
50th-Percentile Queue Length [ft]	135.64	88.20	0.00	158.59	46.39	46.39	0.00	124.44	119.66
95th-Percentile Queue Length [veh]	9.25	6.35	0.00	10.47	3.34	3.34	0.00	8.64	8.37
95th-Percentile Queue Length [ft]	231.14	158.75	0.00	261.85	83.51	83.51	0.00	215.92	209.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.40	32.30	32.30	0.00	0.00	0.00	26.80	5.68	5.68	0.00	15.76	16.71
Movement LOS	D	C	C	A	A	A	C	A	A	A	B	B
d_A, Approach Delay [s/veh]	36.93			0.00			15.18			16.22		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	19.36											
Intersection LOS	B											
Intersection V/C	0.628											

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 18: 18 - Haggerty Lane / Main Street

Control Type:	Two-way stop	Delay (sec / veh):	473.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Haggerty Lane						Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

volumes

Name	Haggerty Lane						Main Street			Main Street		
Base Volume Input [veh/h]	62	0	49	1	0	0	92	773	2	2	332	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	2.00	0.00	0.00	0.00	3.30	2.50	0.00	0.00	3.30	3.60
Growth Rate	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	0	76	2	0	0	144	1206	3	3	518	129
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	25	0	20	1	0	0	38	318	1	1	137	34
Total Analysis Volume [veh/h]	101	0	79	2	0	0	152	1272	3	3	546	136
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.55	0.00	0.12	0.06	0.00	0.00	0.17	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	430.95	473.57	381.13	114.49	119.12	19.68	9.82	0.00	0.00	11.56	0.00	0.00
Movement LOS	F	F	F	F	F	C	A	A	A	B	A	A
95th-Percentile Queue Length [veh]	13.90	13.90	13.90	0.18	0.18	0.18	0.61	0.00	0.00	4.23	2.12	0.00
95th-Percentile Queue Length [ft]	347.58	347.58	347.58	4.38	4.38	4.38	15.18	0.00	0.00	105.79	52.90	0.00
d_A, Approach Delay [s/veh]	409.08			114.49			1.05			0.05		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	32.86											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: 19 - Willson Avenue / College Street

Control Type:	Two-way stop	Delay (sec / veh):	56.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Base Volume Input [veh/h]	158	471	50	19	302	53	1	1	66	1	4	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	1.30	2.00	5.30	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	182	542	57	22	347	61	1	1	76	1	5	21
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	141	15	6	91	16	0	0	20	0	1	6
Total Analysis Volume [veh/h]	190	566	59	23	362	64	1	1	79	1	5	23
Pedestrian Volume [ped/h]	5			4			0			3		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.12	0.01	0.05	0.05
d_M, Delay for Movement [s/veh]	8.80	0.00	0.00	8.95	0.00	0.00	51.02	44.36	11.60	56.56	45.20	13.99
Movement LOS	A	A	A	A	A	A	F	E	B	F	E	B
95th-Percentile Queue Length [veh]	6.53	6.53	6.53	2.65	2.65	2.65	0.50	0.50	0.50	0.38	0.38	0.38
95th-Percentile Queue Length [ft]	163.29	163.29	163.29	66.32	66.32	66.32	12.54	12.54	12.54	9.45	9.45	9.45
d_A, Approach Delay [s/veh]	2.05			0.46			12.49			20.84		
Approach LOS	A			A			B			C		
d_I, Intersection Delay [s/veh]	2.54											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 20: 20 - Highland Boulevard / Ellis Street

Control Type:	Two-way stop	Delay (sec / veh):	83.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Base Volume Input [veh/h]	5	253	49	74	300	257	18	2	4	28	10	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.80	0.00	1.40	2.60	1.20	0.00	0.00	25.00	0.00	0.00	2.90
Growth Rate	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	390	75	114	462	396	28	3	6	43	15	52
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	102	20	30	121	103	8	1	2	12	4	14
Total Analysis Volume [veh/h]	8	407	78	119	482	413	30	3	7	47	16	57
Pedestrian Volume [ped/h]	3			0			1			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.11	0.00	0.00	0.37	0.03	0.02	0.45	0.17	0.09
d_M, Delay for Movement [s/veh]	9.75	0.00	0.00	8.74	0.00	0.00	72.57	58.69	37.39	80.18	83.79	51.53
Movement LOS	A	A	A	A	A	A	F	F	E	F	F	F
95th-Percentile Queue Length [veh]	0.03	0.00	0.00	0.37	0.00	0.00	1.69	1.69	1.69	4.35	4.35	4.35
95th-Percentile Queue Length [ft]	0.79	0.00	0.00	9.25	0.00	0.00	42.17	42.17	42.17	108.64	108.64	108.64
d_A, Approach Delay [s/veh]	0.16			1.03			65.37			67.06		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	7.07											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: 21 - Sourdough Road / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	1,427.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.788

Intersection Setup

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Base Volume Input [veh/h]	67	42	79	36	315	31	26	560	20	5	21	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	1.30	0.00	0.60	0.00	0.00	0.70	0.00	0.00	0.00	3.30
Growth Rate	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	65	122	56	488	48	40	868	31	8	33	47
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	27	17	32	15	127	13	10	226	8	2	9	12
Total Analysis Volume [veh/h]	109	68	127	58	509	50	42	906	32	8	34	49
Pedestrian Volume [ped/h]	0			0			0			5		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	No			No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No			No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.79	0.81	0.23	0.08	0.01	0.00	0.04	0.01	0.00	0.51	0.41	0.15
d_M, Delay for Movement [s/veh]	1427.79	1378.39	1342.27	10.34	0.00	0.00	8.67	0.00	0.00	396.41	208.90	176.85
Movement LOS	F	F	F	B	A	A	A	A	A	F	F	F
95th-Percentile Queue Length [veh]	31.67	31.67	31.67	0.26	0.00	0.00	0.13	0.00	0.00	6.24	6.24	6.24
95th-Percentile Queue Length [ft]	791.74	791.74	791.74	6.43	0.00	0.00	3.21	0.00	0.00	156.08	156.08	156.08
d_A, Approach Delay [s/veh]	1381.01			0.97			0.37			208.12		
Approach LOS	F			A			A			F		
d_I, Intersection Delay [s/veh]	220.75											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 22: 22 - Highland Boulevard / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.074

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	2	2	0	7	0	331	319	71	1	1	270	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.60	0.30	0.00	0.00	0.00	0.40	0.00
Growth Rate	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	0	12	0	556	536	119	2	2	454	35
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	1	0	3	0	145	140	31	1	1	118	9
Total Analysis Volume [veh/h]	3	3	0	13	0	580	559	124	2	2	474	37
Pedestrian Volume [ped/h]	0			1			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.07	0.00	0.34	0.00	1.00	0.53	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	282.22	274.53	193.78	12.11	0.00	0.00	7.45	0.00	0.00
Movement LOS	F	F	F	F	F	F	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.92	1.92	1.92	27.21	27.21	27.21	3.18	0.00	0.00	1.58	1.58	1.58
95th-Percentile Queue Length [ft]	48.03	48.03	48.03	680.15	680.15	680.15	79.47	0.00	0.00	39.56	39.56	39.56
d_A, Approach Delay [s/veh]	10000.00			195.72			9.88			0.03		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	101.75											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue

Control Type:	All-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	115.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Base Volume Input [veh/h]	7	163	33	171	275	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.40	0.00	0.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	176	36	185	297	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	48	9	48	77	1
Total Analysis Volume [veh/h]	9	191	38	193	310	3
Pedestrian Volume [ped/h]	0		0		3	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.19	0.19	1.07	2.32
95th-Percentile Queue Length [ft]	29.87	4.71	26.67	57.93
Approach Delay [s/veh]	10.29	9.30		12.24
Approach LOS	B	A		B
Intersection Delay [s/veh]	10.81			
Intersection LOS	B			

Intersection Level Of Service Report
Intersection 27: 25 - 11th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	22.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Base Volume Input [veh/h]	5	101	96	79	109	39	10	47	18	50	36	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	1.00	0.00	0.00	0.00	0.00	2.10	0.00	2.00	2.80	0.00
Growth Rate	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	195	185	152	210	75	19	91	35	97	69	77
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	51	48	40	55	20	5	25	10	25	18	20
Total Analysis Volume [veh/h]	10	203	193	159	219	78	21	99	38	101	72	80
Pedestrian Volume [ped/h]	154			130			106			65		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.48	7.57	1.37	2.66
95th-Percentile Queue Length [ft]	136.93	189.22	34.17	66.50
Approach Delay [s/veh]	21.97	28.86	13.68	16.45
Approach LOS	C	D	B	C
Intersection Delay [s/veh]	22.31			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 28: 26 - 11th Avenue / Lincoln Street

Control Type:	All-way stop	Delay (sec / veh):	30.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Base Volume Input [veh/h]	31	126	24	3	129	27	73	38	208	13	8	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	0.80	0.00	0.00	0.80	11.10	1.40	0.00	0.50	0.00	0.00	0.00
Growth Rate	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	227	43	5	232	49	131	68	374	23	14	13
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	59	11	1	61	13	34	18	98	6	4	4
Total Analysis Volume [veh/h]	58	237	45	5	242	51	137	71	390	25	15	14
Pedestrian Volume [ped/h]	35			36			48			110		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.43	3.39	2.79	0.32	12.79	0.37
95th-Percentile Queue Length [ft]	10.71	84.71	69.86	7.95	319.73	9.18
Approach Delay [s/veh]	17.33		16.08		45.98	11.21
Approach LOS	C		C		E	B
Intersection Delay [s/veh]	30.07					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 29: 27 - 11th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	200.00	100.00	100.00	115.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	10	41	7	52	55	42	141	520	74	17	513	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.40	0.00	7.70	1.80	4.80	2.10	1.00	0.00	0.00	0.60	0.00
Growth Rate	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	71	12	90	96	73	245	905	129	30	893	179
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	5	19	3	23	25	19	64	236	34	8	233	47
Total Analysis Volume [veh/h]	18	77	13	94	100	76	256	944	135	31	932	187
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			1			23			49		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	20	0	0	20	0	10	30	0	0	30	0
Maximum Green [s]	0	45	0	0	45	0	25	90	0	0	90	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	25	0	0	25	0	13	95	0	0	82	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	22	22	22	22	88	88	75	75
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.73	0.73	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.05	0.08	0.10	0.39	0.59	0.06	0.61
s, saturation flow rate [veh/h]	1219	1765	1160	1682	660	1841	531	1834
c, Capacity [veh/h]	152	328	201	312	298	1345	196	1142
d1, Uniform Delay [s]	52.10	41.92	50.41	44.43	37.55	10.50	35.34	21.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.31	0.11	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	2.07	7.65	7.18	25.95	3.23	0.37	20.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

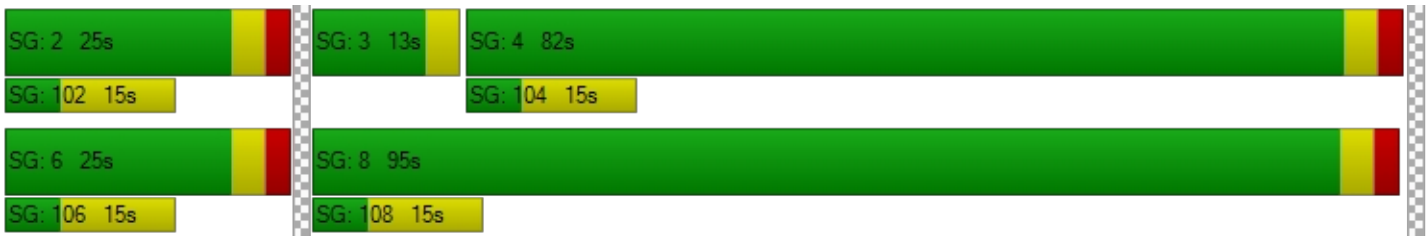
X, volume / capacity	0.12	0.27	0.47	0.56	0.86	0.80	0.16	0.98
d, Delay for Lane Group [s/veh]	53.69	43.99	58.06	51.61	63.50	13.73	35.72	42.33
Lane Group LOS	D	D	E	D	E	B	D	D
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	0.58	2.49	3.13	5.39	3.97	17.08	0.74	34.30
50th-Percentile Queue Length [ft]	14.44	62.22	78.19	134.78	99.28	426.88	18.57	857.48
95th-Percentile Queue Length [veh]	1.04	4.48	5.63	9.20	7.15	23.85	1.34	43.90
95th-Percentile Queue Length [ft]	26.00	111.99	140.74	229.98	178.70	596.30	33.42	1097.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.69	43.99	43.99	58.06	51.61	51.61	63.50	13.73	13.73	35.72	42.33	42.33
Movement LOS	D	D	D	E	D	D	E	B	B	D	D	D
d_A, Approach Delay [s/veh]	45.60			53.86			23.27			42.15		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	34.58											
Intersection LOS	C											
Intersection V/C	0.767											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: 28 - 8th Avenue / College Street

Control Type:	All-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	8th Avenue			8th Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	8th Avenue			8th Avenue			College Street			College Street		
Base Volume Input [veh/h]	68	35	2	23	106	45	59	123	77	4	253	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00	1.30	0.00	0.40	0.00
Growth Rate	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	49	3	32	148	63	83	172	108	6	354	73
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	25	13	1	8	39	16	22	45	28	2	92	19
Total Analysis Volume [veh/h]	99	51	3	33	154	66	87	179	113	6	369	76
Pedestrian Volume [ped/h]	5			11			21			20		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.31	2.52	4.70	6.83
95th-Percentile Queue Length [ft]	32.76	62.97	117.54	170.87
Approach Delay [s/veh]	13.56	15.65	19.90	25.60
Approach LOS	B	C	C	D
Intersection Delay [s/veh]	20.33			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 31: 29 - 7th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	26.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	7th Avenue		Grant Street		Grant Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	7th Avenue		Grant Street		Grant Street	
Base Volume Input [veh/h]	59	37	84	87	112	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.70	1.20	1.10	0.00	1.30
Growth Rate	2.74	2.74	2.74	2.74	2.74	2.74
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	101	230	238	307	214
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	42	26	60	62	80	56
Total Analysis Volume [veh/h]	169	105	240	248	320	223
Pedestrian Volume [ped/h]	12		100		160	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.73	6.56	10.00
95th-Percentile Queue Length [ft]	68.21	163.93	250.08
Approach Delay [s/veh]	15.71	22.41	34.95
Approach LOS	C	C	D
Intersection Delay [s/veh]	26.22		
Intersection LOS	D		

Intersection Level Of Service Report
Intersection 32: 30 - 7th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.580

Intersection Setup

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	2	12	2	1	7	38	127	401	19	29	637	111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	5.30	1.60	1.70	5.30	0.00	0.40	1.80
Growth Rate	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	15	3	1	9	48	161	509	24	37	809	141
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	4	1	0	2	13	42	133	6	10	211	37
Total Analysis Volume [veh/h]	3	16	3	1	9	50	168	531	25	39	844	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	4			6			29			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	21	0	0	21	0	0	69	0	0	69	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	8	8	8	8	72	72	72	72
g / C, Green / Cycle	0.09	0.09	0.09	0.09	0.80	0.80	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.00	0.04	0.30	0.30	0.05	0.54
s, saturation flow rate [veh/h]	1225	1848	1416	1407	568	1853	866	1843
c, Capacity [veh/h]	116	160	163	122	386	1487	676	1479
d1, Uniform Delay [s]	42.52	37.95	39.89	39.20	13.65	2.51	4.58	3.80
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	0.33	0.01	2.98	3.56	0.72	0.16	2.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.12	0.01	0.49	0.44	0.37	0.06	0.67
d, Delay for Lane Group [s/veh]	42.61	38.28	39.90	42.18	17.20	3.23	4.74	6.23
Lane Group LOS	D	D	D	D	B	A	A	A
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.07	0.40	0.02	1.33	2.45	1.92	0.23	5.37
50th-Percentile Queue Length [ft]	1.68	9.95	0.53	33.26	61.14	47.97	5.77	134.36
95th-Percentile Queue Length [veh]	0.12	0.72	0.04	2.39	4.40	3.45	0.42	9.18
95th-Percentile Queue Length [ft]	3.03	17.91	0.96	59.86	110.05	86.35	10.38	229.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.61	38.28	38.28	39.90	42.18	42.18	17.20	3.23	3.23	4.74	6.23	6.23
Movement LOS	D	D	D	D	D	D	B	A	A	A	A	A
d_A, Approach Delay [s/veh]	38.87			42.14			6.47			6.17		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	7.86											
Intersection LOS	A											
Intersection V/C	0.580											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 33: 31 - Valley Center Spur / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.110

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	825.00	100.00	100.00	615.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	64	101	61	66	236	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	2.00	4.90	6.10	5.90	4.90
Growth Rate	0.88	0.88	0.88	0.88	0.88	0.88
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	89	54	58	208	91
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	15	24	15	17	59	26
Total Analysis Volume [veh/h]	61	97	62	66	237	104
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.12	0.05	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.10	11.07	8.16	0.00	0.00	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.89	0.89	0.16	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	22.28	22.28	4.07	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.85		3.95		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.79					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 34: 32 - Valley Center Spur / Valley Center Road

Control Type:	Two-way stop	Delay (sec / veh):	185.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.206

Intersection Setup

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	120.00	430.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Base Volume Input [veh/h]	105	62	104	217	70	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	4.80	1.00	4.10	15.80	1.70
Growth Rate	1.91	1.91	1.91	1.91	1.91	1.91
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	118	199	414	134	115
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	55	32	57	118	38	33
Total Analysis Volume [veh/h]	218	128	227	473	153	131
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.21	0.16	0.18	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	185.00	10.24	8.40	0.00	0.00	0.00
Movement LOS	F	B	A	A	A	A
95th-Percentile Queue Length [veh]	11.66	0.56	0.64	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	291.53	13.90	16.03	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	120.35		2.73		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	32.74					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 35: 33 - Nelson Road / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	19.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.221

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	575.00	600.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	53	25	139	11	6	448
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	1.40	0.00	0.00	0.90
Growth Rate	1.23	1.23	1.23	1.23	1.23	1.23
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	31	171	14	7	551
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0900	1.0900	1.0900	1.0900
Total 15-Minute Volume [veh/h]	18	8	51	4	2	163
Total Analysis Volume [veh/h]	71	34	203	17	8	653
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.04	0.00	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	19.33	12.47	0.00	0.00	7.66	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.03	1.03	0.00	0.00	0.02	0.00
95th-Percentile Queue Length [ft]	25.83	25.83	0.00	0.00	0.44	0.00
d_A, Approach Delay [s/veh]	17.11		0.00		0.09	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.88					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 36: 34 - 19th Avenue / I-90 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	270.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

volumes

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Base Volume Input [veh/h]	0	308	200	103	440	0	0	0	0	18	0	302
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	6.20	12.00	2.90	2.20	2.00	2.00	2.00	2.00	5.60	2.00	4.90
Growth Rate	1.00	1.88	1.88	1.88	1.88	1.00	1.00	1.00	1.00	1.88	1.00	1.88
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	579	376	194	827	0	0	0	0	34	0	568
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	157	102	53	225	0	0	0	0	9	0	154
Total Analysis Volume [veh/h]	0	629	409	211	899	0	0	0	0	37	0	617
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	2	1	6	0	0	0	0	3	0	0
Auxiliary Signal Groups			2,3									
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	30	30	5	30	0	0	0	0	20	0	0
Maximum Green [s]	0	90	90	20	90	0	0	0	0	45	0	0
Amber [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Split [s]	0	50	50	14	64	0	0	0	0	56	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	5	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	0	0	10	0	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	1.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall		No	No	No	No					No		
Maximum Recall		No	No	No	No					No		
Pedestrian Recall		No	No	No	No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C		L	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00		5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	0.00	3.00		3.00	3.00
g_i, Effective Green Time [s]	47	102	60	60		50	50
g / C, Green / Cycle	0.39	0.85	0.50	0.50		0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.35	0.28	0.22	0.48		0.02	0.40
s, saturation flow rate [veh/h]	1789	1442	970	1859		1714	1540
c, Capacity [veh/h]	698	1222	311	932		712	640
d1, Uniform Delay [s]	34.41	1.95	25.76	28.90		20.96	34.22
k, delay calibration	0.50	0.50	0.50	0.50		0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	17.00	0.74	11.30	22.09		0.03	24.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.33	0.68	0.96		0.05	0.96
d, Delay for Lane Group [s/veh]	51.41	2.69	37.07	50.99		20.99	59.07
Lane Group LOS	D	A	D	D		C	E
Critical Lane Group	No	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh]	20.19	1.50	4.27	29.63		0.63	21.51
50th-Percentile Queue Length [ft]	504.84	37.51	106.76	740.72		15.85	537.86
95th-Percentile Queue Length [veh]	27.56	2.70	7.66	38.56		1.14	29.12
95th-Percentile Queue Length [ft]	689.08	67.52	191.48	963.89		28.53	728.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	51.41	2.69	37.07	50.99	0.00	0.00	0.00	0.00	20.99	0.00	59.07
Movement LOS		D	A	D	D					C		E
d_A, Approach Delay [s/veh]	32.21			48.34			0.00			56.91		
Approach LOS	C			D			A			E		
d_I, Intersection Delay [s/veh]	44.37											
Intersection LOS	D											
Intersection V/C	0.884											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 37: 35 - 19th Avenue / I-90 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	275.00	100.00	100.00	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Base Volume Input [veh/h]	160	170	0	0	467	12	81	0	19	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.60	2.40	2.00	2.00	1.30	0.00	13.50	2.00	5.30	2.00	2.00	2.00
Growth Rate	1.58	1.58	1.00	1.00	1.58	1.58	1.58	1.00	1.58	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	253	269	0	0	738	19	128	0	30	0	0	0
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	73	0	0	201	5	35	0	8	0	0	0
Total Analysis Volume [veh/h]	275	292	0	0	802	21	139	0	33	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	7	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	10	30	0	0	30	0	15	0	0	0	0	0
Maximum Green [s]	25	60	0	0	60	0	45	0	0	0	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Split [s]	13	48	0	0	35	0	22	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No			No		No					
Maximum Recall	No	No			No		No					
Pedestrian Recall	No	No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	53	53	40	7	7	
g / C, Green / Cycle	0.75	0.75	0.57	0.10	0.10	
(v / s)_i Volume / Saturation Flow Rate	0.37	0.17	0.49	0.10	0.02	
s, saturation flow rate [veh/h]	741	1670	1680	1435	1380	
c, Capacity [veh/h]	467	1258	955	149	143	
d1, Uniform Delay [s]	13.15	2.58	12.78	31.13	28.81	
k, delay calibration	0.50	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	5.37	0.43	10.09	21.51	0.81	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	0.59	0.23	0.86	0.93	0.23	
d, Delay for Lane Group [s/veh]	18.51	3.01	22.87	52.64	29.62	
Lane Group LOS	B	A	C	D	C	
Critical Lane Group	Yes	No	Yes	Yes	No	
50th-Percentile Queue Length [veh]	1.33	0.82	11.53	3.13	0.52	
50th-Percentile Queue Length [ft]	33.37	20.48	288.19	78.27	13.12	
95th-Percentile Queue Length [veh]	2.40	1.47	17.10	5.64	0.94	
95th-Percentile Queue Length [ft]	60.06	36.86	427.39	140.88	23.61	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.51	3.01	0.00	0.00	22.87	22.87	52.64	0.00	29.62	0.00	0.00	0.00
Movement LOS	B	A			C	C	D		C			
d_A, Approach Delay [s/veh]	10.53			22.87			48.22			0.00		
Approach LOS	B			C			D			A		
d_I, Intersection Delay [s/veh]	21.18											
Intersection LOS	C											
Intersection V/C	0.662											

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: 36 - 19th Avenue / Tschache Way

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	200.00	275.00	100.00	175.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Base Volume Input [veh/h]	29	405	11	17	899	18	25	12	55	5	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.40	9.10	11.80	2.10	16.70	12.00	8.30	1.80	0.00	50.00	33.40
Growth Rate	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	644	17	27	1429	29	40	19	87	8	6	10
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	182	5	8	404	8	11	5	24	2	2	3
Total Analysis Volume [veh/h]	52	728	19	31	1615	33	43	21	95	9	7	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	68.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	10	0	0	10	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	13	49	0	21	57	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	60	52	52	60	50	50	9	9	9	9
g / C, Green / Cycle	0.67	0.57	0.57	0.67	0.55	0.55	0.11	0.11	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.10	0.21	0.01	0.04	0.46	0.02	0.03	0.08	0.01	0.02
s, saturation flow rate [veh/h]	524	3432	1480	765	3543	1384	1265	1533	1296	1143
c, Capacity [veh/h]	353	1968	849	547	1964	767	172	162	98	121
d1, Uniform Delay [s]	12.52	10.39	8.29	5.73	16.43	9.16	40.07	38.91	44.05	36.54
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.12	0.01	0.04	0.91	0.02	0.76	5.73	0.40	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.37	0.02	0.06	0.82	0.04	0.25	0.71	0.09	0.15
d, Delay for Lane Group [s/veh]	12.71	10.51	8.31	5.78	17.34	9.18	40.83	44.64	44.44	37.10
Lane Group LOS	B	B	A	A	B	A	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.31	3.62	0.15	0.18	12.50	0.28	0.94	2.70	0.21	0.38
50th-Percentile Queue Length [ft]	7.69	90.40	3.80	4.43	312.59	7.10	23.51	67.57	5.21	9.38
95th-Percentile Queue Length [veh]	0.55	6.51	0.27	0.32	18.30	0.51	1.69	4.87	0.37	0.68
95th-Percentile Queue Length [ft]	13.85	162.72	6.83	7.97	457.56	12.78	42.31	121.63	9.37	16.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.71	10.51	8.31	5.78	17.34	9.18	40.83	44.64	44.64	44.44	37.10	37.10
Movement LOS	B	B	A	A	B	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.60			16.96			43.61			39.55		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.87											
Intersection LOS	B											
Intersection V/C	0.544											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: 37 - 19th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

Intersection Setup

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	400.00	100.00	400.00	275.00	100.00	250.00	200.00	100.00	100.00	225.00	100.00	225.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	39	312	169	240	705	80	61	313	44	113	167	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	7.70	1.80	2.50	2.90	2.50	0.00	1.30	2.30	4.40	7.80	6.80
Growth Rate	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	583	316	449	1318	150	114	585	82	211	312	165
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	20	158	86	122	358	41	31	159	22	56	82	43
Total Analysis Volume [veh/h]	79	634	343	488	1433	163	124	636	89	222	329	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	40.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	5	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	30	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	8	20	20	42	54	54	9	54	54	14	59	59
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	76	48	64	76	68	79	44	30	40	44	35	65
g / C, Green / Cycle	0.58	0.37	0.49	0.58	0.52	0.60	0.34	0.23	0.31	0.34	0.27	0.50
(v / s)_i Volume / Saturation Flow Rate	0.17	0.19	0.22	0.44	0.41	0.10	0.10	0.18	0.06	0.22	0.10	0.12
s, saturation flow rate [veh/h]	469	3359	1586	1116	3516	1576	1185	3571	1579	1030	3356	1512
c, Capacity [veh/h]	234	1243	782	615	1827	952	405	836	491	307	915	755
d1, Uniform Delay [s]	21.14	31.81	21.32	19.49	25.31	11.35	30.68	46.38	32.69	35.68	38.13	18.42
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.85	1.50	1.78	10.12	3.46	0.39	1.95	1.46	0.81	3.21	0.24	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.51	0.44	0.79	0.78	0.17	0.31	0.76	0.18	0.72	0.36	0.23
d, Delay for Lane Group [s/veh]	25.00	33.31	23.10	29.60	28.77	11.74	32.63	47.84	33.50	38.89	38.37	18.57
Lane Group LOS	C	C	C	C	C	B	C	D	C	D	D	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.26	8.01	7.13	9.97	18.35	2.17	3.00	9.76	2.19	5.59	4.30	3.03
50th-Percentile Queue Length [ft]	31.58	200.32	178.17	249.34	458.77	54.35	75.03	243.97	54.65	139.86	107.43	75.63
95th-Percentile Queue Length [veh]	2.27	12.65	11.50	15.15	25.38	3.91	5.40	14.88	3.93	9.47	7.70	5.45
95th-Percentile Queue Length [ft]	56.84	316.37	287.62	378.82	634.41	97.84	135.05	372.05	98.37	236.83	192.43	136.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.00	33.31	23.10	29.60	28.77	11.74	32.63	47.84	33.50	38.89	38.37	18.57
Movement LOS	C	C	C	C	C	B	C	D	C	D	D	B
d_A, Approach Delay [s/veh]	29.37			27.63			44.12			33.78		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	31.94											
Intersection LOS	C											
Intersection V/C	0.703											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 40: 38 - 19th Avenue / Durston Road

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	90.00	100.00	100.00	250.00	100.00	100.00	325.00	100.00	420.00	140.00	100.00	50.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Base Volume Input [veh/h]	73	402	53	135	670	61	114	367	142	54	158	81
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.40	4.50	3.80	6.60	2.20	3.30	0.90	0.80	0.00	1.90	3.80	9.80
Growth Rate	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	563	74	189	938	85	160	514	199	76	221	113
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	28	153	20	51	255	23	42	135	52	20	58	30
Total Analysis Volume [veh/h]	111	612	80	205	1020	92	169	542	210	80	233	119
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	28.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	0	5	30	0	5	15	15	5	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	8	35	0	8	35	0	9	44	44	8	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	47	39	39	47	39	39	38	30	40	38	29	39
g / C, Green / Cycle	0.50	0.41	0.41	0.50	0.41	0.41	0.40	0.32	0.42	0.40	0.30	0.41
(v / s)_i Volume / Saturation Flow Rate	0.17	0.19	0.19	0.24	0.30	0.30	0.13	0.29	0.13	0.08	0.13	0.08
s, saturation flow rate [veh/h]	670	1818	1746	841	1859	1806	1274	1885	1615	993	1830	1471
c, Capacity [veh/h]	308	752	722	419	769	747	516	600	684	284	553	599
d1, Uniform Delay [s]	17.30	20.25	20.26	16.11	23.41	23.45	19.53	30.97	18.13	21.62	26.52	18.16
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.22	0.50	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.25	2.09	2.19	4.04	6.08	6.33	1.69	9.97	1.16	0.54	0.51	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.47	0.47	0.49	0.73	0.73	0.33	0.90	0.31	0.28	0.42	0.20
d, Delay for Lane Group [s/veh]	20.55	22.35	22.44	20.15	29.49	29.78	21.22	40.94	19.29	22.15	27.03	18.90
Lane Group LOS	C	C	C	C	C	C	C	D	B	C	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	1.50	5.94	5.73	2.88	11.45	11.22	2.68	13.16	3.20	1.14	4.23	1.78
50th-Percentile Queue Length [ft]	37.56	148.46	143.19	72.05	286.22	280.56	66.96	329.04	79.97	28.40	105.80	44.46
95th-Percentile Queue Length [veh]	2.70	9.93	9.65	5.19	17.00	16.72	4.82	19.11	5.76	2.04	7.61	3.20
95th-Percentile Queue Length [ft]	67.61	248.37	241.31	129.68	424.94	417.91	120.53	477.79	143.94	51.12	190.14	80.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.55	22.39	22.44	20.15	29.62	29.78	21.22	40.94	19.29	22.15	27.03	18.90
Movement LOS	C	C	C	C	C	C	C	D	B	C	C	B
d_A, Approach Delay [s/veh]	22.14			28.16			32.38			23.89		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.36											
Intersection LOS	C											
Intersection V/C	0.656											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.609

Intersection Setup

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	70.00	100.00	100.00	50.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Base Volume Input [veh/h]	36	308	19	73	552	81	103	250	78	21	106	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.80	4.50	0.00	1.40	3.60	2.50	0.00	1.20	2.60	9.50	4.70	14.30
Growth Rate	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	400	25	95	718	105	134	325	101	27	138	46
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Total 15-Minute Volume [veh/h]	13	108	7	26	193	28	35	84	26	7	36	12
Total Analysis Volume [veh/h]	51	430	27	102	773	113	138	336	104	28	143	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	8	30	0	8	30	0	0	20	0	0	20	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	11	35	0	11	35	0	0	49	0	0	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	53	42	42	53	44	44	32	32	20
g / C, Green / Cycle	0.44	0.35	0.35	0.44	0.36	0.36	0.26	0.26	0.17
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.13	0.09	0.22	0.07	0.08	0.24	0.13
s, saturation flow rate [veh/h]	842	1818	1781	1076	3492	1576	1810	1802	1737
c, Capacity [veh/h]	331	643	630	471	1269	573	480	478	289
d1, Uniform Delay [s]	21.52	28.69	28.71	20.42	31.23	26.19	35.07	42.86	47.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.20	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.99	1.55	1.60	1.05	2.18	0.77	0.33	13.09	8.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

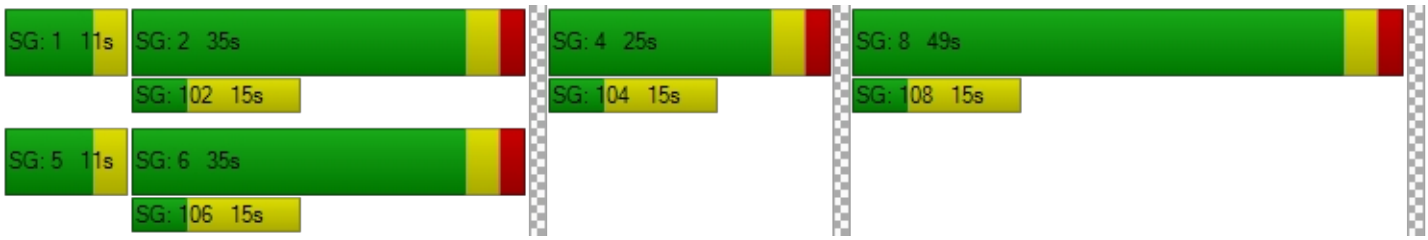
X, volume / capacity	0.15	0.36	0.36	0.22	0.61	0.20	0.29	0.92	0.75
d, Delay for Lane Group [s/veh]	22.51	30.24	30.31	21.47	33.41	26.96	35.40	55.95	55.77
Lane Group LOS	C	C	C	C	C	C	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	0.91	5.20	5.12	1.83	9.48	2.35	3.27	14.32	6.86
50th-Percentile Queue Length [ft]	22.84	129.88	128.05	45.80	236.94	58.81	81.84	358.09	171.47
95th-Percentile Queue Length [veh]	1.64	8.93	8.83	3.30	14.53	4.23	5.89	20.53	11.15
95th-Percentile Queue Length [ft]	41.11	223.33	220.84	82.44	363.17	105.87	147.31	513.26	278.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.51	30.27	30.31	21.47	33.41	26.96	35.40	55.95	55.95	55.77	55.77	55.77
Movement LOS	C	C	C	C	C	C	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	29.50			31.44			51.05			55.77		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	38.27											
Intersection LOS	D											
Intersection V/C	0.609											

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: 40 - 19th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	54.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	113.00	200.00	100.00	100.00	250.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Base Volume Input [veh/h]	60	323	120	107	655	203	142	753	42	103	350	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.70	0.80	0.90	2.30	3.90	3.50	1.30	0.00	1.00	2.80	0.00
Growth Rate	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	85	455	169	151	924	286	200	1062	59	145	494	86
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	22	119	44	39	241	75	52	277	15	38	129	22
Total Analysis Volume [veh/h]	89	475	176	158	964	298	209	1108	62	151	515	90
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	84.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups			2,7			3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	5	15	15	5	15	15	5	15	0	5	15	15
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	15	59	59	26	70	70	22	81	0	14	73	73
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	3.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	1.00	1.00	3.00	3.00	1.00	3.00	3.00	1.00	3.00	3.00
g_i, Effective Green Time [s]	12	54	70	23	65	102	19	76	76	11	68	118
g / C, Green / Cycle	0.07	0.30	0.39	0.13	0.36	0.57	0.11	0.42	0.42	0.06	0.38	0.66
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.11	0.09	0.27	0.19	0.08	0.31	0.32	0.04	0.15	0.06
s, saturation flow rate [veh/h]	1440	3522	1602	1793	3536	1554	2702	1876	1841	3479	3519	1615
c, Capacity [veh/h]	120	1057	623	229	1277	881	295	792	777	213	1329	1059
d1, Uniform Delay [s]	85.51	50.97	37.76	75.08	50.50	20.91	79.99	43.82	43.88	82.94	40.82	11.31
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.45	1.38	1.13	15.68	4.18	1.04	13.42	6.28	6.46	18.20	0.85	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

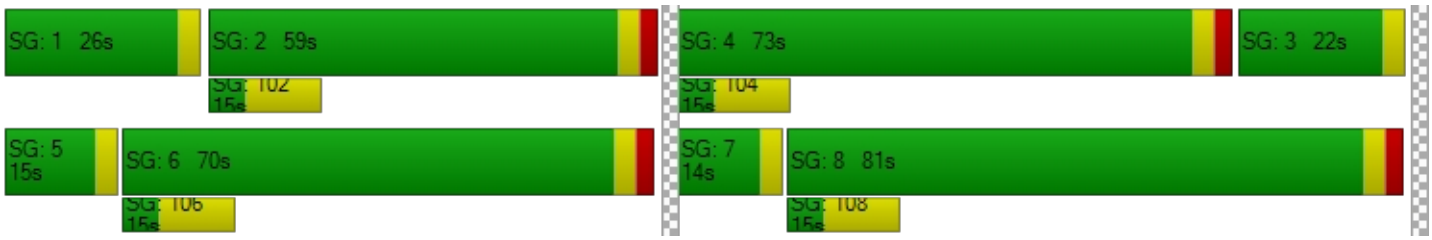
X, volume / capacity	0.74	0.45	0.28	0.69	0.75	0.34	0.71	0.74	0.75	0.71	0.39	0.09
d, Delay for Lane Group [s/veh]	118.96	52.36	38.89	90.77	54.69	21.95	93.41	50.09	50.35	101.14	41.67	11.47
Lane Group LOS	F	D	D	F	D	C	F	D	D	F	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	5.31	9.02	5.67	8.05	20.00	7.18	5.35	23.74	23.44	4.02	8.67	1.41
50th-Percentile Queue Length [ft]	132.71	225.48	141.68	201.37	499.96	179.49	133.80	593.45	586.07	100.38	216.80	35.33
95th-Percentile Queue Length [veh]	9.09	13.94	9.57	12.71	27.33	11.57	9.15	31.73	31.38	7.23	13.50	2.54
95th-Percentile Queue Length [ft]	227.17	348.62	239.29	317.73	683.31	289.35	228.64	793.21	784.59	180.68	337.54	63.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	118.96	52.36	38.89	90.77	54.69	21.95	93.41	50.21	50.35	101.14	41.67	11.47
Movement LOS	F	D	D	F	D	C	F	D	D	F	D	B
d_A, Approach Delay [s/veh]	57.16			51.83			56.76			49.95		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	54.00											
Intersection LOS	D											
Intersection V/C	0.760											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: 41 - 7th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.390

Intersection Setup

Name	7th Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	7th Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	169	219	118	302	233	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	3.60	1.70	3.50	3.00	3.40
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	226	293	158	405	312	79
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Total 15-Minute Volume [veh/h]	57	74	40	102	79	20
Total Analysis Volume [veh/h]	228	296	160	409	315	80
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal group	1	6	3	8	4	0
Auxiliary Signal Groups		3,6				
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	5	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	2.0	2.0	2.0	2.0	2.0	0.0
Split [s]	24	24	16	36	20	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	No	Yes	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	28	12	39	39	22	22
g / C, Green / Cycle	0.19	0.47	0.20	0.65	0.65	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.14	0.21	0.10	0.14	0.12	0.12	0.13
s, saturation flow rate [veh/h]	1590	1403	1601	1652	1503	1660	1549
c, Capacity [veh/h]	297	652	312	1183	972	612	571
d1, Uniform Delay [s]	23.16	10.89	21.61	4.35	4.26	13.58	13.71
k, delay calibration	0.11	0.17	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.15	0.80	1.31	0.08	0.42	1.40	1.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

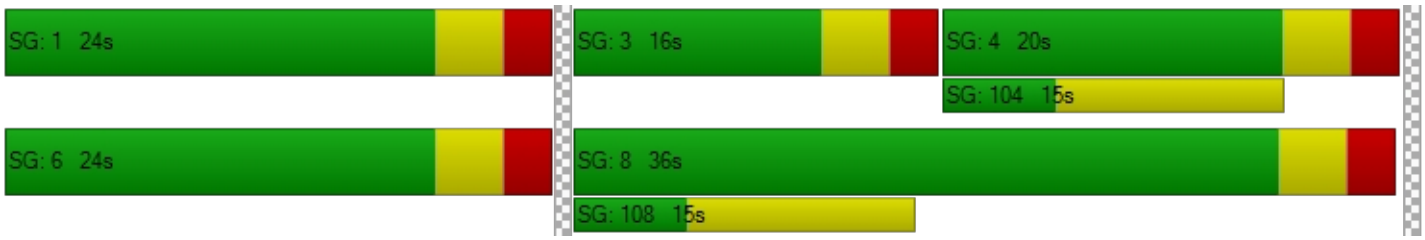
X, volume / capacity	0.77	0.45	0.51	0.19	0.18	0.32	0.35
d, Delay for Lane Group [s/veh]	27.31	11.69	22.92	4.43	4.68	14.98	15.37
Lane Group LOS	C	B	C	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.19	2.41	1.98	0.82	0.72	1.95	1.99
50th-Percentile Queue Length [ft]	79.70	60.19	49.54	20.55	18.02	48.77	49.83
95th-Percentile Queue Length [veh]	5.74	4.33	3.57	1.48	1.30	3.51	3.59
95th-Percentile Queue Length [ft]	143.47	108.34	89.18	37.00	32.43	87.79	89.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.31	11.69	22.92	4.54	15.13	15.37
Movement LOS	C	B	C	A	B	B
d_A, Approach Delay [s/veh]	18.48		9.71		15.18	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	14.25					
Intersection LOS	B					
Intersection V/C	0.390					

Sequence

Ring 1	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: 42 - 19th Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.57	1.57	1.57	1.00	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	39.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	109	0	0	109	0	0	11	0	0	11	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	104	104	104	104	104	6	6
g / C, Green / Cycle	0.84	0.84	0.84	0.84	0.84	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1296	1710	1710	1710	1710	1710	1710
c, Capacity [veh/h]	1124	1434	1434	1434	1434	112	112
d1, Uniform Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d, Delay for Lane Group [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lane Group LOS	A	A	A	A	A	A	A
Critical Lane Group	No	No	No	No	No	No	No
50th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS	A	A	A		A	A	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 45: 43 - 19th Avenue / Koch Street

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name				19th Avenue								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	160.00	100.00	100.00	330.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name				19th Avenue								
Base Volume Input [veh/h]	10	447	26	42	687	18	27	53	94	27	16	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.00	1.70	3.80	0.00	1.60	0.00	3.70	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	16	711	41	67	1092	29	43	84	149	43	25	29
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	4	187	11	18	288	8	12	23	40	11	7	8
Total Analysis Volume [veh/h]	17	750	43	71	1151	31	47	91	162	45	26	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	73.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	67	0	0	67	0	0	23	0	0	23	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	62	62	62	62	62	62	18	18
g / C, Green / Cycle	0.69	0.69	0.69	0.69	0.69	0.69	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.04	0.21	0.21	0.10	0.32	0.32	0.18	0.11
s, saturation flow rate [veh/h]	438	1868	1833	695	1870	1853	1696	957
c, Capacity [veh/h]	309	1295	1270	487	1296	1284	378	245
d1, Uniform Delay [s]	10.63	5.40	5.40	8.61	6.21	6.22	35.20	31.33
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.31	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	0.62	0.63	0.63	1.17	1.18	10.17	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.31	0.31	0.15	0.46	0.46	0.79	0.42
d, Delay for Lane Group [s/veh]	10.97	6.02	6.03	9.24	7.38	7.40	45.38	32.45
Lane Group LOS	B	A	A	A	A	A	D	C
Critical Lane Group	No	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	0.19	2.65	2.61	0.68	4.57	4.54	7.34	1.99
50th-Percentile Queue Length [ft]	4.71	66.37	65.26	16.88	114.29	113.46	183.44	49.85
95th-Percentile Queue Length [veh]	0.34	4.78	4.70	1.22	8.08	8.03	11.78	3.59
95th-Percentile Queue Length [ft]	8.48	119.46	117.47	30.38	201.95	200.81	294.50	89.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.97	6.02	6.03	9.24	7.39	7.40	45.38	45.38	45.38	32.45	32.45	32.45
Movement LOS	B	A	A	A	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	6.13			7.49			45.38			32.45		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	12.69											
Intersection LOS	B											
Intersection V/C	0.495											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 46: 44 - 19th Avenue / College Street

Control Type:	Signalized	Delay (sec / veh):	30.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	19th Avenue						College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	450.00	100.00	100.00	330.00	100.00	100.00	300.00	100.00	300.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue						College Street			College Street		
Base Volume Input [veh/h]	120	407	88	168	529	33	67	329	218	63	150	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	1.00	0.00	0.60	1.00	3.00	1.50	0.00	0.00	0.00	1.30	5.70
Growth Rate	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	185	627	136	259	815	51	103	507	336	97	231	82
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	49	165	36	68	215	13	27	134	89	26	61	22
Total Analysis Volume [veh/h]	195	661	143	273	859	54	109	535	354	102	244	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	38.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									8			4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
Split [s]	10	26	0	13	29	0	13	40	40	11	38	38
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	42	29	29	42	32	32	38	28	28	38	28	28
g / C, Green / Cycle	0.47	0.32	0.32	0.47	0.35	0.35	0.42	0.31	0.31	0.42	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.23	0.22	0.22	0.28	0.25	0.25	0.09	0.28	0.22	0.10	0.13	0.06
s, saturation flow rate [veh/h]	842	1881	1767	977	1881	1842	1276	1900	1615	1072	1876	1528
c, Capacity [veh/h]	373	603	566	434	666	652	551	599	509	349	583	475
d1, Uniform Delay [s]	17.75	26.64	26.64	18.31	24.88	24.89	16.37	29.36	27.01	19.15	24.58	22.66
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.26	0.22	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.15	6.28	6.67	6.74	5.84	5.98	0.43	9.34	1.76	0.46	0.48	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.69	0.69	0.63	0.69	0.69	0.20	0.89	0.69	0.29	0.42	0.18
d, Delay for Lane Group [s/veh]	22.91	32.92	33.32	25.05	30.72	30.86	16.80	38.70	28.77	19.61	25.06	22.84
Lane Group LOS	C	C	C	C	C	C	B	D	C	B	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.83	8.54	8.08	4.18	9.17	9.02	1.40	12.16	6.71	1.29	4.10	1.33
50th-Percentile Queue Length [ft]	70.63	213.55	202.10	104.58	229.28	225.43	35.12	304.04	167.66	32.29	102.58	33.29
95th-Percentile Queue Length [veh]	5.09	13.34	12.75	7.53	14.14	13.94	2.53	17.88	10.95	2.33	7.39	2.40
95th-Percentile Queue Length [ft]	127.13	333.38	318.67	188.24	353.45	348.54	63.21	447.02	273.83	58.13	184.64	59.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.91	33.07	33.32	25.05	30.79	30.86	16.80	38.70	28.77	19.61	25.06	22.84
Movement LOS	C	C	C	C	C	C	B	D	C	B	C	C
d_A, Approach Delay [s/veh]	31.12			29.47			32.79			23.33		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	30.11											
Intersection LOS	C											
Intersection V/C	0.639											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 47: 45 - 19th Avenue / Graf Street

Control Type:	Signalized	Delay (sec / veh):	66.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

Intersection Setup

Name	19th Avenue			19th Avenue			Graf Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	400.00	380.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

volumes

Name	19th Avenue			19th Avenue			Graf Street					
Base Volume Input [veh/h]	22	502	110	297	180	14	45	27	2	103	20	310
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.60	0.00	0.00	5.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.79	1.79	1.00	1.00	1.79	1.79	1.79	1.00	1.79	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	899	110	297	322	25	81	27	4	103	20	310
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	237	30	81	85	7	22	7	1	28	5	84
Total Analysis Volume [veh/h]	41	948	120	323	340	26	88	29	4	112	22	337
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	59	0	12	71	0	0	29	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	54	54	66	66	66	24	24	24	24
g / C, Green / Cycle	0.54	0.54	0.66	0.66	0.66	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.04	0.58	0.44	0.19	0.02	0.08	0.02	0.08	0.22
s, saturation flow rate [veh/h]	1058	1852	730	1801	1615	1039	1860	1398	1630
c, Capacity [veh/h]	539	1000	304	1189	1066	84	446	361	391
d1, Uniform Delay [s]	16.21	23.00	41.05	7.12	5.87	49.92	29.40	34.22	37.04
k, delay calibration	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	48.43	69.06	0.13	0.01	111.22	0.32	2.23	28.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	1.07	1.06	0.29	0.02	1.05	0.07	0.31	0.92
d, Delay for Lane Group [s/veh]	16.27	71.43	110.11	7.25	5.88	161.13	29.72	36.46	65.88
Lane Group LOS	B	F	F	A	A	F	C	D	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.55	34.96	8.23	2.78	0.18	4.69	0.65	2.56	11.53
50th-Percentile Queue Length [ft]	13.68	874.09	205.74	69.57	4.40	117.34	16.31	63.90	288.15
95th-Percentile Queue Length [veh]	0.99	47.11	13.50	5.01	0.32	8.42	1.17	4.60	17.09
95th-Percentile Queue Length [ft]	24.63	1177.75	337.58	125.22	7.92	210.51	29.35	115.02	427.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.27	71.43	71.43	110.11	7.25	5.88	161.13	29.72	29.72	36.46	65.88	65.88
Movement LOS	B	E	E	F	A	A	F	C	C	D	E	E
d_A, Approach Delay [s/veh]	69.39			55.49			125.30			58.88		
Approach LOS	E			E			F			E		
d_I, Intersection Delay [s/veh]	66.15											
Intersection LOS	E											
Intersection V/C	0.875											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 49: 47 - Flanders Mill Road / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.143

Intersection Setup

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Base Volume Input [veh/h]	30	101	137	84	87	111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.20	4.80	3.30	4.50
Growth Rate	1.50	1.50	1.50	1.50	1.50	1.50
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	152	206	126	131	167
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	12	41	54	33	34	44
Total Analysis Volume [veh/h]	49	165	215	131	137	174
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.22	0.00	0.00	0.11	0.00
d_M, Delay for Movement [s/veh]	18.84	13.09	0.00	0.00	8.37	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.63	1.63	0.00	0.00	1.03	1.03
95th-Percentile Queue Length [ft]	40.72	40.72	0.00	0.00	25.83	25.83
d_A, Approach Delay [s/veh]	14.41		0.00		3.69	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	4.86					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 50: 48 - Davis Lane / Baxter Lane

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	138	85	41	17	168	84	57	295	70	25	205	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	128	62	26	254	127	86	445	106	38	310	18
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0900	1.0900	1.0900	1.0900	1.0900	1.0900	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	38	18	8	75	38	23	121	29	10	84	5
Total Analysis Volume [veh/h]	246	152	73	31	301	150	93	484	115	41	337	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	2	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	5	0	5	0	0	5	5	0	5	0
Maximum Green [s]	0	30	30	0	30	0	0	30	30	0	30	0
Amber [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	0	34	34	0	34	0	0	41	41	0	41	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	25	25	25	25	25
g / C, Green / Cycle	0.53	0.53	0.53	0.53	0.53	0.53	0.33	0.33	0.33	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.26	0.04	0.05	0.02	0.12	0.13	0.09	0.25	0.07	0.04	0.19
s, saturation flow rate [veh/h]	954	3618	1615	1255	1900	1692	1041	1900	1615	926	1881
c, Capacity [veh/h]	513	1933	863	704	1015	904	255	631	537	171	625
d1, Uniform Delay [s]	16.02	8.48	8.51	10.20	9.28	9.31	29.58	22.44	18.01	33.13	20.64
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.19	0.08	0.19	0.12	0.53	0.62	0.88	1.99	0.20	0.71	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

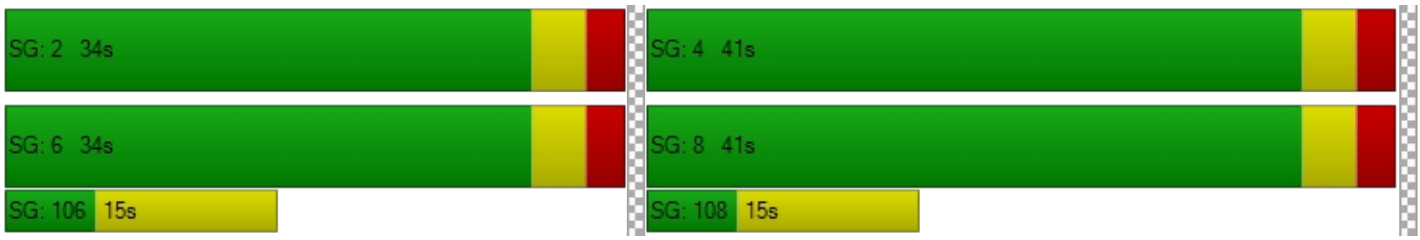
X, volume / capacity	0.48	0.08	0.08	0.04	0.23	0.24	0.37	0.77	0.21	0.24	0.57
d, Delay for Lane Group [s/veh]	19.21	8.56	8.70	10.32	9.81	9.94	30.45	24.43	18.20	33.84	21.46
Lane Group LOS	B	A	A	B	A	A	C	C	B	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	3.38	0.56	0.57	0.27	1.98	1.84	1.57	7.52	1.40	0.73	5.01
50th-Percentile Queue Length [ft]	84.58	14.03	14.16	6.80	49.46	45.94	39.29	187.95	34.91	18.30	125.18
95th-Percentile Queue Length [veh]	6.09	1.01	1.02	0.49	3.56	3.31	2.83	12.01	2.51	1.32	8.68
95th-Percentile Queue Length [ft]	152.25	25.25	25.49	12.24	89.03	82.69	70.72	300.36	62.83	32.94	216.93

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.21	8.56	8.70	10.32	9.84	9.94	30.45	24.43	18.20	33.84	21.46	21.46
Movement LOS	B	A	A	B	A	A	C	C	B	C	C	C
d_A, Approach Delay [s/veh]	14.15			9.90			24.20			22.74		
Approach LOS	B			A			C			C		
d_I, Intersection Delay [s/veh]	18.22											
Intersection LOS	B											
Intersection V/C	0.512											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: 49 - Laurel Parkway / Durston Road

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.449

Intersection Setup

Name	Laurel Parkway		Durston Road		Durston Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	35.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Laurel Parkway		Durston Road		Durston Road	
Base Volume Input [veh/h]	187	13	5	241	170	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.40	3.50	0.00
Growth Rate	1.81	1.81	1.81	1.81	1.81	1.81
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	338	24	9	436	308	62
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	92	7	2	114	80	16
Total Analysis Volume [veh/h]	367	26	9	455	321	65
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	42	0	0	48	48	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	37	37	43	43
g / C, Green / Cycle	0.41	0.41	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.20	0.02	0.25	0.22
s, saturation flow rate [veh/h]	1810	1615	1882	1783
c, Capacity [veh/h]	744	664	940	852
d1, Uniform Delay [s]	19.58	15.86	16.26	15.66
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.33	0.11	1.85	1.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

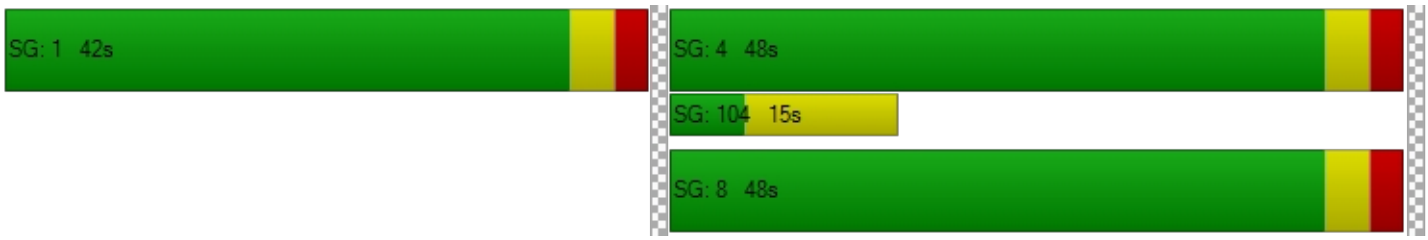
X, volume / capacity	0.49	0.04	0.49	0.45
d, Delay for Lane Group [s/veh]	21.91	15.97	18.11	17.40
Lane Group LOS	C	B	B	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	5.93	0.33	6.74	5.42
50th-Percentile Queue Length [ft]	148.29	8.33	168.40	135.57
95th-Percentile Queue Length [veh]	9.93	0.60	10.99	9.24
95th-Percentile Queue Length [ft]	248.15	14.99	274.81	231.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.91	15.97	18.11	18.11	17.40	17.40
Movement LOS	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	21.52		18.11		17.40	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	18.97					
Intersection LOS	B					
Intersection V/C	0.449					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 52: 50 - Cottonwood Road / Durston Road

Control Type:	Signalized	Delay (sec / veh):	89.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Base Volume Input [veh/h]	32	6	176	16	13	1	2	307	163	168	162	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.10	0.00	3.90	0.00	0.00	0.00	0.00	0.30	0.00	1.80	3.80	0.00
Growth Rate	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	23	678	62	50	4	8	1182	628	647	624	31
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	33	6	184	17	14	1	2	308	164	169	163	8
Total Analysis Volume [veh/h]	134	25	737	67	54	4	8	1233	655	675	651	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups			2,7						5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	19	26	26	8	15	0	70	83	83	33	46	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00
g_i, Effective Green Time [s]	29	21	56	29	10	10	111	78	99	111	106
g / C, Green / Cycle	0.19	0.14	0.37	0.19	0.07	0.07	0.74	0.52	0.66	0.74	0.71
(v / s)_i Volume / Saturation Flow Rate	0.09	0.01	0.47	0.04	0.02	0.02	0.01	0.65	0.41	0.48	0.38
s, saturation flow rate [veh/h]	1576	3618	1554	1491	1900	1855	793	1894	1615	1397	1815
c, Capacity [veh/h]	362	510	582	396	129	126	516	983	1064	970	1288
d1, Uniform Delay [s]	52.69	55.71	46.91	50.53	66.19	66.20	7.69	36.09	14.68	23.64	10.16
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50	0.11	0.50	0.50	0.50	0.12
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.89	0.18	133.07	0.92	0.88	4.22	0.01	122.98	2.67	4.12	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

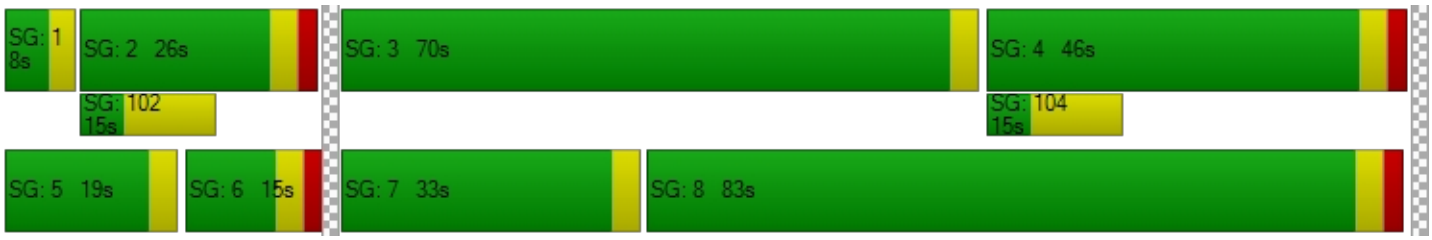
X, volume / capacity	0.37	0.05	1.27	0.17	0.23	0.23	0.02	1.25	0.62	0.70	0.53
d, Delay for Lane Group [s/veh]	55.58	55.89	179.98	51.45	67.06	70.43	7.71	159.06	17.35	27.76	10.54
Lane Group LOS	E	E	F	D	E	E	A	F	B	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	4.74	0.43	43.10	2.24	1.09	1.20	0.07	68.58	13.25	9.79	10.21
50th-Percentile Queue Length [ft]	118.61	10.68	1077.55	55.94	27.35	30.11	1.64	1714.48	331.16	244.67	255.28
95th-Percentile Queue Length [veh]	8.32	0.77	62.56	4.03	1.97	2.17	0.12	97.05	19.22	14.92	15.45
95th-Percentile Queue Length [ft]	207.92	19.23	1563.99	100.69	49.24	54.20	2.96	2426.36	480.38	372.93	386.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.58	55.89	179.98	51.45	68.62	70.43	7.71	159.06	17.35	27.76	10.54	10.54
Movement LOS	E	E	F	D	E	E	A	F	B	C	B	B
d_A, Approach Delay [s/veh]	157.92			59.48			109.47			19.10		
Approach LOS	F			E			F			B		
d_I, Intersection Delay [s/veh]	89.45											
Intersection LOS	F											
Intersection V/C	0.857											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 55: 53 - Fowler Avenue / Durston Road

Control Type:	Two-way stop	Delay (sec / veh):	30.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.097

Intersection Setup

Name	Fowler Avenue		Durston Road		Durston Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Durston Road		Durston Road	
Base Volume Input [veh/h]	8	20	422	1	2	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.10
Growth Rate	1.85	1.85	1.85	1.85	1.85	1.85
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	37	781	2	4	509
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	4	10	204	1	1	133
Total Analysis Volume [veh/h]	16	40	815	2	4	531
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.11	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	29.99	17.73	0.00	0.00	9.41	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	0.74	0.74	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft]	18.48	18.48	0.00	0.00	0.37	0.00
d_A, Approach Delay [s/veh]	21.23		0.00		0.07	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.87					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 56: 54 - Cottonwood Road / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Pocket Length [ft]	265.00	100.00	100.00	210.00	100.00	210.00	100.00	100.00	100.00	50.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	6	199	32	21	313	12	17	12	5	50	5	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	0.30	8.30	5.90	0.00	0.00	0.00	0.00	0.00
Growth Rate	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	1126	181	119	1772	68	96	68	28	283	28	68
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	306	49	32	482	18	26	18	8	77	8	18
Total Analysis Volume [veh/h]	37	1224	197	129	1926	74	104	74	30	308	30	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	70	0	12	74	0	0	38	0	0	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	77	69	69	77	70	70	33	33	33	33
g / C, Green / Cycle	0.64	0.57	0.57	0.64	0.59	0.59	0.28	0.28	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.12	0.39	0.39	0.26	0.53	0.53	0.08	0.06	0.23	0.06
s, saturation flow rate [veh/h]	314	1863	1774	502	1894	1870	1238	1808	1311	1688
c, Capacity [veh/h]	187	1065	1014	304	1112	1097	321	497	341	464
d1, Uniform Delay [s]	24.32	18.02	18.15	15.48	21.70	22.02	40.78	33.46	48.27	33.61
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.33	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.36	3.50	3.81	4.28	11.56	12.78	0.58	0.21	21.75	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.68	0.69	0.42	0.90	0.91	0.32	0.21	0.90	0.22
d, Delay for Lane Group [s/veh]	26.68	21.52	21.96	19.76	33.26	34.81	41.35	33.67	70.02	33.85
Lane Group LOS	C	C	C	B	C	C	D	C	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.46	14.50	14.15	1.62	26.62	27.29	2.71	2.38	11.44	2.39
50th-Percentile Queue Length [ft]	11.62	362.60	353.84	40.51	665.61	682.30	67.76	59.43	285.94	59.75
95th-Percentile Queue Length [veh]	0.84	20.75	20.32	2.92	35.09	35.86	4.88	4.28	16.98	4.30
95th-Percentile Queue Length [ft]	20.92	518.75	508.09	72.91	877.16	896.49	121.96	106.97	424.61	107.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.68	21.70	21.96	19.76	34.01	34.81	41.35	33.67	33.67	70.02	33.85	33.85
Movement LOS	C	C	C	B	C	C	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	21.86			33.17			37.51			60.89		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	32.18											
Intersection LOS	C											
Intersection V/C	0.778											

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 58: 55 - 19th Avenue / Baxter Lane

Control Type:	Signalized	Delay (sec / veh):	71.7
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.964

Intersection Setup

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	325.00	100.00	100.00	300.00	100.00	100.00	245.00	100.00	100.00	150.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	75	342	48	120	986	63	117	214	179	60	134	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.50	2.10	1.60	2.10	0.00	0.90	1.90	1.70	6.70	6.00	2.20
Growth Rate	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	561	79	197	1617	103	192	351	294	98	220	75
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	32	148	21	52	426	27	50	92	77	26	57	20
Total Analysis Volume [veh/h]	130	591	83	208	1705	109	200	366	307	102	230	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	145
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	36.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	4
Auxiliary Signal Groups												4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	8	20	0	60	72	0	12	57	0	8	53	53
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	3.00	3.00
g_i, Effective Green Time [s]	75	60	60	75	67	67	60	52	60	48	48
g / C, Green / Cycle	0.52	0.41	0.41	0.52	0.46	0.46	0.41	0.36	0.41	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.35	0.19	0.19	0.22	0.49	0.50	0.16	0.39	0.12	0.13	0.05
s, saturation flow rate [veh/h]	376	1836	1758	939	1861	1822	1264	1726	825	1792	1580
c, Capacity [veh/h]	150	761	728	452	860	842	483	619	154	593	523
d1, Uniform Delay [s]	41.79	30.60	30.61	21.13	39.00	39.00	29.53	46.50	36.46	37.22	34.13
k, delay calibration	0.50	0.50	0.50	0.15	0.50	0.50	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.24	1.94	2.03	1.02	46.18	53.94	2.60	62.24	4.86	0.41	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.45	0.45	0.46	1.05	1.08	0.41	1.09	0.66	0.39	0.15
d, Delay for Lane Group [s/veh]	86.03	32.54	32.64	22.15	85.18	92.94	32.13	108.74	41.32	37.64	34.26
Lane Group LOS	F	C	C	C	F	F	C	F	D	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	4.17	9.17	8.81	4.03	41.05	42.02	5.02	32.84	2.46	6.42	1.99
50th-Percentile Queue Length [ft]	104.31	229.17	220.21	100.69	1026.34	1050.40	125.38	821.06	61.42	160.42	49.83
95th-Percentile Queue Length [veh]	7.51	14.13	13.68	7.25	53.79	55.79	8.69	44.78	4.42	10.57	3.59
95th-Percentile Queue Length [ft]	187.76	353.30	341.90	181.24	1344.84	1394.84	217.19	1119.51	110.55	264.28	89.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	86.03	32.58	32.64	22.15	88.81	92.94	32.13	108.74	108.74	41.32	37.64	34.26
Movement LOS	F	C	C	C	F	F	C	F	F	D	D	C
d_A, Approach Delay [s/veh]	41.23			82.18			91.19			37.91		
Approach LOS	D			F			F			D		
d_I, Intersection Delay [s/veh]	71.66											
Intersection LOS	E											
Intersection V/C	0.964											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 59: 56 - 7th Avenue / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	143.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.186

Intersection Setup

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	80.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Base Volume Input [veh/h]	160	590	17	60	863	135	0	0	266	0	0	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	3.70	5.90	6.70	2.90	4.40	2.00	2.00	4.10	2.00	2.00	2.00
Growth Rate	1.45	1.45	1.45	1.45	1.45	1.45	1.00	1.00	1.45	1.00	1.00	1.45
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	232	856	25	87	1251	196	0	0	386	0	0	71
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	226	7	23	330	52	0	0	101	0	0	19
Total Analysis Volume [veh/h]	245	903	26	92	1319	207	0	0	403	0	0	77
Pedestrian Volume [ped/h]	0			0			3			2		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.59	0.01	0.00	0.13	0.01	0.00	0.00	0.00	1.19	0.00	0.00	0.14
d_M, Delay for Movement [s/veh]	25.30	0.00	0.00	10.91	0.00	0.00	0.00	0.00	143.47	0.00	0.00	12.74
Movement LOS	D	A	A	B	A	A			F			B
95th-Percentile Queue Length [veh]	3.67	0.00	0.00	0.45	0.00	0.00	0.00	0.00	16.86	0.00	0.00	0.49
95th-Percentile Queue Length [ft]	91.64	0.00	0.00	11.27	0.00	0.00	0.00	0.00	421.51	0.00	0.00	12.32
d_A, Approach Delay [s/veh]	5.28			0.62			143.47			12.74		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	20.17											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: 57 - 7th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	100.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	63	359	51	207	651	204	252	224	113	37	142	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.20	5.60	3.90	4.30	2.30	5.40	2.00	4.90	3.50	8.10	8.50	7.90
Growth Rate	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	513	73	296	931	292	360	320	162	53	203	127
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	144	20	83	261	82	96	85	43	14	55	35
Total Analysis Volume [veh/h]	101	574	82	331	1042	327	383	341	173	58	221	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			6,8			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	30	30	10	30	30	8	15	15	8	15	15
Maximum Green [s]	25	90	90	25	90	90	25	45	45	25	45	45
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	13	35	35	24	46	46	41	50	50	11	20	20
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	68	50	62	68	55	102	42	32	47	42	15	35
g / C, Green / Cycle	0.56	0.41	0.52	0.56	0.46	0.85	0.35	0.26	0.39	0.35	0.12	0.29
(v / s)_i Volume / Saturation Flow Rate	0.14	0.17	0.05	0.32	0.29	0.21	0.25	0.19	0.11	0.05	0.07	0.09
s, saturation flow rate [veh/h]	731	3426	1554	1034	3536	1532	1525	1811	1560	1117	3334	1497
c, Capacity [veh/h]	379	1419	806	572	1613	1302	555	479	608	317	417	437
d1, Uniform Delay [s]	16.00	24.73	14.70	15.60	25.15	1.72	32.47	39.96	25.13	27.89	49.20	33.13
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.32	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.72	0.86	0.25	4.24	2.01	0.46	4.51	1.97	1.17	0.27	1.05	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.40	0.10	0.58	0.65	0.25	0.69	0.71	0.28	0.18	0.53	0.32
d, Delay for Lane Group [s/veh]	17.72	25.59	14.95	19.84	27.16	2.18	36.98	41.93	26.31	28.17	50.25	33.55
Lane Group LOS	B	C	B	B	C	A	D	D	C	C	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.43	5.90	1.20	5.43	11.71	1.05	9.84	9.35	3.60	1.15	3.17	3.20
50th-Percentile Queue Length [ft]	35.67	147.50	29.88	135.72	292.66	26.17	245.91	233.68	89.88	28.72	79.28	80.06
95th-Percentile Queue Length [veh]	2.57	9.88	2.15	9.25	17.32	1.88	14.98	14.36	6.47	2.07	5.71	5.76
95th-Percentile Queue Length [ft]	64.21	247.08	53.79	231.25	432.94	47.11	374.50	359.03	161.79	51.69	142.70	144.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.72	25.59	14.95	19.84	27.16	2.18	36.98	41.93	26.31	28.17	50.25	33.55
Movement LOS	B	C	B	B	C	A	D	D	C	C	D	C
d_A, Approach Delay [s/veh]	23.39			20.93			36.80			41.65		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	27.49											
Intersection LOS	C											
Intersection V/C	0.589											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 61: 58 - 15th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	105.00	100.00	100.00	120.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	52	4	57	8	11	15	9	561	145	34	284	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	0.00	3.50	0.00	0.00	6.70	0.00	1.40	2.80	2.90	5.60	0.00
Growth Rate	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	7	106	15	20	28	17	1043	270	63	528	4
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	26	2	29	4	5	8	5	278	72	17	141	1
Total Analysis Volume [veh/h]	105	8	115	16	22	30	18	1111	288	67	562	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	0	70	0	0	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	32	32	32	32	48	48	48	48	48	48
g / C, Green / Cycle	0.35	0.35	0.35	0.35	0.54	0.54	0.54	0.54	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.01	0.03	0.02	0.38	0.39	0.18	0.16	0.16
s, saturation flow rate [veh/h]	1348	1631	1288	1724	858	1874	1743	381	1799	1795
c, Capacity [veh/h]	499	570	438	602	446	1011	941	162	971	968
d1, Uniform Delay [s]	23.19	20.61	23.74	19.65	15.12	15.49	15.63	33.63	11.32	11.32
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.12	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.96	0.87	0.16	0.28	0.04	1.00	1.19	1.68	0.16	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.22	0.04	0.09	0.04	0.71	0.72	0.41	0.29	0.29
d, Delay for Lane Group [s/veh]	24.15	21.48	23.90	19.93	15.16	16.49	16.82	35.32	11.49	11.49
Lane Group LOS	C	C	C	B	B	B	B	D	B	B
Critical Lane Group	Yes	No	No	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.76	1.92	0.26	0.76	0.22	10.38	9.93	1.44	2.95	2.95
50th-Percentile Queue Length [ft]	44.12	47.88	6.61	19.09	5.39	259.52	248.34	35.95	73.79	73.63
95th-Percentile Queue Length [veh]	3.18	3.45	0.48	1.37	0.39	15.66	15.10	2.59	5.31	5.30
95th-Percentile Queue Length [ft]	79.41	86.19	11.89	34.37	9.70	391.62	377.56	64.71	132.82	132.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.15	21.48	21.48	23.90	19.93	19.93	15.16	16.60	16.82	35.32	11.49	11.49
Movement LOS	C	C	C	C	B	B	B	B	B	D	B	B
d_A, Approach Delay [s/veh]	22.71			20.86			16.63			14.01		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	16.63											
Intersection LOS	B											
Intersection V/C	0.468											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 62: 59 - 27th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	427.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.769

Intersection Setup

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	18	54	51	23	46	29	40	358	29	15	218	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.10	1.90	2.00	0.00	0.00	0.00	0.00	1.40	0.00	6.70	7.30	3.60
Growth Rate	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	303	287	129	259	163	225	2012	163	84	1225	157
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	82	78	35	70	44	61	547	44	23	333	43
Total Analysis Volume [veh/h]	110	329	312	140	282	177	245	2187	177	91	1332	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	34	0	0	34	0	0	56	0	0	56	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	29	29	29	29	51	51	51	51	51
g / C, Green / Cycle	0.32	0.32	0.32	0.32	0.57	0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	1.18	0.20	1.55	0.11	2.22	1.07	0.64	0.43	0.44
s, saturation flow rate [veh/h]	372	1583	272	1615	370	1676	143	1771	1702
c, Capacity [veh/h]	170	510	141	520	262	950	80	1003	964
d1, Uniform Delay [s]	32.40	25.75	34.80	23.22	32.35	19.50	45.00	14.81	14.99
k, delay calibration	0.50	0.15	0.50	0.11	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	730.77	1.66	916.89	0.38	970.84	401.67	142.63	5.35	5.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

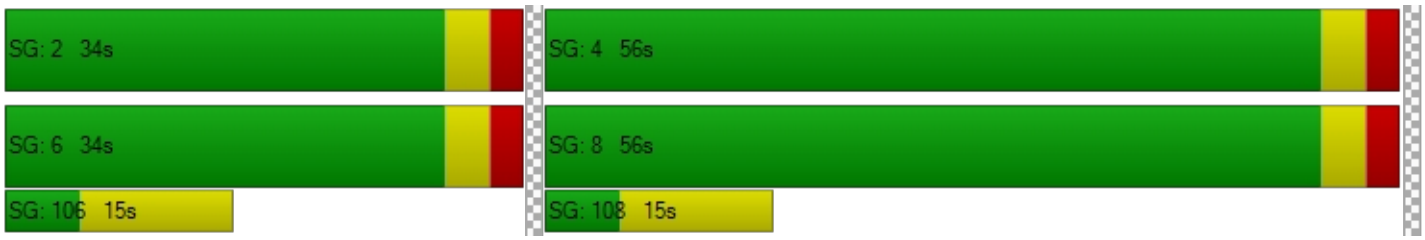
X, volume / capacity	2.59	0.61	3.00	0.34	3.14	1.88	1.14	0.76	0.77
d, Delay for Lane Group [s/veh]	763.17	27.40	951.69	23.60	1003.20	421.17	187.63	20.16	20.91
Lane Group LOS	F	C	F	C	F	F	F	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	38.21	5.70	38.99	2.85	76.33	123.38	4.94	12.09	12.06
50th-Percentile Queue Length [ft]	955.21	142.45	974.81	71.27	1908.20	3084.49	123.47	302.16	301.43
95th-Percentile Queue Length [veh]	65.37	9.61	67.03	5.13	132.81	198.91	8.89	17.79	17.75
95th-Percentile Queue Length [ft]	1634.16	240.32	1675.69	128.28	3320.36	4972.65	222.24	444.70	443.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	763.17	763.17	27.40	951.69	951.69	23.60	1003.20	574.23	421.17	187.63	20.48	20.91
Movement LOS	F	F	C	F	F	C	F	F	F	F	C	C
d_A, Approach Delay [s/veh]	457.50			677.44			604.13			30.07		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	427.42											
Intersection LOS	F											
Intersection V/C	3.769											

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: 61 - Rouse Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.574

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Pocket Length [ft]	210.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	190.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Base Volume Input [veh/h]	119	315	0	0	317	94	139	4	194	2	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.10	3.20	0.00	0.00	4.40	5.30	2.20	0.00	3.60	0.00	0.00	0.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	476	0	0	479	142	210	6	293	3	2	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	127	0	0	128	38	57	2	80	1	1	0
Total Analysis Volume [veh/h]	192	507	0	0	510	151	228	7	318	3	2	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	8	8	0	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	8	60	0	0	52	0	0	35	35	0	35	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No	No		No	
Maximum Recall	No	No			No			No	No		No	
Pedestrian Recall	No	No			No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	63	63	55	55	55	22	32	22
g / C, Green / Cycle	0.66	0.66	0.58	0.58	0.58	0.23	0.34	0.23
(v / s)_i Volume / Saturation Flow Rate	0.24	0.31	0.00	0.31	0.11	0.20	0.23	0.01
s, saturation flow rate [veh/h]	810	1657	816	1638	1380	1156	1403	445
c, Capacity [veh/h]	479	1096	385	946	797	344	475	164
d1, Uniform Delay [s]	9.40	7.84	0.00	12.32	9.52	35.73	26.89	29.29
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.17	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	1.40	0.00	2.20	0.53	3.83	7.33	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

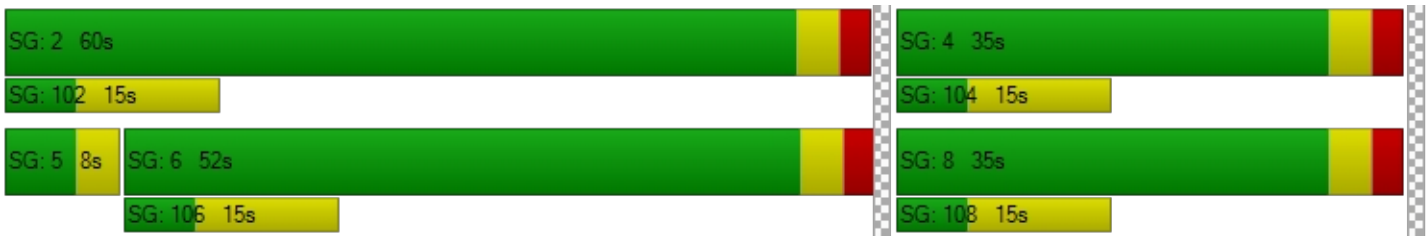
X, volume / capacity	0.40	0.46	0.00	0.54	0.19	0.68	0.67	0.03
d, Delay for Lane Group [s/veh]	11.90	9.24	0.00	14.52	10.05	39.56	34.22	29.36
Lane Group LOS	B	A	A	B	B	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.67	4.86	0.00	6.72	1.52	5.53	6.95	0.09
50th-Percentile Queue Length [ft]	41.76	121.50	0.00	167.95	38.05	138.35	173.78	2.26
95th-Percentile Queue Length [veh]	3.01	8.48	0.00	10.97	2.74	9.39	11.27	0.16
95th-Percentile Queue Length [ft]	75.16	211.88	0.00	274.22	68.50	234.79	281.87	4.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.90	9.24	9.24	0.00	14.52	10.05	39.56	39.56	34.22	29.36	29.36	29.36
Movement LOS	B	A	A	A	B	B	D	D	C	C	C	C
d_A, Approach Delay [s/veh]	9.97			13.50			36.49			29.36		
Approach LOS	A			B			D			C		
d_I, Intersection Delay [s/veh]	18.88											
Intersection LOS	B											
Intersection V/C	0.574											

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 65: 62 - 19th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	350.00	100.00	300.00	350.00	100.00	100.00	150.00	100.00	150.00	135.00	100.00	135.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	34	360	322	349	252	21	24	26	7	135	24	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	0.80	0.90	2.30	4.00	9.50	4.20	7.70	0.00	4.40	0.00	0.40
Growth Rate	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	641	573	621	449	37	43	46	12	240	43	463
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	16	167	149	162	117	10	12	13	3	63	11	121
Total Analysis Volume [veh/h]	64	669	598	648	469	39	47	50	13	250	45	483
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	135
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	69.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	11	63	0	37	89	0	0	35	0	0	35	35
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
g_i, Effective Green Time [s]	95	60	60	95	87	87	30	30	30	30	30	67
g / C, Green / Cycle	0.70	0.44	0.44	0.70	0.65	0.65	0.22	0.22	0.22	0.22	0.22	0.50
(v / s)_i Volume / Saturation Flow Rate	0.07	0.19	0.37	0.58	0.14	0.14	0.04	0.03	0.01	0.19	0.02	0.30
s, saturation flow rate [veh/h]	932	3589	1601	1115	1827	1778	1327	1764	1615	1318	1900	1609
c, Capacity [veh/h]	682	1588	708	766	1182	1150	303	392	359	297	422	802
d1, Uniform Delay [s]	6.42	25.80	33.51	14.89	9.79	9.79	46.08	42.02	41.16	55.35	41.82	24.27
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.32	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.82	11.82	11.12	0.42	0.44	0.23	0.14	0.04	16.93	0.11	3.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.42	0.84	0.85	0.22	0.22	0.15	0.13	0.04	0.84	0.11	0.60
d, Delay for Lane Group [s/veh]	6.69	26.62	45.32	26.01	10.21	10.23	46.31	42.17	41.21	72.28	41.93	27.62
Lane Group LOS	A	C	D	C	B	B	D	D	D	E	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.60	7.59	19.53	10.78	3.24	3.16	1.36	1.37	0.35	9.94	1.22	11.74
50th-Percentile Queue Length [ft]	14.95	189.81	488.30	269.46	80.88	78.90	34.05	34.21	8.71	248.45	30.61	293.48
95th-Percentile Queue Length [veh]	1.08	12.11	26.78	16.16	5.82	5.68	2.45	2.46	0.63	15.11	2.20	17.36
95th-Percentile Queue Length [ft]	26.92	302.78	669.50	404.07	145.59	142.02	61.29	61.57	15.68	377.71	55.09	433.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	6.69	26.62	45.32	26.01	10.22	10.23	46.31	42.17	41.21	72.28	41.93	27.62
Movement LOS	A	C	D	C	B	B	D	D	D	E	D	C
d_A, Approach Delay [s/veh]	34.07			19.07			43.83			42.80		
Approach LOS	C			B			D			D		
d_I, Intersection Delay [s/veh]	31.26											
Intersection LOS	C											
Intersection V/C	0.796											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 66: 63 - Willson Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	170.00	100.00	100.00	325.00	100.00	100.00	350.00	100.00	110.00	160.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Base Volume Input [veh/h]	390	331	107	80	117	73	85	283	94	90	405	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.40	2.10	0.90	3.80	3.40	0.00	1.20	0.70	1.10	3.30	1.20	1.30
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	374	121	90	132	82	96	320	106	102	458	172
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	117	100	32	24	35	22	26	85	28	27	122	46
Total Analysis Volume [veh/h]	470	398	129	96	141	87	102	341	113	109	488	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	20	20	8	20	20	8	43	0	19	54	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	36	28	28	36	15	25	44	36	36	44	36
g / C, Green / Cycle	0.40	0.32	0.32	0.40	0.17	0.28	0.49	0.39	0.39	0.49	0.40
(v / s)_i Volume / Saturation Flow Rate	0.31	0.21	0.08	0.09	0.08	0.05	0.11	0.18	0.07	0.10	0.37
s, saturation flow rate [veh/h]	1531	1861	1601	1090	1838	1615	900	1887	1597	1127	1791
c, Capacity [veh/h]	655	587	505	377	309	456	282	745	631	531	720
d1, Uniform Delay [s]	22.19	26.81	22.93	18.76	33.71	24.48	19.21	20.12	17.74	13.53	25.71
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.12	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.62	6.18	1.22	1.62	4.78	0.20	0.78	0.44	0.13	0.21	11.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.68	0.26	0.25	0.46	0.19	0.36	0.46	0.18	0.21	0.93
d, Delay for Lane Group [s/veh]	28.80	33.00	24.14	20.38	38.49	24.68	19.99	20.56	17.87	13.74	36.73
Lane Group LOS	C	C	C	C	D	C	B	C	B	B	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	8.90	8.21	2.17	1.40	3.15	1.41	1.14	5.19	1.51	1.19	15.15
50th-Percentile Queue Length [ft]	222.52	205.27	54.17	34.89	78.71	35.27	28.42	129.76	37.83	29.66	378.64
95th-Percentile Queue Length [veh]	13.79	12.91	3.90	2.51	5.67	2.54	2.05	8.93	2.72	2.14	21.53
95th-Percentile Queue Length [ft]	344.84	322.75	97.51	62.79	141.69	63.49	51.16	223.17	68.10	53.39	538.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.80	33.00	24.14	20.38	38.49	24.68	19.99	20.56	17.87	13.74	36.73	36.73
Movement LOS	C	C	C	C	D	C	B	C	B	B	D	D
d_A, Approach Delay [s/veh]	29.87			29.41			19.91			33.52		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	28.80											
Intersection LOS	C											
Intersection V/C	0.698											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

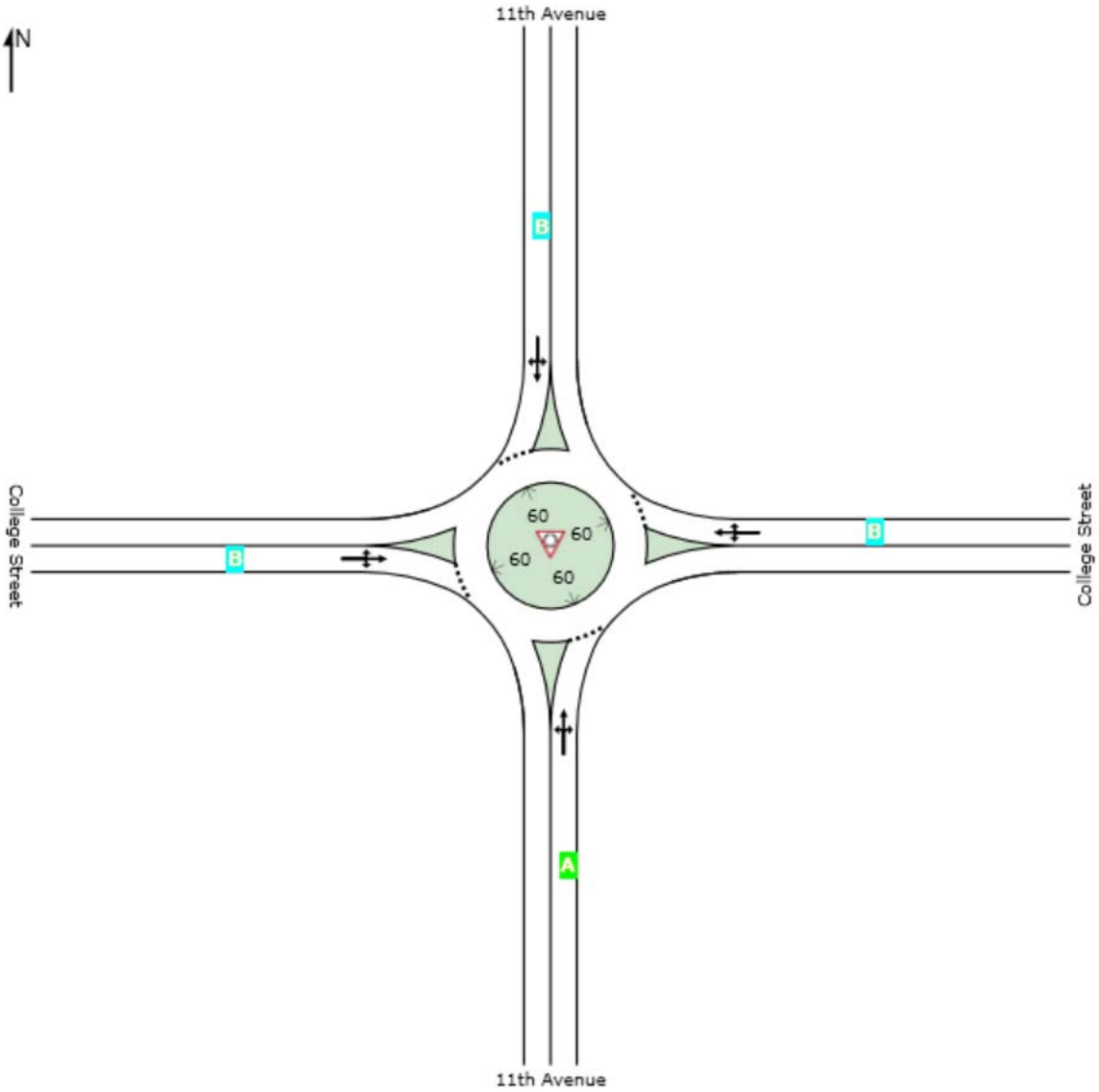
LEVEL OF SERVICE

Site: 11th Avenue/College Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	South	East	North	West	Intersection
LOS	A	B	B	B	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: 11th Avenue/College Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 11th Avenue											
3	L2	91	0.0	0.288	7.4	LOS A	1.0	26.2	0.50	0.49	23.2
8	T1	116	1.3	0.288	7.4	LOS A	1.0	26.2	0.50	0.49	23.0
18	R2	39	0.0	0.288	7.4	LOS A	1.0	26.2	0.50	0.49	22.6
Approach		245	0.6	0.288	7.4	LOS A	1.0	26.2	0.50	0.49	23.0
East: College Street											
1	L2	71	0.0	0.531	10.1	LOS B	2.9	72.6	0.52	0.46	22.8
6	T1	282	0.5	0.531	10.1	LOS B	2.9	72.6	0.52	0.46	22.6
16	R2	190	0.0	0.531	10.1	LOS B	2.9	72.6	0.52	0.46	22.2
Approach		544	0.3	0.531	10.1	LOS B	2.9	72.6	0.52	0.46	22.5
North: 11th Avenue											
7	L2	110	0.0	0.601	12.8	LOS B	3.7	92.8	0.65	0.72	22.1
4	T1	242	0.6	0.601	12.8	LOS B	3.7	92.8	0.65	0.72	21.9
14	R2	193	0.0	0.601	12.8	LOS B	3.7	92.8	0.65	0.72	21.5
Approach		545	0.3	0.601	12.8	LOS B	3.7	92.8	0.65	0.72	21.8
West: College Street											
5	L2	82	0.0	0.583	12.2	LOS B	3.4	86.7	0.62	0.67	22.3
2	T1	327	1.8	0.583	12.2	LOS B	3.4	86.7	0.62	0.67	22.1
12	R2	123	1.2	0.583	12.2	LOS B	3.4	86.7	0.62	0.67	21.7
Approach		532	1.4	0.583	12.2	LOS B	3.4	86.7	0.62	0.67	22.0
All Vehicles		1865	0.6	0.601	11.1	LOS B	3.7	92.8	0.58	0.60	22.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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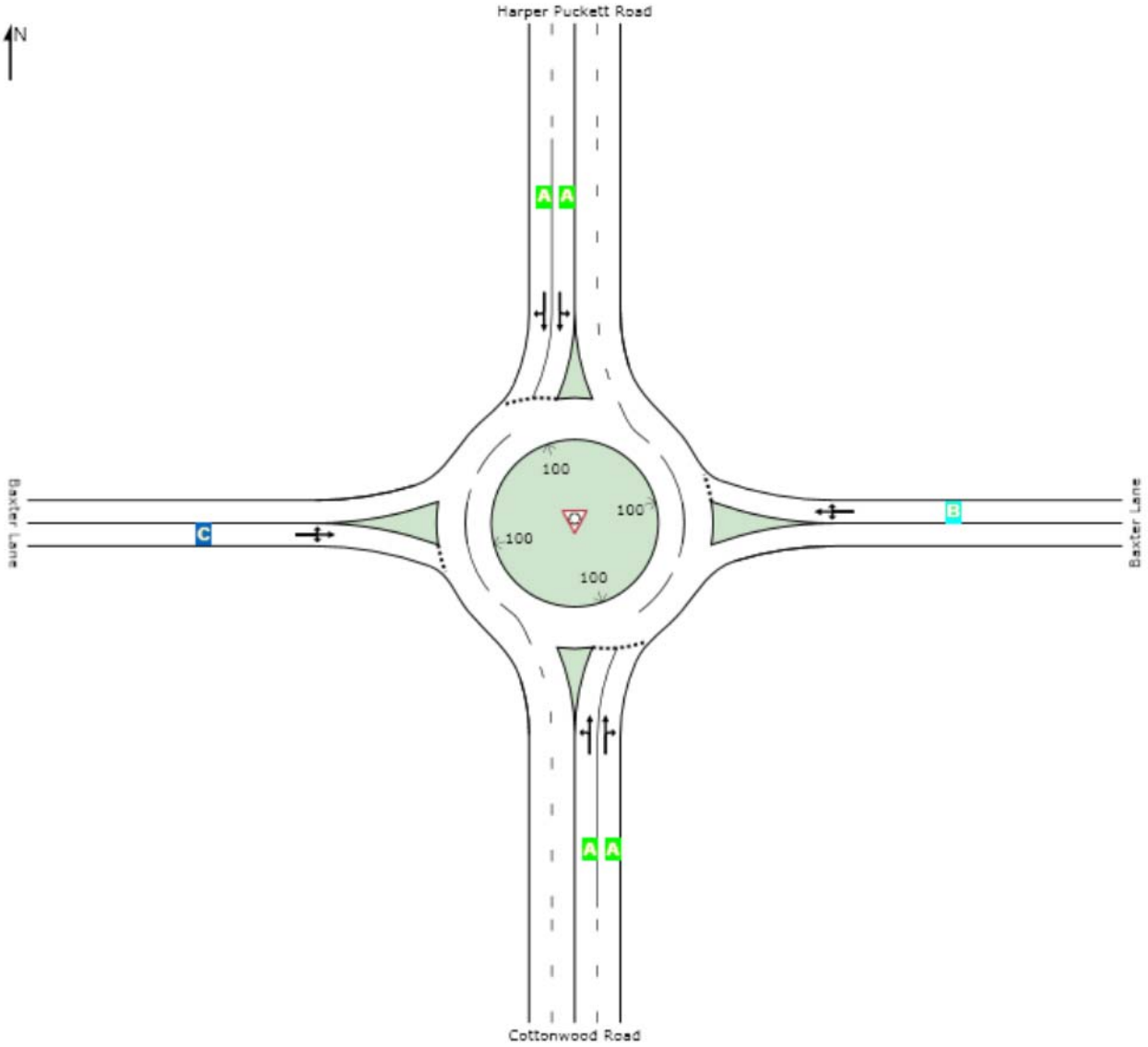
LEVEL OF SERVICE

Site: Harper Puckett Road/Baxter Lane - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	South	East	North	West	Intersection
LOS	A	B	A	C	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Harper Puckett Road/Baxter Lane - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cottonwood Road											
3	L2	191	0.0	0.320	8.8	LOS A	1.2	29.1	0.57	0.58	31.5
8	T1	41	0.0	0.320	8.8	LOS A	1.2	29.1	0.57	0.58	31.3
18	R2	270	0.0	0.370	9.7	LOS A	1.5	36.3	0.59	0.61	31.8
Approach		502	0.0	0.370	9.3	LOS A	1.5	36.3	0.58	0.60	31.6
East: Baxter Lane											
1	L2	185	0.0	0.621	12.2	LOS B	3.8	96.7	0.54	0.49	31.2
6	T1	398	3.7	0.621	12.2	LOS B	3.8	96.7	0.54	0.49	31.0
16	R2	52	7.1	0.621	12.2	LOS B	3.8	96.7	0.54	0.49	30.1
Approach		634	2.9	0.621	12.2	LOS B	3.8	96.7	0.54	0.49	31.0
North: Harper Puckett Road											
7	L2	219	5.3	0.331	9.8	LOS A	1.1	29.8	0.58	0.60	30.6
4	T1	114	0.0	0.263	8.3	LOS A	0.9	22.4	0.56	0.56	33.6
14	R2	69	0.0	0.263	8.3	LOS A	0.9	22.4	0.56	0.56	32.5
Approach		402	2.9	0.331	9.1	LOS A	1.1	29.8	0.57	0.58	31.7
West: Baxter Lane											
5	L2	48	0.0	0.803	22.7	LOS C	7.1	179.3	0.83	0.97	27.7
2	T1	446	1.7	0.803	22.7	LOS C	7.1	179.3	0.83	0.97	27.6
12	R2	203	0.0	0.803	22.7	LOS C	7.1	179.3	0.83	0.97	26.9
Approach		697	1.1	0.803	22.7	LOS C	7.1	179.3	0.83	0.97	27.4
All Vehicles		2235	1.7	0.803	14.3	LOS B	7.1	179.3	0.65	0.68	30.0

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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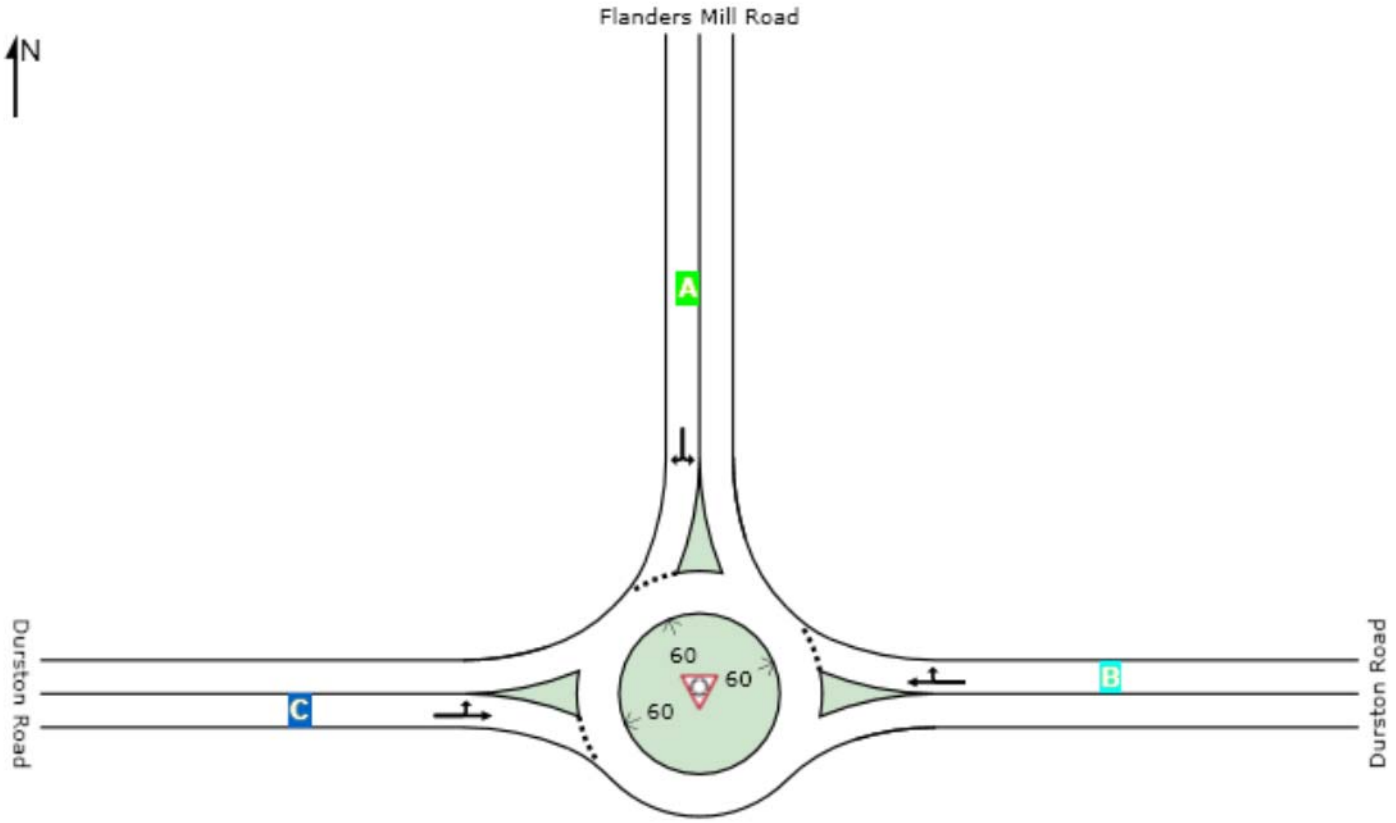
LEVEL OF SERVICE

Site: Flanders Mill Road/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	East	North	West	Intersection
LOS	B	A	C	B



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Flanders Mill Road/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Durston Road											
6	T1	600	2.3	0.605	11.1	LOS B	3.7	93.9	0.46	0.32	22.5
16	R2	71	0.0	0.605	11.1	LOS B	3.7	93.9	0.46	0.32	22.1
Approach		671	2.1	0.605	11.1	LOS B	3.7	93.9	0.46	0.32	22.5
North: Flanders Mill Road											
7	L2	117	1.5	0.386	9.6	LOS A	1.5	38.6	0.56	0.59	22.6
14	R2	178	6.1	0.386	9.6	LOS A	1.5	38.6	0.56	0.59	22.0
Approach		295	4.3	0.386	9.6	LOS A	1.5	38.6	0.56	0.59	22.2
West: Durston Road											
5	L2	163	1.1	0.790	17.6	LOS C	8.1	205.3	0.62	0.40	21.2
2	T1	747	1.9	0.790	17.6	LOS C	8.1	205.3	0.62	0.40	21.0
Approach		910	1.8	0.790	17.6	LOS C	8.1	205.3	0.62	0.40	21.0
All Vehicles		1876	2.3	0.790	14.0	LOS B	8.1	205.3	0.55	0.40	21.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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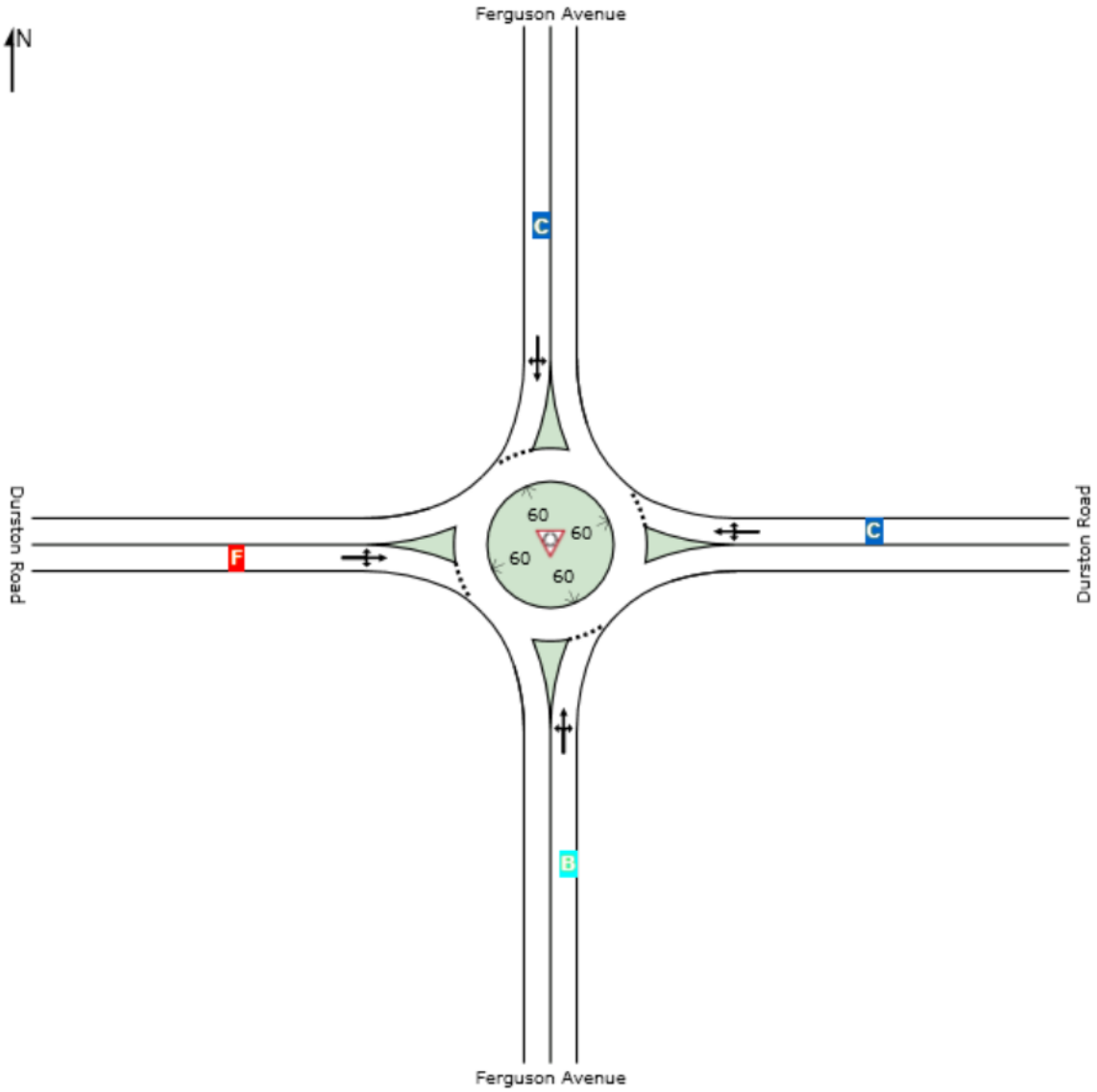
LEVEL OF SERVICE

Site: Ferguson Avenue/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	South	East	North	West	Intersection
LOS	B	C	C	F	E



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Ferguson Avenue/Durston Road - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Ferguson Avenue											
3	L2	133	0.0	0.587	13.8	LOS B	3.3	81.6	0.68	0.75	27.4
8	T1	223	0.9	0.587	13.8	LOS B	3.3	81.6	0.68	0.75	27.4
18	R2	104	0.0	0.587	13.8	LOS B	3.3	81.6	0.68	0.75	26.9
Approach		459	0.4	0.587	13.8	LOS B	3.3	81.6	0.68	0.75	27.3
East: Durston Road											
1	L2	145	0.0	0.697	18.1	LOS C	4.7	117.9	0.76	0.88	26.1
6	T1	387	1.0	0.697	18.1	LOS C	4.7	117.9	0.76	0.88	26.1
16	R2	8	0.0	0.697	18.1	LOS C	4.7	117.9	0.76	0.88	25.6
Approach		539	0.7	0.697	18.1	LOS C	4.7	117.9	0.76	0.88	26.0
North: Ferguson Avenue											
7	L2	4	0.0	0.753	21.8	LOS C	5.4	138.8	0.80	0.95	25.3
4	T1	338	3.6	0.753	21.8	LOS C	5.4	138.8	0.80	0.95	25.2
14	R2	218	1.8	0.753	21.8	LOS C	5.4	138.8	0.80	0.95	24.8
Approach		560	2.9	0.753	21.8	LOS C	5.4	138.8	0.80	0.95	25.1
West: Durston Road											
5	L2	301	3.2	1.081	76.2	LOS F	39.9	1007.9	1.00	2.45	15.5
2	T1	369	0.0	1.081	76.2	LOS F	39.9	1007.9	1.00	2.45	15.6
12	R2	260	1.5	1.081	76.2	LOS F	39.9	1007.9	1.00	2.45	15.4
Approach		930	1.5	1.081	76.2	LOS F	39.9	1007.9	1.00	2.45	15.5
All Vehicles		2488	1.4	1.081	39.9	LOS E	39.9	1007.9	0.84	1.46	20.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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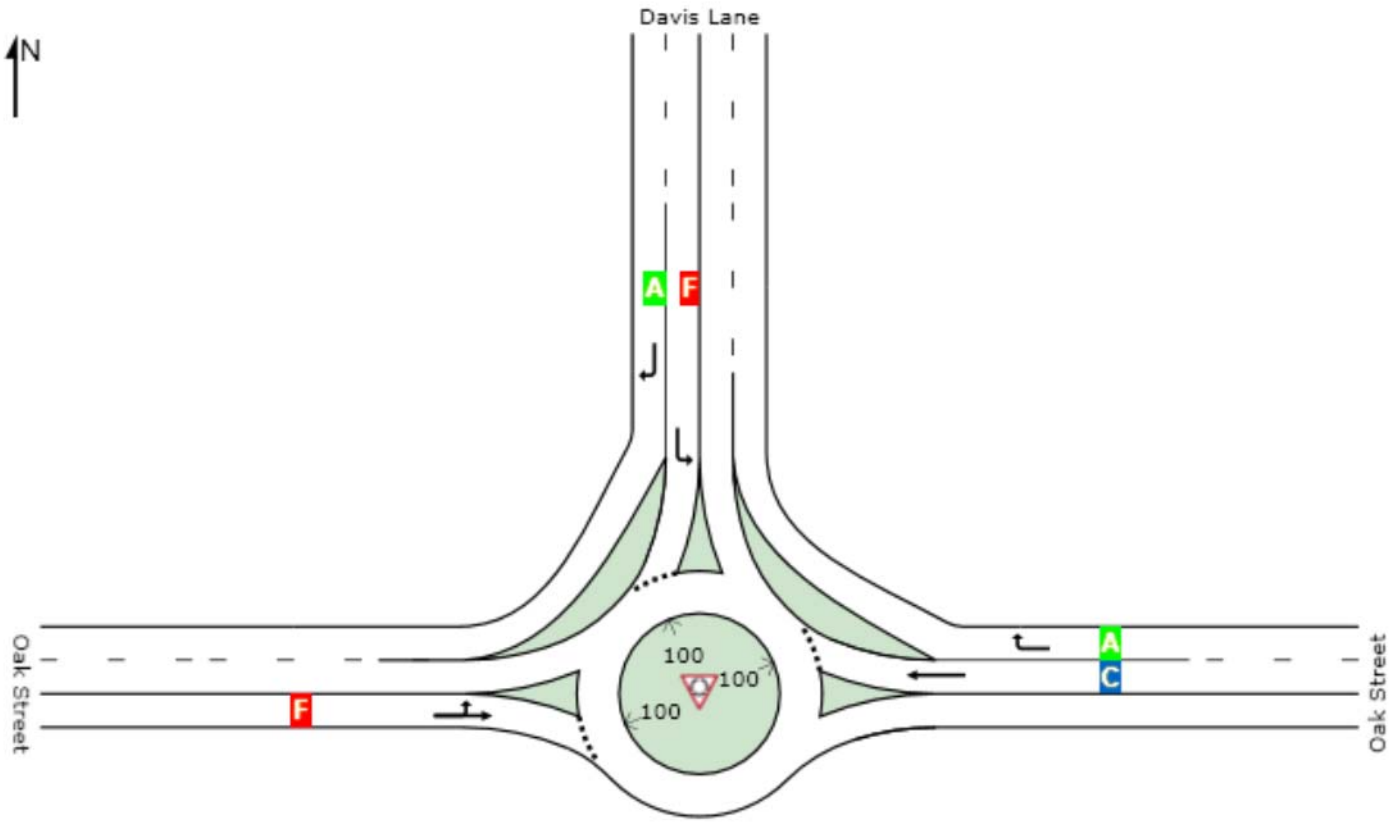
LEVEL OF SERVICE

Site: Davis Lane / Oak Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	East	North	West	Intersection
LOS	B	E	F	F



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Davis Lane / Oak Street - 2040 AM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Oak Street											
6	T1	827	5.8	0.843	23.9	LOS C	9.8	257.2	0.81	0.84	25.4
16	R2	587	5.7	0.370	0.1	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		1414	5.8	0.843	14.0	LOS B	9.8	257.2	0.48	0.49	28.3
North: Davis Lane											
7	L2	721	1.3	1.123	98.1	LOS F	36.3	917.7	1.00	2.86	13.7
14	R2	750	4.5	0.468	0.1	LOS A	0.0	0.0	0.00	0.00	33.6
Approach		1472	2.9	1.123	48.1	LOS E	36.3	917.7	0.49	1.40	19.5
West: Oak Street											
5	L2	654	6.6	2.537	709.5	LOS F	376.9	9707.7	1.00	9.87	3.0
2	T1	1241	2.3	2.537	709.5	LOS F	376.9	9707.7	1.00	9.87	3.0
Approach		1895	3.8	2.537	709.5	LOS F	376.9	9707.7	1.00	9.87	3.0
All Vehicles		4780	4.1	2.537	300.2	LOS F	376.9	9707.7	0.69	4.49	6.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Bozeman TMP

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Report File: F:\...\Projected PM.pdf

Scenario 4: Projected - PM
4/1/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	01 - Ferguson Avenue / Babcock Street	Two-way stop	HCM 2010	EB Thru	0.798	10,000.0	F
2	02 - Fowler Avenue / Babcock Street	Two-way stop	HCM 2010	NB Left	0.761	83.6	F
3	03 - Ferguson Avenue / Huffine Lane	Signalized	HCM 2010	SB Left	0.763	27.7	C
4	04 - Fowler Avenue / Huffine Lane	Signalized	HCM 2010	EB Left	0.923	43.5	D
5	05 - 19th Avenue / Garfield Street	Signalized	HCM 2010	EB Right	1.070	118.0	F
6	06 - 19th Avenue / Stucky Road	Signalized	HCM 2010	NB Left	0.777	27.8	C
7	07 - 19th Avenue / Goldenstein Lane	Two-way stop	HCM 2010	WB Left	0.202	28.6	D
8	08 - 7th Avenue / Griffin Drive	Signalized	HCM 2010	SB Left	1.080	80.0	F
9	09 - Manley Road / Griffin Drive	Two-way stop	HCM 2010	SB Left	0.662	67.5	F
10	10 - Rouse Avenue / Griffin Drive	Signalized	HCM 2010	EB Left	0.463	15.1	B
11	11 - Story Mill Road / Bridger Drive	Two-way stop	HCM 2010	NB Left	0.082	34.1	D
12	12 - Wilson Avenue / Peach Street	Two-way stop	HCM 2010	NB Left	0.530	41.8	E
13	13 - Rouse Avenue / Peach Street	Signalized	HCM 2010	EB Left	0.668	20.6	C
14	14 - Willson Avenue / Mendenhall Street	Signalized	HCM 2010	WB Right	0.520	18.3	B
15	15 - Willson Avenue / Babcock Street	Signalized	HCM 2010	EB Right	0.439	13.6	B
16	16 - Broadway Avenue / Main Street	Signalized	HCM 2010	SB Left	0.759	17.5	B
17	17 - Highland Boulevard / Main Street	Signalized	HCM 2010	NEB Left	0.890	117.2	F

18	18 - Haggerty Lane / Main Street	Two-way stop	HCM 2010	NEB Thru	0.000	3,131.6	F
19	19 - Willson Avenue / College Street	Two-way stop	HCM 2010	WB Left	0.000	105.4	F
20	20 - Highland Boulevard / Ellis Street	Two-way stop	HCM 2010	EB Left	5.168	2,083.4	F
21	21 - Sourdough Road / Kagy Boulevard	Two-way stop	HCM 2010	SEB Thru	1.630	10,000.0	F
22	22 - Highland Boulevard / Kagy Boulevard	Two-way stop	HCM 2010	NB Left	0.833	1,392.0	F
23	23 - Wagon Wheel Road / 3rd Avenue	All-way stop	HCM 2010	EB Left		9.1	A
27	25 - 11th Avenue / Grant Street	All-way stop	HCM 2010	NB Thru		234.6	F
28	26 - 11th Avenue / Lincoln Street	All-way stop	HCM 2010	NB Thru		103.2	F
29	27 - 11th Avenue / Kagy Boulevard	Signalized	HCM 2010	SB Left	1.338	239.0	F
30	28 - 8th Avenue / College Street	All-way stop	HCM 2010	EB Thru		99.1	F
31	29 - 7th Avenue / Grant Street	All-way stop	HCM 2010	EB Thru		123.0	F
32	30 - 7th Avenue / Kagy Boulevard	Signalized	HCM 2010	SB Right	0.561	10.7	B
33	31 - Valley Center Spur / Frontage Road	Two-way stop	HCM 2010	NEB Left	0.302	20.4	C
34	32 - Valley Center Spur / Valley Center Road	Two-way stop	HCM 2010	SB Left	1.908	500.3	F
35	33 - Nelson Road / Frontage Road	Two-way stop	HCM 2010	SWB Left	0.070	22.2	C
36	34 - 19th Avenue / I-90 EB Ramp	Signalized	HCM 2010	SEB Right	1.353	228.9	F
37	35 - 19th Avenue / I-90 WB Ramp	Signalized	HCM 2010	NWB Left	0.876	69.4	E
38	36 - 19th Avenue / Tschache Way	Signalized	HCM 2010	EB Left	0.721	31.7	C
39	37 - 19th Avenue / Oak Street	Signalized	HCM 2010	SB Left	1.011	82.8	F
40	38 - 19th Avenue / Durston Road	Signalized	HCM 2010	NB Left	0.831	54.0	D
41	39 - 7th Avenue / Durston Road / Peach Street	Signalized	HCM 2010	EB Thru	0.758	52.7	D

42	40 - 19th Avenue / Main Street	Signalized	HCM 2010	SB Left	0.879	63.2	E
43	41 - 7th Avenue / Main Street	Signalized	HCM 2010	SB Left	0.608	19.7	B
44	42 - 19th Avenue / Babcock Street	Signalized	HCM 2010	NB Left	0.542	35.5	D
45	43 - 19th Avenue / Koch Street	Signalized	HCM 2010	WB Thru	0.627	16.3	B
46	44 - 19th Avenue / College Street	Signalized	HCM 2010	WB Thru	0.768	37.8	D
47	45 - 19th Avenue / Graf Street	Signalized	HCM 2010	WB Left	0.708	22.7	C
49	47 - Flanders Mill Road / Baxter Lane	Two-way stop	HCM 2010	NB Left	0.417	31.6	D
50	48 - Davis Lane / Baxter Lane	Signalized	HCM 2010	EB Left	0.399	14.2	B
51	49 - Laurel Parkway / Durston Road	Signalized	HCM 2010	SB Left	0.539	13.7	B
52	50 - Cottonwood Road / Durston Road	Signalized	HCM 2010	NB Right	0.730	70.2	E
55	53 - Fowler Avenue / Durston Road	Two-way stop	HCM 2010	NB Left	0.071	43.7	E
56	54 - Cottonwood Road / Babcock Street	Signalized	HCM 2010	EB Left	0.960	52.7	D
58	55 - 19th Avenue / Baxter Lane	Signalized	HCM 2010	SB Left	0.999	69.9	E
59	56 - 7th Avenue / Baxter Lane	Two-way stop	HCM 2010	EB Right	1.350	206.3	F
60	57 - 7th Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.851	39.7	D
61	58 - 15th Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.698	22.5	C
62	59 - 27th Avenue / Oak Street	Signalized	HCM 2010	WB Left	65.597	321.3	F
64	61 - Rouse Avenue / Oak Street	Signalized	HCM 2010	EB Left	0.649	16.9	B
65	62 - 19th Avenue / Kagy Boulevard	Signalized	HCM 2010	NB Right	0.915	42.5	D
66	63 - Willson Avenue / Kagy Boulevard	Signalized	HCM 2010	EB Left	0.564	30.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: 01 - Ferguson Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Ferguson Avenue			Ferguson Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	64	400	43	38	340	12	4	64	44	47	90	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.80	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	540	58	51	459	16	5	86	59	63	122	99
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	141	15	13	120	4	1	22	15	17	33	27
Total Analysis Volume [veh/h]	90	563	61	53	479	17	5	90	62	68	133	108
Pedestrian Volume [ped/h]	0			3			0			4		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.01	0.00	0.06	0.00	0.00	0.00	0.80	0.11	2.34	1.14	0.22
d_M, Delay for Movement [s/veh]	8.64	0.00	0.00	8.97	0.00	0.00	10000.0	10000.0	10000.0	903.34	254.73	230.95
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh]	5.27	5.27	5.27	3.74	3.74	3.74	22.27	22.27	22.27	8.04	14.29	14.29
95th-Percentile Queue Length [ft]	131.77	131.77	131.77	93.39	93.39	93.39	556.72	556.72	556.72	201.11	357.36	357.36
d_A, Approach Delay [s/veh]	1.09			0.87			10000.00			389.15		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	978.31											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: 02 - Fowler Avenue / Babcock Street

Control Type:	Two-way stop	Delay (sec / veh):	83.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Fowler Avenue		Babcock Street		Babcock Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Babcock Street		Babcock Street	
Base Volume Input [veh/h]	163	151	170	79	119	286
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.60	0.00	0.80	0.00
Growth Rate	1.18	1.18	1.18	1.18	1.18	1.18
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	192	178	201	93	140	337
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	52	48	52	24	37	88
Total Analysis Volume [veh/h]	209	193	210	97	146	352
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.76	0.25	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	83.64	75.11	0.00	0.00	8.23	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh]	12.45	12.45	0.00	0.00	0.39	0.00
95th-Percentile Queue Length [ft]	311.37	311.37	0.00	0.00	9.80	0.00
d_A, Approach Delay [s/veh]	79.55		0.00		2.41	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	27.49					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: 03 - Ferguson Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	110.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	Ferguson Avenue		Huffine Lane		Huffine Lane	
Base Volume Input [veh/h]	259	222	157	952	1065	328
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.40	2.80	1.90	1.00	1.80	0.00
Growth Rate	1.50	1.50	1.50	1.50	1.50	1.50
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	333	236	1428	1598	492
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	101	87	62	376	421	130
Total Analysis Volume [veh/h]	406	347	249	1506	1685	519
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	0	3	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	8	30	30	0
Maximum Green [s]	60	0	30	90	90	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	53	0	14	62	48	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	1.0	3.0	3.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	29	29	76	76	61	61
g / C, Green / Cycle	0.25	0.25	0.66	0.66	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.23	0.22	0.46	0.42	0.47	0.32
s, saturation flow rate [veh/h]	1802	1571	544	3582	3554	1612
c, Capacity [veh/h]	455	396	329	2367	1887	856
d1, Uniform Delay [s]	41.50	41.27	31.22	11.42	24.05	18.65
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.64	6.22	15.06	1.32	6.95	3.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

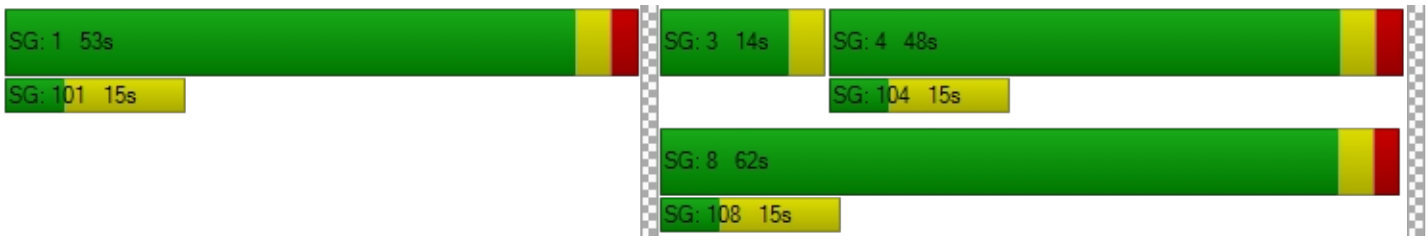
X, volume / capacity	0.89	0.88	0.76	0.64	0.89	0.61
d, Delay for Lane Group [s/veh]	48.14	47.49	46.27	12.73	31.00	21.83
Lane Group LOS	D	D	D	B	C	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	11.85	10.04	3.68	10.76	21.17	10.00
50th-Percentile Queue Length [ft]	296.13	250.97	91.92	269.11	529.27	250.01
95th-Percentile Queue Length [veh]	17.49	15.24	6.62	16.15	28.72	15.19
95th-Percentile Queue Length [ft]	437.24	380.88	165.46	403.63	717.92	379.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.14	47.49	46.27	12.73	31.00	21.83
Movement LOS	D	D	D	B	C	C
d_A, Approach Delay [s/veh]	47.84		17.49		28.84	
Approach LOS	D		B		C	
d_I, Intersection Delay [s/veh]	27.65					
Intersection LOS	C					
Intersection V/C	0.763					

Sequence

Ring 1	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: 04 - Fowler Avenue / Huffine Lane

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.923

Intersection Setup

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	253.00	100.00	100.00	76.00	100.00	100.00	100.00	100.00	280.00	365.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Fowler Avenue			Fowler Avenue			Huffine Lane			Huffine Lane		
Base Volume Input [veh/h]	293	292	33	92	148	28	114	844	294	24	768	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.30	0.30	3.00	1.10	0.00	0.00	0.60	1.60	0.00	4.50	1.80	0.60
Growth Rate	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	438	50	138	222	42	171	1266	441	36	1152	234
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	120	119	14	38	60	11	45	334	116	9	304	62
Total Analysis Volume [veh/h]	478	476	54	150	241	46	180	1335	465	38	1215	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	60	0	0	60	0
Maximum Green [s]	0	45	0	0	45	0	0	90	0	0	90	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	45	0	0	45	0	0	65	0	0	65	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	40	40	40	40	40	40	60	60	60	60	60	60
g / C, Green / Cycle	0.36	0.36	0.36	0.36	0.36	0.36	0.55	0.55	0.55	0.55	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.43	0.25	0.03	0.16	0.08	0.08	0.49	0.37	0.29	0.10	0.40	0.41
s, saturation flow rate [veh/h]	1106	1894	1568	923	1900	1796	366	3561	1615	398	1866	1759
c, Capacity [veh/h]	389	689	570	187	691	653	148	1942	881	167	1018	960
d1, Uniform Delay [s]	41.61	29.75	23.07	49.14	24.13	24.17	48.04	18.18	15.96	33.68	18.94	19.16
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.39	0.11	0.11	0.11	0.26	0.27
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	123.49	5.62	0.33	29.43	0.70	0.75	134.22	0.44	0.50	0.68	2.51	2.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

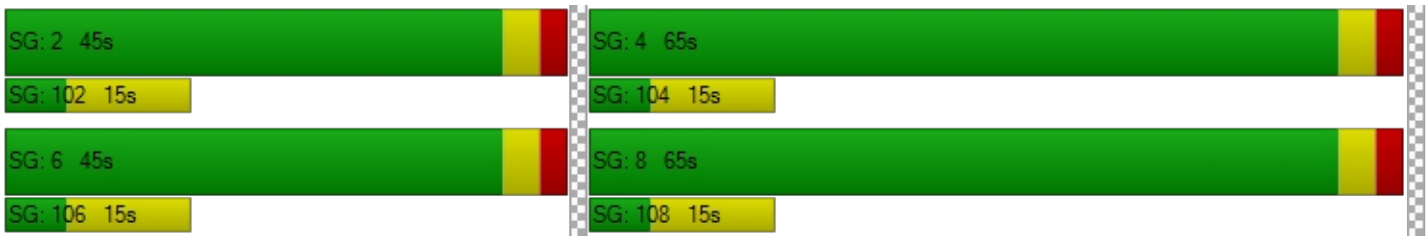
X, volume / capacity	1.23	0.69	0.09	0.80	0.21	0.22	1.21	0.69	0.53	0.23	0.73	0.75
d, Delay for Lane Group [s/veh]	165.11	35.36	23.40	78.57	24.83	24.92	182.26	18.62	16.46	34.36	21.44	22.08
Lane Group LOS	F	D	C	E	C	C	F	B	B	C	C	C
Critical Lane Group	Yes	No	No	No	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	24.12	11.60	0.98	5.68	2.76	2.66	9.64	11.87	7.31	0.87	14.40	14.05
50th-Percentile Queue Length [ft]	602.89	290.07	24.46	141.96	68.99	66.61	240.95	296.75	182.73	21.64	359.92	351.37
95th-Percentile Queue Length [veh]	36.45	17.19	1.76	9.59	4.97	4.80	16.58	17.52	11.74	1.56	20.62	20.20
95th-Percentile Queue Length [ft]	911.21	429.73	44.03	239.66	124.18	119.90	414.48	438.01	293.58	38.96	515.49	505.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	165.11	35.36	23.40	78.57	24.87	24.92	182.26	18.62	16.46	34.36	21.69	22.08
Movement LOS	F	D	C	E	C	C	F	B	B	C	C	C
d_A, Approach Delay [s/veh]	96.25			43.31			32.99			22.08		
Approach LOS	F			D			C			C		
d_I, Intersection Delay [s/veh]	43.53											
Intersection LOS	D											
Intersection V/C	0.923											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: 05 - 19th Avenue / Garfield Street

Control Type:	Signalized	Delay (sec / veh):	118.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.070

Intersection Setup

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	280.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Garfield Street			Garfield Street		
Base Volume Input [veh/h]	488	863	16	57	710	52	34	23	364	11	21	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	791	1398	26	92	1150	84	55	37	590	18	34	107
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	206	365	7	24	300	22	15	10	160	5	9	29
Total Analysis Volume [veh/h]	825	1459	27	96	1200	88	60	40	641	20	37	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			1			1			4		
Bicycle Volume [bicycles/h]	3			3			2			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	8	0	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	10	10	0	10	0
Maximum Green [s]	30	90	0	30	90	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	50	53	0	44	47	0	0	53	53	0	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	92	79	79	92	42	42	48	48	48	48	48
g / C, Green / Cycle	0.61	0.53	0.53	0.61	0.28	0.28	0.32	0.32	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.72	0.39	0.39	0.18	0.34	0.35	0.05	0.02	0.40	0.01	0.09
s, saturation flow rate [veh/h]	1152	1900	1886	533	1900	1847	1254	1900	1593	1389	1658
c, Capacity [veh/h]	657	1001	994	286	532	517	346	608	510	454	530
d1, Uniform Delay [s]	46.78	27.55	27.68	21.93	54.00	54.00	45.79	35.43	51.00	38.14	38.21
k, delay calibration	0.50	0.50	0.50	0.22	0.50	0.50	0.11	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	127.27	4.96	5.13	1.40	116.16	120.78	0.24	0.05	130.97	0.04	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

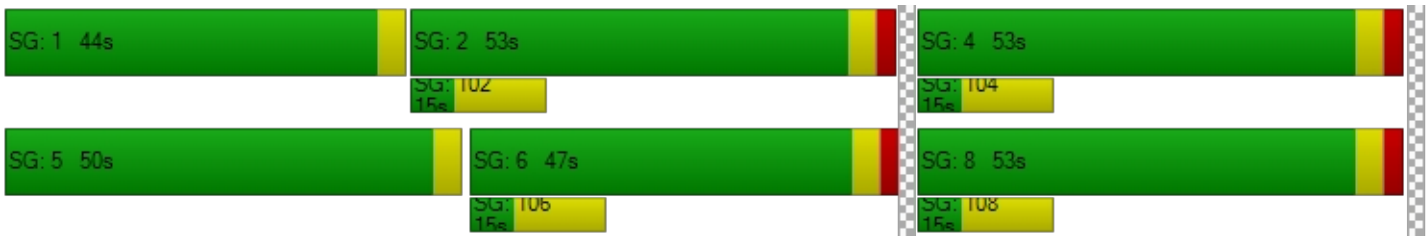
X, volume / capacity	1.26	0.74	0.75	0.34	1.22	1.23	0.17	0.07	1.26	0.04	0.29
d, Delay for Lane Group [s/veh]	174.05	32.50	32.81	23.33	170.16	174.78	46.02	35.47	181.97	38.18	38.50
Lane Group LOS	F	C	C	C	F	F	D	D	F	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	36.87	21.88	22.02	1.45	37.20	36.83	1.84	1.05	37.63	0.55	4.33
50th-Percentile Queue Length [ft]	921.70	547.05	550.49	36.30	930.03	920.72	46.07	26.19	940.80	13.63	108.33
95th-Percentile Queue Length [veh]	55.31	29.55	29.72	2.61	53.14	52.87	3.32	1.89	54.71	0.98	7.75
95th-Percentile Queue Length [ft]	1382.86	738.84	742.88	65.35	1328.38	1321.70	82.93	47.14	1367.80	24.53	193.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	174.05	32.65	32.81	23.33	172.27	174.78	46.02	35.47	181.97	38.18	38.50	38.50
Movement LOS	F	C	C	C	F	F	D	D	F	D	D	D
d_A, Approach Delay [s/veh]	83.13			162.10			163.05			38.47		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	118.02											
Intersection LOS	F											
Intersection V/C	1.070											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: 06 - 19th Avenue / Stucky Road

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	19th Avenue		19th Avenue		Stucky Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	1
Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	19th Avenue		19th Avenue		Stucky Road	
Base Volume Input [veh/h]	26	240	433	309	334	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	0.70	0.60	0.90	5.70
Growth Rate	1.79	1.79	1.79	1.79	1.79	1.79
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	430	775	553	598	63
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	12	112	202	144	156	16
Total Analysis Volume [veh/h]	49	449	809	577	624	66
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	0	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	30	30	0	30	0
Amber [s]	0.0	4.0	4.0	0.0	4.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	0	25	25	0	65	0
Vehicle Extension [s]	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.0	4.0	0.0	4.0	0.0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	R
L, Total Lost Time per Cycle [s]	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	4.00	4.00	4.00	4.00
g_i, Effective Green Time [s]	44	44	44	44	34	34
g / C, Green / Cycle	0.49	0.49	0.49	0.49	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.24	0.43	0.36	0.35	0.04
s, saturation flow rate [veh/h]	685	1877	1887	1605	1793	1528
c, Capacity [veh/h]	131	919	924	786	676	576
d1, Uniform Delay [s]	41.53	15.40	20.52	18.29	26.79	18.26
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.00	1.85	11.39	6.02	5.89	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

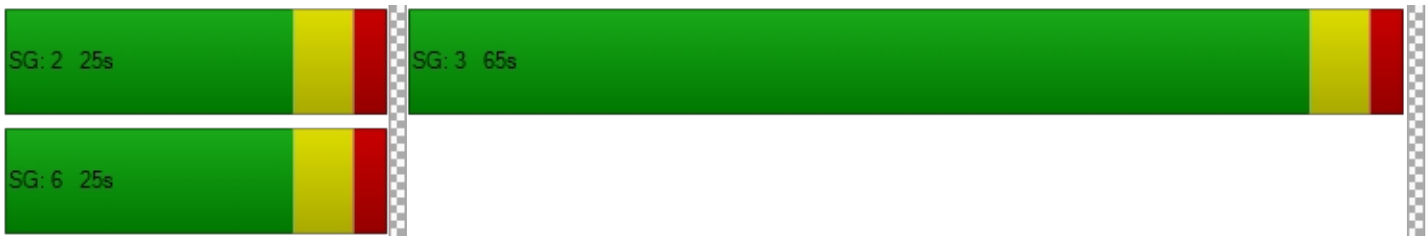
X, volume / capacity	0.37	0.49	0.88	0.73	0.92	0.11
d, Delay for Lane Group [s/veh]	49.53	17.26	31.91	24.31	32.68	18.34
Lane Group LOS	D	B	C	C	C	B
Critical Lane Group	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	1.36	6.29	16.89	10.19	13.27	0.89
50th-Percentile Queue Length [ft]	33.98	157.27	422.13	254.82	331.67	22.26
95th-Percentile Queue Length [veh]	2.45	10.40	23.62	15.43	19.24	1.60
95th-Percentile Queue Length [ft]	61.16	260.11	590.61	385.72	481.01	40.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.53	17.26	31.91	24.31	32.68	18.34
Movement LOS	D	B	C	C	C	B
d_A, Approach Delay [s/veh]	20.43		28.75		31.31	
Approach LOS	C		C		C	
d_I, Intersection Delay [s/veh]	27.82					
Intersection LOS	C					
Intersection V/C	0.777					

Sequence

Ring 1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: 07 - 19th Avenue / Goldenstein Lane

Control Type:	Two-way stop	Delay (sec / veh):	28.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.202

Intersection Setup

Name						
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name						
Base Volume Input [veh/h]	135	31	158	290	25	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	0.00	1.30	1.70	4.00	0.00
Growth Rate	1.41	1.41	1.41	1.41	1.41	1.41
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	44	223	409	35	134
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	11	58	107	10	36
Total Analysis Volume [veh/h]	198	46	233	427	38	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.18	0.00	0.20	0.18
d_M, Delay for Movement [s/veh]	0.00	0.00	8.29	0.00	28.59	13.83
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.64	0.00	1.75	1.75
95th-Percentile Queue Length [ft]	0.00	0.00	15.91	0.00	43.78	43.78
d_A, Approach Delay [s/veh]	0.00		2.93		16.88	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.63					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 8: 08 - 7th Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	80.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.080

Intersection Setup

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Mandeville Lane			Griffin Drive		
Base Volume Input [veh/h]	22	373	214	74	292	6	4	7	29	467	5	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	6.10	9.60	1.70	0.00	0.00	0.00	3.40	2.10	0.00	2.10
Growth Rate	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	548	315	109	429	9	6	10	43	686	7	212
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	8	143	82	28	112	2	2	3	12	179	2	55
Total Analysis Volume [veh/h]	33	572	329	114	448	9	7	11	47	716	7	221
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	3			3			0			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	0	0	30	0	0	20	0	0	20	0
Maximum Green [s]	0	60	0	0	60	0	0	45	0	0	45	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	35	0	0	35	0	0	45	0	0	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	30	30	30	30	40	40
g / C, Green / Cycle	0.38	0.38	0.38	0.38	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.41	0.22	0.15	0.25	0.04	0.67
s, saturation flow rate [veh/h]	1494	1485	779	1861	1770	1399
c, Capacity [veh/h]	608	557	97	698	935	779
d1, Uniform Delay [s]	25.79	20.07	39.98	20.71	10.40	22.21
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.47	4.55	147.60	4.75	0.03	107.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

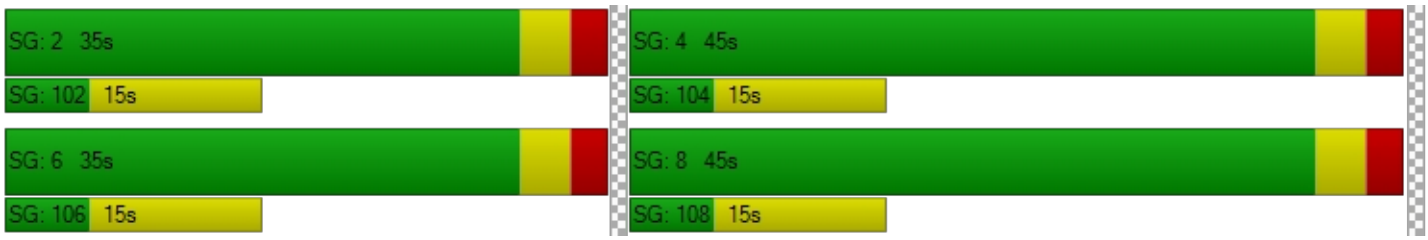
X, volume / capacity	1.00	0.59	1.18	0.65	0.07	1.21
d, Delay for Lane Group [s/veh]	61.26	24.62	187.57	25.46	10.43	129.54
Lane Group LOS	E	C	F	C	B	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	17.30	5.35	5.83	7.59	0.56	37.67
50th-Percentile Queue Length [ft]	432.46	133.87	145.82	189.68	14.11	941.83
95th-Percentile Queue Length [veh]	24.12	9.15	10.50	12.10	1.02	54.75
95th-Percentile Queue Length [ft]	602.99	228.75	262.48	302.61	25.39	1368.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.26	61.26	24.62	187.57	25.46	25.46	10.43	10.43	10.43	129.54	129.54	129.54
Movement LOS	E	E	C	F	C	C	B	B	B	F	F	F
d_A, Approach Delay [s/veh]	48.36			57.83			10.43			129.54		
Approach LOS	D			E			B			F		
d_I, Intersection Delay [s/veh]	80.01											
Intersection LOS	F											
Intersection V/C	1.080											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: 09 - Manley Road / Griffin Drive

Control Type:	Two-way stop	Delay (sec / veh):	67.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Manley Road		Griffin Drive		Griffin Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	0	0	0	0
Pocket Length [ft]	100.00	90.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Manley Road		Griffin Drive		Griffin Drive	
Base Volume Input [veh/h]	55	110	52	241	366	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.90	7.70	3.80	1.10	1.90
Growth Rate	1.71	1.71	1.71	1.71	1.71	1.71
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	188	89	412	626	92
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	25	49	23	107	163	24
Total Analysis Volume [veh/h]	98	196	93	430	653	96
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.66	0.44	0.11	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	67.47	19.55	9.85	0.00	0.00	0.00
Movement LOS	F	C	A	A	A	A
95th-Percentile Queue Length [veh]	3.70	2.24	4.51	4.51	0.00	0.00
95th-Percentile Queue Length [ft]	92.41	56.00	112.81	112.81	0.00	0.00
d_A, Approach Delay [s/veh]	35.53		1.75		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	7.25					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 10: 10 - Rouse Avenue / Griffin Drive

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Approach	Eastbound			Northeastbound			Southwestbound			Northwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	275.00	130.00	100.00	100.00	70.00	100.00	70.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Griffin Drive			Rouse Avenue			Bridger Drive			Griffin Drive		
Base Volume Input [veh/h]	108	9	192	163	223	9	1	212	157	8	9	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	11.10	6.30	1.80	1.30	11.10	0.00	1.90	2.50	12.50	0.00	0.00
Growth Rate	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	14	305	259	355	14	2	337	250	13	14	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	4	80	68	93	4	1	88	65	4	4	1
Total Analysis Volume [veh/h]	179	15	318	270	370	15	2	352	261	14	15	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2			0			1			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	6	8	3	8	0	0	4	0	0	2	0
Auxiliary Signal Groups			6,8									
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	30	10	30	0	0	30	0	0	30	0
Maximum Green [s]	0	60	60	25	60	0	0	60	0	0	60	0
Amber [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	39	51	16	51	0	0	35	0	0	39	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No	No	No	No			No			No	
Maximum Recall		No	No	No	No			No			No	
Pedestrian Recall		No	No	No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	C	R	C
L, Total Lost Time per Cycle [s]	5.00	0.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	30	85	50	50	37	37	37	30
g / C, Green / Cycle	0.33	0.94	0.56	0.56	0.41	0.41	0.41	0.33
(v / s)_i Volume / Saturation Flow Rate	0.19	0.21	0.23	0.21	0.00	0.19	0.17	0.04
s, saturation flow rate [veh/h]	1034	1519	1193	1863	1014	1865	1572	828
c, Capacity [veh/h]	422	1435	635	1034	351	764	644	335
d1, Uniform Delay [s]	26.04	0.18	11.76	11.24	24.22	19.31	18.78	21.60
k, delay calibration	0.11	0.12	0.50	0.50	0.50	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	0.08	2.08	1.03	0.03	1.99	1.89	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

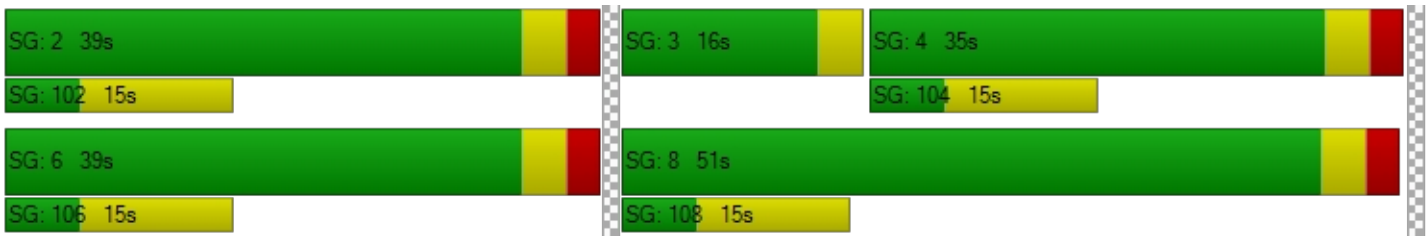
X, volume / capacity	0.46	0.22	0.43	0.37	0.01	0.46	0.41	0.09
d, Delay for Lane Group [s/veh]	26.82	0.26	13.84	12.27	24.25	21.30	20.67	21.72
Lane Group LOS	C	A	B	B	C	C	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.59	0.03	2.99	4.29	0.03	5.57	4.05	0.45
50th-Percentile Queue Length [ft]	89.74	0.82	74.72	107.31	0.84	139.13	101.17	11.13
95th-Percentile Queue Length [veh]	6.46	0.06	5.38	7.69	0.06	9.43	7.28	0.80
95th-Percentile Queue Length [ft]	161.53	1.48	134.50	192.26	1.52	235.85	182.10	20.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.82	26.82	0.26	13.84	12.27	12.27	24.25	21.30	20.67	21.72	21.72	21.72
Movement LOS	C	C	A	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.32			12.92			21.04			21.72		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.09											
Intersection LOS	B											
Intersection V/C	0.463											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: 11 - Story Mill Road / Bridger Drive

Control Type:	Two-way stop	Delay (sec / veh):	34.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.082

Intersection Setup

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	Story Mill Road			Story Mill Road			Bridger Drive			Bridger Drive		
Base Volume Input [veh/h]	8	33	44	5	21	69	91	166	10	18	161	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	2.50	0.00
Growth Rate	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	51	68	8	33	107	141	257	16	28	250	6
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	13	18	2	9	28	37	67	4	7	65	2
Total Analysis Volume [veh/h]	13	53	71	8	34	112	147	268	17	29	261	6
Pedestrian Volume [ped/h]	0			0			6			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.22	0.09	0.05	0.14	0.15	0.11	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	34.08	26.25	16.17	30.95	23.78	13.58	8.10	0.00	0.00	7.86	0.00	0.00
Movement LOS	D	D	C	D	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.81	1.81	1.81	1.46	1.46	1.46	0.38	0.00	0.00	0.89	0.89	0.89
95th-Percentile Queue Length [ft]	45.21	45.21	45.21	36.42	36.42	36.42	9.47	0.00	0.00	22.20	22.20	22.20
d_A, Approach Delay [s/veh]	21.77			16.73			2.76			0.77		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	6.85											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 12: 12 - Wilson Avenue / Peach Street

Control Type:	Two-way stop	Delay (sec / veh):	41.8
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.530

Intersection Setup

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	106	29	27	0	5	4	2	223	67	15	238	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.90	6.00	0.00	1.70	0.00
Growth Rate	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	41	38	0	7	6	3	312	94	21	333	3
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	39	11	10	0	2	2	1	81	25	5	87	1
Total Analysis Volume [veh/h]	154	43	40	0	8	7	3	326	98	22	347	3
Pedestrian Volume [ped/h]	4			3			4			3		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.53	0.14	0.06	0.00	0.03	0.01	0.00	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	41.76	40.72	34.78	20.19	17.44	10.57	7.97	0.00	0.00	8.23	0.00	0.00
Movement LOS	E	E	D	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	5.37	5.37	5.37	0.12	0.12	0.12	1.60	1.60	1.60	1.44	1.44	1.44
95th-Percentile Queue Length [ft]	134.17	134.17	134.17	2.88	2.88	2.88	40.07	40.07	40.07	35.89	35.89	35.89
d_A, Approach Delay [s/veh]	40.39			14.23			0.06			0.49		
Approach LOS	E			B			A			A		
d_I, Intersection Delay [s/veh]	9.51											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 13: 13 - Rouse Avenue / Peach Street

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Peach Street			Peach Street		
Base Volume Input [veh/h]	55	336	9	57	416	70	35	51	74	3	54	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.60	0.00	0.00	0.50	1.40	0.00	2.00	0.00	0.00	0.00	0.80
Growth Rate	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	528	14	89	653	110	55	80	116	5	85	190
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	22	138	4	23	170	29	14	21	30	1	22	50
Total Analysis Volume [veh/h]	90	551	15	93	681	115	57	83	121	5	89	198
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	62	0	0	62	0	0	28	0	0	28	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	57	57	57	57	23	23	23	23
g / C, Green / Cycle	0.63	0.63	0.63	0.63	0.25	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.14	0.33	0.12	0.48	0.06	0.13	0.00	0.19
s, saturation flow rate [veh/h]	624	1692	773	1659	999	1518	1077	1524
c, Capacity [veh/h]	256	1074	414	1053	138	386	204	387
d1, Uniform Delay [s]	27.08	9.02	16.46	11.54	42.38	28.92	35.43	30.84
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	1.85	1.25	5.06	1.99	1.13	0.05	5.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.53	0.22	0.76	0.41	0.53	0.02	0.74
d, Delay for Lane Group [s/veh]	30.84	10.87	17.72	16.60	44.37	30.05	35.48	36.59
Lane Group LOS	C	B	B	B	D	C	D	D
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.85	5.88	1.34	11.06	1.32	3.83	0.10	6.19
50th-Percentile Queue Length [ft]	46.32	147.02	33.52	276.62	33.12	95.78	2.48	154.63
95th-Percentile Queue Length [veh]	3.34	9.86	2.41	16.52	2.38	6.90	0.18	10.26
95th-Percentile Queue Length [ft]	83.38	246.45	60.33	413.00	59.61	172.41	4.47	256.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.84	10.87	10.87	17.72	16.60	16.60	44.37	30.05	30.05	35.48	36.59	36.59
Movement LOS	C	B	B	B	B	B	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	13.61			16.71			33.18			36.57		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	20.56											
Intersection LOS	C											
Intersection V/C	0.668											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 14: 14 - Willson Avenue / Mendenhall Street

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Mendenhall Street			Mendenhall Street		
Base Volume Input [veh/h]	78	136	0	0	140	45	0	0	0	137	434	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.20	2.00	2.00	0.70	2.20	2.00	2.00	2.00	0.00	1.20	0.00
Growth Rate	1.28	1.28	1.00	1.00	1.28	1.28	1.00	1.00	1.00	1.28	1.28	1.28
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	174	0	0	179	58	0	0	0	175	556	91
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	1.0000	1.0000	1.0000	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	1.0000	1.0000	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	26	45	0	0	47	15	0	0	0	46	145	24
Total Analysis Volume [veh/h]	104	182	0	0	187	61	0	0	0	183	580	95
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	20			6			32			20		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	0	0	0	15	0
Maximum Green [s]	0	45	0	0	45	0	0	0	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	0	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	0	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C		C	C
L, Total Lost Time per Cycle [s]	5.00	5.00		5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00		3.00	3.00
g_i, Effective Green Time [s]	31	31		19	19
g / C, Green / Cycle	0.51	0.51		0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.25	0.15		0.27	0.27
s, saturation flow rate [veh/h]	1167	1619		1656	1473
c, Capacity [veh/h]	675	824		538	478
d1, Uniform Delay [s]	10.39	8.55		18.85	18.87
k, delay calibration	0.50	0.50		0.11	0.11
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	1.94	0.94		3.71	4.21
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00

Lane Group Results

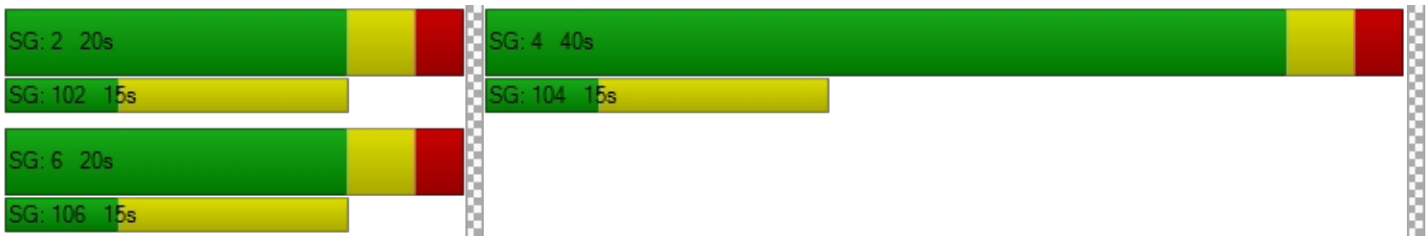
X, volume / capacity	0.42	0.30		0.84	0.85
d, Delay for Lane Group [s/veh]	12.33	9.49		22.56	23.08
Lane Group LOS	B	A		C	C
Critical Lane Group	Yes	No		No	Yes
50th-Percentile Queue Length [veh]	2.70	1.76		5.79	5.23
50th-Percentile Queue Length [ft]	67.53	44.12		144.75	130.83
95th-Percentile Queue Length [veh]	4.86	3.18		9.74	8.98
95th-Percentile Queue Length [ft]	121.56	79.42		243.40	224.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.33	12.33	0.00	0.00	9.49	9.49	0.00	0.00	0.00	22.56	22.83	23.08
Movement LOS	B	B			A	A				C	C	C
d_A, Approach Delay [s/veh]	12.33			9.49			0.00			22.80		
Approach LOS	B			A			A			C		
d_I, Intersection Delay [s/veh]	18.28											
Intersection LOS	B											
Intersection V/C	0.520											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: 15 - Willson Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.439

Intersection Setup

Name	Willson Avenue			Willson Avenue			Babcock Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	125.00	110.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			Babcock Street					
Base Volume Input [veh/h]	0	284	189	49	344	0	33	348	99	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.20	1.10	2.00	0.30	2.00	0.00	0.30	0.00	2.00	2.00	2.00
Growth Rate	1.00	1.18	1.18	1.18	1.18	1.00	1.18	1.18	1.18	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	335	223	58	406	0	39	411	117	0	0	0
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	0.9600	0.9600	0.9600	0.9600	1.0000	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	87	58	15	106	0	10	107	31	0	0	0
Total Analysis Volume [veh/h]	0	350	233	61	424	0	41	429	122	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	1			19			16			11		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	0	15	0	0	0	0
Maximum Green [s]	0	45	0	0	45	0	0	60	0	0	0	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
Split [s]	0	28	0	0	28	0	0	32	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	0	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	C	C	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	35	35	35	35	15	15	
g / C, Green / Cycle	0.58	0.58	0.58	0.58	0.25	0.25	
(v / s)_i Volume / Saturation Flow Rate	0.21	0.16	0.07	0.25	0.19	0.19	
s, saturation flow rate [veh/h]	1673	1430	923	1705	1694	1437	
c, Capacity [veh/h]	971	829	509	989	429	364	
d1, Uniform Delay [s]	6.68	6.32	10.75	7.04	20.61	20.67	
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	1.04	0.85	0.48	1.36	2.57	3.15	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

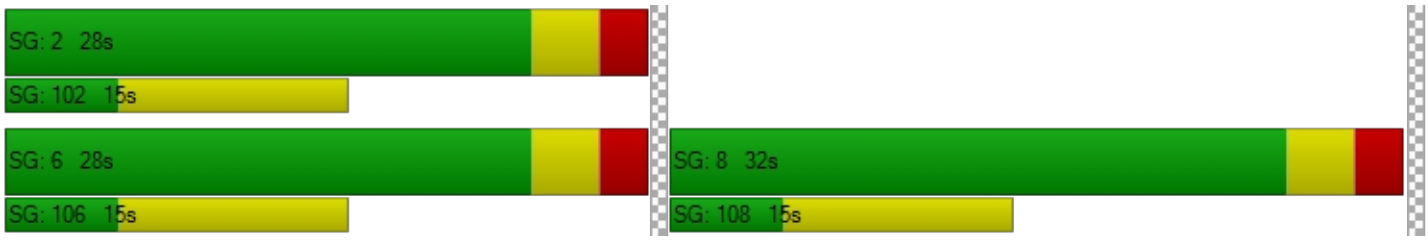
X, volume / capacity	0.36	0.28	0.12	0.43	0.74	0.75	
d, Delay for Lane Group [s/veh]	7.73	7.16	11.23	8.39	23.18	23.81	
Lane Group LOS	A	A	B	A	C	C	
Critical Lane Group	No	No	No	Yes	No	Yes	
50th-Percentile Queue Length [veh]	2.09	1.33	0.51	2.68	4.07	3.56	
50th-Percentile Queue Length [ft]	52.23	33.31	12.69	66.98	101.75	88.88	
95th-Percentile Queue Length [veh]	3.76	2.40	0.91	4.82	7.33	6.40	
95th-Percentile Queue Length [ft]	94.02	59.95	22.84	120.56	183.15	159.98	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	7.73	7.16	11.23	8.39	0.00	23.18	23.40	23.81	0.00	0.00	0.00
Movement LOS		A	A	B	A		C	C	C			
d_A, Approach Delay [s/veh]	7.50			8.75			23.47			0.00		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	13.56											
Intersection LOS	B											
Intersection V/C	0.439											

Sequence

Ring 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 16: 16 - Broadway Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	Broadway Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		No	

volumes

Name	Broadway Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	140	31	73	685	675	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	0.00	1.40	1.30	1.90	1.40
Growth Rate	1.54	1.54	1.54	1.54	1.54	1.54
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	216	48	112	1055	1040	213
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	56	13	30	278	274	56
Total Analysis Volume [veh/h]	225	50	118	1112	1097	225
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	12		5		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	15	0	0	15	15	0
Maximum Green [s]	30	0	0	90	90	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	21	0	0	54	54	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	15	50	50	50	50
g / C, Green / Cycle	0.20	0.67	0.67	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.17	0.59	0.57	0.39	0.42
s, saturation flow rate [veh/h]	1594	606	1536	1678	1578
c, Capacity [veh/h]	320	467	1022	1117	1050
d1, Uniform Delay [s]	28.93	12.49	9.74	6.92	7.22
k, delay calibration	0.25	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.94	11.10	9.15	2.31	2.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

Lane Group Results

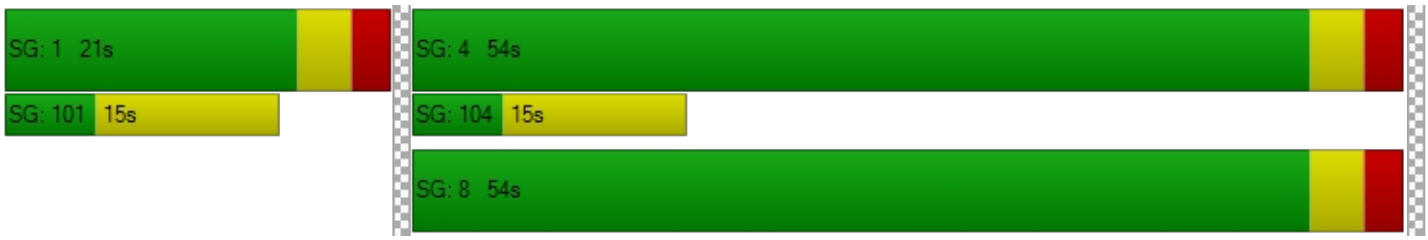
X, volume / capacity	0.86	0.76	0.86	0.59	0.63
d, Delay for Lane Group [s/veh]	42.86	23.59	18.89	9.23	10.08
Lane Group LOS	D	C	B	A	B
Critical Lane Group	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh]	5.82	4.34	10.86	5.15	5.46
50th-Percentile Queue Length [ft]	145.50	108.47	271.42	128.73	136.50
95th-Percentile Queue Length [veh]	9.78	7.76	16.26	8.87	9.29
95th-Percentile Queue Length [ft]	244.41	193.88	406.51	221.76	232.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.86	42.86	23.59	19.89	9.57	10.08
Movement LOS	D	D	C	B	A	B
d_A, Approach Delay [s/veh]	42.86		20.25		9.65	
Approach LOS	D		C		A	
d_I, Intersection Delay [s/veh]	17.49					
Intersection LOS	B					
Intersection V/C	0.759					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 17: 17 - Highland Boulevard / Main Street

Control Type:	Signalized	Delay (sec / veh):	117.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Highland Boulevard						Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard						Main Street			Main Street		
Base Volume Input [veh/h]	341	0	363	3	6	8	155	428	0	1	612	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.60	2.00	0.80	0.00	0.00	0.00	1.90	2.80	0.00	0.00	2.00	1.70
Growth Rate	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	501	0	534	4	9	12	228	629	0	1	900	265
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	131	0	139	1	2	3	60	166	0	0	237	70
Total Analysis Volume [veh/h]	523	0	557	4	10	13	240	663	0	1	949	279
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	3	8	0	0	4	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	30	0	0	30	0
Maximum Green [s]	0	45	0	0	45	0	25	60	0	0	60	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	84	0	0	84	0	14	66	0	0	52	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	79	79	79	61	61	61	47	47	47
g / C, Green / Cycle	0.53	0.53	0.53	0.41	0.41	0.41	0.31	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.41	0.39	0.03	0.37	0.20	0.20	0.00	0.38	0.38
s, saturation flow rate [veh/h]	1262	1425	803	642	1663	1663	706	1676	1548
c, Capacity [veh/h]	424	751	450	204	676	676	156	525	485
d1, Uniform Delay [s]	55.21	27.59	21.04	56.16	32.97	32.97	53.89	51.50	51.50
k, delay calibration	0.50	0.50	0.50	0.40	0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	124.58	6.54	0.25	112.62	0.55	0.55	0.02	112.27	116.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

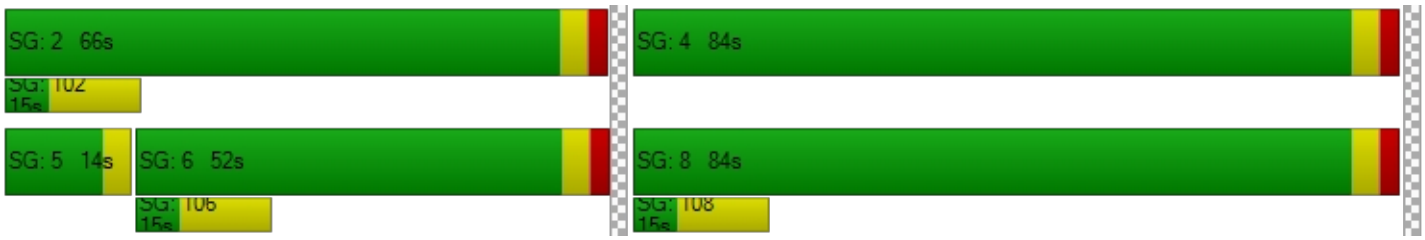
X, volume / capacity	1.23	0.74	0.06	1.18	0.49	0.49	0.01	1.21	1.22
d, Delay for Lane Group [s/veh]	179.79	34.12	21.30	168.78	33.53	33.53	53.90	163.77	167.58
Lane Group LOS	F	C	C	F	C	C	D	F	F
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	31.09	16.76	0.49	11.49	9.14	9.14	0.03	36.06	33.80
50th-Percentile Queue Length [ft]	777.14	418.99	12.36	287.35	228.62	228.62	0.83	901.58	845.08
95th-Percentile Queue Length [veh]	46.60	23.47	0.89	18.77	14.10	14.10	0.06	51.66	48.86
95th-Percentile Queue Length [ft]	1164.94	586.84	22.25	469.15	352.60	352.60	1.49	1291.59	1221.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	179.79	34.12	34.12	21.30	21.30	21.30	168.78	33.53	33.53	53.90	165.03	167.58
Movement LOS	F	C	C	C	C	C	F	C	C	D	F	F
d_A, Approach Delay [s/veh]	104.66			21.30			69.47			165.52		
Approach LOS	F			C			E			F		
d_I, Intersection Delay [s/veh]	117.25											
Intersection LOS	F											
Intersection V/C	0.890											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: 18 - Haggerty Lane / Main Street

Control Type:	Two-way stop	Delay (sec / veh):	3,131.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Haggerty Lane						Main Street			Main Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

volumes

Name	Haggerty Lane						Main Street			Main Street		
Base Volume Input [veh/h]	97	0	95	1	0	1	69	496	1	2	811	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.10	0.00	0.00	0.00	0.00	2.60	0.00	0.00	2.10	0.00
Growth Rate	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	151	0	148	2	0	2	108	774	2	3	1265	234
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	39	0	39	1	0	1	28	204	1	1	333	62
Total Analysis Volume [veh/h]	158	0	154	2	0	2	114	816	2	3	1334	247
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	1	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	6.86	0.00	0.46	0.08	0.00	0.00	0.27	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	3101.47	3131.58	2955.99	161.66	229.47	18.25	16.67	0.00	0.00	9.41	0.00	0.00
Movement LOS	F	F	F	F	F	C	C	A	A	A	A	A
95th-Percentile Queue Length [veh]	36.85	36.85	36.85	0.27	0.27	0.27	1.08	0.00	0.00	15.62	7.81	0.00
95th-Percentile Queue Length [ft]	921.24	921.24	921.24	6.75	6.75	6.75	27.03	0.00	0.00	390.61	195.31	0.00
d_A, Approach Delay [s/veh]	3029.66			89.95			2.04			0.02		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	334.58											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 19: 19 - Willson Avenue / College Street

Control Type:	Two-way stop	Delay (sec / veh):	105.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Willson Avenue			Willson Avenue			College Street			College Street		
Base Volume Input [veh/h]	124	458	20	19	522	70	4	3	139	0	5	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.80	0.90	0.00	0.00	0.40	1.40	0.00	0.00	1.40	0.00	0.00	0.00
Growth Rate	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	143	527	23	22	600	81	5	3	160	0	6	29
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	137	6	6	157	21	1	1	42	0	2	8
Total Analysis Volume [veh/h]	149	550	24	23	626	85	5	3	167	0	7	32
Pedestrian Volume [ped/h]	4			13			0			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.01	0.00	0.02	0.01	0.00	0.09	0.04	0.37	0.00	0.09	0.06
d_M, Delay for Movement [s/veh]	9.83	0.00	0.00	8.69	0.00	0.00	76.91	60.99	22.37	105.42	56.27	14.78
Movement LOS	A	A	A	A	A	A	F	F	C	F	F	B
95th-Percentile Queue Length [veh]	8.94	8.94	8.94	6.90	6.90	6.90	2.61	2.61	2.61	0.55	0.55	0.55
95th-Percentile Queue Length [ft]	223.58	223.58	223.58	172.38	172.38	172.38	65.28	65.28	65.28	13.73	13.73	13.73
d_A, Approach Delay [s/veh]	2.03			0.27			24.59			22.23		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.09											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 20: 20 - Highland Boulevard / Ellis Street

Control Type:	Two-way stop	Delay (sec / veh):	2,083.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5.168

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Ellis Street			Ellis Street		
Base Volume Input [veh/h]	2	455	53	51	289	23	140	3	10	51	3	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	1.90	0.00	1.00	4.30	0.00	33.30	0.00	0.00	0.00	0.90
Growth Rate	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	701	82	79	445	35	216	5	15	79	5	172
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	183	21	21	116	9	59	1	4	21	1	47
Total Analysis Volume [veh/h]	3	731	86	82	464	37	235	5	16	86	5	187
Pedestrian Volume [ped/h]	20			1			7			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.10	0.00	0.00	5.17	0.05	0.03	0.94	0.04	0.47
d_M, Delay for Movement [s/veh]	8.41	0.00	0.00	9.88	0.00	0.00	2083.44	2041.63	2010.77	295.14	286.52	264.88
Movement LOS	A	A	A	A	A	A	F	F	F	F	F	F
95th-Percentile Queue Length [veh]	0.01	0.00	0.00	0.33	0.00	0.00	29.19	29.19	29.19	16.93	16.93	16.93
95th-Percentile Queue Length [ft]	0.21	0.00	0.00	8.31	0.00	0.00	729.80	729.80	729.80	423.20	423.20	423.20
d_A, Approach Delay [s/veh]	0.03			1.39			2078.08			274.63		
Approach LOS	A			A			F			F		
d_I, Intersection Delay [s/veh]	314.49											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 21: 21 - Sourdough Road / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.630

Intersection Setup

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Approach	Northbound			Eastbound			Westbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	75.00	100.00	100.00	75.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	Sourdough Road			Kagy Boulevard			Kagy Boulevard			Sourdough Road		
Base Volume Input [veh/h]	45	38	57	37	487	54	56	435	15	22	56	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.70	0.00	0.00	0.00	1.20
Growth Rate	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	59	88	57	755	84	87	674	23	34	87	130
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	18	15	23	15	197	22	23	176	6	9	23	34
Total Analysis Volume [veh/h]	73	62	92	59	788	88	91	703	24	35	91	136
Pedestrian Volume [ped/h]	0			0			1			17		

Intersection Settings

Priority Scheme	Stop	Free	Free	Stop
Flared Lane	No			No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No			No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	1.06	0.25	0.07	0.01	0.00	0.12	0.01	0.00	0.00	1.63	0.33
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	9.50	0.00	0.00	10.23	0.00	0.00	10000.0	10000.0	10000.0
Movement LOS	F	F	F	A	A	A	B	A	A	F	F	F
95th-Percentile Queue Length [veh]	31.11	31.11	31.11	0.22	0.00	0.00	0.39	0.00	0.00	35.52	35.52	35.52
95th-Percentile Queue Length [ft]	777.78	777.78	777.78	5.52	0.00	0.00	9.87	0.00	0.00	887.91	887.91	887.91
d_A, Approach Delay [s/veh]	10000.00			0.60			1.14			10000.00		
Approach LOS	F			A			A			F		
d_I, Intersection Delay [s/veh]	2181.75											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 22: 22 - Highland Boulevard / Kagy Boulevard

Control Type:	Two-way stop	Delay (sec / veh):	1,392.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

Intersection Setup

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

volumes

Name	Highland Boulevard			Highland Boulevard			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	2	3	1	18	3	346	361	195	4	0	148	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.30	0.60	0.00	0.00	0.00	0.70	0.00
Growth Rate	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68	1.68
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	5	2	30	5	581	606	328	7	0	249	24
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	1	1	8	1	152	158	86	2	0	65	6
Total Analysis Volume [veh/h]	3	5	2	31	5	606	632	342	7	0	260	25
Pedestrian Volume [ped/h]	0			3			5			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.83	0.14	0.00	1.04	0.14	0.80	0.49	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	1391.99	494.58	398.02	590.46	569.64	474.00	10.54	0.00	0.00	7.95	0.00	0.00
Movement LOS	F	F	F	F	F	F	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.92	1.92	1.92	45.14	45.14	45.14	2.83	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	48.04	48.04	48.04	1128.43	1128.43	1128.43	70.85	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	744.49			480.37			6.79			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	168.14											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 23: 23 - Wagon Wheel Road / 3rd Avenue

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	115.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	Wagon Wheel Road		3rd Avenue		Graf Street	
Base Volume Input [veh/h]	2	64	135	200	161	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.60	0.00
Growth Rate	1.08	1.08	1.08	1.08	1.08	1.08
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	69	146	216	174	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	1	19	38	56	45	1
Total Analysis Volume [veh/h]	2	75	152	225	182	2
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.35	0.81	1.11	1.03
95th-Percentile Queue Length [ft]	8.77	20.26	27.85	25.82
Approach Delay [s/veh]	8.49	8.90		9.83
Approach LOS	A	A		A
Intersection Delay [s/veh]	9.12			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 27: 25 - 11th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	234.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Grant Street			Grant Street		
Base Volume Input [veh/h]	17	234	120	73	210	42	30	39	24	92	60	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.70	0.00
Growth Rate	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	452	232	141	405	81	58	75	46	178	116	205
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	9	118	61	37	106	21	16	20	13	46	30	53
Total Analysis Volume [veh/h]	34	472	242	147	423	85	63	82	50	186	121	214
Pedestrian Volume [ped/h]	116			204			111			86		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	44.49	34.61	2.82	19.75
95th-Percentile Queue Length [ft]	1112.23	865.15	70.49	493.74
Approach Delay [s/veh]	340.55	261.39	22.05	128.26
Approach LOS	F	F	C	F
Intersection Delay [s/veh]	234.58			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 28: 26 - 11th Avenue / Lincoln Street

Control Type:	All-way stop	Delay (sec / veh):	103.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Lincoln Street			Bobcat Circle		
Base Volume Input [veh/h]	159	276	26	8	225	84	88	59	97	37	64	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Growth Rate	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	286	497	47	14	405	151	158	106	175	67	115	23
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	75	130	12	4	106	39	41	28	46	18	31	6
Total Analysis Volume [veh/h]	298	519	49	15	423	158	165	111	183	73	125	25
Pedestrian Volume [ped/h]	42			48			69			73		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.38	27.42	14.94	1.60	14.65	3.59
95th-Percentile Queue Length [ft]	159.62	685.50	373.53	39.93	366.29	89.72
Approach Delay [s/veh]	151.16		75.25		86.97	24.98
Approach LOS	F		F		F	C
Intersection Delay [s/veh]	103.20					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 29: 27 - 11th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	239.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.338

Intersection Setup

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	210.00	100.00	100.00	200.00	100.00	100.00	115.00	100.00	100.00	150.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	11th Avenue			11th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	90	99	49	165	82	168	126	477	520	20	499	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.00	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.60	0.90
Growth Rate	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	172	85	287	143	292	219	830	905	35	868	202
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	43	47	23	75	37	76	57	217	236	9	226	53
Total Analysis Volume [veh/h]	171	187	92	299	149	305	229	866	944	37	906	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2			19			18			43		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	15	0	0	15	0	10	30	0	0	30	0
Maximum Green [s]	0	45	0	0	45	0	25	90	0	0	90	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	23	0	0	23	0	13	52	0	0	39	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No		No	No			No	
Maximum Recall		No			No		No	No			No	
Pedestrian Recall		No			No		No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	18	18	18	18	47	47	34	34
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.63	0.63	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.18	0.16	0.27	0.27	0.28	1.06	0.14	0.61
s, saturation flow rate [veh/h]	952	1716	1092	1653	814	1703	263	1819
c, Capacity [veh/h]	104	412	177	397	419	1067	98	826
d1, Uniform Delay [s]	37.48	25.87	36.22	28.50	15.14	14.00	37.49	20.47
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	328.21	8.67	331.47	90.70	5.07	317.46	2.39	166.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

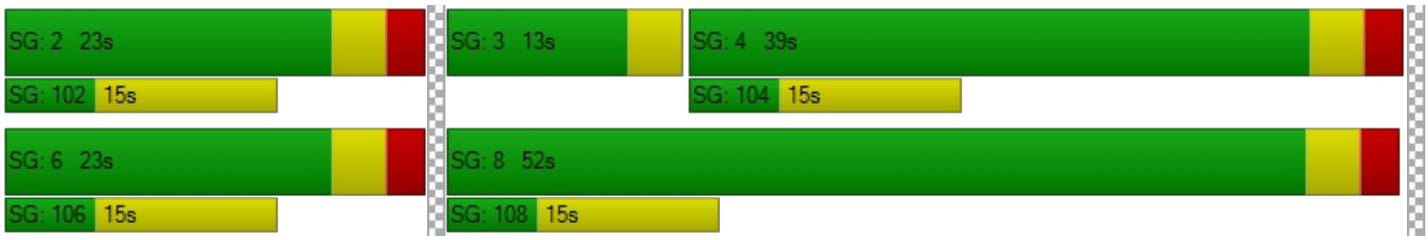
X, volume / capacity	1.64	0.68	1.69	1.14	0.55	1.70	0.38	1.35
d, Delay for Lane Group [s/veh]	365.68	34.53	367.69	119.20	20.21	331.46	39.88	186.73
Lane Group LOS	F	C	F	F	C	F	D	F
Critical Lane Group	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	11.36	5.31	19.52	16.76	1.87	108.07	0.73	51.01
50th-Percentile Queue Length [ft]	283.95	132.64	488.08	418.88	46.81	2701.77	18.23	1275.19
95th-Percentile Queue Length [veh]	20.35	9.08	32.91	25.24	3.37	172.16	1.31	76.14
95th-Percentile Queue Length [ft]	508.80	227.08	822.83	631.01	84.26	4303.97	32.81	1903.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	365.68	34.53	34.53	367.69	119.20	119.20	20.21	331.46	331.46	39.88	186.73	186.73
Movement LOS	F	C	C	F	F	F	C	F	F	D	F	F
d_A, Approach Delay [s/veh]	160.37			217.87			296.50			182.02		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	239.05											
Intersection LOS	F											
Intersection V/C	1.338											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 30: 28 - 8th Avenue / College Street

Control Type:	All-way stop	Delay (sec / veh):	99.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	8th Avenue			8th Avenue			College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	8th Avenue			8th Avenue			College Street			College Street		
Base Volume Input [veh/h]	69	126	7	39	65	55	127	250	77	6	236	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.80	0.00	0.00	0.00	0.00	0.80	0.40	0.00	0.00	0.40	0.00
Growth Rate	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	97	176	10	55	91	77	178	350	108	8	330	53
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	25	46	3	14	24	20	46	91	28	2	86	14
Total Analysis Volume [veh/h]	101	184	10	57	95	80	186	365	113	8	344	55
Pedestrian Volume [ped/h]	18			12			29			33		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.73	3.02	30.17	8.53
95th-Percentile Queue Length [ft]	118.23	75.45	754.31	213.28
Approach Delay [s/veh]	25.70	20.06	196.11	39.24
Approach LOS	D	C	F	E
Intersection Delay [s/veh]	99.14			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 31: 29 - 7th Avenue / Grant Street

Control Type:	All-way stop	Delay (sec / veh):	123.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	7th Avenue		Grant Street		Grant Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

volumes

Name	7th Avenue		Grant Street		Grant Street	
Base Volume Input [veh/h]	100	125	192	49	39	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.50	0.00	0.00	0.80
Growth Rate	2.74	2.74	2.74	2.74	2.74	2.74
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	343	526	134	107	348
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	71	89	137	35	28	91
Total Analysis Volume [veh/h]	286	358	549	140	112	363
Pedestrian Volume [ped/h]	28		129		74	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	23.32	28.83	11.27
95th-Percentile Queue Length [ft]	582.97	720.87	281.82
Approach Delay [s/veh]	126.59	169.64	50.65
Approach LOS	F	F	F
Intersection Delay [s/veh]	123.05		
Intersection LOS	F		

Intersection Level Of Service Report
Intersection 32: 30 - 7th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

Intersection Setup

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	0	7	38	30	13	86	37	663	4	8	568	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.60	6.70	0.00	0.00	2.70	0.60	0.00	0.00	0.90	0.00
Growth Rate	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	48	38	17	109	47	842	5	10	721	64
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	0	2	13	10	4	28	12	220	1	3	188	17
Total Analysis Volume [veh/h]	0	10	52	40	18	114	49	879	5	10	752	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	2			2			42			2		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	0	60	0	0	60	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	11	11	11	11	59	59	59	59
g / C, Green / Cycle	0.14	0.14	0.14	0.14	0.73	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.00	0.04	0.03	0.09	0.07	0.47	0.02	0.44
s, saturation flow rate [veh/h]	1278	1645	1269	1431	660	1887	638	1856
c, Capacity [veh/h]	140	235	205	204	409	1381	381	1359
d1, Uniform Delay [s]	0.00	30.54	34.16	32.37	11.58	5.40	12.03	5.14
k, delay calibration	0.11	0.11	0.11	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.59	0.46	3.39	0.60	2.28	0.13	1.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

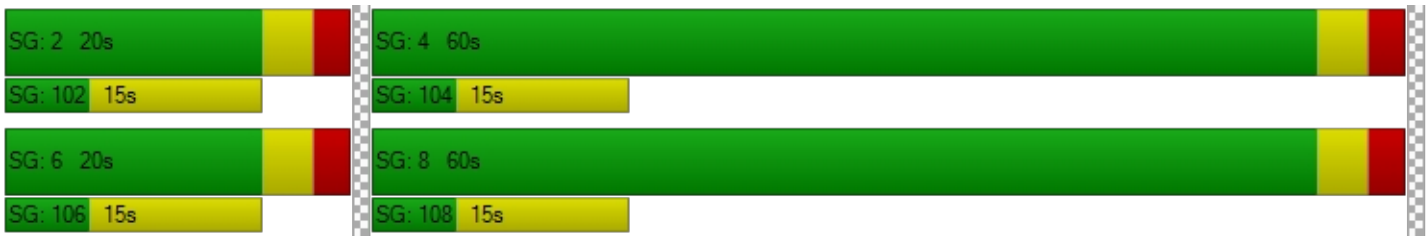
X, volume / capacity	0.00	0.26	0.20	0.65	0.12	0.64	0.03	0.60
d, Delay for Lane Group [s/veh]	0.00	31.13	34.62	35.76	12.18	7.68	12.16	7.12
Lane Group LOS	A	C	C	D	B	A	B	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.00	1.08	0.74	2.55	0.52	5.94	0.11	5.21
50th-Percentile Queue Length [ft]	0.00	27.04	18.57	63.66	13.07	148.56	2.67	130.37
95th-Percentile Queue Length [veh]	0.00	1.95	1.34	4.58	0.94	9.94	0.19	8.96
95th-Percentile Queue Length [ft]	0.00	48.67	33.42	114.58	23.53	248.51	4.80	224.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	31.13	31.13	34.62	35.76	35.76	12.18	7.68	7.68	12.16	7.12	7.12
Movement LOS	A	C	C	C	D	D	B	A	A	B	A	A
d_A, Approach Delay [s/veh]	31.13			35.50			7.92			7.19		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	10.71											
Intersection LOS	B											
Intersection V/C	0.561											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 33: 31 - Valley Center Spur / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	20.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.302

Intersection Setup

Name	Valley Center Spur		Frontage Road		Frontage Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	825.00	100.00	100.00	615.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	108	76	142	298	158	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.90	1.30	0.70	2.60	1.30	1.80
Growth Rate	0.88	0.88	0.88	0.88	0.88	0.88
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	67	125	262	139	99
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	26	18	36	75	40	28
Total Analysis Volume [veh/h]	103	73	143	299	159	113
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.08	0.11	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	20.35	13.86	8.11	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	1.78	1.78	0.37	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	44.49	44.49	9.25	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.66		2.63		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.80					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 34: 32 - Valley Center Spur / Valley Center Road

Control Type:	Two-way stop	Delay (sec / veh):	500.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.908

Intersection Setup

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	0	0
Pocket Length [ft]	100.00	120.00	430.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Valley Center Spur		Valley Center Road		Valley Center Road	
Base Volume Input [veh/h]	109	135	70	195	264	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	5.20	2.90	6.60	3.00	1.70
Growth Rate	1.91	1.91	1.91	1.91	1.91	1.91
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	258	134	372	504	231
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0500	1.0500	1.0500	1.0500
Total 15-Minute Volume [veh/h]	57	70	38	106	144	66
Total Analysis Volume [veh/h]	226	280	153	425	575	264
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.91	0.65	0.19	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	500.26	27.71	10.63	0.00	0.00	0.00
Movement LOS	F	D	B	A	A	A
95th-Percentile Queue Length [veh]	18.12	4.52	0.71	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	453.06	112.89	17.80	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	238.77		2.81		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	63.67					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 35: 33 - Nelson Road / Frontage Road

Control Type:	Two-way stop	Delay (sec / veh):	22.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

Name	Nelson Road		Frontage Road		Frontage Road	
Approach	Southwestbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	1	0
Pocket Length [ft]	100.00	100.00	100.00	575.00	600.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Nelson Road		Frontage Road		Frontage Road	
Base Volume Input [veh/h]	12	12	481	49	18	241
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	8.30	2.70	0.00	5.60	2.50
Growth Rate	1.23	1.23	1.23	1.23	1.23	1.23
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	15	592	60	22	296
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0900	1.0900	1.0900	1.0900
Total 15-Minute Volume [veh/h]	4	4	175	18	7	88
Total Analysis Volume [veh/h]	16	16	701	71	26	351
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.04	0.01	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	22.22	14.86	0.00	0.00	9.49	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.36	0.36	0.00	0.00	0.10	0.00
95th-Percentile Queue Length [ft]	8.93	8.93	0.00	0.00	2.43	0.00
d_A, Approach Delay [s/veh]	18.54		0.00		0.65	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.71					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 36: 34 - 19th Avenue / I-90 EB Ramp

Control Type:	Signalized	Delay (sec / veh):	228.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.353

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	350.00	100.00	100.00	100.00	100.00	100.00	270.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

volumes

Name	19th Avenue			19th Avenue			I-90 WB On			I-90 WB Off		
Base Volume Input [veh/h]	0	877	200	45	486	0	0	0	0	17	0	279
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.20	3.50	0.00	1.80	2.00	2.00	2.00	2.00	5.90	2.00	4.00
Growth Rate	1.00	1.88	1.88	1.88	1.88	1.00	1.00	1.00	1.00	1.88	1.00	1.88
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1649	376	85	914	0	0	0	0	32	0	525
Peak Hour Factor	1.0000	0.9200	0.9200	0.9200	0.9200	1.0000	1.0000	1.0000	1.0000	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	448	102	23	248	0	0	0	0	9	0	143
Total Analysis Volume [veh/h]	0	1792	409	92	993	0	0	0	0	35	0	571
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	2	1	6	0	0	0	0	3	0	0
Auxiliary Signal Groups			2									
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	30	30	15	30	0	0	0	0	20	0	0
Maximum Green [s]	0	60	60	30	90	0	0	0	0	45	0	0
Amber [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Split [s]	0	71	71	18	89	0	0	0	0	31	0	0
Vehicle Extension [s]	0.0	3.0	3.0	3.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	5	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	0	0	10	0	0
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	3.0	1.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Minimum Recall		No	No	No	No					No		
Maximum Recall		No	No	No	No					No		
Pedestrian Recall		No	No	No	No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C		L	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00		5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00		3.00	3.00
g_i, Effective Green Time [s]	67	67	84	84		26	26
g / C, Green / Cycle	0.56	0.56	0.70	0.70		0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.96	0.26	0.17	0.53		0.02	0.37
s, saturation flow rate [veh/h]	1859	1560	552	1866		1709	1553
c, Capacity [veh/h]	1031	865	327	1306		370	336
d1, Uniform Delay [s]	26.74	16.15	25.22	11.54		37.59	47.00
k, delay calibration	0.50	0.50	0.50	0.50		0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	336.50	1.85	2.14	4.20		0.11	326.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00		1.00	1.00

Lane Group Results

X, volume / capacity	1.74	0.47	0.28	0.76		0.09	1.70
d, Delay for Lane Group [s/veh]	363.24	18.00	27.36	15.74		37.70	373.21
Lane Group LOS	F	B	C	B		D	F
Critical Lane Group	Yes	No	Yes	No		No	Yes
50th-Percentile Queue Length [veh]	123.96	7.07	0.88	16.62		0.84	40.46
50th-Percentile Queue Length [ft]	3099.06	176.66	22.10	415.60		21.03	1011.62
95th-Percentile Queue Length [veh]	195.45	11.43	1.59	23.31		1.51	63.31
95th-Percentile Queue Length [ft]	4886.27	285.65	39.78	582.77		37.85	1582.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	363.24	18.00	27.36	15.74	0.00	0.00	0.00	0.00	37.70	0.00	373.21
Movement LOS		F	B	C	B					D		F
d_A, Approach Delay [s/veh]	299.08			16.73			0.00			353.84		
Approach LOS	F			B			A			F		
d_I, Intersection Delay [s/veh]	228.89											
Intersection LOS	F											
Intersection V/C	1.353											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 37: 35 - 19th Avenue / I-90 WB Ramp

Control Type:	Signalized	Delay (sec / veh):	69.4
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Approach	Northbound			Southbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	275.00	100.00	100.00	100.00	100.00	100.00	260.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

volumes

Name	19th Avenue			19th Avenue			I-90 EB Off			I-90 EB On		
Base Volume Input [veh/h]	424	500	0	0	313	26	208	0	60	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.60	1.00	2.00	2.00	0.90	7.70	2.40	2.00	1.70	2.00	2.00	2.00
Growth Rate	1.58	1.58	1.00	1.00	1.58	1.58	1.58	1.00	1.58	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	670	790	0	0	495	41	329	0	95	0	0	0
Peak Hour Factor	0.9200	0.9200	1.0000	1.0000	0.9200	0.9200	0.9200	1.0000	0.9200	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	182	215	0	0	135	11	89	0	26	0	0	0
Total Analysis Volume [veh/h]	728	859	0	0	538	45	358	0	103	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No			
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	7	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	10	30	0	0	30	0	15	0	0	0	0	0
Maximum Green [s]	25	60	0	0	60	0	45	0	0	0	0	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Split [s]	46	90	0	0	44	0	30	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	5	0	0	0	0	0
Pedestrian Clearance [s]	0	10	0	0	10	0	10	0	0	0	0	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	No			No		No					
Maximum Recall	No	No			No		No					
Pedestrian Recall	No	No			No		No					
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	R	
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	
g_i, Effective Green Time [s]	85	85	39	25	25	
g / C, Green / Cycle	0.71	0.71	0.33	0.21	0.21	
(v / s)_i Volume / Saturation Flow Rate	0.62	0.51	0.35	0.23	0.07	
s, saturation flow rate [veh/h]	1179	1693	1672	1590	1429	
c, Capacity [veh/h]	680	1199	543	331	298	
d1, Uniform Delay [s]	34.47	10.36	40.50	47.50	40.52	
k, delay calibration	0.50	0.50	0.50	0.47	0.11	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	55.20	3.68	59.62	71.24	0.69	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	

Lane Group Results

X, volume / capacity	1.07	0.72	1.07	1.08	0.35	
d, Delay for Lane Group [s/veh]	89.67	14.04	100.12	118.74	41.21	
Lane Group LOS	F	B	F	F	D	
Critical Lane Group	Yes	No	Yes	Yes	No	
50th-Percentile Queue Length [veh]	18.55	13.15	24.79	16.39	2.67	
50th-Percentile Queue Length [ft]	463.64	328.75	619.77	409.86	66.65	
95th-Percentile Queue Length [veh]	27.09	19.10	34.52	24.02	4.80	
95th-Percentile Queue Length [ft]	677.34	477.43	863.12	600.40	119.97	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	89.67	14.04	0.00	0.00	100.12	100.12	118.74	0.00	41.21	0.00	0.00	0.00
Movement LOS	F	B			F	F	F		D			
d_A, Approach Delay [s/veh]	48.74			100.12			101.42			0.00		
Approach LOS	D			F			F			A		
d_I, Intersection Delay [s/veh]	69.35											
Intersection LOS	E											
Intersection V/C	0.876											

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 38: 36 - 19th Avenue / Tschache Way

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	200.00	100.00	200.00	275.00	100.00	175.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Tschache Way			Tschache Way		
Base Volume Input [veh/h]	65	1089	48	73	797	57	102	22	56	76	26	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.90	0.00	0.00	0.70	0.00	1.00	0.00	3.60	0.00	0.00	3.40
Growth Rate	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	103	1732	76	116	1267	91	162	35	89	121	41	142
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	489	21	33	358	26	44	10	24	33	11	39
Total Analysis Volume [veh/h]	116	1958	86	131	1432	103	176	38	97	132	45	154
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	10	30	0	10	30	0	0	15	0	0	15	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	14	96	0	13	95	0	0	41	0	0	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	104	91	91	104	91	91	36	36	36	36
g / C, Green / Cycle	0.69	0.61	0.61	0.69	0.61	0.61	0.24	0.24	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.22	0.55	0.05	0.33	0.40	0.06	0.15	0.08	0.10	0.12
s, saturation flow rate [veh/h]	531	3585	1615	395	3592	1615	1190	1686	1274	1672
c, Capacity [veh/h]	341	2176	980	239	2178	979	198	405	255	401
d1, Uniform Delay [s]	14.99	25.53	12.24	33.50	19.33	12.42	66.92	47.09	58.74	49.17
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.16	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.70	6.49	0.18	8.79	1.57	0.22	17.33	0.48	1.63	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.90	0.09	0.55	0.66	0.11	0.89	0.33	0.52	0.50
d, Delay for Lane Group [s/veh]	17.69	32.03	12.42	42.29	20.90	12.63	84.25	47.57	60.37	50.12
Lane Group LOS	B	C	B	D	C	B	F	D	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	1.48	31.07	1.27	1.98	16.55	1.54	7.78	4.28	4.83	6.61
50th-Percentile Queue Length [ft]	37.04	776.69	31.84	49.51	413.74	38.60	194.50	106.94	120.79	165.19
95th-Percentile Queue Length [veh]	2.67	40.21	2.29	3.56	23.22	2.78	12.35	7.67	8.44	10.82
95th-Percentile Queue Length [ft]	66.68	1005.21	57.32	89.11	580.53	69.49	308.86	191.74	210.92	270.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.69	32.03	12.42	42.29	20.90	12.63	84.25	47.57	47.57	60.37	50.12	50.12
Movement LOS	B	C	B	D	C	B	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	30.48			22.07			68.33			54.21		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	31.74											
Intersection LOS	C											
Intersection V/C	0.721											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 39: 37 - 19th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	82.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.011

Intersection Setup

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	400.00	100.00	400.00	275.00	100.00	250.00	200.00	100.00	100.00	225.00	100.00	225.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	115	836	205	186	645	75	148	227	56	248	423	262
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	0.90	2.60	1.30	1.10	3.20	0.00	4.40	1.40	3.50	0.50	2.40
Growth Rate	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87	1.87
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	215	1563	383	348	1206	140	277	424	105	464	791	490
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	58	425	104	95	328	38	75	115	29	122	208	129
Total Analysis Volume [veh/h]	234	1699	416	378	1311	152	301	461	114	489	834	517
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	165
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	30	30	10	30	30	10	20	20	10	20	20
Maximum Green [s]	30	90	90	30	90	90	30	45	45	30	45	45
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	18	75	75	27	84	84	22	27	27	36	41	41
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	97	70	108	97	81	105	58	22	40	58	36	65
g / C, Green / Cycle	0.59	0.42	0.65	0.59	0.49	0.64	0.35	0.13	0.24	0.35	0.22	0.39
(v / s)_i Volume / Saturation Flow Rate	0.38	0.47	0.26	0.56	0.37	0.10	0.28	0.13	0.07	0.35	0.23	0.33
s, saturation flow rate [veh/h]	611	3585	1574	675	3578	1565	1062	3465	1593	1403	3600	1577
c, Capacity [veh/h]	300	1521	1030	339	1765	999	293	462	383	437	785	621
d1, Uniform Delay [s]	30.75	47.50	13.38	64.25	33.45	11.93	58.87	71.48	51.30	56.66	64.50	45.08
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.34	0.50	0.11	0.29	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.97	62.21	1.18	83.35	2.88	0.22	60.08	18.95	1.17	79.87	34.69	12.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

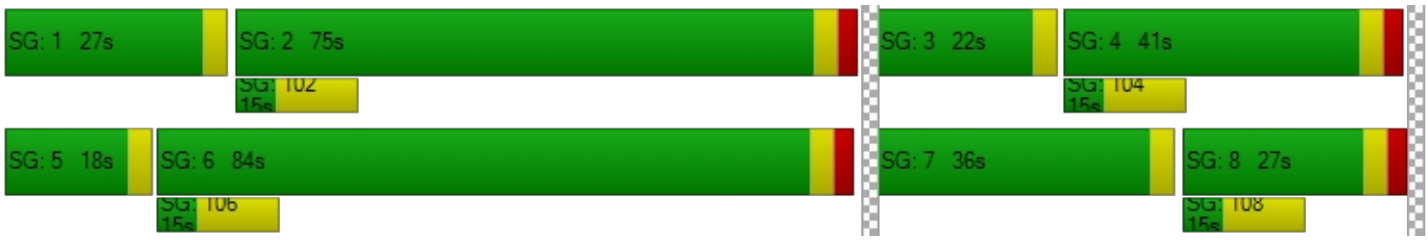
X, volume / capacity	0.78	1.12	0.40	1.11	0.74	0.15	1.03	1.00	0.30	1.12	1.06	0.83
d, Delay for Lane Group [s/veh]	48.72	109.71	14.56	147.60	36.32	12.16	118.95	90.43	52.48	136.53	99.19	57.42
Lane Group LOS	D	F	B	F	D	B	F	F	D	F	F	E
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.81	44.19	7.66	14.56	21.73	2.36	14.26	11.01	4.05	25.31	20.33	21.28
50th-Percentile Queue Length [ft]	145.23	1104.74	191.48	363.90	543.27	59.02	356.44	275.26	101.23	632.81	508.33	531.91
95th-Percentile Queue Length [veh]	9.76	59.79	12.20	22.50	29.38	4.25	20.83	16.45	7.29	36.14	28.70	28.84
95th-Percentile Queue Length [ft]	244.05	1494.63	304.94	562.49	734.40	106.24	520.63	411.30	182.22	903.56	717.41	721.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.72	109.71	14.56	147.60	36.32	12.16	118.95	90.43	52.48	136.53	99.19	57.42
Movement LOS	D	F	B	F	D	B	F	F	D	F	F	E
d_A, Approach Delay [s/veh]	86.78			57.18			95.29			97.38		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	82.79											
Intersection LOS	F											
Intersection V/C	1.011											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 40: 38 - 19th Avenue / Durston Road

Control Type:	Signalized	Delay (sec / veh):	54.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	90.00	100.00	100.00	250.00	100.00	100.00	325.00	100.00	420.00	140.00	100.00	50.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Durston Road			Durston Road		
Base Volume Input [veh/h]	178	918	62	96	763	139	145	251	103	80	368	117
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.50	1.60	1.00	0.80	0.00	0.00	0.80	1.00	0.00	0.50	0.00
Growth Rate	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	249	1285	87	134	1068	195	203	351	144	112	515	164
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	68	349	24	36	290	53	54	93	38	30	136	43
Total Analysis Volume [veh/h]	271	1397	95	146	1161	212	214	370	152	118	543	173
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	8	30	0	8	30	0	8	15	15	8	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	18	70	0	11	63	0	14	56	56	13	55	55
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	79	68	68	79	61	61	61	50	70	61	47	60
g / C, Green / Cycle	0.53	0.45	0.45	0.53	0.41	0.41	0.41	0.33	0.46	0.41	0.31	0.40
(v / s)_i Volume / Saturation Flow Rate	0.40	0.40	0.41	0.28	0.37	0.38	0.20	0.20	0.10	0.10	0.29	0.11
s, saturation flow rate [veh/h]	683	1872	1831	516	1885	1786	1064	1885	1599	1148	1891	1615
c, Capacity [veh/h]	292	862	843	215	780	739	255	612	732	364	579	634
d1, Uniform Delay [s]	45.67	36.37	36.73	32.75	40.95	41.36	37.95	42.57	24.35	31.16	50.67	30.98
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.13	0.41	0.11	0.35	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.91	11.54	12.79	15.97	15.07	17.42	26.80	1.16	0.53	0.51	19.62	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

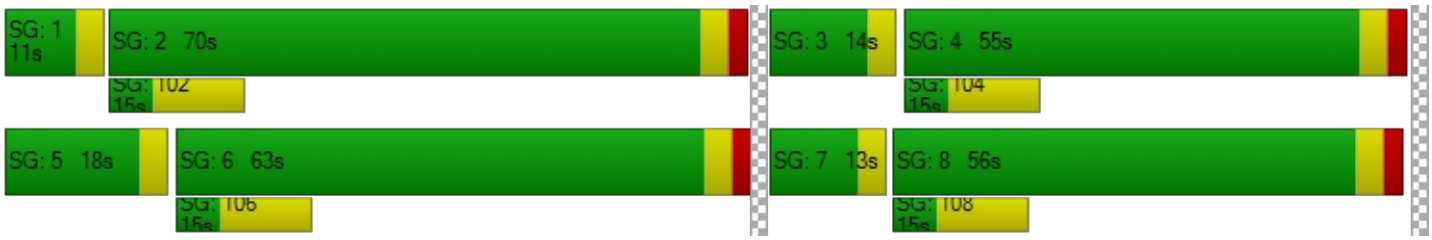
X, volume / capacity	0.93	0.87	0.88	0.68	0.90	0.91	0.84	0.60	0.21	0.32	0.94	0.27
d, Delay for Lane Group [s/veh]	82.58	47.91	49.52	48.72	56.02	58.79	64.75	43.73	24.88	31.67	70.30	32.04
Lane Group LOS	F	D	D	D	E	E	E	D	C	C	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	8.35	27.55	27.84	3.62	27.51	27.16	7.21	11.70	3.37	2.81	22.78	4.48
50th-Percentile Queue Length [ft]	208.80	688.77	695.96	90.61	687.65	679.11	180.20	292.60	84.34	70.32	569.49	111.97
95th-Percentile Queue Length [veh]	13.09	36.16	36.49	6.52	36.11	35.71	11.61	17.31	6.07	5.06	30.61	7.95
95th-Percentile Queue Length [ft]	327.29	903.98	912.28	163.09	902.68	892.79	290.27	432.87	151.81	126.57	765.17	198.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	82.58	48.65	49.52	48.72	57.12	58.79	64.75	43.73	24.88	31.67	70.30	32.04
Movement LOS	F	D	D	D	E	E	E	D	C	C	E	C
d_A, Approach Delay [s/veh]	53.92			56.54			45.95			56.90		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	54.04											
Intersection LOS	D											
Intersection V/C	0.831											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 41: 39 - 7th Avenue / Durston Road / Peach Street

Control Type:	Signalized	Delay (sec / veh):	52.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	70.00	100.00	100.00	50.00	100.00	50.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Durston Road			Peach Street		
Base Volume Input [veh/h]	72	681	34	64	489	189	194	233	57	23	233	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	1.60	1.00	0.50	1.00	0.40	0.00	0.00	0.40	0.00
Growth Rate	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	885	44	83	636	246	252	303	74	30	303	94
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9900	0.9900	0.9900	0.9900	0.9900	0.9900	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Total 15-Minute Volume [veh/h]	25	238	12	22	171	66	65	78	19	8	78	24
Total Analysis Volume [veh/h]	101	952	47	89	684	265	260	313	76	31	313	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	8	30	0	8	30	0	0	20	0	0	20	0
Maximum Green [s]	25	90	0	25	90	0	0	45	0	0	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	11	36	0	11	36	0	0	25	0	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	44	33	33	44	33	33	26	26	30
g / C, Green / Cycle	0.38	0.29	0.29	0.38	0.29	0.29	0.23	0.23	0.26
(v / s)_i Volume / Saturation Flow Rate	0.10	0.27	0.27	0.11	0.19	0.16	0.15	0.21	0.24
s, saturation flow rate [veh/h]	976	1881	1850	802	3582	1607	1792	1829	1816
c, Capacity [veh/h]	338	542	533	254	1027	461	410	418	474
d1, Uniform Delay [s]	25.24	39.81	39.82	27.77	36.17	35.04	40.01	43.44	41.44
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.14	0.34	0.25
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.25	24.69	25.02	3.79	3.42	5.16	2.09	22.37	16.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

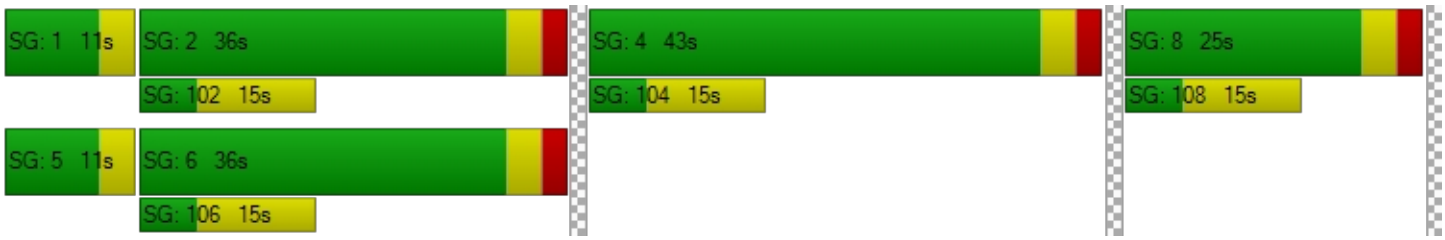
X, volume / capacity	0.30	0.93	0.93	0.35	0.67	0.58	0.63	0.93	0.93
d, Delay for Lane Group [s/veh]	27.49	64.51	64.84	31.56	39.59	40.20	42.10	65.82	57.91
Lane Group LOS	C	E	E	C	D	D	D	E	E
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes
50th-Percentile Queue Length [veh]	2.02	17.38	17.15	1.85	8.91	6.98	6.85	13.34	14.24
50th-Percentile Queue Length [ft]	50.61	434.56	428.74	46.36	222.67	174.49	171.26	333.55	355.89
95th-Percentile Queue Length [veh]	3.64	24.22	23.94	3.34	13.80	11.31	11.14	19.33	20.42
95th-Percentile Queue Length [ft]	91.10	605.49	598.53	83.46	345.03	282.80	278.58	483.31	510.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.49	64.66	64.84	31.56	39.59	40.20	42.10	65.82	65.82	57.91	57.91	57.91
Movement LOS	C	E	E	C	D	D	D	E	E	E	E	E
d_A, Approach Delay [s/veh]	61.26			39.06			56.32			57.91		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	52.67											
Intersection LOS	D											
Intersection V/C	0.758											

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 42: 40 - 19th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	63.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

Intersection Setup

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	2	0	0	2	0	1
Pocket Length [ft]	100.00	100.00	100.00	230.00	100.00	113.00	200.00	100.00	100.00	250.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Main Street			Main Street		
Base Volume Input [veh/h]	122	629	107	129	499	307	371	601	31	175	754	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.40	0.00	0.00	1.40	1.30	1.60	0.80	0.00	0.00	0.80	0.50
Growth Rate	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41	1.41
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	887	151	182	704	433	523	847	44	247	1063	268
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	45	231	39	47	184	113	136	221	11	64	277	70
Total Analysis Volume [veh/h]	179	926	158	190	735	452	546	884	46	258	1109	280
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	0	7	4	4
Auxiliary Signal Groups			2,7			3,6						1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	5
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	27	54	54	24	51	51	38	24	0	78	64	64
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	No
Maximum Recall	No	No	No	No	No	No	No	No		No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	3.00	5.00	3.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	0.00	1.00	3.00	0.00	1.00	3.00	3.00	1.00	3.00	0.00
g_i, Effective Green Time [s]	24	49	70	21	46	112	36	78	78	16	58	123
g / C, Green / Cycle	0.13	0.27	0.39	0.12	0.26	0.62	0.20	0.43	0.43	0.09	0.32	0.68
(v / s)_i Volume / Saturation Flow Rate	0.13	0.26	0.10	0.11	0.21	0.28	0.20	0.25	0.25	0.07	0.31	0.17
s, saturation flow rate [veh/h]	1417	3603	1615	1810	3568	1594	2752	1885	1852	3514	3589	1607
c, Capacity [veh/h]	213	983	630	208	908	993	569	817	803	315	1154	1097
d1, Uniform Delay [s]	79.34	64.07	37.09	78.72	62.98	17.87	73.26	38.43	38.49	80.47	59.94	10.96
k, delay calibration	0.43	0.50	0.50	0.39	0.50	0.50	0.11	0.15	0.15	0.11	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.41	17.77	0.95	36.27	7.72	1.51	10.43	0.88	0.92	5.21	6.14	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

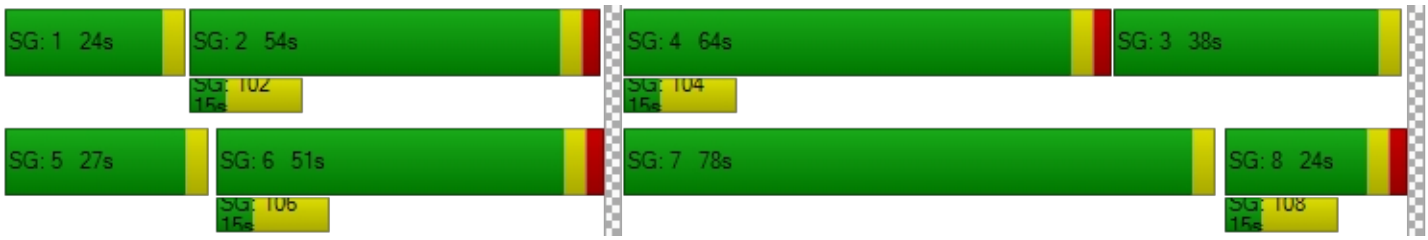
X, volume / capacity	0.84	0.94	0.25	0.91	0.81	0.46	0.96	0.57	0.58	0.82	0.96	0.26
d, Delay for Lane Group [s/veh]	106.75	81.84	38.04	114.99	70.70	19.37	83.69	39.31	39.40	85.68	66.08	11.52
Lane Group LOS	F	F	D	F	E	B	F	D	D	F	E	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	10.02	23.27	5.00	10.88	16.88	10.49	13.61	16.05	15.88	6.16	25.89	4.58
50th-Percentile Queue Length [ft]	250.60	581.85	124.92	271.98	421.98	262.31	340.16	401.32	397.00	154.06	647.20	114.44
95th-Percentile Queue Length [veh]	15.22	31.19	8.66	16.29	23.62	15.80	19.66	22.62	22.42	10.23	34.23	8.09
95th-Percentile Queue Length [ft]	380.41	779.65	216.57	407.21	590.42	395.12	491.40	565.59	560.39	255.84	855.81	202.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	106.75	81.84	38.04	114.99	70.70	19.37	83.69	39.35	39.40	85.68	66.08	11.52
Movement LOS	F	F	D	F	E	B	F	D	D	F	E	B
d_A, Approach Delay [s/veh]	79.89			59.96			55.75			59.88		
Approach LOS	E			E			E			E		
d_I, Intersection Delay [s/veh]	63.23											
Intersection LOS	E											
Intersection V/C	0.879											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 43: 41 - 7th Avenue / Main Street

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name	7th Avenue		Main Street		Main Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	90.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

volumes

Name	7th Avenue		Main Street		Main Street	
Base Volume Input [veh/h]	219	286	328	333	407	141
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.50	2.40	0.60	1.50	1.70	0.00
Growth Rate	1.34	1.34	1.34	1.34	1.34	1.34
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	383	440	446	545	189
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Total 15-Minute Volume [veh/h]	74	97	111	113	138	48
Total Analysis Volume [veh/h]	296	387	445	451	551	191
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Overlap	ProtectedPermissi	Permissive	Permissive	Permissive
Signal group	1	6	3	8	4	0
Auxiliary Signal Groups		3,6				
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	2.0	2.0	2.0	2.0	2.0	0.0
Split [s]	30	30	10	60	50	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	3.0	3.0	3.0	3.0	0.0
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	0.00	0.00	0.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	23	35	57	57	57	45	45
g / C, Green / Cycle	0.26	0.39	0.63	0.63	0.63	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.18	0.27	0.16	0.49	0.29	0.22	0.24
s, saturation flow rate [veh/h]	1620	1419	818	665	1533	1681	1541
c, Capacity [veh/h]	415	549	532	462	970	844	774
d1, Uniform Delay [s]	30.46	23.25	8.00	9.72	8.49	14.33	14.71
k, delay calibration	0.18	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.70	7.40	1.14	8.63	1.51	1.66	2.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

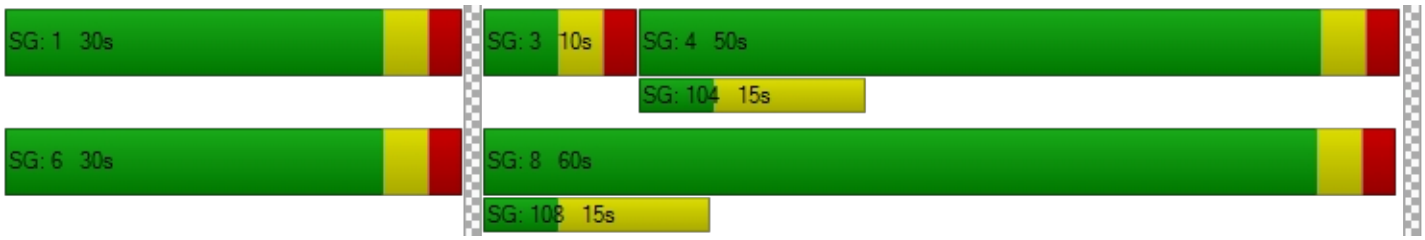
X, volume / capacity	0.71	0.70	0.25	0.70	0.45	0.44	0.48
d, Delay for Lane Group [s/veh]	34.16	30.65	9.14	18.35	10.00	15.99	16.83
Lane Group LOS	C	C	A	B	B	B	B
Critical Lane Group	No	Yes	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	6.12	7.74	1.09	3.66	4.25	4.95	5.14
50th-Percentile Queue Length [ft]	153.00	193.53	27.29	91.52	106.30	123.78	128.46
95th-Percentile Queue Length [veh]	10.18	12.30	1.97	6.59	7.63	8.60	8.86
95th-Percentile Queue Length [ft]	254.43	307.60	49.13	164.74	190.85	215.01	221.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.16	30.65	14.13	10.26	16.26	16.83
Movement LOS	C	C	B	B	B	B
d_A, Approach Delay [s/veh]	32.17		12.89		16.41	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	19.69					
Intersection LOS	B					
Intersection V/C	0.608					

Sequence

Ring 1	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 44: 42 - 19th Avenue / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	35.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.542

Intersection Setup

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	30	781	35	0	595	51	18	59	44	24	27	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	2.90	2.00	1.00	0.00	0.00	1.70	0.00	0.00	0.00	1.80
Growth Rate	1.57	1.57	1.57	1.00	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	1226	55	0	934	80	28	93	69	38	42	88
Peak Hour Factor	0.9200	0.9200	0.9200	1.0000	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	1.0000	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	12	323	14	0	246	21	7	25	18	10	11	23
Total Analysis Volume [veh/h]	50	1293	58	0	985	84	30	98	73	40	44	93
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	180
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	102	0	0	102	0	0	78	0	0	78	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	97	97	97	97	97	73	73
g / C, Green / Cycle	0.54	0.54	0.54	0.54	0.54	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.10	0.40	0.40	0.32	0.32	0.14	0.13
s, saturation flow rate [veh/h]	483	1683	1658	1693	1647	1471	1356
c, Capacity [veh/h]	188	907	893	912	888	620	575
d1, Uniform Delay [s]	48.31	32.10	32.16	27.96	28.33	36.53	36.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.44	5.65	5.79	2.75	3.02	1.39	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

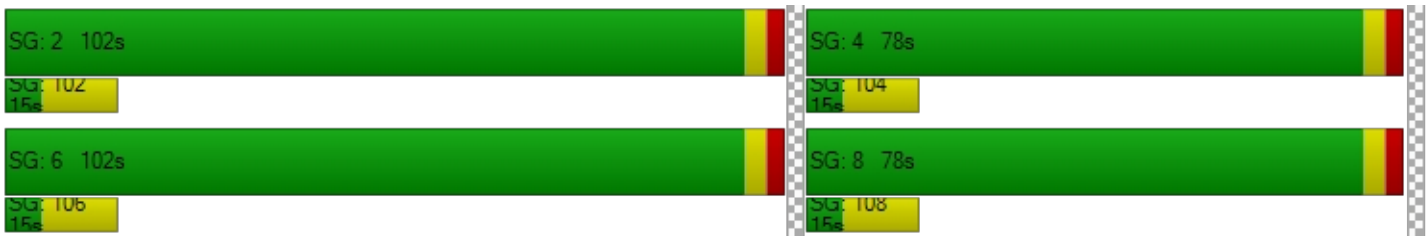
X, volume / capacity	0.27	0.75	0.75	0.59	0.60	0.32	0.31
d, Delay for Lane Group [s/veh]	51.76	37.75	37.95	30.71	31.34	37.92	37.93
Lane Group LOS	D	D	D	C	C	D	D
Critical Lane Group	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	1.95	24.42	24.20	16.45	16.70	6.46	5.76
50th-Percentile Queue Length [ft]	48.83	610.43	604.93	411.31	417.60	161.49	144.04
95th-Percentile Queue Length [veh]	3.52	32.52	32.26	23.10	23.41	10.63	9.70
95th-Percentile Queue Length [ft]	87.90	813.03	806.62	577.62	585.16	265.69	242.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.76	37.84	37.95	0.00	31.00	31.34	37.92	37.92	37.92	37.93	37.93	37.93
Movement LOS	D	D	D		C	C	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	38.35			31.03			37.92			37.93		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	35.54											
Intersection LOS	D											
Intersection V/C	0.542											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 45: 43 - 19th Avenue / Koch Street

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name				19th Avenue								
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	160.00	100.00	100.00	330.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name				19th Avenue								
Base Volume Input [veh/h]	55	805	52	57	563	22	29	53	79	34	76	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.50	3.80	0.00	0.90	0.00	0.00	0.00	0.00	0.00	0.00	2.00
Growth Rate	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59	1.59
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	1280	83	91	895	35	46	84	126	54	121	80
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	1.0000	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	23	337	22	24	236	9	13	23	34	14	32	21
Total Analysis Volume [veh/h]	92	1350	88	96	944	37	50	91	137	57	128	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	30	0	0	30	0	0	5	0	0	5	0
Maximum Green [s]	0	90	0	0	90	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	58	0	0	58	0	0	32	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	60	60	60	60	60	60	20	20
g / C, Green / Cycle	0.67	0.67	0.67	0.67	0.67	0.67	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.18	0.43	0.43	0.28	0.29	0.29	0.20	0.20
s, saturation flow rate [veh/h]	515	1701	1665	340	1695	1672	1407	1359
c, Capacity [veh/h]	319	1135	1111	195	1131	1116	359	350
d1, Uniform Delay [s]	15.71	8.68	8.72	27.43	7.03	7.03	33.77	33.78
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.18	0.18
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.27	2.75	2.86	8.62	1.23	1.24	5.88	5.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

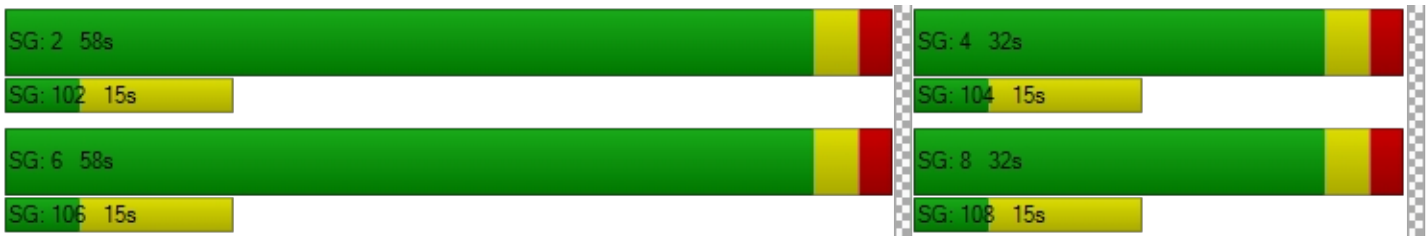
X, volume / capacity	0.29	0.64	0.64	0.49	0.44	0.44	0.77	0.77
d, Delay for Lane Group [s/veh]	17.98	11.42	11.58	36.05	8.26	8.28	39.65	39.68
Lane Group LOS	B	B	B	D	A	A	D	D
Critical Lane Group	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.38	7.70	7.65	2.29	4.16	4.11	6.34	6.16
50th-Percentile Queue Length [ft]	34.40	192.54	191.36	57.29	104.06	102.83	158.55	154.09
95th-Percentile Queue Length [veh]	2.48	12.25	12.19	4.12	7.49	7.40	10.47	10.24
95th-Percentile Queue Length [ft]	61.92	306.32	304.80	103.12	187.30	185.10	261.80	255.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.98	11.50	11.58	36.05	8.27	8.28	39.65	39.65	39.65	39.68	39.68	39.68
Movement LOS	B	B	B	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	11.89			10.75			39.65			39.68		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.32											
Intersection LOS	B											
Intersection V/C	0.627											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 46: 44 - 19th Avenue / College Street

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	19th Avenue						College Street			College Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	450.00	100.00	100.00	330.00	100.00	100.00	300.00	100.00	300.00	175.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue						College Street			College Street		
Base Volume Input [veh/h]	289	548	70	106	550	52	76	247	147	108	337	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	0.00	0.00	0.40	0.00	0.00	0.00	0.70	0.00	0.00	0.90
Growth Rate	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	445	844	108	163	847	80	117	380	226	166	519	174
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Total 15-Minute Volume [veh/h]	117	222	28	43	223	21	31	100	60	44	137	46
Total Analysis Volume [veh/h]	469	890	114	172	893	84	123	401	238	175	547	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	8	7	4	4
Auxiliary Signal Groups									5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	30	0	5	30	0	5	15	15	5	15	15
Maximum Green [s]	25	90	0	25	90	0	25	45	45	25	45	45
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	19	42	0	12	35	0	8	33	33	8	33	33
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No		No	No		No	No	No	No	No	No
Maximum Recall	No	No		No	No		No	No	No	No	No	No
Pedestrian Recall	No	No		No	No		No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	49	37	37	49	30	30	36	28	49	36	28	42
g / C, Green / Cycle	0.52	0.39	0.39	0.52	0.32	0.32	0.38	0.29	0.52	0.38	0.29	0.44
(v / s)_i Volume / Saturation Flow Rate	0.46	0.27	0.28	0.21	0.26	0.26	0.12	0.21	0.15	0.15	0.29	0.11
s, saturation flow rate [veh/h]	1010	1870	1797	819	1892	1836	1030	1900	1604	1134	1900	1601
c, Capacity [veh/h]	495	731	703	407	598	580	255	560	827	355	560	705
d1, Uniform Delay [s]	24.11	24.21	24.30	15.81	30.13	30.14	24.08	29.95	13.08	23.01	33.18	16.79
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.22	0.37	0.11	0.41	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.46	5.43	5.83	3.20	12.58	12.98	6.40	3.52	0.64	1.06	29.12	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.70	0.70	0.42	0.83	0.83	0.48	0.72	0.29	0.49	0.98	0.26
d, Delay for Lane Group [s/veh]	53.57	29.64	30.13	19.01	42.71	43.12	30.48	33.47	13.72	24.07	62.30	17.68
Lane Group LOS	D	C	C	B	D	D	C	C	B	C	E	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	10.31	10.33	10.13	2.24	12.28	11.99	2.24	8.54	2.91	2.72	16.61	2.63
50th-Percentile Queue Length [ft]	257.77	258.26	253.30	56.05	306.93	299.69	55.90	213.53	72.82	68.02	415.25	65.77
95th-Percentile Queue Length [veh]	15.58	15.60	15.35	4.04	18.02	17.67	4.02	13.33	5.24	4.90	23.29	4.74
95th-Percentile Queue Length [ft]	389.43	390.04	383.81	100.89	450.59	441.64	100.61	333.35	131.07	122.43	582.35	118.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.57	29.85	30.13	19.01	42.89	43.12	30.48	33.47	13.72	24.07	62.30	17.68
Movement LOS	D	C	C	B	D	D	C	C	B	C	E	B
d_A, Approach Delay [s/veh]	37.42			39.33			26.82			45.88		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.84											
Intersection LOS	D											
Intersection V/C	0.768											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 47: 45 - 19th Avenue / Graf Street

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	19th Avenue			19th Avenue			Graf Street					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	1	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	400.00	380.00	100.00	100.00	175.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

volumes

Name	19th Avenue			19th Avenue			Graf Street					
Base Volume Input [veh/h]	15	249	290	152	448	54	29	23	11	265	40	160
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.60	2.00	2.00	0.60	0.00	3.40	2.00	0.00	2.00	2.00	2.00
Growth Rate	1.79	1.79	1.00	1.00	1.79	1.79	1.79	1.00	1.79	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	446	290	152	802	97	52	23	20	265	40	160
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	118	79	41	211	26	14	6	5	72	11	43
Total Analysis Volume [veh/h]	28	470	315	165	846	102	57	25	22	288	43	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	47	0	8	55	0	0	15	0	0	15	0
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	34	34	42	42	42	18	18	18	18
g / C, Green / Cycle	0.48	0.48	0.59	0.59	0.59	0.26	0.26	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.04	0.45	0.20	0.45	0.06	0.05	0.03	0.21	0.13
s, saturation flow rate [veh/h]	661	1746	839	1889	1615	1144	1721	1353	1632
c, Capacity [veh/h]	214	842	400	1121	959	221	453	369	430
d1, Uniform Delay [s]	25.25	17.06	12.57	10.46	6.17	29.63	19.52	28.64	21.90
k, delay calibration	0.11	0.26	0.50	0.18	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	11.31	3.13	1.75	0.05	2.81	0.46	15.07	4.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.93	0.41	0.75	0.11	0.26	0.10	0.78	0.50
d, Delay for Lane Group [s/veh]	25.52	28.37	15.70	12.21	6.21	32.44	19.98	43.71	26.09
Lane Group LOS	C	C	B	B	A	C	B	D	C
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.40	12.90	1.26	8.24	0.56	1.05	0.61	6.20	3.36
50th-Percentile Queue Length [ft]	10.11	322.50	31.52	206.00	13.99	26.13	15.25	155.04	84.04
95th-Percentile Queue Length [veh]	0.73	18.79	2.27	12.95	1.01	1.88	1.10	10.29	6.05
95th-Percentile Queue Length [ft]	18.20	469.75	56.74	323.70	25.18	47.04	27.46	257.14	151.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.52	28.37	28.37	15.70	12.21	6.21	32.44	19.98	19.98	43.71	26.09	26.09
Movement LOS	C	C	C	B	B	A	C	B	B	D	C	C
d_A, Approach Delay [s/veh]	28.27			12.18			26.81			36.14		
Approach LOS	C			B			C			D		
d_I, Intersection Delay [s/veh]	22.71											
Intersection LOS	C											
Intersection V/C	0.708											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 49: 47 - Flanders Mill Road / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	31.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.417

Intersection Setup

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

volumes

Name	Flanders Mill Road		Baxter Lane		Baxter Lane	
Base Volume Input [veh/h]	69	100	161	53	105	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	0.00	0.00	0.60
Growth Rate	1.50	1.50	1.50	1.50	1.50	1.50
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	150	242	80	158	242
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	28	41	63	21	41	63
Total Analysis Volume [veh/h]	113	163	253	83	165	253
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.42	0.22	0.00	0.00	0.13	0.00
d_M, Delay for Movement [s/veh]	31.65	23.17	0.00	0.00	8.37	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh]	4.30	4.30	0.00	0.00	1.51	1.51
95th-Percentile Queue Length [ft]	107.39	107.39	0.00	0.00	37.83	37.83
d_A, Approach Delay [s/veh]	26.64		0.00		3.30	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	8.48					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 50: 48 - Davis Lane / Baxter Lane

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.399

Intersection Setup

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	Davis Lane			Davis Lane			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	81	160	30	20	186	71	81	209	58	47	230	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	242	45	30	281	107	122	316	88	71	347	71
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0900	1.0900	1.0900	1.0900	1.0900	1.0900	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	72	13	9	83	32	33	86	24	19	94	19
Total Analysis Volume [veh/h]	145	287	53	36	333	127	133	343	96	77	377	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	22	0	0	22	0	0	38	0	0	38	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	26	26	26	26	26	26	24	24	24	24	24
g / C, Green / Cycle	0.43	0.43	0.43	0.43	0.43	0.43	0.41	0.41	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.15	0.08	0.03	0.03	0.13	0.13	0.14	0.18	0.06	0.07	0.25
s, saturation flow rate [veh/h]	947	3618	1615	1109	1900	1725	952	1900	1615	1054	1845
c, Capacity [veh/h]	406	1541	688	495	809	735	299	774	658	384	752
d1, Uniform Delay [s]	17.26	10.74	10.22	13.60	11.31	11.35	22.97	12.85	11.20	18.19	13.97
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.44	0.27	0.22	0.29	0.93	1.05	1.04	0.40	0.10	0.25	0.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

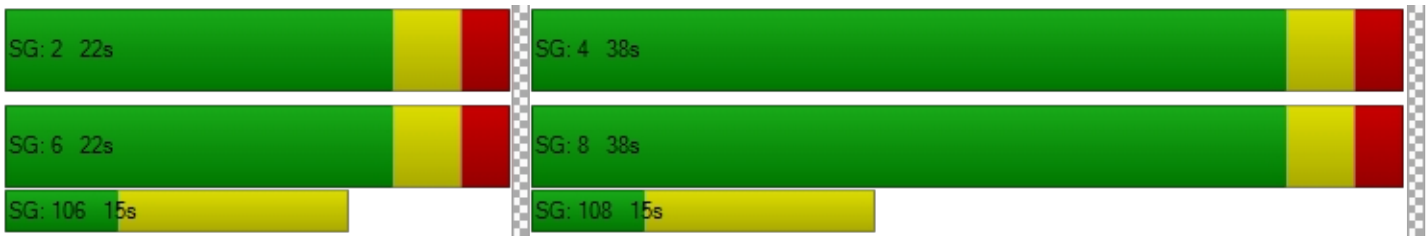
X, volume / capacity	0.36	0.19	0.08	0.07	0.29	0.30	0.44	0.44	0.15	0.20	0.60
d, Delay for Lane Group [s/veh]	19.70	11.01	10.44	13.89	12.24	12.40	24.01	13.25	11.30	18.45	14.76
Lane Group LOS	B	B	B	B	B	B	C	B	B	B	B
Critical Lane Group	Yes	No	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.77	1.10	0.41	0.34	2.03	1.91	1.73	3.02	0.73	0.83	4.39
50th-Percentile Queue Length [ft]	44.26	27.41	10.18	8.55	50.67	47.73	43.36	75.49	18.35	20.68	109.63
95th-Percentile Queue Length [veh]	3.19	1.97	0.73	0.62	3.65	3.44	3.12	5.44	1.32	1.49	7.82
95th-Percentile Queue Length [ft]	79.67	49.33	18.32	15.39	91.20	85.91	78.05	135.89	33.02	37.22	195.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.70	11.01	10.44	13.89	12.28	12.40	24.01	13.25	11.30	18.45	14.76	14.76
Movement LOS	B	B	B	B	B	B	C	B	B	B	B	B
d_A, Approach Delay [s/veh]	13.55			12.43			15.43			15.29		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.24											
Intersection LOS	B											
Intersection V/C	0.399											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 51: 49 - Laurel Parkway / Durston Road

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	Laurel Parkway		Durston Road		Durston Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	0	0	0
Pocket Length [ft]	35.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Laurel Parkway		Durston Road		Durston Road	
Base Volume Input [veh/h]	111	14	12	229	251	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.90	0.00	0.00	0.90	0.00	1.40
Growth Rate	1.81	1.81	1.81	1.81	1.81	1.81
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	25	22	414	454	261
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	55	7	6	108	118	68
Total Analysis Volume [veh/h]	218	27	23	432	474	272
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	1	0	0	8	4	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	2.0	0.0	0.0	2.0	2.0	0.0
Split [s]	23	0	0	67	67	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	0.0	3.0	3.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	18	18	62	62
g / C, Green / Cycle	0.20	0.20	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.12	0.02	0.25	0.42
s, saturation flow rate [veh/h]	1793	1615	1810	1785
c, Capacity [veh/h]	359	323	1289	1230
d1, Uniform Delay [s]	32.79	29.29	5.74	7.48
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.46	0.51	0.76	2.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.08	0.35	0.61
d, Delay for Lane Group [s/veh]	40.25	29.80	6.50	9.71
Lane Group LOS	D	C	A	A
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	4.99	0.52	3.21	7.03
50th-Percentile Queue Length [ft]	124.77	12.89	80.20	175.82
95th-Percentile Queue Length [veh]	8.65	0.93	5.77	11.38
95th-Percentile Queue Length [ft]	216.37	23.20	144.37	284.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.25	29.80	6.50	6.50	9.71	9.71
Movement LOS	D	C	A	A	A	A
d_A, Approach Delay [s/veh]	39.10		6.50		9.71	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	13.68					
Intersection LOS	B					
Intersection V/C	0.539					

Sequence

Ring 1	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 52: 50 - Cottonwood Road / Durston Road

Control Type:	Signalized	Delay (sec / veh):	70.2
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Durston Road			Durston Road		
Base Volume Input [veh/h]	94	16	165	12	12	4	5	251	86	174	312	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.60	0.00
Growth Rate	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	62	635	46	46	15	19	966	331	670	1201	96
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	98	17	173	13	13	4	5	252	86	175	313	25
Total Analysis Volume [veh/h]	393	67	690	50	50	16	20	1008	345	699	1253	100
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	2	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups			2,7						5,8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	13	20	20	8	15	0	64	66	66	26	28	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	0.0	1.0	3.0	3.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00	0.00	0.00	3.00
g_i, Effective Green Time [s]	23	16	44	23	10	10	87	61	76	87	82
g / C, Green / Cycle	0.19	0.13	0.37	0.19	0.08	0.08	0.72	0.51	0.63	0.72	0.68
(v / s)_i Volume / Saturation Flow Rate	0.26	0.02	0.43	0.03	0.02	0.02	0.04	0.53	0.21	0.49	0.73
s, saturation flow rate [veh/h]	1540	3618	1615	1455	1900	1749	465	1900	1615	1439	1864
c, Capacity [veh/h]	367	484	593	390	160	147	150	964	1021	973	1265
d1, Uniform Delay [s]	60.24	45.87	37.97	40.25	51.21	51.27	33.15	29.56	10.31	19.40	19.28
k, delay calibration	0.50	0.50	0.50	0.25	0.11	0.50	0.11	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	67.32	0.60	91.07	0.35	0.64	3.44	0.40	41.57	0.90	4.56	46.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.14	1.16	0.13	0.21	0.22	0.13	1.05	0.34	0.72	1.07
d, Delay for Lane Group [s/veh]	127.56	46.46	129.04	40.59	51.84	54.71	33.55	71.13	11.21	23.97	65.36
Lane Group LOS	F	D	F	D	D	D	C	F	B	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	17.98	0.93	32.08	1.27	0.97	1.06	0.14	37.58	4.36	8.44	46.94
50th-Percentile Queue Length [ft]	449.46	23.19	802.00	31.84	24.15	26.55	3.60	939.60	108.96	210.89	1173.57
95th-Percentile Queue Length [veh]	25.87	1.67	45.71	2.29	1.74	1.91	0.26	49.41	7.78	13.20	61.80
95th-Percentile Queue Length [ft]	646.78	41.75	1142.82	57.32	43.48	47.79	6.48	1235.36	194.56	329.98	1544.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	127.56	46.46	129.04	40.59	52.80	54.71	33.55	71.13	11.21	23.97	65.36	65.36
Movement LOS	F	D	F	D	D	D	C	F	B	C	E	E
d_A, Approach Delay [s/veh]	123.72			47.80			55.53			51.26		
Approach LOS	F			D			E			D		
d_I, Intersection Delay [s/veh]	70.19											
Intersection LOS	E											
Intersection V/C	0.730											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 55: 53 - Fowler Avenue / Durston Road

Control Type:	Two-way stop	Delay (sec / veh):	43.7
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.071

Intersection Setup

Name	Fowler Avenue		Durston Road		Durston Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

volumes

Name	Fowler Avenue		Durston Road		Durston Road	
Base Volume Input [veh/h]	3	6	381	7	19	456
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.85	1.85	1.85	1.85	1.85	1.85
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	11	705	13	35	844
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	2	3	184	3	9	220
Total Analysis Volume [veh/h]	7	12	736	14	37	881
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.03	0.01	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	43.71	15.69	0.00	0.00	9.33	0.00
Movement LOS	E	C	A	A	A	A
95th-Percentile Queue Length [veh]	0.33	0.33	0.00	0.00	0.13	0.00
95th-Percentile Queue Length [ft]	8.20	8.20	0.00	0.00	3.33	0.00
d_A, Approach Delay [s/veh]	26.02		0.00		0.38	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 56: 54 - Cottonwood Road / Babcock Street

Control Type:	Signalized	Delay (sec / veh):	52.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.960

Intersection Setup

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	0	1	0	0
Pocket Length [ft]	265.00	100.00	100.00	210.00	100.00	210.00	100.00	100.00	100.00	50.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Cottonwood Road			Cottonwood Road			Babcock Street			Babcock Street		
Base Volume Input [veh/h]	8	353	76	23	282	11	22	14	7	26	11	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.60	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66	5.66
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	1998	430	130	1596	62	125	79	40	147	62	136
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	543	117	35	434	17	34	21	11	40	17	37
Total Analysis Volume [veh/h]	49	2172	467	141	1735	67	136	86	43	160	67	148
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	8	81	0	8	81	0	0	26	0	0	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	84	76	76	84	77	77	21	21	21	21
g / C, Green / Cycle	0.73	0.66	0.66	0.73	0.67	0.67	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.14	0.70	0.74	0.59	0.48	0.48	0.11	0.07	0.12	0.13
s, saturation flow rate [veh/h]	359	1889	1778	237	1885	1861	1185	1794	1281	1694
c, Capacity [veh/h]	273	1248	1175	192	1261	1244	121	328	195	309
d1, Uniform Delay [s]	11.24	19.50	19.50	38.22	12.08	12.23	56.12	41.39	52.57	44.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.15	0.11	0.19	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.44	42.04	66.99	21.95	3.48	3.69	81.62	0.77	13.35	4.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	1.06	1.12	0.73	0.71	0.72	1.12	0.39	0.82	0.69
d, Delay for Lane Group [s/veh]	12.68	61.54	86.49	60.17	15.56	15.91	137.75	42.16	65.92	48.93
Lane Group LOS	B	F	F	E	B	B	F	D	E	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.40	43.83	49.40	2.05	14.47	14.69	6.27	3.30	5.37	6.14
50th-Percentile Queue Length [ft]	9.94	1095.80	1234.95	51.15	361.79	367.13	156.86	82.46	134.33	153.59
95th-Percentile Queue Length [veh]	0.72	57.48	67.28	3.68	20.71	20.97	10.90	5.94	9.17	10.21
95th-Percentile Queue Length [ft]	17.88	1436.99	1682.03	92.06	517.76	524.25	272.59	148.42	229.37	255.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.68	71.33	86.49	60.17	15.73	15.91	137.75	42.16	42.16	65.92	48.93	48.93
Movement LOS	B	E	F	E	B	B	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	72.90			18.96			91.22			56.18		
Approach LOS	E			B			F			E		
d_I, Intersection Delay [s/veh]	52.75											
Intersection LOS	D											
Intersection V/C	0.960											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 58: 55 - 19th Avenue / Baxter Lane

Control Type:	Signalized	Delay (sec / veh):	69.9
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.999

Intersection Setup

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	325.00	100.00	100.00	300.00	100.00	100.00	245.00	100.00	100.00	150.00	100.00	175.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Baxter Lane			Baxter Lane		
Base Volume Input [veh/h]	110	1053	126	137	850	128	79	175	101	88	226	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.70	2.20	1.10	1.60	1.30	4.60	1.00	3.40	1.80	0.60
Growth Rate	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64	1.64
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	180	1727	207	225	1394	210	130	287	166	144	371	282
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	47	455	55	59	367	55	34	75	43	38	97	74
Total Analysis Volume [veh/h]	190	1821	218	237	1470	221	136	299	173	150	387	294
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			1		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal group	5	2	0	1	6	0	3	8	0	7	4	1
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	5
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	15	78	0	13	76	0	13	41	0	8	36	13
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	0.0	1.0	3.0	1.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	0.00	3.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	86	73	73	86	73	73	44	36	44	31	46
g / C, Green / Cycle	0.61	0.52	0.52	0.61	0.52	0.52	0.31	0.26	0.31	0.22	0.33
(v / s)_i Volume / Saturation Flow Rate	0.39	0.54	0.56	0.58	0.45	0.47	0.11	0.28	0.15	0.21	0.18
s, saturation flow rate [veh/h]	490	1881	1812	406	1879	1796	1194	1706	1021	1866	1605
c, Capacity [veh/h]	254	981	945	220	980	936	249	439	176	415	529
d1, Uniform Delay [s]	35.57	33.50	33.50	58.69	29.19	30.29	38.99	52.00	49.20	53.43	38.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.49	0.19	0.38	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.24	39.46	52.94	82.70	10.02	13.56	8.39	64.58	17.94	25.32	4.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	1.04	1.08	1.08	0.86	0.90	0.55	1.08	0.85	0.93	0.56
d, Delay for Lane Group [s/veh]	53.81	72.96	86.44	141.39	39.21	43.84	47.37	116.58	67.14	78.75	42.73
Lane Group LOS	D	F	F	F	D	D	D	F	E	E	D
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.86	42.99	44.95	8.10	26.91	28.58	4.08	23.23	4.78	16.27	8.96
50th-Percentile Queue Length [ft]	96.43	1074.64	1123.78	202.45	672.68	714.44	102.01	580.68	119.41	406.86	224.03
95th-Percentile Queue Length [veh]	6.94	55.51	59.52	13.43	35.41	37.34	7.34	32.54	8.36	22.89	13.87
95th-Percentile Queue Length [ft]	173.57	1387.78	1487.98	335.79	885.36	933.61	183.62	813.57	209.02	572.26	346.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.81	78.89	86.44	141.39	41.17	43.84	47.37	116.58	116.58	67.14	78.75	42.73
Movement LOS	D	E	F	F	D	D	D	F	F	E	E	D
d_A, Approach Delay [s/veh]	77.49			53.80			101.10			63.91		
Approach LOS	E			D			F			E		
d_I, Intersection Delay [s/veh]	69.88											
Intersection LOS	E											
Intersection V/C	0.999											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 59: 56 - 7th Avenue / Baxter Lane

Control Type:	Two-way stop	Delay (sec / veh):	206.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.350

Intersection Setup

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	80.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Baxter Lane			Driveway		
Base Volume Input [veh/h]	292	799	45	100	812	191	0	0	308	0	0	188
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.60	0.00	0.00	0.80	2.10	2.00	2.00	1.60	2.00	2.00	0.00
Growth Rate	1.45	1.45	1.45	1.45	1.45	1.45	1.00	1.00	1.45	1.00	1.00	1.45
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	423	1159	65	145	1177	277	0	0	447	0	0	273
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	1.0000	1.0000	0.9200	1.0000	1.0000	0.9200
Other Adjustment Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	1.0000	1.0000	0.9600	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	305	17	38	310	73	0	0	117	0	0	74
Total Analysis Volume [veh/h]	446	1222	69	153	1241	292	0	0	466	0	0	297
Pedestrian Volume [ped/h]	0			0			1			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.03	0.01	0.00	0.28	0.01	0.00	0.00	0.00	1.35	0.00	0.00	0.71
d_M, Delay for Movement [s/veh]	81.67	0.00	0.00	14.19	0.00	0.00	0.00	0.00	206.28	0.00	0.00	31.86
Movement LOS	F	A	A	B	A	A			F			D
95th-Percentile Queue Length [veh]	13.70	0.00	0.00	1.15	0.00	0.00	0.00	0.00	22.78	0.00	0.00	5.38
95th-Percentile Queue Length [ft]	342.40	0.00	0.00	28.69	0.00	0.00	0.00	0.00	569.56	0.00	0.00	134.60
d_A, Approach Delay [s/veh]	20.97			1.29			206.28			31.86		
Approach LOS	C			A			F			D		
d_I, Intersection Delay [s/veh]	34.44											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 60: 57 - 7th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	150.00	100.00	150.00	100.00	100.00	100.00	160.00	100.00	100.00	215.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	7th Avenue			7th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	186	765	132	184	621	351	232	227	156	126	321	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.30	21.70	3.70	5.20	17.60	10.00	6.60	6.40	4.40	3.60	9.10	5.60
Growth Rate	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	1094	189	263	888	502	332	325	223	180	459	282
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0300	1.0300	1.0300	1.0300	1.0300	1.0300	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	306	53	74	249	141	88	87	59	49	125	77
Total Analysis Volume [veh/h]	298	1225	212	294	994	562	354	346	238	196	499	307
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap
Signal group	5	2	2	1	6	6	3	8	8	7	4	4
Auxiliary Signal Groups			2,7			3,6			5,8			1,4
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	30	30	10	30	30	8	15	15	8	15	15
Maximum Green [s]	25	90	90	25	90	90	25	45	45	25	45	45
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0
Split [s]	19	59	59	16	56	56	21	30	30	15	24	24
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	5	0	5	5
Pedestrian Clearance [s]	0	10	10	0	10	10	0	10	10	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0	1.0	3.0	3.0
Minimum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	0.00
g_i, Effective Green Time [s]	70	54	71	70	51	74	40	25	46	40	19	37
g / C, Green / Cycle	0.58	0.45	0.59	0.58	0.43	0.62	0.33	0.21	0.38	0.33	0.16	0.31
(v / s)_i Volume / Saturation Flow Rate	0.36	0.41	0.14	0.42	0.32	0.38	0.28	0.10	0.15	0.16	0.15	0.20
s, saturation flow rate [veh/h]	826	2973	1557	696	3076	1468	1256	3400	1547	1253	3316	1529
c, Capacity [veh/h]	424	1338	921	331	1315	909	381	708	589	417	525	472
d1, Uniform Delay [s]	21.02	30.87	11.58	32.38	29.04	14.09	37.33	41.86	27.19	30.62	50.03	35.91
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.50	0.39	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.38	11.28	0.58	27.96	4.08	3.15	31.49	0.52	2.06	2.92	9.85	6.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

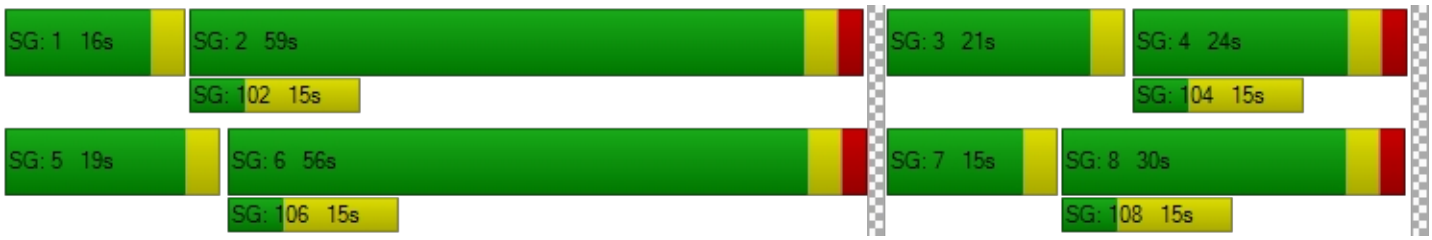
X, volume / capacity	0.70	0.92	0.23	0.89	0.76	0.62	0.93	0.49	0.40	0.47	0.95	0.65
d, Delay for Lane Group [s/veh]	30.41	42.15	12.16	60.34	33.12	17.24	68.82	42.39	29.25	33.55	59.89	42.74
Lane Group LOS	C	D	B	E	C	B	E	D	C	C	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.07	18.19	2.78	6.47	12.63	9.71	11.98	4.58	5.33	4.61	8.11	8.64
50th-Percentile Queue Length [ft]	126.81	454.77	69.54	161.77	315.72	242.85	299.45	114.46	133.37	115.19	202.78	216.05
95th-Percentile Queue Length [veh]	8.77	25.19	5.01	10.64	18.46	14.83	17.65	8.09	9.12	8.13	12.78	13.46
95th-Percentile Queue Length [ft]	219.15	629.64	125.17	266.07	461.42	370.63	441.35	202.19	228.06	203.20	319.55	336.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.41	42.15	12.16	60.34	33.12	17.24	68.82	42.39	29.25	33.55	59.89	42.74
Movement LOS	C	D	B	E	C	B	E	D	C	C	E	D
d_A, Approach Delay [s/veh]	36.47			32.62			49.03			49.48		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	39.67											
Intersection LOS	D											
Intersection V/C	0.851											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 61: 58 - 15th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	105.00	100.00	100.00	120.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	15th Avenue			15th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	197	11	85	9	8	11	8	527	76	51	768	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	2.40	11.10	0.00	0.00	0.00	2.10	0.00	0.00	1.30	20.00
Growth Rate	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	366	20	158	17	15	20	15	980	141	95	1428	9
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	99	5	43	5	4	5	4	261	38	25	380	2
Total Analysis Volume [veh/h]	398	22	172	18	16	22	16	1044	150	101	1521	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	38	0	0	38	0	0	52	0	0	52	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	34	34	34	34	46	46	46	46	46	46
g / C, Green / Cycle	0.38	0.38	0.38	0.38	0.51	0.51	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.29	0.12	0.02	0.02	0.05	0.33	0.33	0.21	0.41	0.41
s, saturation flow rate [veh/h]	1378	1643	1087	1724	345	1861	1780	476	1876	1871
c, Capacity [veh/h]	557	624	382	655	129	947	906	195	955	953
d1, Uniform Delay [s]	27.04	19.62	23.85	17.70	34.79	16.13	16.15	32.80	18.34	18.35
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.18	0.18	0.11	0.29	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.63	1.30	0.23	0.17	0.43	1.21	1.28	2.11	4.27	4.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

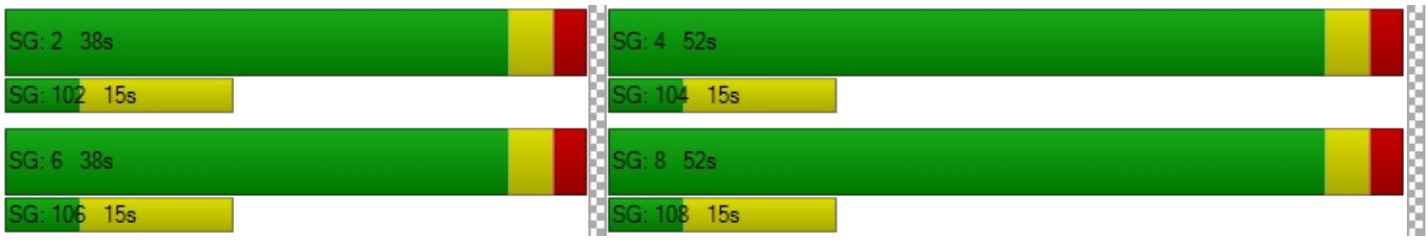
X, volume / capacity	0.71	0.31	0.05	0.06	0.12	0.64	0.65	0.52	0.80	0.80
d, Delay for Lane Group [s/veh]	34.67	20.92	24.09	17.86	35.22	17.34	17.44	34.91	22.60	22.66
Lane Group LOS	C	C	C	B	D	B	B	C	C	C
Critical Lane Group	Yes	No	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	8.72	3.01	0.30	0.52	0.33	8.81	8.48	2.17	13.26	13.26
50th-Percentile Queue Length [ft]	218.11	75.13	7.57	13.05	8.17	220.23	211.93	54.27	331.55	331.58
95th-Percentile Queue Length [veh]	13.57	5.41	0.54	0.94	0.59	13.68	13.25	3.91	19.23	19.24
95th-Percentile Queue Length [ft]	339.21	135.24	13.62	23.49	14.70	341.92	331.30	97.68	480.85	480.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.67	20.92	20.92	24.09	17.86	17.86	35.22	17.38	17.44	34.91	22.63	22.66
Movement LOS	C	C	C	C	B	B	D	B	B	C	C	C
d_A, Approach Delay [s/veh]	30.16			19.86			17.62			23.39		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	22.48											
Intersection LOS	C											
Intersection V/C	0.698											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 62: 59 - 27th Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	321.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	65.597

Intersection Setup

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			No		

volumes

Name	27th Avenue			27th Avenue			Oak Street			Oak Street		
Base Volume Input [veh/h]	3	34	38	15	51	52	24	237	16	79	412	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.90	0.00	0.00	0.00	0.00	0.00	0.80	0.00	1.30	0.00	0.00
Growth Rate	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62	5.62
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	191	214	84	287	292	135	1332	90	444	2315	309
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	52	58	23	78	79	37	362	24	121	629	84
Total Analysis Volume [veh/h]	18	208	233	91	312	317	147	1448	98	483	2516	336
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	0	20	0	0	20	0	0	70	0	0	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	R	C	C	L	C	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
g_i, Effective Green Time [s]	15	15	15	15	65	65	65	65	65
g / C, Green / Cycle	0.17	0.17	0.17	0.17	0.72	0.72	0.72	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.27	0.14	1.47	0.20	64.13	0.91	1.44	0.75	0.78
s, saturation flow rate [veh/h]	851	1615	274	1615	2	1696	336	1900	1824
c, Capacity [veh/h]	185	269	95	269	82	1225	102	1372	1317
d1, Uniform Delay [s]	36.15	36.52	40.05	37.50	44.98	12.50	44.36	12.50	12.50
k, delay calibration	0.50	0.28	0.50	0.49	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	138.30	18.56	1489.42	110.97	404.28	124.57	1702.00	35.11	50.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

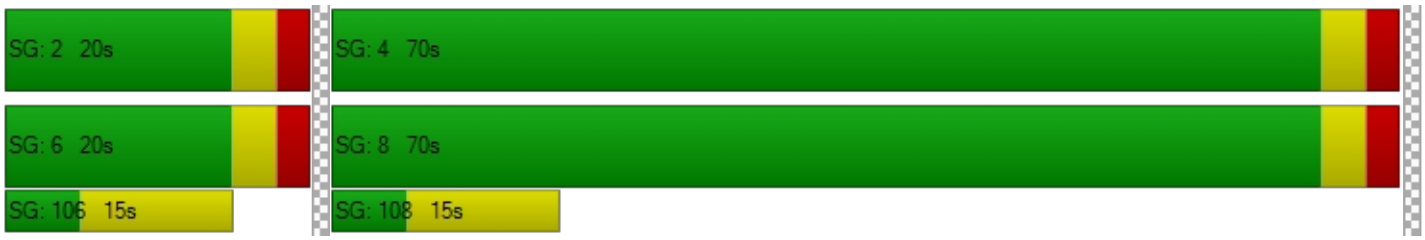
X, volume / capacity	1.22	0.87	4.26	1.18	1.80	1.26	4.73	1.04	1.08
d, Delay for Lane Group [s/veh]	174.45	55.08	1529.47	148.47	449.27	137.07	1746.37	47.61	62.81
Lane Group LOS	F	E	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh]	11.20	6.28	41.27	14.09	10.98	60.30	50.50	33.44	37.67
50th-Percentile Queue Length [ft]	280.01	156.88	1031.87	352.37	274.40	1507.46	1262.55	836.00	941.69
95th-Percentile Queue Length [veh]	18.19	10.38	67.23	21.83	19.76	87.95	90.90	44.45	51.21
95th-Percentile Queue Length [ft]	454.69	259.58	1680.66	545.73	493.91	2198.85	2272.58	1111.33	1280.15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	174.45	174.45	55.08	1529.47	1529.47	148.47	449.27	137.07	137.07	1746.37	54.19	62.81
Movement LOS	F	F	E	F	F	F	F	F	F	F	D	E
d_A, Approach Delay [s/veh]	113.85			921.45			164.17			300.13		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	321.35											
Intersection LOS	F											
Intersection V/C	65.597											

Sequence

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 64: 61 - Rouse Avenue / Oak Street

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	0	0	1	0	0	0
Pocket Length [ft]	210.00	100.00	100.00	90.00	100.00	100.00	100.00	100.00	190.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Rouse Avenue			Rouse Avenue			Oak Street			Birch Street		
Base Volume Input [veh/h]	218	341	0	1	418	171	117	0	159	0	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.50	1.20	0.00	0.00	1.20	0.00	1.70	0.00	6.30	0.00	0.00	0.00
Growth Rate	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51	1.51
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	329	515	0	2	631	258	177	0	240	0	0	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	137	0	1	168	69	48	0	65	0	0	1
Total Analysis Volume [veh/h]	350	549	0	2	672	275	192	0	261	0	0	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss
Signal group	5	2	0	0	6	0	0	8	8	0	4	0
Auxiliary Signal Groups									5,8			
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	0	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Split [s]	12	70	0	0	58	0	0	20	20	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Minimum Recall	No	No			No			No	No		No	
Maximum Recall	No	No			No			No	No		No	
Pedestrian Recall	No	No			No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	3.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	3.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	65	65	53	53	53	15	29	15
g / C, Green / Cycle	0.72	0.72	0.59	0.59	0.59	0.17	0.32	0.17
(v / s)_i Volume / Saturation Flow Rate	0.42	0.32	0.00	0.40	0.19	0.13	0.19	0.00
s, saturation flow rate [veh/h]	839	1690	785	1690	1454	1531	1367	1367
c, Capacity [veh/h]	533	1220	420	995	856	335	441	268
d1, Uniform Delay [s]	11.07	5.14	14.49	12.63	9.38	35.22	25.55	31.30
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.21	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.21	1.20	0.02	3.67	0.99	2.95	5.76	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.45	0.00	0.68	0.32	0.57	0.59	0.01
d, Delay for Lane Group [s/veh]	17.28	6.34	14.51	16.30	10.37	38.16	31.31	31.31
Lane Group LOS	B	A	B	B	B	D	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh]	2.73	3.71	0.03	9.26	2.74	4.16	5.24	0.04
50th-Percentile Queue Length [ft]	68.30	92.72	0.63	231.59	68.59	103.91	131.00	0.92
95th-Percentile Queue Length [veh]	4.92	6.68	0.05	14.26	4.94	7.48	8.99	0.07
95th-Percentile Queue Length [ft]	122.94	166.89	1.13	356.38	123.46	187.04	224.85	1.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.28	6.34	6.34	14.51	16.30	10.37	38.16	38.16	31.31	31.31	31.31	31.31
Movement LOS	B	A	A	B	B	B	D	D	C	C	C	C
d_A, Approach Delay [s/veh]	10.60			14.58			34.21			31.31		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	16.90											
Intersection LOS	B											
Intersection V/C	0.649											

Sequence

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 65: 62 - 19th Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.915

Intersection Setup

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	350.00	100.00	300.00	350.00	100.00	100.00	150.00	100.00	150.00	135.00	100.00	135.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	19th Avenue			19th Avenue			Kagy Boulevard			Kagy Boulevard		
Base Volume Input [veh/h]	6	270	231	309	313	8	53	23	24	279	16	461
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.70	1.30	6.50	1.00	0.00	0.00	4.30	0.00	1.10	0.00	0.70
Growth Rate	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78	1.78
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	481	411	550	557	14	94	41	43	497	28	821
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	1.0000	1.0000	1.0000	0.9600	0.9600	0.9600
Total 15-Minute Volume [veh/h]	3	125	107	143	145	4	26	11	12	130	7	214
Total Analysis Volume [veh/h]	11	502	429	574	581	15	102	45	47	519	29	857
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	2 - 19th Coordination
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap
Signal group	5	2	0	1	6	0	0	8	0	0	4	4
Auxiliary Signal Groups												1,4
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	5
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
Split [s]	8	46	0	33	71	0	0	61	0	0	61	61
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	10
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	0.0	1.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall	No	No		No	No			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	3.00	0.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	0.00
g_i, Effective Green Time [s]	74	41	41	74	69	69	56	56	56	56	56	91
g / C, Green / Cycle	0.53	0.29	0.29	0.53	0.49	0.49	0.40	0.40	0.40	0.40	0.40	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.27	0.47	0.16	0.16	0.07	0.02	0.03	0.38	0.02	0.53
s, saturation flow rate [veh/h]	872	3592	1594	1209	1881	1865	1403	1822	1615	1368	1900	1604
c, Capacity [veh/h]	456	1052	467	616	929	921	579	729	646	558	760	1042
d1, Uniform Delay [s]	16.34	40.69	47.89	27.80	21.31	21.32	29.35	25.84	25.96	44.68	25.59	18.42
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.42	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	1.55	25.64	22.79	0.92	0.93	0.14	0.04	0.05	21.47	0.02	7.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

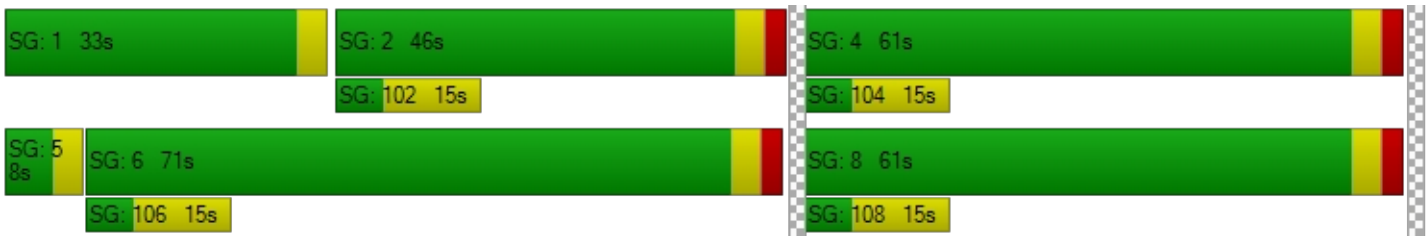
X, volume / capacity	0.02	0.48	0.92	0.93	0.32	0.32	0.18	0.06	0.07	0.93	0.04	0.82
d, Delay for Lane Group [s/veh]	16.43	42.24	73.53	50.60	22.23	22.24	29.50	25.87	26.00	66.15	25.61	25.73
Lane Group LOS	B	D	E	D	C	C	C	C	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.18	7.41	17.77	17.29	6.21	6.16	2.37	0.95	1.00	21.39	0.61	21.86
50th-Percentile Queue Length [ft]	4.58	185.22	444.34	432.36	155.21	153.96	59.33	23.77	24.96	534.81	15.16	546.50
95th-Percentile Queue Length [veh]	0.33	11.87	24.69	24.11	10.29	10.23	4.27	1.71	1.80	28.98	1.09	29.53
95th-Percentile Queue Length [ft]	8.25	296.82	617.19	602.87	257.37	255.71	106.80	42.78	44.93	724.44	27.29	738.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.43	42.24	73.53	50.60	22.24	22.24	29.50	25.87	26.00	66.15	25.61	25.73
Movement LOS	B	D	E	D	C	C	C	C	C	E	C	C
d_A, Approach Delay [s/veh]	56.19			36.15			27.81			40.66		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	42.51											
Intersection LOS	D											
Intersection V/C	0.915											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 66: 63 - Willson Avenue / Kagy Boulevard

Control Type:	Signalized	Delay (sec / veh):	30.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	170.00	100.00	100.00	325.00	100.00	100.00	350.00	100.00	110.00	160.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

volumes

Name	Kagy Boulevard			Kagy Boulevard			3rd Avenue			Willson Avenue		
Base Volume Input [veh/h]	155	162	69	141	228	77	136	418	259	122	364	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	0.60	0.00	3.50	0.40	0.00	0.00	0.20	0.40	0.00	0.30	0.00
Growth Rate	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	183	78	159	258	87	154	472	293	138	411	130
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Total 15-Minute Volume [veh/h]	47	49	21	42	69	23	41	126	78	37	109	35
Total Analysis Volume [veh/h]	186	195	83	169	275	93	164	503	312	147	438	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	145
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	3	8	8	7	4	1	5	2	0	1	6	0
Auxiliary Signal Groups			5,8			1,4						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	2.0	2.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Split [s]	9	93	93	14	98	11	8	27	0	11	30	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	10	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	0.0	1.0	3.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	5.00	5.00	3.00	5.00	5.00	3.00	5.00	5.00	5.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.00	0.00	0.00	3.00	0.00	0.00	3.00	3.00	0.00	3.00
g_i, Effective Green Time [s]	47	33	43	47	38	50	88	78	78	88	80
g / C, Green / Cycle	0.32	0.23	0.30	0.32	0.26	0.35	0.61	0.53	0.53	0.61	0.55
(v / s)_i Volume / Saturation Flow Rate	0.15	0.10	0.05	0.13	0.15	0.06	0.18	0.27	0.19	0.15	0.32
s, saturation flow rate [veh/h]	1209	1889	1615	1315	1892	1615	916	1896	1609	998	1817
c, Capacity [veh/h]	324	427	477	393	493	562	457	1014	861	530	1005
d1, Uniform Delay [s]	44.73	48.40	37.96	37.50	46.36	32.73	16.04	21.34	19.45	14.51	21.20
k, delay calibration	0.50	0.11	0.50	0.11	0.11	0.44	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.21	0.76	0.79	0.74	0.99	0.56	2.19	1.73	1.18	1.30	2.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

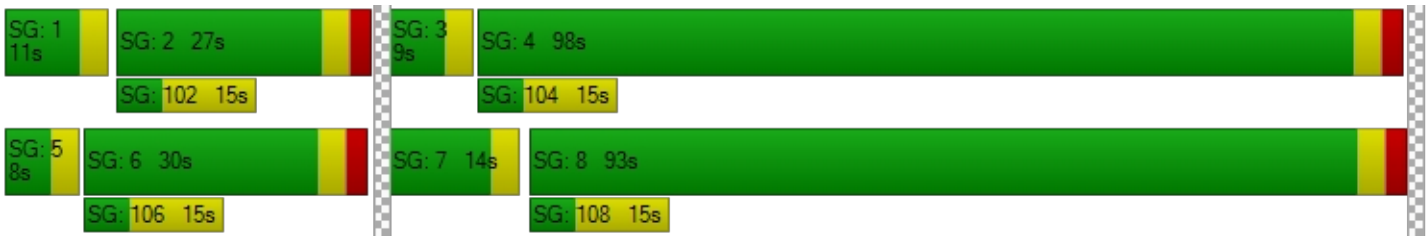
X, volume / capacity	0.57	0.46	0.17	0.43	0.56	0.17	0.36	0.50	0.36	0.28	0.57
d, Delay for Lane Group [s/veh]	51.94	49.17	38.76	38.24	47.35	33.29	18.23	23.07	20.63	15.81	23.57
Lane Group LOS	D	D	D	D	D	C	B	C	C	B	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	5.71	6.24	2.34	4.64	8.79	2.40	2.60	11.34	6.42	2.26	13.42
50th-Percentile Queue Length [ft]	142.80	155.97	58.40	116.09	219.65	59.88	65.12	283.47	160.46	56.38	335.38
95th-Percentile Queue Length [veh]	9.63	10.34	4.20	8.18	13.65	4.31	4.69	16.86	10.57	4.06	19.42
95th-Percentile Queue Length [ft]	240.79	258.38	105.12	204.44	341.18	107.79	117.21	421.53	264.33	101.49	485.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.94	49.17	38.76	38.24	47.35	33.29	18.23	23.07	20.63	15.81	23.57	23.57
Movement LOS	D	D	D	D	D	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	48.41			42.05			21.48			21.99		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.33											
Intersection LOS	C											
Intersection V/C	0.564											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



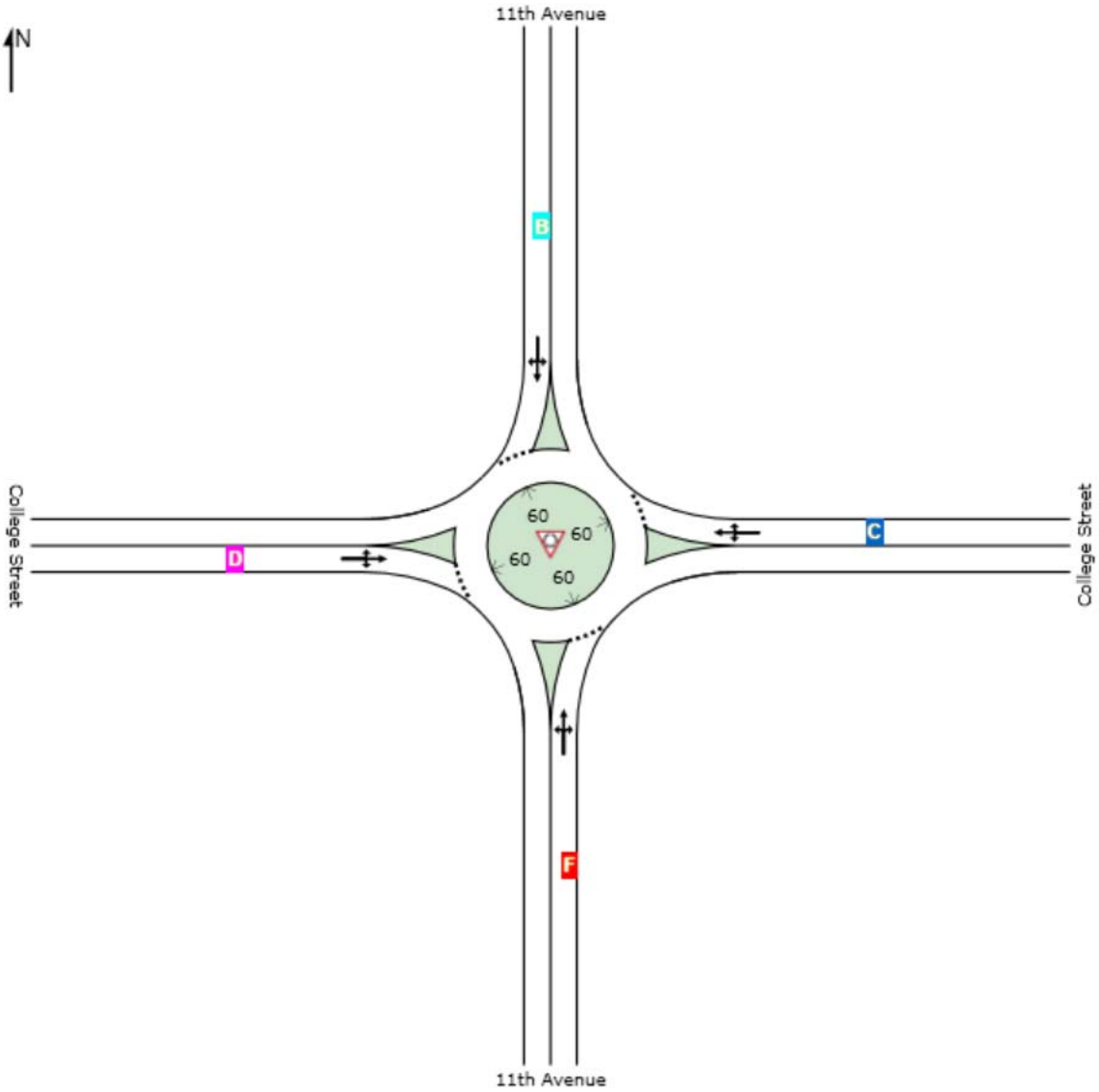
LEVEL OF SERVICE

Site: 11th Avenue/College Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	South	East	North	West	Intersection
LOS	F	C	B	D	F



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: 11th Avenue/College Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: 11th Avenue											
3	L2	245	1.2	1.383	198.5	LOS F	99.5	2506.4	1.00	6.38	7.8
8	T1	407	0.7	1.383	198.5	LOS F	99.5	2506.4	1.00	6.38	7.8
18	R2	358	1.2	1.383	198.5	LOS F	99.5	2506.4	1.00	6.38	7.7
Approach		1010	1.0	1.383	198.5	LOS F	99.5	2506.4	1.00	6.38	7.8
East: College Street											
1	L2	131	0.0	0.699	17.7	LOS C	4.9	122.2	0.76	0.91	21.1
6	T1	310	0.0	0.699	17.7	LOS C	4.9	122.2	0.76	0.91	20.9
16	R2	122	0.0	0.699	17.7	LOS C	4.9	122.2	0.76	0.91	20.6
Approach		563	0.0	0.699	17.7	LOS C	4.9	122.2	0.76	0.91	20.9
North: 11th Avenue											
7	L2	114	0.0	0.565	13.1	LOS B	3.0	76.3	0.67	0.75	22.0
4	T1	227	0.0	0.565	13.1	LOS B	3.0	76.3	0.67	0.75	21.8
14	R2	105	1.4	0.565	13.1	LOS B	3.0	76.3	0.67	0.75	21.4
Approach		447	0.3	0.565	13.1	LOS B	3.0	76.3	0.67	0.75	21.8
West: College Street											
5	L2	126	0.0	0.894	31.7	LOS D	12.1	304.0	0.99	1.36	18.7
2	T1	468	1.3	0.894	31.7	LOS D	12.1	304.0	0.99	1.36	18.6
12	R2	196	0.0	0.894	31.7	LOS D	12.1	304.0	0.99	1.36	18.3
Approach		790	0.8	0.894	31.7	LOS D	12.1	304.0	0.99	1.36	18.5
All Vehicles		2810	0.6	1.383	85.9	LOS F	99.5	2506.4	0.90	2.98	12.8

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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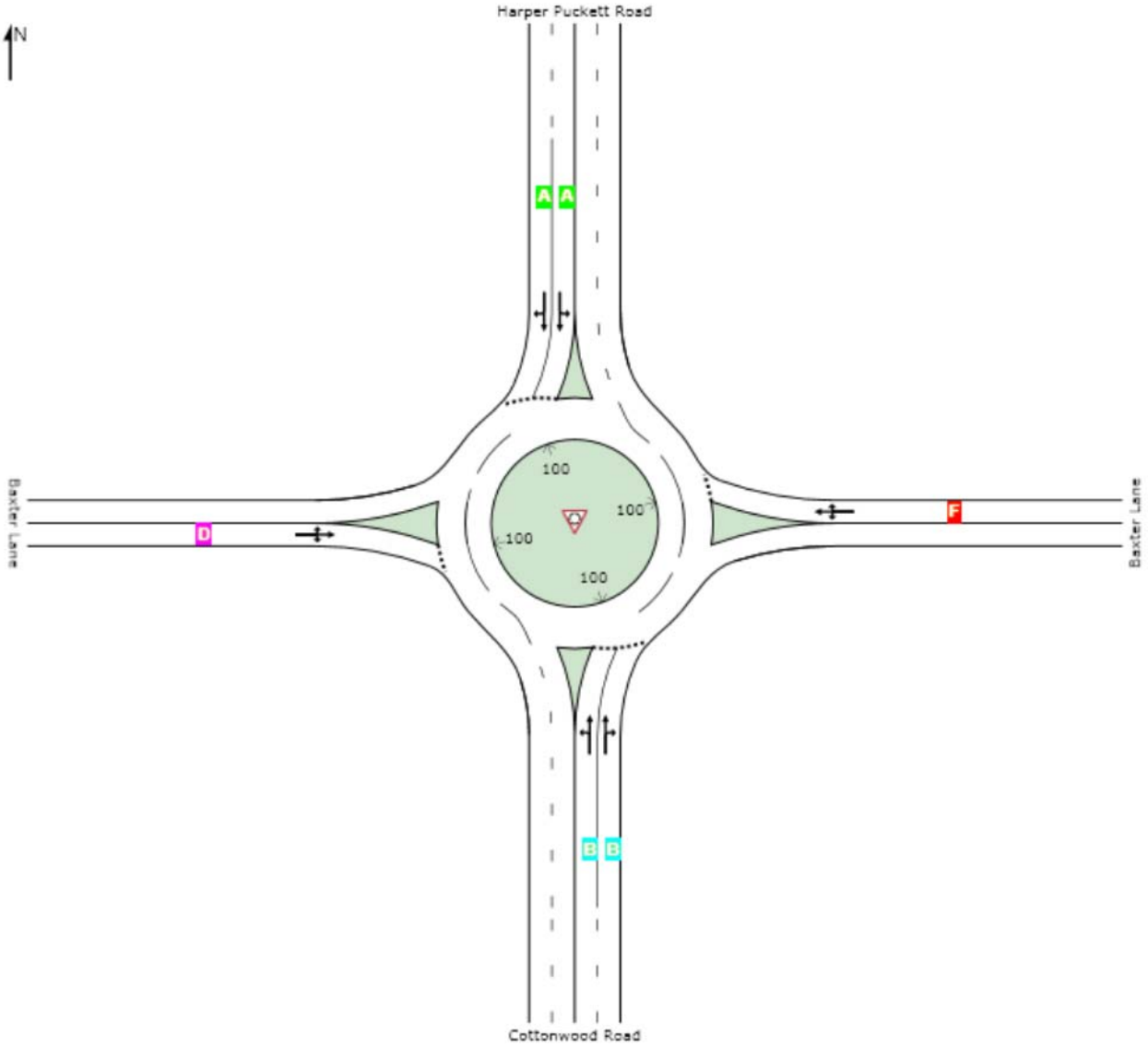
LEVEL OF SERVICE

Site: Harper Puckett Road/Baxter Lane - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	South	East	North	West	Intersection
LOS	B	F	A	D	E



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Harper Puckett Road/Baxter Lane - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Cottonwood Road											
3	L2	267	0.0	0.531	13.4	LOS B	2.6	64.4	0.68	0.74	29.8
8	T1	130	0.0	0.531	13.4	LOS B	2.6	64.4	0.68	0.74	30.0
18	R2	347	0.0	0.531	13.4	LOS B	2.6	64.4	0.68	0.74	30.2
Approach		745	0.0	0.531	13.4	LOS B	2.6	64.4	0.68	0.74	30.0
East: Baxter Lane											
1	L2	239	0.0	1.080	74.6	LOS F	40.9	1050.7	1.00	2.27	16.9
6	T1	516	3.7	1.080	74.6	LOS F	40.9	1050.7	1.00	2.27	16.8
16	R2	217	7.1	1.080	74.6	LOS F	40.9	1050.7	1.00	2.27	16.6
Approach		972	3.6	1.080	74.6	LOS F	40.9	1050.7	1.00	2.27	16.8
North: Harper Puckett Road											
7	L2	150	5.3	0.263	9.9	LOS A	0.8	21.4	0.61	0.61	30.5
4	T1	57	0.0	0.146	7.8	LOS A	0.5	11.3	0.57	0.57	33.8
14	R2	31	0.0	0.146	7.8	LOS A	0.5	11.3	0.57	0.57	32.8
Approach		237	3.3	0.263	9.1	LOS A	0.8	21.4	0.59	0.60	31.5
West: Baxter Lane											
5	L2	48	0.0	0.874	28.2	LOS D	10.7	269.2	0.94	1.13	26.0
2	T1	564	1.7	0.874	28.2	LOS D	10.7	269.2	0.94	1.13	25.9
12	R2	200	0.0	0.874	28.2	LOS D	10.7	269.2	0.94	1.13	25.3
Approach		812	1.2	0.874	28.2	LOS D	10.7	269.2	0.94	1.13	25.7
All Vehicles		2765	1.9	1.080	38.9	LOS E	40.9	1050.7	0.86	1.38	22.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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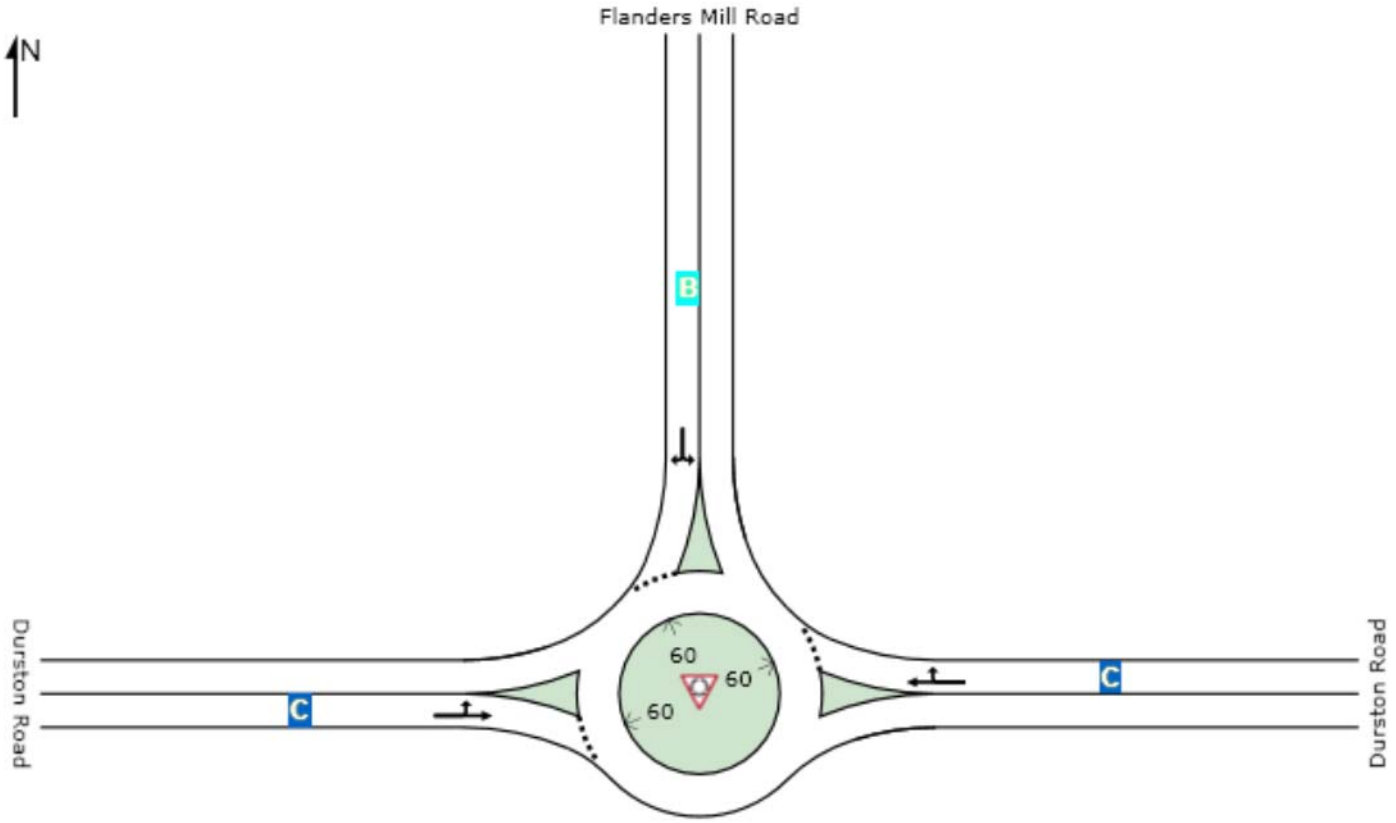
LEVEL OF SERVICE

Site: Flanders Mill Road/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	East	North	West	Intersection
LOS	C	B	C	C



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Flanders Mill Road/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Durston Road											
6	T1	778	0.6	0.799	18.7	LOS C	9.3	235.0	0.74	0.62	20.9
16	R2	107	1.6	0.799	18.7	LOS C	9.3	235.0	0.74	0.62	20.6
Approach		886	0.7	0.799	18.7	LOS C	9.3	235.0	0.74	0.62	20.9
North: Flanders Mill Road											
7	L2	72	0.0	0.389	10.3	LOS B	1.6	38.8	0.61	0.65	22.5
14	R2	200	0.0	0.389	10.3	LOS B	1.6	38.8	0.61	0.65	22.0
Approach		272	0.0	0.389	10.3	LOS B	1.6	38.8	0.61	0.65	22.1
West: Durston Road											
5	L2	182	0.0	0.760	15.5	LOS C	7.9	199.0	0.48	0.25	21.6
2	T1	739	0.5	0.760	15.5	LOS C	7.9	199.0	0.48	0.25	21.4
Approach		920	0.4	0.760	15.5	LOS C	7.9	199.0	0.48	0.25	21.5
All Vehicles		2078	0.5	0.799	16.2	LOS C	9.3	235.0	0.61	0.46	21.3

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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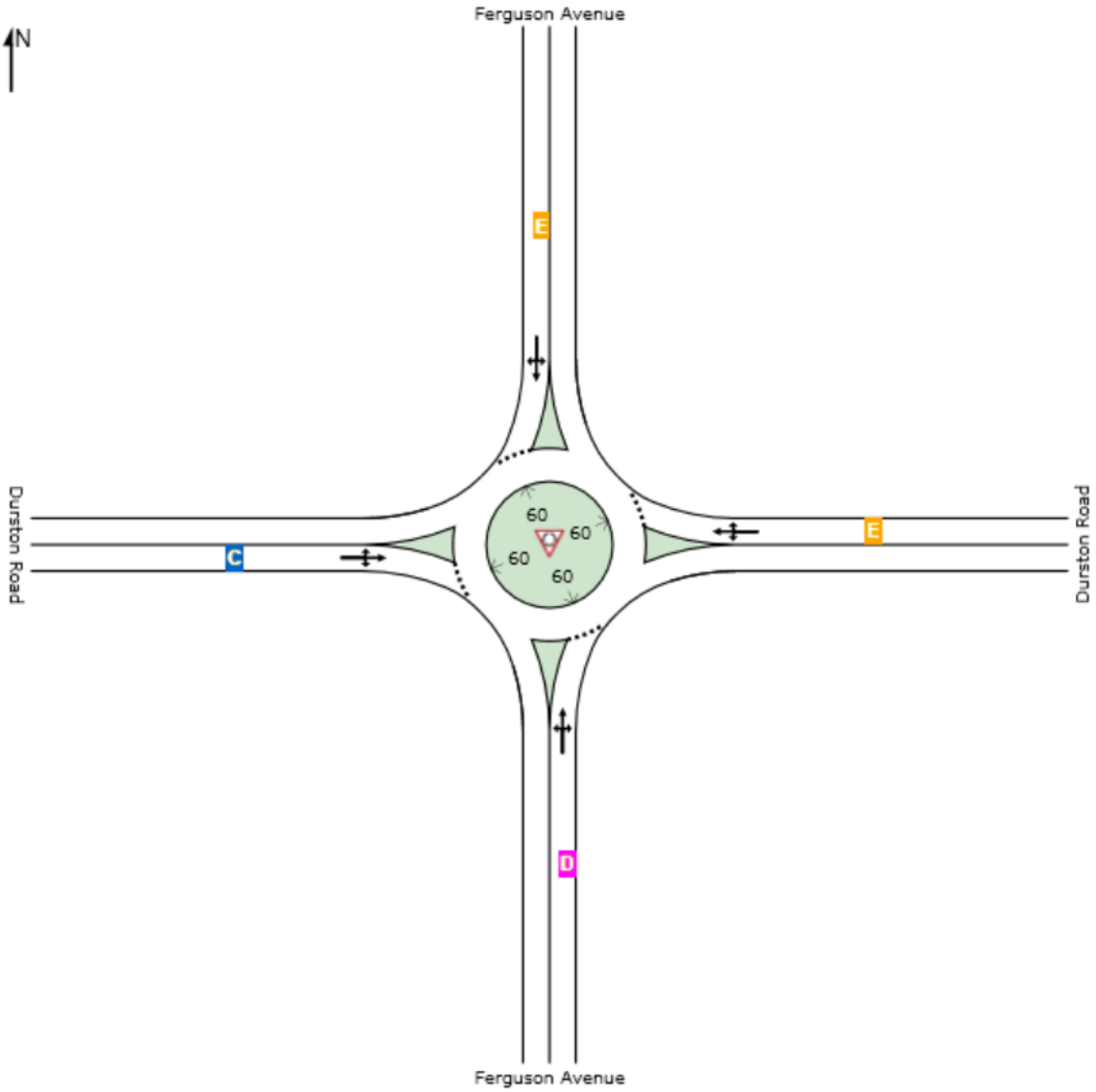
LEVEL OF SERVICE

Site: Ferguson Avenue/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	South	East	North	West	Intersection
LOS	D	E	E	C	E



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Ferguson Avenue/Durston Road - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: Ferguson Avenue											
3	L2	250	0.8	0.876	30.7	LOS D	10.2	257.3	0.95	1.22	22.7
8	T1	336	1.8	0.876	30.7	LOS D	10.2	257.3	0.95	1.22	22.7
18	R2	141	0.0	0.876	30.7	LOS D	10.2	257.3	0.95	1.22	22.3
Approach		727	1.1	0.876	30.7	LOS D	10.2	257.3	0.95	1.22	22.6
East: Durston Road											
1	L2	160	0.0	0.945	48.4	LOS E	11.9	297.3	0.96	1.50	19.3
6	T1	428	0.5	0.945	48.4	LOS E	11.9	297.3	0.96	1.50	19.3
16	R2	18	0.0	0.945	48.4	LOS E	11.9	297.3	0.96	1.50	19.1
Approach		606	0.4	0.945	48.4	LOS E	11.9	297.3	0.96	1.50	19.3
North: Ferguson Avenue											
7	L2	6	0.0	0.956	49.7	LOS E	13.1	329.8	0.98	1.56	19.2
4	T1	313	0.6	0.956	49.7	LOS E	13.1	329.8	0.98	1.56	19.2
14	R2	315	0.6	0.956	49.7	LOS E	13.1	329.8	0.98	1.56	18.9
Approach		635	0.6	0.956	49.7	LOS E	13.1	329.8	0.98	1.56	19.1
West: Durston Road											
5	L2	293	1.3	0.824	24.2	LOS C	8.5	214.0	0.89	1.06	24.2
2	T1	246	0.0	0.824	24.2	LOS C	8.5	214.0	0.89	1.06	24.2
12	R2	186	0.0	0.824	24.2	LOS C	8.5	214.0	0.89	1.06	23.8
Approach		725	0.5	0.824	24.2	LOS C	8.5	214.0	0.89	1.06	24.1
All Vehicles		2692	0.7	0.956	37.4	LOS E	13.1	329.8	0.94	1.32	21.2

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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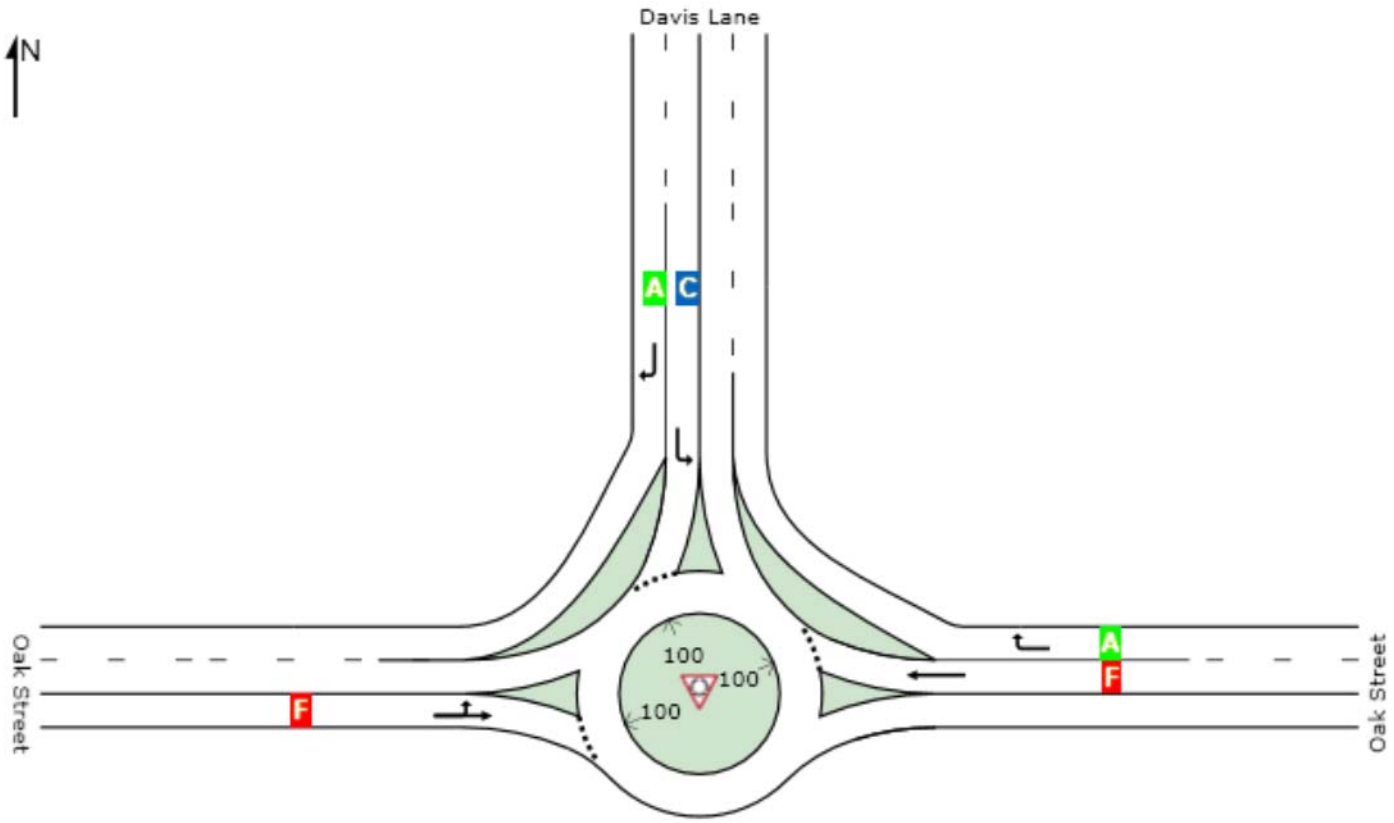
LEVEL OF SERVICE

Site: Davis Lane / Oak Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

All Movement Classes

	East	North	West	Intersection
LOS	F	A	F	F



Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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MOVEMENT SUMMARY

Site: Davis Lane / Oak Street - 2040 PM

Roundabout
Design Life Analysis (Final Year): Results for 25 years

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
East: Oak Street											
6	T1	1500	0.0	1.661	316.2	LOS F	205.2	5129.9	1.00	6.70	6.0
16	R2	466	0.3	0.279	0.0	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		1967	0.1	1.661	241.2	LOS F	205.2	5129.9	0.76	5.11	7.4
North: Davis Lane											
7	L2	356	0.0	0.559	15.4	LOS C	2.7	67.6	0.71	0.79	26.7
14	R2	856	1.1	0.517	0.1	LOS A	0.0	0.0	0.00	0.00	33.7
Approach		1212	0.8	0.559	4.6	LOS A	2.7	67.6	0.21	0.23	31.2
West: Oak Street											
5	L2	779	4.9	1.800	377.0	LOS F	260.3	6652.6	1.00	7.12	5.2
2	T1	928	1.0	1.800	377.0	LOS F	260.3	6652.6	1.00	7.12	5.2
Approach		1707	2.8	1.800	377.0	LOS F	260.3	6652.6	1.00	7.12	5.2
All Vehicles		4886	1.2	1.800	230.0	LOS F	260.3	6652.6	0.71	4.60	7.7

Level of Service (LOS) Method: Delay & v/c (HCM 2010).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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BOZEMANTMP
TRANSPORTATION MASTER PLAN

FACILITY RECOMMENDATIONS

Technical Memorandum

FINAL

December 31, 2016

prepared by:

Robert Peccia & Associates
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and

Alta Planning + Design
www.altaplanning.com

prepared for:
City of Bozeman & Montana Department of Transportation

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The City of Bozeman, MDT and RPA attempt to provide accommodations for any known disability that may interfere with a person participating in any service, program, or activity associated with this study. Alternative accessible formats of this information will be provided upon request. For further information, call (406) 447-5000 or (406) 582-2280. Accommodation requests must be made at least 48 hours prior to the scheduled activity and / or meeting.

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Abbreviations / Acronyms

ADA	Americans with Disabilities Act
ADU	Accessory Dwelling Unit
CIP	Capital Improvement Plan
CMSN	Committed Major Street Network
CTSM	Committed Transportation System Management
FY	Fiscal Year
GVLT	Gallatin Valley Land Trust
HAWK	High-Intensity Activated Crosswalk
LOS	Level of Service
LPI	Leading Pedestrian Interval
LRCDP	Long Range Campus Development Plan
MDT	Montana Department of Transportation
MEPA	Montana Environmental Policy Act
MOR	Museum of the Rockies
mph	miles per hour
MSN	Major Street Network
MSU	Montana State University
NEPA	National Environmental Policy Act
PROST	Parks, Recreation, Open Space and Trails (Plan)
PROWAG	Public Rights-of-Way Accessibility Guidelines

RRFB	Rectangular Rapid Flashing Beacon
RP	Reference Post
RPA	Robert Peccia and Associates
TCC	Transportation Coordinating Committee
TMP	Transportation Master Plan
TSM	Transportation System Management
TWG	Technical Working Group
TWLTL	Two-way Left-Turn Lane
UDO	Unified Development Ordinance
WTI	Western Transportation Institute
YOE	Year of Expenditure

Facility Recommendations

1.0. INTRODUCTION

The following sections present a variety of recommended street improvement projects. Recommended improvements (i.e. projects) contained herein were developed through a combination of public process, project solicitation from partnering agencies, travel demand modeling, traffic engineering analysis, and policy choices to support TMP goals and objectives previously defined. In most cases, the recommended projects are either needed to meet the anticipated traffic demands for the year 2040 or to bring sub-standard roadways up to current standards based on the functional classification of the roadway. There are two categories of street improvement projects - major street network (MSN) and transportation system management (TSM) projects. These two categories are consistent with past long range transportation planning efforts completed in the greater Bozeman community.

2.0. RECOMMENDED MAJOR STREET NETWORK PROJECTS

MSN projects are typically large road reconstruction projects that take time to development, are costly, and are needed to meet existing or future capacity demands. Recommended MSN projects are shown in **Figure 2.1** at the end of this section. A summary of MSN projects from the 2007 Update and the status of each project is shown in **Table 2.1** to provide background for the currently proposed MSN projects. Committed MSN projects currently in process for FY 2018 thru FY 2022 are shown in **Table 2.2** and **Figure 2.1**.

2.1.1. MSN Projects from the 2007 Transportation Plan

A list of recommended major street network (MSN) projects made as part of the *Greater Bozeman Area Transportation Plan (2007 Update)*, and their status for this TMP, are listed in this section. The 2007 update of the Transportation Plan included 46 recommended MSN projects. Of these projects, 12 were completed, 12 are partially completed, and 22 have not been completed. Of the either partially completed or not completed projects from the previous plan, 25 projects have been included in this update of the plan as recommended projects. The various 46 projects recommended from the previous plan and their resultant status is summarized in **Table 2.1**.

Table 2.1: MSN Projects from 2007 Update & Status for this TMP

Project #	Location	Past Recommendation	Status for TMP
CMSN-1	S. 19th Ave (Babcock St to Kagy Blvd)	This project consists of reconstructing S. 19th Avenue from the intersection with Babcock Street south to the intersection with Kagy Boulevard to meet 5-lane principal arterial standards. This project comes from the high traffic volumes found on this roadway and the expected growth in the Bozeman area. This segment is approximately 1.25 miles long.	**COMPLETED**
CMSN-2	College St (S. 19th Ave to S. 8th Ave)	This project consists of reconstructing College Street from the intersection with S. 19th Avenue east to the intersection with S. 8th Avenue to meet minor arterial standards. This section of West College Street has already exceeded the volume of traffic it was projected to carry in 2020. Planned improvements to S. 19th Avenue and increased development in the S. 19th Avenue corridor will only further increase traffic demand on this facility. This facility also lacks bicycle and pedestrian facilities, therefore, this project will improve not only safety and capacity for motorized vehicle but for bicycle and pedestrians as well.	**PARTIALLY COMPLETED,** modified and included herein as **MSN-17** & **MSN-19**
CMSN-3	Hulbert Rd (Love Ln to Jackrabbit Ln)	Hulbert Road will be paved from the intersection with Love Lane west to the intersection with Jackrabbit Lane. This segment is approximately 2 miles long and is classified as a collector roadway. This project also consists of paving Hulbert Road west from the intersection with Jackrabbit Lane to the Gallatin Heights Major property boundary. This segment is approximately 0.5 miles long and is a local roadway.	**NOT COMPLETED,** not included herein for further consideration (outside of study area)
CMSN-4	Durston Rd (Fowler Ave to Ferguson Ave)	This project consists of constructing a new roadway between Fowler Avenue and Ferguson Avenue. It is apparent from recent development activity that the areas served by this minor arterial roadway may cause the predicted volumes to be exceeded along this corridor. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.	**NOT COMPLETED,** modified and included herein as **CMSN-5**
CMSN-5	Baxter Ln (N. 7th Ave to N. 19th Ave)	This project consists of reconstructing Baxter Lane from the intersection with N. 19th Avenue east to the intersection with N. 7th Avenue to meet minor arterial standards. Baxter Lane is positioned to become a major commercial route due to zoning on the south side of the road from N. 19th Avenue to N. 7th Avenue. By 2020 it has been projected that this roadway will carry more than double the vehicles per day than what it currently carries. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.	**PARTIALLY COMPLETED,** modified and included herein as **MSN-41**
CMSN-6	Baxter Ln (N. 19th Ave to Harper Puckett Rd)	This project consists of reconstructing Baxter Lane from the intersection with Harper Puckett Road east to the intersection with N. 19th Avenue to meet minor arterial standards. Continued development in the northwest quadrant of the City insures that this improvement will be needed. This project will improve the capacity and safety of this corridor.	**PARTIALLY COMPLETED,** modified and included herein as **MSN-39** & **MSN-40**
CMSN-7	Baxter Lane (Harper Puckett Rd to Jackrabbit Ln)	Baxter Lane will be paved from the intersection with Harper Puckett Road west to the intersection with Jackrabbit Lane. This segment of Baxter Lane is classified as a minor arterial roadway.	**NOT COMPLETED,** not included herein for further consideration (outside of study area)
CMSN-8	Harper Puckett Rd	Harper Puckett Road will be paved from the intersection with Cameron Bridge Road south to approximately 0.5 miles south of Valley Center Road. This segment is approximately 1.5 miles long and is classified as a minor arterial roadway.	**COMPLETED**

Project #	Location	Past Recommendation	Status for TMP
CMSN-9	Durston Rd	Durston Road will be extended approximately one mile from the current western termination point through Black Bull Run Subdivision and Middle Creek Parklands Subdivision to intersect with Jackrabbit Lane. Durston Road will also be paved from the current western end of asphalt location at the Bozeman City limits to the end of its extension. This segment of Durston Road is classified as a minor arterial roadway.	**PARTIALLY COMPLETED,** not included herein for further consideration (outside of study area)
CMSN-10	Valley Center Rd	This project consists of paving Valley Center Road from the intersection with Jackrabbit Lane west to the Gallatin Heights Major property boundary. This segment is approximately 0.5 miles long and is a local roadway.	**COMPLETED**
CMSN-11	Cameron Bridge Rd	Cameron Bridge Road will be paved from the intersection with Jackrabbit Lane east to the intersection with Harper Puckett Road. This segment is approximately 3 miles long and is classified as a collector roadway.	**COMPLETED**
CMSN-12	Monforton School Rd	Monforton School Road will be abandoned at the campus of Monforton School via a new cul-de-sac, and a new road will be re-routed to line up across from Cobb Hill Road at Huffine Lane. It is recommended herein that the relocated Monforton School Road be changed to a collector road functional classification.	**COMPLETED**
CMSN-13	Spain Bridge Rd	Spain Bridge Road will be paved from the intersection with Penwell Bridge Road south to the intersection with Airport Road. This segment is approximately 2 miles long and is classified as a minor arterial roadway.	**COMPLETED**
CMSN-14	Penwell Bridge Rd	This project consists of paving a one mile stretch of Penwell Bridge Road east from the intersection with Dry Creek Road. Another stretch of Penwell Bridge Road will also be paved from the intersection with Spain Bridge Road to East Gallatin River. Penwell Bridge Road is a local roadway.	**COMPLETED**
CMSN-15	Tayabeshockup Rd	Tayabeshockup Road will be paved south from the intersection with Bozeman Trail Road. This segment is approximately 2 miles long and is classified as a collector roadway.	**COMPLETED**
CMSN-16	Valley Center Rd	This project consists of upgrading Valley Center Road from the intersection with Jackrabbit Lane to the intersection with Love Lane to a two-lane urban arterial standard. This section will consist of one travel lane in each direction, 6-foot shoulders on each side, curb and gutter, turn-lanes at major intersections, and sidewalks. This project is approximately 2 miles long.	**COMPLETED**
MSN-1	N. 19th Ave (Interstate 90 to Springhill Road)	This project consists of widening N. 19th Avenue from Interstate 90 (I-90) to the intersection with Springhill Road to a 5-lane urban arterial standard. This project includes widening the I-90 overpass along N. 19th Avenue. This roadway is currently a principal arterial roadway south of I-90 and a minor arterial roadway north of I-90. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve north-south traffic flow. It is expected that a minimum of two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and raised median will be required.	**NOT COMPLETED,** modified and included herein as **MSN-5**
MSN-2	Kagy Blvd (S. 19th Ave to Willson Ave)	This project consists of widening Kagy Boulevard from the intersection with S. 19th Avenue to the intersection with Willson Avenue to a three-lane urban arterial. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve east-west traffic flow around the southern portions of the city. Currently this section of Kagy Boulevard is a two-lane roadway with few left-turn bays.	**NOT COMPLETED,** modified and included herein as **MSN-8**
MSN-3	S. 3rd Ave (Graf St to Kagy Blvd)	This project consists of widening S. 3rd Avenue from the intersection with Graf Street to the intersection with Kagy Boulevard to a three-lane urban arterial roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, sidewalks, and a raised median. This project serves to accommodate development in the region and serve north-south traffic flow around the southern portions of the city.	**NOT COMPLETED,** modified and included herein as **MSN-21**

Project #	Location	Past Recommendation	Status for TMP
MSN-4	Rouse Ave (Main Street to Story Mill Rd)	This project consists of widening Rouse Avenue from the intersection with Main Street to the intersection with Story Mill Road to a three-lane urban arterial. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project serves to accommodate increasing traffic volumes along Rouse Avenue and serve traffic flow around the northern portions of the city. Currently Rouse Avenue is a two-lane roadway with few left-turn bays. An Environmental Assessment (EA) has been prepared for this recommended project that identifies specific constraints and known design issues.	**NOT COMPLETED,** modified and included herein as **CMSN-11**
MSN-5	College St (Main St to S. 19th Ave)	This project consists of reconstructing College Street from the intersection with Main Street east to the intersection with S. 19th Avenue to a five-lane urban arterial roadway. It is expected that a minimum of two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk , and a raised median will be required. This section of College Street has exceeded the volume of traffic it was projected to carry. During peak hours, traffic is backed up from S. 19th Avenue to Huffine Lane and beyond. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.	**COMPLETED**
MSN-6	Cottonwood Rd / Harper Puckett Rd (Stucky Rd to Valley Center Rd)	This project consists of widening Cottonwood Road from the intersection with Stucky Road north to its current termini and constructing an extension to Cottonwood Road from its current northern termini to Baxter Lane. It is also recommended that Harper Puckett Road be widened from the intersection with Baxter Lane north to the intersection with Hidden Valley Road and that an extension be constructed north to intersect with Valley Center Road. This project should be constructed to a five-lane urban arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project is necessitated by the future development patterns in the region and will serve north-south traffic flow around the western edge of the city.	**PARTIALLY COMPLETED,** modified and included herein as **CMSN-2, MSN-12, MSN-15, MSN-26** & **MSN-33**
MSN-7	Fowler Ave / Davis Ln (Stucky Rd to Valley Center Rd)	This project consists of upgrading Fowler Avenue and Davis Lane from the intersection with Stucky Road to the intersection with Valley Center Road to a three-lane urban arterial standard. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. New links will have to be constructed along this corridor between Oak Street and Babcock Street and between Garfield Street and Stucky Road. This project is necessitated by the future development patterns in the region and will serve north-south traffic flow around the western portion of the city.	**PARTIALLY COMPLETED,** modified and included herein as **MSN-11** & **MSN-13**
MSN-8	Deadman's Gulch / Cattail St (N. 27th Ave to Cottonwood Rd)	This project consists of upgrading Cattail Street from the intersection with N. 27th Avenue west to its current termini point to a two-lane urban collector roadway. A new link between the current western termini point of Cattail Street and Cottonwood Road should be created to two-lane collector standards complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the northern portion of the city.	**PARTIALLY COMPLETED,** modified and included herein as **MSN-10**
MSN-9	Stucky Rd (S. 19th Ave to Gooch Hill Rd)	This project consists of upgrading Stucky Road from the intersection with S. 19th Avenue west to the intersection with Gooch Hill Road to a two-lane urban collector roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the southern edge of the city.	**NOT COMPLETED,** modified and included herein as **MSN-16**

Project #	Location	Past Recommendation	Status for TMP
MSN-10	Oak St (Fowler Ave to Cottonwood Rd)	This project consists of constructing a new link along Oak Street from the intersection with Fowler Avenue west to Cottonwood Road. This section should be built to a five-lane urban arterial standard and should include two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the northwestern portion of the city.	**NOT COMPLETED,** modified and included herein as **CMSN-3, CMSN-4, MSN-18** & **MSN-38**
MSN-11	Graf St	Graf Street is to be extended from its current western termini to connect to S. 19th Avenue. This extension would be approximately 0.6 miles long and should be built to meet two-lane collector standards. This extension is an important connection for public safety purposes, allowing fire service to meet their response time requirements in areas where they currently cannot.	**NOT COMPLETED,** modified and included herein as **MSN-27**
MSN-12	S. 11th Ave (Kagy Bld to Graf St extension)	This project would connect S. 11th Avenue between Kagy Boulevard and the future extension of Graf Street as described in MSN-11. This roadway should be built to a two-lane urban collector standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. A new link between Opportunity Way and the Graf Street extension would need to be constructed under this project. This project will serve to create a north-south link for the southern portion of the city.	**PARTIALLY COMPLETED,** modified and included herein as **CMSN-7**
MSN-13	N. 11th Ave (Durston Rd to Baxter Ln)	This project consists of upgrading N. 11th Avenue from the intersection with Durston Road to the intersection with Baxter Lane. A new link between Durston Road and Oak Street would need to be constructed under this project. This roadway should be built to a two-lane urban collector standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project will serve to create an additional north-south link along the north-central part of the city.	**NOT COMPLETED,** modified and included herein as **MSN-3** & **MSN-45**
MSN-14	W. Babcock Street (S. 11th Ave to S. 19th Ave)	W. Babcock Street should be upgraded to a two-lane urban collector standard between the intersection with S. 11th Avenue and the intersection with S. 19th Avenue. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevards, parking, and sidewalks.	**NOT COMPLETED,** modified and included herein as **CMSN-9**
MSN-15	Church St (Main St to Kagy Blvd)	This project consists of reconstructing Church Street from the intersection with Main Street south to the intersection with Kagy Boulevard to a two-lane urban collector standard. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevards, parking, and sidewalks. The need for this project comes from increased traffic due to growth in the South Bozeman area as well as the county area south of Bozeman. This project will improve the safety and capacity for motorized vehicles as well as bicycles and pedestrians.	**NOT COMPLETED,** modified and included herein as **MSN-30**
MSN-16	W. Main St (7th Ave to 19th Ave)	This project consists of installing a raised or landscaped median at appropriate locations along W. Main Street between the intersection with 7th Avenue and the intersection with 19th Avenue. This project will help to increase traffic flow via access control and improve safety along this corridor.	**NOT COMPLETED,** not included herein for further consideration
MSN-17	Frontage Rd (N. 7th Ave to Belgrade)	The Frontage Road between N. 7th Avenue to Belgrade should be upgraded to a three-lane rural arterial roadway. This includes one travel lane in each direction and a two-way center turn lane. This project is necessitated by the future development patterns in the region and will serve as a link between the Belgrade and Bozeman areas. Roadway shoulders should be included to facilitate bicycle travel.	**NOT COMPLETED,** corridor study underway

Project #	Location	Past Recommendation	Status for TMP
MSN-18	Springhill Rd (Frontage Rd to Sypes Canyon Rd)	Springhill Road from the intersection with the Frontage Road to the intersection with Sypes Canyon Road should be widened to a three-lane rural arterial roadway. This includes one travel lane in each direction and a two-way center turn lane. This project is necessitated by the development on the western side of the city and north of the interstate. This project will serve to provide a north-south connection along the northwest side of the city.	**NOT COMPLETED,** modified and included herein as **MSN-6**
MSN-19	Bozeman Trail/Haggerty Ln (Main St to Kagy Blvd)	Bozeman Trail should be upgraded to a two-lane urban collector roadway from the intersection with Kagy Boulevard north to the intersection with Haggerty Lane. Haggerty Lane should also be upgraded to a two-lane urban collector roadway from the intersection with Bozeman Trail northwest to the intersection with Main Street. A two-lane urban collector roadway includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development in the region and will serve as a north-south link along the southeastern portion of the city.	**PARTIALLY COMPLETED,** modified and included herein as **MSN-23**
MSN-20	East Belgrade Interchange	This project consists of constructing a new I-90 interchange to serve the airport and Belgrade areas. A northern interchange connection is to be made to connect with the Frontage Road. A southern connection to the interchange should be made to connect to Alaska Road. The interchange connections should be constructed to two-lane rural arterial standards complete with one travel lane in each direction. This project is necessitated by the future development in the region and the need for more adequate connection to the airport. Non-motorized facilities should be developed in association with this project as this interchange will serve important cross connectivity north and south of Interstate 90.	**COMPLETED**
MSN-21	Gallatin Rd (Gallatin Gateway to Four Corners)	It is recommended that Gallatin Road be widened to a three-lane rural arterial between Gallatin Gateway and Four Corners complete with one travel lane in each direction and a two-way center turn lane. This project is necessitated by the development in the region and the increasing traffic volumes along this corridor. This project will serve as a vital north-south link for the area and will increase the overall safety of the roadway.	**PARTIALLY COMPLETED,** not included herein for further consideration (outside of study area)
MSN-22	Jackrabbit Ln (Four Corners to Frank Rd)	It is recommended that Jackrabbit Lane be widened to a five-lane arterial between Four Corners and Frank Road, complete with two travel lanes in each direction and a two-way center turn lane or raised median. This project is necessitated by the development in the region and the increasing traffic volumes along this corridor. This project will serve as a vital north-south link for the area and will increase the overall safety of the roadway.	**PARTIALLY COMPLETED,** not included herein for further consideration (outside of study area)
MSN-23	Griffin Dr Railroad Underpass	This project consists of constructing a railroad underpass along Griffin Drive. The railroad crossing separates the northeastern portion of the city and creates a problem for emergency vehicle access and traffic congestion when the train blocks the current at-grade crossings.	**NOT COMPLETED,** not included herein for further consideration
MSN-24	Cedar St / Oak St	This project consists of upgrading Cedar Street to a three-lane urban arterial. An eastern extension of Oak Street from its intersection with Rouse Avenue to connect to Cedar Street and a southern extension of Cedar Street connecting to Main Street at the intersection with Highland Boulevard should also be constructed under this project. This project would also require two grade separated railroad crossings. A three-lane urban arterial includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalks, and a raised median. This project in necessitated by the future development patterns in the region and will serve to access development area on the eastern side of the city and relieve neighborhood "cut-thru" traffic issues in the northeast neighborhood area.	**NOT COMPLETED,** not included herein for further consideration

Project #	Location	Past Recommendation	Status for TMP
MSN-25	Ferguson Ave (Durston Rd to Valley Center Rd)	This project consists of extending Ferguson Avenue from its current northern termini point north to intersect with Valley Center Road. This roadway should be constructed to a two-lane urban collector standard which includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve north-west traffic flow around the western portion of the city.	**PARTIALLY COMPLETED,** modified and included herein as **CMSN-6**
MSN-26	Highland Blvd (Main St to Kagy Blvd)	This project consists of widening Highland Boulevard from the intersection with Main Street to the intersection with Ellis Street to a five-lane urban arterial standard, and from the intersection with Ellis Street south to the intersection with Kagy Boulevard to a three-lane urban arterial standard. This roadway is currently a minor arterial roadway with one travel lane in each direction. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve north-south traffic flow. It is expected that a minimum of two travel lanes in each direction from Main Street to Ellis Street, one travel lane in each direction from Ellis Street to Kagy Boulevard, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median will be required.	**NOT COMPLETED,** modified and included herein as **MSN-22**
MSN-27	Kagy Blvd (Highland Blvd to Bozeman Trail)	This project consists of widening Kagy Boulevard from the intersection with Highland Boulevard to the intersection with Bozeman Trail to a three-lane urban arterial standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median. This roadway is a two-lane roadway and is classified as a principal arterial. This project serves as a long-term need that will be necessary to accommodate future development patterns in the region and serve east-west traffic flow.	**NOT COMPLETED,** modified and included herein as **MSN-24**
MSN-28	Stucky Rd / Elk Ln Extension	This project consists of constructing an extension of Stucky Road west from the intersection with Gooch Hill Road to the future intersection of Elk Lane and Love Lane. This segment should be constructed to a two-lane collector standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the southwestern edge of the city.	**NOT COMPLETED,** modified and included herein as **MSN-16**
MSN-29	Valley Center Rd (Love Ln to Valley Center Spur Rd)	This project consists of upgrading Valley Center Road from the intersection with Love Lane to the intersection with the Valley Center Spur Road to a two-lane urban arterial standard. This section will consist of one travel lane in each direction, 6-foot shoulders on each side, curb and gutter, turn-lanes at major intersections, and sidewalks. This project in necessitated by the future development patterns in the region and will serve to access development area on the northwestern side of the city.	**COMPLETED**
MSN-30	Valley Center Rd (Valley Center Spur Rd to N. 27th Ave)	This project consists of upgrading Valley Center Road from the intersection with the Valley Center Spur Road to the intersection with N. 27th Avenue to a three-lane urban arterial standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and a raised median. This roadway is a two-lane roadway and is classified as a principal arterial. This project in necessitated by the future development patterns in the region and will serve to access development area on the northwestern side of the city.	**NOT COMPLETED,** modified and included herein as **MSN-29**

2.1.2. Committed MSN Projects

Committed projects in the MSN category are only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years, are not listed here as they will not have an effect on capacity and/or delay characteristics (an example might be a street overlay). Committed improvements listed are only considered if they are likely to be constructed within a five-year timeframe (i.e. fiscal year 2018 through fiscal year 2022), and a funding source has been identified and is assigned to the specific project. Committed MSN projects are shown in **Table 2.2**.

Table 2.2: Committed MSN Projects (FY 2018 to FY 2022)

TMP ID	Title	Description	Cost	YOE	Project ID	Source
CMSN-1	Griffin Dr (N. 7th Ave to Rouse Ave)	This project consists of reconstructing Griffin Drive, from the intersection of N. 7th Avenue to Rouse Avenue, to a three-lane urban "minor arterial" standard. This includes one travel lane in each direction, bike lanes on each side, curb and gutter throughout, boulevard, and sidewalks. Turn-bays and flushed or raised medians should be incorporated at major intersections as applicable (i.e. N. 7th Avenue, Manley Road, Rouse Avenue, etc.).	$5,000,000	FY19	SIF113	City
CMSN-2	Cottonwood Rd (Babcock St to Durston Rd)	This project consists of widening Cottonwood Road, from West Babcock Street to Durston Road, to a five-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalk on the west side and a shared use path on the east side and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor on the west side of the city.	$2,555,883	FY18	SIF036	City
CMSN-3	Oak St (New Holland Dr to Ferguson Ave)	This project is the completion of the street segment of Oak Street, from New Holland Drive to Ferguson Avenue, to a five-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, shared use paths on both sides and a raised median. Currently, the south half of the street is missing, creating a bottleneck in the street network.	$2,000,000	FY18	SIF046	City
CMSN-4	Oak St (Ferguson Ave to Ryunson Way)	This project is the completion of the street segment of Oak Street, from Ferguson Avenue to Ryunson Way, to a five-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median.	$100,000	FY19	SIF135	City

TMP ID	Title	Description	Cost	YOE	Project ID	Source
CMSN-5	Durston Rd (Ferguson Rd to Fowler Ave)	Complete Durston Road, from Fowler Avenue to Ferguson Road, to a three-lane urban minor arterial standard including sidewalks, parking, medians, boulevards and bike lanes.	$1,514,842	FY19	SIF062	City
CMSN-6	Ferguson Ave (Baxter Ln to Oak St)	Complete Ferguson Avenue, from Baxter Lane to Oak Street, to a two-lane urban collector standard with bike lanes, curb and gutter, boulevards, parking and a sidewalk on the west side and shared use path on the east side.	$1,000,000	FY18	SIF080	City
CMSN-7	S. 11th Ave (Kagy Blvd to Graf St Extension)	Complete S. 11th Avenue, from Kagy Boulevard to Graf Street, to a two-lane urban collector standard including shared use paths on both sides, curb and gutter and bike lanes.	$1,600,000	FY18	SIF102	City
CMSN-8	Story Mill Rd (Griffin Dr to Bridger Canyon Rd)	Reconstruct Story Mill Road, between Griffin Drive and Bridge Canyon Road, to a two-lane urban "collector" standard. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, and sidewalks. Also, north of Griffin Drive install shared use path on the west side as part of a continuous trail connection from south Bozeman to the M trailhead (Story Hill Rail Trail).	$500,000	FY21	SIF117	City
CMSN-9	W. Babcock St (S. 11th Ave to S. 19th Ave)	Upgrade West Babcock Street, between South 11th Avenue and South 19th Avenue, to a three-lane urban "collector" standard. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevards, parking, and sidewalks, with a flush or raised center lane or median.	$1,500,000	FY22	SIF118	City
CMSN-10	Oak St (Rouse Ave thru Cannery District)	Improve Oak Street from Rouse Avenue thru the Cannery District to include curb, gutter, sidewalks, and a turning lane to provide left-turn movement access to the two drive accesses from Oak Street into the Cannery District.	$266,000	FY19	SIF109	City
CMSN-11	Rouse Ave (E Main St to Oak St)	Complete the reconstruction of Rouse Avenue, between E. Main Street and Oak Street, to a three-lane urban principal arterial standard with bike lanes and sidewalks.	$9,185,756	FY18	UPN4805	MDT

2.1.3. Recommended MSN Projects

A number of MSN projects have been identified and are described in this section and shown on **Figure 2.1**. **Table 2.3** contains a summary of the recommended MSN projects that are not identified for funding in the next five years as per the 5-Year CIP. The project numbering scheme does not represent or imply priority with respect to individual projects. System deficiencies and needs are often not fundable in the foreseeable future. However, funding opportunities often arise during the course of time, often from unexpected sources. To be prepared to take advantage of such opportunities, the following list of projects is provided, with no identified funding source or schedule for

construction/implementation. It is likely that some of them will become funded at some point during the twenty-five year planning horizon even though no current source is known. For planning level cost estimates, representative "costs per mile" were developed using recent roadway cost estimates from the *Oak Street Improvements* project and the *Cottonwood/Durston Road Improvements* project. Furthermore, for some projects the City of Bozeman's most current *Street Impact Fee Fund CIP (FY 18-22)* and *Arterial and Collector District CIP (FY 18-22)* was utilized. Planning level cost estimates include construction, design, construction administration, utilities and contingencies. The Basis of Planning cost estimates for the MSN projects, absent other defined sources, are as follows:

- $2.2M per mile (2-lane urban)
- $3.0M per mile (3-lane urban)
- $5.0M per mile (4/5-lane urban)
- $1.5M per mile (2-lane rural)
- $1.9M per mile (3-lane rural)
- $250 per sq ft (bridge construction)

MSN-1: Kagy Blvd (Willson Ave to Highland Blvd)

Reconstruct Kagy Boulevard, from the intersection of Willson Avenue to Highland Boulevard, to a four-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, wide sidewalks or shared use paths, and a raised median. Also included are intersection improvements consisting of traffic signalization or roundabouts at the intersections of Kagy Boulevard with Sourdough Avenue / Church Street and also Highland Boulevard. (SIF 129)

Estimated Cost: $6.0M

MSN-2: Oak Street (N. 7th Avenue to west edge of Cannery District)

This project consists of reconstructing Oak Street, from the intersection of N. 7th Avenue to the west edge of the Cannery District, to a three-lane urban "principal arterial" standard. This includes one travel lane in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalk on the north side, and either a flush center lane or raised median. The shared use path on the south side should remain and be extended to N. 7th Avenue. Turn-bays should be incorporated at major intersections as applicable.

Estimated Cost: $1.95M

MSN-3: N. 11th Avenue (Durston Road to Oak Street)

This project consists of constructing N. 11th Avenue from the intersection with Durston Road to the intersection with Oak Street. This roadway should be built to a two-lane urban "collector" standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, sidewalk on the east side, and a shared use path on the west side. This project will serve to create an additional north-south link within the north-central part of the city.

Estimated Cost: $1.12M

MSN-4: N. 15th Avenue (Patrick Street to Baxter Lane)

This project consists of constructing N. 15th Avenue from the intersection with Patrick Street to the intersection with Baxter Lane. This roadway should be built to a three-lane urban "collector" standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project will serve to create an additional north-south link within the north-central part of the city. A new roundabout intersection at Tschache Lane and N. 15th Avenue will be created with this project.

Estimated Cost: $705K

MSN-5: N. 19th Avenue (Interstate 90 to Springhill Road)

This project consists of reconstructing N. 19th Avenue from Interstate 90 to the intersection with Springhill Road to a 5-lane urban “principal arterial” standard. This project includes widening the I-90 overpass on N. 19th Avenue. This roadway is currently a principal arterial roadway south of I-90 and a minor arterial roadway north of I-90. This project serves a long-term need that will be necessary to accommodate future development patterns in the region and serve north-south traffic flow. It is expected that a minimum of two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk, and raised median will be required.

Estimated Cost: $2.5M (road only) // $4.7M (includes bridge widening)

MSN-6: Springhill Road (Frontage Road to Sypes Canyon Road)

Springhill Road from the intersection with the Frontage Road to the intersection with Sypes Canyon Road should be reconstructed to a three-lane rural "minor arterial" roadway. This includes one travel lane in each direction and a two-way center turn lane. This project is

necessitated by the development on the western side of the city and north of the interstate. This project will serve to provide a north-south connection within the northwest side of the city. A shared-use path should be added to the east side of Springhill Road linking the Frontage Road with Sypes Canyon Road (could also connect to a future conceptual path to Story Mill Road/Bridger Drive).

Estimated Cost: $2.85M

MSN-7: N. 27th Avenue (Baxter Lane to Valley Center Road)

This project consists of constructing N. 27th Avenue from the intersection with Baxter Lane to the intersection with Valley Center Road. This roadway should be built to a three-lane urban "collector" standard which should include one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project will serve to create an additional north-south link within the north-central part of the city.

Estimated Cost: $4.2M

MSN-8: Kagy Blvd (Willson Ave to S. 19th Ave)

Reconstruct Kagy Boulevard, from the intersection of S. 19th Avenue to Willson Avenue, to a four-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, wide sidewalks or shared use paths, and a raised median. Also included are multi-lane roundabouts at the intersections of Kagy Boulevard with S. 11th, S. 7th, and Willson Avenues. (SIF 009)

Estimated Cost: $8.0M

MSN-9: Oak Street (N. 27th Avenue to N. 19th Avenue)

Reconstruct Oak Street, from N. 27th Avenue to N. 19th Avenue, to a five-lane urban "principal arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalk on the north side, shared use path on the south side, and either a flush center lane or raised median. Turn-bays should be incorporated at major intersections as applicable.

Estimated Cost: $2.1M

MSN-10: Cattail Street (Davis Lane to Harper Puckett Road)

This project consists of constructing Cattail Street from the intersection with Davis Lane west of its current termini point to a three-lane urban "collector" roadway. A new link between the current western termini point of Ferguson Avenue and Harper Puckett Road should be created with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. The portion of Cattail Street between Davis Lane and Ferguson Avenue has been constructed but not to a full build-out configuration. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow within the northern portion of the city.

Estimated Cost: $3.0M

MSN-11: Davis Lane (Baxter Lane to Valley Center Road)

This project consists of reconstructing Davis Lane from the intersection with Baxter Lane to the intersection with Valley Center Road to a five-lane urban "minor arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk on the east side, shared use path on the west side, and a center turn lane/raised median. This project is necessitated by the future development patterns in the region and will serve north-south traffic flow within the western portion of the city.

Estimated Cost: $8.5M

MSN-12: Cottonwood Road (Oak Street to Cattail Street)

Complete the construction of Cottonwood Road, from Oak Street to Cattail Street, to a five lane urban "principal arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalk on the west side, shared use path on the east side, and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor within the west side of the city.

Estimated Cost: $5.0M

MSN-13: Fowler Avenue Connection (Huffine Lane to Oak Street)

This project consists of reconstructing Fowler Avenue from the intersection with Huffine Lane to the intersection with Oak Street to a five-lane urban "minor arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter, boulevard,

sidewalk on the east side, and a shared use path on the west side. New links will have to be constructed within this corridor between Oak Street and Durston Road, and between Christopher Way and Babcock Street. This project is necessitated by the future development patterns in the region and will serve north-south traffic flow within the western portion of the city. (SIF 114)

Estimated Cost: $7.5M

MSN-14: Durston Road (Gooch Hill Road to Westgate Avenue)

This project consists of reconstructing Durston Road, from Gooch Hill Road to Westgate Avenue, to a three-lane urban "minor arterial" standard. This includes one travel lane in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks, and either a flush center lane or raised median. Turn-bays should be incorporated at major intersections as applicable.

Estimated Cost: $900K

MSN-15: Cottonwood Road (Durston Road to Oak Street)

This project consists of constructing Cottonwood Road, from Durston Road to Oak Street, to a five lane urban "principal arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalk on the west side, shared use path on the east side, and a raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor within the west side of the city. (SIF 105)

Estimated Cost: $2.5M

MSN-16: Stucky Road (S. 19th Avenue to Gooch Hill Road)

This project consists of reconstructing Stucky Road from the intersection with S. 19th Avenue west to the intersection with Gooch Hill Road to a three-lane urban "collector" roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow around the southern edge of the city.

Estimated Cost: $9.0M

MSN-17: College Street (S. 11th Avenue to S. 19th Avenue)

This project consists of reconstructing College Street, from the intersection of S. 11th Avenue to S. 19th Avenue, to a three-lane urban "minor arterial" standard. This includes one travel lane in each direction, bike lanes on each side, parking on each side, curb and gutter throughout, boulevard, flush and/or raised medians with left turn lanes at major intersections, and shared use paths on both sides (currently exists on south side). The roundabout at College Street and S. 11th Avenue should remain. (SIF 115)

Estimated Cost: $1.1M

MSN-18: Oak Street (Cottonwood Road to Flanders Mill)

This project consists of reconstructing Oak Street, from Cottonwood Road to Flanders Mill, to a five-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. (SIF 134)

Estimated Cost: $1.55M

MSN-19: W. College Street (S. 8th Avenue to S. 11th Avenue)

This project consists of reconstructing College Street, from the intersection of S. 8th Avenue to S. 11th Avenue, to a two-lane urban "minor arterial" standard. This includes one travel lane in each direction, bike lanes on each side, parking on each side, curb and gutter throughout, boulevard, and sidewalks. The roundabout at College Street and S. 11th Avenue should remain.

Estimated Cost: $440K

MSN-20: Mendenhall Street and Babcock Street (Streetscape Improvements)

This project consists of completing streetscape improvements along Mendenhall Street and Babcock Street to include curb bulb-outs, landscaping and crossing enhancements.

Estimated Cost: $2.1M

MSN-21: S. 3rd Avenue (Graf Street to Kagy Boulevard)

This project consists of reconstructing S. 3rd Avenue from the intersection with Graf Street to the intersection with Kagy Boulevard to a three-lane urban "collector" roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, sidewalks, and left turn lanes at major intersections. This project serves to accommodate development in the region and serve north-south traffic flow within the southern portion of the city.

Estimated Cost: $2.1M

MSN-22: Highland Boulevard (Main Street to Kagy Boulevard)

This project consists of reconstructing Highland Boulevard from the intersection with Main Street to the intersection with Knolls Drive to a five-lane urban "principal arterial" standard, and from the intersection with Knolls Drive south to the intersection with Kagy Boulevard to a three-lane urban "principal arterial" standard. This project serves as a long-term need that will be necessary to accommodate future development patterns in the area and serve north-south traffic flow. It is expected that a minimum of two travel lanes in each direction from Main Street to Knolls Drive, and one travel lane in each direction from Knolls Drive to Kagy Boulevard, will be necessary. Also included are bike lanes on each side, curb and gutter, boulevard, sidewalk (on the east side of Highland Boulevard), and a flush/raised median. The shared use path on the west side of Highland Boulevard will need to be reconstructed to the west to fit in a three-lane roadway section. (SIF 111)

Estimated Cost: $10.0M

MSN-23: Bozeman Trail Road / Haggerty Lane (Main Street to Kagy Boulevard)

Bozeman Trail Road should be reconstructed to a three-lane urban "minor arterial" roadway from the intersection with Kagy Boulevard north to the intersection with Haggerty Lane. Haggerty Lane should also be upgraded to a three-lane urban "minor arterial" roadway from the intersection with Bozeman Trail Road northwest to the intersection with Main Street. A three-lane urban "minor arterial" roadway includes one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, sidewalk on the east side, a shared use path on the west side, and a center turn lane/raised median as appropriate. This project is necessitated by the future development in the area and will serve as a north-south link within the southeastern portion of the city.

Estimated Cost: $5.55M

MSN-24: Kagy Boulevard (Highland Boulevard to Bozeman Trail Road)

This project consists of reconstructing Kagy Boulevard from the intersection with Highland Boulevard to the intersection with Bozeman Trail Road to a three-lane urban "principal arterial" standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, shared use paths on both sides, and a flush/raised median. This roadway is currently a two-lane roadway with no shoulder, steep fill slopes, and limited non-motorized amenities. This project serves as a long-term need that will be necessary to accommodate future development patterns in the area and serve east-west traffic flow. Two grade separated underpasses below Kagy Boulevard are envisioned to provide north-south non-motorized connectivity to trails in the area.

Estimated Cost: $5.0M

MSN-25: Kagy Boulevard / Bozeman Trail Road (Bozeman Trail Road to Interstate 90)

This project consists of reconstructing Kagy Boulevard from the intersection with Bozeman Trail Road, east to Interstate 90, to a two-lane rural "principal arterial" standard complete with one travel lane in each direction, bike lanes on each side, and shared use paths (as per PROST Plan). This roadway is currently a two-lane roadway with no shoulder, steep fill slopes, and limited non-motorized amenities. This project serves as a long-term need.

Estimated Cost: $4.35M

MSN-26: Cottonwood Road (Loyal Drive to Graf Street)

This project consists of reconstructing Cottonwood Road, from the intersection of Loyal Drive to Graf Street, to a five-lane urban "principal arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks (on the west side), a shared use path on the east side, and a flush or raised median. Cottonwood Road serves as an important element in Bozeman's west side street system and serves as a primary north-south corridor on the west side of the city.

Estimated Cost: $5.5M

MSN-27: Graf Street Extension (Ritter Drive to S. 19th Avenue)

This project consists of completing Graf Street, from Ritter Drive to S. 19th Avenue, to a two-lane urban collector standard with bike lanes. This also includes shared use paths on both sides.

Estimated Cost: $1.035M

MSN-28: Gooch Hill Road (Huffine Lane to Durston Road)

Reconstruct Gooch Hill Road, from Huffine Lane to Durston Road, to a five lane urban "minor arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. Gooch Hill Road will serve as an important element in Bozeman's future west side street system.

Estimated Cost: $5.0M

MSN-29: Valley Center Road (Valley Center Spur Road to N. 27th Avenue)

This project consists of reconstructing Valley Center Road from the intersection with Valley Center Spur Road (at underpass) to the intersection with N. 27th Avenue to a three-lane urban “principal arterial” standard complete with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, a shared use path (on the south side), and a flush/raised median. This project in necessitated by the future development patterns in the region and will serve to access development area on the northwestern side of the city.

Estimated Cost: $3.51M

MSN-30: Church Street (Main Street to Kagy Boulevard)

This project consists of reconstructing Church Street from the intersection with Main Street south to the intersection with Kagy Boulevard to a two-lane urban "collector" standard. This would include one travel lane in each direction, curb and gutter, bike lanes, and sidewalks. This project will improve the safety and capacity for motorized vehicles as well as pedestrians. It is possible that due to land constraints that sidewalk may not be feasible on both sides of the street.

Estimated Cost: $3.52M

MSN-31: "L" Street / Story Mill Road (Tamarack Street to Griffin Drive)

This project consists of reconstructing "L" Street and Story Mill Road, from the intersection with Tamarack Street to Griffin Drive, to a two-lane urban "collector" standard. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, and sidewalks. Also, from where "L" Street becomes Story Mill Road, up to Griffin Drive, a segment of shared use path is recommended on the west side as part of a continuous trail connection from south Bozeman to the M trailhead (Story Hill Rail Trail). The need for this project comes from increased traffic due to growth in the northeast Bozeman area as well as the county area northeast of Bozeman.

Estimated Cost: $2.14M

MSN-32: Interstate 90 Corridor Planning Study

It is recommended that a "pre-NEPA/MEPA Corridor Planning Study" be completed for Interstate 90, between the West Belgrade Interchange and the Bear Canyon Exit, to assess issues, constraints and opportunities regarding operations and access between Belgrade and east of Bozeman before entering the canyon. The purpose of the study is to assess existing and projected interstate operations, determine needs, and analyze the current lane configurations and their ability to serve the community into the future. An assessment of the need and feasibility of a new interchange between the East Belgrade Interchange and the N. 19th Avenue Interchange should also be included as a component of the study.

Estimated Cost: $250K

MSN-33: Harper Puckett Road (Gooch Hill Road to E. Valley Center Road)

Reconstruct Harper Puckett Road, from Gooch Hill Road to E. Valley Center Road, to a five lane urban "minor arterial" standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalk on the west side, a shared use path on the east side, and a raised median. Harper Puckett Road will serve as an important element in Bozeman's future west side street system.

Estimated Cost: $2.50M

MSN-34: Cattail Street (N. 19th Avenue to N. 27th Avenue)

This project consists of constructing Cattail Street from the intersection with N. 19th Avenue west to N. 27th Avenue to a three-lane urban "collector" roadway. A new link should be created with one travel lane in each direction, bike lanes on each side, curb and gutter, boulevard, parking, and sidewalks. This project is necessitated by the future development patterns in the region and will serve east-west traffic flow within the northern portion of the city.

Estimated Cost: $960K

MSN-35: Story Mill Road North / McIlhattan Road (Bridger Canyon Drive to Landfill)

This project consists of reconstructing Story Mill Road North to McIlhattan Road, and McIlhattan Road northwest to the Landfill, to a two-lane urban "collector" road standard. This would include one travel lane in each direction, a shared use path on the west side, and curb and gutter. Sidewalks may not be necessary along the McIlhatten portion of the roadway. The need for this project comes from increased traffic due to growth in the northeast Bozeman area as well as the county northeast of Bozeman.

Estimated Cost: $3.08M

MSN-36: Manley Road (Griffin Drive to Gallatin Park Drive North)

This project consists of reconstructing Manley Road from Griffin Drive north to Gallatin Park Drive North to an urban "collector" road standard. This would include one travel lane in each direction, bike lanes on each side, curb and gutter, and sidewalks. Beginning about 800 feet north of Griffin Drive, parking should also be provided via a widened shoulder on both sides of Manley Road for a distance of approximately 750 feet. The need for this project comes from increased traffic in this part of Bozeman.

Estimated Cost: $1.95M

MSN-37: W. Lincoln Street (N. 19th Avenue to S. 11th Avenue)

This project consists of reconstructing W. Lincoln Street, from S. 11th Avenue to S. 19th Avenue, to a three-lane urban “collector” roadway. This includes one travel lane in each direction, bike lanes on each side, curb and gutter, sidewalk on the south side, a shared use path on the

north side, and a flush or raised median. Traffic signal control at the intersection of S. 19th Avenue and W. Lincoln Street should be included with the project.

Estimated Cost: $1.5M

MSN-38: Oak Street (Flanders Mill to Ryunson Way)

This project consists of reconstructing Oak Street, from Flanders Mill to Ryunson Way, to a five-lane urban principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and a raised median. (SIF 057).

Estimated Cost: $1.5M

MSN-39: Baxter Ln (Ferguson Ave to Harper Puckett Rd)

This project consists of completing Baxter Lane, from Ferguson Avenue to Cottonwood Road, to a three-lane urban minor arterial standard including sidewalks, parking, medians, boulevards and bike lanes. This also includes a short 600-foot section of shared use path from Flanders Mill Road to the stream corridor to the east.

Estimated Cost: $1.5M

MSN-40: Baxter Lane (N. 19th Avenue to Davis Lane)

This project consists of completing Baxter Lane, from N. 19th Avenue to Davis Lane, to a three-lane "urban" minor arterial standard. This includes one travel lane in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks and flush/raised medians as warranted.

Estimated Cost: $1.5M

MSN-41: Baxter Ln (N. 7th Avenue to N. 19th Avenue)

This project consists of completing Baxter Lane, from N. 7th Avenue to N. 19th Avenue, to a three-lane urban collector standard including sidewalks on both sides and bike lanes. This also includes a shared use path from N. 11th Avenue to N. 19th Avenue on the south side.

Estimated Cost: $1.5M

MSN-42: Catamount Street (N. 27th Avenue to Valley Center Road)

This project consists of completing Catamount Street, from N. 27th Avenue to Valley Center Road, to a two-lane urban minor arterial standard including bike lanes.

Estimated Cost: $600k

MSN-43: Oak Street (N. 15th Avenue to N. 19th Avenue)

This project consists of completing Oak Street, from N. 15th Avenue to N. 19th Avenue, to a five-lane urban principal arterial standard including addition of 1 lane (5 lanes total), bike lanes and a shared use path on the south side.

Estimated Cost: $765k

MSN-44: N. 27th Ave (Oak St to Tschache Ln)

This project consists of completing N. 27th Avenue, from Oak Street to Tschache Lane, to a five-lane urban collector standard including medians for power poles.

Estimated Cost: $350k

MSN-45: N. 11th Avenue (Oak Street to Baxter Lane)

This project consists of reconstructing N. 11th Avenue from the intersection with Oak Street to the intersection with Baxter Lane. This roadway should be built to a two-lane urban "collector" standard which should include one travel lane in each direction, bike lanes on each

side, curb and gutter, boulevard, parking, sidewalk on the east side, and a shared use path on the west side. This project will serve to create an additional north-south link within the north-central part of the city.

Estimated Cost: $750K

MSN-46: S. 19th Avenue (Kagy Boulevard to Goldenstein Lane)

This project consists of reconstructing S. 19th Avenue from the intersection with Kagy Boulevard south to the intersection with Goldenstein Lane to a five-lane principal arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks, and turn pockets with raised median as applicable.

Estimated Cost: $9.0M

MSN-47: Durston Road (Cottonwood Road to Ferguson Avenue)

This project consists of reconstructing Durston Road from the intersection with Cottonwood Road to the intersection with Ferguson Avenue to a three-lane minor arterial standard. This includes two travel lanes in each direction, bike lanes on each side, curb and gutter throughout, boulevard, sidewalks, and turn pockets with raised median as applicable.

Estimated Cost: $2.5M

Table 2.3: Summary of Recommended MSN Projects (not in City's 5-Year CIP)

TMP ID	Title	Description	Cost
MSN-1	Kagy Blvd (Willson Ave to Highland Blvd)	Reconstruct Kagy Boulevard, from the intersection of Willson Avenue to Highland Boulevard, to a four-lane urban principal arterial standard. (SIF 129)	$6,000,000
MSN-2	Oak Street (N. 7th Avenue to west edge of Cannery District)	Reconstruct Oak Street, from the intersection of N. 7th Avenue to the west edge of the Cannery District, to a three-lane urban "principal arterial" standard.	$1,950,000
MSN-3	N. 11th Avenue (Durston Road to Oak Street)	Construct N. 11th Avenue, from the intersection with Durston Road to the intersection with Oak Street, to a two-lane urban "collector" standard.	$1,120,000
MSN-4	N. 15th Avenue (Patrick Street to Baxter Lane)	Construct N. 15th Avenue, from the intersection with Patrick Street to the intersection with Baxter Lane, to a three-lane urban "collector" standard.	$705,000
MSN-5	N. 19th Avenue (Interstate 90 to Springhill Road)	Reconstruct N. 19th Avenue, from Interstate 90 to the intersection with Springhill Road, to a 5-lane urban "principal arterial" standard. This project includes widening the I-90 overpass on N. 19th Avenue.	$2,500,000 (road only) // $4,700,000

TMP ID	Title	Description	Cost
			(includes bridge widening)
MSN-6	Springhill Road (Frontage Road to Sypes Canyon Road)	Reconstruct Springhill Road, from the intersection with the Frontage Road to the intersection with Sypes Canyon Road, to a three-lane rural "minor arterial" roadway.	$2,850,000
MSN-7	N. 27th Avenue (Baxter Lane to Valley Center Road)	Construct N. 27th Avenue, from the intersection with Baxter Lane to the intersection with Valley Center Road, to a three-lane urban "collector" standard.	$4,200,000
MSN-8	Kagy Blvd (Willson Ave to S. 19th Ave)	Reconstruct Kagy Boulevard, from the intersection of S. 19th Avenue to Willson Avenue, to a four-lane urban principal arterial standard. (SIF 009)	$8,000,000
MSN-9	Oak Street (N. 27th Avenue to N. 19th Avenue)	Reconstruct Oak Street, from N. 27th Avenue to N. 19th Avenue, to a five-lane urban "principal arterial" standard.	$2,100,000
MSN-10	Cattail Street (Davis Lane to Harper Puckett Road)	Construct Cattail Street, from the intersection with Davis Lane west of its current termini point, to a three-lane urban "collector" roadway. The portion of Cattail Street between Davis Lane and Ferguson Avenue has been constructed but not to a full build-out configuration.	$3,000,000
MSN-11	Davis Lane (Baxter Lane to Valley Center Road)	Reconstruct Davis Lane, from the intersection with Baxter Lane to the intersection with Valley Center Road, to a five-lane urban "minor arterial" standard.	$8,500,000
MSN-12	Cottonwood Road (Oak Street to Cattail Street)	Construct Cottonwood Road, from Oak Street to Cattail Street, to a five lane urban "principal arterial" standard.	$5,000,000
MSN-13	Fowler Avenue Connection (Huffine Lane to Oak Street)	Reconstruct Fowler Avenue, from the intersection with Huffine Lane to the intersection with Oak Street, to a five-lane urban "minor arterial" standard. (SIF 114)	$7,500,000
MSN-14	Durston Road (Gooch Hill Road to Westgate Avenue)	Reconstruct Durston Road, from Gooch Hill Road to Westgate Avenue, to a three-lane urban "minor arterial" standard.	$900,000
MSN-15	Cottonwood Road (Durston Road to Oak Street)	Construct Cottonwood Road, from Durston Road to Oak Street, to a five lane urban "principal arterial" standard. (SIF 105)	$2,500,000
MSN-16	Stucky Road (S. 19th Avenue to Gooch Hill Road)	Reconstruct Stucky Road, from the intersection with S. 19th Avenue west to the intersection with Gooch Hill Road, to a three-lane urban "collector" roadway.	$9,000,000
MSN-17	College Street (S. 11th Avenue to S. 19th Avenue)	Reconstruct College Street, from the intersection of S. 11th Avenue to S. 19th Avenue, to a three-lane urban "minor arterial" standard. The roundabout at College Street and S. 11th Avenue should remain. (SIF 115)	$1,100,000
MSN-18	Oak Street (Cottonwood Road to Flanders Mill)	Reconstruct Oak Street, from Cottonwood Road to Flanders Mill, to a five-lane urban principal arterial standard. (SIF 134)	$1,550,000
MSN-19	W. College Street (S. 8th Avenue to S. 11th Avenue)	Reconstruct College Street, from the intersection of S. 8th Avenue to S. 11th Avenue, to a two-lane urban "minor arterial" standard. The roundabout at College Street and S. 11th Avenue should remain.	$440,000
MSN-20	Mendenhall Street and Babcock Street (Streetscape Improvements)	Complete streetscape improvements along Mendenhall Street and Babcock Street to include curb bulb-outs, landscaping and crossing enhancements.	$2,100,000
MSN-21	S. 3rd Avenue (Graf Street to Kagy Boulevard)	Reconstruct S. 3rd Avenue, from the intersection with Graf Street to the intersection with Kagy Boulevard, to a three-lane urban "collector" roadway.	$2,100,000

TMP ID	Title	Description	Cost
MSN-22	Highland Boulevard (Main Street to Kagy Boulevard)	Reconstruct Highland Boulevard, from the intersection with Main Street to the intersection with Knolls Drive, to a five-lane urban "principal arterial" standard; and from the intersection with Knolls Drive south to the intersection with Kagy Boulevard, to a three-lane urban "principal arterial" standard. (SIF 111)	$10,000,000
MSN-23	Bozeman Trail Road / Haggerty Lane (Main Street to Kagy Boulevard)	Reconstruct Bozeman Trail Road, from the intersection with Kagy Boulevard north to the intersection with Haggerty Lane, to a three-lane urban "minor arterial" roadway.	$5,550,000
MSN-24	Kagy Boulevard (Highland Boulevard to Bozeman Trail Road)	Reconstruct Kagy Boulevard, from the intersection with Highland Boulevard to the intersection with Bozeman Trail Road, to a three-lane urban "principal arterial" standard.	$5,000,000
MSN-25	Kagy Boulevard / Bozeman Trail Road (Bozeman Trail Road to Interstate 90)	Reconstruct Kagy Boulevard, from the intersection with Bozeman Trail Road east to Interstate 90, to a two-lane rural "principal arterial" standard.	$4,350,000
MSN-26	Cottonwood Road (Loyal Drive to Graf Street)	Reconstruct Cottonwood Road, from the intersection of Loyal Drive to Graf Street, to a five-lane urban "principal arterial" standard.	$5,500,000
MSN-27	Graf Street Extension (Ritter Drive to S. 19th Avenue)	Complete Graf Street, from Ritter Drive to S. 19th Avenue, to a two-lane urban collector standard.	$1,035,000
MSN-28	Gooch Hill Road (Huffine Lane to Durston Road)	Reconstruct Gooch Hill Road, from Huffine Lane to Durston Road, to a five lane urban "minor arterial" standard.	$5,000,000
MSN-29	Valley Center Road (Valley Center Spur Road to N. 27th Avenue)	Reconstruct Valley Center Road, from the intersection with Valley Center Spur Road (at underpass) to the intersection with N. 27th Avenue, to a three-lane urban "principal arterial" standard.	$3,510,000
MSN-30	Church Street (Main Street to Kagy Boulevard)	Reconstruct Church Street, from the intersection with Main Street south to the intersection with Kagy Boulevard, to a two-lane urban "collector" standard.	$3,520,000
MSN-31	"L" Street / Story Mill Road (Tamarack Street to Griffin Drive)	Reconstruct "L" Street and Story Mill Road, from the intersection with Tamarack Street to Griffin Drive, to a two-lane urban "collector" standard.	$2,140,000
MSN-32	Interstate 90 Corridor Planning Study	Complete a "pre-NEPA/MEPA Corridor Planning Study" for Interstate 90, between the West Belgrade Interchange and the Bear Canyon Exit, to assess issues, constraints and opportunities regarding operations and access between Belgrade and east of Bozeman before entering the canyon.	$250,000
MSN-33	Harper Puckett Road (Gooch Hill Road to E. Valley Center Road)	Reconstruct Harper Puckett Road, from Gooch Hill Road to E. Valley Center Road, to a five lane urban "minor arterial" standard.	$2,500,000
MSN-34	Cattail Street (N. 19th Avenue to N. 27th Avenue)	Construct Cattail Street, from the intersection with N. 19th Avenue west to N. 27th Avenue, to a three-lane urban "collector" roadway.	$960,000
MSN-35	Story Mill Road North / McIlhattan Road (Bridger Canyon Drive to Landfill)	Reconstruct Story Mill Road north to McIlhattan Road, and McIlhattan Road northwest to the Landfill, to a two-lane urban "collector" road standard.	$3,080,000
MSN-36	Manley Road (Griffin Drive to Gallatin Park Drive North)	Reconstruct Manley Road, from Griffin Drive north to Gallatin Park Drive North, to an urban "collector" road standard.	$1,950,000
MSN-37	W. Lincoln Street (N. 19th Avenue to S. 11th Avenue)	Reconstruct W. Lincoln Street, from S. 11th Avenue to S. 19th Avenue, to a three-lane urban "collector" roadway.	$1,500,000

TMP ID	Title	Description	Cost
MSN-38	Oak Street (Flanders Mill to Ryunson Way)	Reconstruct Oak Street, from Flanders Mill to Ryunson Way, to a five-lane urban principal arterial standard. (SIF 057)	$1,500,000
MSN-39	Baxter Ln (Ferguson Ave to Harper Puckett Rd)	Complete Baxter Lane, from Ferguson Avenue to Cottonwood Road, to a three-lane urban minor arterial standard.	$1,500,000
MSN-40	Baxter Lane (N. 19th Avenue to Davis Lane)	Complete Baxter Lane, from N. 19th Avenue to Davis Lane, to a three-lane "urban" minor arterial standard.	$1,500,000
MSN-41	Baxter Ln (N. 7th Avenue to N. 19th Avenue)	Complete Baxter Lane, from N. 7th Avenue to N. 19th Avenue, to a three-lane urban collector standard.	$1,500,000
MSN-42	Catamount Street (N. 27th Avenue to Valley Center Road)	Complete Catamount Street, from N. 27th Avenue to Valley Center Road, to a two-lane urban minor arterial standard.	$600,000
MSN-43	Oak Street (N. 15th Avenue to N. 19th Avenue)	Complete Oak Street, from N. 15th Avenue to N. 19th Avenue, to a five-lane urban principal arterial standard.	$765,000
MSN-44	N. 27th Ave (Oak St to Tschache Ln)	Complete N. 27th Avenue, from Oak Street to Tschache Lane, to a five-lane urban collector standard including medians for utility poles.	$350,000
MSN-45	N. 11th Avenue (Oak Street to Baxter Lane)	Reconstruct N. 11th Avenue, from the intersection with Oak Street to the intersection with Baxter Lane, to a two-lane urban "collector" standard.	$750,000
MSN-46	S. 19th Avenue (Kagy Boulevard to Goldenstein Lane)	Reconstruct S. 19th Avenue, from the intersection with Kagy Boulevard south to the intersection with Goldenstein Lane, to a five-lane "principal arterial" standard.	$9,000,000
MSN-47	Durston Road (Cottonwood Road to Ferguson Avenue)	Reconstruct Durston Road, from the intersection with Cottonwood Road to the intersection with Ferguson Avenue, to a three-lane urban "minor arterial" standard.	$2,500,000

2.1.4. Future Road Connections

The road network consists of all interstate principal arterial, non-interstate principal arterial, minor arterial, and collector routes. Establishing a plan for a community's future street layout is essential to proper land development and community planning. It is important that planners, landowners, and developers know where the future road network needs to be located. The future connections shown are conceptual in nature and may vary based on factors such as topography, wetlands, land ownership, and other unforeseen factors. The purpose of the connections are to illustrate the anticipated network at full build-out. It is likely that many of the corridors shown will not be developed into roads for many decades to come. On the other hand, if development is proposed in a particular area, the recommended road network will ensure that the arterial and collector will be established in a fashion that produces an efficient and logical future road system. **Table 2.4** contains the list of future road connections to complete the network over the foreseeable planning horizon. **Figure 2.1** shows the future road connections as dashed lines.

Table 2.4: Future Road Connections

Road Segment	From	To	Approximate Length (ft)	Possible Cost (assumes various urban sections)
Principal Arterials				
Kagy Boulevard	Cottonwood Road	S. 19th Avenue	9,370	$8,870,000
Oak Street	Twin Lakes Avenue	Laurel Parkway	1,930	$1,830,000
Oak Street	West Termini	Study Area Boundary	4,000	$3,790,000
Harper Puckett Road	Cattail Street	Valley Center Road	7,910	$7,490,000
Johnson Road	Fowler Avenue	Private Approach	4,030	$1,680,000
Minor Arterials				
Fowler Avenue	Garfield Street	Stucky Road	4,000	$3,790,000
Goldenstein Lane	Cottonwood Road	S. 19th Avenue	10,625	$4,430,000
Gooch Hill Road	Durston Road	Harper Puckett Road	13,330	$12,620,000
Catamount Street	Davis Lane	Love Lane	15,900	$9,030,000
Goldenstein Lane	Sourdough Road	Tayebeshockup Road	13,180	$5,490,000
Baxter Lane	Cottonwood Road	Study Area Boundary	8,010	$4,550,000
Durston Road	Gooch Hill Road	Study Area Boundary	2,640	$1,500,000
Collectors				
Ferguson Avenue	Huffine Lane	Johnson Road	21,200	$12,050,000
Blackwood Road	Fowler Avenue	S. 31st Avenue	1,345	$560,000
Blackwood Road	S. 3rd Avenue	Parkway Avenue	5,830	$2,430,000
S. 27th Avenue	Garfield Street	Stucky Road	3,975	$2,260,000
S. 27th Avenue	Stucky Road	Graf Street	2,675	$1,520,000
S. 27th Avenue	Blackwood Road	Patterson Road	5,340	$2,230,000
Garfield Street	Fowler Avenue	Ferguson Avenue	2,815	$1,600,000

Road Segment	From	To	Approximate Length (ft)	Possible Cost (assumes various urban sections)
Ferguson Avenue	Cattail Street	Valley Center Road	7,650	$4,350,000
S. 11th Avenue	Alder Creek	Goldenstein Lane	4,020	$2,280,000
Johnson Road	S. 19th Avenue	Sourdough Road	10,440	$4,350,000
Sir Arthur Drive	Subdivision Access	Johnson Road	2,670	$1,110,000
N/S Connector	Goldenstein Lane	Nash Road	10,630	$4,430,000
Goldenstein Lane	Tayebeshockup Road	Study Area Boundary	13,190	$5,500,000
Fort Ellis Road	Termini	Goldenstein Lane	2,700	$1,130,000
Cattail Street	Cottonwood Road	Study Area Boundary	7,980	$4,530,000
Laurel Parkway	Valley Center Road	Oak Street	13,265	$7,540,000
Babcock Street	Water Lily	Study Area Boundary	6,430	$2,680,000
Laurel Parkway	Durston Road	Huffine Lane	5,325	$3,030,000

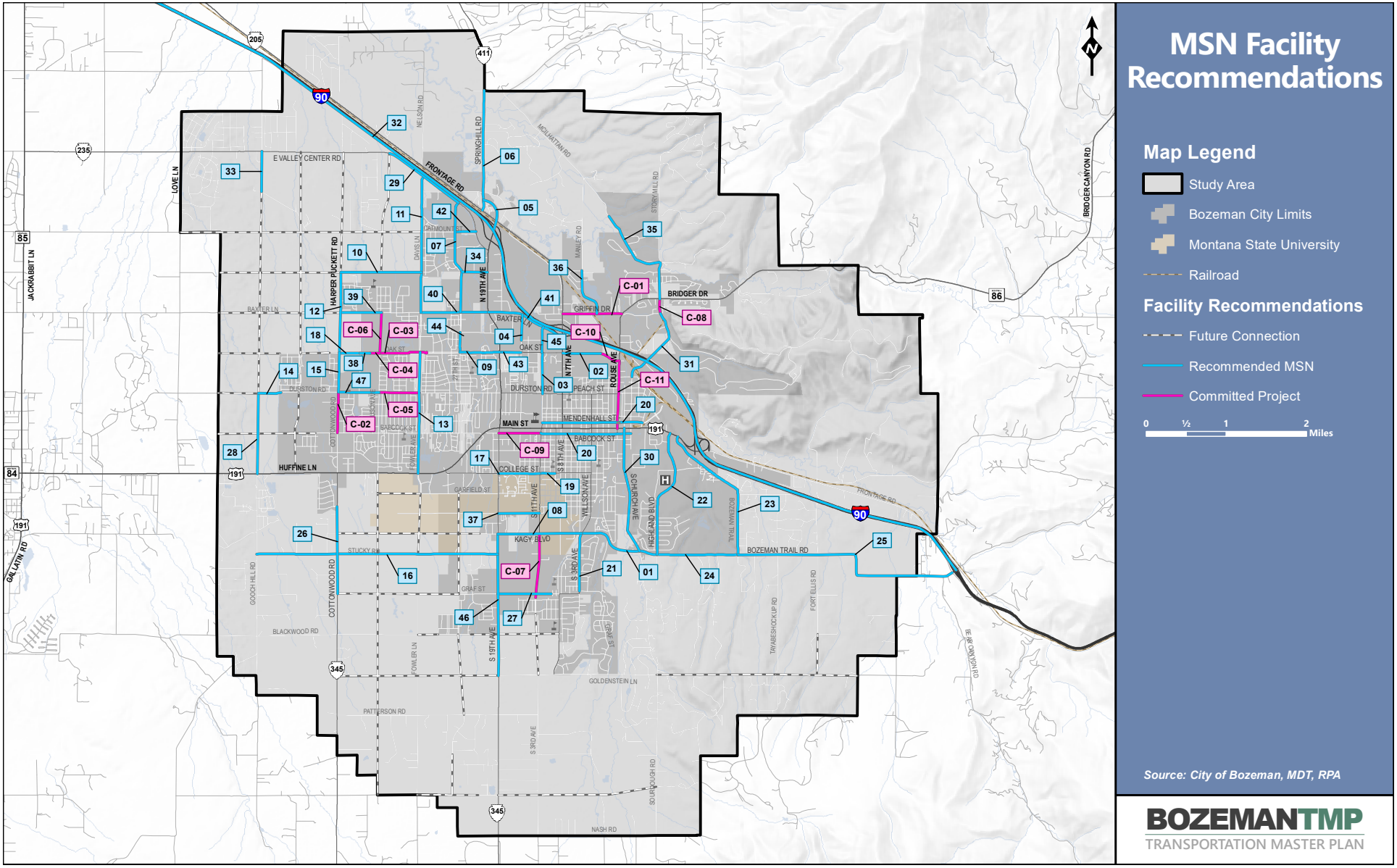


Figure 2.1: Recommended and Committed MSN Projects

3.0. RECOMMENDED TRANSPORTATION SYSTEM MANAGEMENT PROJECTS

Transportation System Management (TSM) projects are "tune-up" type improvements with a reasonable chance of being implemented within a two- to ten-year timeframe. Problem areas which can usually be addressed in the short range are as follows: intersection capacity problems (both signalized and unsignalized), pavement condition problems (i.e. overlays, chip seals, etc.), crash problems (i.e. sight distance improvements, better signing and/or pavement markings), and roadway/lane width and capacity concerns. Recommended TSM projects are shown in **Figure 3.1** at the end of this section. A summary of TSM projects from the 2007 Update and the status of each project is shown in **Table 3.1** to provide background for the currently proposed TSM projects. Committed TSM projects currently in process for FY 2017 thru FY 2021 are shown in **Table 3.2** and **Figure 3.1**.

3.1.1. TSM Projects from the 2007 Transportation Plan

A list of recommended transportation system management (TSM) projects made as part of the *Greater Bozeman Area Transportation Plan (2007 Update)*, and their status for this TMP, are listed in this section. The 2007 update of the Transportation Plan included 43 recommended TSM projects. Of these projects, 20 were completed, 2 are partially completed, and 21 have not been completed. Of the either partially completed or not completed projects from the previous plan, 15 projects have been included in this update of the plan as recommended projects. The various 43 projects recommended from the previous plan and their resultant status is summarized in **Table 3.1**.

Table 3.1: TSM Projects from 2007 Update & Status for this TMP

Project #	Location	Past Recommendation	Status for TMP
CTSM-1	S. 19th Ave / Koch St	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of S. 19th Avenue and Koch Street. S. 19th Avenue is currently a 3-lane principal arterial roadway at this location. Koch Street is a two-lane collector roadway east of the intersection and a two-lane local roadway west of the roadway. This intersection currently has stop control along Koch Street. This project will improve traffic flow and safety at this intersection.	**COMPLETED**
CTSM-2	College St / S. 11th Ave	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of S. 11th Avenue and College Street. Both College Street and S. 11th Avenue are two-lane collector roadways at this location. This intersection is currently a 4-way stop control and backs up at peak hours significantly. Volumes for this intersection area approaching those predicted for 2020, and with increasing development to the immediate west and south of the City, warrants will likely be met in the very near future. This project would improve the traffic flow and safety at this intersection.	**COMPLETED**

Project #	Location	Past Recommendation	Status for TMP
CTSM-3	College St / Willson Ave	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of College Street and Willson Avenue. College Street is a two-lane collector roadway west of the intersection and a two-lane local roadway east of the roadway. Willson Avenue is a two-lane minor arterial roadway at this location. This intersection currently has stop control along College Street. This project will improve traffic flow and safety at this intersection.	**NOT COMPLETED,** not included herein for further consideration
CTSM-4	S. 11th Ave / Kagy Blvd	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of S. 11th Avenue and Kagy Boulevard. Kagy Boulevard is a three-lane roadway west of S. 11th Avenue and a 2-lane roadway east of S. 11th Avenue and is classified as a principal arterial. S. 11th Avenue is a 2-lane roadway classified as a collector. This intersection currently has stop control along S. 11th Avenue. Recent development proposals (primarily south of Kagy Boulevard as well as the hospital) and increasing traffic volumes indicate that the need for this signal improvement will soon be warranted. This intersection is a major access point for the MSU campus. This project will improve traffic flow and safety at this intersection.	**COMPLETED**
CTSM-5	N. 27th Ave / Oak St	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of N. 27th Avenue and Oak Street. Oak Street is a three-lane principal arterial at this location; N. 27th Avenue is a two-lane collector roadway. This intersection currently has stop control along N. 27th Avenue. Recent development proposals and increasing traffic volumes indicate that the need for this signal improvement will soon be warranted. This project will improve traffic flow and safety at this intersection.	**NOT COMPLETED,** modified and included herein as **TSM-2**
CTSM-6	College St / S. 19th Ave	This project consists of constructing additional northbound and southbound thru lanes. It is expected that this project will be completed in conjunction with CMSN-1 which calls for S. 19th Avenue to be upgraded to a five-lane corridor at this location. This intersection is a signalized intersection and has a LOS failure during both AM and PM peak hours. The poor performance of this intersection is a result of the intersection and S. 19th Avenue corridor being undersized to adequately handle the large amounts of traffic that pass through.	**COMPLETED**
TSM-1	N. 7th Ave / Mendenhall St	It is recommended that the intersection of N. 7th Avenue and Mendenhall Street be re-striped to include a designated westbound right-turn lane. This is a signalized three-legged signalized intersection that current analysis shows has a poor LOS along the east approach. A designated right-turn lane on this approach will help improve the traffic flow characteristics of this intersection.	**NOT COMPLETED,** modified and included herein as **TSM-20**
TSM-2	Willson Ave (Olive St to Main St)	It is recommended that parking be removed from the east side of Willson Avenue at the intersection with Olive Street. It is also recommended that two northbound lanes be striped from this intersection to the intersection with Main Street. This intersection experiences stacking problems that cause increased delay and poor LOS.	**PARTIALLY COMPLETED,** not included herein for further consideration
TSM-3	Main St / 11th Ave	It is recommended that the radius on the southwest corner be increased to improve the intersection geometrics. This corner causes maneuvering difficulties for larger vehicles turning right off of Main Street to travel south on 11th Avenue.	**NOT COMPLETED,** not included herein for further consideration

Project #	Location	Past Recommendation	Status for TMP
TSM-4	Rouse Ave / Peach St	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Rouse Avenue and Peach Street. The intersection is a skewed four-legged intersection with stop control on Peach Street. This intersection currently has a failing LOS on the eastbound leg during the PM peak hour. It should be noted that the Rouse Avenue Environmental Assessment recommends that a traffic signal be installed at this location.	**NOT COMPLETED,** modified and included herein as **CMSN-11**
TSM-5	Main St / Haggerty Ln	It is recommended that the intersection of Main Street and Haggerty Lane be modified to include a designated northbound right-turn lane, a northbound left-turn lane, and an eastbound right-turn lane. This intersection currently has stop control on Haggerty Lane. A designated westbound left-turn lane exists at this intersection. Current analysis of this intersection shows a LOS failure due to the northbound movement.	**NOT COMPLETED,** modified and included herein as **TSM-22**
TSM-6	College St / S. 23rd Ave / Technology Blvd	It is recommended that left-turn lanes be added to the intersection of College Street and S. 23rd Avenue / Technology Boulevard as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on S. 23rd Avenue / Technology Boulevard. This intersection frequently has delay problems during peak traffic periods due to the inability of vehicles to make left-hand turns, particularly southbound left-turns. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**COMPLETED**
TSM-7	Willson Ave / Garfield St	It is recommended that left-turn lanes be added to the intersection of Wilson Avenue and Garfield Street as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on Garfield Street. This intersection frequently has delay problems during peak traffic periods due to the inability of vehicles to make left-hand turns. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**NOT COMPLETED,** not included herein for further consideration
TSM-8	Kagy Blvd / Sourdough Rd / Church St	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Kagy Boulevard and Sourdough Road / Church Street. This intersection currently has stop control on Sourdough Road and Church Street. Current LOS analysis shows that this intersection fails during AM and PM peak hours due to excessive delay along the northbound and southbound approaches.	**NOT COMPLETED,** modified and included herein as **TSM-25**
TSM-9	Highland Blvd / Kagy Blvd	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Highland Boulevard and Kagy Boulevard. Highland Boulevard is currently a two-lane minor arterial roadway and Kagy Boulevard is a two-lane principal arterial. This intersection currently has stop control along Highland Boulevard. A modern roundabout will help to improve traffic flow and safety at this intersection.	**NOT COMPLETED,** modified and included herein as **TSM-24**
TSM-10	Oak St / Ferguson Ave	It is recommended that left-turn lanes be added to the intersection of Oak Street and Ferguson Avenue as necessitated by the growing traffic demand. The intersection will become a four-legged intersection with stop control on Ferguson Avenue. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met. This project is expected to serve future need in the area.	**NOT COMPLETED,** modified and included herein as **CTSM-4**

Project #	Location	Past Recommendation	Status for TMP
TSM-11	Oak St / Cottonwood Rd	It is recommended that left-turn lanes be added to the intersection of Oak Street and Cottonwood Road as necessitated by the growing traffic demand. The intersection will become a four-legged intersection with stop control on Cottonwood Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met. This project is expected to serve future need in the area and should be completed in conjunction with MSN-6 and MSN-10.	**NOT COMPLETED,** modified and included herein as **TSM-4**
TSM-12	Baxter Ln / Cottonwood Rd / Harper Puckett Rd	It is recommended that left-turn lanes be added to the intersection of Baxter Lane and Cottonwood Road / Harper Puckett Road as necessitated by the growing traffic demand. The intersection will become a four-legged intersection with stop control on Cottonwood Road / Harper Puckett Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**NOT COMPLETED,** modified and included herein as **TSM-3**
TSM-13	Durston Road / N. 27th Ave	It is recommended that left-turn lanes be added to the intersection of Durston Road and N. 27th Avenue as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on N. 27th Avenue. Durston Road is a minor arterial roadway and N. 27th Avenue is a collector roadway. This intersection experiences delay problems associated with the difficulty of vehicles being able to make left-turns during peak hours. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**PARTIALLY COMPLETED,** modified and included herein as **TSM-12**
TSM-14	Hulbert Rd / Jackrabbit Ln	It is recommended that left-turn lanes be added to the intersection of Hulbert Road and Jackrabbit Lane as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on Hulbert Road. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**COMPLETED**
TSM-15	Nelson Rd / Frontage Rd	It is recommended that a left-turn lane be added to Nelson Road at the intersection with the Frontage Road as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on Nelson Road. The Frontage Road is a minor arterial roadway and Nelson Road is classified as a collector. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**COMPLETED**
TSM-16	Sacajawea Peak / Frontage Rd	It is recommended that left-turn lanes be added to the intersection of Sacajawea Peak and Frontage Road as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on Sacajawea Peak. The Frontage Road is a minor arterial roadway and Sacajawea Peak is classified as a local. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	**NOT COMPLETED,** modified and included herein as **CTSM-8**
TSM-17	Gallatin Field / Frontage Rd	It is recommended that a traffic signal, roundabout, or other adequate traffic control device be installed at the intersection of Gallatin Field and Frontage Road when warrants are met. This is a three-legged intersection with stop control on Gallatin Field. There currently are designated left-turn lanes on each approach leg of this intersection.	**COMPLETED**
TSM-18	College St / S. 8th Ave	It is recommended that a traffic signal, roundabout, or other adequate traffic control device be installed at this intersection when warrants are met. This intersection is currently four-way stop controlled and analysis shows a failing level of service due to excessive delay at the intersection.	**NOT COMPLETED,** not included herein for further consideration

Project #	Location	Past Recommendation	Status for TMP
TSM-19	West Babcock St / Main St	It is recommended that the intersection signal timing/phasing be reconfigured to provide a dedicated left-turn phase along the Babcock leg. This intersection currently has a failing LOS due to the eastbound and westbound movements. If the LOS does not improve to an acceptable level by changing the signal timing/phasing, then this intersection should be reevaluated to determine other possible traffic control measures.	**NOT COMPLETED,** not included herein for further consideration
TSM-20	Highland Blvd / Ellis St	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Highland Boulevard and Ellis Street. Highland Boulevard is currently a two-lane minor arterial roadway and Ellis Street is a two-lane local roadway. This intersection currently has stop control along Ellis Street.	**NOT COMPLETED,** modified and included herein as **TSM-23**
TSM-21	Kagy Blvd / Willson Ave	The existing intersection should be modified to add a designated southbound right-turn lane. This intersection currently operates at a LOS of D or lower during the AM and PM peak hours. If conditions do not improve at this intersection, it should be reevaluated to determine other potential traffic control solutions.	**NOT COMPLETED,** modified and included herein as **MSN-8**
TSM-22	Durston Rd / N. 25th Ave	It is recommended that left-turn lanes be added to the intersection of Durston Road and N. 25th Avenue as necessitated by the growing traffic demand. The intersection is a four-legged intersection with stop control on N. 25th Avenue. Durston Road is a minor arterial roadway and N. 25th Avenue is a local roadway. This intersection experiences delay problems associated with the difficulty of vehicles being able to make left-turns during peak hours. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met. This intersection serves as a major access to Emily Dickinson School and as such, there are increases in traffic volumes and pedestrian traffic at this location.	**COMPLETED**
TSM-23	Babcock St / S. 11th Ave	It is recommended that crosswalks be painted on all legs of the intersection of Babcock Street and S. 11th Avenue. This intersection is a block south of Bozeman High School and experiences high pedestrian traffic. This is a four-legged intersection with stop control on Babcock Street.	**NOT COMPLETED,** modified and included herein as **CMSN-9**
TSM-24	Highway 191 Speed Zone Study	It is recommended that a speed zone study be completed to determine if the 50 mph speed zone can be extended north to Axtell Anceney Road and south to Cottonwood Road along Highway 191. It is also recommended that signage be installed at both ends of the speed zone to indicate "congested area next 2 miles" or "dangerous intersection ahead". Also, determine if the speed differential can be eliminated between cars and trucks along the remainder of Highway 191 by posting a day speed of 65 mph and night speed of 60 mph.	**COMPLETED**
TSM-25	Highway 191 / Mill St	It is recommended that a traffic signal with a pre-emptive traffic device be installed at the intersection of Mill Street and Highway 191 to allow the Gallatin Gateway Fire Department safer and speedier access to the highway. The west side of this intersection serves an elementary school, fire station, the Gallatin Gateway Community Center, and businesses and homes in town, as well as the Gallatin River and a network of rural roads. To the east, it serves the Post Office, and businesses and residences. Although the intersection is currently at a LOS C for the A.M. and P.M. peak hours, expected future growth could diminish the LOS to a failing grade.	**NOT COMPLETED,** not included herein for further consideration (outside of study area)

Project #	Location	Past Recommendation	Status for TMP
TSM-26	Highway 191 / Axtell Anceney Rd	It is recommended that designated turn lanes complete with appropriate length turn bays be installed at the intersection of Highway 191 and Axtell Anceney Road as necessitated by the growing traffic demand. This is a three-legged intersection with stop control on Axtell Anceney Road. Designated turn lanes will help increase the safety level and traffic flow at the intersection.	**COMPLETED**
TSM-27	Highway 191 / Zachariah Ln	It is recommended that designated turn lanes complete with appropriate length turn bays be installed at the intersection of Highway 191 and Zachariah Lane as necessitated by the growing traffic demand. This is a four-legged intersection with stop control on Zachariah Lane. Designated turn lanes will help increase the safety level and traffic flow at the intersection.	**COMPLETED**
TSM-28	Highway 191 / Cottonwood Rd	It is recommended that designated turn lanes complete with appropriate length turn bays be installed at the intersection of Highway 191 and Cottonwood Road as necessitated by the growing traffic demand. This is a four-legged intersection with stop control on Cottonwood Road. Designated turn lanes will help increase the safety level and traffic flow at the intersection.	**COMPLETED**
TSM-29	Access Management Plan on Highway 191	Eliminate excessive curb cuts and access points on Highway 191 by restricting access as much as possible to major intersections with turn lanes. Require developers to provide frontage road access via intersections with turn lanes instead of multiple curb cuts. It is further recommended that a formal access control study be undertaken in hopes of preparing an access control management plan for this corridor.	**COMPLETED**
TSM-30	Highway 191 / Huffine Ln	It is recommended that a pre-emptive traffic device be installed at the intersection. A pre-emptive traffic device would allow for safer and speedier access for the Gallatin Gateway Fire Department.	**COMPLETED**
TSM-31	S. 7th Ave / Kagy Blvd	This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device to the intersection of S. 7th Avenue and Kagy Boulevard. S. 7th Avenue is a two-lane collector roadway north of the intersection and a two-lane local roadway south of the intersection. Kagy Boulevard is a two-lane principal arterial roadway at the intersection. This intersection currently has stop control along S. 7th Avenue. Recent development proposals and increasing traffic volumes indicate that the need for this signal improvement will soon be warranted. This intersection is a major access point for the MSU campus. This project will improve traffic flow and safety at this intersection.	**NOT COMPLETED,** modified and included herein as **CTSM-14**
TSM-32	Truck Route Alternatives	Study possible routes that would allow commercial trucks to by-pass Mill Street when accessing Highway 191. Possible routes include Gateway South, Axtell Gateway, and /or Axtell Anceney.	**NOT COMPLETED,** not included herein for further consideration (outside of study area)
TSM-33	Mill St Speed Zone Study	Conduct a Speed Zone study to determine if the 25 mph speed zone can be extended to the west at the intersection with Cottonwood Road, Axtell Gateway Road, and Gateway South Road. Also, determine if Gateway South Road from the intersection with Mill Road should be a 35 mph speed zone for 3 miles.	**COMPLETED**
TSM-34	Implement Huffine Ln Access Control Plan	The MDT has an adopted Access Control Plan in place for Huffine Lane that delineates allowed access spacing, frontage road locations, and future signalization of intersections. As improvements and/or developments are considered along this corridor, reference should be made to the Access Control Plan for allowable traffic mitigation improvements.	**COMPLETED**

Project #	Location	Past Recommendation	Status for TMP
TSM-35	Implement Jackrabbit Ln Access Control Plan	The MDT has an adopted Access Control Plan in place for Jackrabbit Lane that delineates allowed access spacing, frontage road locations, and future signalization of intersections. As improvements and/or developments are considered along this corridor, reference should be made to the Access Control Plan for allowable traffic mitigation improvements.	**COMPLETED**
TSM-36	Development Review/Coordination Efforts	It is desirable to have a formal mechanism by which Streamline board and staff can participate in the development revise process. This will allow for continued coordination of proper bus stop location and identification of appropriate bus bay design and locations. The goal is to be able to participate in the formal review such that knowledge is disseminated to all affected parties pertinent to transit growth opportunities (routes, destinations, etc.) and how those opportunities interface with private development infrastructure.	**COMPLETED**
TSM-37	Formalize Transit Representation on TCC	It is recommended that a member of Streamline (board or staff) have a formal, allocated seat on the Bozeman Transportation Coordinating Committee (TCC).	**COMPLETED**

3.1.2. Committed TSM Projects

As described for the MSN projects, committed projects are typically only listed if the project will affect capacity and/or delay characteristics of a roadway facility and/or intersection. This distinction is necessary since some committed improvement projects, likely to occur within the next five years (i.e. fiscal year 2018 through fiscal year 2022), are not necessarily listed since they will not have an effect on the traffic model. For completeness, though, all committed TSM improvement projects are listed in this section. Committed TSM projects are shown in **Table 3.2**.

Table 3.2: Committed TSM Projects (FY 2018 to FY 2022)

TMP ID	Title	Description	Cost	YOE	Project ID	Source
CTSM-1	Manley Rd and Griffin Dr	Improvements to the intersection to include installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met.	$2,000,000	FY19	SIF110	City
CTSM-2	Ferguson Ave and Durston Rd	Control of the intersection of Ferguson Avenue & Durston Road. Includes the installation of a traffic signal or roundabout. Future development and the resulting increased traffic indicate that intersection improvements will be needed.	$2,256,220	FY18	SIF039	City
CTSM-3	Oak St and Davis Lane	Installation of a roundabout at the intersection of Oak Street & Davis Lane. Peak hour level of service for northbound traffic is degrading due to lack of north-south connectivity in the network. Geometric deficiencies will be addressed.	$1,761,508	FY18	SIF074	City

TMP ID	Title	Description	Cost	YOE	Project ID	Source
CTSM-4	Oak St and Ferguson Ave	Includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met.	$1,345,331	FY18	SIF061	City
CTSM-5	S. 3rd Ave and Graf St	Control of the intersection of S. 3rd Avenue & Graf Street. Includes the installation of a traffic signal or roundabout. Future development and the resulting increased traffic indicate that intersection improvements will be needed.	$1,000,000	FY19	SIF108	City
CTSM-6	Cottonwood Rd and Babcock St	Installation of a traffic signal when warrants are met.	$1,435,336	FY18	SIF104	City
CTSM-7	N. 19th Ave Interchange	Signal on I-90 eastbound (EB) off-ramp.	$1,494,900	FY19	UPN8999	MDT
CTSM-8	SF 129 - Slope Flattening Belgrade	Slope flattening from reference post (RP) 22.5-24.3 on Primary 205 (Frontage Road).	$3,716,816	FY18	UPN8031	MDT
CTSM-9	Bozeman Signal Safety	Upgrade signals in 4 systems (Main Street, West Main St., Bozeman Radio System, & isolated intersections) and signals along Huffine Lane, and Jackrabbit Lane (Baxter Lane & Durston Road) - flashing yellow arrows. Adding a protective left turn phase signal at signal of Ferguson Avenue and Huffine Lane.	$1,635,776	FY17	UPN8642	MDT
CTSM-10	Cottonwood Rd & Stucky Rd	Roundabout installation at the intersection of Cottonwood Road and Stucky Road.	$3,158,260	FY18	UPN8190	MDT
CTSM-11	Highland Blvd and Main St	Improve intersection control at Highland Boulevard and Main Street by adding additional phases and improving geometry to increase capacity for deficient movements.	$150,000	FY18	SIF112	City
CTSM-12	Baxter Lane and Davis Street	Improve intersection to include signalization and geometric improvements.	$2,500,000	FY20	SIF121	City
CTSM-13	Babcock St and Ferguson Ave	Improve intersection to include geometric improvements with installation of a traffic signal.	$800,000	FY18	SIF122	City
CTSM-14	Kagy Blvd (S. 19th Ave to Willson Ave) – Interim Improvements	Improve Kagy Boulevard from approximately 500 feet west of S. 11th Avenue to approximately 500 feet east of S. 7th Avenue to a full three-lane cross section with two-way left-turn lane (TWLTL) and associated improvements.	$500,000	FY18	SIF130	City

3.1.3. Recommended TSM Projects

A number of TSM projects have been identified and are described in this section and shown on **Figure 3.1**. **Table 3.3** contains a summary of the recommended TSM projects that are not identified for funding in the next five years as per the 5-Year CIP. The project numbering scheme does not represent or imply priority with respect to individual projects. System deficiencies and needs are often not fundable in the foreseeable future. However, funding opportunities often arise during the course of time, often from unexpected sources. To be prepared to take advantage of such opportunities, the following list of projects is provided, with no identified funding source or schedule for construction/implementation. It is likely that some of them will become funded at some point during the twenty-five year planning horizon even though no current source is known. For planning level cost estimates, representative costs were utilized from recent roadway cost estimates from the *Oak Street Improvements* project and the *Cottonwood/Durston Road Improvements* project. Furthermore, for some projects the City of Bozeman's most current *Street Impact Fee Fund CIP (FY 18-22)* and *Arterial and Collector District CIP (FY 18-22)* was utilized. Planning level cost estimates include construction, design, construction administration, utilities and contingencies. The Basis of Planning cost estimates for the TSM projects, absent other defined sources, are as follows:

- $2.35M (traffic signal – large)
- $1.15M (traffic signal – small to medium)
- $750K (traffic signal – modifications to existing)
- $2.85M (roundabout – large)
- $2.00M (roundabout – small)

An item to note is that many of the TSM recommendations identified in this section call for the separation of turning movements at intersections by installing left-turn, thru- or right-turn lanes (bays). There are some instances where a recommendation may suggest a "combination thru- / right- turn lane". These recommendations may be for projects that are already in the design phase and which have approved corridor concept plans already in place (Oak Street, Baxter Lane, Cottonwood Road), or are in very constrained locations where the thru-lane and right-turn lane just can't be separated at the intersection. Separating the thru-movement and the right-turn movement by a designated right-turn lane is almost always more desirable; this is especially true for bicyclists.

Many of the TSM projects include recommendations for traffic signals or roundabouts. It is worthy of mention that both types of intersection control treatments have different initial set-up and long-term maintenance costs. The costs for building a roundabout and a traffic signal are quite different. Generally, initial capital costs are less for a traffic signal compared to a roundabout. Part of the reason is that a roundabout may need more property within the actual intersection. In the long-term, however, roundabouts eliminate hardware, maintenance and electrical costs associated with traffic signals, which can cost between $5,000 and $10,000 per year. Roundabouts are also

more effective during power outages. Unlike traditional signalized intersections, which must be treated as a four-way stop or require police to direct traffic, roundabouts continue to work like normal.

TSM-1: Durston Road and Laurel Parkway

It is recommended that geometric improvements be made to the intersection with traffic signalization control. The intersection should include dedicated left-turn bays and shared through/right turn lanes for all four legs of the intersection. Signal warrants would need to be met prior to installation of a traffic signal. On-street bicycle lanes will be marked on all four legs of the intersection.

Estimated Cost: $1.15M

TSM-2: N. 27th Avenue and Oak Street

It is recommended that geometric improvements be made to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 058)

Estimated Cost: $650k

TSM-3: Baxter Lane and Cottonwood Road

It is recommended that geometric improvements be made to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 086)

Estimated Cost: $2.5M

TSM-4: Oak Street and Cottonwood Road

It is recommended that geometric improvements be made to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 098)

Estimated Cost: $2.75M

TSM-5: Durston Road and Flanders Mill Road

It is recommended that geometric improvements be made to the intersection with installation of a single-lane roundabout. This is a three-legged intersection and Durston Road will be reconstructed to a three-lane roadway in the future. It is unlikely that Flanders Mill Road will be extended to the south. On-street bicycle lanes will be marked on all three legs of the intersection. School zone context should be considered.

Estimated Cost: $2.0M

TSM-6: Bridger Drive and Story Mill Road

It is recommended that geometric improvements be made to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 116)

Estimated Cost: $1.0M

TSM-7: Fowler Avenue and Babcock Street

It is recommended that geometric improvements be made to the intersection with installation of a traffic signal when warrants are met. The future vision for Fowler Avenue is a five-lane minor arterial with amenities as described under project **MSN-13**. As the full reconstruct will take time to develop due to right-of-way needs and other constraints, a stand-alone intersection project may be warranted to provide improved operations at the intersection for the northbound left-turn movement. An interim traffic signal project should include designated northbound left-turn and right turn bays on the south leg. Trail crossing amenities should be provided. (SIF 063)

Estimated Cost: $2.0M

TSM-8: Construction of ADA Compliant Roadway Crossing Improvements

This project includes the construction of ADA compliant pedestrian roadway crossing improvements at three locations: (1) Fowler Avenue and Babcock Street, (2) Oak Street and Hunters Way, and (3) Durston Road Trail Crossing between Hunters Way and N. 27th Ave. ADA crossing improvements may include widened sidewalks, curb ramps, refuge islands, rectangular rapid flashing beacons and crosswalk markings.

Estimated Cost: $167K

TSM-9: Fowler Avenue and Durston Road

The intersection of Fowler Avenue and Durston Road is currently a three-legged intersection with stop control along Fowler Avenue. Future plans to complete Fowler Avenue from Oak Street to Babcock Street call for the intersection to be four-legged with a five-lane typical section on Fowler Avenue. It is recommended to construct a four legged intersection with traffic signal control. The typical section of Fowler Avenue is planned to be five lanes. Durston Road will be constructed to a three-lane typical section. Signal warrants would need to be met prior to installation of a traffic signal. (SIF 073)

Estimated Cost: $2.0M

TSM-10: Davis Lane and Cattail Street

This project includes geometric improvements to the intersection with a single-lane roundabout or traffic signal when warrants are met. The future vision for Davis Lane is a five-lane minor arterial with amenities as described under project **MSN-11**. For Cattail Street, a westerly extension as a three-lane collector roadway is envisioned as described under **MSN-10**. As both of these major projects will take time to develop due to right-of-way needs and funding constraints, a stand-alone intersection project may be warranted to provide improved operations at the intersection as development occurs in the surrounding area.

Estimated Cost: $2.0M

TSM-11: Davis Lane and Catamount Street

This project includes geometric improvements to the intersection with a single-lane roundabout or traffic signal when warrants are met. The future vision for Davis Lane is a five-lane minor arterial with amenities as described under project **MSN-11**. Although a specific project is not identified for the westerly extension of Catamount Street, it has been planned for a future minor arterial out to Love Lane. As development occurs in the surrounding area, a stand-alone intersection improvement project may be needed at the intersection in the form of a single-lane roundabout or traffic signal (when warrants are met).

Estimated Cost: $2.0M

TSM-12: Durston Road and N. 27th Avenue

It is recommended that left-turn lanes be added to the intersection of Durston Road and N. 27th Avenue as necessitated by the growing traffic demand. The intersection is a three-legged intersection with stop control on N. 27th Avenue. Durston Road is a minor arterial roadway and N. 27th Avenue is a collector roadway. This intersection experiences delay problems associated with the difficulty of vehicles being able to make left-turns during peak hours. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.

Estimated Cost: $1.15M

TSM-13: N. 27th Avenue and Tschache Lane

This project includes geometric improvements to the intersection with traffic signalization when warrants are met. The future vision for N. 27th Avenue is a five-lane urban collector, with medians for the power poles, south of Tschache Lane to Oak Street as described in **MSN-44**. Ideally the intersection improvement will be constructed with the roadway improvements, however constraints with funding and right-of-way may necessitate an interim intersection project. Due to the varying existing and future cross sections on each of the roadways, a traffic signal will likely be the better choice for intersection control compared to a roundabout.

Estimated Cost: $2.0M

TSM-14: Davis Lane and Valley Center Road

This intersection will become fairly well used as development pressure continues west of N. 19th Avenue and south of Valley Center Road. Future recommendations suggest Davis Lane be built to a five-lane urban minor arterial standard (see **MSN-11**) and Valley Center Road be developed to a three-lane urban principal arterial standard (see **MSN-29**). Both of these projects will take years to develop. In the short term, a traffic signal should be included at the intersection when warrants are met, with geometric improvements. Potential lane configuration include northbound left and right-turn bays, a westbound left-turn bay, and an eastbound right-turn lane.

Estimated Cost: $2.0M

TSM-15: N. 27th Avenue and Valley Center Road

This intersection will become fairly well used as development pressure continues west of N. 19th Avenue and south of Valley Center Road. Future recommendations suggest N. 27th Avenue be built to a three-lane urban collector standard (see **MSN-7**) and Valley Center Road west of N. 27th Avenue be developed to a three-lane urban principal arterial standard (see **MSN-29**). Both of these projects will take years to develop. In the short term, a traffic signal should be included at the intersection when warrants are met, with geometric improvements. Potential lane configuration modifications include the addition of an eastbound right-turn lane.

Estimated Cost: $2.0M

TSM-16: Oak Street and N. 19th Avenue

The intersection of Oak Street and N. 19th Avenue will be modified to add additional lanes on the west approach of Oak Street, coupled with traffic signal modification. Currently, the west leg of Oak Street realizes a designated left turn bay and a combination thru / right turn lane. This recommendation includes keeping the designated left-turn bay as-is, but adding two thru lanes and a designated right-turn lane to the west approach to the intersection (i.e. the west leg of Oak Street). On-street bicycle lanes will be added to the newly apportioned leg of the intersection, and some adjustment to traffic signal mast arms and other hardware will be required. Consideration should also be given to **TSM-29**, which recommends making the Stoneridge Drive approaches "right-in, right-out" movements.

Estimated Cost: $530K

TSM-17: Oak Street and N. 11th Avenue

The intersection of Oak Street and N. 11th Avenue is currently a four-legged unsignalized intersection with stop control and a slight offset on N. 11th Avenue. Oak Street exhibits a five-lane typical section, and N. 11th Avenue will realize left turn bays and a combination thru / right turn lane on both approaches. On-street bicycle lanes will be marked on the Oak Street approaches. It is recommended to install traffic signal control at the intersection when signal warrants are met.

Estimated Cost: $1.15M

TSM-18: N. 7th Avenue and Griffin Drive

The intersection of N. 7th Avenue and Griffin Drive should be modified to add additional designated turning lanes on all approaches, and to provide revised traffic signalization. The Griffin Drive westbound and eastbound approaches should have designated left-turn bays, and combination thru / right-turn lanes. On N. 7th Avenue, designated left-turn bays should be provided in both directions. There should be a designated thru lane and combination thru / right-turn lanes in each direction on N. 7th Avenue. This intersection improvement will complement long term improvements recommended for Griffin Drive described under **CMSN-1**.

Estimated Cost: $2.35M

TSM-19: Oak Street and N. 7th Avenue

The intersection of Oak Street and N. 7th Avenue will be modified to add additional lanes on the east approach of Oak Street, coupled with traffic signal modification. Currently, the east leg of Oak Street realizes a designated left turn bay and a combination thru / right turn lane. This recommendation includes keeping the designated left-turn bay as-is, but adding two thru lanes and a designated right-turn lane to the east approach to the intersection (i.e. the east leg of Oak Street). On-street bicycle lanes will be added to the newly apportioned leg of the intersection, and some adjustment to traffic signal mast arms and other hardware will be required.

Estimated Cost: $750K

TSM-20: N. 7th Avenue and Mendenhall Street

It is recommended that the intersection of N. 7th Avenue and Mendenhall Street be revised on the northeast quadrant to provide a short right-turn bay for westbound to northbound turning vehicles. This is a heavy movement and the provision of a short right-turn bay at this location would reduce intersection delay on this leg and improve operations. The northeast corner of the intersection would need to be pulled back in the adjacent parking lot, resulting in the loss of potentially two to three private parking spaces.

Estimated Cost: $120K

TSM-21: Babcock Street and Willson Avenue

The traffic signal hardware at the intersection of Babcock Street and Willson Avenue is an older style in terms of light poles, mast arms and foundations. Upgrading the traffic signal system at this intersection will allow the poles to be relocated out of the sidewalks/pedestrian ramps, and improvements to the intersection corners can be made through geometric updates to provide better crosswalk alignment.

Estimated Cost: $750K

TSM-22: Main Street and Haggerty Lane

This project includes modifying the intersection of Main Street and Haggerty Lane to include a designated northbound right turn lane, a northbound left turn lane, and an eastbound right turn lane. This intersection currently has stop control on Haggerty Lane. A designated westbound left turn lane exists at this intersection. Also install traffic signalization control when warrants are met.

Estimated Cost: $1.15M

TSM-23: Highland Boulevard and Ellis Street

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Highland Boulevard and Ellis Street. Highland Boulevard is currently a two-lane minor arterial roadway and Ellis Street is a two-lane local roadway. This intersection currently has stop control along Ellis Street. Future recommended improvements for Highland Boulevard (see **MSN-22**) include a five-lane roadway section north of Ellis Street and a three-lane roadway section south of Ellis Street. Traffic signalization could only occur if signal warrants are met. A roundabout could be utilized without warrants being met, and roundabout "right turn slip lanes" could be utilized for the southbound movement of Highland Boulevard (lane drop) and the westbound movement of Ellis Street (lane pick-up).

Estimated Cost: $2.0M

TSM-24: Highland Boulevard and Kagy Boulevard

This project includes the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met to the intersection of Highland Boulevard and Kagy Boulevard. Highland Boulevard is currently a two-lane minor arterial roadway and Kagy

Boulevard is a two-lane principal arterial. This intersection currently has stop control along Highland Boulevard. A modern roundabout will help to improve traffic flow and safety at this intersection. Future vision for both Highland Boulevard and Kagy Boulevard at this location includes a three-lane roadway section (see **MSN-22** and **MSN-24**). Traffic signalization could only be realized if signal warrants are met.

Estimated Cost: $2.85M

TSM-25: Kagy Boulevard and S. Church Avenue / Sourdough Road

This project includes three options to improve safety and reduce delay at the intersection of Kagy Boulevard and S. Church Avenue / Sourdough Road, as follows:

- **Option 1:** Installation of a roundabout or traffic signal when warrants are met. This option would be a major project due to chasing the grades both east and west of the intersection on Kagy Boulevard. Recommended project **MSN-1** includes a complete reconstruction of Kagy Boulevard, between Willson Avenue and Highland Boulevard. A stand-alone intersection project in this area could be developed, but due to the grade issues and other constraints it is still a robust effort which requires a fair amount of road work on Kagy Boulevard.
- **Option 2:** Narrowing (i.e. necking) down Kagy Boulevard just east and west of the intersection for about 200 feet to reduce the distance that vehicles, pedestrians and bicyclists must cross. This intersection currently has stop control on Sourdough Road and S. Church Avenue.
- **Option 3:** Restrict turning movements at the intersection such that the north-south movements could only make right-in and right-out turns. This would be accomplished by placing a raised median on Kagy Boulevard in an east – west direction to effectively block off left-turns and through movements from the north and south legs of the approach.

Estimated Cost: $2.85M (Roundabout or Signal) // $280K (Narrow Kagy Boulevard) // $100K (Raised Median on Kagy Blvd)

TSM-26: Huffine Lane and Ferguson Avenue

This intersection should continue to be evaluated for eastbound and westbound left-turn phasing on Huffine Lane. Designated left-turn phases were not recommended nor warranted during MDT's most recent signal upgrade project on Huffine Lane. There is quite a lot of development occurring in the northwest part of Bozeman, and left-turn phasing warrants should be re-evaluated to identify whether designated left-turn phases are beneficial.

Estimated Cost: $150K

TSM-27: Huffine Lane and Fowler Avenue

This intersection should continue to be evaluated for eastbound and westbound left-turn phasing on Huffine Lane. Designated left-turn phases were not recommended nor warranted during MDT's most recent signal upgrade project on Huffine Lane. There is quite a lot of development occurring in the northwest part of Bozeman, and left-turn phasing warrants should be re-evaluated to identify whether designated left-turn phases are beneficial. The roadway grades and minimal offsets for left turning traffic on Fowler Avenue make vehicles very difficult to see when making northbound lefts.

Estimated Cost: $150K

TSM-28: Flanders Mill Road and Oak Street

Flanders Mill Road is routinely being used as a north-south cut through to avoid congestion on both Cottonwood Road and Ferguson Avenue. Installation of a traffic diverter to limit cut through traffic is desirable in the form of a chicane or other calming feature near the intersection of Oak Street. Flanders Mill Road is a local street on Bozeman's functional classification system.

Estimated Cost: $30K

TSM-29: Oak Street and Stoneridge Drive

Stoneridge Drive is a local road that accesses a residential neighborhood south of Oak Street and a retail/commercial development north of Oak Street. There are numerous left-turn conflicts on the Stoneridge approaches that make traffic flow congested due to the close proximity to N. 19th Avenue. It is recommended that the Stoneridge approaches on both sides of Oak Street be made three-quarter movement approaches such "left-out" turning movements are prohibited.

Estimated Cost: $70K

TSM-30: Durston Road and N. 19th Avenue

The east leg of this intersection (Durston Road) exhibits poor level of service and severe queuing issues during all peak hours. It is recommended to revise the east leg by providing a longer westbound right-turn bay for westbound-to-northbound turning vehicles. Ideally, a longer westbound left-turn bay would also be installed, however to do so in this location would block northbound left-turning

movements from N. 18th Avenue. A longer right-turn bay on the east leg of Durston Road will improve storage and operations for this heavy movement onto N. 19th Avenue.

Estimated Cost: $750K

TSM-31: Durston Road and N. 15th Avenue

This intersection is currently signalized and realizes long vehicle queues during peak hours due to its proximity to the schools and athletic fields. Extending left-turn bays into the center two-way, left-turn lanes (TWLTL) will necessitate removal of parking and blockage of many private drive approaches along each approach. It is recommended that long term a single-lane roundabout be considered for this intersection to better meter flows. All four legs of the intersection receive approximately equal traffic, and its proximity to the schools warrants long term improvements to the intersection.

Estimated Cost: $2.0M

TSM-32: Beall Street and N. 15th Avenue

Similar to **TSM-31**, this intersection realizes long vehicle queues and substantial pedestrian conflict during peak hours due to its proximity to the schools and athletic fields. It is recommended that a traffic signal or single-lane roundabout be installed at this location when warrants are met (i.e. for traffic signalization).

Estimated Cost: $1.15M (Traffic Signal) // $2.0M (Roundabout)

TSM-33: Willson Avenue and Peach Street

This intersection was very heavily commented on during public outreach associated with the TMP. Willson Avenue essentially acts as a "bypass" to downtown for those wanting to avoid Rouse Avenue or N. 7th Avenue. The intersection exhibits a crash trend associated with rear end and right-angle collisions. This project includes the installation of a traffic signal (when warrants are met) or single-lane roundabout at the intersection.

Estimated Cost: $1.15M (Traffic Signal) // $2.0M (Roundabout)

TSM-34: Willson Avenue and Grant Street

Grant Street realizes traffic entering and exiting the MSU campus by virtue of its direct connection from Willson Avenue all the way to S. 11th Avenue. The intersection of Willson Avenue and Grant Street could use a higher level of traffic control in the form of a single-lane roundabout. This traffic control would allow for left-turn movements off of both legs of Grant Street, but not at the expense of impeding traffic flow adversely on Willson Avenue. Some parking would likely be lost at each quadrant of the intersection. Additional study will be needed.

Estimated Cost: $2.0M (Roundabout)

TSM-35: Main Street and Cypress Street

This intersection should be revised to a right-in, right-out approach on Cypress Street to alleviate cut-thru traffic though the neighborhood. In addition, the existing pedestrian crossing across Main Street should be removed as it has no control and is on the hill into downtown where traffic is decelerating from 40 mph. The new signal at Broadway offers nearby controlled crossing. Improvements to Highland Boulevard and its intersection with Main Street will provide better access in the future.

Estimated Cost: $70K

TSM-36: Durston Road (West of Laurel Parkway)

The segment of Durston Road just west of Westgate Avenue has realized several severe crashes due to the abrupt change in alignment. A short term project is recommended to straighten the roadway in this area to remove the two back-to-back horizontal curves. **MSN-14** recommends a longer term project to completely reconstruct Durston Road, from Westgate Avenue to Gooch Hill Road, to a three-lane urban "minor arterial" standard.

Estimated Cost: $200K

TSM-37: Grant Street and S. 11th Avenue

This intersection operates under all-way stop-control (i.e. 4-way stop). This intersection is recommended for a single-lane urban compact roundabout. The roundabout will provide for better traffic flow and better channelization. Currently, the intersection operates at a LOS B

(AM peak hour) and C (PM peak hour). The intersection has a very high share of pedestrians; in fact traffic counts showed about 34 percent pedestrian mode share at the intersection. During the year 2040, the intersection is anticipated to deteriorate to an overall intersection LOS of C and F.

Estimated Cost: $2.0M (Roundabout)

TSM-38: Grant Street and S. 7th Avenue

This intersection is currently a three-legged stop-controlled intersection that functions at a LOS A (AM peak hour) and B (PM peak hour). A single-lane roundabout is recommended at this location as the intersection is not a good candidate for traffic signalization. A single-lane roundabout would serve to better meter traffic flow, calm traffic, and improve pedestrian and bicycle access. A single-lane roundabout in this location may also serve as a "gateway" treatment on the eastern side of MSU's core campus. The 2040 projected LOS is anticipated to degrade to a D and F without any improvements to the intersection. This intersection realizes a fair amount of traffic destined for MSU from the east via Willson Avenue.

Estimated Cost: $2.0M (Roundabout)

TSM-39: Lincoln Street and S. 11th Avenue

The intersection of South 11th Avenue and Lincoln Street is a four legged intersection, with the east leg serving as a parking lot access. This intersection is recommended for a single-lane roundabout to provide for better traffic flow and improved pedestrian access and safety. The intersection currently operates at a LOS B (AM peak hour) and B (PM peak hour). The intersection is projected to degrade to a LOS D and F by the year 2040.

Estimated Cost: $2.0M (Roundabout)

Table 3.3: Summary of Recommended TSM Projects (not in City's 5-Year CIP)

TMP ID	Title	Description	Cost
TSM-1	Durston Road and Laurel Parkway	Geometric improvements to the intersection with traffic signalization control. The intersection should include dedicated left-turn bays and shared through/right turn lanes for all four legs of the intersection. Signal warrants would need to be met prior to installation of a traffic signal. On-street bicycle lanes will be marked on all four legs of the intersection.	$1,150,000
TSM-2	N. 27th Avenue and Oak Street	Geometric improvements to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 058)	$650,000
TSM-3	Baxter Lane and Cottonwood Road	Geometric improvements to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 086)	$2,500,000
TSM-4	Oak Street and Cottonwood Road	Geometric improvements to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 098)	$2,750,000
TSM-5	Durston Road and Flanders Mill Road	Geometric improvements to the intersection with installation of a single-lane roundabout. Mark on-street bicycle lanes on all legs of the intersection. School zone context should be considered.	$2,000,000
TSM-6	Bridger Drive and Story Mill Road	Geometric improvements to the intersection with includes installation of a traffic signal, roundabout or other adequate traffic control device when warrants are met. (SIF 116)	$1,000,000
TSM-7	Fowler Avenue and Babcock Street	Geometric improvements to the intersection with installation of a traffic signal when warrants are met. Trail crossing amenities should be provided. (SIF 063)	$2,000,000
TSM-8	Construction of ADA Compliant Roadway Crossing Improvements	Construct ADA compliant pedestrian roadway crossing improvements at three locations: (1) Fowler Avenue and Babcock Street, (2) Oak Street and Hunters Way, and (3) Durston Road Trail Crossing between Hunters Way and N. 27th Avenue. ADA crossing improvements may include widened sidewalks, curb ramps, refuge islands, rectangular rapid flashing beacons and crosswalk markings.	$167,000
TSM-9	Fowler Avenue and Durston Road	Geometric improvements to construct a four legged intersection with traffic signal control. Signal warrants would need to be met prior to installation of a traffic signal. (SIF 073)	$2,000,000
TSM-10	Davis Lane and Cattail Street	Geometric improvements to the intersection with a single-lane roundabout or traffic signal when warrants are met.	$2,000,000
TSM-11	Davis Lane and Catamount Street	Geometric improvements to the intersection with a single-lane roundabout or traffic signal when warrants are met.	$2,000,000
TSM-12	Durston Road and N. 27th Avenue	Geometric improvements to include left-turn lanes as necessitated by the growing traffic demand. A traffic signal, roundabout, or other traffic control device should be added to this intersection when warrants are met.	$1,150,000
TSM-13	N. 27th Avenue and Tschache Lane	Geometric improvements to the intersection with traffic signalization when warrants are met. Due to the varying existing and future cross sections on each of the roadways, a traffic signal will likely be the better choice for intersection control compared to a roundabout.	$2,000,000
TSM-14	Davis Lane and Valley Center Road	Geometric improvements with traffic signalization when warrants are met. Potential lane configuration include northbound left and right-turn bays, a westbound left-turn bay, and an eastbound right-turn lane.	$2,000,000

TMP ID	Title	Description	Cost
TSM-15	N. 27th Avenue and Valley Center Road	Geometric improvements with traffic signalization at the intersection when warrants are met. Potential lane configuration modifications include the addition of an eastbound right-turn lane.	$2,000,000
TSM-16	Oak Street and N. 19th Avenue	Modify the intersection of Oak Street and N. 19th Avenue to add additional lanes on the west approach of Oak Street, coupled with traffic signal modification.	$530,000
TSM-17	Oak Street and N. 11th Avenue	Geometric improvements to the intersection of Oak Street and N. 11th Avenue with traffic signal installation when signal warrants are met.	$1,150,000
TSM-18	N. 7th Avenue and Griffin Drive	Modify the intersection of N. 7th Avenue and Griffin Drive to add additional designated turning lanes on all approaches, and to provide revised traffic signalization.	$2,350,000
TSM-19	Oak Street and N. 7th Avenue	Modify the intersection of Oak Street and N. 7th Avenue to add additional lanes on the east approach of Oak Street, along with traffic signal modification.	$750,000
TSM-20	N. 7th Avenue and Mendenhall Street	Revise the northeast quadrant at the intersection of N. 7th Avenue and Mendenhall Street to provide a short right-turn bay for westbound to northbound turning vehicles.	$120,000
TSM-21	Babcock Street and Willson Avenue	Update the traffic signal hardware at the intersection of Babcock Street and Willson Avenue, and relocate the poles out of the sidewalks/pedestrian ramps. Make geometric improvements to the intersection corners to provide better crosswalk alignment.	$750,000
TSM-22	Main Street and Haggerty Lane	Modify the intersection of Main Street and Haggerty Lane to include a designated northbound right turn lane, a northbound left turn lane, and an eastbound right turn lane. Install traffic signalization control when warrants are met.	$1,150,000
TSM-23	Highland Boulevard and Ellis Street	Geometric improvements to include the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met.	$2,000,000
TSM-24	Highland Boulevard and Kagy Boulevard	Geometric improvements to include the installation of a traffic signal, roundabout, or other adequate traffic control device when warrants are met.	$2,850,000
TSM-25	Kagy Boulevard and S. Church Avenue / Sourdough Road	Includes <u>three options</u> to improve safety and reduce delay at the intersection of Kagy Boulevard and S. Church Avenue / Sourdough Road: **Option 1:** Installation of a roundabout or traffic signal when warrants are met. This option would be a major project due to chasing the grades both east and west of the intersection on Kagy Boulevard, and would require a fair amount of road work on Kagy Boulevard. **Option 2:** Narrowing (i.e. necking) down Kagy Boulevard just east and west of the intersection for about 200 feet to reduce the distance that vehicles, pedestrians and bicyclists must cross. **Option 3**: Restrict turning movements at the intersection such that the north-south movements could only make right-in and right-out turns. This would be accomplished by placing a raised median on Kagy Boulevard in an east – west direction to effectively block off left-turns and through movements from the north and south legs of the approach.	$2,850,000 (Roundabout or Signal) // $280,000 (Narrow Kagy Boulevard) // $100,000 (Raised Median on Kagy Blvd)
TSM-26	Huffine Lane and Ferguson Avenue	Continue to evaluate eastbound and westbound left-turn phasing on Huffine Lane (designated left-turn phases were not recommended nor warranted during MDT's most recent signal upgrade project on Huffine Lane).	$150,000

TMP ID	Title	Description	Cost
TSM-27	Huffine Lane and Fowler Avenue	Continue to evaluate eastbound and westbound left-turn phasing on Huffine Lane (designated left-turn phases were not recommended nor warranted during MDT's most recent signal upgrade project on Huffine Lane).	$150,000
TSM-28	Flanders Mill Road and Oak Street	Install traffic diverter or other form of traffic calming to limit cut through traffic near the intersection of Oak Street.	$30,000
TSM-29	Oak Street and Stoneridge Drive	Make Stoneridge Drive approaches on both sides of Oak Street three-quarter movement approaches such that "left-out" turning movements are prohibited.	$70,000
TSM-30	Durston Road and N. 19th Avenue	Geometric improvements to revise the east leg by providing a longer westbound right-turn bay, which will improve storage and operations for this heavy movement onto N. 19th Avenue.	$750,000
TSM-31	Durston Road and N. 15th Avenue	Consider a single-lane roundabout to better meter traffic flows. All four legs of the intersection receive approximately equal traffic, and its proximity to the schools warrants long term improvements to the intersection.	$2,000,000
TSM-32	Beall Street and N. 15th Avenue	Geometric improvements to include traffic signalization or single-lane roundabout installation when warrants are met (i.e. for traffic signalization).	$1,150,000 (Traffic Signal) // $2,000,000 (Roundabout)
TSM-33	Willson Avenue and Peach Street	Geometric improvements to include installation of a traffic signal (when warrants are met) or single-lane roundabout.	$1,150,000 (Traffic Signal) // $2,000,000 (Roundabout)
TSM-34	Willson Avenue and Grant Street	The intersection of Willson Avenue and Grant Street could use a higher level of traffic control in the form of a single-lane roundabout. This traffic control would allow for left-turn movements off of both legs of Grant Street, but not at the expense of impeding traffic flow adversely on Willson Avenue. Some parking would likely be lost at each quadrant of the intersection. Additional study will be needed.	$2,000,000 (Roundabout)
TSM-35	Main Street and Cypress Street	Revise Cypress Street legs to "right-in, right-out" approaches to alleviate cut-thru traffic though the neighborhood. In addition, remove the existing pedestrian crossing across Main Street as it has no control and is on the hill into downtown where traffic is decelerating from 40 mph. The new signal at Broadway offers nearby controlled crossing.	$70,000
TSM-36	Durston Road (West of Laurel Parkway)	Revise and straighten the segment of Durston Road just west of Westgate Avenue to remove the two back-to-back horizontal curves.	$200,000
TSM-37	Grant Street and S. 11th Avenue	Geometric improvements to include a single-lane urban compact roundabout to better meter traffic flow, calm traffic, and improve pedestrian and bicycle access.	$2,000,000 (Roundabout)
TSM-38	Grant Street and S. 7th Avenue	Geometric improvements to include a single-lane roundabout to better meter traffic flow, calm traffic, and improve pedestrian and bicycle access. A single-lane roundabout in this location may also serve as a "gateway" treatment on the eastern side of MSU's core campus.	$2,000,000 (Roundabout)
TSM-39	Lincoln Street and S. 11th Avenue	Geometric improvements to include a single-lane roundabout to better meter traffic flow, calm traffic, and improve pedestrian and bicycle access.	$2,000,000 (Roundabout)

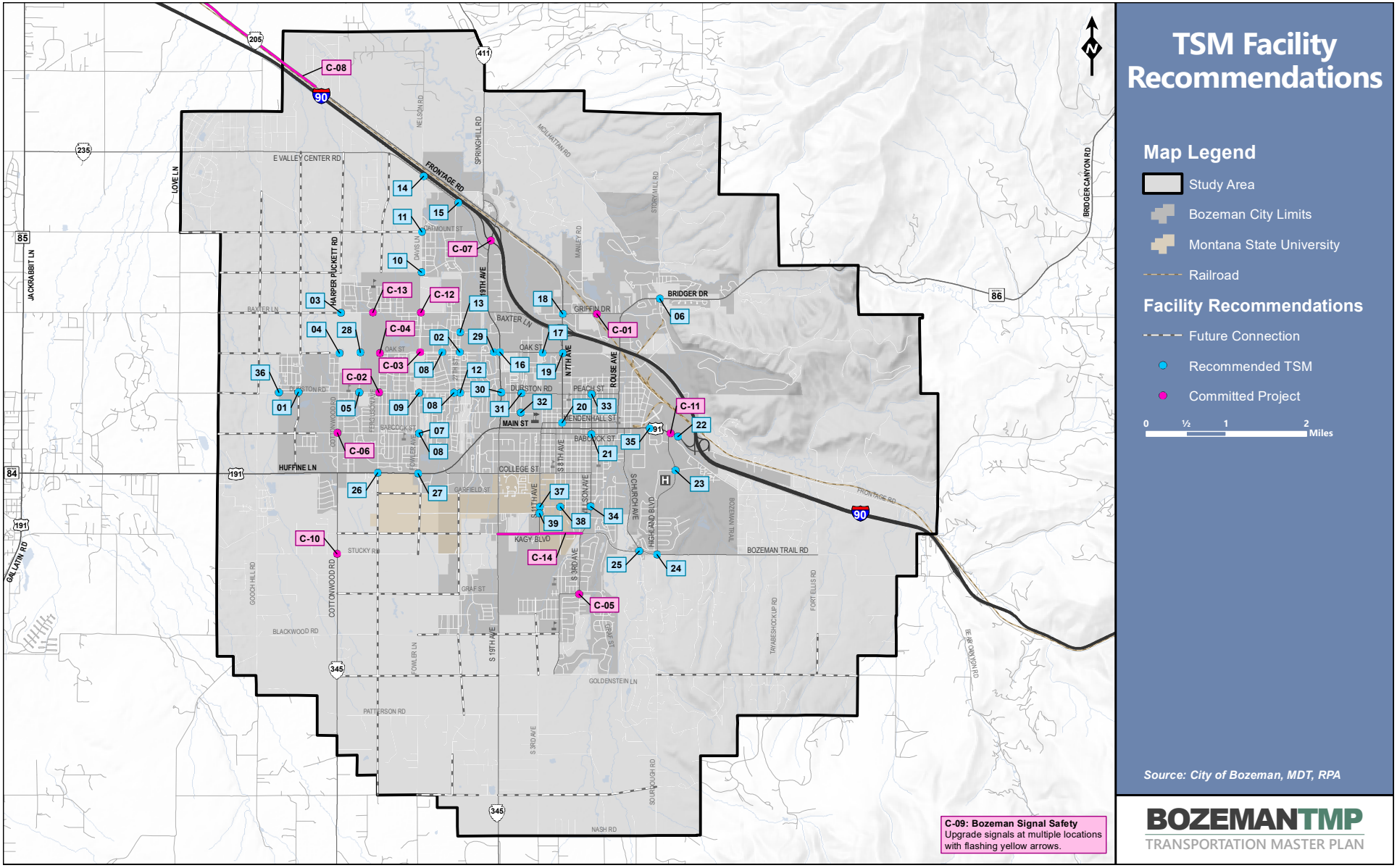


Figure 3.1: Recommended and Committed TSM Projects

4.0. PEDESTRIAN IMPROVEMENTS

This section outlines potential active transportation facilities relative to sidewalks, street crossings, and natural surface trails. The recommendations are intended to encourage active living by residents and visitors and accommodate a variety of ability levels with particular emphasis on making the pedestrian network more comfortable and accessible to a wider range of the population. As Bozeman's growth rate is currently very high, projects are organized into a number of different implementation mechanisms.

4.1. Overview

Bozeman is a walking city. Residents and visitors frequently make use of the City's sidewalks and trails for all types of transportation and recreational trips. The existing conditions and needs analysis identified a number of pedestrian issues including:

- Neighborhoods lacking sidewalks completely
- Incomplete subdivision sidewalks due to piecemeal development
- Arterial and collector streets lacking sidewalks
- Old infrastructure
- Crossings

Each of these issues is addressed in this section through a variety of infrastructure and programmatic improvements. **Figure 4.1** displays the recommended sidewalks, intersection improvements and trails, which will benefit pedestrian activity. All improvements will improve the City's accessibility to pedestrians of all ages and abilities through accessible design. The City of Bozeman should consider adopting the draft Public Rights Of Way Accessibility Guidelines (PROWAG) and continue to retrofit its network for improved accessibility for all users.

4.2. Specific Pedestrian Recommendations

Bozeman's sidewalk gaps constitute some of the greatest challenges to pedestrian connectivity. Some sidewalk gaps can be expected to be closed though already committed or planned roadway projects. Facilities like Oak Street, Durston Road, Babcock Street, Cottonwood Road and Rouse Avenue will all see significant improvements to sidewalk connectivity and accommodation through planned MSN roadway projects. This plan also identifies key sidewalk gaps that do not have an overall road project as a source of implementation. These recommendations include some local streets where connectivity needs are the greatest.

Incomplete subdivision sidewalks were also identified as a major barrier to pedestrian connectivity. As of 2016, subdivision sidewalks on non-publically fronted property are developed with individual lot development. With the growth Bozeman has been experiencing an up to date inventory of sidewalks is nearly impossible as concrete is being poured daily across the city. The current policy of the City requiring the

developer to return and complete unfinished sidewalks after 3 years has proven problematic during the economic downturn of 2009-2012. Tracking and enforcing this policy has been difficult due to lack of data and staff time.

Recommended Policy Change: This plan recommends that the Unified Development Ordinance (UDO) be amended to require sidewalk construction as a basic component of subdivisions and should be installed with the streets and utilities before individual lots are developed. Builders can temporarily bury the sidewalks so that they are not damaged by heavy equipment during the building process. While this change would potentially increase lot prices, the cost of the sidewalk would not be a component of the lot development, so the end cost to the homeowner would be similar.

4.3. Crossing Improvements

This plan includes recommendations for a variety of intersection and mid-block pedestrian crossing improvements, as shown on **Table 4.1** and **Figure 4.1**. Generally, improvements are focused around establishing a safe pedestrian crossing where existing use and/or desire is high. Recommended crossing improvements vary; however, generally include the following typologies:

Pedestrian Refuge: a protected space placed in the center of the street to facilitate bicycle and pedestrian crossings. Pedestrian refuges are the most valuable at uncontrolled crossing locations where the refuge breaks up the crossing into smaller directional crossings, often placing the pedestrian in a less complex situation. No more than two lanes in any direction should be crossed at a time when a pedestrian refuge is utilized without signalization.

Existing pedestrian refuge on Highland Boulevard

Rectangular Rapid Flashing Beacons (RRFB): RRFBs use an irregular flash pattern similar to emergency flashers on police vehicles and can be installed on either two-lane or multi-lane roadways. RRFBs are used to reinforce a driver's legal obligation to yield where pedestrians and/or bicyclists have the right-of-way crossing a road. RRFBs drastically improve motor vehicle yielding compliance over no beacon and even considerably more over steady flashing yellow ball beacons.

RRFBs in front of Whittier School on Peach Street

Pedestrian Hybrid Beacon: A hybrid beacon, also known as a High-intensity Activated Crosswalk (HAWK), consists of a signal-head with two red lenses over a single yellow lens on the major street, and pedestrian signal heads for the minor street or trail crossing. There are no signal indications for motor vehicles on the minor street approaches. Hybrid beacons are used to improve non-motorized crossings of major streets in locations where side-street volumes do not support installation of a conventional traffic signal. Hybrid beacons can operate in areas of heavy traffic and multiple travel lanes where a RRFB would be less effective.

Pedestrian Hybrid Beacon in Billings, MT (*courtesy of Sanderson-Stewart*)

Table 4.1: Recommended Specific Spot Improvements

Project ID	Project Type	Location	Comments	Cost (Low)	Cost (High)
SPOT-1	Grade Separation	W. Kagy Blvd and S. 7th Ave	As part of the W. Kagy Boulevard improvements, a pedestrian tunnel will be constructed linking the main MSU Campus to Western Transportation Institute (WTI), the Museum of the Rockies (MOR) and the neighborhoods to the south.	Part of road project	Part of road project
SPOT-2	Grade Separation	W. Garfield St and S. 19th Ave (south of intersection)	Over or underpass for future central bicycle and pedestrian route as proposed in the MSU Long Range Campus Development Plan (LRCDP).	$1,200,000	$3,500,000
SPOT-3	Install full signal	W. Lincoln St and S. 19th Ave	Recommend installing a full signal to protect pedestrian and bike crossings on W. Lincoln Street. This could allow the current right turn out restrictions to remain and signal would activate for left turns and pedestrian signal calls. This pedestrian crossing has exhibited crash trends in the past.	$40,000	$60,000
SPOT-4	Intersection Improvements	W. Lincoln St and S. 11th Ave	**Short Term:** As EB and NB approaches have combination outer lanes, the stop bar should be set back to provide 6 feet of bicycle forward stop bar. The SB approach does not need improvement. **Long Term:** Convert to roundabout similar to S. 11th Avenue and College Street.	$3,000	$5,000

Project ID	Project Type	Location	Comments	Cost (Low)	Cost (High)
SPOT-5	Intersection Improvements	W. Grant St and S. 11th Ave	**Short Term:** All approaches have combination outer lanes, the stop bar should be set back to provide 6 feet of bicycle forward stop bar. **Long Term:** Convert to roundabout similar to S. 11th Avenue and College Street.	$3,000	$5,000
SPOT-6	Intersection Improvements	W. Kagy Blvd and S. 11th Ave	**Short Term:** Prior to Kagy Boulevard reconstruction, install bicycle boxes in north and south directions with a "right turn on red" prohibition on s. 11th Avenue. This will help queue and move large numbers of bicyclists travelling between campus and the Stadium View Apartments and trails to the south. **Long Term:** Improvements associated with Kagy Boulevard project. Recommend roundabout with grade separation across Kagy Boulevard. If signal is to remain, include leading pedestrian interval, and bike lane to path transitions	$15,000	Part of road project
SPOT-7	Grade Separation	W. Kagy Blvd (MSU Stadium)	As part of the W Kagy Boulevard improvements, a pedestrian tunnel will be constructed linking the main MSU Campus to the Stadium.	Part of road project	Part of road project
SPOT-8	Grade Separation	W. Kagy Blvd and S. Willson Ave	**Short Term:** Prior to reconstruction of Kagy Boulevard, provide bike box on the Willson Avenue approach in front of the through/right lane. Provide new ramp for Gallagator Trail users to access the bike box and provide paved path from end of Gallagator Trail. Provide sharrows in the right turn only lane of the S. 3rd Avenue approach. Formalize short sections of bike lane next to north and south "free right" porkchop islands. **Long Term:** As part of the Kagy Boulevard improvements, a pedestrian tunnel will be constructed providing beneficial pedestrian and bicycle improvements to the Kagy Boulevard/ Willson Avenue / S. 3rd Avenue intersection, as well as serving the existing and future Gallagator Trail. The crossing should serve the intersection and the trail alignment, and should be approximately 75 feet back from the existing pedestrian crossing.	$35,000	Part of road project
SPOT-9	RRFB	W. College St and S. 13th Ave	School crossing for students living in family housing to go to Irving School.	$12,000	$16,000
SPOT-10	RRFB	W. College St and S. 15th Ave	Provide crosswalk and RRFB based crossing for trail/sidewalk connection.	$12,000	$16,000
SPOT-11	Pedestrian Hybrid Beacon	W. Lamme St and N. 7th Ave	Lamme Street is an existing high bicycle and pedestrian use street. This crossing point at N. 7th Avenue is currently difficult and limits the east-west potential of the route. With the 4-lane cross section with no median, a rapid flashing beacon would not be visible enough with the two approach lanes in each direction. A Pedestrian Hybrid Beacon is recommended with a bulb-out on the NE and SW corners for bicyclists to enter and use the pedestrian signal.	$50,000	$75,000
SPOT-12	Beacon Improvement	W. Oak St and Hunters Way	Two options; **Option 1:** Pedestrian Hybrid Beacon to serve shared use path crossings. **Option 2:** RRFB with median extension to create refuge area and allow for two beacons facing each direction.	$20,000	$70,000
SPOT-13	RRFB	Durston Rd and Hunters Way (east of intersection)	Add median refuge and install RRFB. This will be more direct than diverting to Hunters Way where there is significantly more traffic. The mid-block location will also simplify crossings as there will be no turning conflicts or turn lanes to interact with.	$22,000	$26,000

Project ID	Project Type	Location	Comments	Cost (Low)	Cost (High)
SPOT-14	RRFB	W. Babcock St and Hunters Way	Two location options for RRFB. **Option 1:** Hunters Way has more traffic. No refuge can be provided due to narrow cross-section and the need to accommodate eastbound lefts. **Option 2:** The crossing could also be moved 120 feet to the west and improved with a median refuge to isolate trail crossings from the intersection.	$22,000	$26,000
SPOT-15	Crosswalk	W. Babcock St and Hanley Ave	With warning signage.	$3,000	$5,000
SPOT-16	Curb Extensions	W. Lincoln St and S. Willson Ave	Install curb extensions at Gallagator Trail crossing. This crossing will become more heavily used when Kagy Boulevard project is complete. RRFB could be a value added option, however yielding compliance on Willson Avenue is usually good.	$10,000	$15,000
SPOT-17	Intersection Improvement	Bridger Dr and Story Mill Rd	Improve bicycle and pedestrian crossing opportunity here. Rouse Avenue/Bridger Drive will ultimately become 3-lanes which will make this crossing more difficult. Suggest signal, roundabout or a pedestrian hybrid beacon.	$45,000	$90,000
SPOT-18	Realign Path Crossing	Huffine Lane and Harmon Stream Blvd	Re-route path crossing from current location to a location approximately 20 feet south. Utilize median for single lane crossing at a time. Vehicles can then interact with pathway users in a different decision process than merging into/out of traffic.	$18,000	$25,000
SPOT-19	RRFB	W. Kagy Blvd and S. Tracy Ave	Install RRFB to aid bicyclists and pedestrians crossing Kagy Boulevard at this point.	$15,000	$18,000
SPOT-20	RRFB	Carol Place and E. Kagy Blvd	Install RRFB at this location to aid bicyclists and pedestrians crossing Kagy Boulevard. Add bicycle specific buttons on Carol Place and Fairway Drive.	$15,000	$18,000
SPOT-21	RR Grade Crossing Improvement	N. Wallace Ave and Railroad	Extend sidewalks and widen paved surface to at least 34 feet over railroad tracks, with shared use path on the north side of the street.	$7,000	$10,000
SPOT-22	Intersection Improvements	S. 23rd Ave and W. Main St	Add a bike box on Babcock Street in the EB direction in front of the combination lane. This will help bicyclists position to use S. 23rd Avenue to reach College Street. Perform traffic study on WB approach on S. 23rd Avenue to verify right turn queuing requirements. If possible, significantly shorten right turn lane and add through bike lane to connect with Babcock Street. Add lead pedestrian interval when actuated.	$10,000	$15,000
SPOT-23	RRFB	E. Baxter Ln and Buckrake Ave	Install RRFB to assist shared use pathway users.	$12,000	$16,000
SPOT-24	RRFB	E. Baxter Ln and Flanders Mill Rd	Install RRFB to assist shared use pathway users.	$12,000	$16,000
SPOT-25	RRFB	Cascade St and N. Ferguson Ave	New crosswalk and RRFB with bicycle push buttons in addition to pedestrian features.	$17,000	$25,000
SPOT-26	Intersection Improvements	W. Main St and S. 8th Ave	Provide leading pedestrian interval to get pedestrians in crosswalks before vehicles are given green lights. Add shared lane markings in left and right turn lanes in the northbound direction. Add a gore separator between left and right	$1,500	$5,000

Project ID	Project Type	Location	Comments	Cost (Low)	Cost (High)
			only lanes. Main Street does not currently have receiving bicycle lanes, so bikes should be in the travel lane or use crosswalk.		
SPOT-27	Intersection Improvement	S. 8th Ave and W. College St	S. 8th Avenue approaches at College Street are confusing for bikes and drivers. Two options; **Option 1:** Create right turn lane that is shared with the bike lane (this will potentially reduce pedestrian safety). **Option 2:** Mark bike lanes up to intersection and gore out the parking area.	$1,500	$4,000
SPOT-28	Trail Crossing	Breeze Ln and Buckrake Ave	Install curb cuts/warning signage.	$8,000	$10,000
SPOT-29	RRFB	N. 25th Ave and Durston Rd	Add RRFB to existing crossing.	$5,000	$7,000
SPOT-30	Pedestrian Hybrid Beacon	W. Main St and S. 3rd Ave	Pedestrian activated 3-lens beacon. Only activates when pedestrian calls it. Could be coordinated with existing signal progression along Main Street.	$50,000	$75,000
SPOT-31	Ped crossing improvement	Ellis St and Highland Blvd	Important to hospital staff, residents, and all season trail users including skiers. Could be grade separated or a roundabout.	$150,000	$250,000
SPOT-32	Trail Underpass	Trail and Curtis St	Need improved pedestrian crossing in conjunction with new development at Curtis Street or in association with trails. Crossing should be underpass, which should be somewhat straight forward with existing grading on west side. On east side the City of Bozeman owns the land and significant excavation may be needed.	$80,000	$150,000
SPOT-33	Trail Underpass	Trail west of Kagy Blvd and Painted Hills Rd	Replace at-grade crossing with underpass where grading is favorable.	$60,000	$100,000
SPOT-34	Trail Underpass	Kagy Blvd and Painted Hills Trail	Replace at-grade crossing with underpass where grading is favorable.	$60,000	$100,000
SPOT-35	RRFB	Westridge Dr and S. 3rd Ave	Add pedestrian crossing and RRFB.	$12,000	$16,000
SPOT-36	RRFB	W. Arnold St and S. 3rd Ave	Upgrade crossing to include RRFB.	$5,000	$7,000
SPOT-37	RRFB	W. Oak St and Trail	Design with widening of Oak Street. Should have a RRFB and median.	$20,000	$30,000
SPOT-38	Bike/Ped Overpass	I-90	Visionary project, but would provide more direct access for Valley West residents to Bridger Drive trails.	$2,500,000	$4,000,000
SPOT-39	Grade separated crossing	Huffine Ln and Fowler Ave	Could be over or underpass connecting Fowler Avenue trails and MSU to Huffine Lane Trail. Engineering study needed.	$200,000	$400,000
SPOT-40	Signal or grade separation	W. Stevens St and N. 19th Ave	Conceptual project depends on ability to create east-west bicycle boulevard.	$60,000	$250,000

Project ID	Project Type	Location	Comments	Cost (Low)	Cost (High)
SPOT-41	Remove crosswalk	E. Main St and Cypress St	Existing pedestrian crossing has no control and is on the hill into downtown where traffic is decelerating from 40 mph. New signal at Broadway offers nearby controlled crossing. Warrants would not likely support a signalized crossing at this location.	$1,500	$2,500

4.4. General Intersection Improvements

This section provides general recommendations for pedestrian oriented improvements that can be implemented throughout Bozeman as projects are implemented. These recommendations represent national best practices and may be applied as opportunities are provided.

4.4.1. Leading Pedestrian Intervals

A leading pedestrian interval (LPI) is a phase setting for signalized intersections with pedestrian signals. It involves pedestrians being given a walk signal to cross the intersection several seconds in advance of parallel vehicle traffic. This allows pedestrians to begin crossing with a physical head start, which can greatly increase the visibility of pedestrians and reinforce that turning motor vehicles are required to yield to pedestrians in the crosswalk.

The LPI may be an actuated setting where the lead interval is only introduced when a push-button is activated. Having several seconds dedicated to a LPI may mean that there is a corresponding reduction in time in a traffic signal cycle available for motor vehicle travel. Since the pedestrian lead interval is relatively short (generally 3 – 5 seconds) the impacts are usually minimal.

4.4.2. Crosswalk Placement and Corner Radii

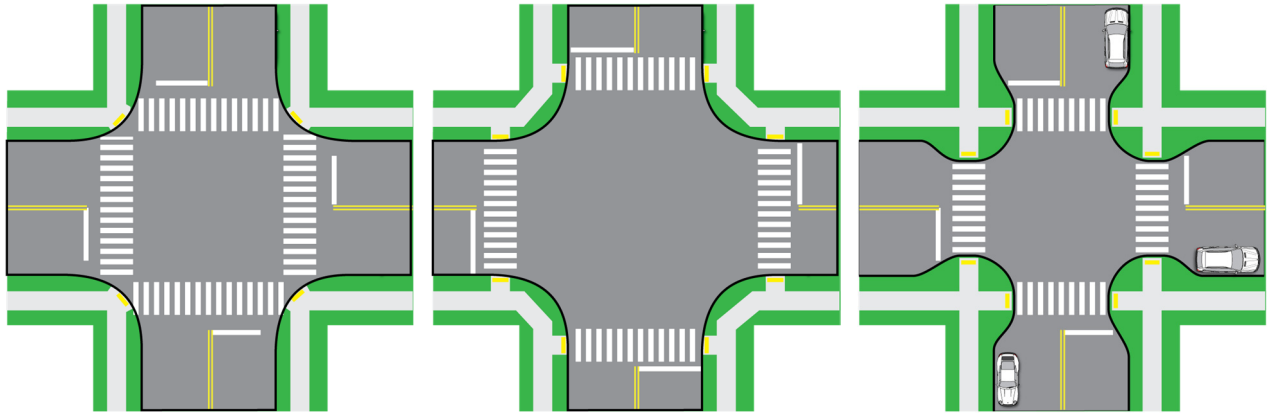
Children are less mentally and physically developed than adults, and often have limited peripheral vision and less ability to judge speed and distance, locate sounds and comprehend street signs. They lack familiarity with traffic, and may act impulsively or unpredictably.

Older adults often exhibit degrading sensory or physical capabilities. This can lead to loss of vision and hearing, the ability to react quickly, and the strength to walk otherwise normal distances between places.

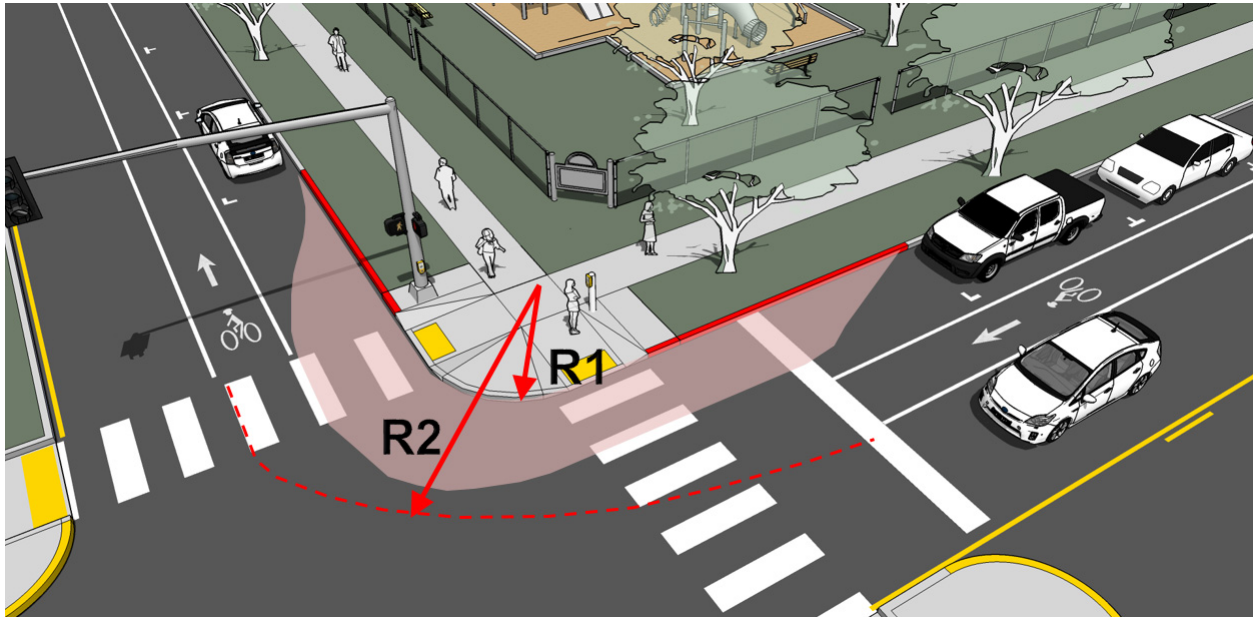
Similar to designing walking facilities for users with disabilities, similar consideration should be given to young and elderly users.

Larger corner radii accommodates heavy vehicles turning while keeping them inside their designated lane. This practice often results in wide sweeping corners that allow smaller vehicles to turn at higher speeds. Additionally crosswalks are typically longer resulting in longer crossing distances, increased pedestrian clearance times and greater exposure to moving vehicles. Several strategies can be employed to mitigate this issue.

1. Reduce corner radii. Design engineers should consider the effective turning radius of vehicles to provide for turning while reducing the physical radius of the corner. For example, the presence of a parking lane and/or bike lane allow for a tight corner radius while still providing a larger effective radius for turning vehicles.
2. Locate crossings at narrowest point. If the corner radius can't be narrowed significantly, placing the crosswalks with directional pedestrian ramps at the curve tangent minimizes crossing distance and exposure while affording vehicles greater visibility of pedestrians while turning due to the angle of the vehicle when it encounters the crosswalk while turning.
3. Provide curb extensions. Curb extensions (also known as bulb-outs) utilize the parking setbacks (if a parking lane is present) to make pedestrians more visible when crossing streets and to shorten crossing distance. Bozeman has a number of successful curb extensions and this treatment should be considered as a key component to any future project.



From left to right: Small corner radii (15 feet), perpendicular crossings at the curve tangent, curb extensions.



Where R1 is the actual corner radius and R2 is the effective corner radius. Curb extensions are also possible in otherwise unused intersection space

4.4.3. Downtown Pedestrian Recommendations

Downtown Bozeman is a key activity center for residents and visitors. Significant public comment was received during this planning process about perceived pedestrian safety issues. Mendenhall and Babcock Streets currently do not have traffic control with the exception of Willson Avenue. As a result this busy area has marked crosswalks that rely on motorist yielding. Parked vehicles often make pedestrian visibility difficult and the two travel lanes create a 'double threat' where a yielding vehicle could block the view of a vehicle in the adjacent lane of the pedestrian in the crosswalk. Curb extensions should be a component of any new property development project where the street is being changed or reconstructed. The City should continue to work with the Downtown Bozeman Partnership to identify key intersections with the poorest pedestrian visibility. South Bozeman Avenue and East Babcock Street is a priority intersection.

4.4.4. Sidewalk Program

Sidewalk replacement and expansion is an issue that is important in every Montana city. Currently the City of Bozeman notifies property owners of issues and requires that they repair or replace deficient sidewalk within 30 days. Equitably balancing property owner responsibility

with the overall public benefit of sidewalks in a way that can accelerate sidewalk maintenance and expansion should be a primary goal of a community's sidewalk program. It is recommended that Bozeman pursue a comprehensive sidewalk program through one of the following:

- 50/50 cost sharing sidewalk replacement program where sidewalk construction costs are divided evenly between the City and the property owner. The source of funding can vary; typically, the City can fund it as a defined item in the annual budget. Kalispell and Superior, MT have implemented similar programs.
- Implement a "Health Plan" style sidewalk replacement policy in which the financing model is based on the concept used in the health insurance industry. This policy allows property owners to pay in a fair amount regardless of property size or frontage length. In Missoula, the owner is given an 'up front benefit' by the city of $1,000, then the owner pays a "deductible" amount up to $7,000 of construction costs. The City of Missoula pays constructions costs above the deductible amount up to $15,000 per property. Missoula allocates between $600,000 and $800,000 in funding from a Road District that was created to help pay for construction and maintenance of City roadways. The program focuses on high-priority areas in the sidewalk master plan and has been well-received. In addition to this program, the City has continued to require piecemeal sidewalk development when new or accessory dwelling units (ADU) are built.
- The city of Bozeman could consider low, or no cost, loans for the purposes of sidewalk reconstruction or expansion. The City of Helena offers a no-interest loan to be repaid over a period of 10 years. Other cities have used increased property assessments to repay the cost of construction.

The City's current ADA ramp upgrade program is a good example of proactive incremental progress and could be a key component of an overall sidewalk program.

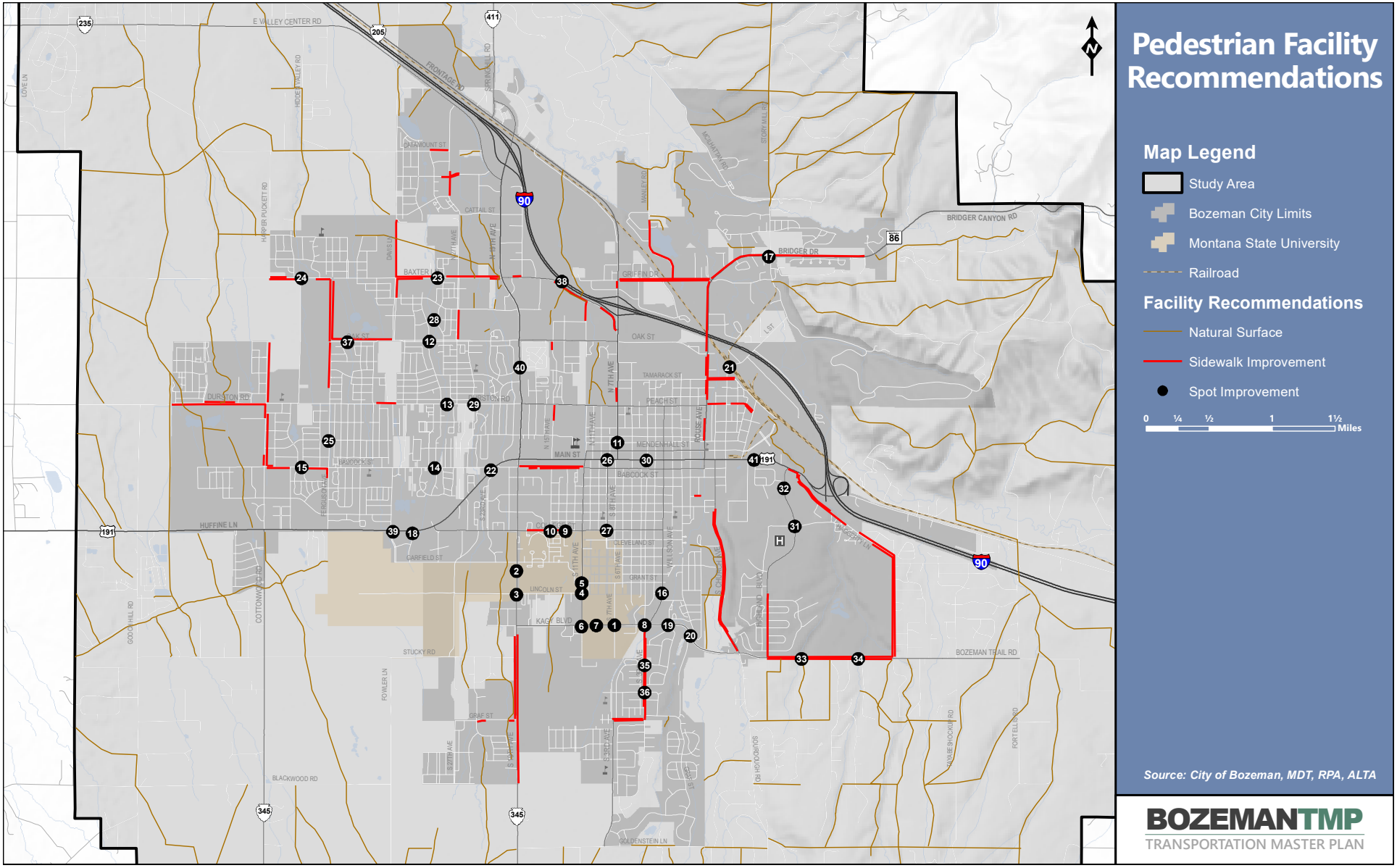


Figure 4.1: Pedestrian Facility Recommendations (Spot Improvements Shown)

5.0. BICYCLE IMPROVEMENTS

Some non-motorized improvements will be completed as part of committed or future MSN or TSM projects. Others will be completed as a component of future site development for residential or commercial purposes. A subset of bikeway projects will need dedicated funding to be realized. Where applicable, recommended bikeways are incorporated into the MSN and TSM project descriptions described earlier.

The majority of the recommendations for distinct bikeway projects (which will not be implemented as part of a MSN, TSM or development project) provide more detailed guidance including roadway cross-sections and various options where multiple roadway configurations may exist. For example streets with excess road space could be configured in a number of ways including a wide bike lane, a buffered bike lane or even a separated bike lane. Some recommendations, however, are more conceptual and additional coordination and study will be needed for implementation. All recommendations are subject to change and refinement as site conditions and development patterns change and as other adjacent or intersecting projects are implemented. Some projects may require feasibility studies to verify routing or applicability.

Figure 5.1 summarizes the existing study area mileage and the proposed additional mileage if all recommended projects are completed.

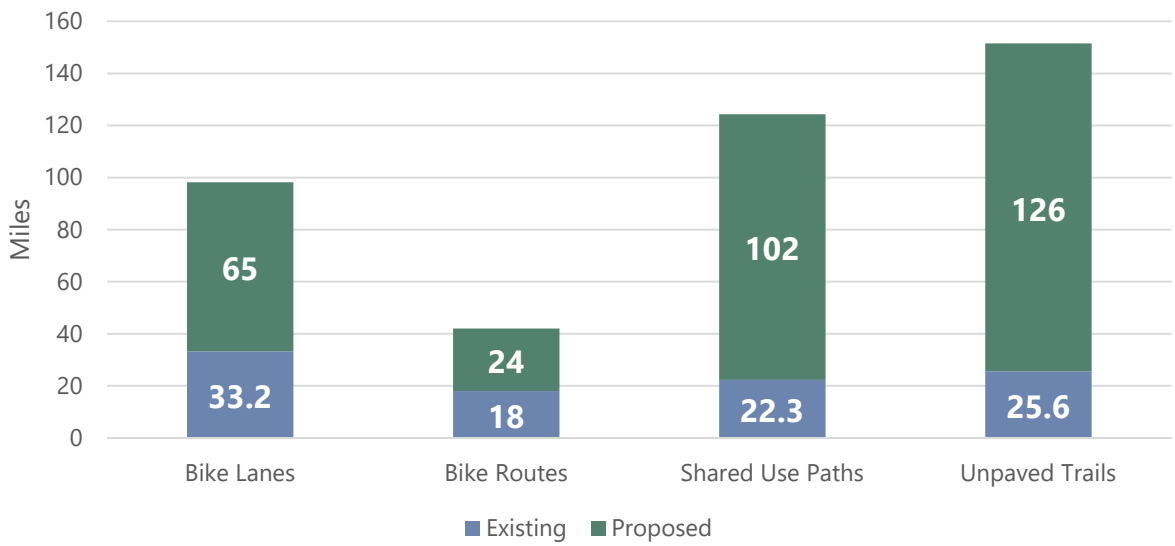


Figure 5.1: Mileage of Existing and Proposed Active Transportation Facilities within the Study Area

5.1. Overview

Bozeman's bicycle transportation mode share is nearly 10 times the national average. This figure is averaged throughout the year and peak bicycle use in the spring, summer and early fall is higher still. Bicycle commuting is, however, not evenly distributed throughout the city, despite distances being comparable in the south, north and west quadrants. The on and off-street recommendations outlined in this plan are intended to, over time, create a balanced bicycle transportation network for all ages and abilities that includes convenient and comfortable routes connecting residents to destinations. The recommended Bozeman bikeway network includes:

- Bicycle boulevards (and other streets with shared lane markings)
- Bike lanes
- Buffered bike lanes
- Separated (also known as protected) bike lanes
- Shared use path projects (and connections to natural surface trails)
- Spot improvements including crossings (signalization, markings, ramps, etc.)

Figures 5.2 and **5.3** depict the proposed bikeway network.

Recommended bikeway projects are included within the corresponding roadway project elsewhere in this memorandum, whether committed or otherwise planned. Additionally, there are a number of bikeway projects which may only be implemented as a distinct active transportation focused project. These projects are summarized in **Table 5.1**.

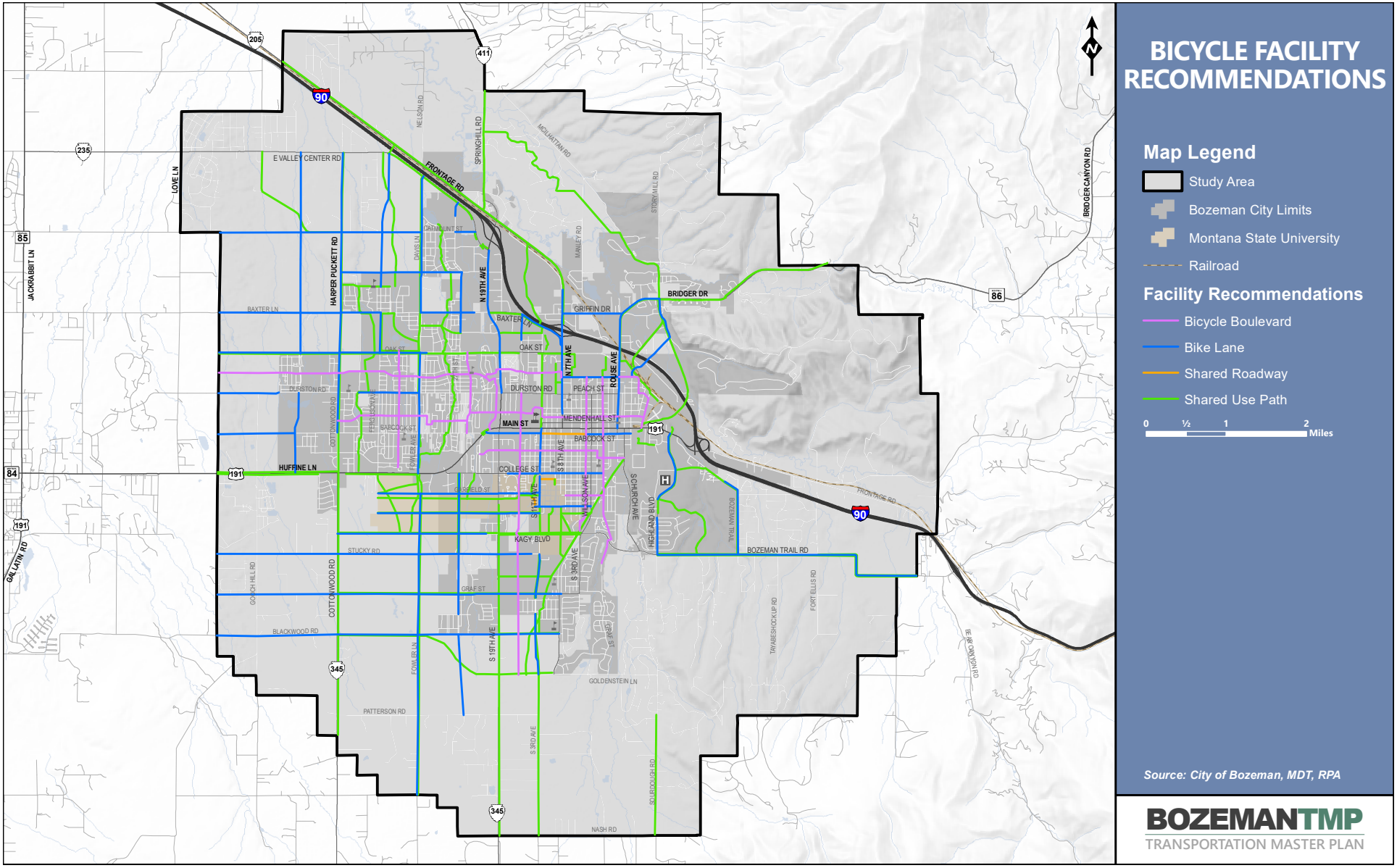


Figure 5.2: Bicycle Facility Recommendations

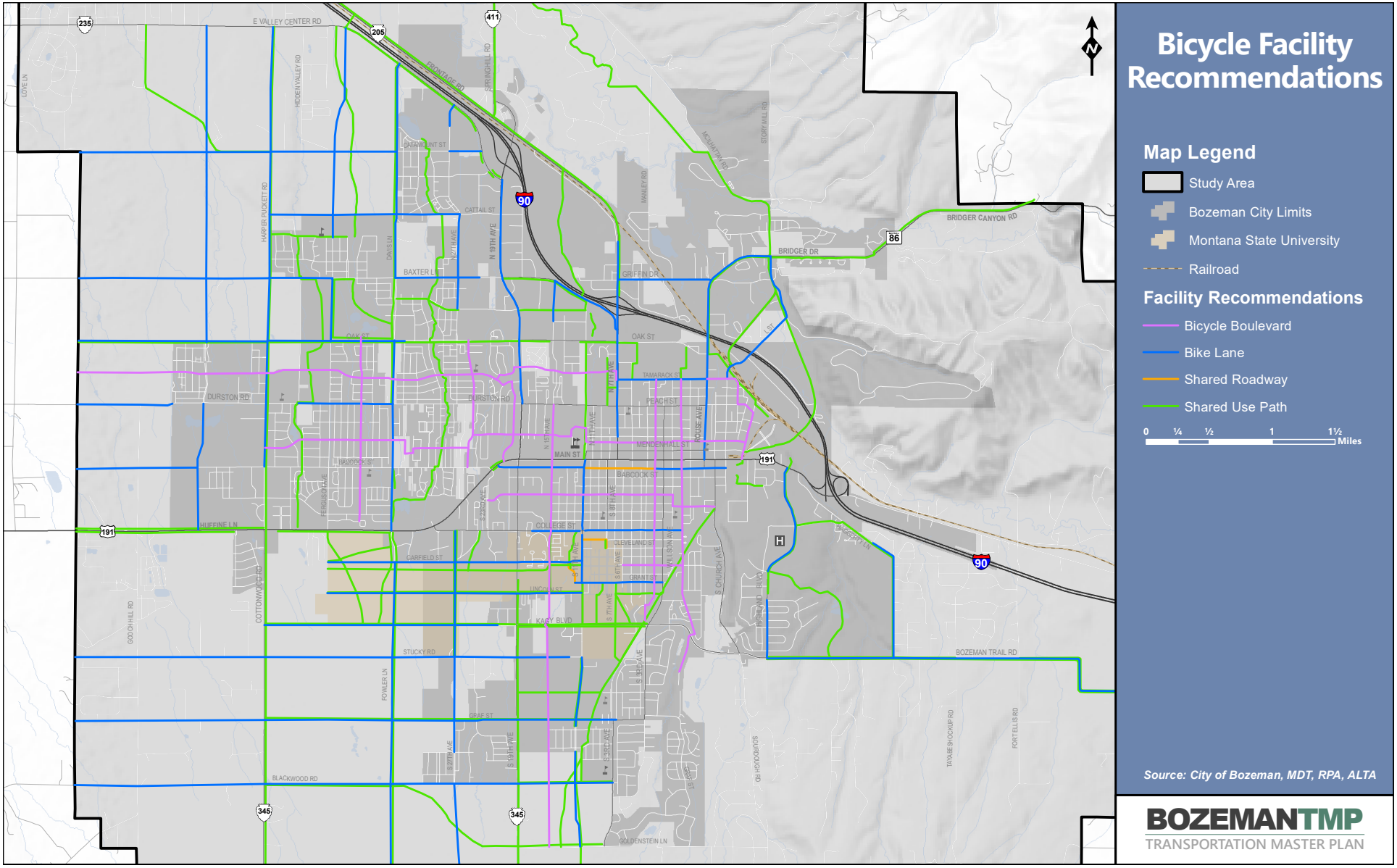


Figure 5.3: Bicycle Facility Recommendations (Detail Area)

Table 5.1: Recommended Distinct Bikeway Projects

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Buffered Bike Lane	W. Grant St	S. 11th Ave	S. 6th Ave	1,707	Add bike lane signs and stencils every 200 feet, or after ped crossings and at far side of intersections. When road is resurfaced, add buffer to bike lane with the following cross-section. 5' bike lane, 2' buffer (double white line), 10' travel lane. Alternatively, bike lane could be 6' and vehicle lanes 11.	$3,000	$5,000
Bike Lane or Buffered Bike Lane	W. Grant St	S. 6th Ave	S. Willson Ave	1,669	Extend existing bike lanes from MSU campus to S. Willson Avenue. Currently there is parking on the north side, however parking is prohibited on the south. Road is approximately 35 feet wide. **Option 1:** Parking remains on north side where the cross section should be made the same as Peach Street, with a combined bike/parking lane of 12 feet, and a 5' bike lane on the south side. **Option 2:** Prohibit parking on both sides. All homes have side street frontages and/or alley parking opportunities. Use 35 feet to provide buffered bike lanes on both sides. 6.5 ' bike lanes and 11' travel lanes.	$6,000	$8,000
Bike Lane	W. Garfield St	S. 19th Ave	S. 12th Ave	2,137	MSU Campus project. New signal in 2015 at S. 19th Ave makes this even more important as a bike route into campus. Road is 34-35 feet wide. Short Term: **Option 1:** Preserve parking on one side of the street and configure street as an advisory bike lane. Advisory bike lanes have dashed bike lane lines which can be encroachable by vehicles if needed for passing. The cross section would include an 8' parking lane, 5-6' bike lanes and 18' foot driving area. **Option 2:** Utilize shared lane markings every 150 feet and at far sides of minor intersections and keep both parking lanes, however this is less desirable and provides less continuity. **Option 3:** Remove parking on both sides and provide full bike lanes on both sides. 11 foot travel lanes and 6.5 foot bike lanes. Long Term: Road is reconstructed to include bike lanes by design.	$4,000	$4,000
Buffered Bike Lane	S. 11th Ave	W. College St	W. Cleveland Ave	540	MSU Campus Project. For the section of bike lane between the roundabout and the southern parking access just south of Harrison Street, S. 11th Avenue is approximately 45 feet wide. The bike lanes could be significantly wider here and be buffered to provide a more comfortable entrance to the MSU Campus. 7 foot bike lanes with 3 foot striped buffers should be added with 12.5 foot travel lanes in each direction.	$1,000	$2,000
Bike Lane Enhancement	S. 11th Ave	W. Cleveland Ave	W. Grant St	1,469	MSU Campus Project. Add bike lane signs and stencils every 200 feet, or after ped crossings and at far side of intersections. Add 6 inch lane stripe.	$3,000	$3,000
Bike Lane	W. Grant Street	S. 12th Ave	S. 11th Ave	297	MSU Campus Project. This short section of Grant has no bike lanes. Bike lanes can be added with lane striping, stenciling and signage.	$1,000	$1,000

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Bike Lane or Buffered Bike Lane	W. Lincoln St	S. 19th Ave	S. 11th Ave	2,722	MSU Campus Project. Between S. 19th Avenue and S. 11th Avenue. The eastern section of W. Lincoln Street has curb and gutter and is approximately 37 feet wide. There is a short-term parking lane on south side of road by businesses. Each of these businesses have off-street parking, some of which is underused in large lots with little parking delineation. Short Term: **Option 1:** Restrict parking and provide 6.5 foot bike lanes and 12 foot travel lanes. Alternate design to improve bicycling further would be a 5 foot bike lane, 3 foot buffer and 10.5 foot travel lanes. If parking cannot be removed it should be reduced to 7 feet in width, with 5 foot bike lanes and 10 foot travel lanes. It is generally undesirable to have on-street parking on collector roadways. The western segment is currently more primitive. **Option 2:** Re-stripe roadway to include 5' minimum bike lanes, this may result in 10 to 11 foot travel lanes depending on location. The current shoulder is 4 feet or narrower. Mid-Term: reconstruct with curb, gutter and sidewalk to accommodate 6 foot minimum bike lanes, 7' preferred.	$5,000	$7,000
Bike Lane	W. Garfield St	S. 12th Ave	S. 11th Ave	572	MSU Campus Project. Long Term: If W. Garfield Street is ever extended to S. 11th Avenue, bike lanes should be incorporated into the design.	N/A	N/A
Bike Lane	W. College St	S. 11th Ave	S. 8th Ave	899	The section of W. College Street between S. 11th Avenue and S. 8th Avenue is generally regarded as a poor facility and experience by all road users. The corridor could benefit from some short term improvements, however a full reconstruction is desired due to poor sidewalks, driveway ramps and pavement quality. Short Term: Eliminate parking on the north side of the street. This side hosts the bulk of the driveways and due to sight distance restrictions does not host a large number of parking spaces. It is estimated that 8 parking spaces currently exist on the north side, several of which would probably not meet current standards for setbacks from side streets. With removal of parking 40 feet exists. Recommend an 8 foot parking lane on the south side, with a 6 foot bike lane next to it. The north side should have a 5 foot bike lane and the travel lanes will be 10.5 feet wide. Long Term: Full road reconstruction which would hopefully expand the roadway slightly to the south to achieve wider lanes, better detached sidewalks, pedestrian ramps, crosswalks, landscaping and driveways.	$3,000	$5,000
Bike Lane	W. College St	S. 19th Ave	S.11th Ave	2,009	This is the last part of College Street west of S. 11th Avenue that will not have been reconstructed. The roadway has no curb and gutter and has sub-standard shoulders. There is approximately 32 feet of asphalt. Short Term: The shoulders should be restriped as designated 5' bike lanes with 11 foot travel lanes. Remove parking on the south side of the street on the approach to the roundabout. This parking is not	$4,000	$6,000

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
					permitted by MSU and currently is highly desired as there is no fee restriction causing many vehicles to drive by to look for free spaces. Approximately 12 spaces exist on the south side of College Street. Long Term: buffered bike lanes should be incorporated into the roadway design if possible when and if the street is ever reconstructed. Parking should be prohibited except for in front of the residences on the north side of the street between S. 13th Avenue and S. 12th Avenue.		
Bike Lane or Buffered Bike Lane	W. Garfield St	Fowler Ave	S. 19th Ave	5,116	On this roadway, a "bike lane only" currently is designated on the north side of the street. This is due to the road being constructed by the development to the north, with the future expectation that any development on the south side by MSU would provide curb/gutter sidewalk and additional width. There is currently space to stripe the bike lane in both directions while still allowing for future improvements which may still be many years away. Short Term: There is 40 feet of pavement which should in the center section (no turn lanes) be 5 foot bike lanes with 3 foot buffers and 11 foot travel lanes. Where turn lanes exist, use 10 foot lanes to maintain a 5 foot bike lane on both sides of the street. Long Term: Build to standards set forth in the Bozeman TMP.	$13,000	$20,000
Bike Lane	E. Tamarack St	N. 7th Ave	N. Rouse Ave	3,720	Street is currently 36 feet wide with parking prohibited on the north. The street is narrow, however Peach Street has the same width and was successfully retrofitted with bike lanes.	$7,000	$8,000
Advisory Bike Lane	E. College St	S. 8th Ave	S. Black Ave	3,161	Street is too narrow for conventional bike lanes. Project involves creating an "advisory bike lane" by removing the roadway centerline and striping 5 foot dashed bike lanes. The center line would be removed leaving an approximate 18 foot center two-way driving lane. Vehicles may encroach into an empty bike lane if needed. Passenger vehicles should be able to pass each other without encroaching into the advisory lane.	$16,000	$19,000
Bike Lane	W. Griffin Dr	I-90 Frontage Rd	N. Rouse Ave	3,899	Approximate 5 foot shoulders currently exist. Short Term: This project involves marking and signing a bike lane along Griffin Drive in the short term. Long Term: if the street is improved, bike lanes should be improved and included in the design.	$10,000	N/A
Buffered Bike Lane	N. 7th Ave	W. Oak St	E. Beall St	3,984	Convert parking lanes to buffered bike lanes. Parking is underutilized. Coordination may be necessary near Oak Street and the hotel/Santa Fe Reds area.	$7,000	$11,000

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Bike Lane	N. 7th Ave	Red Wing Dr	W. Oak St	4,193	I-90 overpass was designed for bike lanes, but never had them marked or signed. This project completes the bike lanes, adds dotted lane line extensions across the I-90 ramps, and signs/marks bike lane on N. 7th Avenue north of the interchange.	$7,000	$8,000
Bike Lane	N. 19th Ave	E. Valley Center Rd	Durston Rd	9,584	8 foot minimum shoulders already exist. This project involves adding bicycle lane stencils and signage. Future additions include adding through bike lanes where right only lanes exist at intersections. This project is similar to other MDT highways of similar land use in Missoula and Kalispell.	$17,000	$17,000
Bike Lane	W. Babcock St	W. Main St	S. 19th Ave	827	Would require parking removal. Parking is not necessary on this street due to large off-street lots for existing and future businesses. This project should be implemented along with any future rebuild of W. Babcock Street from S. 19th Avenue to S. 11th Avenue.	$2,000	$3,000
Buffered Bike Lane	Graf St	S. 27th Ave	S. 19th Ave	2,567	Current road section has intermittent parking lanes and turn lanes causing the bike lane to deflect multiple times. There is no reason for on-street parking along Graf Street. Restripe bike lane to have buffers where no turn lane exists. This will enhance comfort and simplify the street.	$3,000	$7,000
Bike Lane or Buffered Bike Lane	S. 11th Ave	W. Main Street	W. College St	2,931	S. 11th Avenue is proportioned as a local street, however it is classified as a minor arterial. This is a popular biking and walking route to reach MSU and it carries considerable traffic volumes. S. 11th Avenue is approximately 34 feet in width. This project prohibits parking along S. 11th Avenue and establishes bike lanes 6 foot minimum. If 10 foot travel lanes are acceptable 5 foot bike lanes with 2 foot buffers are possible. This project will improve sight lines for pedestrians and reduce crashes, including collisions with parked vehicles. This project can be striped and signed at any time, or it can be done in conjunction with pavement preservation.	$5,000	$8,000
Separated Two-way Bike Lane	E. Babcock St	S. Grand Ave	S. Wallace Ave	2,964	Short term: provide shared lane markings in both travel lanes. Mid-term: remove northern parking lane and provide a separated two-way bike lane (cycle track) on the north side of the street. This side generally has less existing parking and better aligns with best practice. This route will be the primary bicycle east-west connector through downtown. Maintain two lanes of one-way travel.	$53,000	$282,000
Bicycle Boulevard	Grand Ave	W. Tamarack St	S. 3rd Ave	10,331	Pavement quality poor from College Street to Babcock Street. Has bike route signs, needs shared lane markings, improved wayfinding and intersection modifications (see spot improvements).	$34,000	

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Bicycle Boulevard	Black Ave	W. Tamarack St	Private St	12,624	Creates a longer north south route using the Gallagator Trail and Sourdough Trail. Currently has shared lane markings and some signage.	$42,000	
Bicycle Boulevard	Lamme St	N. 11th Ave	N. Broadway Ave	7,331	Already has shared lane markings and bike route signs. Needs some intersection treatments (see spot improvements) and improved wayfinding.	$25,000	
Bicycle Boulevard	S. 15th Ave	Durston Rd	Goldstein Ln	18,654	Connection would provide critical north-south route west of 11th Avenue. Future improvements would need to allow bike/ped access from Babcock Street to Main Street. On south side, will connect to trails that have neighborhood connections. Will need coordination with Kagy Boulevard project design.	$62,000	
Bicycle Boulevard	Koch St	S. 23rd Ave	S. Church Ave	10,092	Sharrows and bike route signs are present. The signal at S. 19th Avenue makes this an important connection for bicyclists and pedestrians. Volumes have been recorded higher than desired just east of S. 19th Avenue at 3,700 vehicles per day.	$34,000	
Bicycle Boulevard	Annie St		Stoneridge Dr	18,535	Still has some gaps, however as streets continue to develop, this route will be an important east-west corridor in Valley West. Volumes should be monitored. Some signage may exist, requires improved signage, wayfinding, shared lane markings and minor intersection treatments.	$61,000	
Bicycle Boulevard	Beal St	N. 25th Ave	N. 11th Ave	5,048	Interrupted at Bozeman High School, however extents the Lamme Street Bicycle Boulevard. The signal at N. 19th Avenue is the key element. Requires shared lane markings, and wayfinding signage. Work with High School to formalize a signed route through campus. Many residents currently use this route now.	$17,000	
Bicycle Boulevard	N. 25th Ave	W. Oak St	W. Babcock St	5,410	Connects Babcock Street to Oak Street; also links Emily Dickinson School and takes advantage of improved crossing at Durston Road. Will require shared lane markings and wayfinding signage.	$18,000	
Bicycle Boulevard	Cascade / Mendenhall	Cottonwood Rd	N. 25th Ave	9,405	This could be one of the most important east-west routes as it ultimately feeds into downtown and avoids the busiest of N. 19th Avenue for a crossing. At Valley Drive, there is a Gallatin County inholding, which has two existing street rights of way that do not currently connect (Bitterroot Way and Mendenhall St). If streets are not likely to extend, short shared use paths could make the connection through the street easements.	$31,000	
Bicycle Boulevard	Yellowstone Ave	W. Oak St	Valley Commons Dr	7,733	North / south on-street bikeway to complement trail access.	$26,000	

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Bicycle Boulevard	Broadway / Peach / Tamarack	N. Rouse Ave	E. Main St	5,123	Provides alternative north-south travel to Wallace, which has more vehicle traffic. Also lines up with new signal at Broadway and Main, including a future shared-use path connector to the Gallagator Trail. This will be the primary route for users to connect from the Story Mill Spur to the Gallagator Trail.	$17,000	
Bicycle Boulevard	Garfield St	S. 6th Ave	S. Black Ave	2,507	Connects MSU Centennial Mall and Garfield Street route to the west with the Gallagator Trail. Requires signing and striping only.	$9,000	
Bicycle Boulevard	N. 20th Ave	N. 22nd Ave	W. Main St	3,520	Provides alternative route to N. 19th Avenue through constrained corridor. Shared use path along W. Main Street needed to connect to W. Babcock Street.	$12,000	
Bicycle Boulevard	Juniper St / Stevens St / Windsor St	Annie St	W. Tamarack St	5,764	Conceptual bicycle boulevard corridor that could be a very important east/west connector. Would require the opportunity to connect Juniper Street with Stevens Street which is unlikely in the short term. Also would require development of vacant land west of N. 7th Avenue and a crossing improvement or grade separated crossing of N. 19th Avenue.	$19,000	
Shared Roadway	S. 12th Ave	W. Garfield St	W. Grant St	974	Short term: Add shared lane markings and bicycle route signage. Mid-term: Street is constructed as a plaza shared street or if reconstructed to a street standard, provide full buffered bike lane.	$1,000	$4,000
Shared Roadway	W. Harrison St	S. 11th Ave	S. 8th Ave	1,006	The presence of angled parking, residence halls, and this street being a gap between bike lanes on S. 11th Avenue and S. 8th Avenue indicates a need to install shared lane markings. Recommend every 100 feet due to the intensity of use.	$1,000	$4,000
Shared Roadway	W. Babcock St	S. 11th Ave	S. Grand Ave	2,982	Requires sharrows to provide eastbound bicycle treatment to match Mendenhall Street.	$3,000	$10,000
Shared Roadway	S. 8th Ave	W. Harrison St	W. Cleveland Ave	348	Median was constructed too narrow to allow for full bike lanes. Shared lane markings should be Installed to provide route continuity.	$1,000	$2,000
Shared Use Path	S. 7th Ave	W. Kagy Blvd	Westridge Cut Through	1,634	MSU Campus Project. This section of S. 7th Avenue is a key linkage for neighborhoods to the south utilizing the Gallagator Trail to access campus. Currently there is no sidewalk or bicycle facilities. A 10' shared use path on the east side of S. 7th Avenue would align with the trail connection. The RRFB or underpass at Kagy Boulevard may influence the location of the path to the east.	$148,000	$156,000

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Shared Use Path	Campus Shared Use Path	S. 7th Ave	W. Kagy Ave	1,355	MSU Campus Project. Would provide a shortcut to people accessing campus from Kagy Boulevard.	$109,000	$129,000
Shared Use Path	S. 7th Ave	W. Grant St	W. Kagy Ave	1,697	MSU Campus Project. 14' wide shared use pathway with grade separated crossing at Kagy Boulevard. Connect to Gallagator Trail south of Museum of Rockies. The east side currently has fewer driveway openings and vehicular conflicts and should continue to be so even after the addition of the parking garage. Shared use paths are desirable on both sides of the street.	$153,000	$162,000
Shared Use Path	Gallagator Extension	W. Kagy Blvd	Gallagator Trail	1,437	This is a crucial missing link for the Bozeman trail system, creating a sizeable gap in the Gallagator Trail. The former rail bed is on Museum of the Rockies (MOR) property. Efforts by the city and other groups have been unsuccessful due to concerns with the living history display. This can be effectively mitigated though design. This particular segment may not have a significant role in campus transportation, however its importance is still significant. This is estimated to be a longer term project coordinated with redevelopment of the MOR.	$115,000	$137,000
Shared Use Path	Campus Shared Use Path	W. College St	S. 12th Ave	1,631	MSU Campus Project. As proposed in the Long Range Campus Development Plan (LRCDP)	$131,000	$155,000
Shared Use Path	S. 19th Ave	Region 3 HQ's	W Kagy Blvd	1,844	Reconstruct existing sidewalk to shared use path width to extend existing shared use path.	$166,000	$176,000
Shared Use Path	Lincoln St	S. 19th Ave	S. 11th Ave	2,649	MSU Campus Project. 12-14' Shared Use Pathway to connect S. 19th Ave and also the F lot where some vehicle commuters in this remote lot would benefit from a better route to campus.	$239,000	$252,000
Shared Use Path	S. 11th Ave	W. Grant St	W. Kagy Blvd	1,704	MSU Campus Project. Widen sidewalk to 10'-12' shared use path standard. Provide bike lane transitions at Lincoln Street and Kagy Boulevard.	$154,000	$162,000
Shared Use Path	S. 8th Ave	W. Harrison St	W. Cleveland St	336	Widen sidewalk on west side to shared use path standard, or construct new pathway parallel to it in conjunction with new building development. Provide bike lane transitions at W Harrison Street.	$31,000	$32,000
Shared Use Path	Westside Greenway	Trout Meadows Rd	Huffine Ln	19,487	This project would improve existing segments of trail, re-routes and new segments to create a continuous 10-foot minimum paved north-south shared use path. This path would be plowed in the winter and make bicycle use for transportation more feasible for a larger number of Valley West residents. The route depicted is conceptual where no existing path is present.	$1,559,000	$1,852,000
Shared Use Path	Gallagator Trail	S Church Ave	Goldenstein Ln	16,026	This project seeks to pave the unpaved portions of the Gallagator Trail. Advantages would include winter maintenance and a more reliable experience year-round.	$1,283,000	$1,523,000

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Shared Use Path	Story Mill Spur	Bridge Dr	"L" St	5,292	This project would pave the Story Mill Spur, develop the trail over the existing rail bed, abandoned bridges, etc. Maintain unpaved trail for runners or others that prefer soft surface. This shared use path will connect with the M-Trail and the Oak Street shared use path.	$424,000	$636,000
Shared Use Path	Oak St Extension	N. Rouse Ave	"L" St	1,270	Utilizing City right-of-way, connect the Oak Street and Story Mill Spur shared use paths.	$127,000	$188,000
Shared Use Path	Oak St Extension	N. 12th Ave	N. 7th Ave	2,392	Connects existing sections of shared use path and replaces some existing sidewalk.	$216,000	$228,000
Shared Use Path	N. 11th Ave	N. 11th Ave	W. Oak St	1,025	As called for in the PROST Plan. Parts of alignment have been implemented.	$82,000	$123,000
Shared Use Path	Tschache Ln	Davis Ln	N. 27th Ave	2,721	Improve east-west connection and legibility. Ideally a wide shared use path would be continued to the west linking other north-south facilities.	$245,000	$259,000
Shared Use Path	Story Hill Rail Trail	Story Mill Spur	N. Broadway Ave	8,990	Project would involve property acquisition and the restoration of several significant bridge structures, but would create a continuous trail connection from south Bozeman to the M trailhead with no on-street segments.	$830,000	$875,000
Shared Use Path	Huffine Ln	Willow Peak Dr	Cottonwood Rd	7,863	Provide shared use path to Four Corners (mileage is to study area boundary only).	$630,000	$944,000
Shared Use Path	Springhill Rd	Sypes Canyon Rd	I-90 Frontage Rd	7,884	Path linking Frontage Road with Sypes Canyon Road. Could also connect to conceptual path to Story Mill/Bridger Drive.	$631,000	$947,000
Shared Use Path	Fowler Ave	W. Babcock St	Bozeman Ponds Park	809	Extend through the Bozeman Ponds Park to Babcock Street.	$65,000	$98,000
Shared Use Path	Kimberwicke St	Harper Puckett Rd	Gallatin Green Blvd	3,197	As recommended in PROST Plan.	$256,000	$384,000
Shared Use Path	Springhill to Story Mill Rd	Springhill Rd	Story Mill Rd	19,420	Conceptual project improves existing natural surface trails, utilizes PROST Plan recommendations and new proposed trail to create continuous route from Springhill Road to Story Mill Road. Alignment has high transportation and recreation potential.	$1,554,000	$2,331,000
Shared Use Path	Gallagator Extension	Cambridge Dr	Goldenstein Ln	3,925	Extend Gallagator Trail to the south.	$314,000	$471,000
Shared Use Path	Huffine Ln	Rowland Rd	Advance Dr	6,626	Provide shared use path to Four Corners.	$531,000	$796,000
Shared Use Path	Abandoned RR alignment	Front St	L St	2,646	As proposed in PROST Plan, likely only if railroad area redevelops and there is no freight service.	$212,000	$318,000

Project Type	Street	From	To	Length (ft)	Comments	Cost (Low)	Cost (High)
Shared Use Path	S. 19th Ave	W. Kagy Blvd	Nash Rd	19,898	As recommended in the Bozeman Area Alternative Transportation Study and PROST Plan. Full extents go to Hyalite Canyon Road.	$1,592,000	$2,388,000
Shared Use Path	Valley Center Rd (west)	Catamount St	Catron St	494	Completes connection between exiting Valley Center Road paths and N. 19th Avenue.	$40,000	$60,000
Shared Use Path	Valley Center Rd (east)	Catron St	N. 19th Ave	428	Completes connection between exiting Valley Center Road paths and N. 19th Avenue.	$35,000	$52,000
Shared Use Path	Valley Center Rd (west)	Catron St	N. 19th Ave	290	Completes connection between exiting Valley Center Road paths and N. 19th Avenue.	$24,000	$35,000
Shared Use Path	S. 3rd Ave	Goldstein Ln	Nash Rd	10,566	Could extend Gallagator Trail to Nash Road, this was also proposed in the Bozeman Area Alternative Transportation Study.	$846,000	$1,268,000
Shared Use Path	W. Main St	W. Babcock St	N. 20th Ave	617	12 foot wide sidewalk to facilitate connections between bikeways that provide alternatives to Main Street and N. 19th Avenue.	$68,000	$68,000
Shared Use Path	Sidewalk	S. 23rd Ave	W. Babcock St	249	12 foot wide sidewalk to facilitate connections between bikeways that provide alternatives to W. Main St and N. 19th Avenue.	$28,000	$28,000
Shared Use Path	Gallagator Connector	Gallagator Linear Trail	Golf Way	1,452	Formalizes a commuter route that is maintainable in the winter months.	$117,000	$175,000
Shared Use Path	Frontage Road	I-90 WB on- & off-ramp	Study Area Boundary; ~2,750 ft west of Coulee Dr	26,400	Shared use path contained in 2007 PROST Plan; has robust public support. Locate to the north of existing Frontage Road and east of N. 7th Avenue. Only includes portion of path between Bozeman (I-90) and TMP study area boundary (~5 miles in length). Approximately 4 miles remaining from TMP study area boundary to downtown Belgrade.	$2,508,000	$2,904,000
Shared Use Path	Lincoln St	S. Willson Ave	S. 7th Ave	1,930	Trail would use utility easement to connect Gallagator Trail to MSU. May require redevelopment of MSU property just east of S. 7th Avenue.	$155,000	$184,000
Shared Use Path	N. 5th Ave	W. Oak St	W. Tamarack St	1,692	To be developed within the N. 5th Avenue right-of-way.	$136,000	$161,000
Shared Use Path	N. 8th Ave	Just south of W. Birch St	W. Durston St	1,968	To be added into the N. 8th Avenue right-of-way.	$158,000	$187,000
Shared Use Path	W. Aspen St	N. 8th Ave	N. 7th Ave	372	To be added within the Aspen St right-of-way.	$30,000	$45,000

5.2. Downtown Bozeman Bicycle Recommendations

Downtown Bozeman is a challenging environment for the provision of dedicated bikeways. Main, Mendenhall, Babcock, Olive and Lamme Streets all act as the primary east-west corridors. While Lamme Street lends itself to a bicycle boulevard, Olive Street exhibits higher speed and volume. Mendenhall and Babcock are both one-way streets with minimal additional space for bike lanes other than absolute minimum parking lanes, travel lanes and bike lanes (this configuration was voted down by the Bozeman Area Bicycle Advisory Board when

Mendenhall Street was reconstructed in 2014). Main Street is incompatible with bike lanes in its current 4-lane configuration. Additionally, even if Main Street were converted to a 3-lane configuration, bike lanes would likely be feasible only in the door zone of short term vehicle parking. The cumulative effect of these facts results in the conclusion that providing dedicated space for bicycle travel in Downtown Bozeman is extremely difficult without creating additional space through parking removal. This plan does propose a two-way separated bikeway on the north side of Babcock Street from Grand Avenue to Wallace Avenue. For this stretch of Babcock Street, parking is currently restricted for a portion of the frontage due to sight restrictions with driveways and cross-streets. Parking removal would be a requirement for implementation of this project and this would require political support or timing with another source of new parking such as a second parking garage on the south side of Downtown.

An increased bicycle parking supply is recommended for Downtown. Both through the provision of at least two additional seasonal on-street parking corrals and for an increase in the number of racks placed in the furnishing zones of the Downtown Streets. Partnerships with existing and new businesses should be sought to locate additional parking in alleys or on private property for employee parking to preserve street parking for patrons. One car parking space can park the equivalent of 14 bicycles if configured properly.

5.3. Enhanced Bicycle Wayfinding System

The Gallatin Valley Land Trust (GVLT) has implemented a trail wayfinding system that includes over 600 signs. In 2005, the City of Bozeman installed on-street bicycle route signs that featured limited wayfinding elements such as 'Trails', 'Downtown', or 'MSU' as destinations. With the recommended bicycle boulevard system it is recommended that a comprehensive bicycle wayfinding system be created to upgrade and replace the existing bicycle route sign system. New signs should feature three destinations per sign, distance information and travel time. Signs could complement the existing 'City of Bozeman Bike Route' signs or be of a new enhanced design. Destinations should be identified, categorized and programmed onto a system of signs throughout the on-street network of bikeways.

Existing sign in Bozeman and enhanced example from Jackson, WY

5.4. Shared Use Path Maintenance

The vast majority of Bozeman's paved shared use paths have never been structurally maintained since construction. Maintenance activities can generally be categorized into one of two types; 'routine maintenance' which is done annually or more frequently, and 'major' or 'capital maintenance' which involves more intensive activity at a less than annual frequency. A robust routine maintenance program may include sweeping, trash removal, mowing, tree trimming, weed abatement, snow removal, restroom maintenance, and sign replacement. However, it should be noted that each segment of shared use path in Bozeman will have different needs and levels of expenditure due to its setting and amenities. It is estimated that for routine maintenance approximately $1,000 to $1,500 should be budgeted annually per mile of trail.

Generally the City and GVLT have kept up adequate routine maintenance. Bozeman Parks and Recreation is now conducting snow removal on all of the city's paved shared use paths.

5.4.1. Capital Maintenance

Major or capital maintenance activities typically involve more intensive maintenance repairs such as pavement seal coating, pavement overlays, pavement reconstruction or other structural rehabilitations. Any paved trail surface will deteriorate over time with asphalt surfaces dropping in quality rapidly after 10 years. Preservation efforts such as seal coating extend the life of asphalt efficiently and at a lower cost than waiting for the surface to fail requiring expensive reconstruction. Maintenance activities vary considerably around the country and different approaches and pavement preservation intervals could be considered.

Financial planning for trail maintenance can be challenging to budget for. Typically trails require greater capital maintenance activities with age and ultimately require full reconstruction at some point. Some jurisdictions focus on eventual reconstruction and treat this as a maintenance item to be budgeted for, whereas some treat this as a separate capital project to be considered in the future.

Recent Jackson Hole Community Pathway maintenance costs have contracted seal coating of the pathways at approximately $9,000 per mile which averages (on a 5-year seal coat cycle) approximately $1,800 per year, per mile of path annually. This experience provides a valuable benchmark for Bozeman and if a similar program were to be budgeted the city would need to perform approximately $30,000 in shared use path surfacing annually, increasing over time as the system mileage increases.

5.4.2. Shared Use Path Surfacing

Due to the expensive burden of ongoing capital maintenance to asphalt paths, it is recommended that wherever possible Bozeman adopt a concrete surface standard for future shared use paths. Concrete does not require seal coats, or resurfacing of any kind and lasts considerably longer resulting in a lower life-cycle cost for the City. A new City standard detail should be created that incorporates expansion joints every 100 feet, with saw-cut intermediate joints every 10 feet for path smoothness and snow removal.

Concrete shared use path with saw cut joints in Billings, MT

BOZEMANTMP
TRANSPORTATION MASTER PLAN

ADDITIONAL TRANSPORTATION CONSIDERATIONS

Technical Memorandum

FINAL

June 17, 2016

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City of Bozeman & Montana Department of Transportation

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The City of Bozeman, MDT and RPA attempt to provide accommodations for any known disability that may interfere with a person participating in any service, program, or activity associated with this study. Alternative accessible formats of this information will be provided upon request. For further information, call (406) 447-5000 or (406) 582-2280. Accommodation requests must be made at least 48 hours prior to the scheduled activity and / or meeting.

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Abbreviations / Acronyms

CSS	Context Sensitive Solutions
GRH	Guaranteed Ride Home
HOV	High Occupancy Vehicle
ITS	Intelligent Transportation Systems
LRTP	Long Range Transportation Plan
MDT	Montana Department of Transportation
MPO	Metropolitan Planning Organization
NEPA	National Environmental Policy Act
PSA	Public Service Announcement
SOV	Single Occupancy Vehicle
TDM	Transportation Demand Management
TMP	Transportation Master Plan
TOD	Transit Oriented Development
TWLTL	Two-Way Left-Turn Lane

Additional Transportation Considerations

1.0. INTRODUCTION

This memorandum addresses several topics for the Bozeman Transportation Master Plan (TMP) that link the transportation system to broader quality of life considerations within the community. Federal regulations for Metropolitan Planning Organizations (MPOs) require long range transportation plans "include both long-range and short-range program strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods." While this is obviously a key consideration for the Bozeman TMP (i.e. non-MPO), it must be recognized that the design, modal mix, and location of transportation infrastructure and facilities can directly affect urban form and functions and community character.

Current directions in transportation planning place importance on developing transportation systems that help reduce unnecessary travel delays and managing travel demands in ways that create balanced multimodal networks that offer multiple transportation choices. Transportation systems also need to provide facilities and services to help achieve reliable and timely access to jobs, community services, affordable housing, and schools while helping create safe streets and improving economic competitiveness, and enhancing unique community characteristics.

Topics addressed on the following pages include: sustainability (triple bottom line), transportation demand management (TDM), metropolitan planning organization (MPO) planning requirements, and livability. These topics are all key considerations to the development of a TMP that helps support and enhance the overall quality of life in the Bozeman area.

2.0. METROPOLITAN PLANNING ORGANIZATION (MPO) REQUIREMENTS

2.1. Establishing Legislation and Purpose

A metropolitan planning organization (MPO) is a federally mandated and federally funded transportation policy-making organization in the United States that is made up of representatives from local government and governmental transportation authorities. MPOs were introduced by the Federal-Aid Highway Act of 1962, which required the formation of an MPO for any urbanized area with a population greater than 50,000. Federal funding for transportation projects and programs are channeled through this planning process. Congress created MPOs in order to ensure that existing and future expenditures of governmental funds for transportation projects and programs are based on a continuing, cooperative, and comprehensive ("3-C") planning process. Statewide and metropolitan transportation planning processes are governed by federal law (23 U.S.C. §§ 134–135). Transparency through public access to participation in the planning process and electronic publication of plans now is required by federal law.

The federal government wishes to see federal transportation funds spent in a manner that has a basis in metropolitan region-wide plans developed through intergovernmental collaboration, rational analysis, and consensus-based decision making. Accordingly, MPOs are essential to ensure that:

- Scarce federal and other transportation funding resources are allocated appropriately;
- Planning reflects the region's shared vision for its future;
- A comprehensive examination of the region's future and investment alternatives has occurred; and
- Facilitation of governments, interested parties, and residents occur in a collaborative manner in the planning process.

2.2. Organizational Structure

Typically, an MPO governance structure includes a variety of committees as well as a professional staff. The "transportation policy coordinating committee (TPCC)" is the top-level decision-making body for the planning organization. In most MPOs, the TPCC comprises:

- Elected or appointed officials from local governmental jurisdictions such as municipalities or counties;
- Representatives of different transportation modes, such as public transit, freight, bicycle/pedestrian;
- State agency officials such as, state Department of Transportation, environmental agency, etc.; and
- Non-voting members such as FHWA, FTA, FAA, FRA, staff advisers from state departments of transportation, Chambers of Commerce, etc.

A TPCC member typically is an elected or appointed official of one of the MPO's constituent local jurisdictions. The TPCC member thus has legal authority to speak and act on behalf of that jurisdiction in the MPO setting. Federal law, however, does not require members of an MPO TPCC to be representatives of the metropolitan areas' populations. The TPCC's responsibilities include debating and making decisions on key MPO actions and issues, including adoption of the metropolitan long-range transportation plans, transportation improvement programs, annual planning work programs, budgets, and other policy documents. The TPCC also may play an active role in key decision points or milestones associated with MPO plans and studies, as well as conducting public hearings and meetings. An appointed transportation technical advisory committee (TTAC) develops the recommendations for consideration by the TPCC and establishes a ranked proposal for work plans.

The TTAC acts as an advisory body to the TPCC for transportation issues that primarily are technical in nature. The TTAC interacts with the MPO's professional staff on technical matters related to planning, analysis tasks, and projects. Through this work, the TTAC develops recommendations on projects and programs for TPCC consideration. The TTAC typically comprises staff-level officials of local, state, and federal agencies. In addition, a TTAC may include representatives of interest groups, various transportation modes, and local citizens.

Usually MPOs retain a core professional staff in order to ensure the ability to carry out the required metropolitan planning process in an effective and expeditious manner. The size and qualifications of this staff may vary by MPO, since no two metropolitan areas have identical planning needs Most MPOs, however, require at least some staff dedicated solely to MPO process oversight and management because of the complexity of the process and need to ensure that requirements are properly addressed.

2.3. Core Functions

There are five core functions of an MPO:

1. **Establish a setting:** establish and manage a fair and impartial setting for effective regional decision-making in the metropolitan area
2. **Evaluate alternatives:** evaluate transportation alternatives, scaled to the size and complexity of the region, to the nature of its transportation issues, and to the realistically available options
3. **Maintain a regional transportation plan (RTP):** develop and update a fiscally constrained long-range transportation plan for the UZA covering a planning horizon of at least twenty years that fosters mobility and access for people and goods, efficient system performance and preservation, and quality of life
4. **Develop a transportation improvement program (TIP):** develop a fiscally constrained program based on the long-range transportation plan and designed to serve the metropolitan area's goals, while using spending, regulating, operating, management, and financial tools

5. **Involve the public:** involve the general public and all the significantly affected sub-groups in the four essential functions listed above.

If the metropolitan area is designated as an air quality non-attainment or maintenance area, then the MPO must also protect air quality – i.e. transportation plans, programs, and projects must conform with the air quality plan, known as the "state implementation plan (SIP)"), for the state within which the metropolitan area lies.

Presently, most MPOs have no authority to raise revenues such as to levy taxes on their own, rather, they are designed to allow local officials to decide collaboratively how to spend available federal and other governmental transportation funds in their urbanized areas. The funding for the operations of an MPO comes from a combination of federal transportation funds and required matching funds from state and local governments.

3.0. TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) measures came into being during the 1970s and 1980s in response to a desire to save energy, improve air quality, and reduce peak-period congestion. TDM strategies focused on identifying alternates to single occupant vehicle use during commuting hours. Therefore, such things as carpooling, vanpooling, transit use, walking and bicycling for work purposes are most often associated with TDM. Many of these methods were not well received by the commuting public and therefore, provided limited improvement to the peak-period congestion problem. Due to the experiences with these traditional TDM measures over the past few decades, it became clear that the whole TDM concept needed to be changed. TDM measures that have been well received by the commuting public include flextime, a compressed workweek and telecommuting. In addition to addressing commute trip issues, managing demand on the transportation system includes addressing traffic congestion associated with special events, such as MSU football games, concerts, the Downtown Christmas Stroll, and other large cultural or sporting events held within the community. A definition of TDM follows:

> *TDM programs are designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel. (FHWA, 1994)*

Since 1994, TDM has been expanded to also include route choice. A parallel arterial with excess capacity near a congested arterial can be used to manage the transportation system to decrease congestion for all transportation users.

The City of Bozeman is embarking on a golden opportunity beginning in Fiscal Year 2017 with the commitment for financial participation for a newly created TDM coordinator to be based at the Western Transportation Institute (WTI). This is the first position of its kind in the

Greater Bozeman area, and is being funded equally by the City of Bozeman, Montana State University, and a Federal grant received by WTI. The length of the funded position is three-years through Fiscal Year 2019.

In Montana, an excellent model for TDM strategies can be found by examining the Missoula Ravalli Transportation Management Association (MRTMA). MRTMA offers vanpool, carpool, and guaranteed ride home programs and works with employers to tailor specific commute programs for their staff.

3.1. Role Of Transportation Demand Management

TDM strategies are an important part of the Bozeman TMP due to their inherent ability to provide the following benefits to the commuting public:

- Better transportation accessibility;
- Better transportation predictability;
- More, and timelier, information;
- A range of commute choices; and
- Enhanced transportation system performance.

TDM measures can also be applied to non-commuter traffic and are especially easy to adapt to tourism, special events, emergencies and construction. The benefits to these traffic users are similar to those for commuters, and are listed as follows:

- Better transportation accessibility;
- More transportation reliability;
- More, and timelier, information;
- A range of route choices; and
- Enhanced transportation system performance.

These changes allow the same amount of transportation infrastructure to effectively serve more people. They acknowledge and work within the mode and route choices which motorists are willing to make, and can encourage a sense of community. Certain measures can also increase the physical activity of people getting from one place to another.

Such things as alerting the traveling public to disruptions in the transportation system caused by construction or vehicle crashes can also manage demand and provide a valuable service to the traveling public.

Overall, congestion can be avoided or managed on a long-term basis through the use of an integrated system of TDM strategies.

3.2. TDM Strategies

TDM strategies, which are or have been used by other communities in the United States, are discussed in this section. By capitalizing on the use of these options, the existing vehicular infrastructure can be made to function at acceptable levels of service for a longer period of time. Ultimately, this will result in lower per year costs for infrastructure replacement and expansion projects, not to mention less disruption to the users of the transportation system.

While some of these options may work well in the Bozeman area, it is clear that some may be inappropriate. Additionally, some of these options are more effective than others. To provide a TDM system that is effective in managing demand, a combination of these methods will be necessary.

Flextime

When provided by employers, flextime allows workers to adjust their commuting time away from the peak periods. This means that employees are allowed some flexibility in their daily work schedules. For example, rather than all employees working 8:00 to 4:30, some might work 7:30 to 4:00, and others 9:00 to 5:30. This provides the workers with a less stressful commute, allows flexibility for family activities and lowers the number of vehicles using the transportation system during peak times. This in turn can translate into reduced traffic congestion, support for ridesharing and public transit use, and benefits to employees. Flextime allows commuters to match their work schedules with transit and rideshare schedules, which can significantly increase the feasibility of using these modes. Costs for implementing this type of TDM strategy can include increased administrative and management responsibilities for the employer, and more difficulty in evaluating an employee's productivity.

Alternate Work Schedule

A related but more expansive strategy is to provide an alternate work schedule. This strategy involves using alternate work hours for all employees. It would entail having the beginning of the normal workday start at a time other than 8:00 a.m. For example, starting the workday at 7:30 a.m. would allow all employees to reach the work site in advance of the peak commute time. Additionally, since they will be leaving work at 4:30 p.m., they will be home before the peak commute time, and have more time in the evening to participate in family or community activities. This can be a very desirable side benefit for the employees. This has a similar effect on traffic as flextime, but does not give individual employees as much control over their schedules.

Compressed Work Week

A compressed work week is different from offering "flextime" or the "alternate work schedule" in that the work week is actually reduced from the standard "five-days-a-week" work schedule. A good example would be employers giving their workers the opportunity to work four (4) ten-hour days a week. A compressed work week reduces commute travel (although this reduction may be modest if employees

take additional car trips during non-work days or move farther from worksites). Costs for implementing this type of TDM strategy may be a reduction in productivity (employees become less productive at the end of a long day), a reduction in total hours worked, and it may be perceived as wasteful by the public (for example, if staffing at public agencies is low on Fridays).

Telecommuting

Telecommuting in the work place offers a good chance to reduce the dependence to travel to work via car or bus. This is especially true in technical positions and some fields in the medical industry (such as medical transcription). Additionally, opportunities for distance learning, shopping via computers, basic health care services and recreation also exist and can serve to reduce vehicular travel on the transportation system. Telecommuting is usually implemented in response to an employee request, more so than instigated by the employer. Since telecommuting reduces commute trips, it can significantly reduce congestion and parking costs. It is highly valued by many employees and tends to increase their productivity and job satisfaction. Costs associated with this TDM strategy include increased administrative and management responsibilities, and more difficult evaluation of employee productivity. Some employees find telecommuting difficult and isolating. Telecommuting also may reduce staff coverage and interaction, and make meetings difficult to schedule. Many employers in Montana have tried and currently allow some form of telecommuting.

Ride Sharing (carpooling)

Carpooling is traditionally one of the most widely considered TDM strategies. The idea is to consolidate drivers of single occupancy vehicles into fewer vehicles, with the result being a reduction in congestion. Carpooling is generally limited to those persons whose schedules are rigid and not flexible in nature. Studies have shown that carpooling is most effective for longer trips greater than ten miles in each direction. Aside for the initial administrative cost of set-up and marketing, ridesharing also may encourage urban sprawl by making longer-distance commutes more affordable.

Vanpooling

Vanpooling is a strategy that encourages employees to utilize a larger vehicle than the traditional standard automobile to arrive at work. Vans typically hold twelve or more persons. Vanpooling generally does not require high levels of subsidy usually associated with a fixed-route or demand-responsive transit service. They can often times be designed to be self-sufficient. The van is typically provided by the employer, or a vanpool brokerage agency, which provides the insurance.

Bicycling

Bicycling can substitute directly for automobile trips. Communities that improve cycling conditions often experience significant increases in bicycle travel and related reductions in vehicle travel. Providing increased bicycling opportunities can help contribute to quality of life improvements as well. Incentives to increase bicycle usage as a TDM strategy include: construction improvements to bike paths and bike lanes; correcting specific roadway hazards (potholes, cracks, narrow lanes, etc.); development of a more connected bikeway street network;

development of safety education, law enforcement and encouragement programs; and the solicitation and addressing of bicycling security/safety concerns. Potential costs of this TDM strategy are expenses associated with creating and maintaining the bikeway network, potential liability and accident risks (in some cases), and increased stress to drivers.

Walking

Walking as a TDM strategy has the ability to substitute directly for automobile trips. A relatively short non-motorized trip often substitutes for a longer car trip. For example, a shopper might choose between walking to a small local store versus driving a longer distance to shop at a supermarket. Incentives to encourage walking in a community can include: making improvements to sidewalks, crosswalks and paths by designing transportation systems that accommodate special needs (including people using wheelchairs, walkers, strollers and hand carts); providing covered walkways, loading and waiting areas; improving pedestrian accessibility by creating location-efficient, clustered, mixed land use patterns; and soliciting and addressing pedestrian security/safety concerns. Costs are similar to that of bicycling and are generally associated with program expenses and facility improvements.

Park & Ride Lots

Park and ride lots are effective for communities with substantial suburb to downtown commute patterns. Park and ride consists of parking facilities at transit stations, bus stops and highway on-ramps, particularly at the urban fringe, to facilitate transit and rideshare use. Parking is generally free or significantly less expensive than in urban centers. Costs are primarily associated with facility construction and operation.

Car Sharing

Car sharing is a demand reducing technique that allows families within a neighborhood to reduce the number of cars they own and share a vehicle for the limited times when an additional vehicle is absolutely essential. Costs are primarily related to creation, startup and administrative costs of a car sharing organization.

Traditional Transit

Traditional transit service is an effective TDM strategy, especially in a highly urban environment. Several methods to increase transit usage within the community are to improve overall transit service (including more service, faster service and more comfortable service), reduce fares and offer discounts (such as lower rates for off-peak travel times, or for certain groups), and improve rider information and marketing programs. The costs of providing transit depend on many factors, including the type of transit service, traffic conditions and ridership. Transit service is generally subsidized, but these subsidies decline with increased ridership because transit services tend to experience economies of scale (a 10% increase in capacity generally increases costs by less than 10%). TDM strategies that encourage increased ridership can be very cost effective. These strategies may include offering bicycle carrying components on the transit vehicle, changing schedules to complement adjacent industries, etc.

Express Bus Service

Express bus service as a TDM strategy has been used by larger cities in the nation as a means to change driver vehicle characteristics. The use of an express bus service is founded on the idea that service between two points of travel can either be done faster or equal to the private automobile (or a conventional bus service that is not "express").

Installing/Increasing Intelligent Transportation Systems (ITS)

The use of ITS methods to alert motorists of disruptions to the transportation system will be well received by the transportation users, and are highly effective tools for managing transportation demands.

Installing High Occupancy Vehicle (HOV) Lanes

HOV lanes are generally used on very congested highways where intersections and access control is somewhat limited. They also can be utilized on urban arterials. A HOV is typically described as having two or more persons in the vehicle during the time of travel. The benefits of a HOV lane in a congested corridor is that increased travel speeds and reliability for HOV passengers is realized. The costs include project construction, management and enforcement. Some critics also argue that HOV lanes encourage urban sprawl, contribute to poor air quality, and increase crash rates due to conflicts between vehicles in higher-speed HOV lanes and vehicles in lower speed general use lanes.

Ramp Metering

Ramp metering has been used by some communities and consists of providing a modified traffic signal at on ramps to interstate highway facilities.

Traffic Calming

Traffic calming refers to various design features and strategies intended to reduce vehicle traffic speeds and volumes on a particular roadway. Traffic calming projects can range from minor modifications of an individual street to comprehensive redesign of a road network. Traffic calming can be an effective TDM strategy in that its use can alter and/or deter driver characteristics by forcing the driver to either use a different route or to use an alternative type of transportation (such as transit, bicycling, walking, etc.). Costs of this TDM strategy include construction expenses, problems for emergency and service vehicles, potential increase in drivers' effort and frustration, and potential problems for bicyclists and visually impaired pedestrians.

Identifying and Using Special Routes and Detours for Emergencies or Special Events

This type of TDM strategy includes modifications to driver patterns during special events or emergencies. They can typically be completed with intensive temporary signing or traffic control personnel. A prime example would be modifying travel patterns before, during and after a MSU football game or the Downtown Christmas Stroll. Temporary traffic control via signs and flaggers are implemented to provide a swift and safe exit after applicable events.

Linked Trips

This strategy entails combining trips into a logical sequence that reduces the total miles driven on the surrounding transportation system. These trips are generated by associated facilities within a mixed-use development or within an area of the community where adjacent land uses are varied and offer services that would limit the need to travel large distances on the transportation system.

Higher Parking Costs for Single Occupant Vehicles (SOV)

Intuitively, free parking provided by employers is a tremendous incentive for driving alone. If the driver of a SOV is not penalized in some form, there is no perceived reason not to drive to the workplace. One way to counter this reality is to charge a higher price for parking for the SOV user.

Preferential Parking for Rideshare/Carpool/Vanpools

This concept ties into the discussion above regarding parking of the SOV user. Preferential parking, such as delineating spaces closer to an office for riders sharing their commute or reduced/free parking, can be an effective TDM strategy.

Subsidized Transit by Employers

A subsidized transit program, typically offered by employers to their employees, consists of the employer either reimbursing or paying for transit services in full as a benefit to the employee. This usually comes in the form of a monthly or annual transit pass. Studies show that once a pass is received by an employee, the tendency to use the system rises dramatically.

Guaranteed Ride Home (GRH) Programs for Transit Riders

The guaranteeing of a ride home for transit users is a wise choice for all transit systems, since it gives the users a measure of calm knowing that they will be able to get home. A GRH program provides an occasional subsidized ride to commuters who use alternative modes, for example, if a bus rider must return home in an emergency, or a car pooler must stay at work later than expected. This addresses a common objection to the use of alternative modes. GRH programs may use taxies, company vehicles or rental cars. GRH trips may be free or they may require a modest co-payment.

Mandatory TDM Measures for Large Employers

Some communities encourage large employers (typically with at least 50 to 100 employees) to mandate TDM strategies for their employees. This is a control that can be required by local governments on developers, employers, or building managers. The regulatory agencies often times provide incentives for large employers to make TDM strategies more appealing, such as reduced transit fares, preferred parking, etc.

Required Densification / Mixed Use Elements for New Developments

Requiring new developments to be dense and contain mixed-use elements will ensure that these developments are urban in character and have some services that can be reached by biking, walking or using other non-automobile methods. This also relates to the concept of "linked" or "shared" trips presented earlier. As new developments are proposed, local and regional planners have the opportunity to dictate responsible and effective land use to encourage "shared" trips and reduce impacts to the surrounding transportation system.

Transit Oriented Development (TOD)

Transit Oriented Development (TOD) refers to residential and commercial areas designed to maximize access by transit and non-motorized transportation, and with other features to encourage transit ridership. A TOD usually consists of a neighborhood with a rail or bus station, surrounded by relatively high-density development, with progressively lower-density spreading outwards. Transit Oriented Development generally requires about seven residential units per acre in residential areas and twenty-five employees per acre in commercial centers to adequately justify transit ridership. Transit ridership is also affected by factors such as employment density and clustering, demographic mix (students, seniors and lower-income people tend to be heavy transit users), transit pricing and rider subsidies, and the quality of transit service.

Alternating Directions of Travel Lanes

This method of TDM is similar to that of traffic calming in that it strives to change driver characteristics and possibly enable users of the system to try different modes of travel. It also can serve to relieve a corridor during particularly heavy times of the day.

3.3. Effectiveness of TDM Strategies

Measuring the effectiveness of TDM strategies can be done using several different methods such as cost, usage, or those listed below:

- Reduced traffic during commute times;
- Reduced or stable peak hour traffic volumes;
- Increased commuter traffic at off peak times;
- Increased use of modes other than single occupant vehicles;
- Increased use of designated routes during emergencies or special events;
- Eased use of the transportation system by tourists or others unfamiliar with the system;
- Reduced travel time during peak hours; and/or
- Fewer crashes during peak hours.

In order to provide a TDM system that will address the needs of the Bozeman area, the elements of the system must be acceptable to the general population. If elements are proposed which are not acceptable, the TDM system goals will not be reached.

3.4. TDM Conclusions

Many TDM options are available for use in the Bozeman area. Existing infrastructure is in place to use alternative modes of transportation including transit, walking and bicycling in some areas; some areas will need expansion as the community grows. There are several major employers in the Bozeman area including government, Bozeman Deaconess, Montana State University, Oracle, and the Bozeman School District who could be approached to implement work week adjustments (flex time, alternate work hours, compressed work week) that could make a noticeable difference to congestion. Designating a couple of prime parking spots for carpooling could increase its use among employees and provide positive recognition for those who carpool.

Developing strategies to manage the demand on the system generated by specific repeatable events such as MSU football games, concerts, or the Christmas Stroll would involve a one-time use of City and/or County staff time. Adjustments to these strategies could be made after seeing how they work. Coordination with the Police Department and/or Sheriff's Office, or other departments that would help implement these plans, would then be needed on an intermittent basis. Implementing these strategies in the Bozeman area could be done quickly and would be obvious to the traveling public. As such, it would be easy to demonstrate a successful TDM program and build approval for implementing additional TDM strategies.

3.5. Recommended TDM Strategies

Based upon this general TDM evaluation, the Bozeman area is poised to implement a successful TDM program. The recommended strategies are listed below. These could be implemented in any order. Since the 2007 Long Range Transportation Plan (LRTP), efforts have been made to expand and improve bicyclist access overall within the community.

- Encourage employers to provide alternate work schedules to their employees.
- Implement a guaranteed ride home program for transit users.
- Provide bike racks in the downtown area for bicycling commuters.
- Increase bicyclist access throughout the community for commuting purposes.
- Encourage walking as a commute choice.
- Encourage biking as a commute choice.
- Look at ways to increase transit ridership.
- Consider factors such as land use/zoning issues when approving non-rural projects in the outlying areas.

4.0. LIVABILITY

Livability is a national movement with local implications that are supported within the Bozeman area. Providing transportation options to improve access to housing, jobs, businesses, services and social activities are fundamental desires of most transportation system user groups. Active transportation results in a physically fit population, minimizes auto emissions, extends the life of transportation infrastructure, and delays the needs for infrastructure improvements.

Fostering livability in transportation projects and programs will result in improved quality of life; will create a more efficient and accessible transportation network; and will serve the mobility needs of communities, families, and businesses.

4.1. What is Livability?

The concept of livability, which has evolved over the years, is often used to describe a range of initiatives aimed at improving community quality of life while supporting broader sustainability goals. Livability encompasses multi-dimensional issues relative to community design, land use, environmental protection and enhancement, mobility and accessibility, public health, and economic well-being. Incorporating livability into transportation planning, programs, and projects is not a new concept. Communities, developers, advocacy groups, businesses, and neighborhood residents have been working for generations to make places more livable through transportation initiatives, with varying degrees of support from local, regional, State, and Federal agencies. These initiatives have used a range of terms to describe an overlapping set of objectives and strategies-livability, sustainability, community impact assessment, scenario planning, land use and transportation, smart growth, walkable communities, new urbanism, healthy neighborhoods, active living, transit-oriented development, complete streets, context-sensitive solutions, and many others. The key concept behind livability in transportation: transportation planning is a process that must consider broader community goals.

Livability in transportation is about integrating the quality, location, and type of transportation facilities and services available with other more comprehensive community plans and programs to help achieve broader community goals such as access to a variety of jobs, community services, affordable housing, quality schools, and safe streets. This includes:

- Addressing road safety and capacity issues through better planning, design, and construction.
- Integrating health and community design considerations into the transportation planning process to create more livable places where residents and workers have a full range of transportation choices.
- Using TDM approaches and system management and operation strategies to maximize the efficiency of transportation investments.
- Maximizing and expanding new technologies such as ITS, green infrastructure, and quiet pavements.

- Developing fast, frequent, dependable public transportation to foster economic development and accessibility to a wide range of housing choices.
- Strategically connecting the modal pieces-bikeways, pedestrian facilities, transit services, and roadways-into a truly intermodal, interconnected system.
- Enhancing the natural environment through improved storm water mitigation, enhanced air quality, and decreased greenhouse gases.

Livability provides economic benefits to communities, businesses, and consumers. In practice, livable transportation systems accommodate a range of modes (walking, bicycling, transit, and automobiles) by creating mobility choice within more balanced multimodal transportation networks. This in turn helps support more sustainable patterns of development, whether in an urban, suburban, or rural context. Livable transportation systems can provide better access to jobs, community services, affordable housing, and schools, while helping to create safe streets, reduce energy use and emissions, reduce impacts on and enhance the natural and built environment, and support more efficient land use patterns.

4.2. Livability Principles

In June 2009, U.S. Secretary of Transportation Ray LaHood, U.S. Secretary of Housing and Urban Development Shaun Donovan, and U.S. EPA Administrator Lisa P. Jackson announced the new Interagency Partnership for Sustainable Communities to improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment in communities nationwide. The Partnership for Sustainable Communities works to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution.

Because the concept of livability is place-based and context sensitive, its definition can differ depending on region and whether the community is an urban, suburban, exurban, or rural setting. However, the overall understanding of livability can be conveyed by five of the six principles established by the Sustainable Communities Partnership listed below. A livable community:

1. **Provides more transportation choices that are safe, reliable, and economical.** Develop transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health. This can be as simple as increasing walkability, to enable citizens to park their car once in a downtown area, and access their daily needs by foot from that location. Providing transportation to critical social services for rural residents who can't drive is another valuable livability option.

2. **Promotes equitable, affordable housing options.** Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation. This refers to an availability of location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities – like neighborhoods with mixed-use, mixed-income housing where a retired couple can live in the same community as a recent college graduate.
3. **Enhances economic competitiveness.** Through reliable and timely access to employment centers, educational opportunities, services and other basic needs, livable communities are those which have higher economic resilience and more economic opportunities. They provide expanded business access to markets – largely through increased accessibility and mobility choices.
4. **Supports and targets funding toward existing communities.** Instead of developing on new land – which can be a waste of funding and resources – livable communities target development toward such strategies as transit oriented, mixed-use development and land recycling – to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.
5. **Values communities and neighborhoods.** The purpose of livability is to enhance the unique characteristics of all communities by investing in healthy, safe and walkable neighborhoods.

The Partnership's sixth principle addresses the alignment of federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

4.3. Benefits of Livability

Incorporating livability approaches into transportation, land use, and housing policies can help improve public health and safety, lower infrastructure costs, reduce combined household transportation and housing costs, reduce vehicle miles traveled, and improve air and water quality, among many other benefits.

- **Transportation, Development, and Environment:** How we plan and develop communities and choose to travel affects environmental quality. Providing more travel options in compact, connected communities leads to fewer car trips, which improve air and water quality. Developing more compactly, and reusing existing properties, can preserve rural lands and protect natural resources. Coordinating land use and development decisions with transportation investments can produce clear results.

- **Transportation and Safety:** Over the past 50 years, most roadways have been designed primarily for safer automobile and truck travel, which can make them less safe for pedestrians, older adults, children, people with disabilities, or bicyclists. More than 4,600 pedestrians and bicyclists died on U.S. roads in 2009 and more than 108,000 were injured. People who do not drive or have access

to private vehicles, such as children and older adults, are disproportionately represented. Making roads safer for all users can have the added benefits of improving access jobs and services, reducing congestion, and sparking business and neighborhood investment.

- **Transportation and Health:** Communities that make it safe and easy to get around by walking, bicycling, and taking transit can generate a number of health benefits, such as reduced obesity; reduced cases of asthma/heart disease/cancer; increased safety, and improved access to schools, parks, and recreation and community facilities.
- **Transportation and Land Use:** Communities benefit when decisions about transportation and land use are made at the same time. Deciding to build houses, schools, grocery stores, employment centers, and transit stations close to one another—while providing a well-connected street network and facilities for walking or biking—provides more transportation choices and convenient access to daily activities. It also ensures community resources and services are used efficiently.
- **Transportation and Housing Costs:** Transportation is the second largest expense for most households after housing. Households living in auto-dependent locations spend 25 percent of its income on transportation costs. Housing that is located closer to employment, shopping, restaurants and other amenities can reduce household transportation costs to 9 percent of household income.
- **Transportation Management and Operations:** Transportation system management and operations (M&O) coordinates systems to make them more efficient, more convenient, more reliable, safer, and easier to use. M&O strategies make systems work better, allowing us to do more with less - less congestion, less money, less fuel, and less frustration. They support livability by increasing travel choices and efficiency—including transit, bicycling, and walking—while reducing emissions and resource use.
- **Transportation and Economic Development:** Livability and economic development are intertwined: livability draws businesses and businesses contribute to community quality of life through investments in the built environment, culture, and philanthropy. Businesses are choosing to locate in more accessible locations that combine transportation and housing choices, good schools, gathering places, and natural amenities. Targeted transportation investments can improve access to jobs, education, shopping, and goods movement, while providing construction and operations jobs.
- **Transportation and Rural Livability:** Livability in rural areas focuses on the towns, villages, working lands and natural resources that surround and connect them. Rural communities vary widely based on location, geography, economic and resource base, and other factors. "Rural" can describe farming, destination, gateway, resource-based, recreational, or other types of communities. Transportation investments that support rural livability also vary depending on location and context. For rural areas between towns

or lands on the urban fringe, livability can mean safer highways and intersections, context-sensitive roadway design, multi-purpose trails, or rural on-demand transit and carpool information linked to smartphones. In small towns and villages, livability can mean a revitalized Main Street, sidewalks and improved crossings, a gateway entry, senior housing in walking distance to a redeveloped shopping district, or new neighborhoods built on the town's existing walkable street network.

- **Freight and Livability:** Getting goods to people and businesses is an essential part of building stronger regional economies, increasing community quality of life, and maintaining the nation's role in a global economy. While freight movement can impact livability and community quality of life, careful planning can help balance freight and livability needs. Communities can be aesthetically pleasing, safe, and walkable, while still providing efficient access for large trucks, rail lines, and other modes of transportation. The HUD-DOT-EPA livability principles call for enhancing economic competitiveness, through reliable and timely access to jobs and services, and expanded business access to markets, as well as for supporting existing communities and valuing communities and neighborhoods.

The FHWA has produced a series of fact sheets on each of the topics above which provide more detailed information and examples.

4.4. Livability and the TMP

The TMP should reflect the future transportation needs of the Bozeman area and include recommended actions, programs and projects to improve, enhance and better manage and operate the area's transportation systems, promote alternative modes, accommodate bicyclists and pedestrians, consider other non-motorized modes of transportation, and provide freight mobility. In general, recommendations in the TMP should also adhere to the livability principles established by the US DOT, HUD and EPA which are aimed at improving access to affordable housing, providing more transportation options, and lower transportation costs. By keeping these considerations in mind, transportation improvement programs and projects will not only accommodate existing travel, make the current transportation system more efficient, meet growing travel requirements and improve mobility, but also be a catalyst for enhancing the overall livability of the Bozeman area.

Livability is about linking the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safe streets. This includes addressing safety and capacity issues on all roads through better planning and design, making judicious decisions about improvement projects, and expanding the use of new technologies.

The TMP continues local efforts to make the transportation network operate as efficiently and effectively as possible and promote a balanced transportation system with alternatives to the private vehicle. The analyses conducted for the TMP show that some components of the system operate poorly and congestion occurs daily and reaches severe conditions at some locations. However, it is important to preserve and maintain essential infrastructure and services, while making the system operate as efficiently as possible. It is also equally

critical to enhance the mobility of people and goods by increasing mode choice, access and convenience, and strategically expanding transportation capacity. Although the highway system dominates movement, non-highway components are equally important and provide alternatives for other system users.

BOZEMANTMP
TRANSPORTATION MASTER PLAN

Traffic Operations Standards and Best Practices

Technical Memorandum

January 23, 2017

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ABBREVIATIONS/ACRONYMS

ADT	Average Daily Trips
DPW	Department of Public Works
FDOT	Florida Department of Transportation
LOS	Level of service
QOS	Quality of Service
TDM	Transportation Demand Management
TSM	Transportation System Management
v/c	Volume to capacity ratio
V/S	Volume to service ratio
VMT	Vehicle miles traveled

Traffic Performance Measures

1.0. INTRODUCTION

The City of Bozeman's current intersection standards for development are based on the intersection level of service (LOS) during the peak hours. The *Bozeman Code of Ordinance*[1] states:

4. *Level of service standards.* All arterial and collector streets and intersections with arterial and collector streets shall operate at a minimum level of service "C" unless specifically exempted by the subsection. [LOS] values shall be determined by using the methods defined by the most recent edition of the Highway Capacity Manual. A development shall be approved if the LOS requirement are met in the design year, which shall be a minimum of 15 years following the development application review or construction of mitigation measures if mitigation measures are required to maintain LOS. Intersections shall have a minimum acceptable LOS of "C" for the intersection as a whole.

    a. Exception: If an intersection within the area required to be studied by section 28.41.060.A.12 does not meet LOS "C" and the intersection has been fully constructed to its maximum lane and turning movement capacity, then a LOS of less than "C" is acceptable.

    b. Exception: The review authority may accept an LOS of less than "C" at a specific intersection if:

        (1) A variance to allow a lesser LOS was approved not more than two years prior to the date an application for development being reviewed is determined to be adequate for review;

        (2) The request was made in writing with the application; and

        (3) The circumstances are in the professional judgment of the review authority substantially the same as when the variance was granted.

This standard, however, may be unreasonable for some intersections for a variety of reasons. As an example, the intersection of Main Street and North 7th Avenue is constrained by the available right-of-way at the intersection. If the intersection LOS was to become sub-standard, few options are available to improve the intersection. As such, context based LOS standards may be required for the City of Bozeman. This study seeks to identify context based traffic performance standards that allow flexibility.

Context based traffic performance standards aim to consider more than just one aspect—vehicle delay—of an intersection. These aspects include, but are not limited to, safety, volume, duration of peak hours, scale of importance, and prioritization or functional class of the intersection and its component roadways. This study presents a review of the best practices on the subject of traffic performance measures.

2.0. STATE OF PRACTICE REVIEW

The following review, while not exhaustive, presents the state of the practice for setting traffic performance standards. Traffic performance standards for many municipalities were found within their respective development concurrency plans. Detailed discussion for each source is presented in the following subsections.

2.1. PIERCE COUNTY, WASHINGTON

Pierce County, Washington extends between Tacoma and Mount Rainer National Park. The Department of Public Works Traffic Section published the *Transportation Concurrency Management System* guide in 2015[2]. Within the guide, they recommend the use of a volume over service level (V/S) for measuring the performance of roadways. The service level for a roadway is similar to the capacity measure but is based on a set rubric for road size. **Table 2.1** reproduces the arterial service thresholds published in the guide.

Table 2.1: Arterial Service Thresholds

	Service Threshold (S)		
	Travel Lanes (Both Directions)	Without Turn Channelization	With Turn Channelization
Urban	2	14,800	18,700
	3	20,800	28,200
	4	29,700	37,600
	6	45,000	56,300
Rural	2	13,700	17,300
	3	27,400	34,800

The volume portion of the V/S ratio is determined from the average annual daily traffic on a given roadway. Projected V/S ratios are determined through the use of travel demand models. The growth between the existing and projected year models is applied to the existing traffic counts. The guide states, "This procedure is intended to minimize the impact of individual link based forecasting errors that are inevitable in almost all travel demand models."

This method can be applied to entire roadways by taking the average V/S of all the component links weighted based on the length of the link. The resulting V/S ratios are then compared to the service standards to determine whether a particular segment is above the threshold. The standard is set at a daily V/S of 1.05.

Mitigation of service threshold deficiencies require financial commitment to address the issues within six years. The guide defines "implementation within six years" as "that a contract for full construction of the roadway capacity improvements must have been executed by the County within six years of the time that the concurrency violation occurred." Six mitigation strategies are outlined in the guide: 1) increase arterial capacity, 2) prohibit/phase development activities, 3) revise service standards, 4) revise service thresholds, 5) ultimate capacity, and 6) other strategies. Methods 1) and 2) are self-explanatory, the remaining four options are further discussed in the following paragraphs.

Revision of service standards would amount to allowing a higher V/S for identified segments. It is also possible to exempt certain roadways from concurrency. This, however, may be unpopular with the public as it could greatly reduce mobility on these facilities. Given that traffic volumes vary daily, weekly, and seasonally, it may be reasonable to refine the current Service Standard methodology.

Revision of service thresholds could be pursued, but would likely involve using new guidelines and/or professional judgment to modify one or more data inputs that go into the calculation of the thresholds. The current thresholds are based on information from the late 1990's. The Guide further states, "Any proposal to revise the thresholds should be based on sound traffic operational analysis and/or refinement of existing methodologies. It should also reflect the nature or road and/or traffic characteristics in the County."

Ultimate capacity could be used in situations where higher density development and a focus on multimodal transportation is desired. Ultimate capacity scenarios may also occur when the county council determines that excessive expenditure of public funds is not warranted for the purpose of making further improvements on certain arterials. Feasible alternatives, however, must be provided as a means to mitigate the congestion on the designated corridor.

Other strategies is a blanket category for transportation demand management (TDM) and transportation system management (TSM) options. While TDM and TSM improvements are generally worth pursuing, it would be very difficult to prove that they would reduce traffic enough to bring any deficient concurrency segments into compliance.

2.2. Boulder, Colorado

The City of Boulder, Colorado lists transportation service standards in their Design and Construction Standards[3]. Chapter 2 of the *Design and Construction Standards* relates to transportation design. The transportation service standards require a discussion and analysis assessing

the impacts of development on the existing and projected transportation system within the study area with respect to the following traffic impact and mitigation objectives:

1. **Transportation Master Plan Objectives**: TMP service standards' objectives include the following:
    a. No long-term growth in auto traffic over current levels described as a 0 percent increase in vehicle miles traveled.
    b. Reduction in single-occupant vehicle travel to 25 percent of total trips.
    c. Continuous reduction in mobile source emission of air pollutants, and no more than 20 percent of roadways congested at LOS F.
2. **Level of Service Design Guide**: LOS standards objectives include:
    a. Minimum LOS D design guide for peak hour conditions for all movements. Project impacts that maintain LOS D or better for all intersections and street segments may not be required to provide LOS-related traffic mitigation improvements.
    b. LOS E and lower peak hour conditions require the implementation of one or more transportation management strategies consistent with the goals and objective of the TMP. A transportation management strategy plan required to address and mitigate these conditions may include travel demand management, land use intensity reduction, site design, layout and access modifications, parking reduction measures, or transportation infrastructure improvements.

2.3. San Diego County, California

Transportation and traffic guidelines for San Diego County, California are given in the *Guidelines for Determining Significance*[4]. This document states, "New development shall provide needed roadway expansion and improvements on-site to meet the demand created by the development, and to maintain a LOS C on circulation element roads during peak traffic hours. New development shall provide off-site improvements designed to contribute to the overall achievement of LOS D on circulation element roads." Simply stated, roadways and intersections within and adjacent to the development must reach at least LOS C. Roadways and intersection that are impacted by the development must operate at LOS D or better.

The Department of Public Works presents the LOS standards for roadways in their Public Roads Standards[5]. The standards presented are based on the average daily vehicle trips on a given road. These standards are reproduced in **Table 2.2**.

The Guidelines list eight standard mitigation options if a corridor does not meet LOS requirements:

1) Traffic signal improvements
2) Physical road improvements
3) Street re-striping and parking restrictions
4) Fair share contributions

5) TDM – implementation of these measures will require monitoring on an on-going basis
6) Traffic safety/hazard mitigation for pedestrians or bicyclists
7) Alternative transportation
8) Project phasing

If a proposed project results in a significant traffic impact, mitigation for the traffic impact must be proposed. If mitigation is infeasible or impractical, the technical, economic, and physical reasons for the infeasibility must be detailed to support a statement of overriding considerations.

Table 2.2: Average Daily Vehicle Trips

Mobility Element Roads			Levels of Service				
Road Classification		# of Travel Lanes	A	B	C	D	E
Expressway		6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial		6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	w/ Raised Median	4	<14,800	<24,700	<29,600	<33,400	<37,000
	w/ intermittent turn lanes	4	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard	w/ raised median	4	<18,000	<21,000	<24,000	<27,000	<30,000
	w/ intermittent turn lanes	4	<16,800	<19,600	<22,500	<25,000	<28,000
Community Collector	w/ Raised Median	2	<10,000	<11,700	<13,400	<15,000	<19,000
	w/ Continuous left turn lane	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ intermittent turn lane	2	<3,000	<6,000	<9,500	<13,500	<19,00
	w/ passing lane	2	<3,000	<6,000	<9,500	<13,500	<19,000
	no median	2	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector	w/ raised median	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ continuous left turn lane	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ intermittent turn lane	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ passing lane	2	<3,000	<6,000	<9,500	<13,500	<19,000
	no median	2	<1,900	<4,100	<7,100	<10,900	<16,200
	w/ reduced shoulder	2	<5,800	<6,800	<7,800	<8,700	<9,700
Minor Collector	w/ raised median	2	<3,000	<6,000	<7,000	<8,000	<9,000
	w/ intermittent turn lane	2	<3,000	<6,000	<7,000	<8,000	<9,000
	no median	2	<3,000	<6,000	<7,000	<8,000	<9,000
Non-mobility Element Roads			**Levels of Service**				
Residential Collector		2	-	-	<4,500	-	-
Rural Residential Collector		2	-	-	<4,500	-	-
Residential Road		2	-	-	<1,500	-	-
Rural Residential Road		2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road		2	-	-	<200	-	-

2.4. Spokane, Washington

The City of Spokane Levels of Service Standards/Concurrency Management System is outlined in a report published in 2000[6]. The report proposed a LOS program that establishes different standards for different areas of the city. Much of the proposed system is meant to be used as a tool to direct or control development. To be effective in this goal, LOS standards must reflect the land use strategy. For example, areas where development is desired, the LOS standards can be relaxed.

Three basic LOS systems were suggested and modeled. The first is simply a flat LOS of D or better. The second system defines LOS targets based on land use and the corridors connecting the different areas of the city. A LOS of C would be required for areas and routes with no mixed-use centers or corridors. LOS D would be allowed on major routes that connect residential areas to areas with mixed-use or the central business district. A LOS E would be allowed in areas and on segments in the central business district.

The third standard would be region based. The central business district would be allowed to operate at LOS E. The next region would be adjacent to the central business district would be LOS D. Areas on the edge of town would allow an LOS C. The third method would not take land use into account.

Each of the above methodologies were modeled and compared to one another. It was determined that the cost to mitigate the deficient roadways was highest with the flat LOS D standard and less expensive under the other two options. The second and third option resulted in roughly equal costs.

Ultimately, Spokane utilizes a combination of the above approaches. According to the City of Spokane's *Administrative Policy and Procedure*, intersection LOS standards vary with intersection location[7]. For signalized intersections in the downtown and central business districts, LOS of F not to exceed 90 seconds of delay is acceptable at arterial intersections. Areas within Types 1, 2, and 4 areas—retail centers and corridors—may not exceed LOS F with greater than 85 seconds of delay. For all other intersection on arterial roadways, LOS of E or better is required; LOS of D or better is required for all collectors.

Unsignalized intersections are to have a LOS of E or better according to the Policies. Individual approach movements are analyzed at all unsignalized intersections, including two-way stop-controlled and all-way stop-controlled intersections. Lower LOS may be allowed by the department based on major and minor movement queue length, delay, and volume to capacity ratio.

Developments causing LOS to drop below the relevant standard are given five mitigations options:

1) Mitigate impacts such that the LOS of the transportation facility meets or exceeds the relevant LOS standard;
2) Do not proceed with development or modify or phase the development proposal,

3) Delay the development until a programmed project is included in the Six-Year Comprehensive Street Program which adds sufficient capacity to the impacted transportation facility;
4) Participate in a voluntary agreement with the City; or
5) Pay an appropriate transportation impact fee.

2.5. Wisconsin Department of Transportation

The Wisconsin Department of Transportation published LOS recommendations in their *Traffic Impact Analysis Guidelines*[8]. These guidelines recommended that roadway and/or intersection improvements may be required under the following conditions:

1. If specific movements on the roadway segment and/or roadway intersection are expected to operate at LOS C or better and have a volume to capacity (v/c) ratio less than 1.0 in the horizon year(s) without the development but operate at LOS D or worse with a v/c ratio greater or equal to 1.0 with the development. In this case, improvements shall be proposed to bring the LOS from D or worse to LOS C and a v/c ratio less than 1.0.
2. If specific movement on the roadway segment and/or roadway intersection are expected to operate below LOS C and/or above a v/c ratio of 1.0 in the horizon year(s) without development, but operate at an even lower LOS with the development. In this case, improvements shall be proposed to maintain the amount of delay (in seconds per vehicle) expected to occur without the development using Highway Capacity Manual methodology.

The guidelines, however, do allow the regional traffic engineer to determine locations and situation that LOS D may be acceptable. With respect to roundabouts, the regional engineer needs to be consulted when a roundabout is operating at LOS C or lower. Furthermore, if an approach or lane is operating with LOS D or lower, the regional engineer needs to determine if that LOS is acceptable. The guide further states that roundabout capacity analysis should be performed using the most current version of the Highway Capacity Manual.

2.6. Vancouver, Washington

The City of Vancouver, Washington has a concurrency program that consists of three basic elements; 1) level of service standards that are affordable and consistent with the City's land use plan, 2) system monitoring and management to maintain adopted levels of service, and 3) development impact review to determine whether proposed development will cause levels of service to decline below adopted standards[9]. The city measures LOS on arterial corridors based on the free-flow speed of traffic. Additionally, if a corridor is fully built out, or as the manual states, "constructed to ultimate capacity", mitigation efforts turn to safety, access management and circulation, and transportation demand management. Roadways that are constructed to ultimate capacity are defined as those that have been built to full urban standards with sidewalks, bike lanes, travel lanes appropriate to its designation, intersection capacity consistent with the roadway cross section, and state of the art traffic control.

Each of the facilities within the arterial street network is assigned a target average peak hour travel speed. Some facilities are broken into sections with different target speeds. According to the *Vancouver Comprehensive Plan*, the target average peak hour travel speeds range from 10 to 15 miles per hour[10].

System monitoring and management is conducted at least annually, according to the concurrency program standards. Both speeds and traffic volumes are measured. Growth from expected development is taken into account to preempt possible level of service issues that may be caused by growth and development. The City groups its major corridors into four categories.

- **Category 1**: Transportation concurrency corridors are presumed to operate within acceptable LOSs between corridor LOS measurements and are not specifically evaluated with each development application.
- **Category 2**: Transportation concurrency corridors are presumed to operate within acceptable LOSs between corridor LOS measurements where the near-future LOS is over 15 percent above the adopted LOS standard for the corridor.
- **Category 3**: Transportation concurrency corridors operating at close to the adopted LOS will likely require additional analysis either by the Director or by the development applicant.
- **Category 4**: Those corridors designated by City Council as built to ultimate capacity.

Mitigation for congestion is required for any developments. Developments impacting Category 4 corridors are deemed to satisfy transportation concurrency where the proposed development complies with the corridor management plan and demonstrates consistency with the corridor's person trip capacity.

2.7. Florida Department of Transportation

The Florida Department of Transportation (FDOT) published the 2009 *Quality/Level of Service Handbook* to define their methodology for approaching system operations[11]. The handbook seeks to utilize both quantitative and qualitative measured to define transportation system operations. Quantitative measures are those that directly measure an aspect of the transportation system, for example, LOS and vehicle delay. Quantitative measures are meant to gauge traveler-based perceptions of the operations of the facility. The handbook presents the concept of quality of service (QOS) as a user's perception of how well a transportation service or facility operates. LOS, as defined by the handbook, is the qualitative stratification of the QOS.

The handbook recommends using a holistic approach to QOS and LOS for a given system by simultaneously measuring for auto, pedestrian, bike, and transit modes. However, simply combining the resultant LOS for each mode into a single score is discouraged because of the interrelated nature of the component LOS scores. Four major cautions are cited in the handbook:

1) No professionally accepted or scientifically valid technique exists for combining the LOS for the various modes.

2) Simply weighting each of the modes by the number of users would, in most cased, result in using the LOS for the automobile mode.
3) The functional classification/purpose of the facility may favor one mode over the other.
4) The travel patterns for each mode are generally distinct.

The handbook recognizes that the Highway Capacity Manual is the foremost authority on automobile LOS. For bicycle and pedestrian LOS, a score is determined based on multiple aspects of the road/sidewalk environment. The score is then used to determine a LOS. Transit LOS is based on the headway between busses. Details for the determination of LOS using the methodologies presented in the handbook are beyond the scope of this document. However, FDOT does distribute software to determine LOS for all modes.

The handbook presents FDOT's standards for LOS as D or better in urban areas and C in rural areas for both roadway segments and signalized intersections. The handbook warns against basing intersection LOS on only the through movement as it is possible to get an acceptable LOS if other movements are allowed to have a decreased LOS. Non-automobile modes are not given an LOS target, rather local goals and facility context need to be assessed.

2.8. Emeryville, California

The Emeryville, California *General Plan* gives the city's policies on transportation LOS[12]. Emeryville has opted to focus on multi-modal transportation. As such, they have chosen to eschew the traditional LOS model in favor of the QOS model presented by FDOT. Their justification for this approach is that it allows for greater development flexibility to take advantage of land use density and diversity which have been shown to increase multi-modal usage of the transportation network.

The plan presents policies for the overall circulation system. Included in these policies is the following statement, "A [QOS] standard that seeks to optimize travel by all transportation modes shall be developed and used to measure transportation performance. The City does not recognize [LOS] as a valid measure of overall transportation operations, and sets no maximum or minimum acceptable LOS levels, with the exception of streets that are part of the regional Congestion Management Agency network. LOS shall not be used to measure transportation performance in environmental review documents for any other purpose unless it is mandated by another agency over which the City has no jurisdiction, and then it shall only be used for the purposes mandated by that agency." Additionally, a policy stating that traffic impact fees can be used for bicycle, pedestrian, and transit improvements is included, "so that development pays its fair share toward a circulation system that optimizes travel by all modes." A street system policy requiring all private developments and public infrastructure projects to provide adequate right-of-way for all transportation modes is also listed.

2.9. Arlington, Texas

The City of Arlington, Texas *Thoroughfare Development Plan* lists the city's LOS standards as C or D except in specific areas where slower moving traffic will help to create a vibrant, safe, and pedestrian-friendly environment[13]. The city does not use intersection LOS, rather, corridor LOS is used based on v/c ratios. The following issues related to the adjustment of the roadway system are given:

1) A roadway that is projected to experience traffic volumes greater than its capacity may need to be adjusted to allow for increased capacity.
2) A roadway that is planned for increased capacity improvement without the backing of increased traffic volume projections should be adjusted to match the demand.
3) A roadway may require increased capacity, but expansion may be limited to site-specific constraints such as right-of-way. In this instance, improvements on parallel facilities and throughout the entire network should be examined to mitigate demand.
4) Increased use of alternated modes of transportation, such as transit or bicycling, could reduce vehicular demand on thoroughfare roadways over time.

The City of Arlington emphasizes flexible design for major roads. As stated in the *Thoroughfare Development Plan*, "Flexible design allows for transportation planners and roadway designers to create unique characteristics specific to individual corridors."

2.10. Snohomish County, Washington

Snohomish County, Washington uses an ultimate capacity standard for arterials that are built to their final size[14]. The ultimate capacity standard is applied to a roadway "when the county council determines that excessive expenditure of public funds is not warranted for the purpose of making further improvements on certain arterial units, the county council may designate, by motion, following a public hearing such arterial unit as being at ultimate capacity." After a road has been designated as having ultimate capacity, TSM and TDM actions are used to improve or maintain the QOS on the roadway. The objectives of the ultimate capacity methodology is given in **Table 2.3**.

Table 2.3: Ultimate Capacity Objectives

GMA Objective in RCW 36.70A.020	How the use of Ultimate Capacity relates to the GMA objective
Urban growth. Encourage development in urban areas where adequate public facilities and services exist or can be provided in an efficient manner.	Designation of certain arterials as ultimate capacity will enable increased density of both residential and commercial development in the surrounding (and immediate) areas served by the arterials to increase the viability of more efficient modes of transportation including transit, vanpool, and carpools
Reduce sprawl. Reduce the inappropriate conversion of undeveloped land into sprawling, low-density development.	Snohomish County's adopted GMA Comprehensive Plan identifies the areas suitable for higher density urban development. Without designations of ultimate capacity on arterials in these areas (once they have been improved to a certain level), concurrency restrictions can prevent the increased densities of development necessary to fully achieved these higher densities, forcing growth into lower density areas or even outside the urban growth area.
Transportation. Encourage efficient multimodal transportation systems that are based on regional priorities and coordinated with county and city comprehensive plans.	Efficient multi-modal systems depend upon high density residential and commercial development. Ultimate capacity is a tool to help achieve that density.
Permits. Applications for both state and local government permits should be processed in a timely and fair manner to ensure predictability.	Determination of ultimate capacity streamlines concurrency determinations for developments impacting such arterials.
Public facilities and services. Ensure that those public facilities and services necessary to support development shall be adequate to serve the development at the time the development is available for occupancy and use without decreasing current service levels below locally established minimum standards.	All developments impacting arterials designated as ultimate capacity would still be subject to concurrency, but the determination of ultimate capacity would effectively establish a lower level of service standard and shift the focus to multimodal transportation. Developments impacting ultimate capacity facilities are required to meet [TSM] requirements (e.g. access control) and either meet revised (more intensive) [TDM] requirements, or meet criteria for transit compatibility. Determinations of ultimate capacity also include commitments to additional road improvements, TSM actions, and/or TDM actions by the County. Examples might include access control, periodic signal coordination, signal upgrades, and support for corridor-level employer commute trip reduction programs.

Snohomish County establishes LOS standards based on average daily trip (ADT) thresholds. The thresholds for roadways that are not designated as ultimate capacity are generally low and only arterials with relatively low volumes will meet the standard. Conversely, roads that have been designated as ultimate capacity, the thresholds are high and are intended to be difficult, but not impossible, to exceed. **Table 2.4** presents the threshold values used by Snohomish County with respect to minimum levels of service.

Table 2.4: Transportation Level of Service Standard: Average Daily Trip Thresholds

Thresholds Measured as Number of Daily Trips (ADT)	Road Not Designated as Ultimate Capacity		Road Designated as Ultimate Capacity	
Number of Lanes	**Rural Arterial Unit**	**Urban Arterial Unit**	**Rural Arterial Unit**	**Urban Arterial Unit**
2	4,000	7,000	18,000	22,000
3	5,000	9,000	27,000	33,000
4	7,000	12,000	36,000	44,000
5	n/a	15,000	45,000	55,000
6	n/a	16,000	54,000	66,000
7	n/a	21,000	63,000	77,000

Snohomish County gives the following criteria for designating a roadway as reaching ultimate capacity

1) Initiated by a recommendation from the Public Works Director
    - Upon Completion of an engineer's report
    - Based on criterial in code and Department of Public Works (DPW) rules
2) Ultimate capacity is a County Council determination
    - By motion following a public hearing
    - When excessive expenditure of public funds would not be warranted for making further improvements
    - When arterial is designated ultimate capacity, a different LOS standard would apply, which would effectively allow much reduced travel speed.
3) Criteria for DPW recommendations and Council Designation
    - Either road is totally improved consistent with long-range plan
    - Road is partially improved but certain constraints preclude additional cost effective improvements
4) If road is only partially improved, then
    - Number of general-purpose travel lanes (excluding turn lanes) is consistent with the adopted transportation element
    - Adequate provisions are made to accommodate pedestrian and bicycle demand
    - If the source of delay is another agency's facility, then the approach to that facility is totally improved consistent with long-range plan
5) Developments impacting ultimate-capacity arterials would be required to:
    - Provide access management and circulation provisions, and either
        - Provide TDM, or

- Meet the criteria for transit compatibility

6) Designation by Council to include a commitment by the County to
   - Complete any known improvements needed to address safety issues
   - Complete an access management and circulation plan
   - TSM actions, access management improvements, and/or TDM actions for the purpose of improving efficiency, preserving roadway capacity, and improving operations

2.11. Fort Collins, Colorado

LOS standards for the City of Fort Collins, Colorado are given in their *Multimodal Transportation Level of Service Manual*[15]. Context sensitivity is stated in the Manual as, "[LOS] standards do not exist as stand-alone measures, but are part of a system of goal, objectives and standards. They are interpreted by the public and by elected decision makers in the context of current and future issues, trends, conditions, expectations, and perceptions and they require a system of measurement." Along this line of reasoning, LOS standards are presented for vehicular, pedestrian, bicycle, and transit modes, each with their respective criteria. The relevant vehicular LOS standards are presented in the following paragraphs.

The basic structure of Fort Collins' LOS standards is based on facility type and adjacent land use. LOS standards are given for both roadways (**Table 2.5**) and intersections (**Table 2.6**). Two special circumstances that may require unique treatment are identified as "Constrained Corridors" and "Backlogged Facilities." The Manual defines these two situations as:

- Constrained Corridors – These are segments of the street network which are physically constrained from further widening or major reconstruction. The constraint may be caused by the proximity of buildings or by environmental conditions (e.g., the presence of a wetland or riparian corridor).
- Backlogged Facilities – These are roadway segments which currently operate below the LOS standards in [**Table 2.5**]. These roadways are normally adjacent to developed properties and are not expected to be improved in future development.

Identification of both constrained corridors and backlogged facilities are identified on city maps. Each situation may require investment in non-motorized infrastructure to mitigate congestion and LOS issues.

Table 2.5: Roadway LOS Standards

Roadway Functional Classification	Land Use (from structure plan)			
	Commercial Corridors	Other Corridors Within:		
		Mixed Use Districts	Low Density Mixed Residential	All other Areas
Major Arterial	E	E*	D	D
Arterial	E	E*	D	D
Minor Arterial	E	E*	C	D
Collector	D	D*	C	D
Connector	n/a	C*	B	C

** Corridors within mixed use districts may fall below the LOS level indicated. In such cases, the City will provide for mitigation of congestion through alternatives to motor vehicle travel.*

Table 2.6: Intersection LOS Standards

Intersection Type	Land Use (from structure plan)			
	Commercial Corridors	Other Corridors Within:		
		Mixed Use Districts	Low Density Mixed Residential	All Other Areas
Signalized Intersections	D	E*	D	D
Stop Sign Control (arterial/local)	n/a	E*	E*	E
Stop Sign Control (collector/local)	n/a	C	C	C

** Intersections falling below LOS E will require identification of specific strategies for mitigation of congestion through alternatives to motor vehicle travel*

Street oversizing fees are collected prior to the issuance of building permits. These fees are coordinated with the City's overall transportation LOS standards and with its capital improvement planning. Proposed developments which would not meet motor vehicle LOS standards without additional investment in roadway infrastructure must be evaluated in light of the City's fee provisions. For such projects, the relationship between LOS standards and the street oversizing fee program, including the anticipated sharing of costs for roadway investments and the timing of such improvements, should be established as part of early review and should be explicitly addressed at the beginning of a development project.

2.12. Bellingham, Washington

The City of Bellingham, Washington defines its LOS standards in the *Development Guidelines & Improvement Standards*[16]. LOS standards are simply states as, "Level of service 'C' will be the peak-hour design objective for all movements, and under no circumstance will less than level of service 'D' be accepted for site- and non-site traffic including existing traffic at build out of the study area." The standards state that the current version of the Highway Capacity Manual or Transportation Research Board *Circular 212* methods be used to calculate LOS.

Bellingham uses a multimodal transportation concurrency policy[17]. The city is broken into 23 concurrency service areas. Within these areas, established concurrency measurement points are used to determine LOS on an annual basis. For pedestrian and bicycle concurrency, the degree of completeness is used rather than capacity measurements. As system of "person trip credits" is used to determine the multimodal capacity of each concurrency service area.

When a new development application is made, a determination must be made that there are enough person trips available to serve the development. If there are not enough person trips available, then the developer would be required to fund and construct bicycle, pedestrian, transit, and automobile improvements to ensure adequate person trips are available. This approach allows the City to focus on more than just peak hour traffic volumes. The concurrency policy states, "It is important to realize that, with the exception of the 'rush hour' commute, our multimodal transportation system works quite will." Changing user perception and expectations about rush hour automobile traffic congestion and their travel and mobility decisions and behavior is the goal of these policies.

2.13. Eugene, Oregon

Eugene, Oregon presents its LOS standards in the *Eugene 2035 Transportation System Plan*[18]. The LOS criteria vary depending upon where in the city the roadway is located:

1) LOS F within Eugene's Downtown Traffic Impact Analysis Exempt Area
2) LOS D elsewhere

Eugene's Downtown Traffic Impact Analysis Exempt Area is best characterized as the downtown core of Eugene. Additionally, this portion of Eugene is space constrained.

The *Transportation System Plan* further states that, "In some cases, it may not be possible or desirable to meet the designated mobility target or LOS standard. In those cases, an alternative mix of strategies such as land use, transportation demand management, safety improvements or increased use of active modes may be applied."

System-wide transportation system improvements are given for direction for a wide range of actions that reduce the need to construct new roadway capacity improvements. Examples of such actions include the following:

- Reconfigure roadway accesses to minimize traffic conflicts at intersections;
- Limit parking near signalized intersection to increase intersection capacity;
- Coordinate and operate traffic signals to improve traffic progression;
- Relocate driveways and improve local street connections to direct traffic away from overburdened intersections and intersection where side-street capacity is limited in order to optimize traffic progression on arterial and collectors;
- Improve turning-radii at intersections that are heavily used by trucks to avoid lane blockages;
- Install raised medians to reduce traffic conflicts; and
- Improve accesses so that traffic can enter or exit the highway with minimal disruptions of flow.

Even with the above actions, significant components of the roadway system are forecast to fall below acceptable LOS standards. Where management actions have failed to produce acceptable LOS, construction projects to add roadway capacity must be considered.

2.14. Pocatello, Idaho

The City of Pocatello, Idaho follows its *Traffic Impact Study Guidelines* for LOS criteria[19]. Based on intersection LOS, the criteria are based on the existing LOS without development and projected LOS with development. If the existing LOS is A, B, or C prior to development, then the minimum acceptable projected LOS with development shall be LOS C for all movements within a specific intersection. If, however, the existing LOS is D, E, or F, then the minimum acceptable projected LOS shall be equal to the LOS without development.

Mitigation requirements are jurisdiction specific. At a minimum, for each significant impact (drop in LOS) identified in the results section, the report must discuss feasible measures to avoid or reduce the impact to the system. To be considered adequate, measures should be specific and feasible. The report should also identify who is responsible for each measure. Any existing facility which does not meet criteria prior to the TIS should be identified. For developments that cause a facility to operate at an unacceptable LOS, measures should be identified for which the developer would be 100 percent responsible. If a development causes a significant impact at a facility which is directly accessed, the developer should be responsible for an equitable share. The development's equitable share is defined as its percentage of the facility's total traffic.

If a development causes a facility not directly accessed but within the study area to have significant impact or operate below the acceptable LOS, then the proposed development should pay a fair share of mitigation measures identified.

2.15. Raleigh, North Carolina

LOS standards for Raleigh, North Carolina are found in *The 2030 Comprehensive Plan for the City of Raleigh*[20]. The LOS standards are stated as Policy T 2.10: "Maintain [LOS] 'E' or better on all roadways and for overall intersection operation at all times, including peak travel times, unless maintaining this LOS would be infeasible and/or conflict with the achievement of other goals."

In addition to LOS standards, the Plan gives policies on when additional lanes can be added to a roadway. The Plan states that additional lanes should be added only after the roadway has exceeded 20 percent of its full capacity and all other alternative approaches have been considered. Furthermore, roadway improvements should increase vehicle dispersion and circulation, not just capacity. Use of bicycle, pedestrian, and transit LOS is also recommended.

2.16. College Station, Texas

LOS standards for College Station, Texas are found in their municipal code[21]. The code focuses on development related impacts to the transportation network. A standard of LOS D or better is given. If a new development will cause the LOS to degrade below a D, there are four mitigation options listed:

1) Modifying the density or intensity of land use, such as a reduction in square footage or the percentage of commercial use to result in traffic levels meeting LOS D or better
2) Phasing approval and construction of a project until additional roadway capacity becomes available;
3) Improving the access plan by dealing with features such as overall sire arrangement, the placement and design features of access points, provision of additional access points to roadway not immediately adjacent to the property, provision of alternate controls, or adjustments in the site circulation system;
4) Making off-site improvements including the construction of additional lanes, increases in storage lane capacities, or modification of signalization, to list some examples.

Mitigation is required where the development is contributing five percent or more of the total traffic at locations failing to meet LOS D or better. Adequate mitigation shall be determined by the appropriate reviewing body as to whether acceptable LOS will be met by the mitigation effort.

3.0. SUMMARY

Traffic performance measure policies are used to assist in determining when a given facility or intersection needs to be upgraded or improved. Establishing a fixed performance target can lead to forcing expensive upgrades that may have limited benefit. As such, care must be taken in determining a performance standard that is suitable for a given context.

Many of the agency policies that were reviewed focused on corridor, instead of intersection, performance measures. Travel time and v/c ratios were commonly used measures of performance. For some locations, travel time is measured for each link that makes up a given facility. For others, travel time between selected origins and destinations are used. For the municipalities that use v/c, capacity is set by policy based on facility size and functional usage. Commonly, a v/c less than 1.0 is considered acceptable.

Total volume on a given facility is used by some agencies. Some of the agencies establish threshold values for LOS (i.e. a value for LOS A, B, C, etc.), other agencies set a single threshold for passing or failing. For the agencies that use letter grades, LOS thresholds range based on facility size and function but generally LOS D and better is considered acceptable.

Free flow travel speed targets were used by a few agencies. Free flow speed target values are established by policy for roadway segments. An advantage cited for using free flow speed is the ability for the agency to measure it relatively easily.

While most agencies focused on automobile traffic, some utilize a holistic approach that accounts for multiple travel modes. When looking at multiple travel modes, the interrelated nature of the modes needs to be taken into account. Caution should be used when combining all modes of travel based on the volume of each mode. When this is done, it is often the case that the high volume of automobiles will dominate.

The concept of ultimate capacity, or establishing a point at which little to no more improvement in service can be realized through capacity improvements, is used to varying levels by some agencies. This concept allows city planners and leaders to establish a hard limit to the size and extent of certain roadways. When a facility is determined to be at ultimate capacity, funds are used for transportation demand management and transportation system management instead of capacity and infrastructure. **Table 3.1** presents a brief summary of the traffic performance metrics used by agencies reviewed in this document.

Table 3.1: Summary of Findings

Agency	Metric	Threshold	Notes
Pierce County, Washington	Volume to Service V/S ratio (similar to v/c)	V/S < 1.05	
Boulder, Colorado	Average daily trips (roadway)	LOS D or LOS E with TSM/TDM	
San Diego County, California	Average daily trips (roadway)	LOS C within development LOS D outside development	LOS thresholds vary based on size and functional class
Spokane, Washington	Intersection Delay	Delay no worse than 90 seconds in CBD Delay no worse than 85 seconds in retail areas/corridors LOS E or better on signalized arterial intersections LOS D or better on signalized collector intersections LOS E on unsignalized intersections	
Wisconsin DOT	Intersection Delay Roadway v/c	LOS C v/c < 1.0	
Vancouver, Washington	Roadway Free-flow speed	Established for each segment based on functional class and location	Measured annually along with volume
Florida DOT	Varies	Varies	Outlines a holistic approach to measuring multimodal LOS
Emeryville, California	Varies	No set targets	Utilizes the Florida DOT model No targets were set to ensure flexibility
Arlington, Texas	Roadway v/c	LOS C or D	Areas where slow speed and pedestrian traffic are allowed to have lower LOS
Snohomish County, Washington	n/a	n/a	Ultimate capacity policies that designate a facility as fully built.
Fort Collins, Colorado	Roadway v/c Intersection Delay	Varies by functional class	Have provisions for constrained and backlogged facilities
Bellingham, Washington	Roadway v/c	LOS C or D	Uses a "person trips available" method for multimodal capacity
Eugene, Oregon	Roadway v/c	LOS F in downtown, LOS D elsewhere	
Pocatello, Idaho	Intersection Delay	LOS C or better	
Raleigh, North Carolina	Intersection Delay	LOS E	If it is infeasible to build out of poor LOS, alternative mitigation options are allowed
College Station, Texas	Roadway v/c	LOS D	

Mitigation of transportation deficiencies varies between the reviewed agencies. Many agencies require developers to share the financial burden, however, the options available to the developers varies. For some agencies, increasing capacity is the last option to be considered. Investment in multi-modal transportation is preferred to expanding vehicle capacity in many locations. Some agencies have different requirements based on what portion of the city is being impacted. For example, Eugene, Oregon has designated its downtown area as a "Traffic Impact Exempt" area allowing for LOS F for vehicular modes.

Ultimate capacity designation is used by many cities. These routes, as designated by the respective city councils, are often space constrained and have been built to the extent that is reasonable. Other times, it may not be desirable to expand the corridors further due to land use, functional class, neighborhood character, etc. Again, investment in multi-modal infrastructure is needed to address the capacity needs of the areas.

4.0. RECOMMENDATIONS

A desire has been expressed to reevaluate current standards and to determine if changes are necessary to better mitigate impacts from development. The previous sections provide a discussion and comparison of what other communities have in place for development standards. While no single reviewed standard may be directly applicable to Bozeman, the review does provide some ideas for modifications to Bozeman's existing development standards.

The City of Bozeman's current development standards provide requirements for intersection performance based on LOS. The existing standards require developers to submit traffic impact studies documenting existing and projected conditions for traffic conditions adjacent to the development. This approach relies on intersection LOS to measure the impact of developments and often results in a narrowly focused view of the transportation system. Impacts from development are felt throughout the community, not just at adjacent intersections. The current standards are often unattainable due to funding or other constraints, and in some cases, may be undesirable.

Standards based on intersection LOS provide a microscopic approach to reviewing traffic operations. Intersection LOS is a simplistic approach to evaluate intersection performance in terms of vehicle delay and does not factor in alternative travel modes nor does it provide a realistic picture of the overall transportation system. Intersection LOS is often based on a single hour, or peak hours, for which the system is most congested. A more macroscopic approach to improving the transportation system, not just reducing peak hour delay at single intersections, should be taken to improve conditions for all users.

Investment in other parts of the transportation network may be more appropriate than trying to fix intersections near new development. Some areas of town require more infrastructure investment than others. For example, a residential development on the outskirts of town where current infrastructure is lacking would be more costly to the community than the same size and type of development in an area

where infrastructure is already built to current standards. Older areas of town are already built up and have constraints which limit the ability to add vehicle capacity. These areas are likely at their ultimate capacity. Undeveloped areas, however, require higher investment costs to provide new infrastructure. Other approaches to improving travel conditions, such as providing for active transportation modes and TDM strategies, should be encouraged to help reduce impacts, delay, and improve safety for all users.

Instead of requiring developers to develop traffic impact studies, it may be desirable, and simpler, to evaluate based solely on the type, location and size of the development. Ultimately, the goal is to develop the transportation network to the standards contained in the Bozeman TMP. For those roadways already built to recommended standards, no further infrastructure investment is needed. Focus can instead be put on improving accommodations for active travel modes and implementing TDM strategies. For other areas, significant costs are likely needed to improve infrastructure to meet current standards. These costs increase the further out development occurs. Standards focusing on the specifics of the development, not just on a set threshold for adjacent intersection, would allow for a holistic approach to improving the transportation system.

5.0. REFERENCES

[1] Subsection 4 of the *Bozeman Code of Ordinances*, Chapter 38 – Unified Development Code, Article 24 – Transportation Facilities and Access, Section 38.24.060. – Street Improvement Standards

[2] Pierce County. (2015). *Transportation Concurrency Management System.* Department of Public Works Traffic Section.

[3] City of Boulder. (2009). *Design and Construction Standards*, https://bouldercolorado.gov/plan-develop/design-construction-standards

[4] County of San Diego Lane Use and Environment Group. (2011). *Guidlines for Determining Significance and Report Format and Content Requirements.*

[5] County of San Diego Department of Public Works. (2012). *Public Road Standards.*

[6] The TRANSPO Group. (2000). *City of Spokane Levels of Service Standards/Concurrency Management System.* Spokane

[7] City of Spokane. (2008, December 29). Administrative Policy and Procedure. *Transportation Concurrency Level of Service Standards*. Spokane, Washington.

[8] Wisconsin Department of Transportation. (2014). *Traffic Impact Analysis Guidlines.*

[9] City of Vancouver. (2012). *Transportation Concurrenty Management*.

[10] City of Vancouver. (2011). *Comprehensive Plan 2011-2030.*

[11] Florida Department of Transportation. (2013). *Quality/Level of Service Handbook.*

[12] City of Emeryville. (2015). *Emeryville General Plan.*

[13] City of Arlington. (2011). *Thoroghfare Developement Plan*.

[14] Snohomish County. (n.d.). *Ultimate Capacity*. Retrieved November 3, 2016, from http://snohomishcountywa.gov/964/Ultimate-Capacity

[15] City of Fort Collins. (2002). *Multimodal Transportation Level of Service Manual.* Transportation Master Plan.

[16] City of Bellingham. (2016). *Development Guidlines & Improvement Standards.*

[17] City of Bellingham. (2016). *Transportation Concurrency FAQ*.

[18] City of Eugene. (2016). *Eugene 2035 Transporation System Plan*.

[19] Bannock Planning Organization. (2006). *Traffic Impact Study Guidlines.*

[20] City of Raleigh. (2015). *The 2030 Comprehensive Plan for the the City of Raleigh*.

[21] City of College Station. (2016, November 11). *City of College Station Municipal Code*. Retrieved from https://www.municode.com/library/tx/college_station/codes/code_of_ordinances?nodeId=CH12UNDEOR_ART7GEDEST_S12-7.13TRIMAN

Appendix K
Corridor Striping Plans

As part of the *Bozeman TMP*, conceptual corridor striping plans were developed for the major street network. The major street network consists of a hierarchy of roadways classified as principal arterials, minor arterials, and collectors. These functional classifications are defined according to certain parameters such as geometric configurations, traffic volumes, location, speed, and adjacent land use. The network is intended to provide a vision to help define how the transportation network will develop over the foreseeable future. The figure on the following page shows the existing and future visionary major street network for the TMP study area.

Striping plans were developed for existing roadways where expansion or changes are foreseen in the future as well as for future desired roadway connections. Striping plans were not developed for those corridors that are currently under development, those that have already been constructed to their final configuration, or those that have constraints which would not allow further expansion.

There are numerous roadway typical sections defined in the *Greater Bozeman Area Transportation Plan (2007 Update)* depending on the functional classification of the facility. This visionary *Corridor Striping Plan* provides high-level recommendations for roadway configurations on a corridor-by-corridor basis for future full build-out conditions. The configurations were identified based on the defined typical sections with the broad assumption that most of the major street network would be developed to urban roadway standards with characteristics such as curb and gutter, bicycle lanes and sidewalks, at some point in the future.

There will need to be flexibility when developing this visionary network. The striping plans are considered conceptual in nature. Corridor-specific considerations will need to be made during project development. In particular, individual intersections will need to be evaluated for appropriate configurations and traffic control based on traffic analysis. The striping plans show standardized intersections and may not be appropriate for all locations. Consideration for turn bays, changes to traffic control, or roundabouts should occur on a case-by-case basis.

Included in the striping plans are approximations for anticipated right-of-way needs. Right-of-way requirements are defined based on functional classification. Property boundaries based on current Montana Cadastral information is included for reference. The Cadastral information is approximate and may not be spatially accurate. Further investigation into existing property boundaries is necessary during project development.

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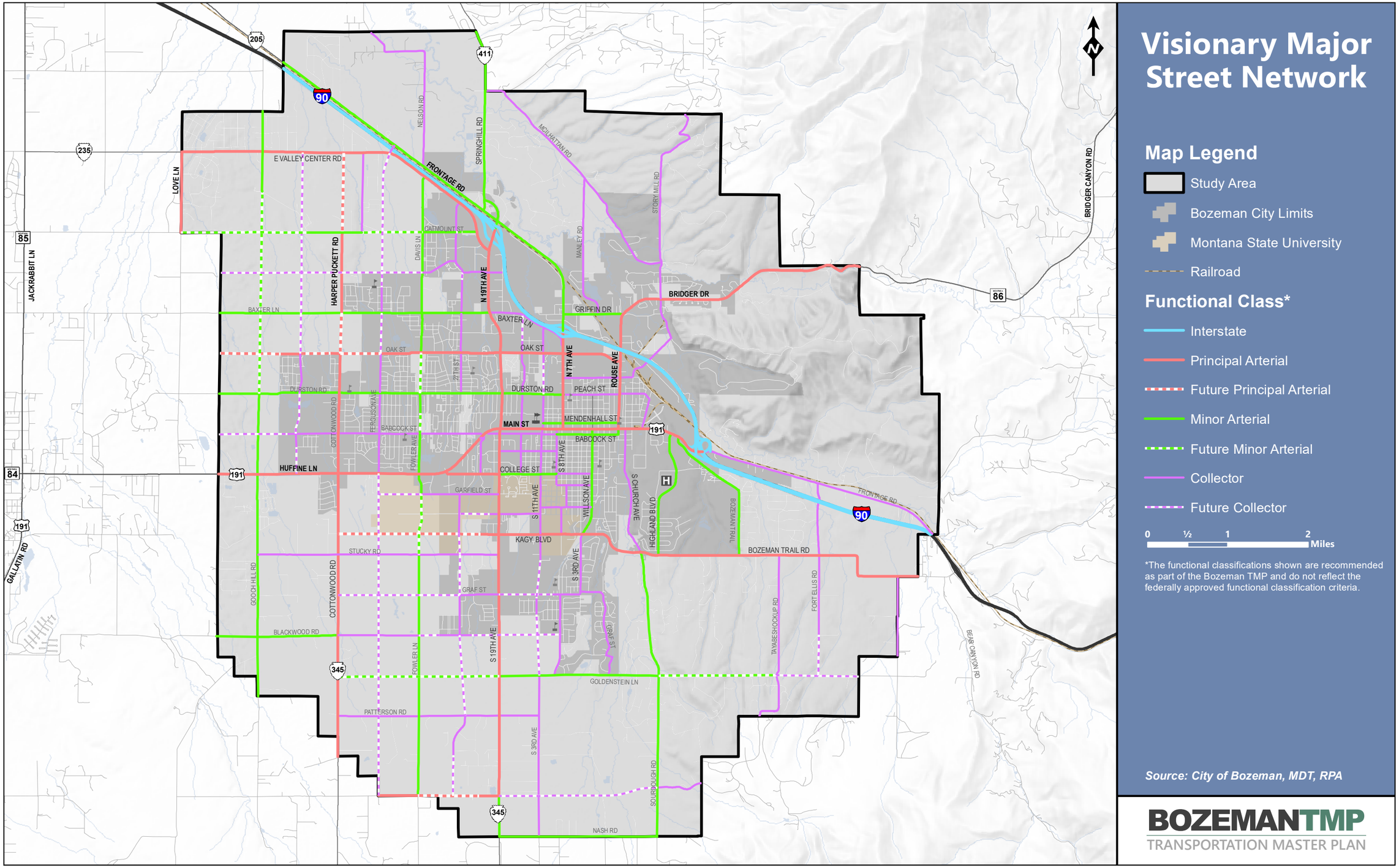
Visionary Major Street Network
Map Legend
Study Area
Bozeman City Limits
Montana State University
Railroad
Functional Class*
Interstate
Principal Arterial
Future Principal Arterial
Minor Arterial
Future Minor Arterial
Collector
Future Collector
0 ½ 1 2 Miles
*The functional classifications shown are recommended as part of the Bozeman TMP and do not reflect the federally approved functional classification criteria.
Source: City of Bozeman, MDT, RPA
BOZEMANTMP
TRANSPORTATION MASTER PLAN
N
205
411
90
235
85
84
191
345
86
E VALLEY CENTER RD
FRONTAGE RD
LOVE LN
JACKRABBIT LN
HARPER PUCKETT RD
NELSON RD
SPRINGHILL RD
MCILHATTAN RD
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BRIDGER CANYON RD
OATMOUNT ST
DAVIS LN
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BAXTER LN
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FERGUSON AVE
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MAIN ST
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S 8TH AVE
GARFIELD ST
S 11TH AVE
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S CHURCH AVE
HIGHLAND BLVD
BOZEMAN TRAIL
KAGY BLVD
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GOOCH HILL RD
GRAF ST
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FORT ELLIS RD
BLACKWOOD RD
S 19TH AVE
FOWLER LN
BEAR CANYON RD
GOLDENSTEIN LN
PATTERSON RD
SOURDOUGH RD
NASH RD

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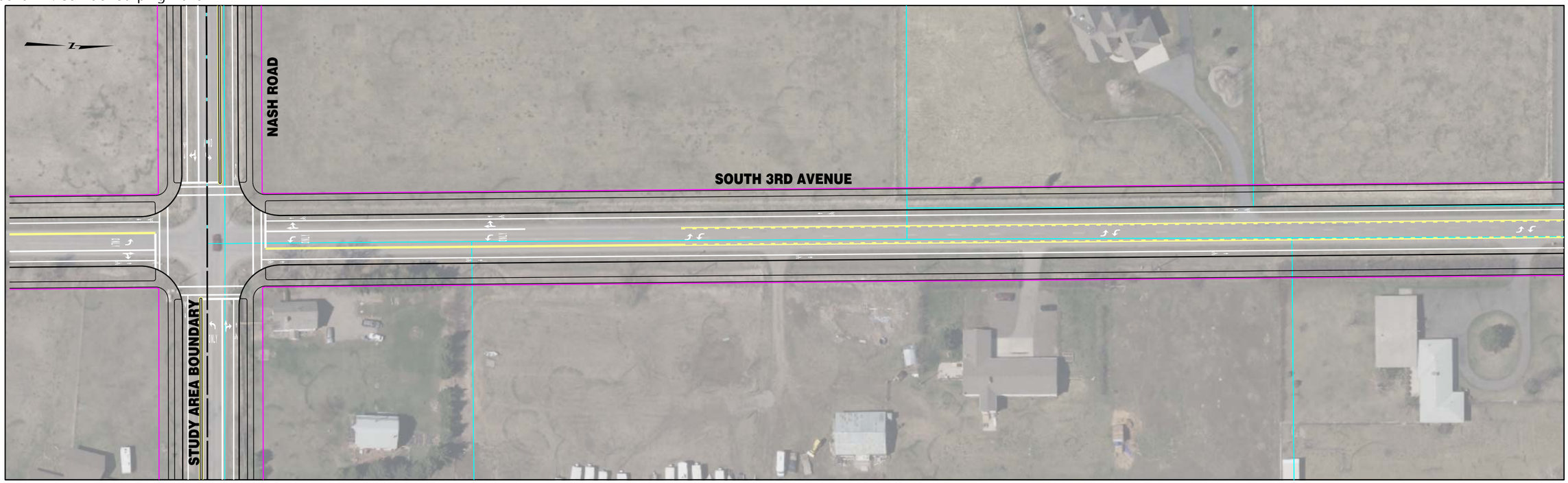

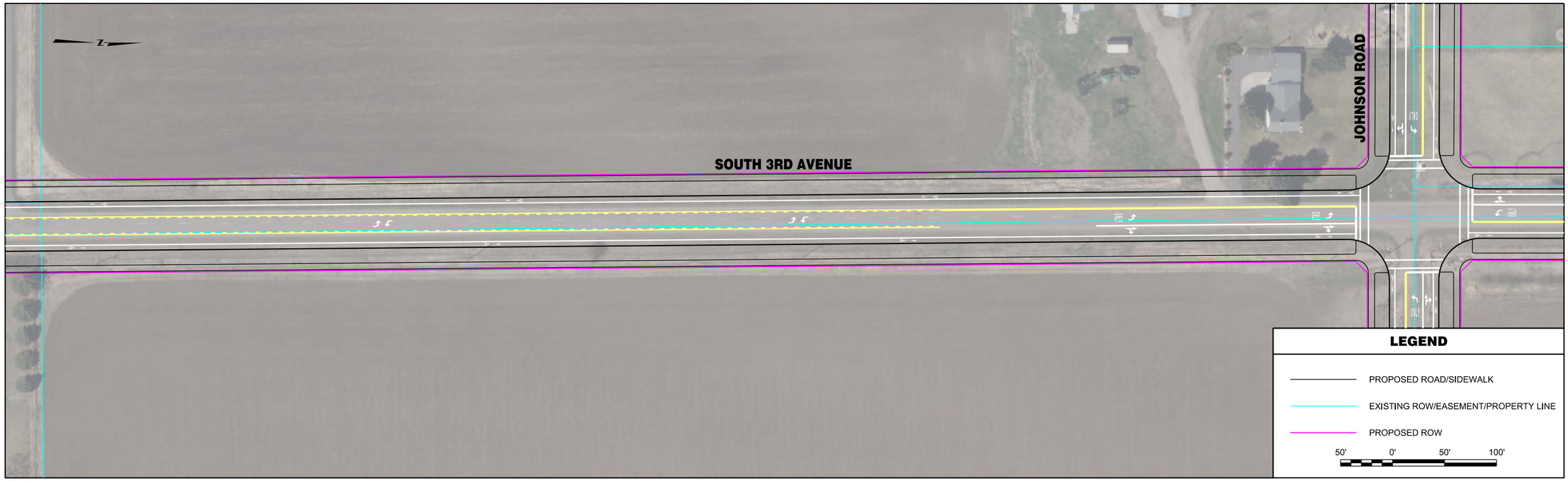

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\LL-S3rdAve\15602RDPLNZLL1.dwg 1/26/2017 2:36:35 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOUTH 3RD AVENUE STRIPING PLAN**

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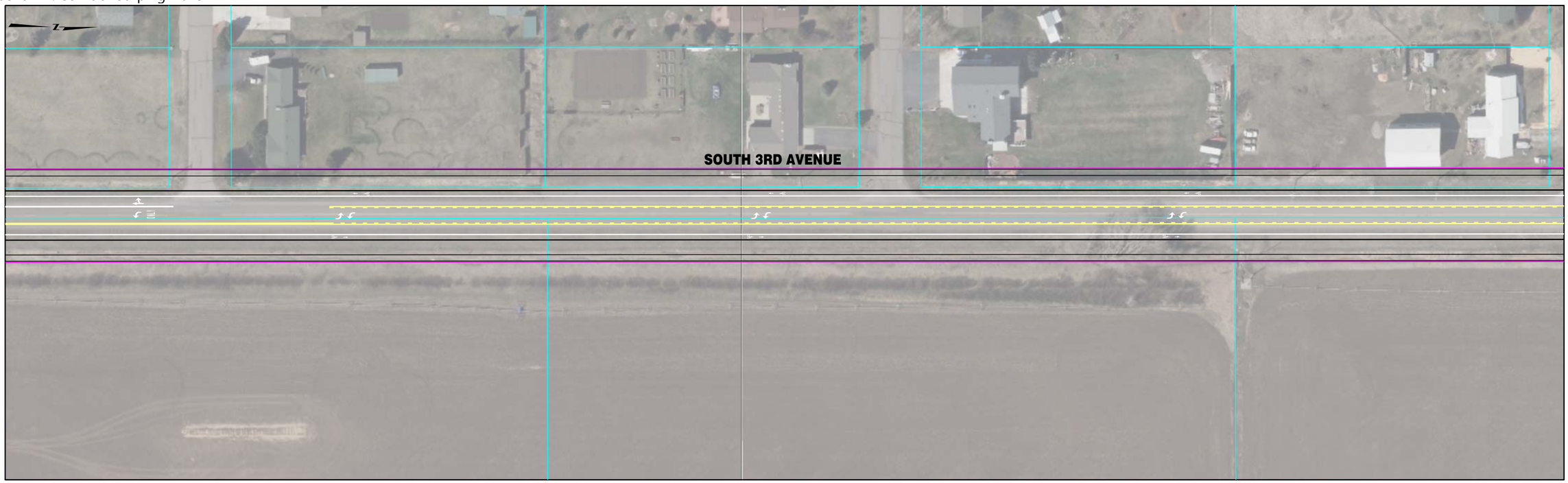

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\LL-S3rdAve\15602RDPLNZLL1.dwg 1/26/2017 2:36:43 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOUTH 3RD AVENUE STRIPING PLAN**	SHEET Page 4 **2**

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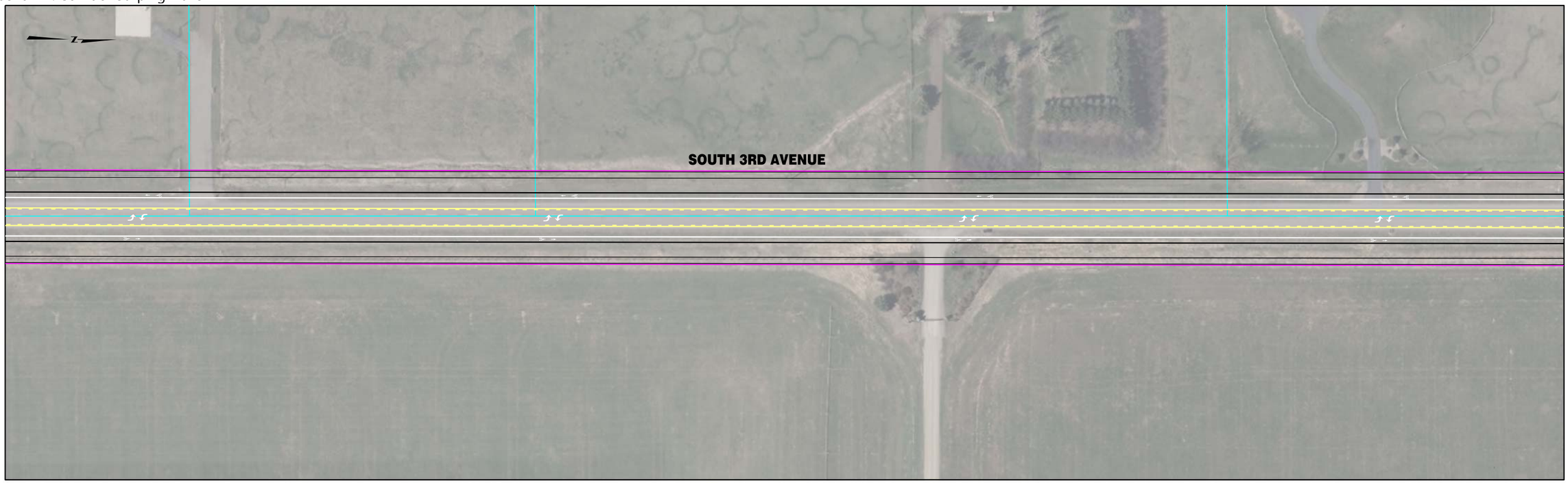
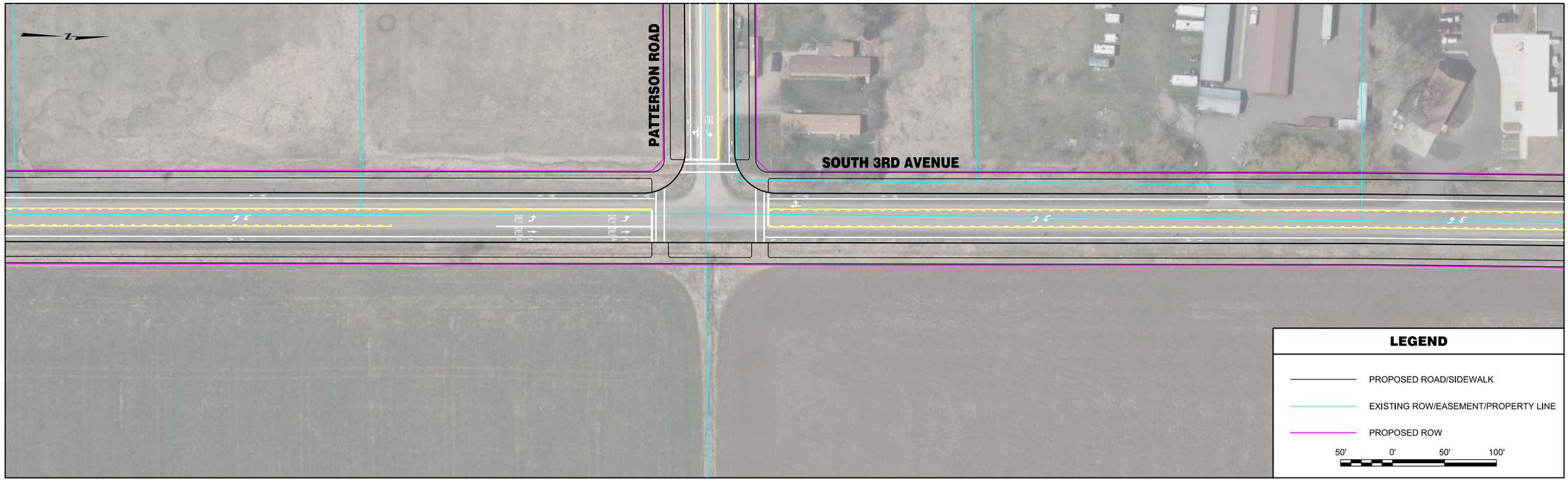
Appendix K: Corridor Striping Plans





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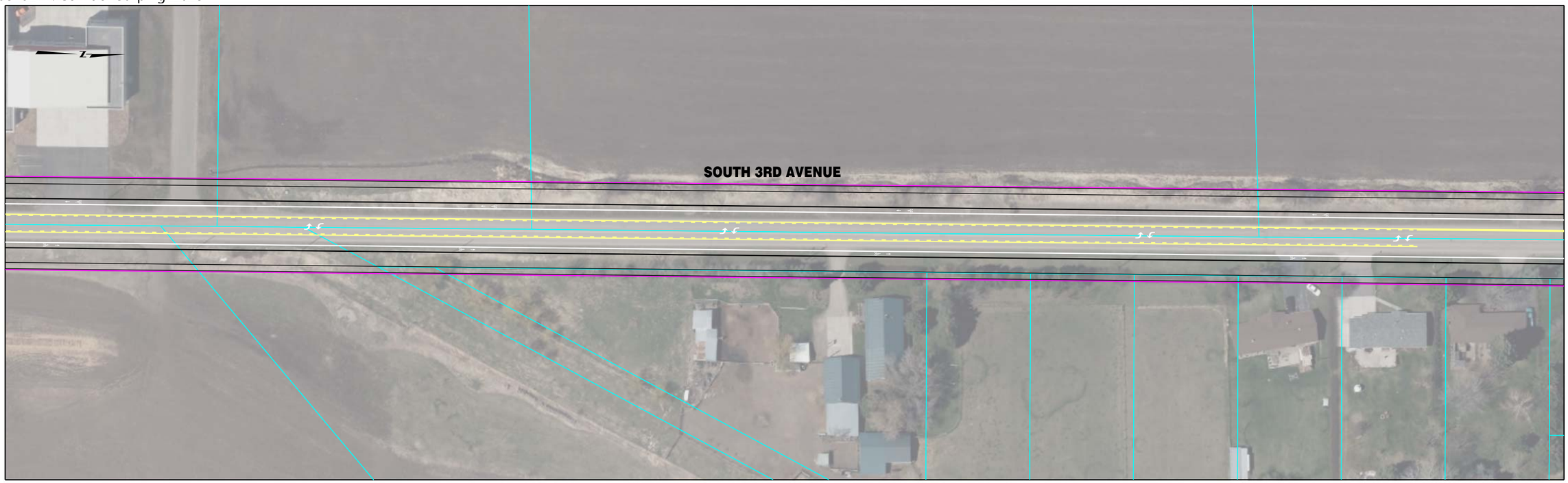
Appendix K: Corridor Striping Plans



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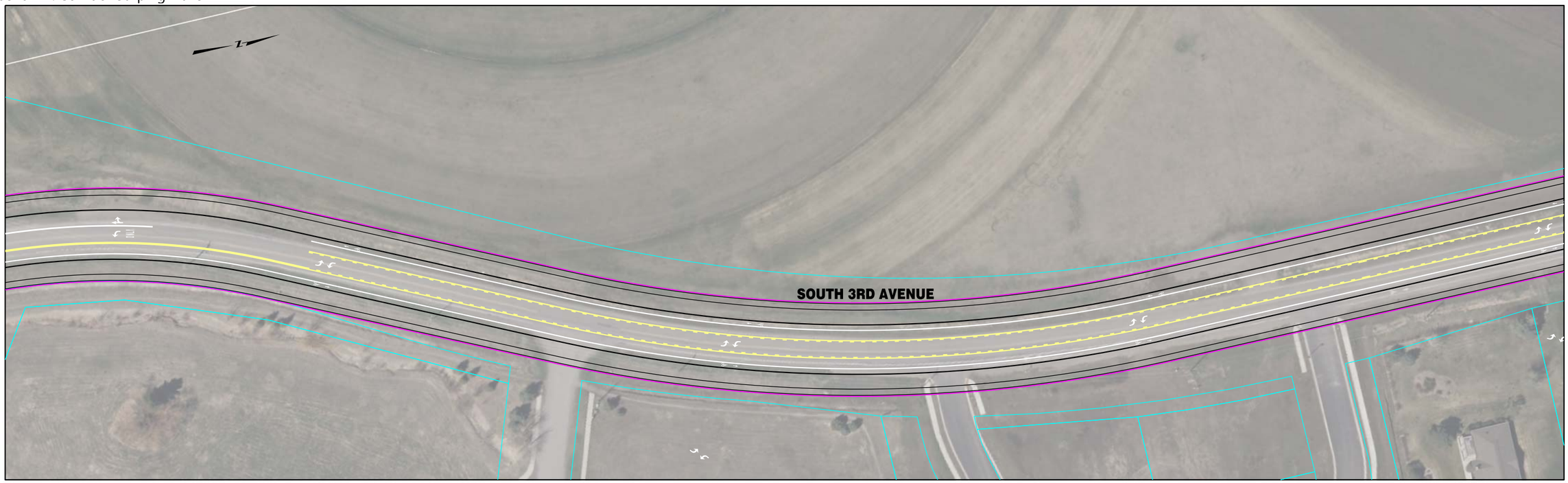
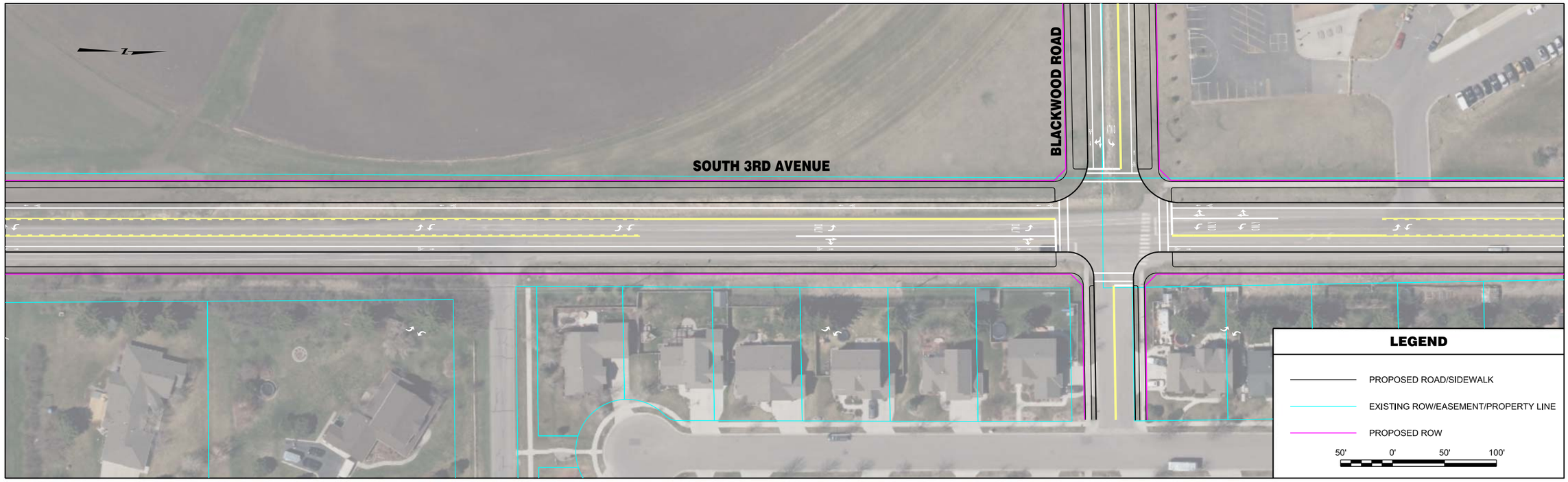
Appendix K: Corridor Striping Plans





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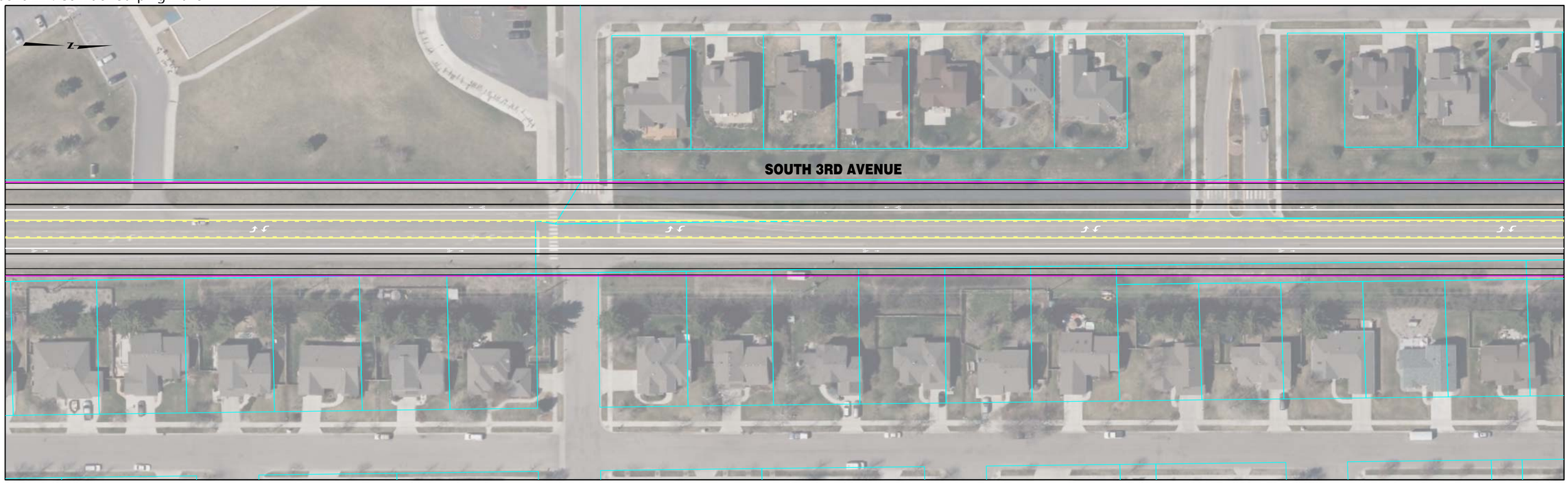
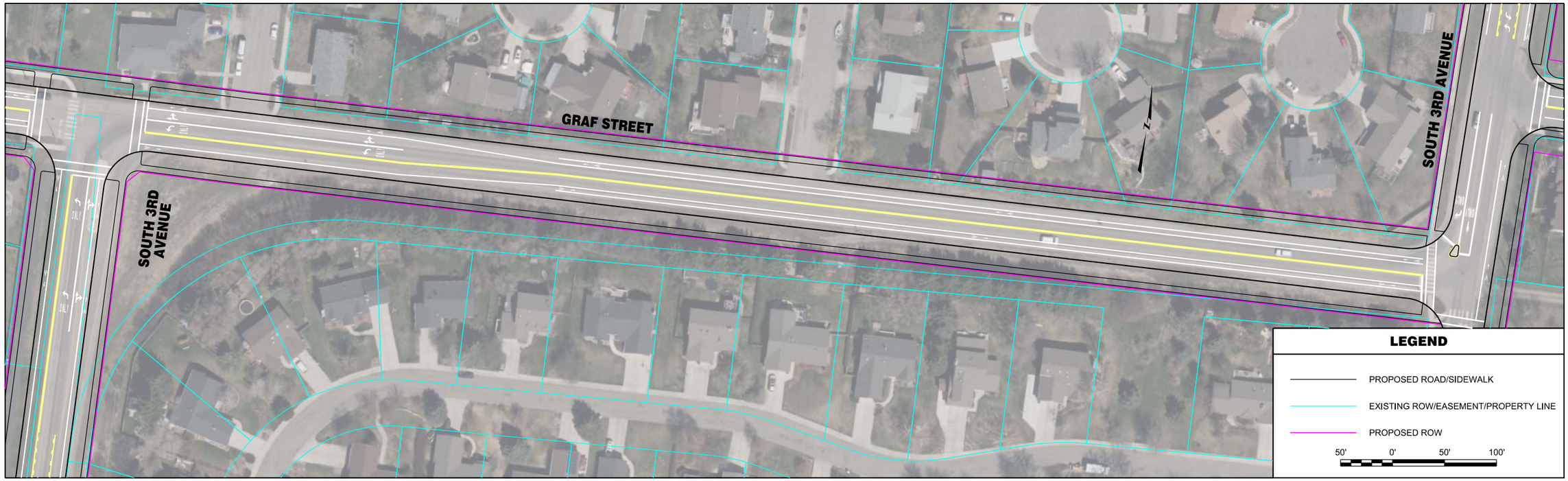
Appendix K: Corridor Striping Plans





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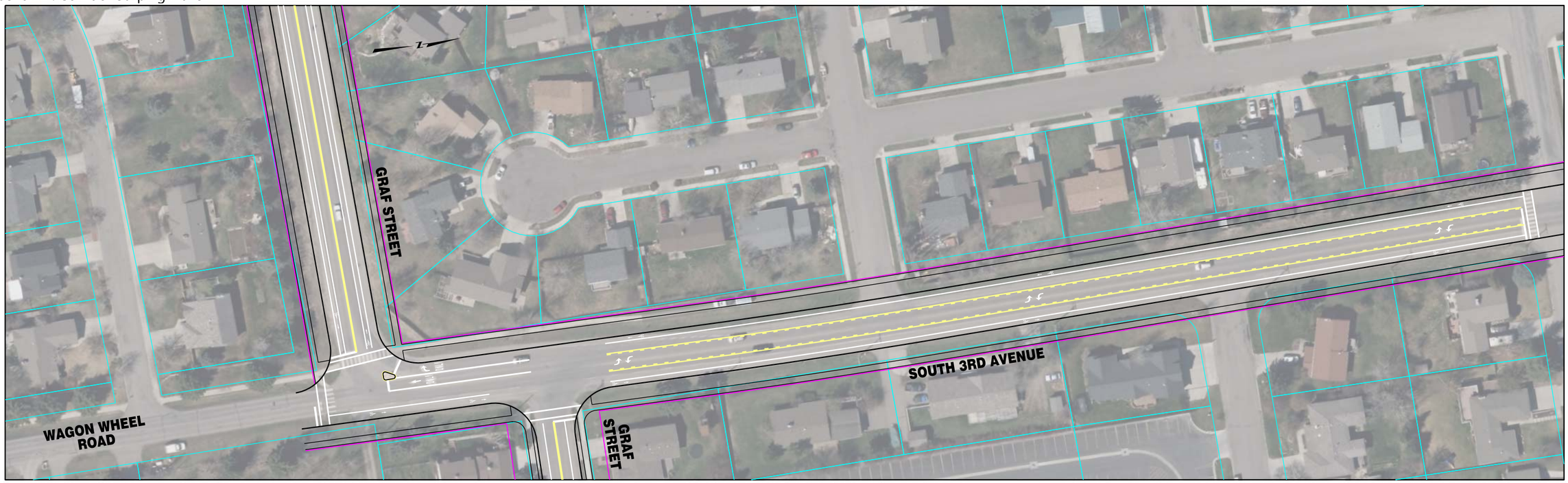
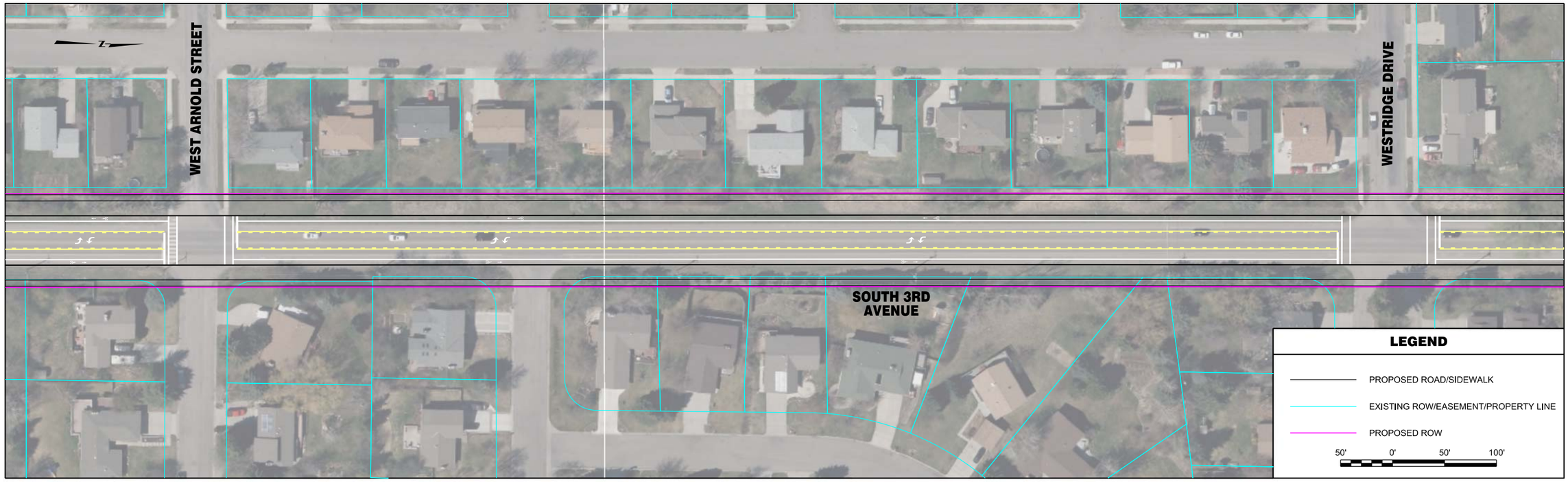
Appendix K: Corridor Striping Plans





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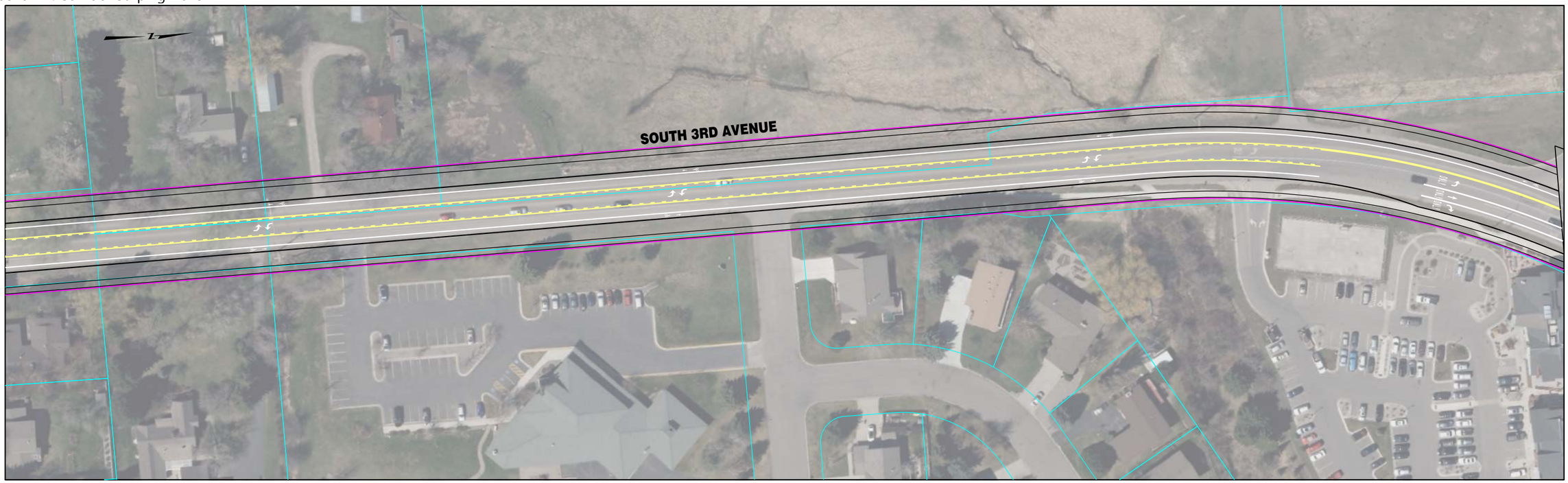

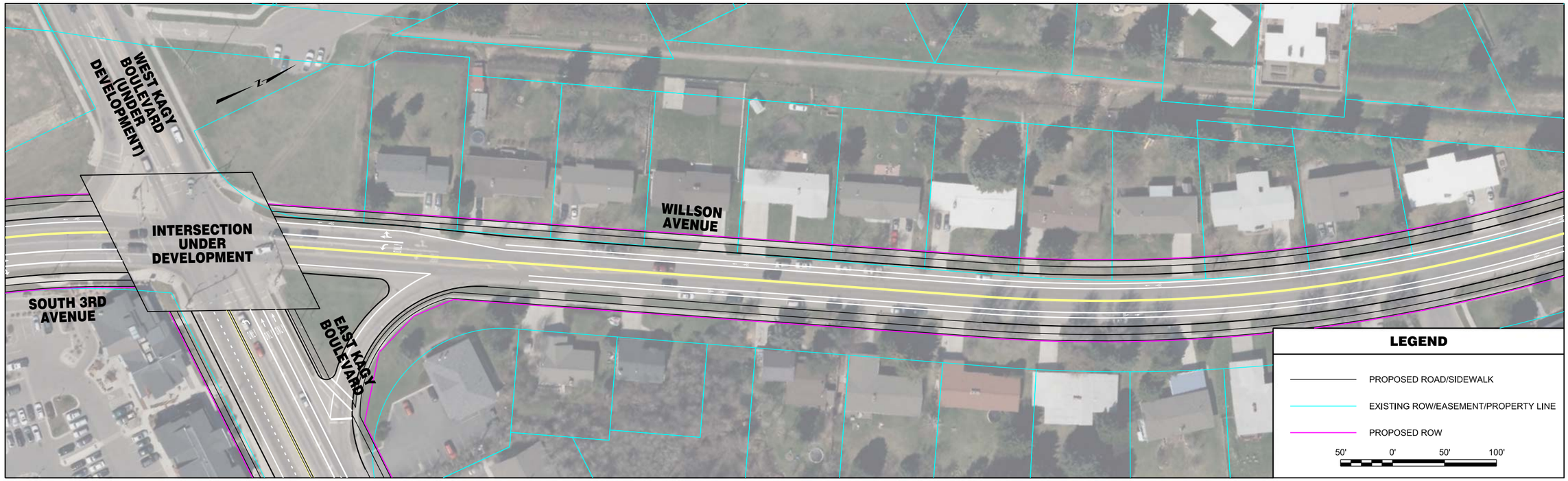

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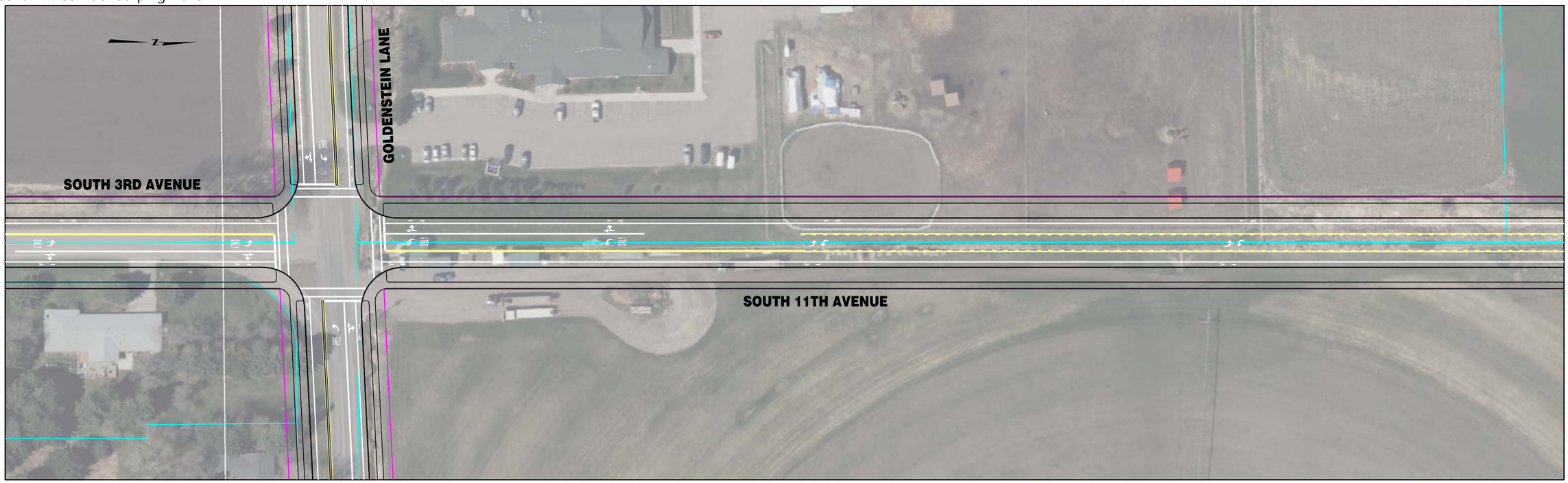
Appendix K: Corridor Striping Plans



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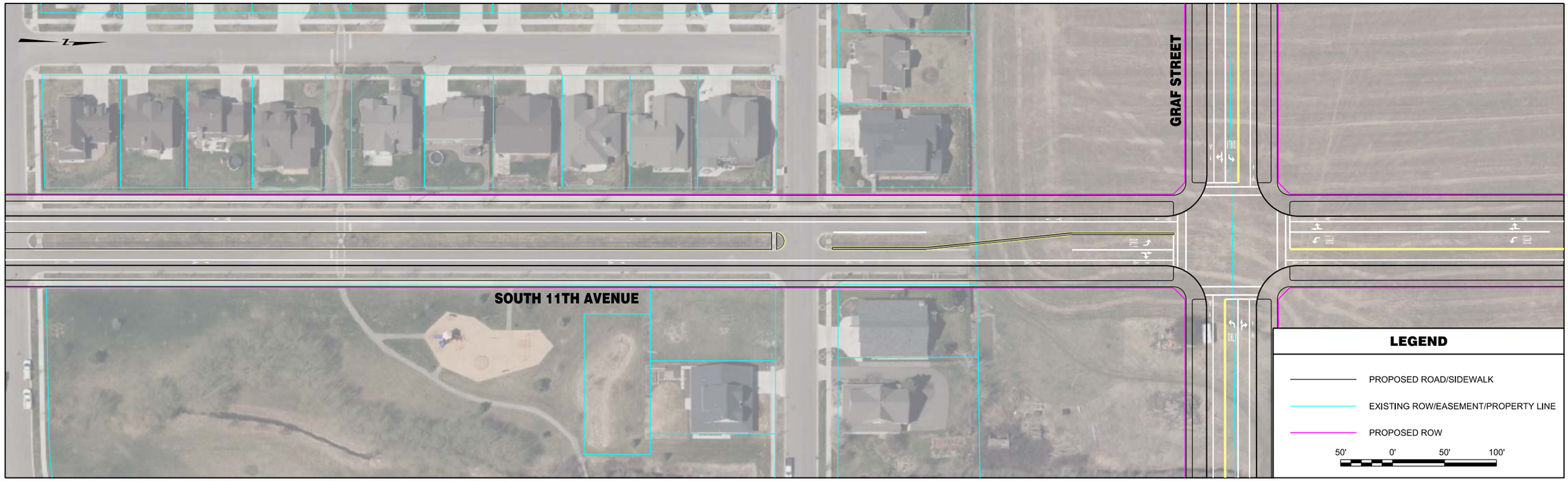

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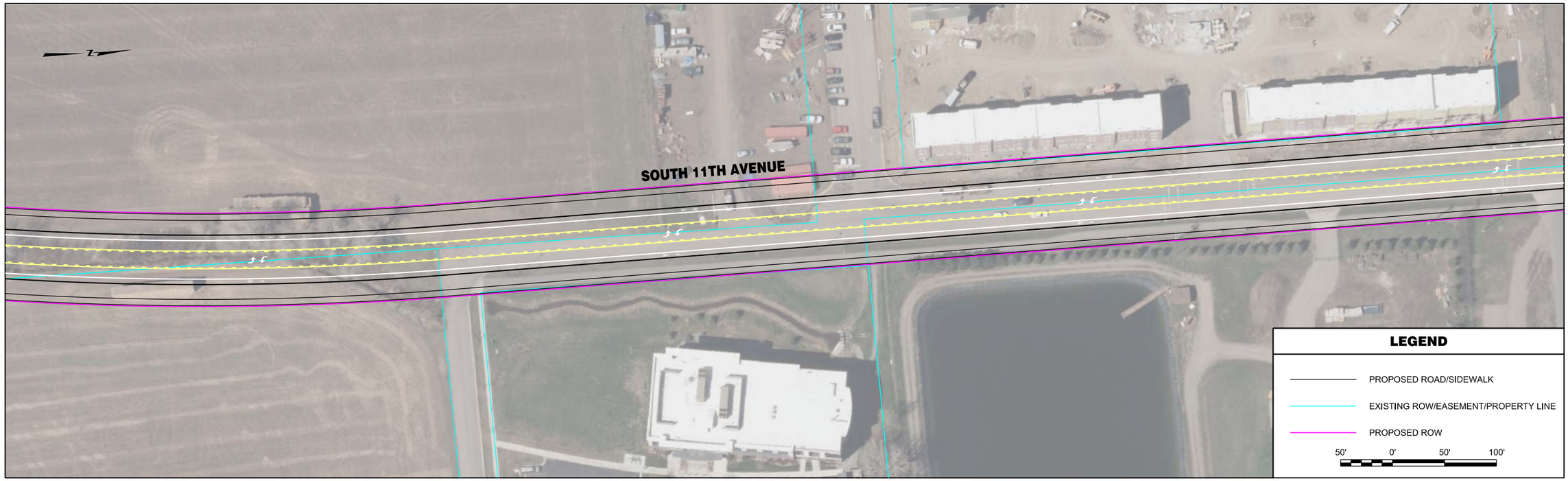
Appendix K: Corridor Striping Plans



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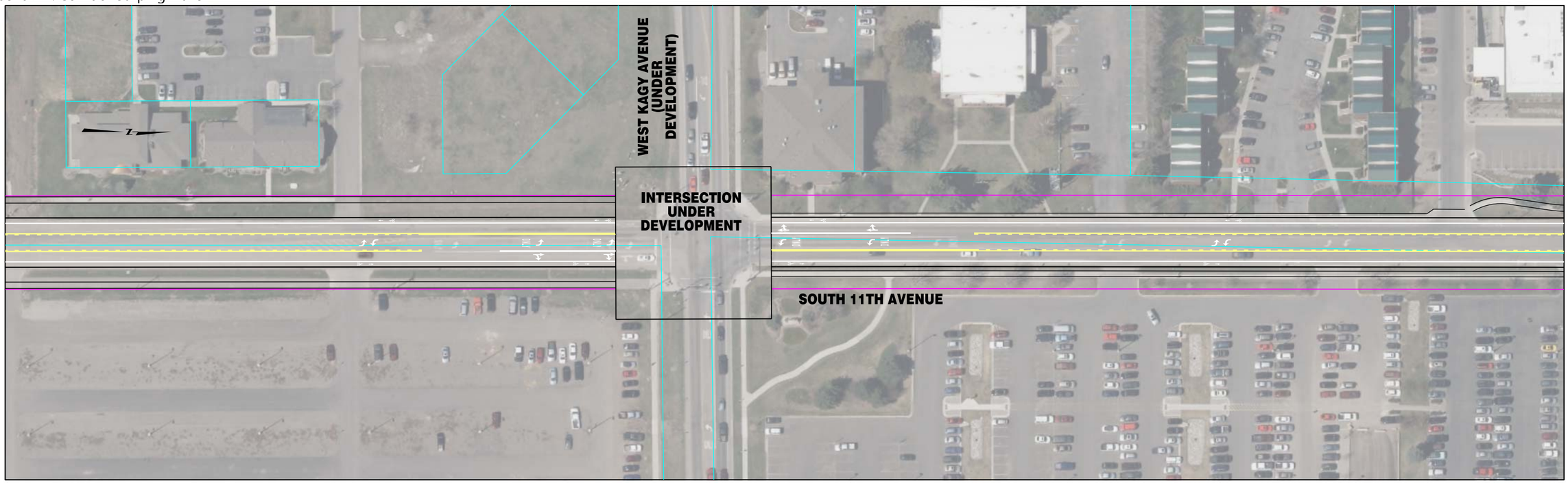

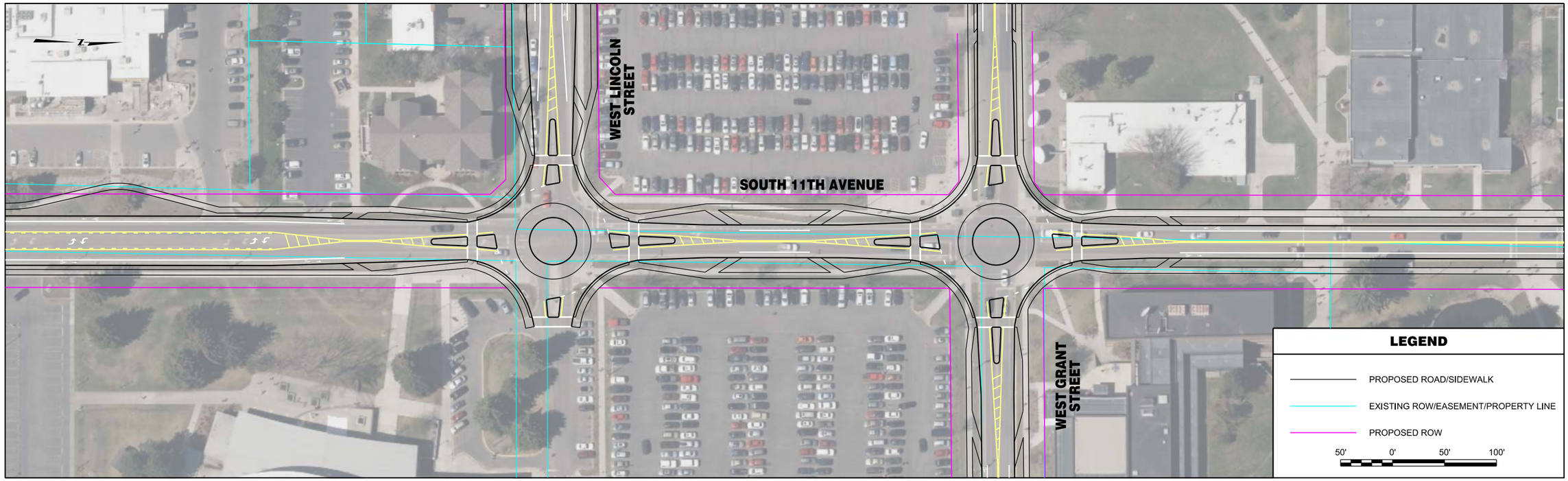

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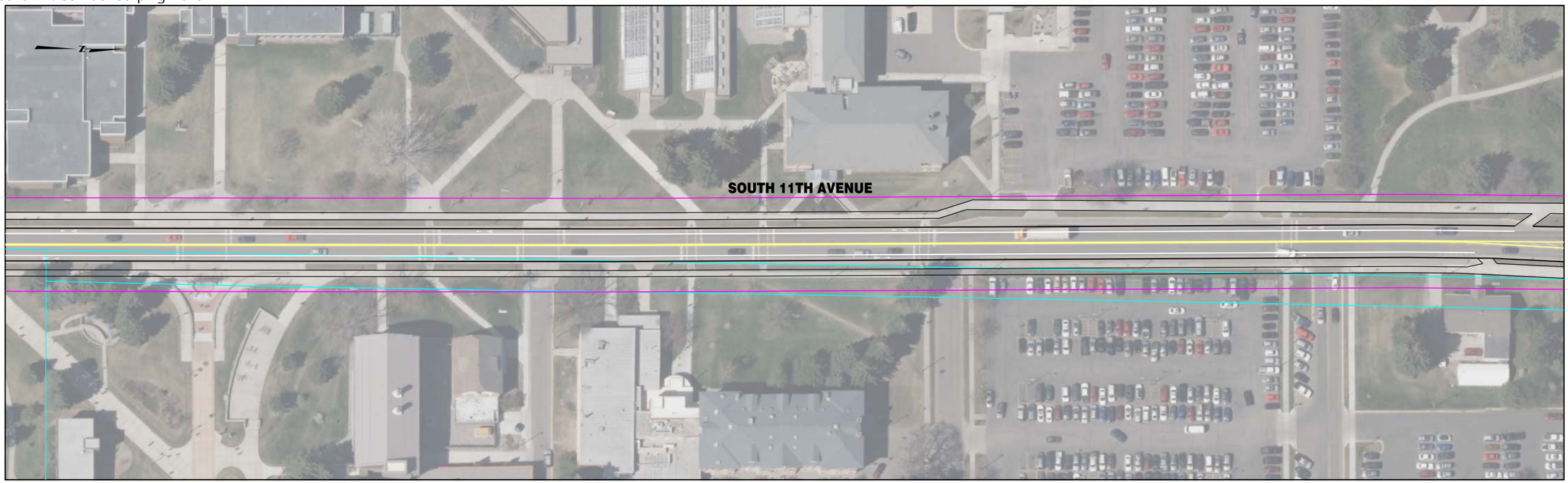

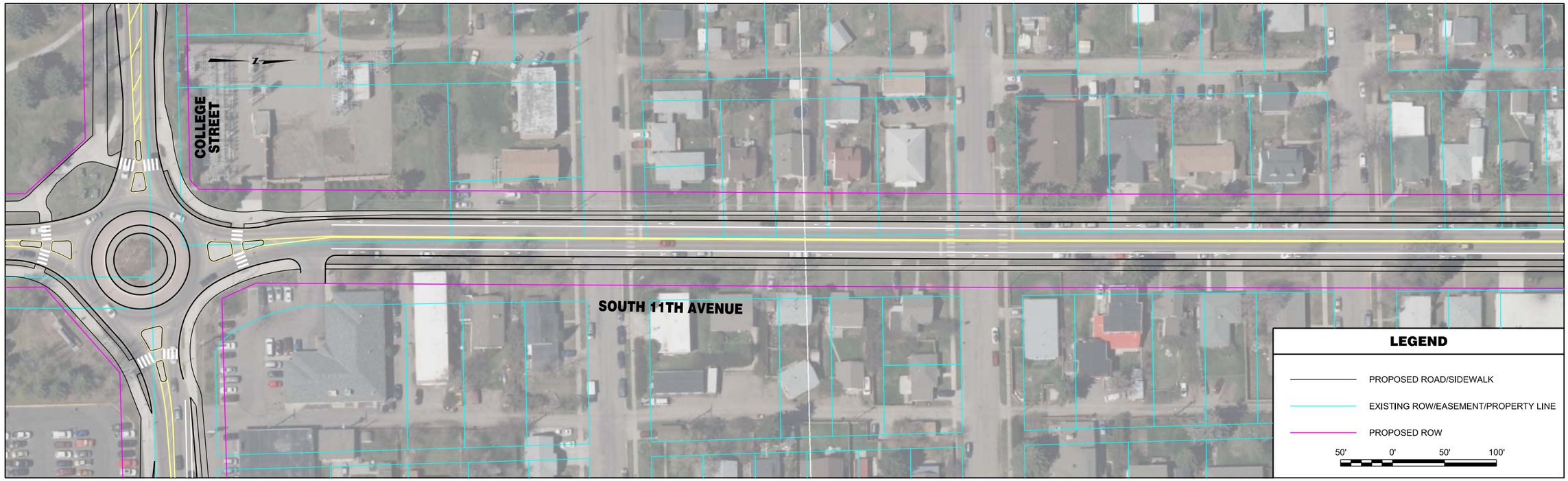

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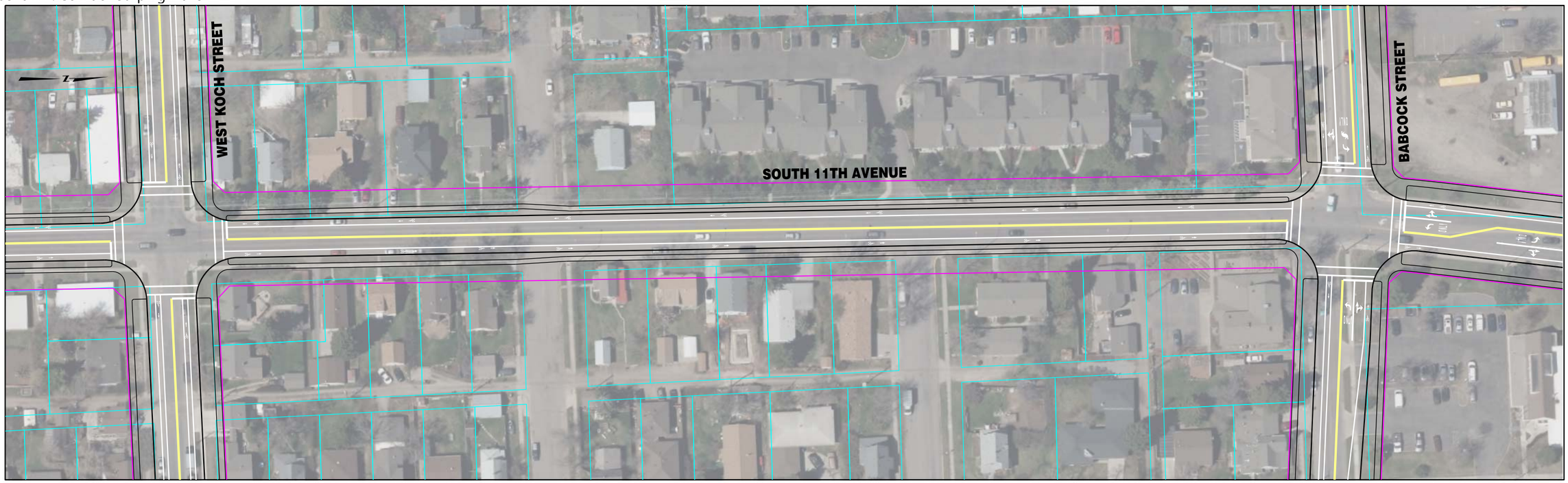

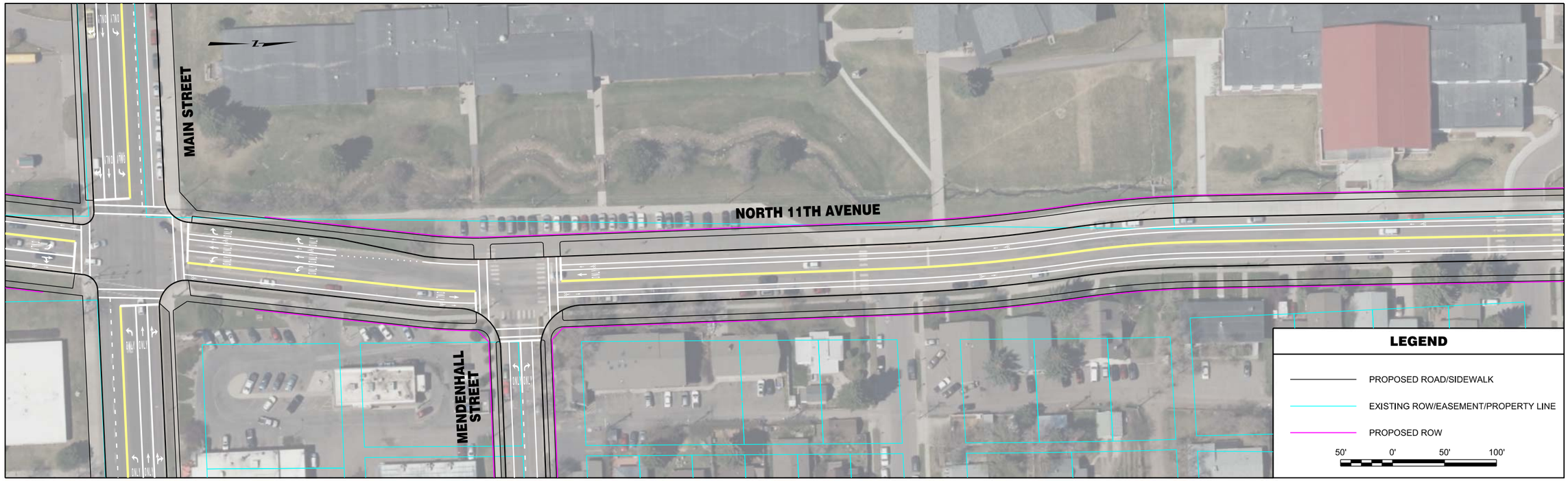

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\OO-11thAve\15602RDPLNZOO2.dwg 1/26/2017 2:39:54 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOUTH & NORTH 11TH AVENUE STRIPING PLAN**	SHEET Page 16 **6**

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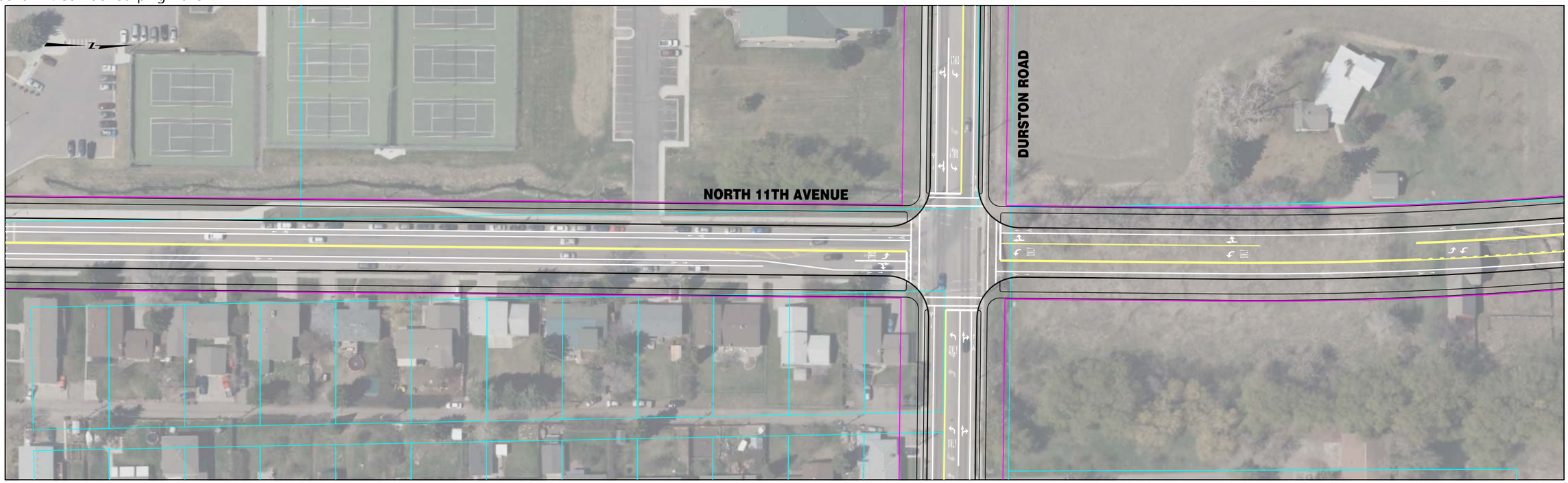

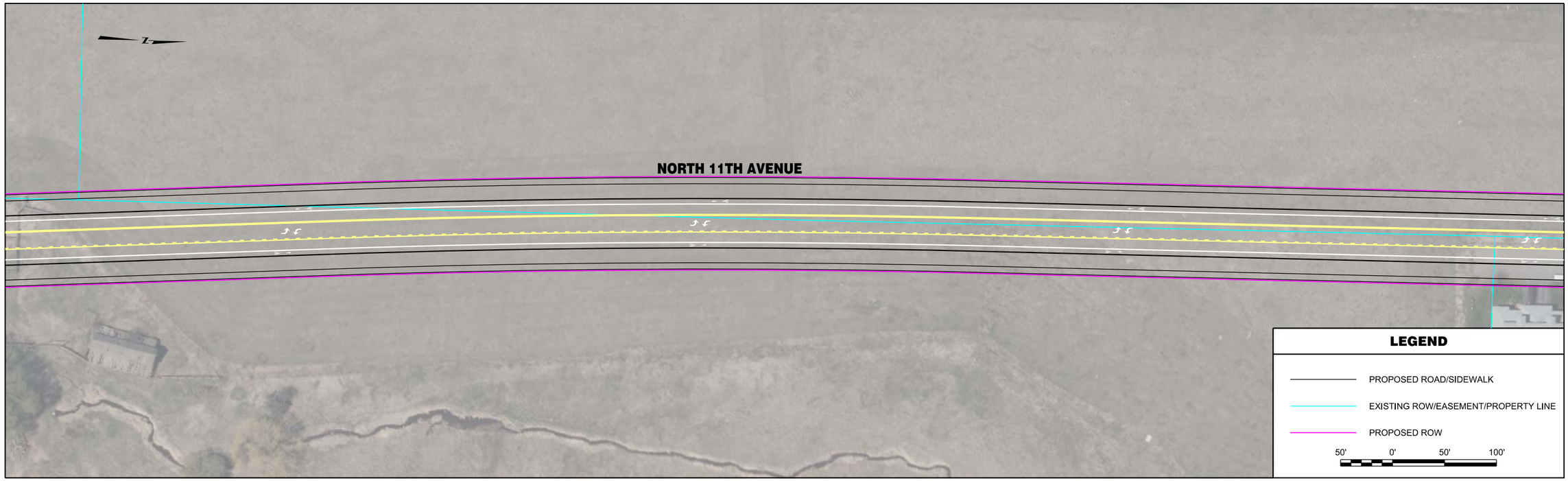

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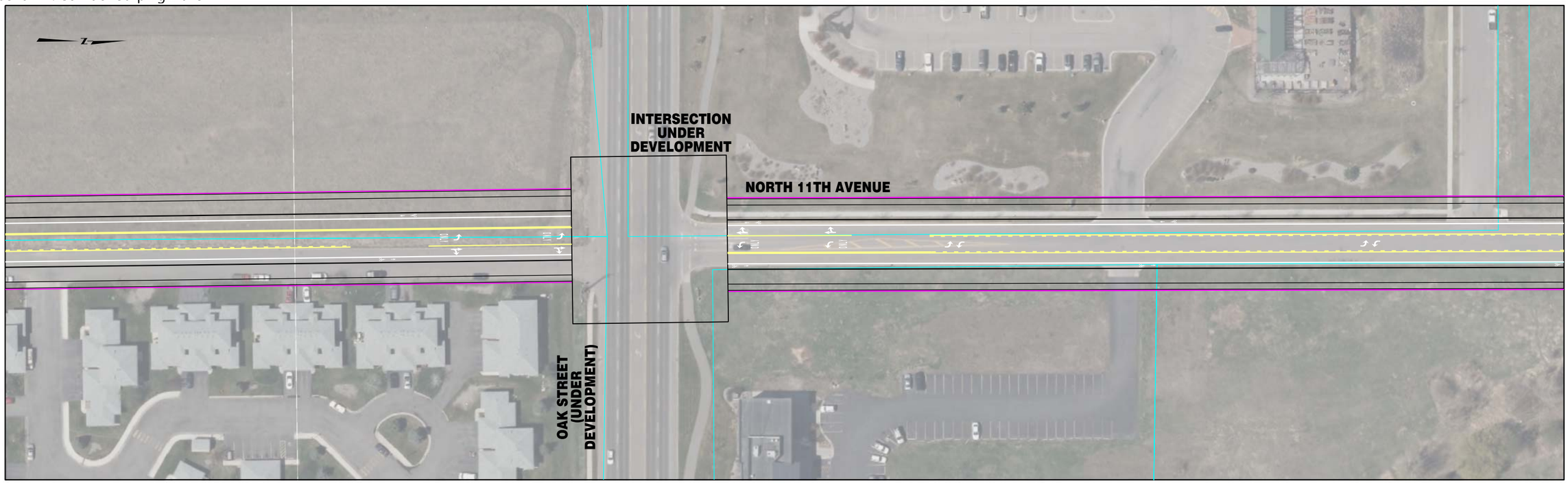

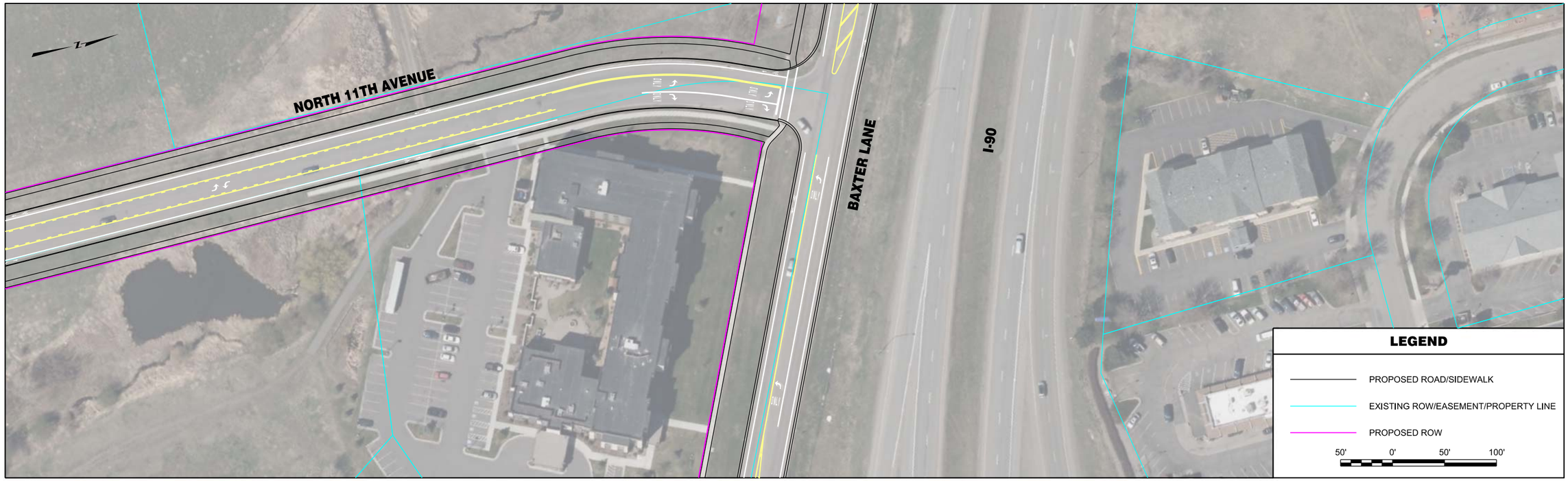

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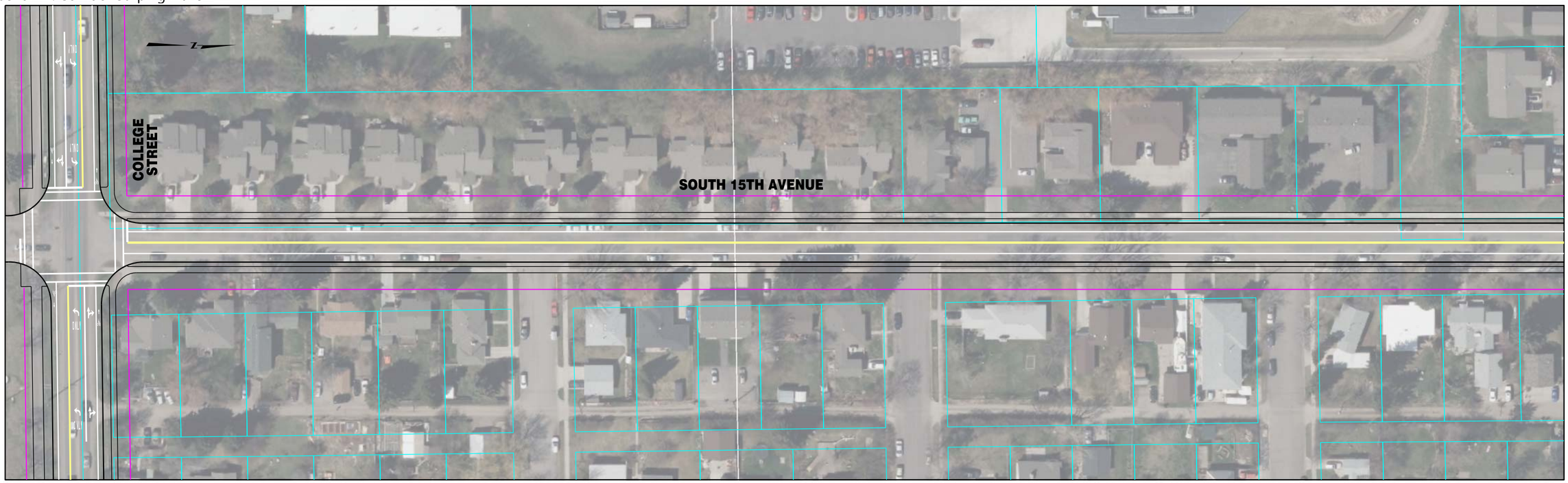

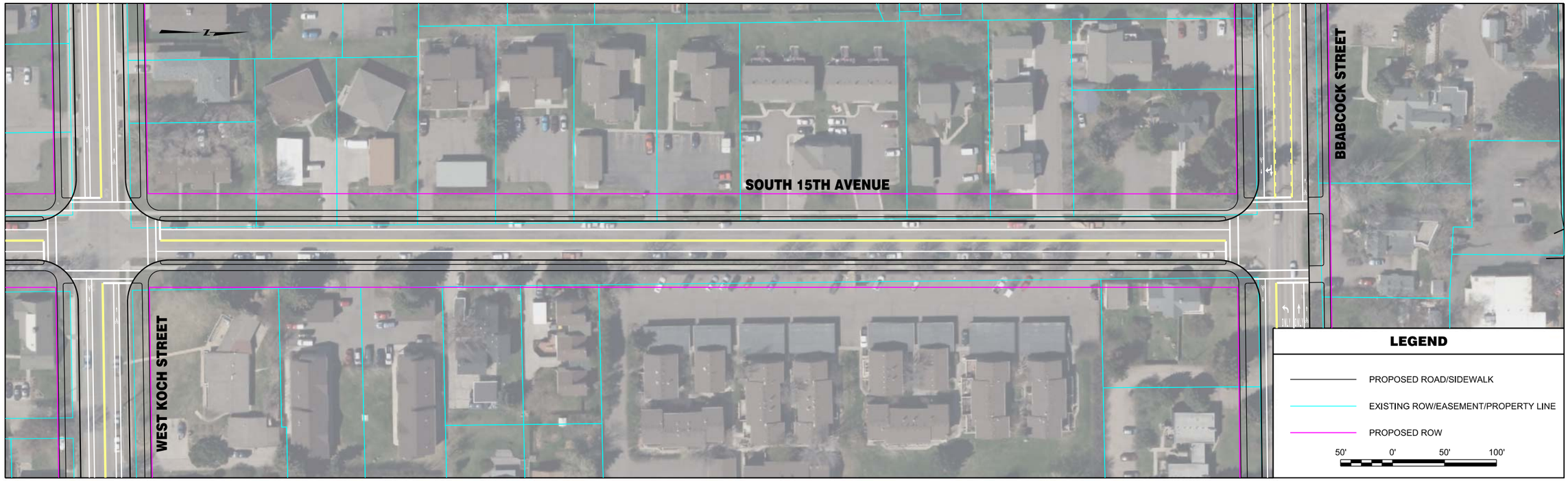

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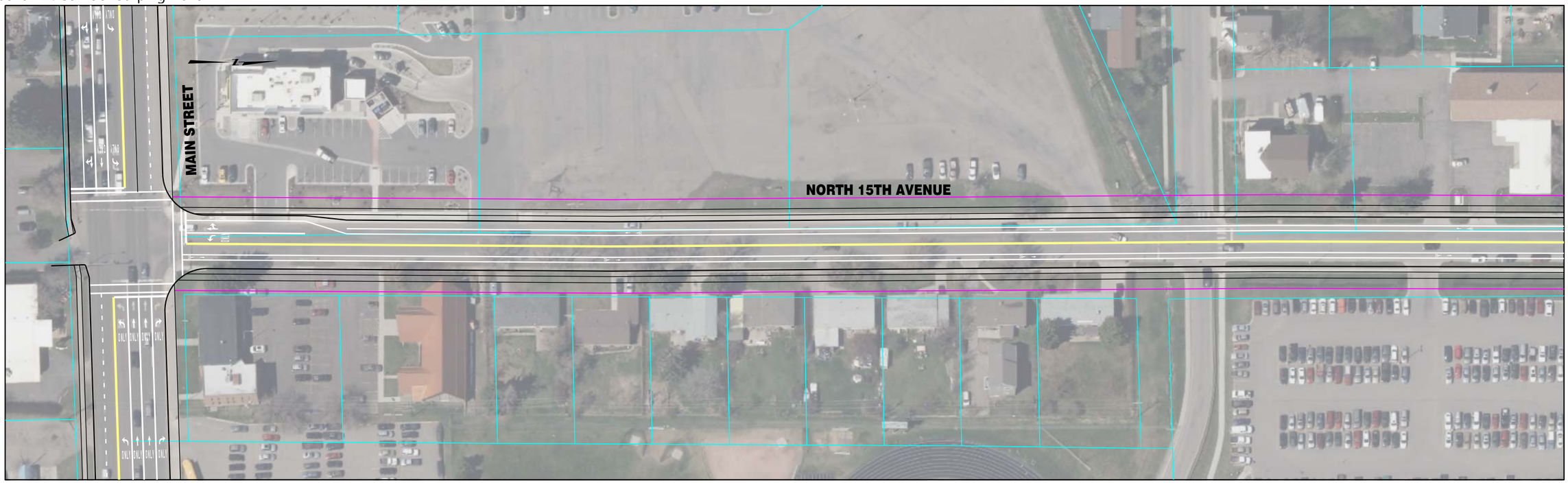

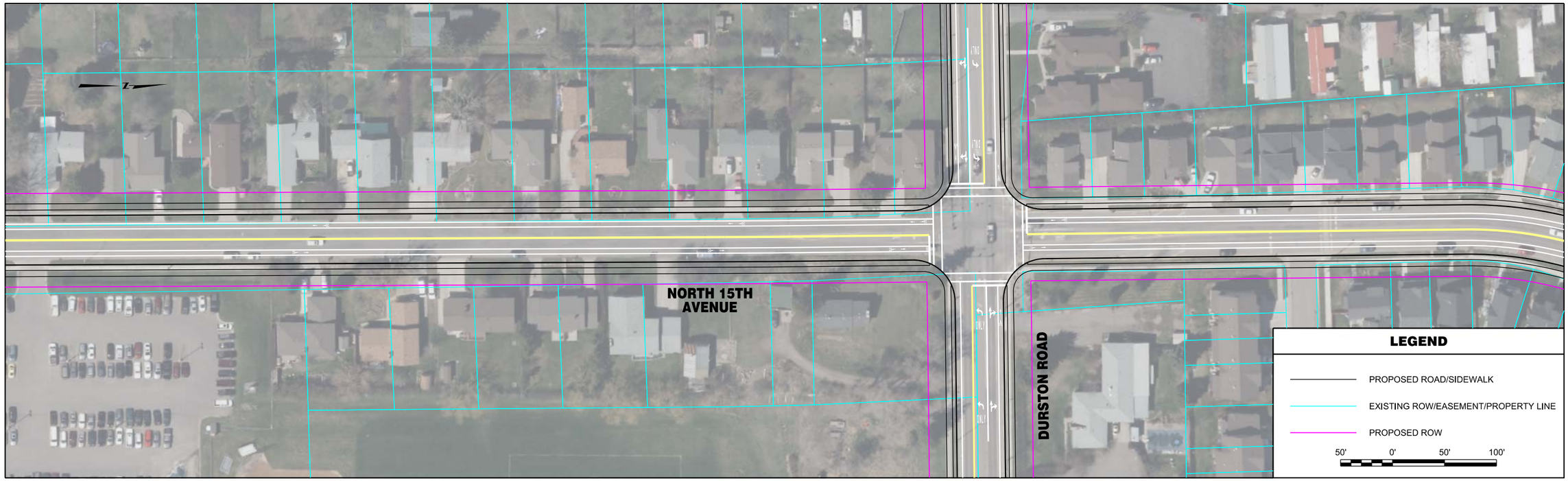

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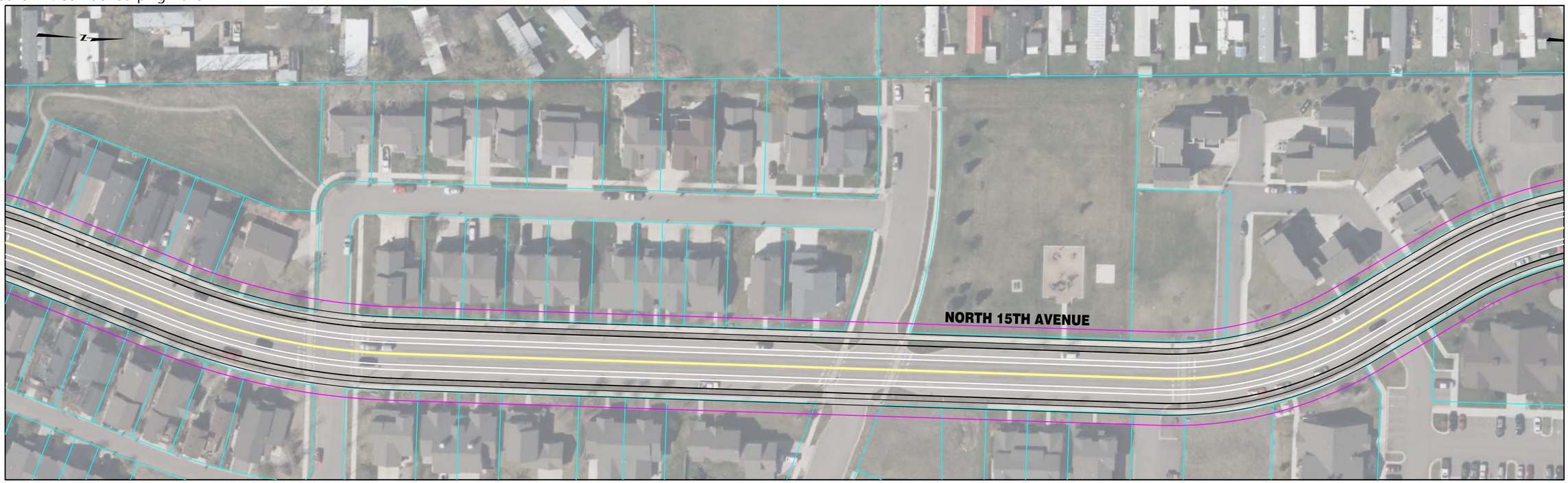

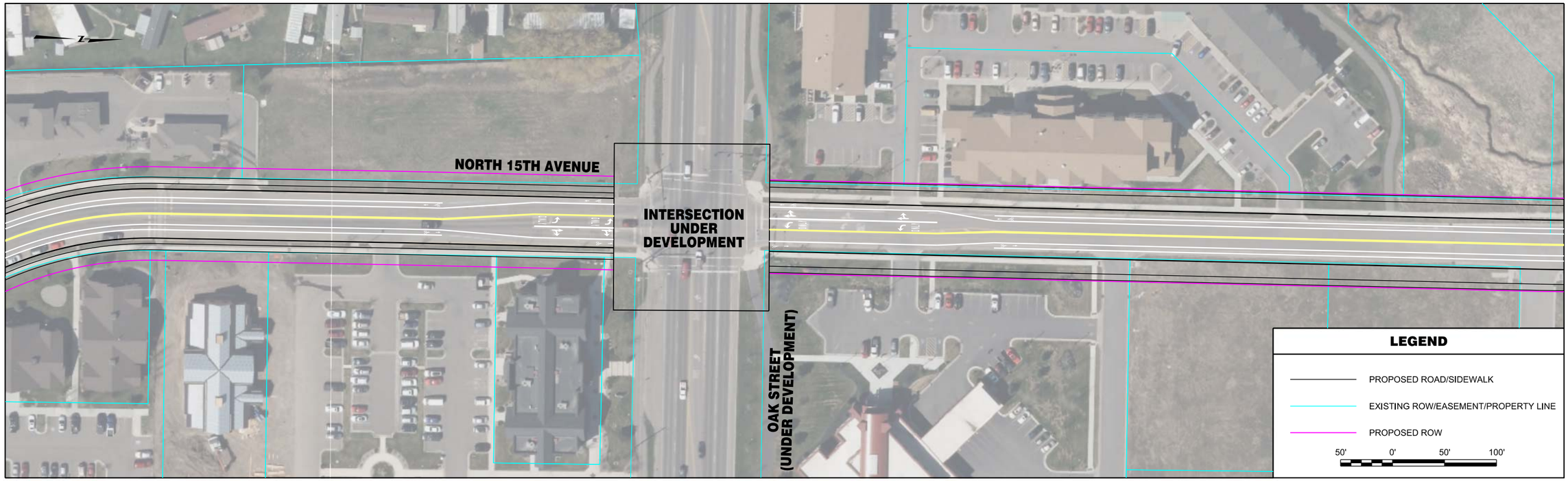

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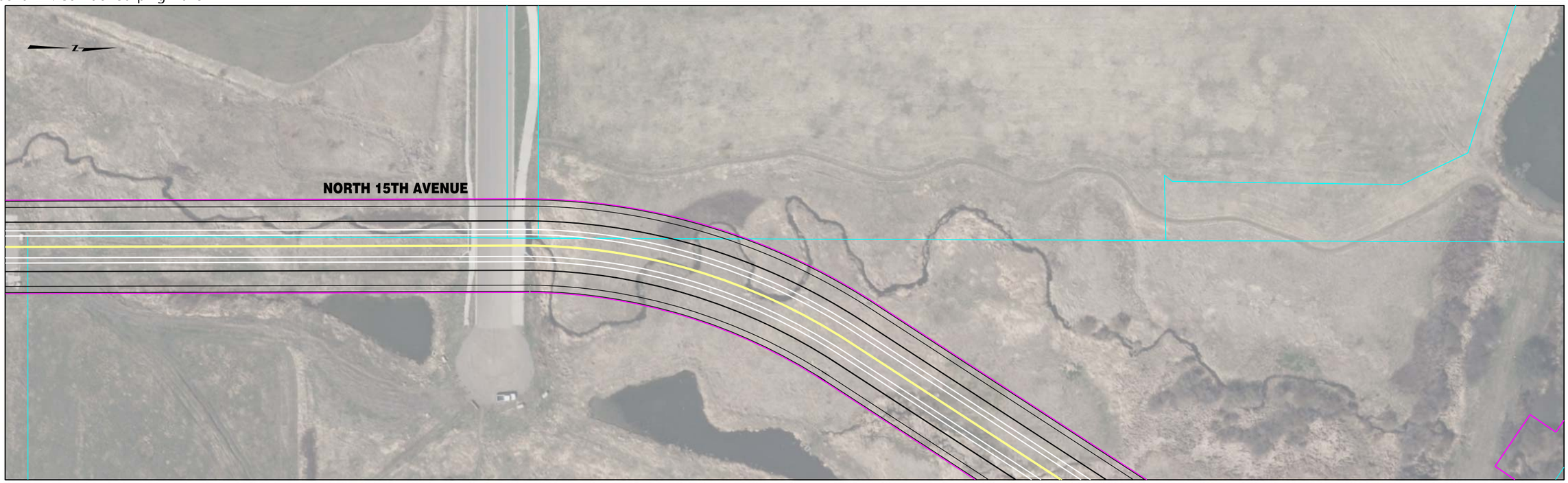

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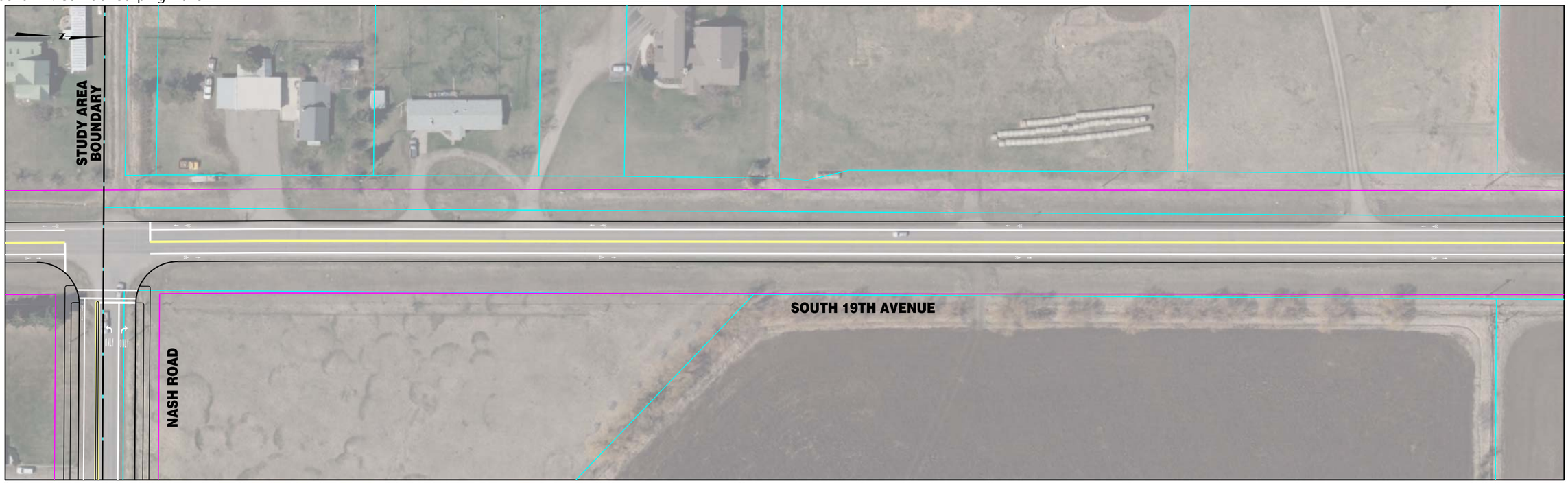

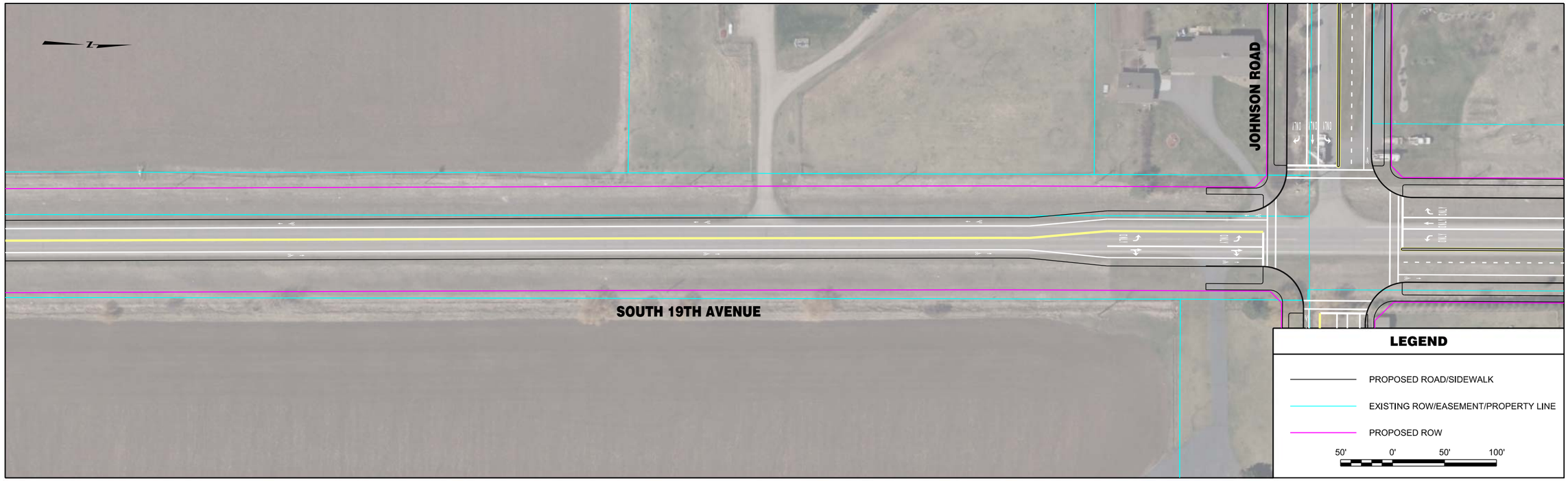

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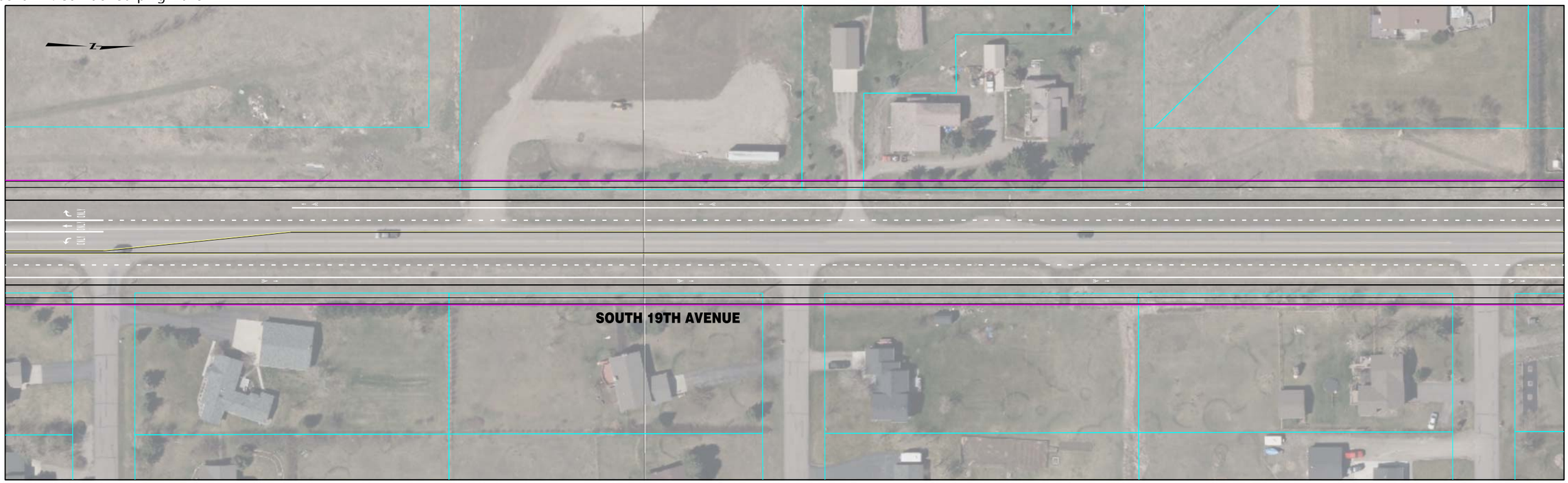

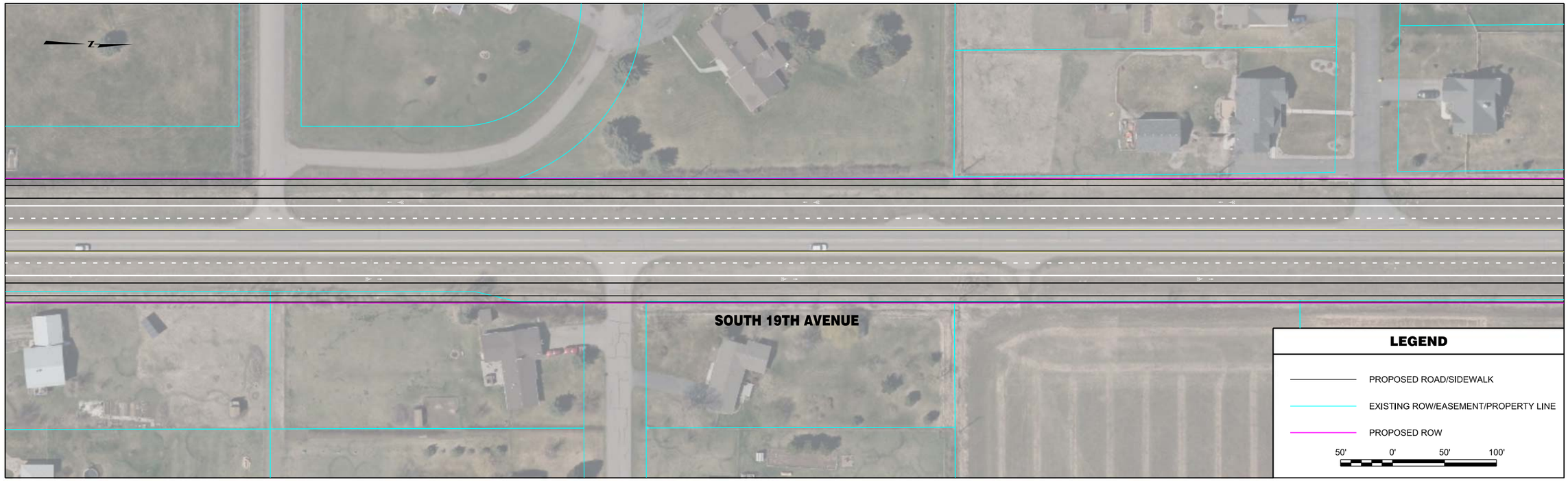

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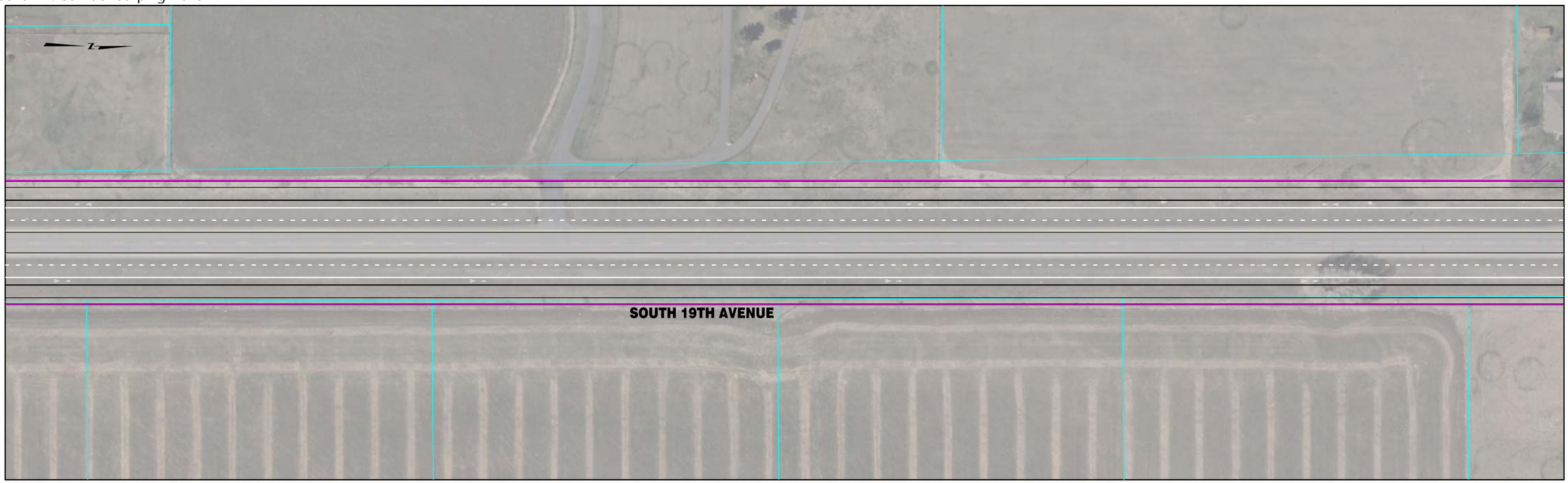

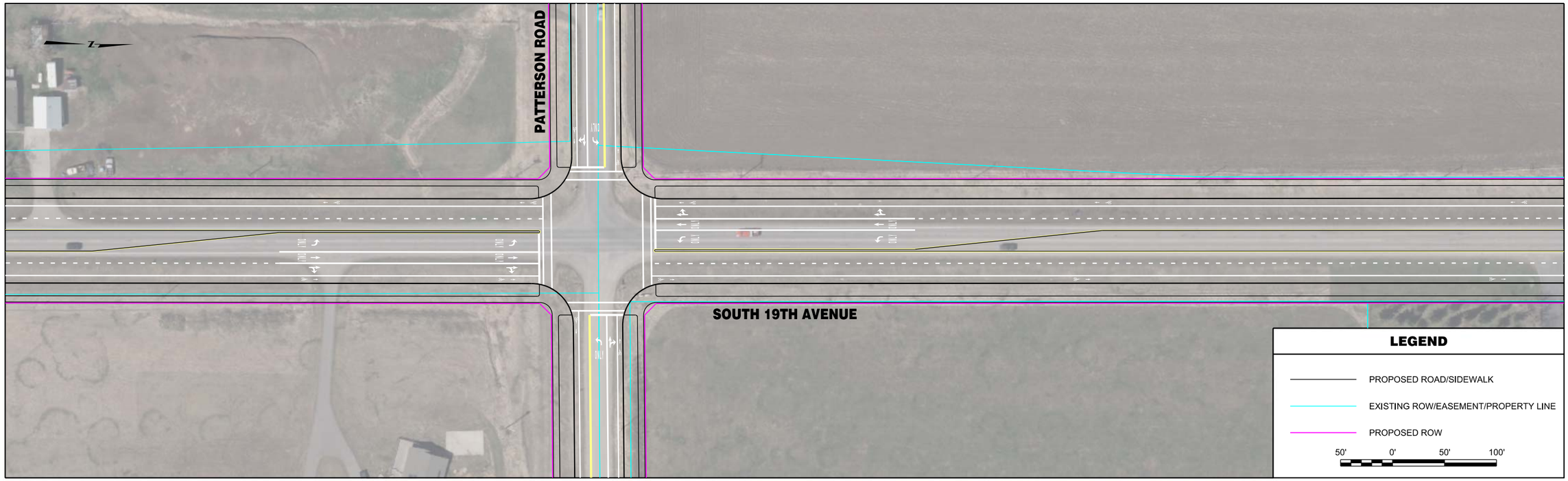

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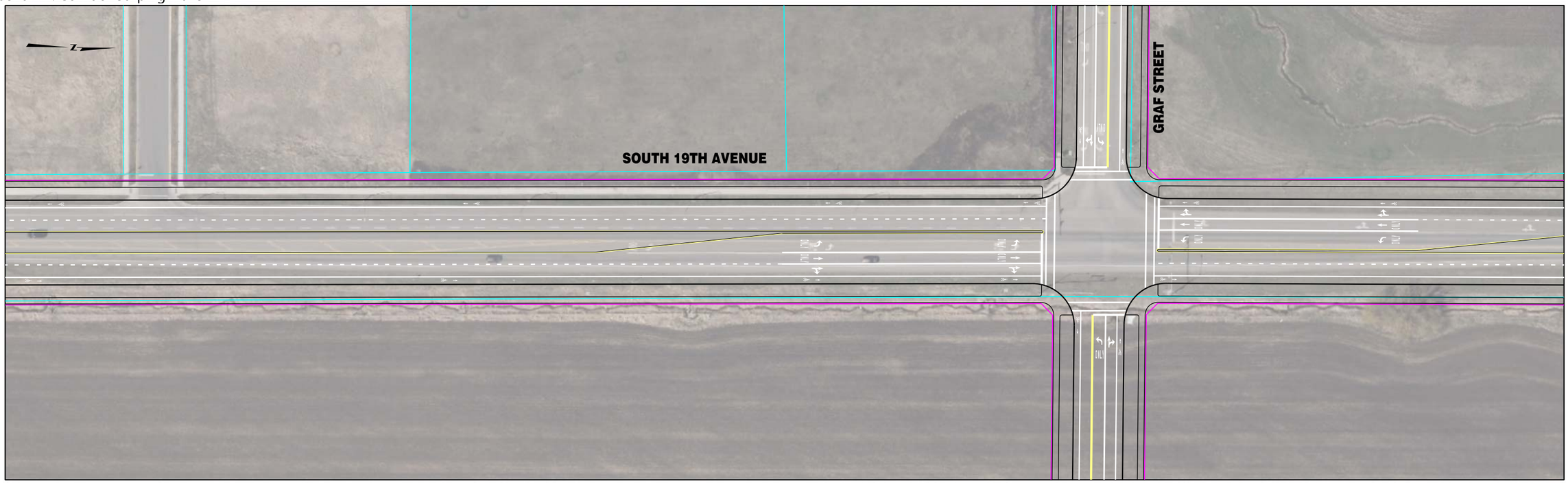

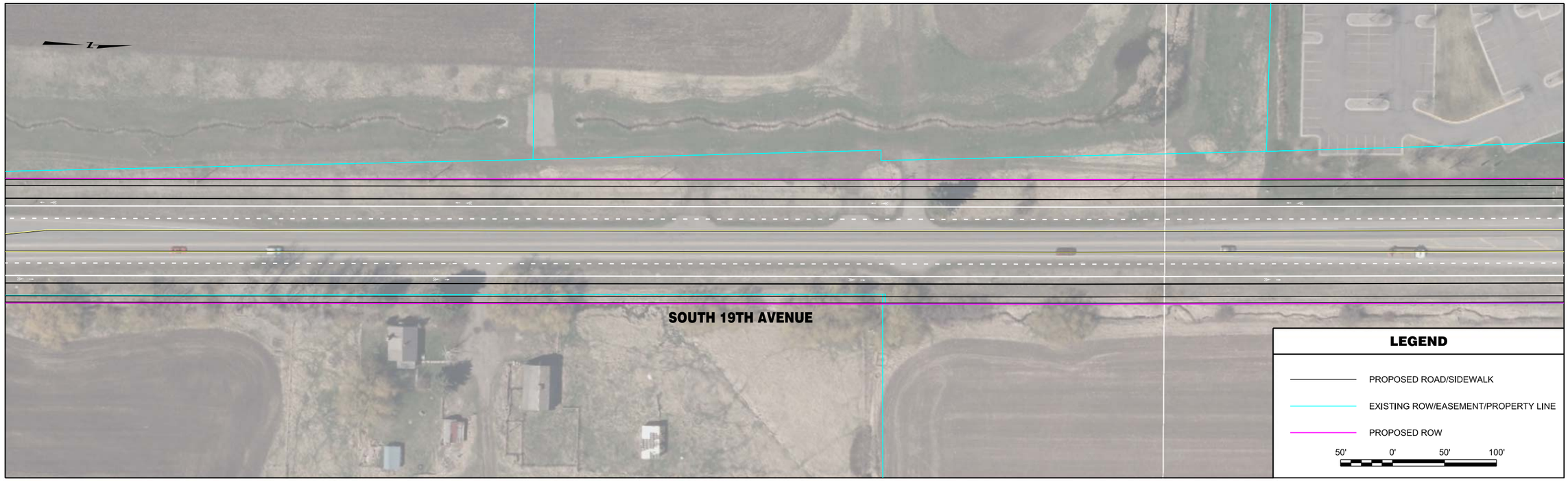

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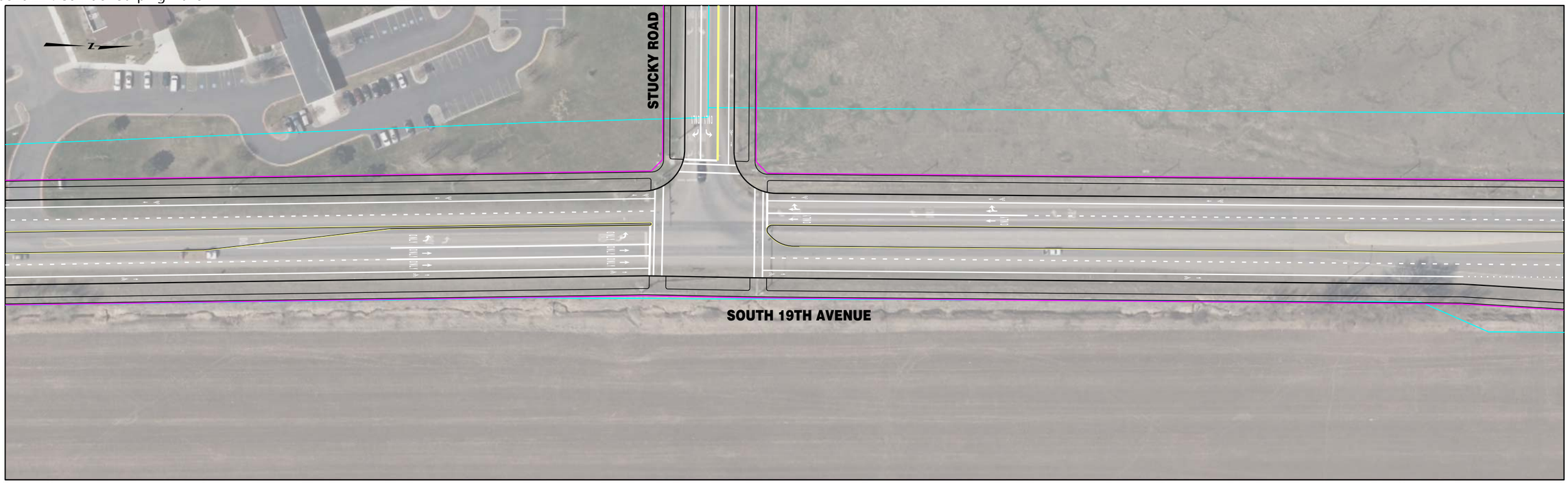

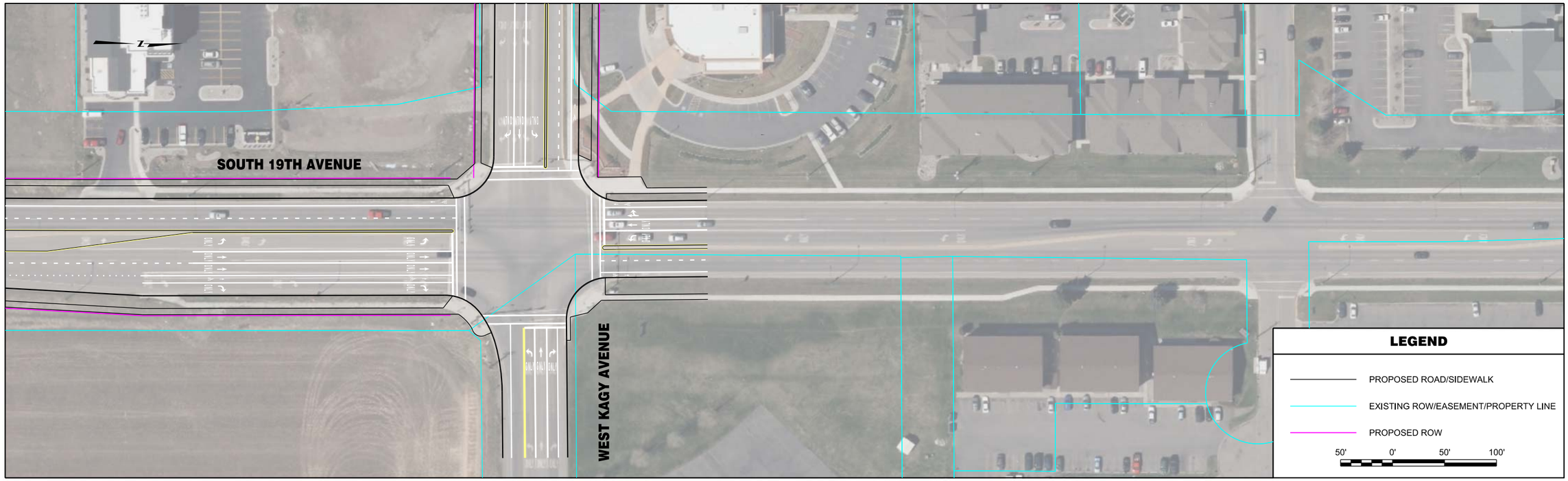

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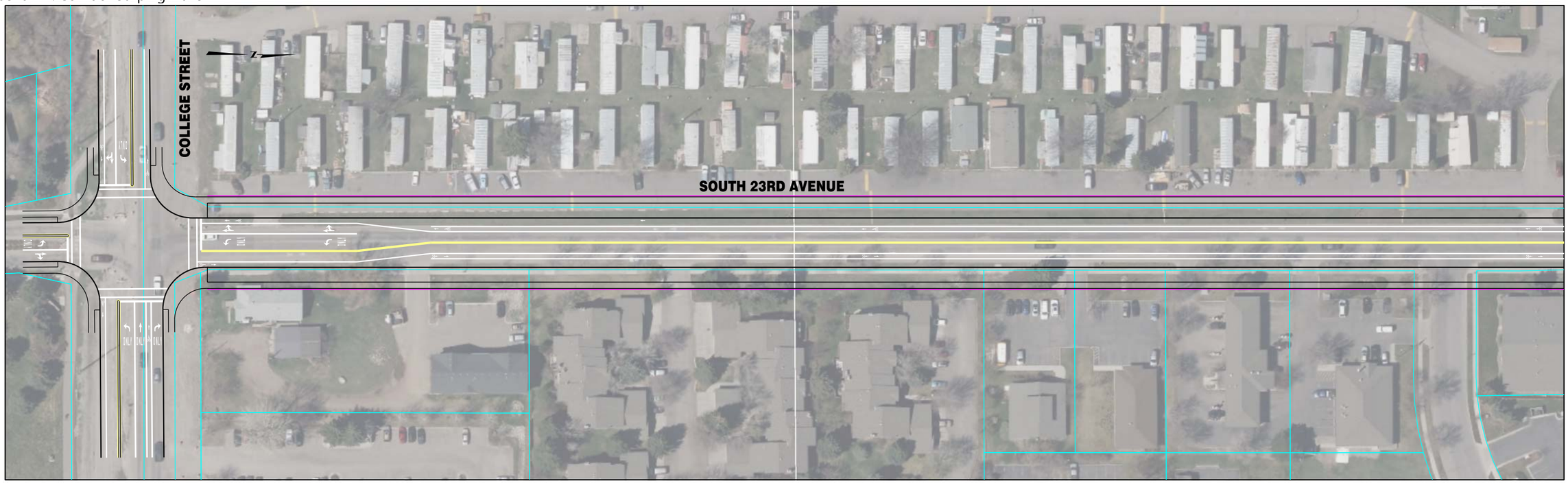

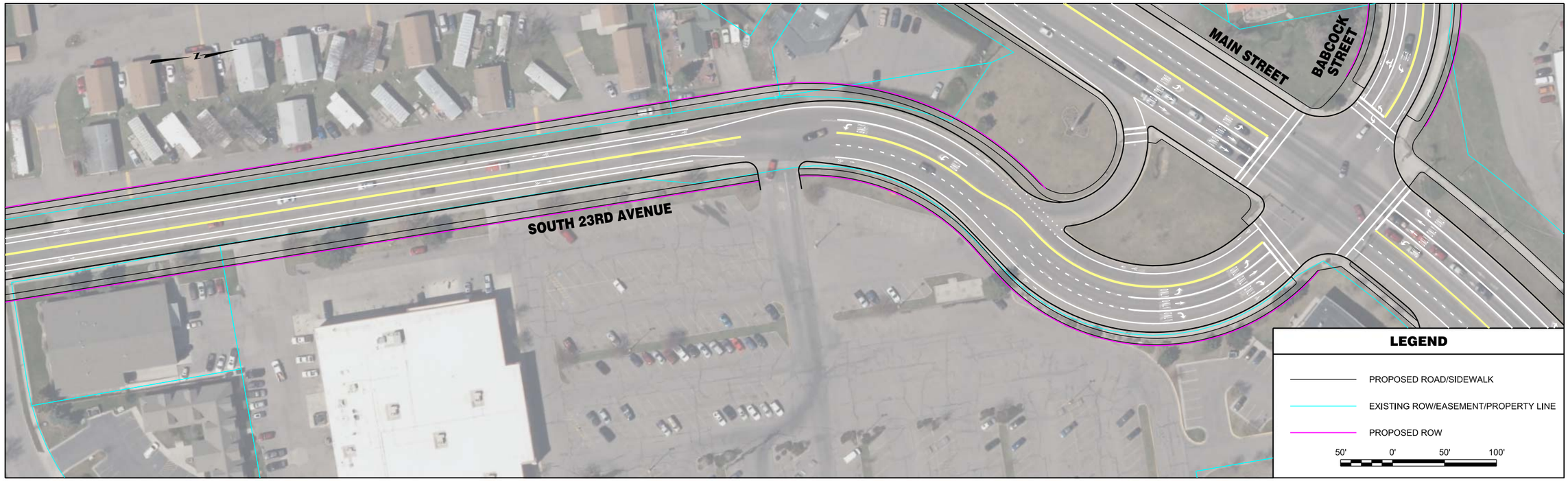

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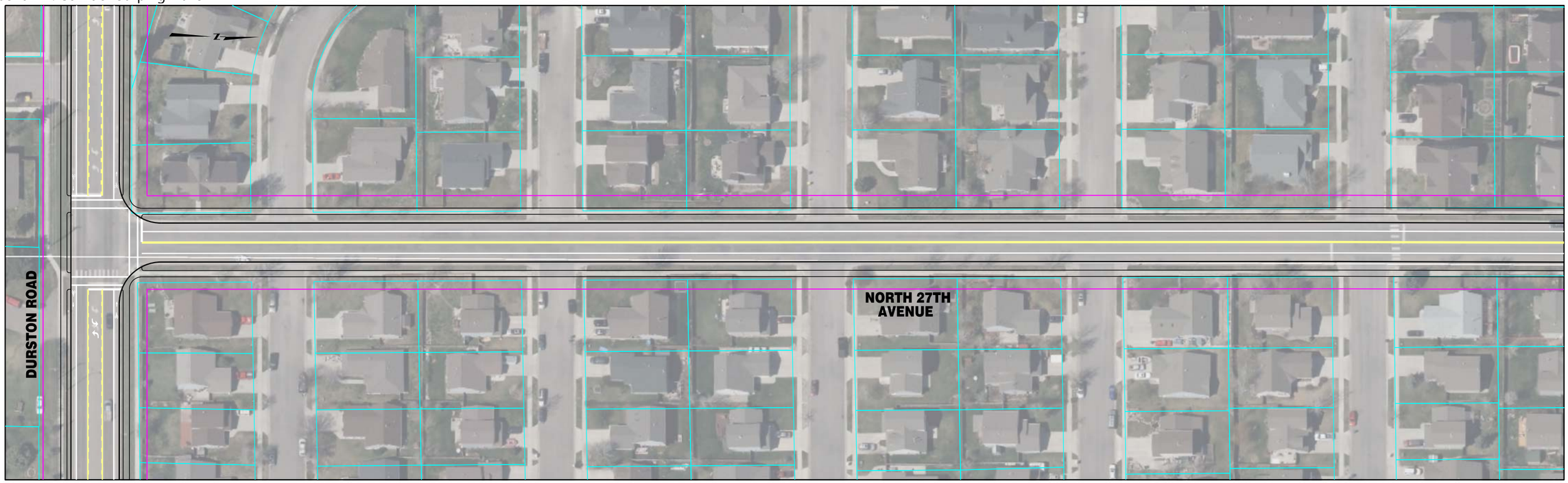

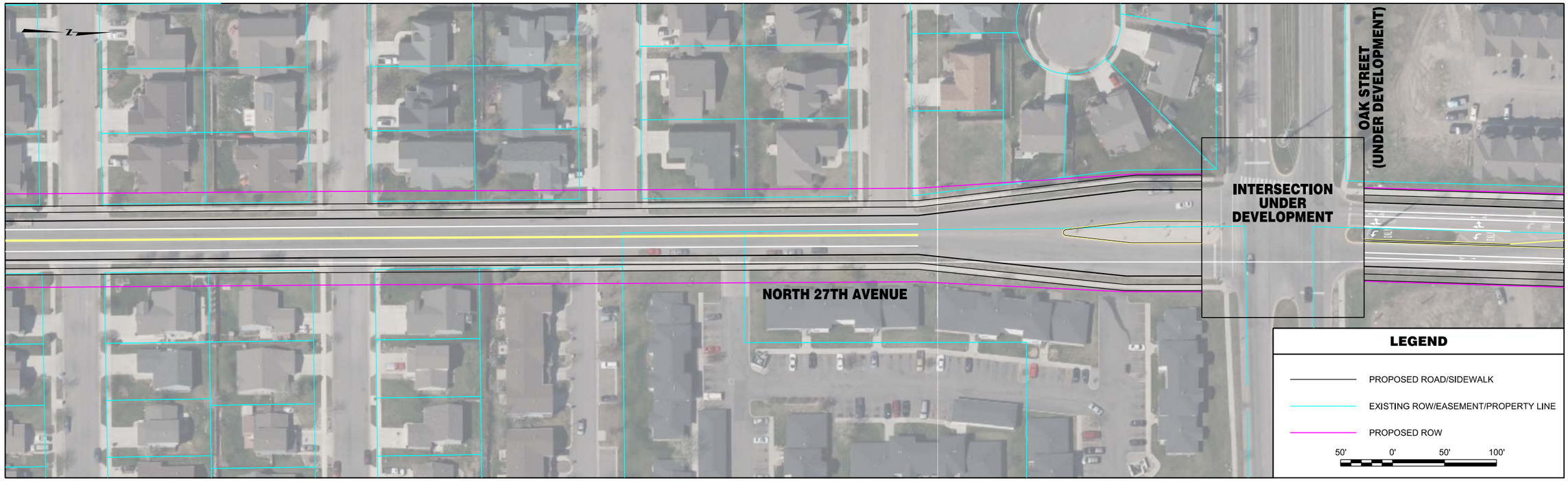

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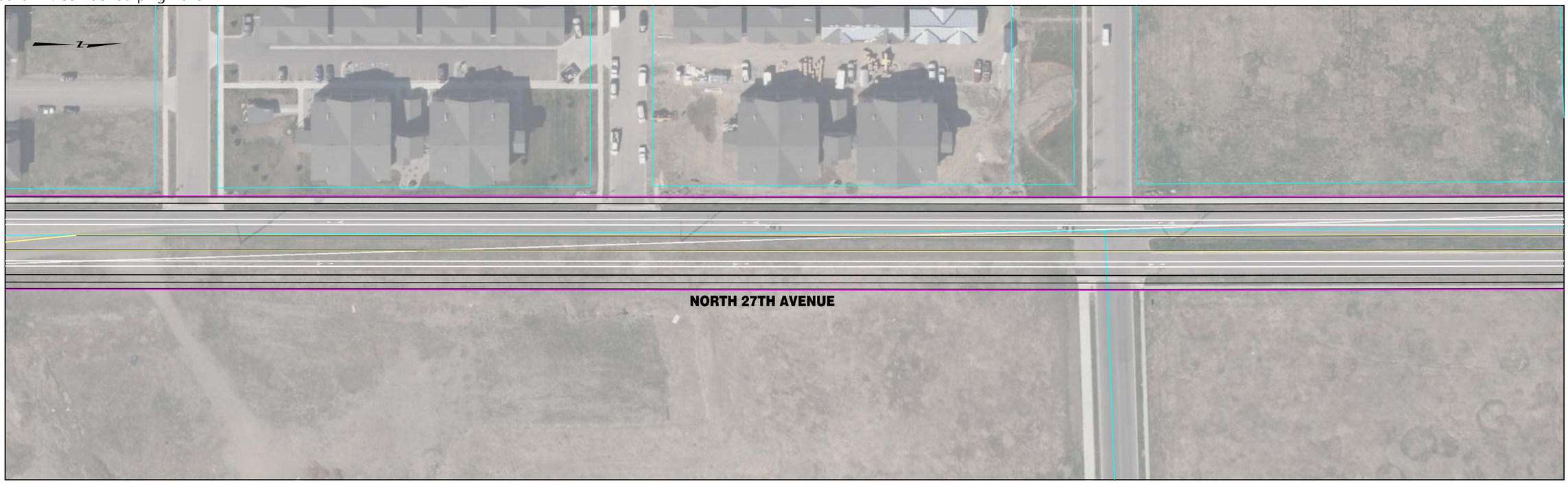

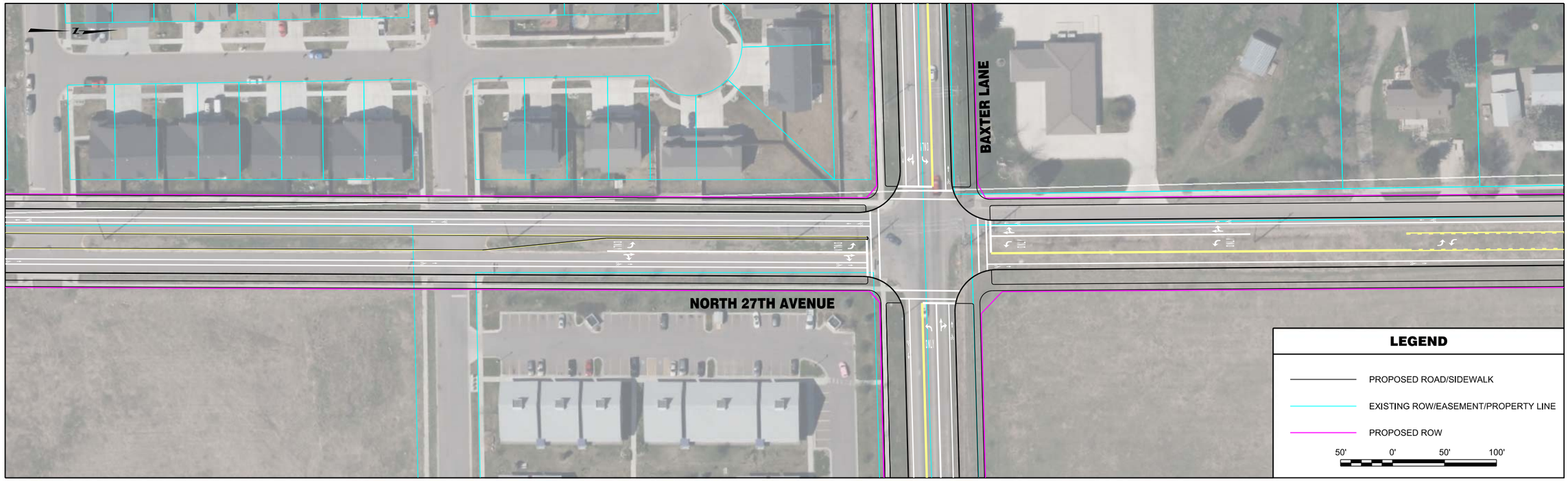

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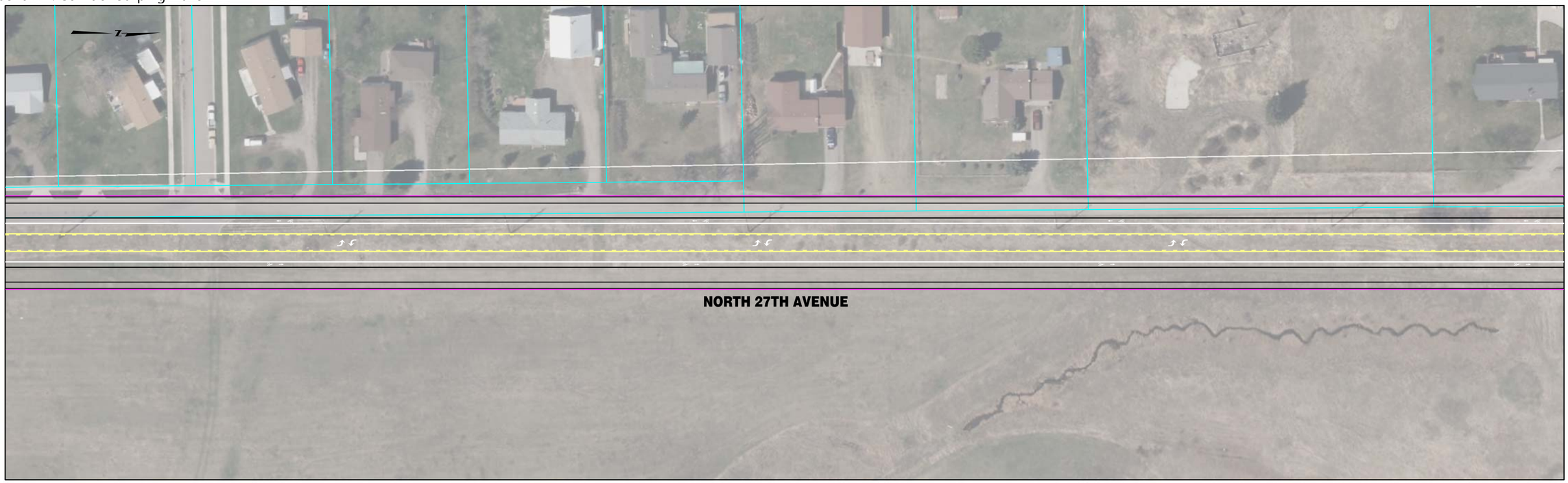
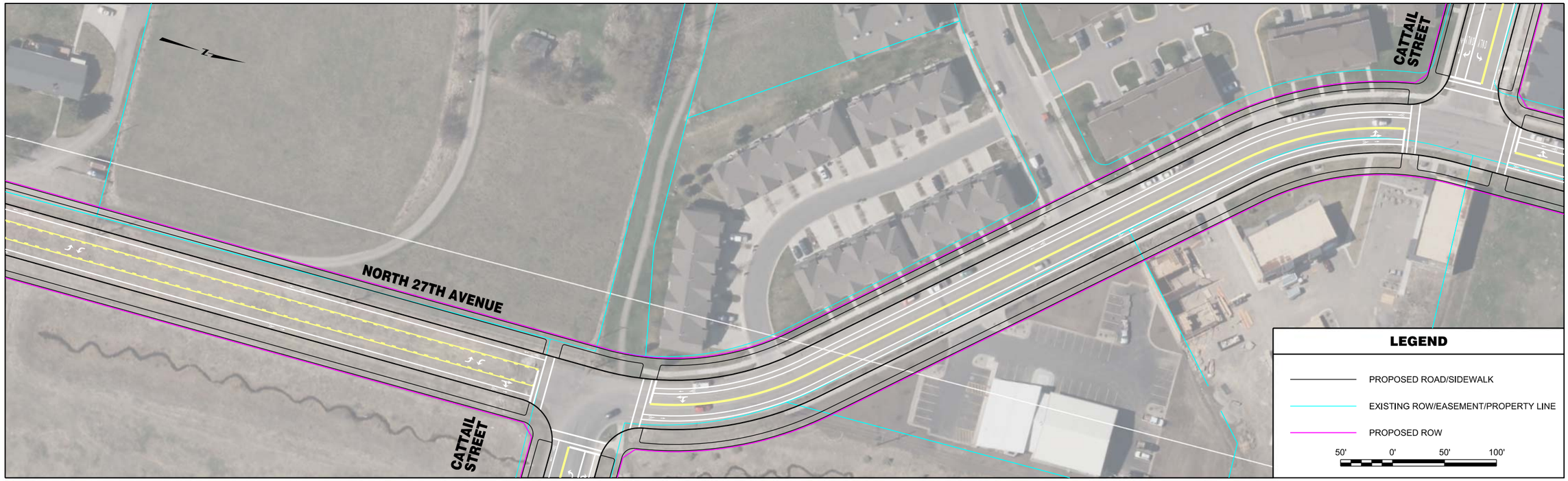
Appendix K: Corridor Striping Plans





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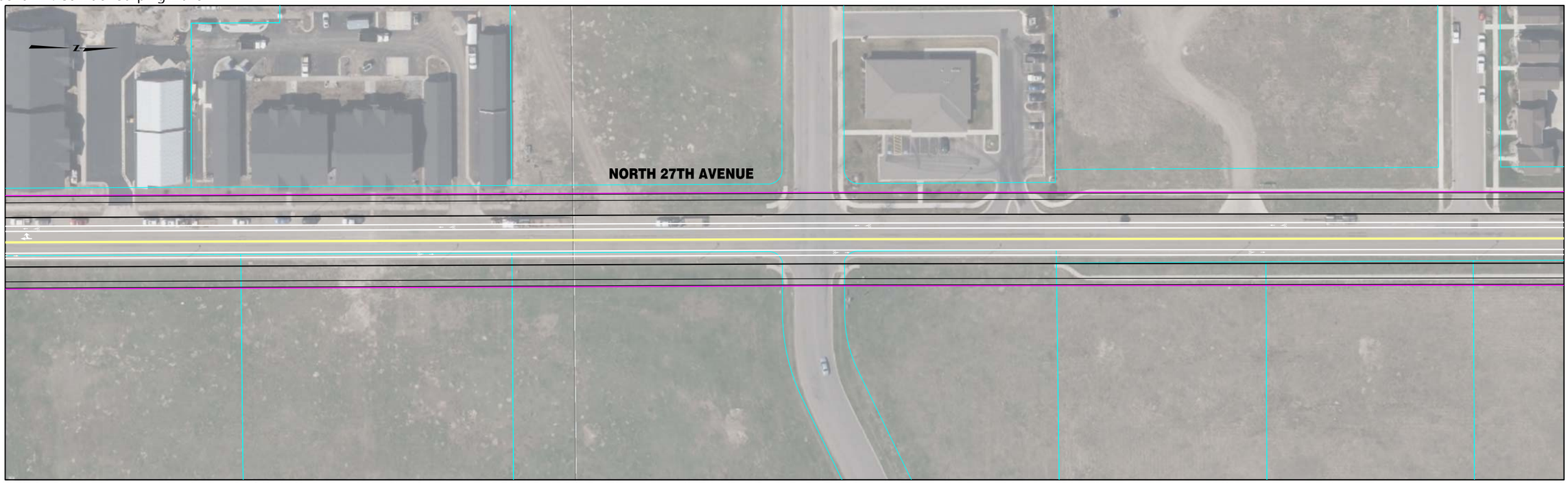

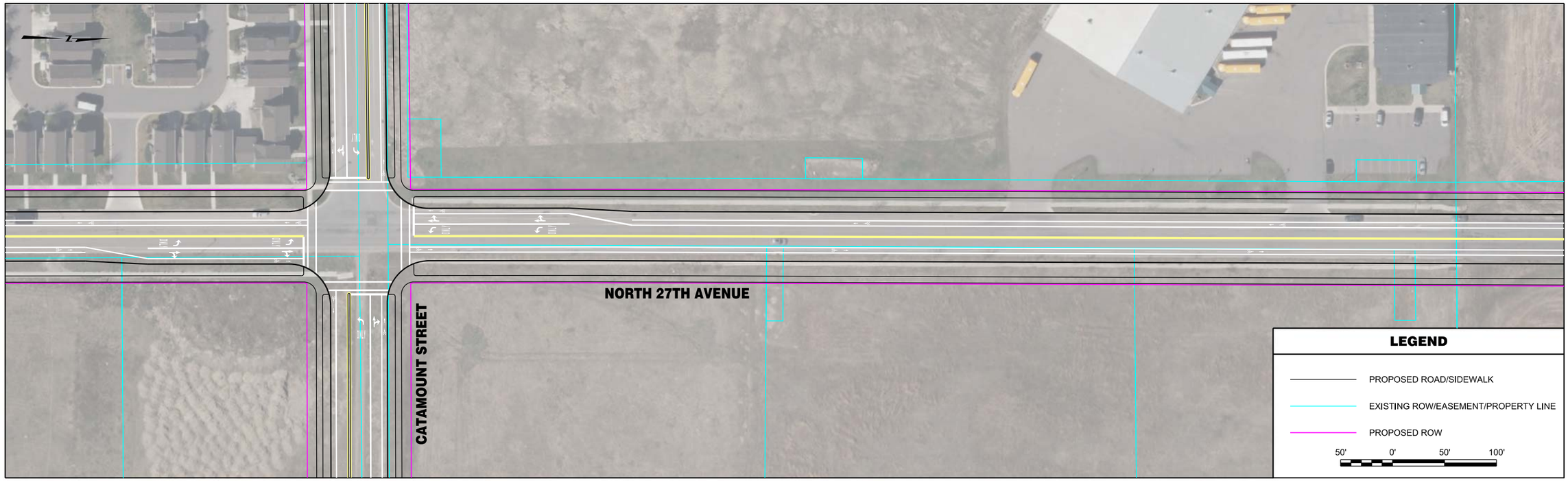

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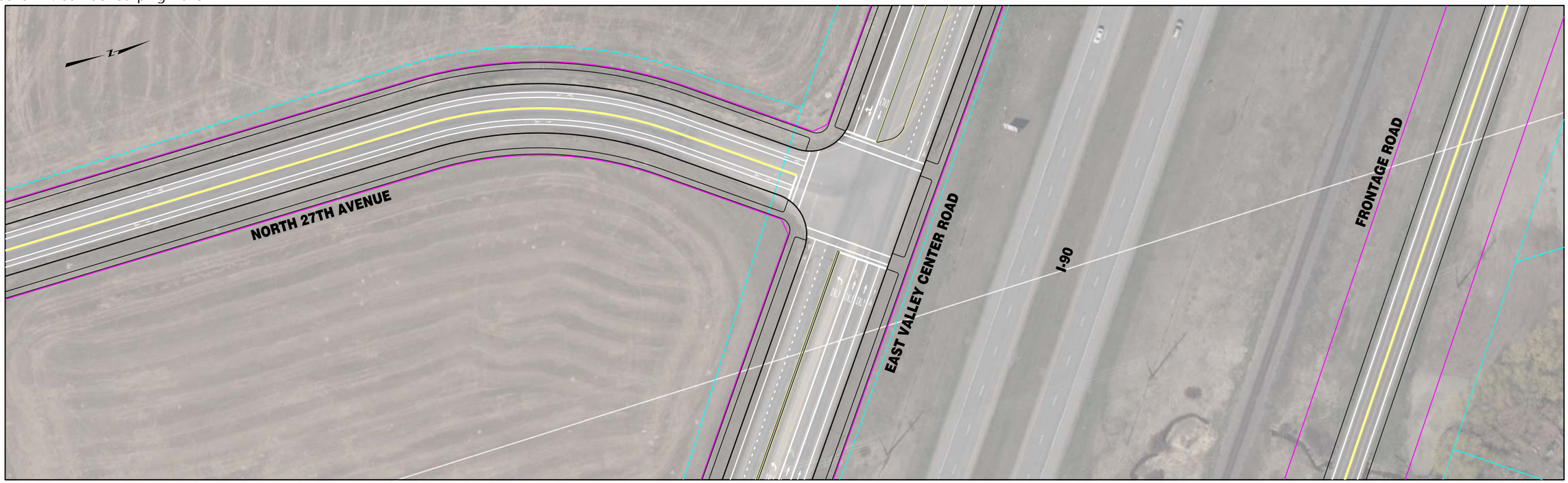

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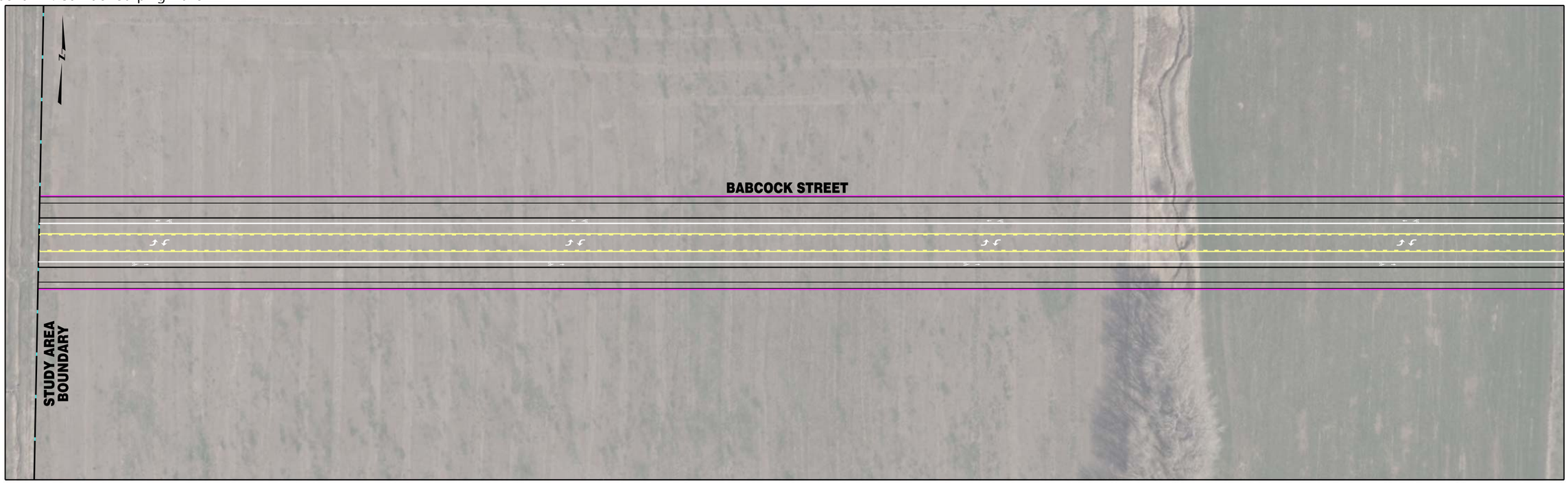

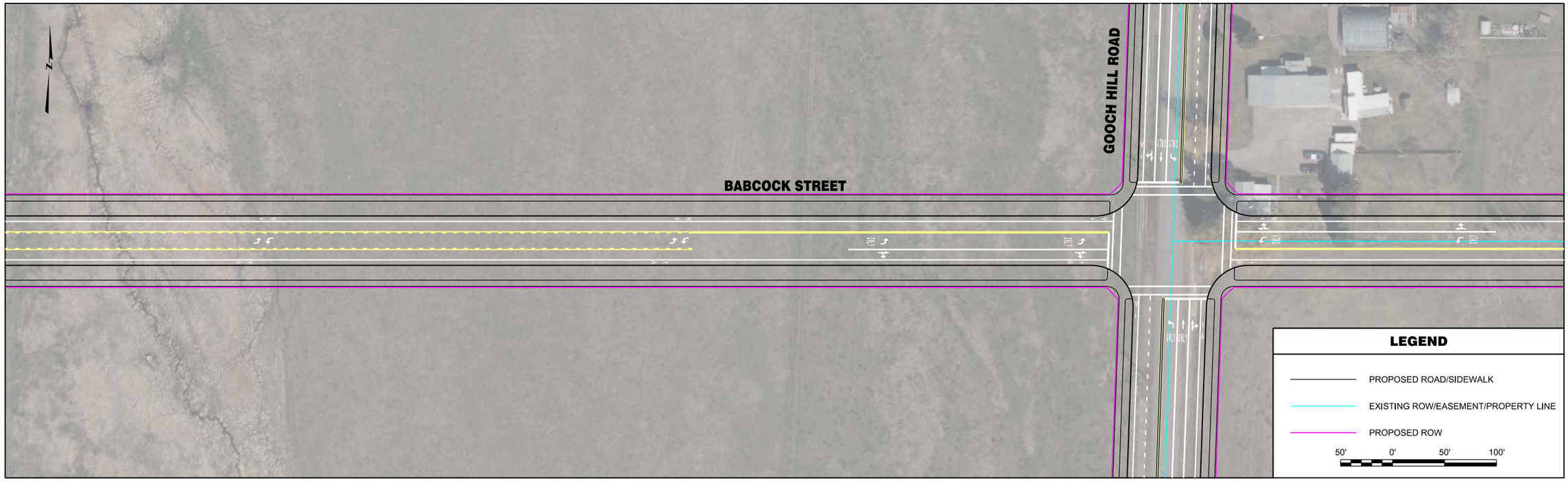

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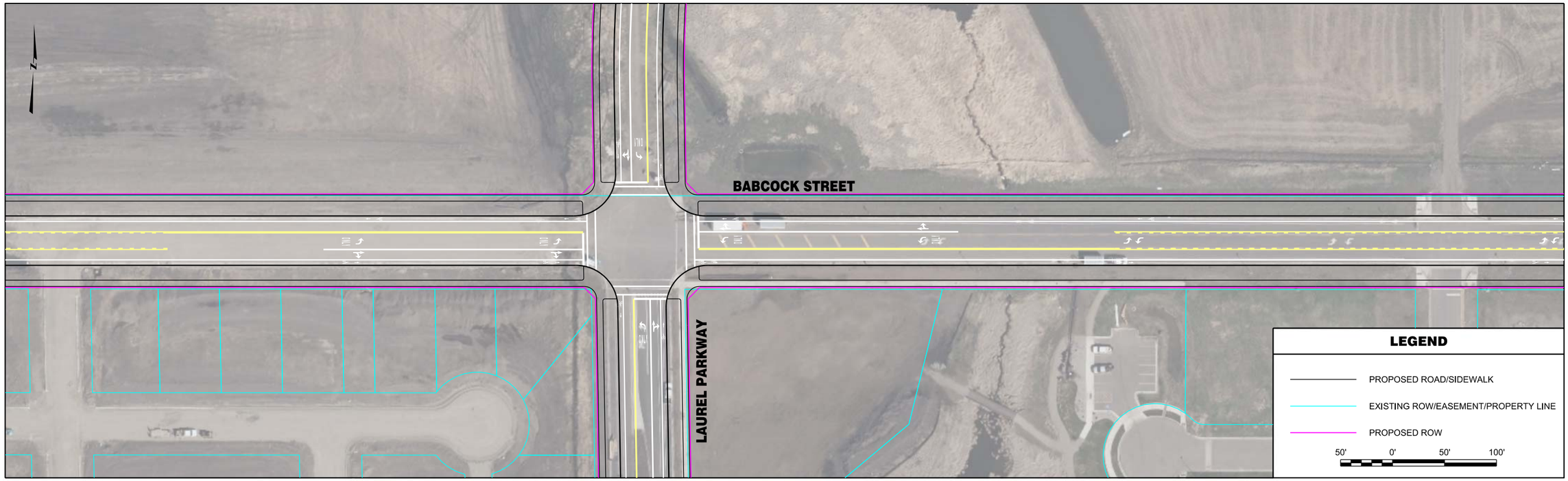

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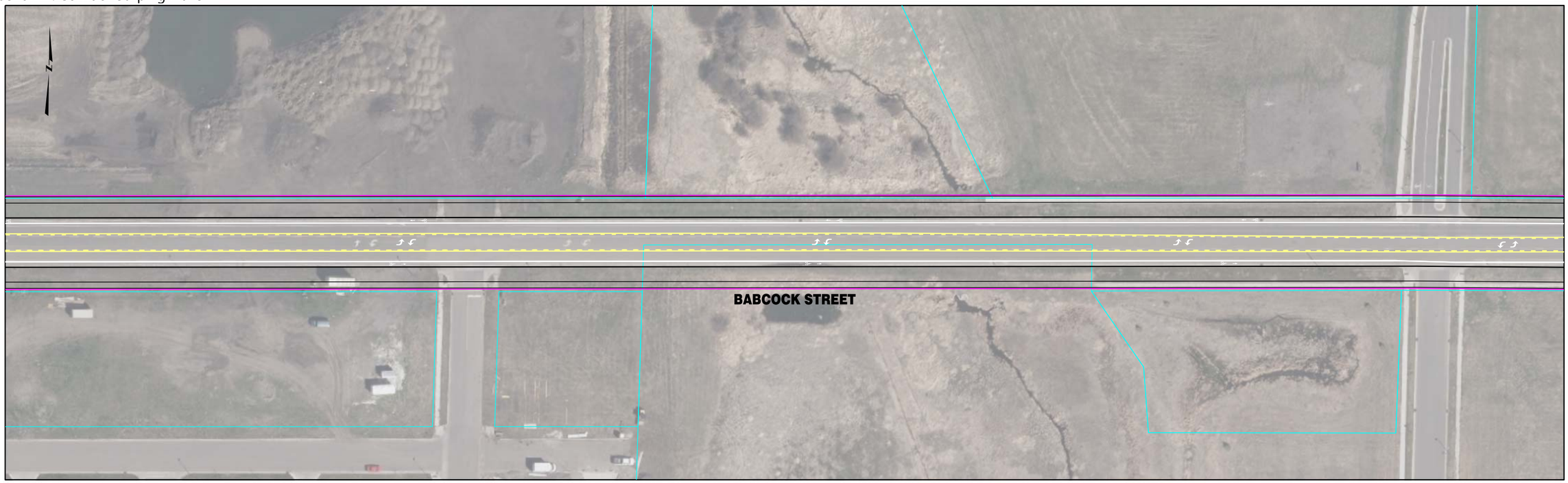

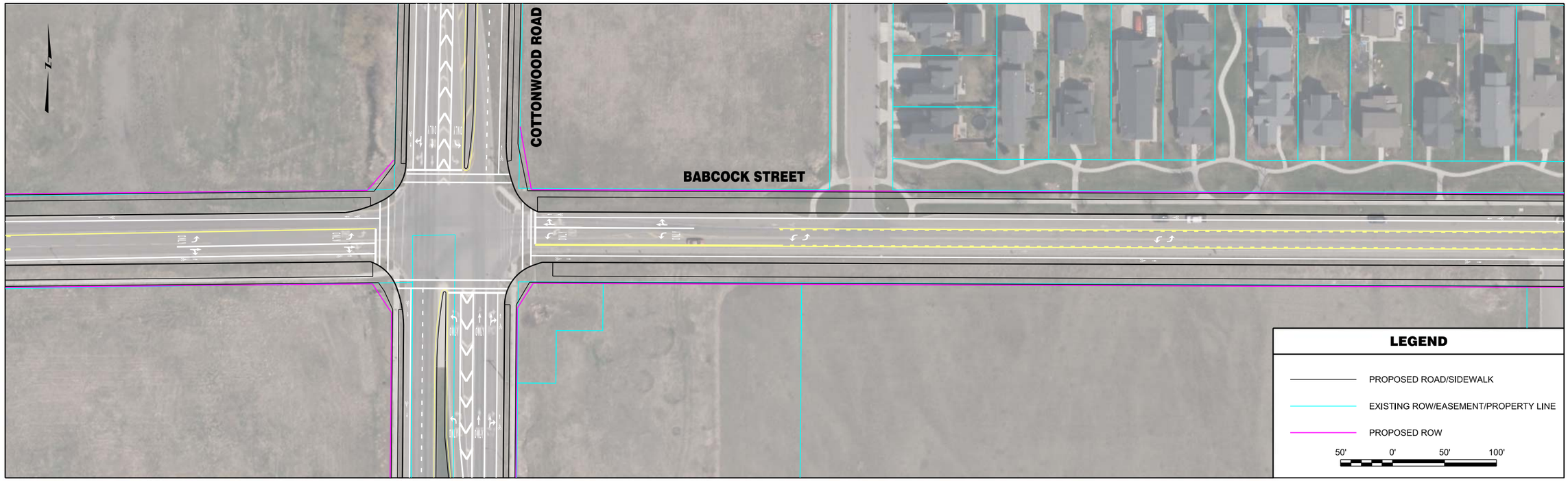

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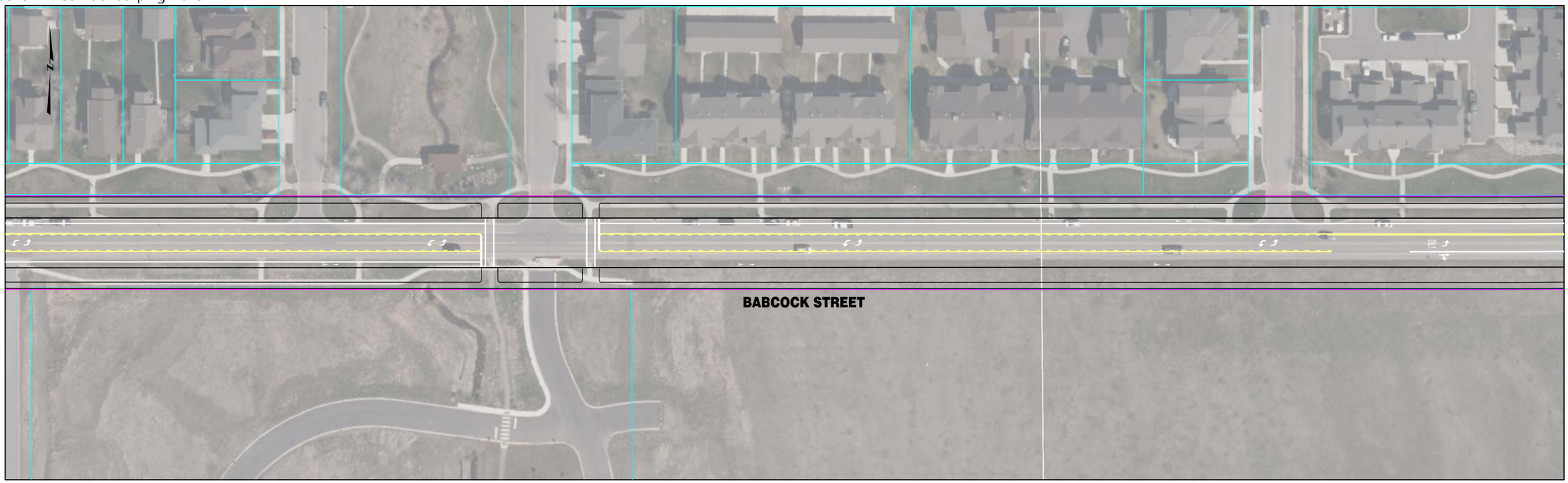

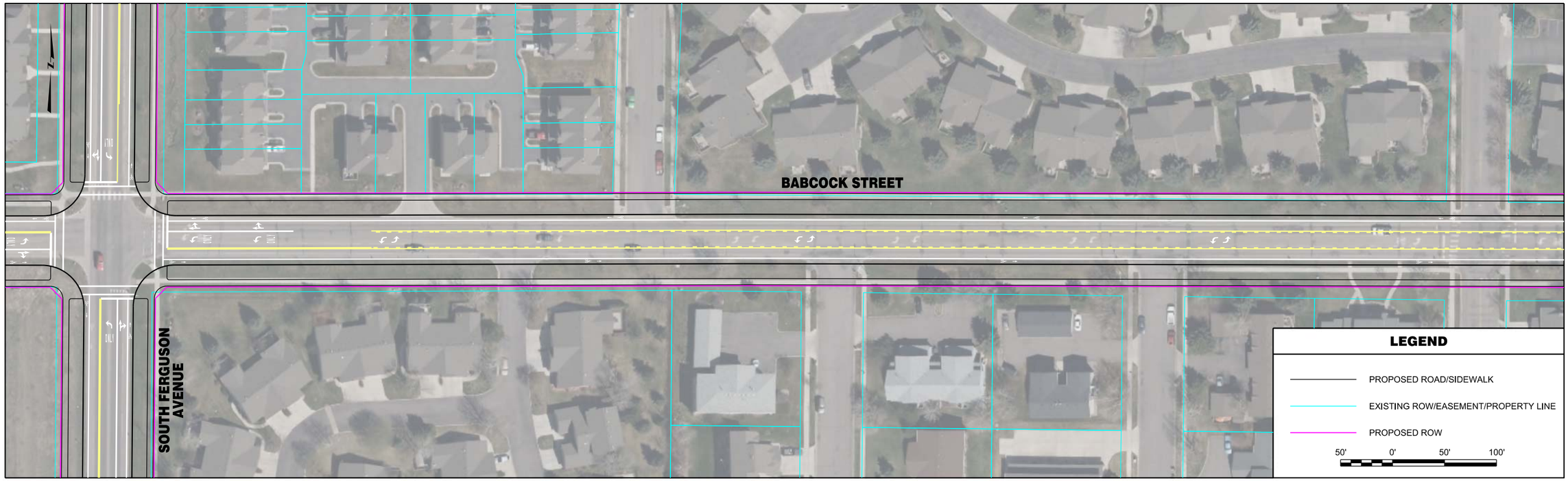

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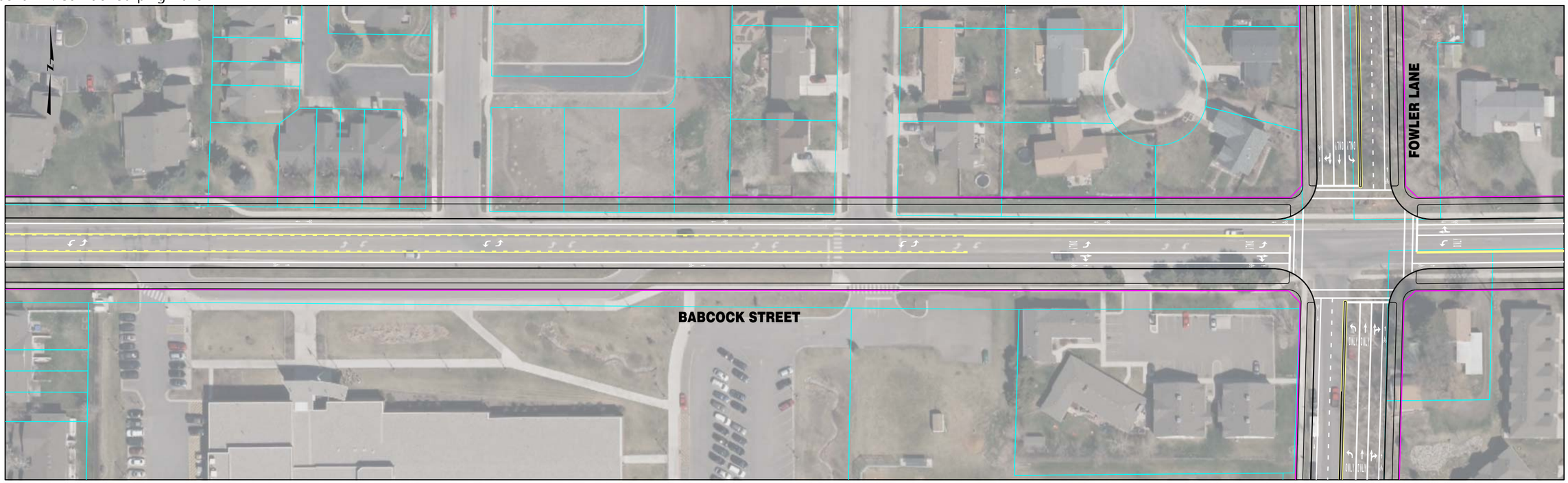

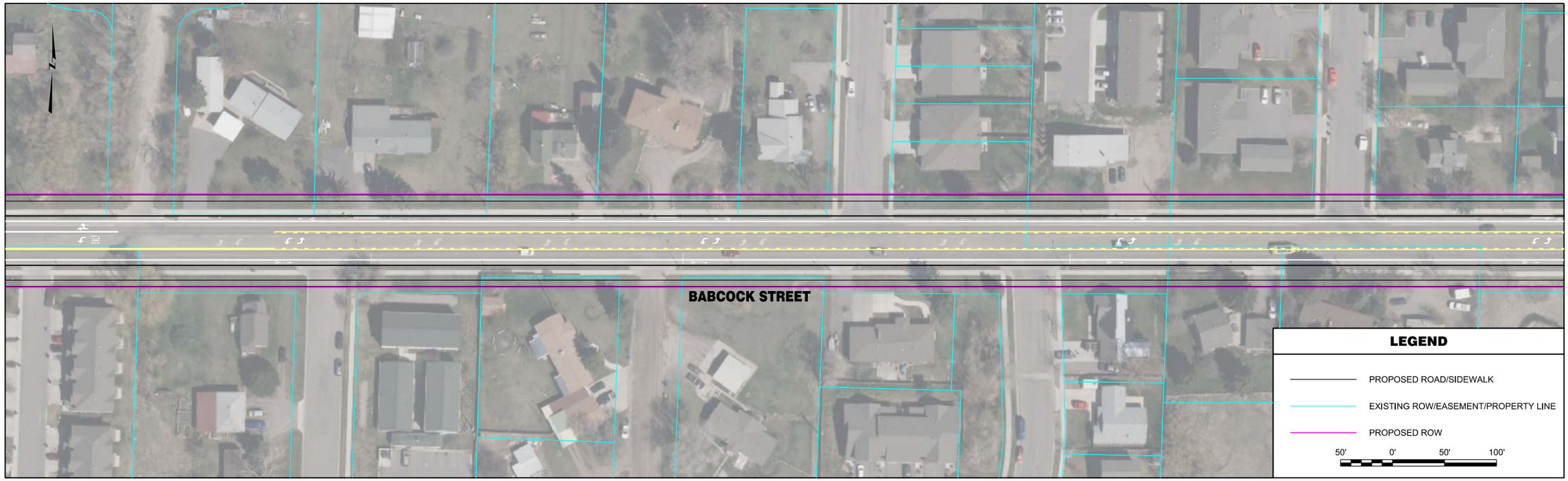

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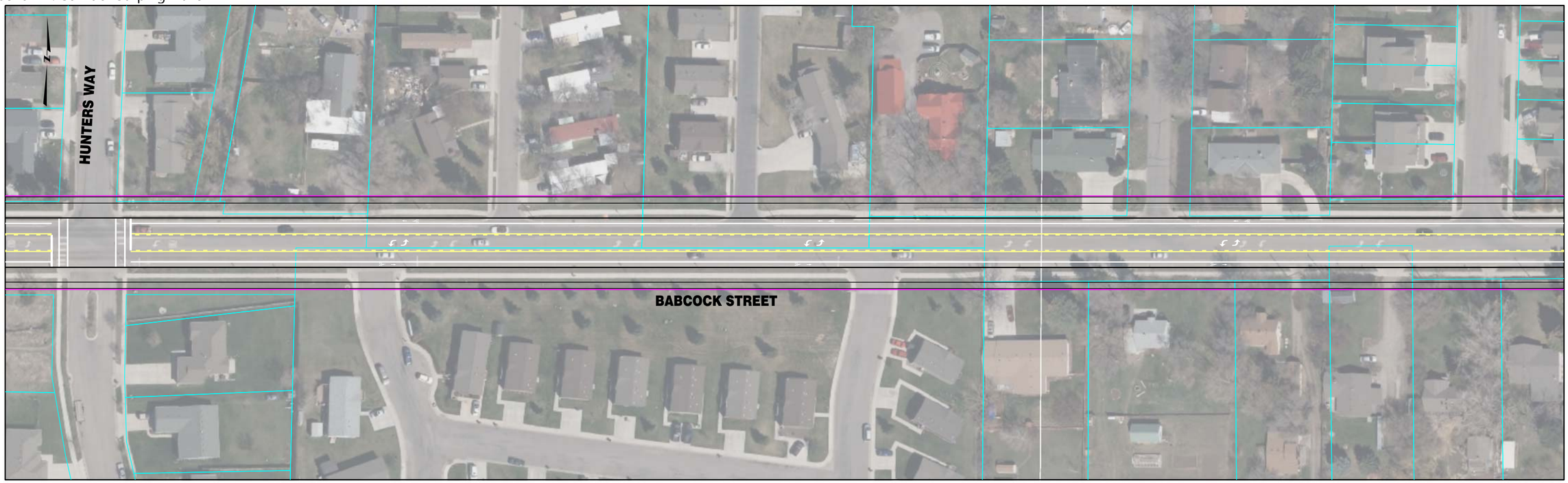

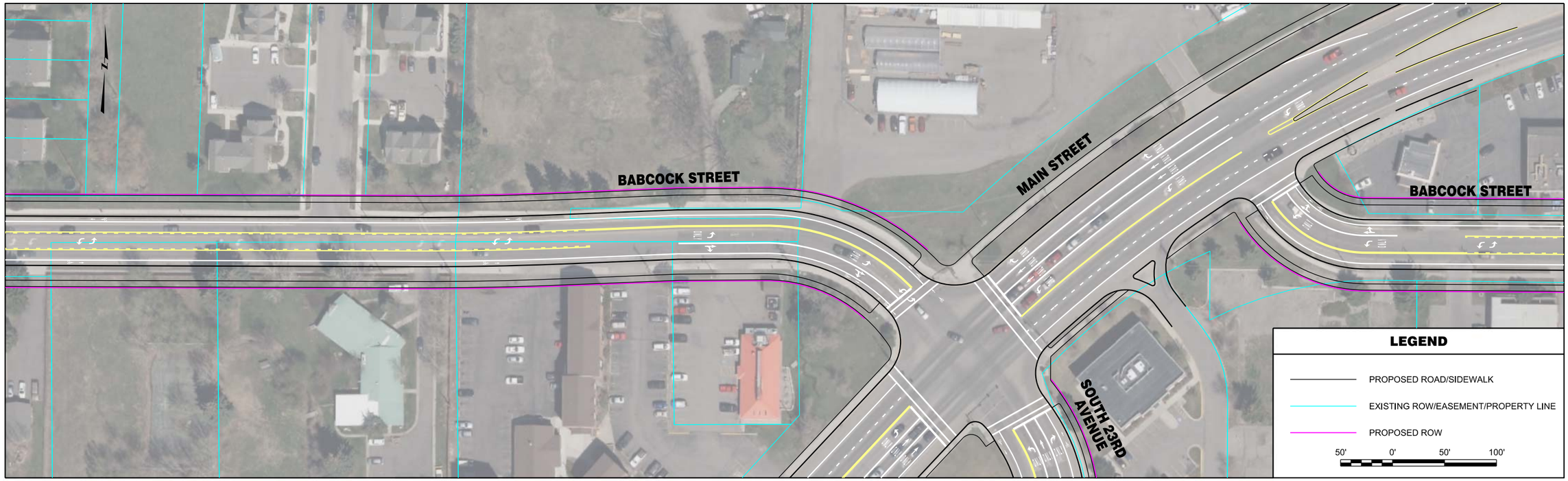

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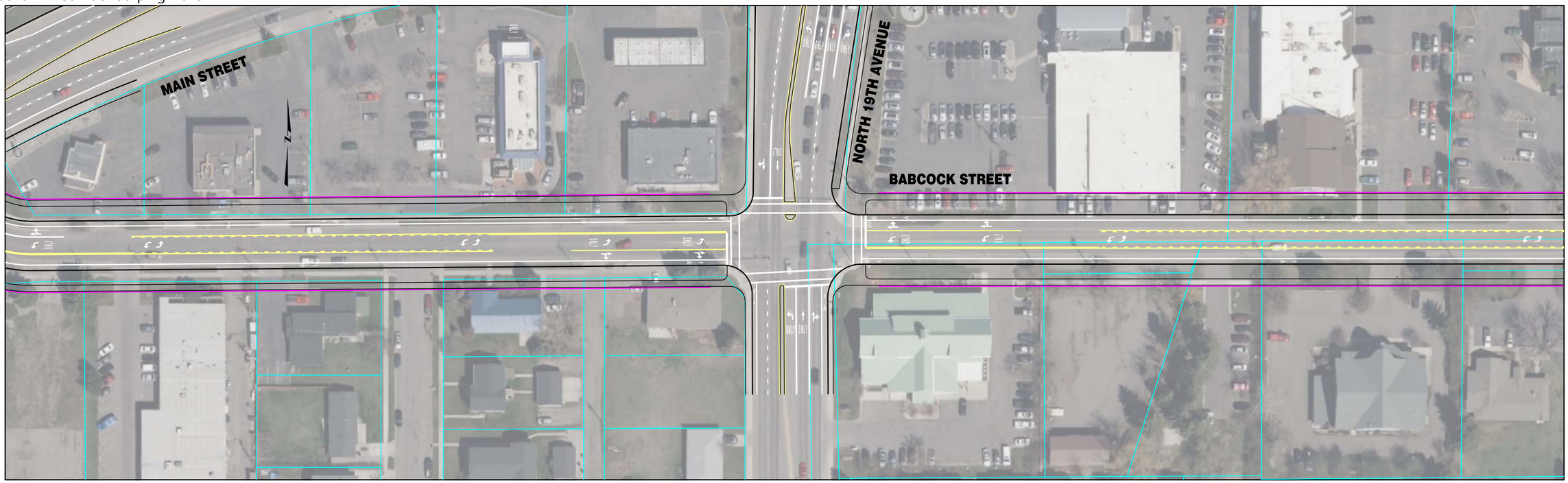

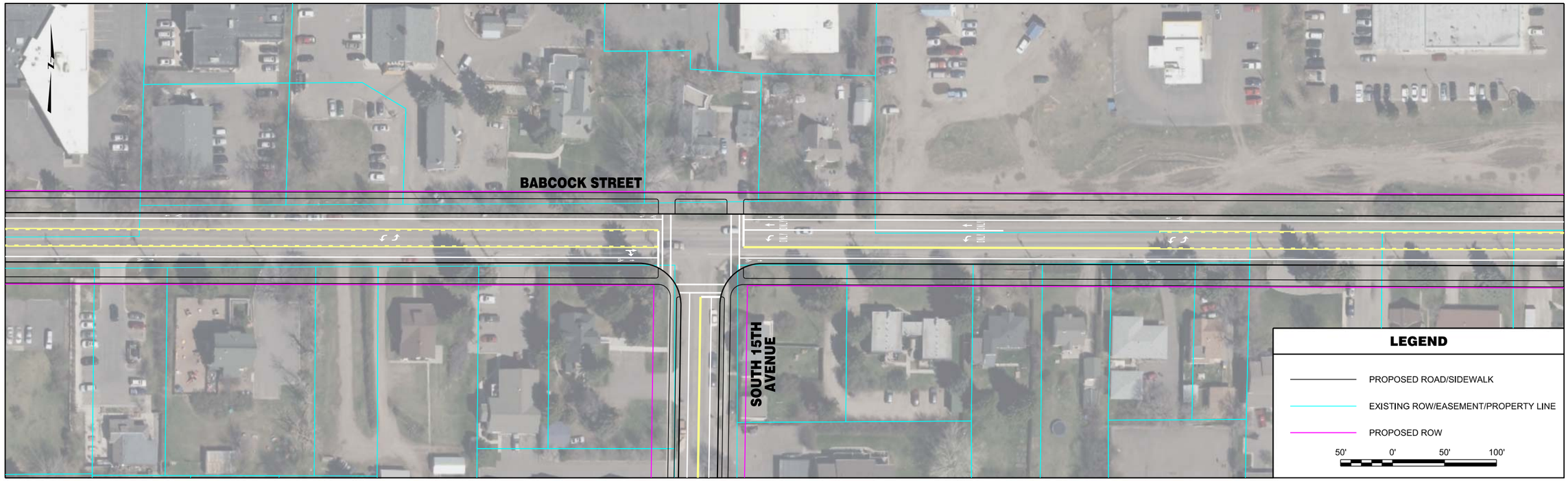

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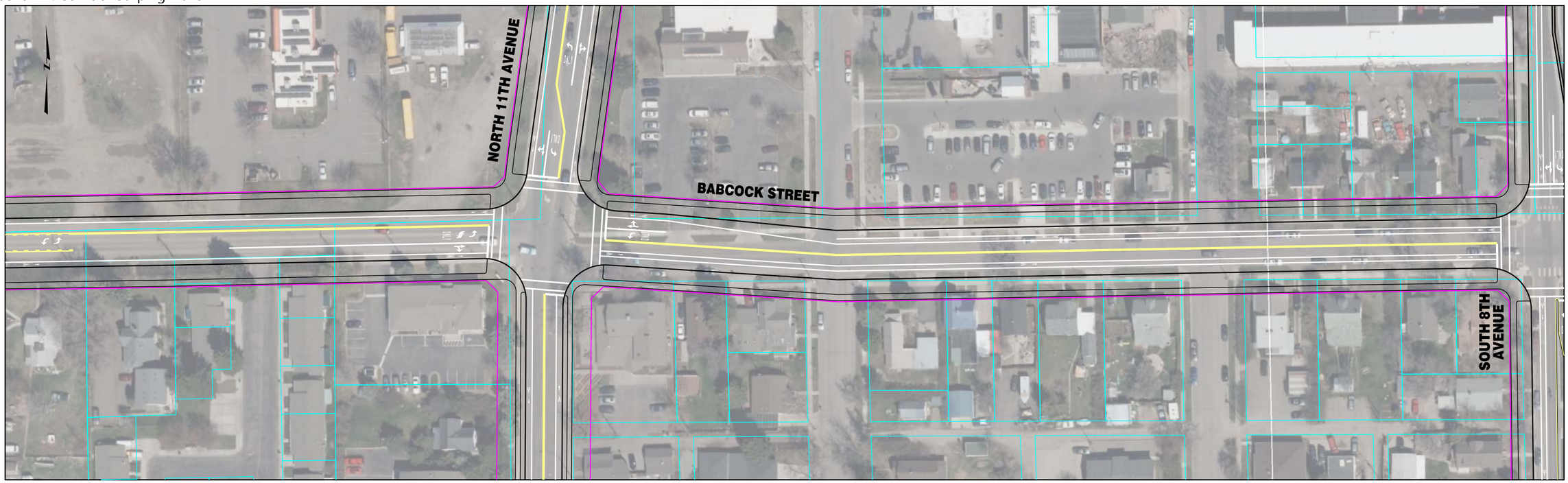

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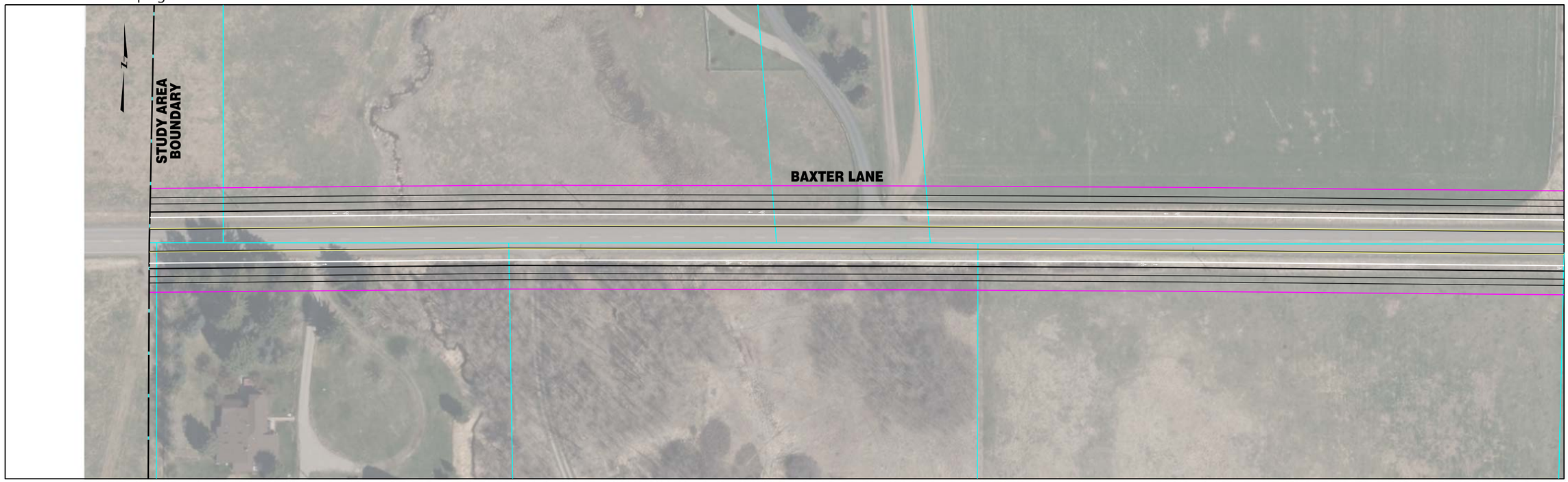

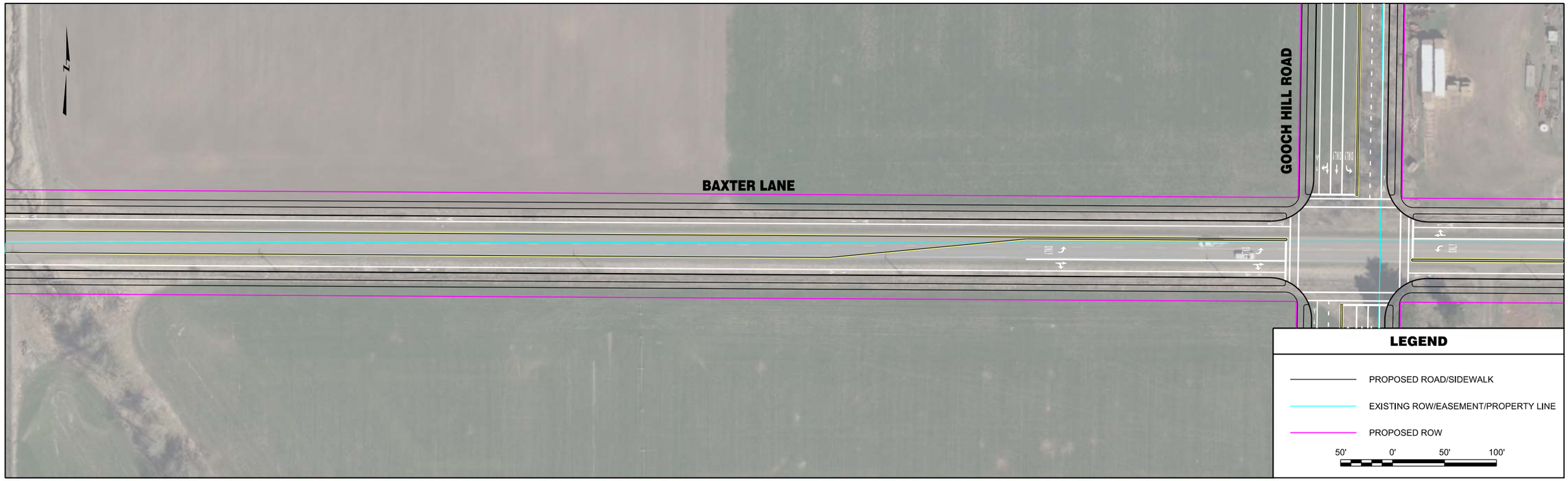

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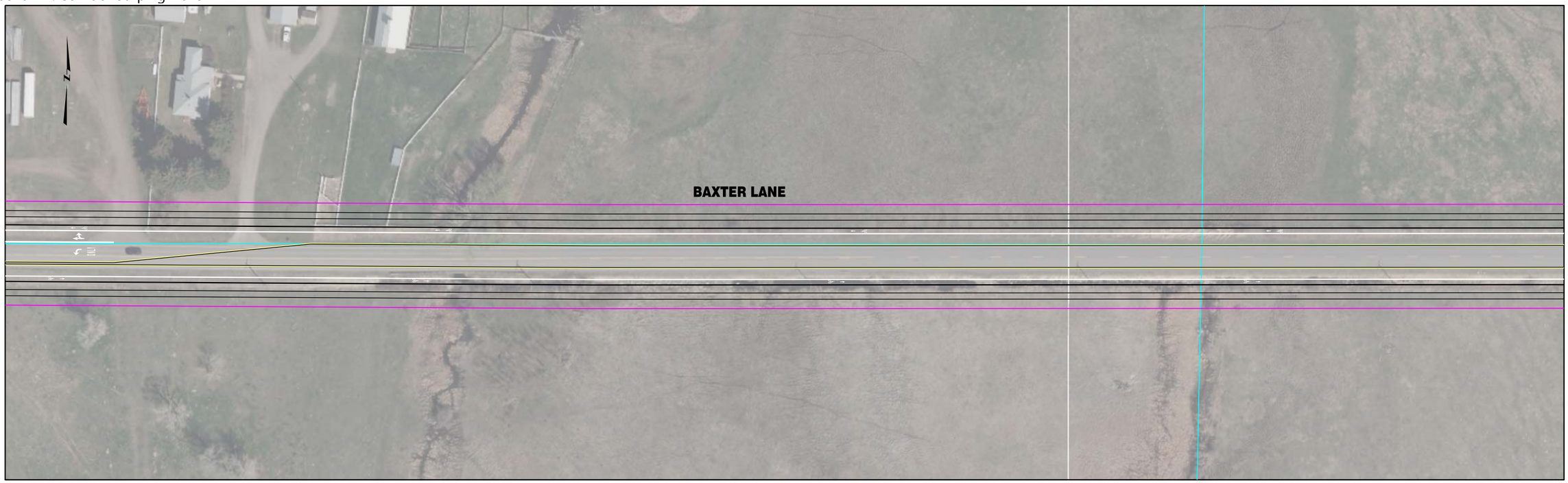

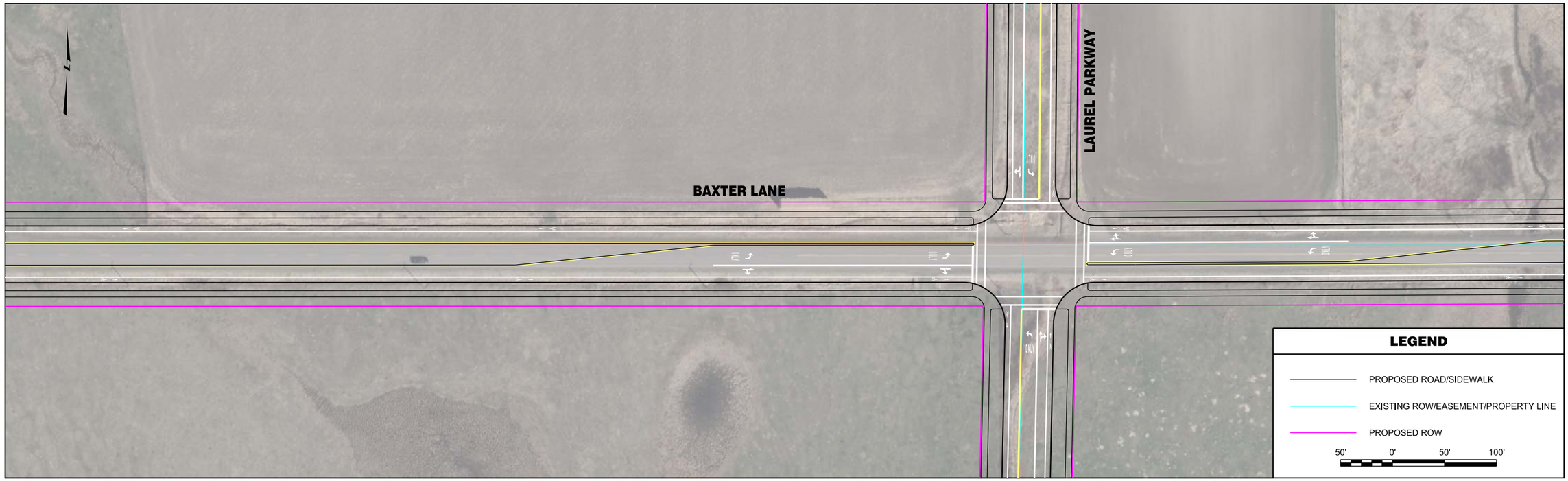

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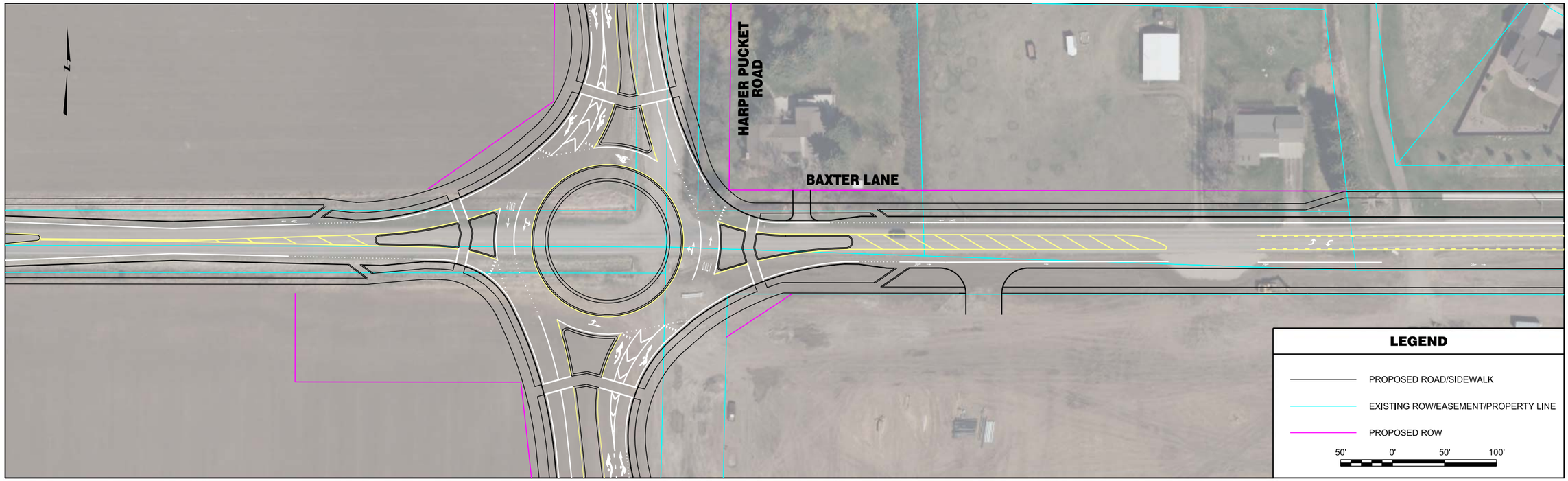
Appendix K: Corridor Striping Plans



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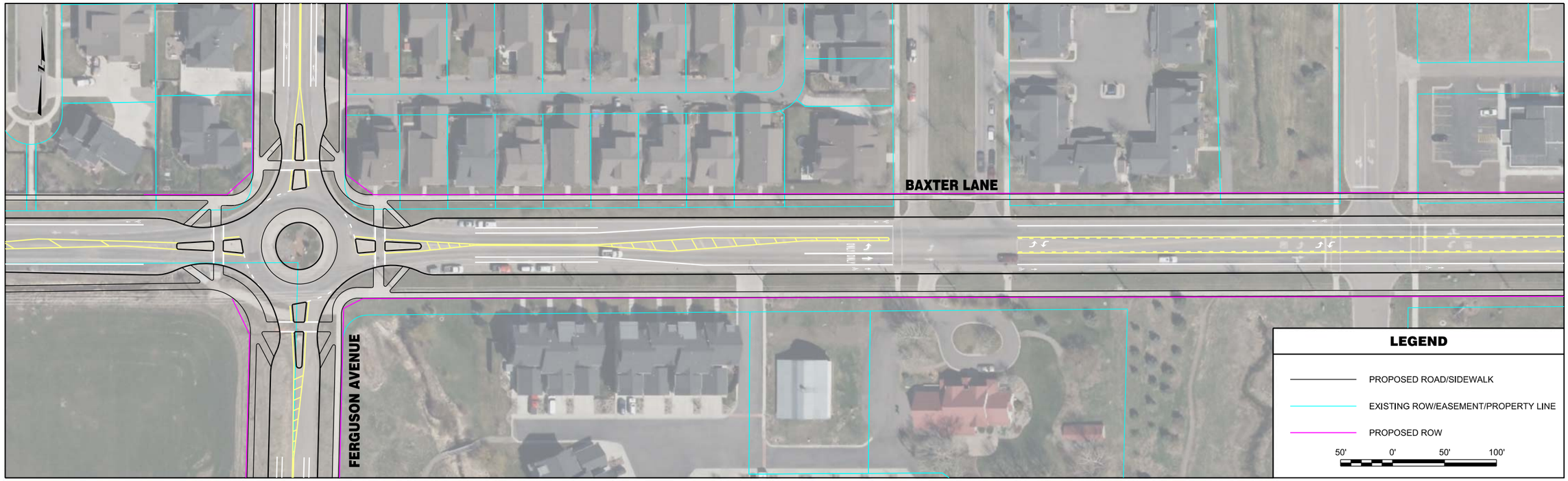

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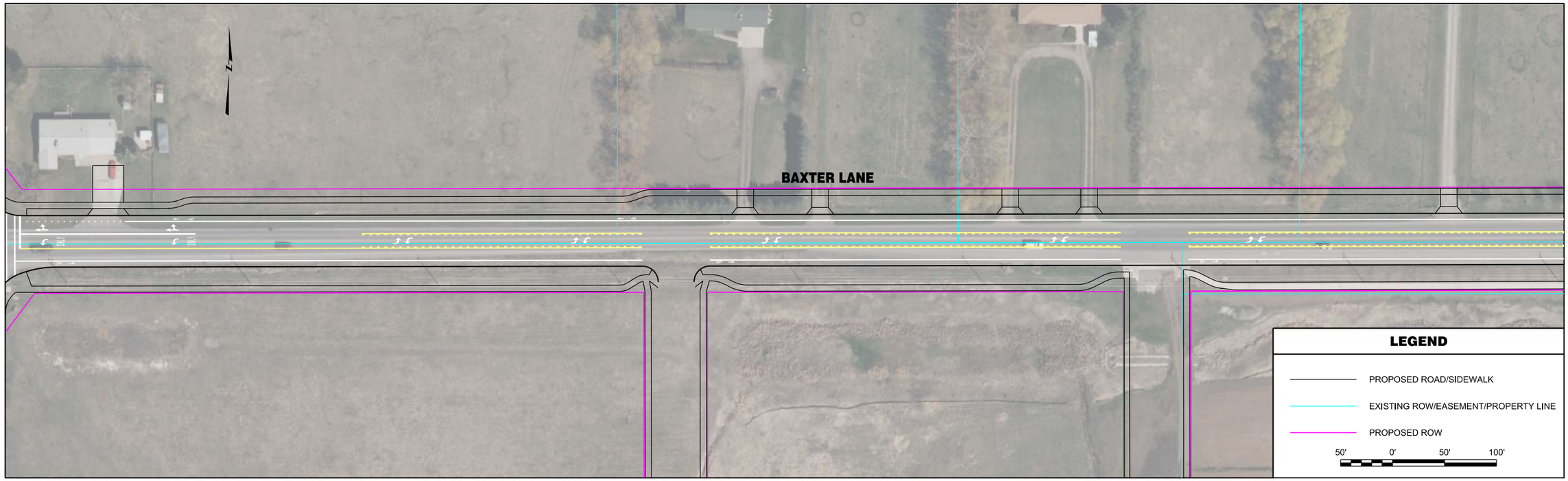

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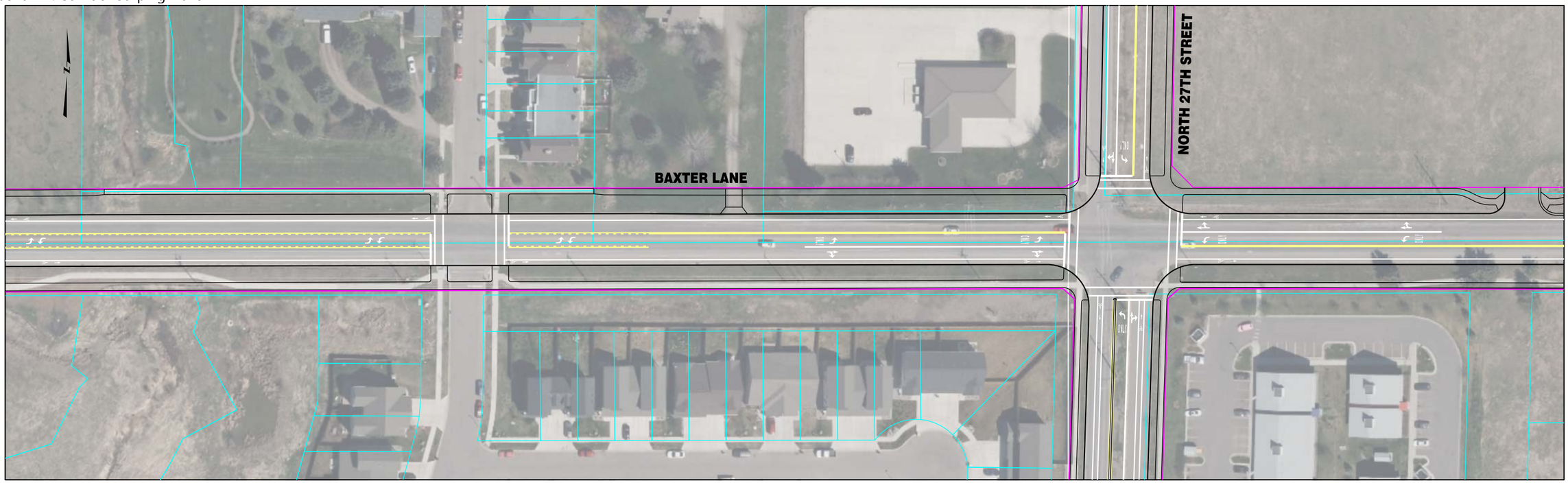

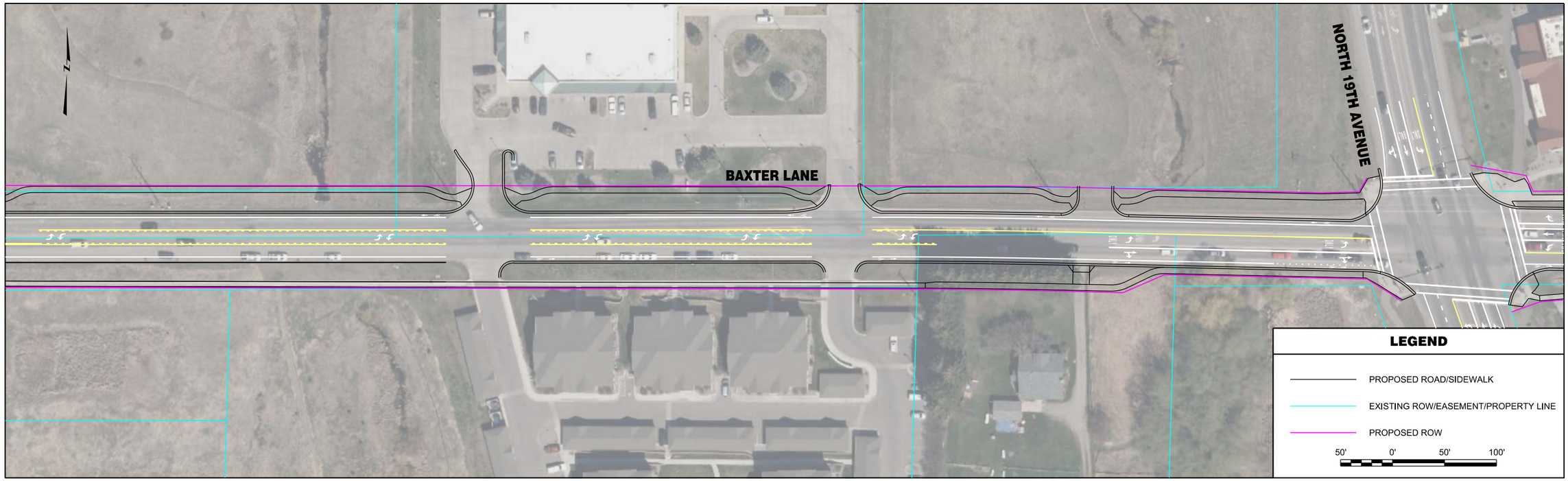

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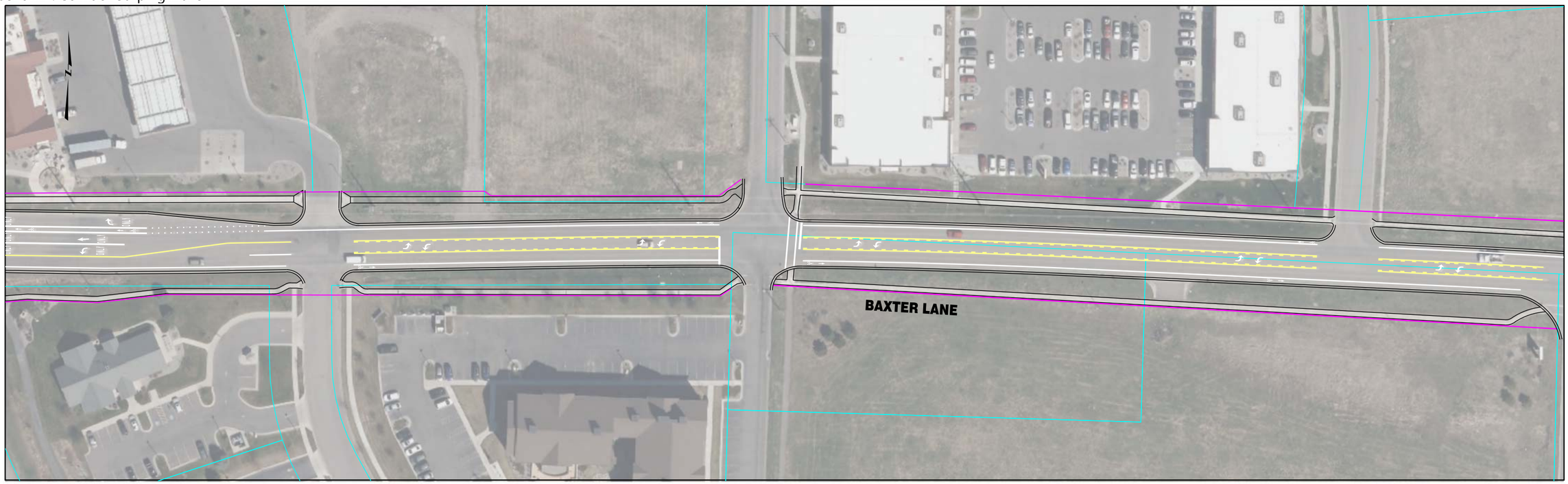

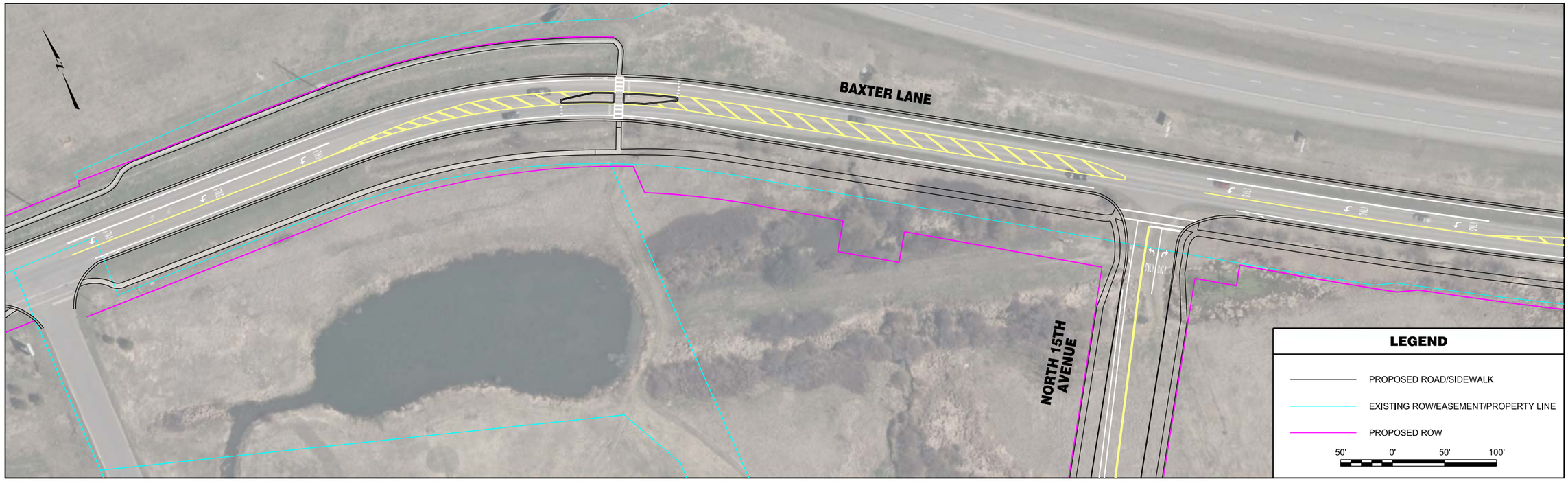

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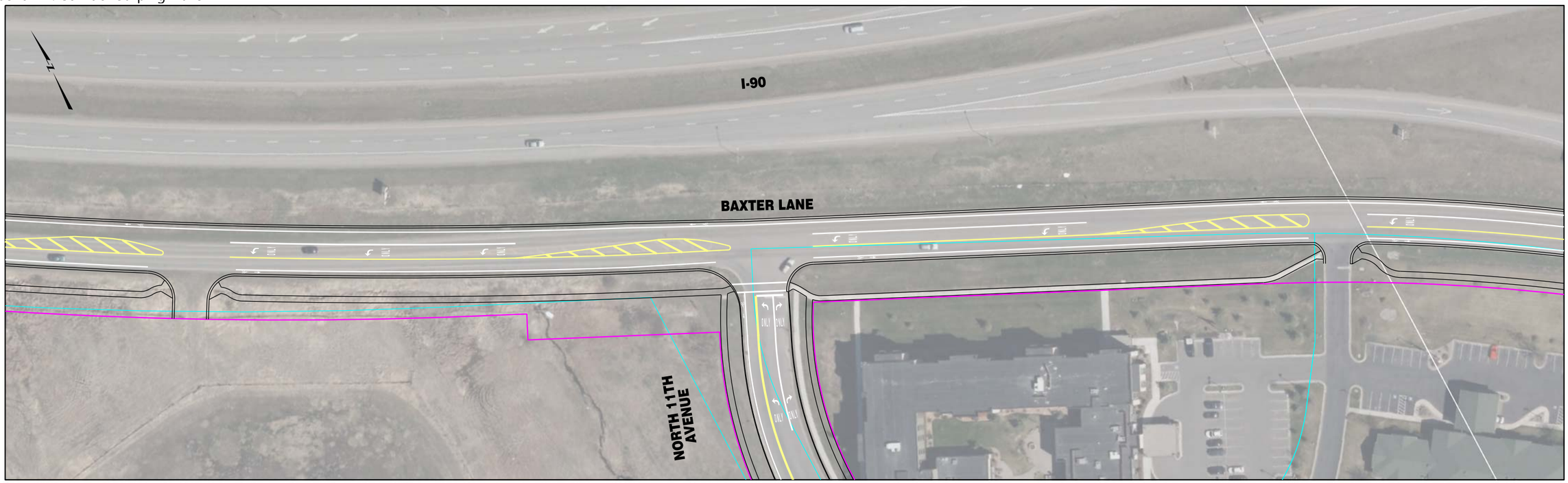

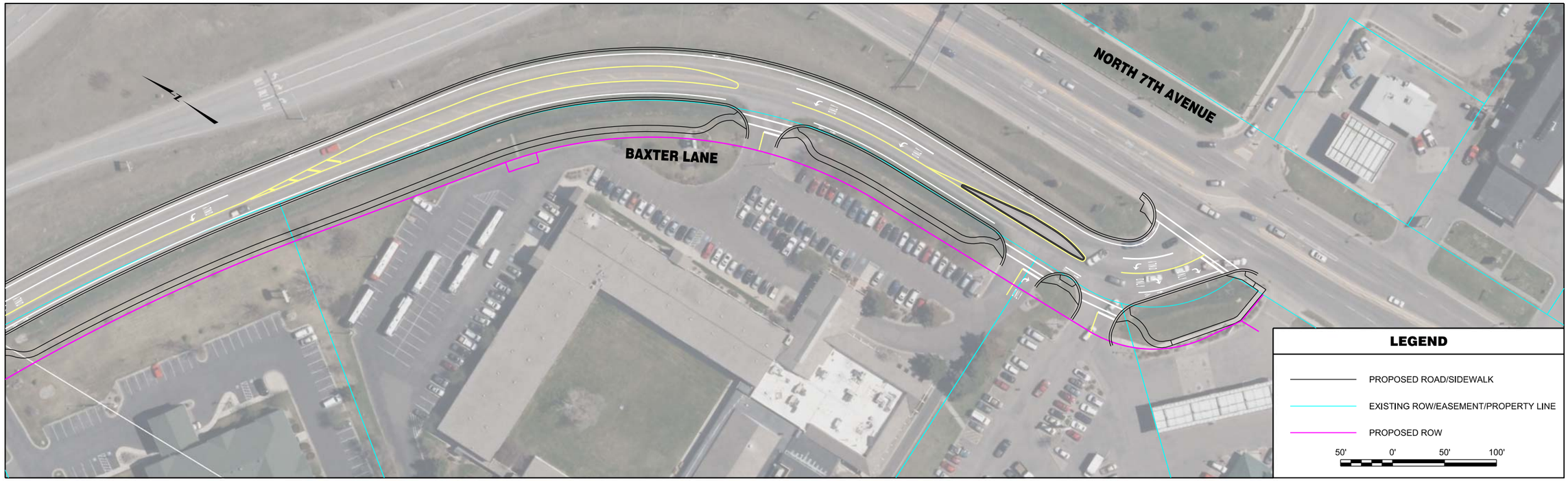

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\I-Blackwood\15602RDPLNZI1.dgn 1/26/2017 3:02:36 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **BLACKWOOD ROAD STRIPING PLAN**

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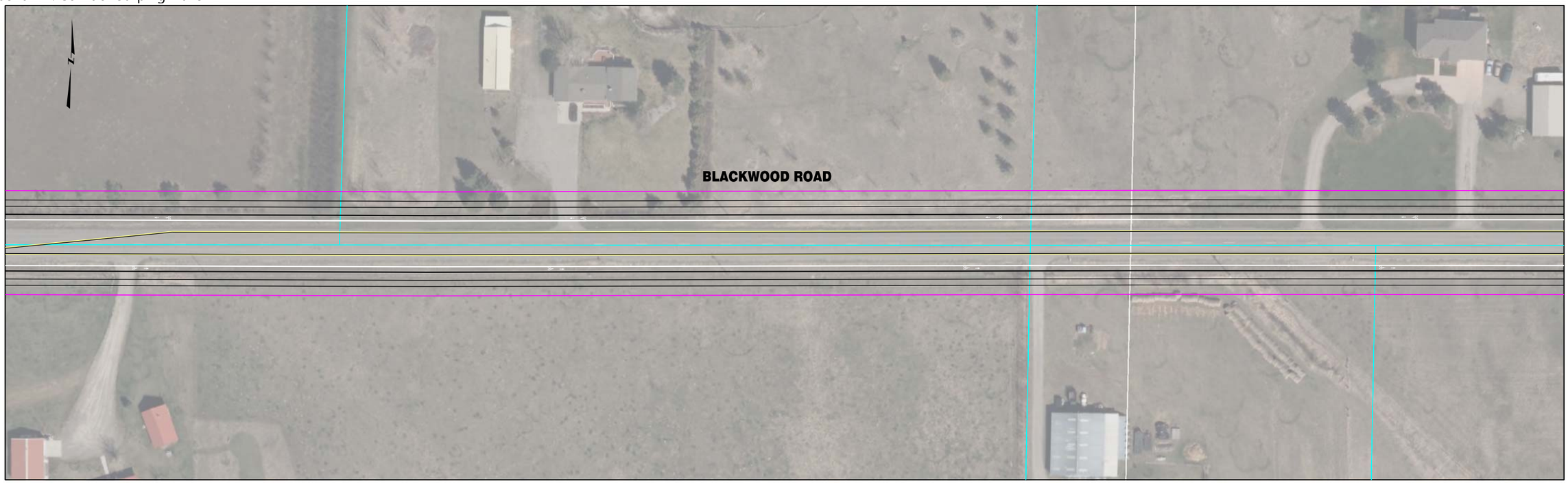

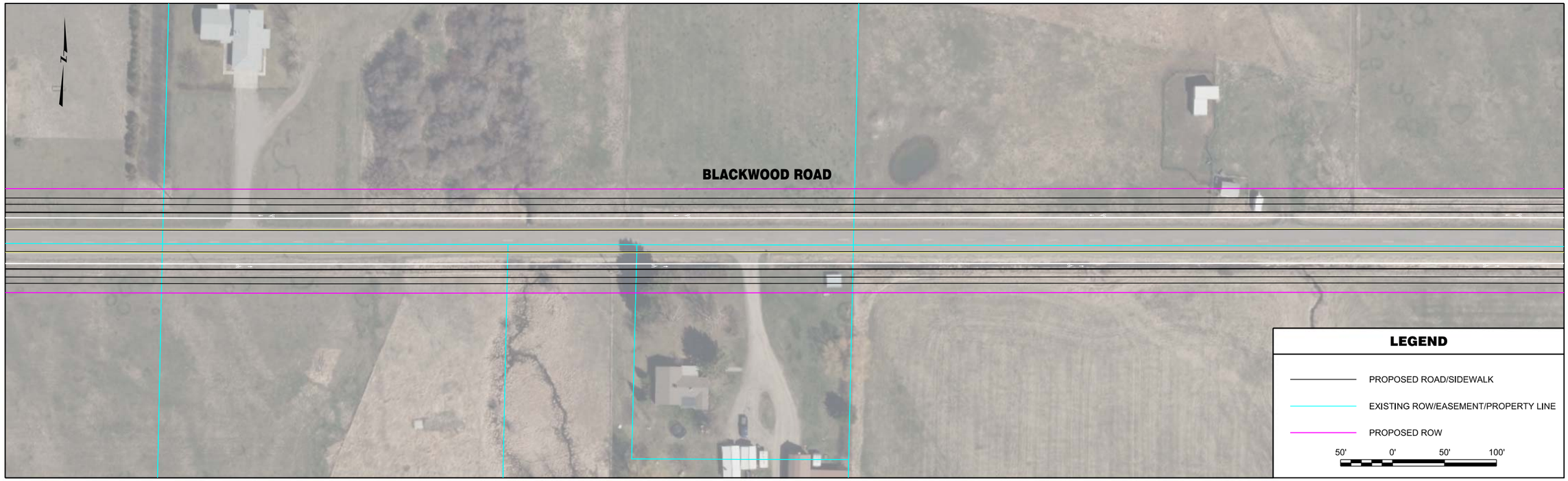

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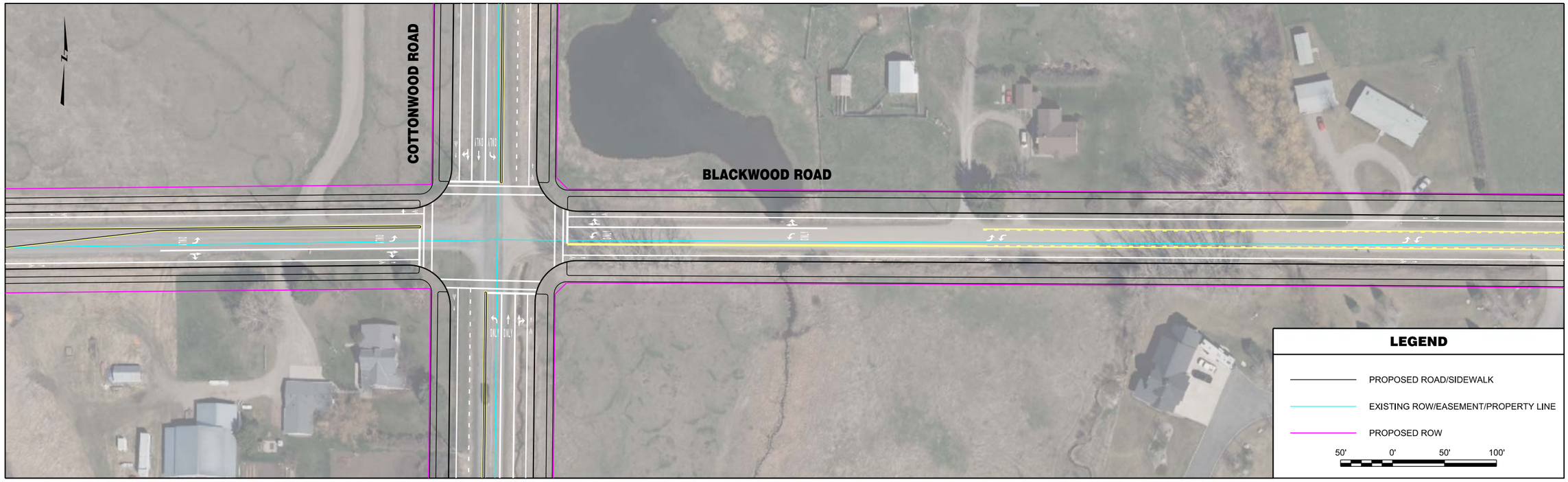

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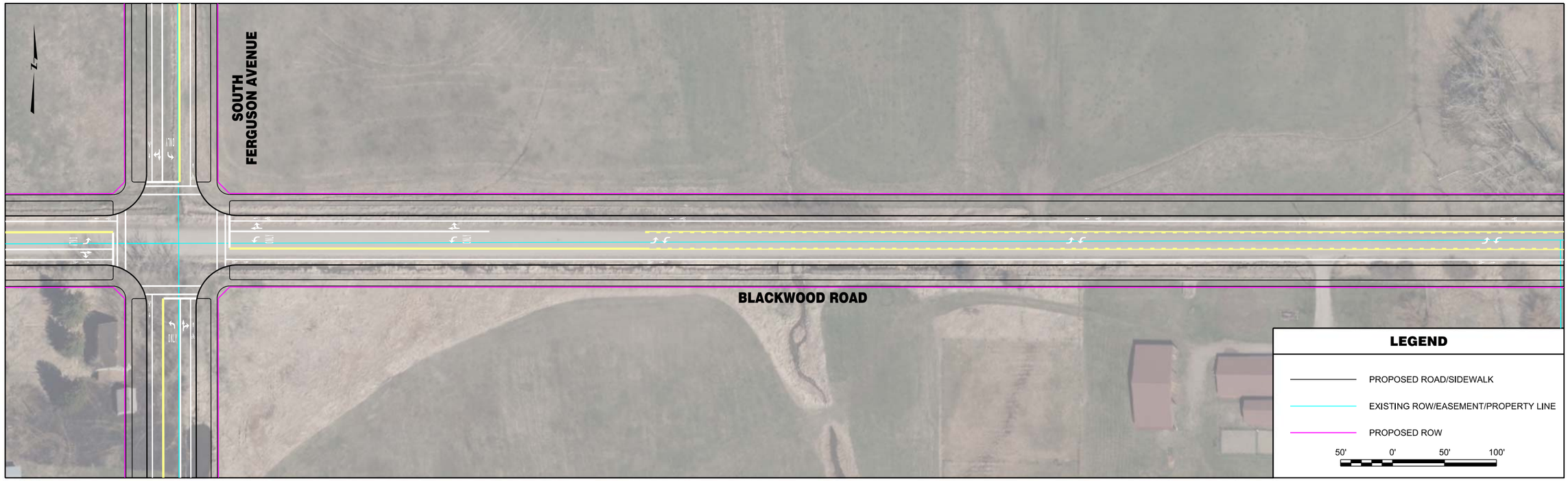

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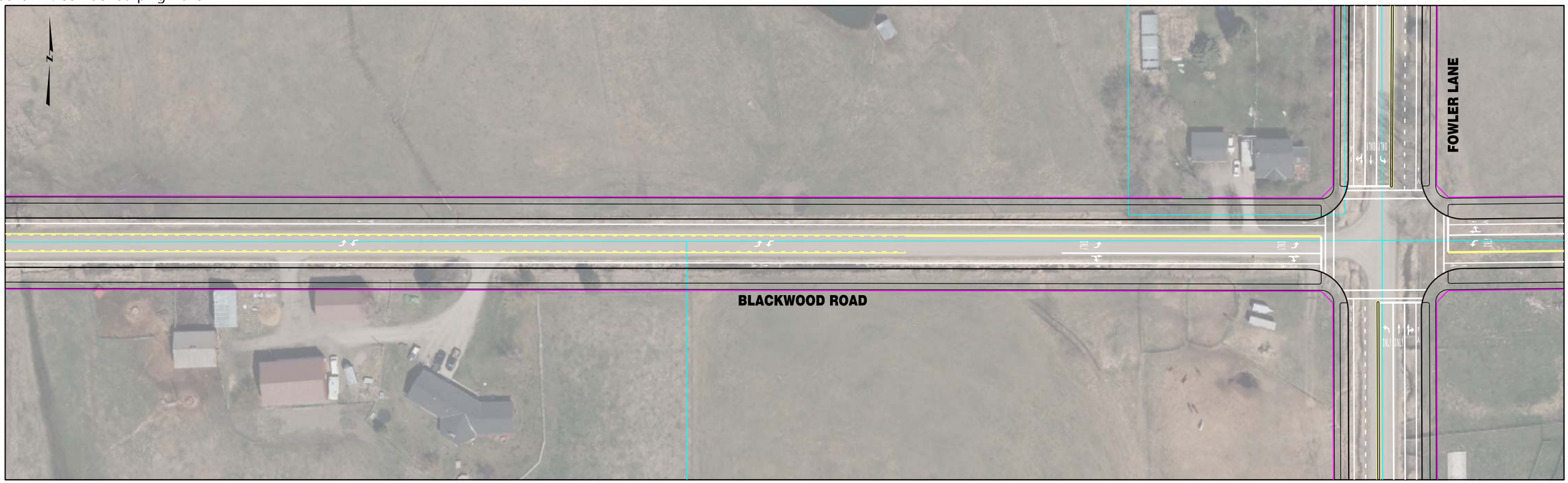

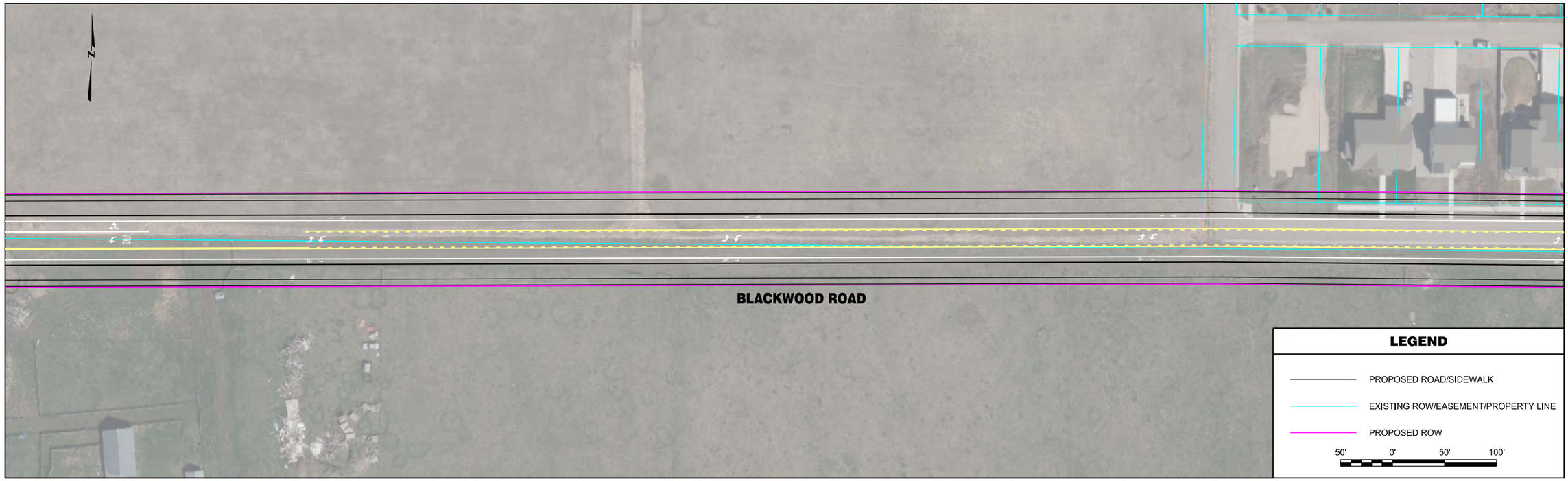

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\I-Blackwood\15602RDPLNZI2.dgn 1/26/2017 3:03:13 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **BLACKWOOD ROAD STRIPING PLAN**	SHEET Page 56 **5**

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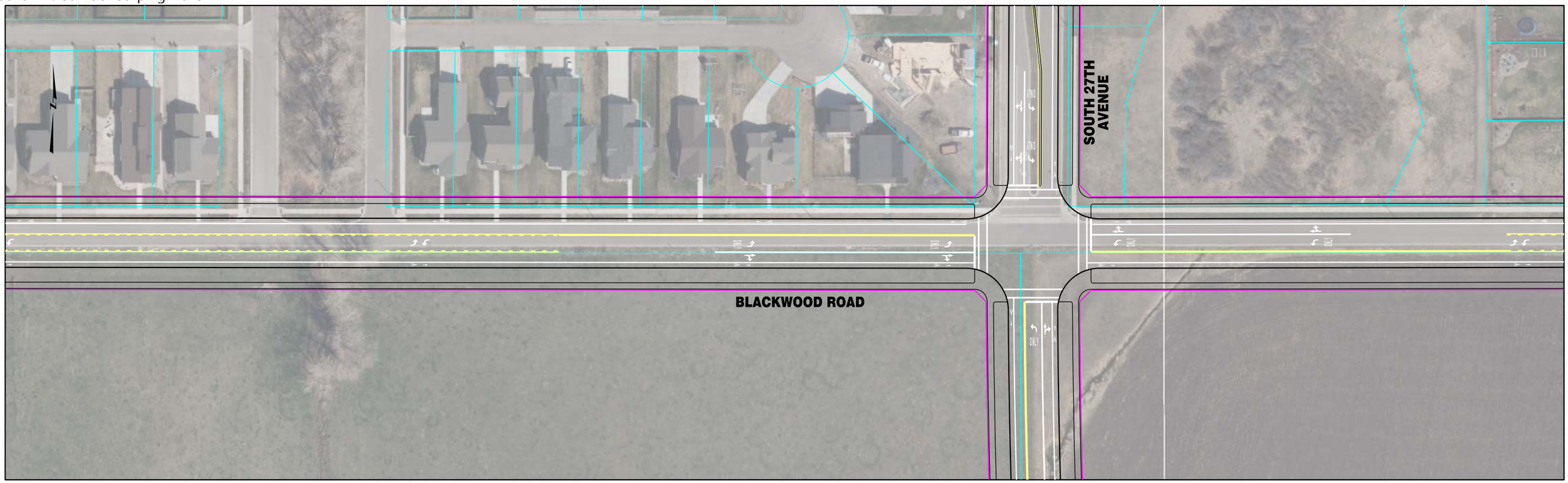

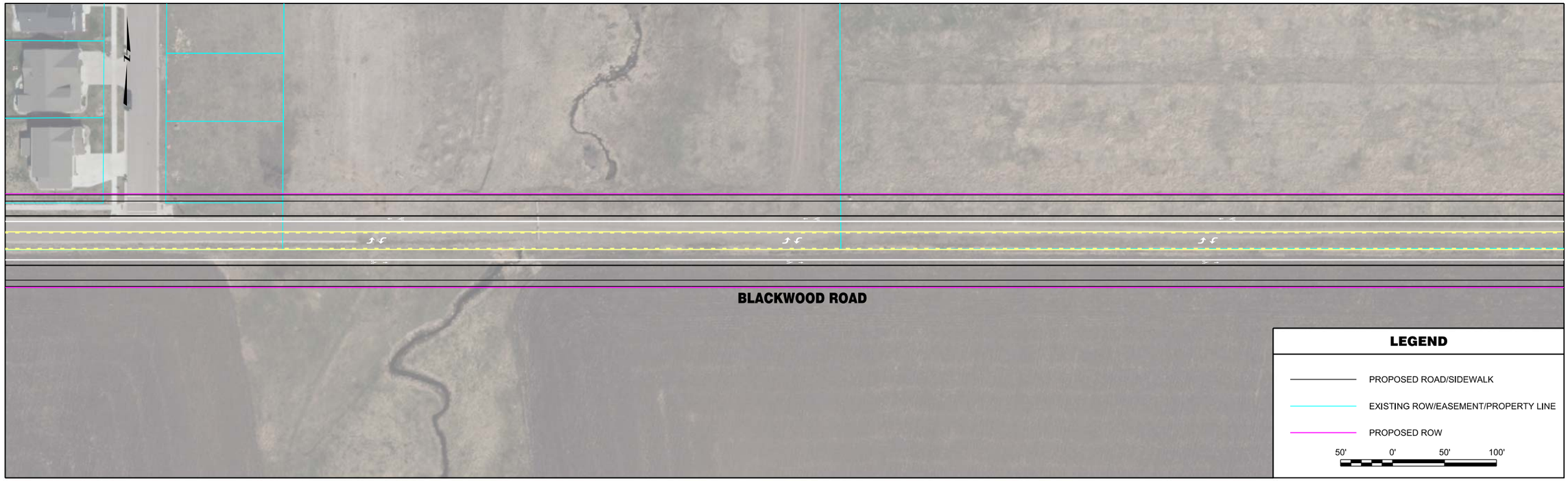

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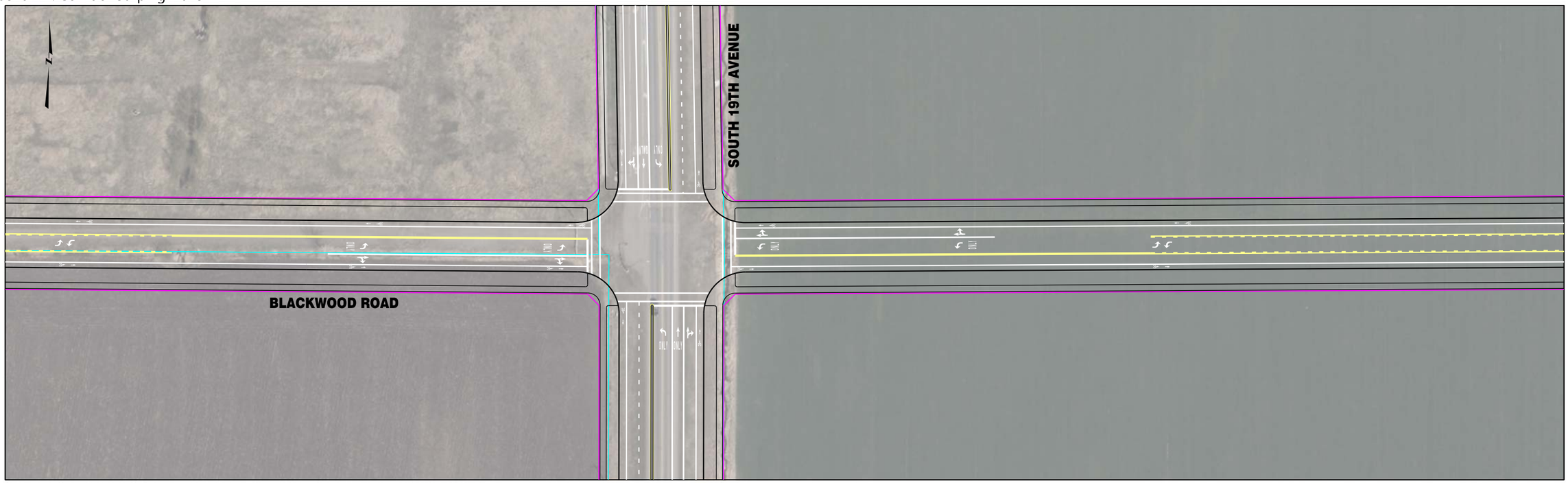

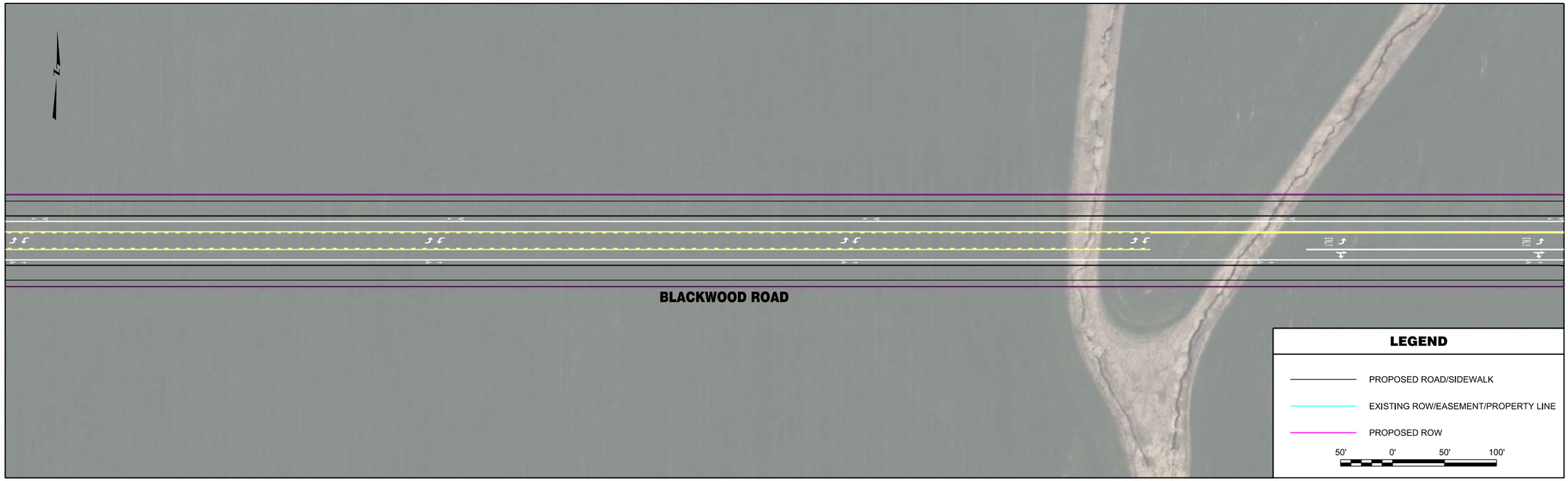

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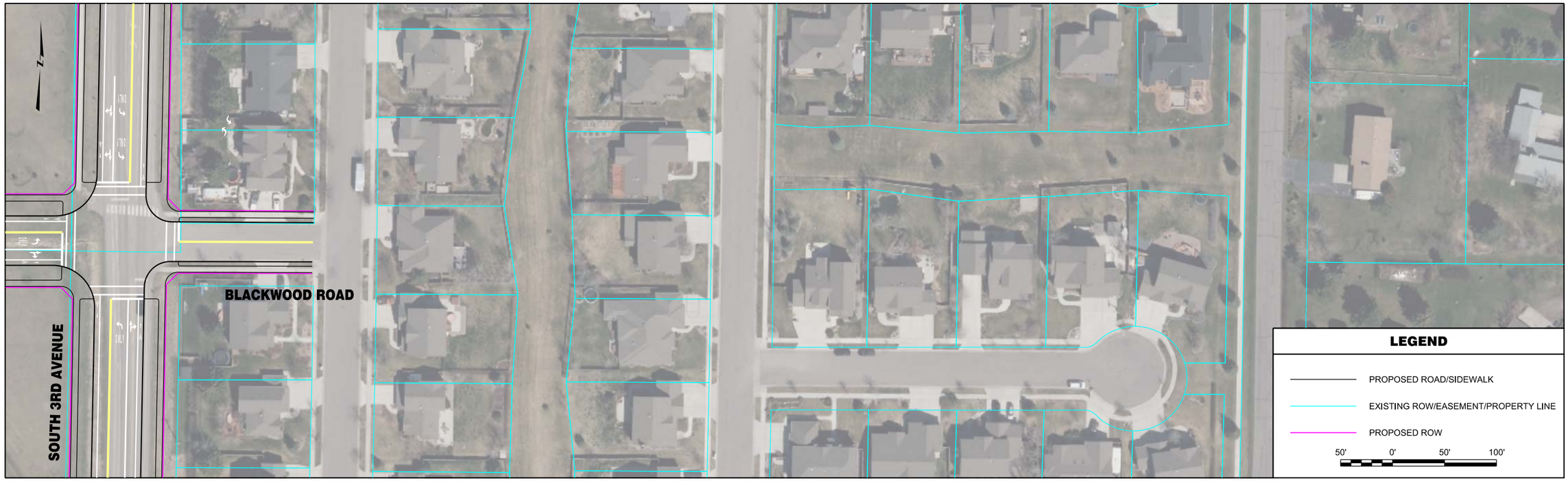

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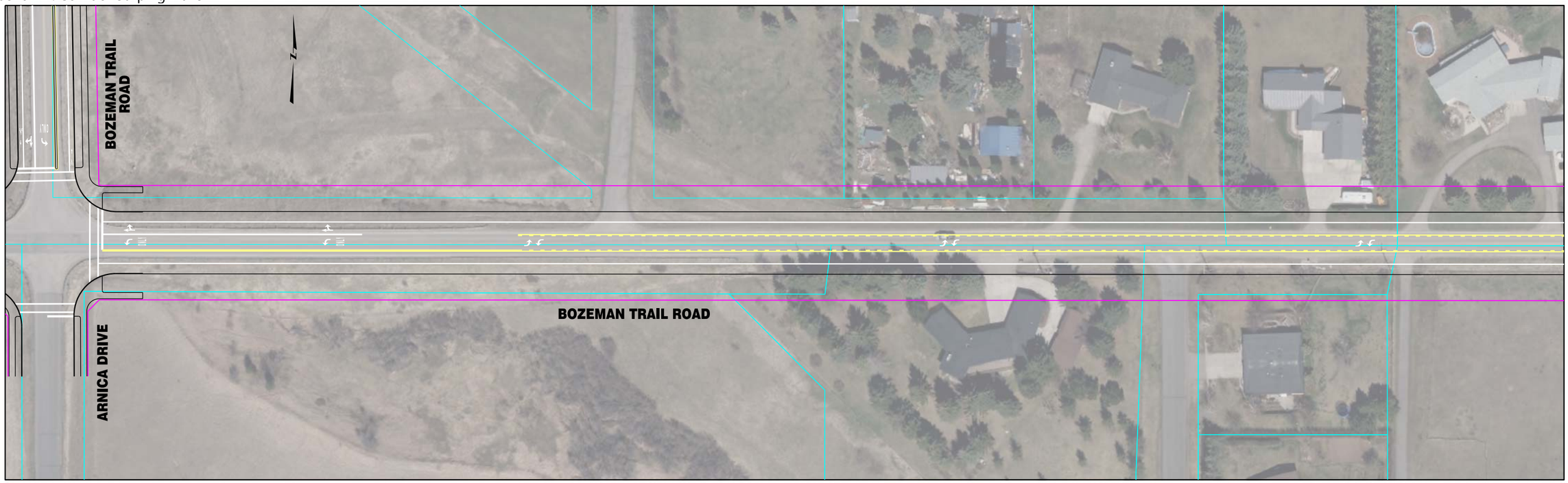

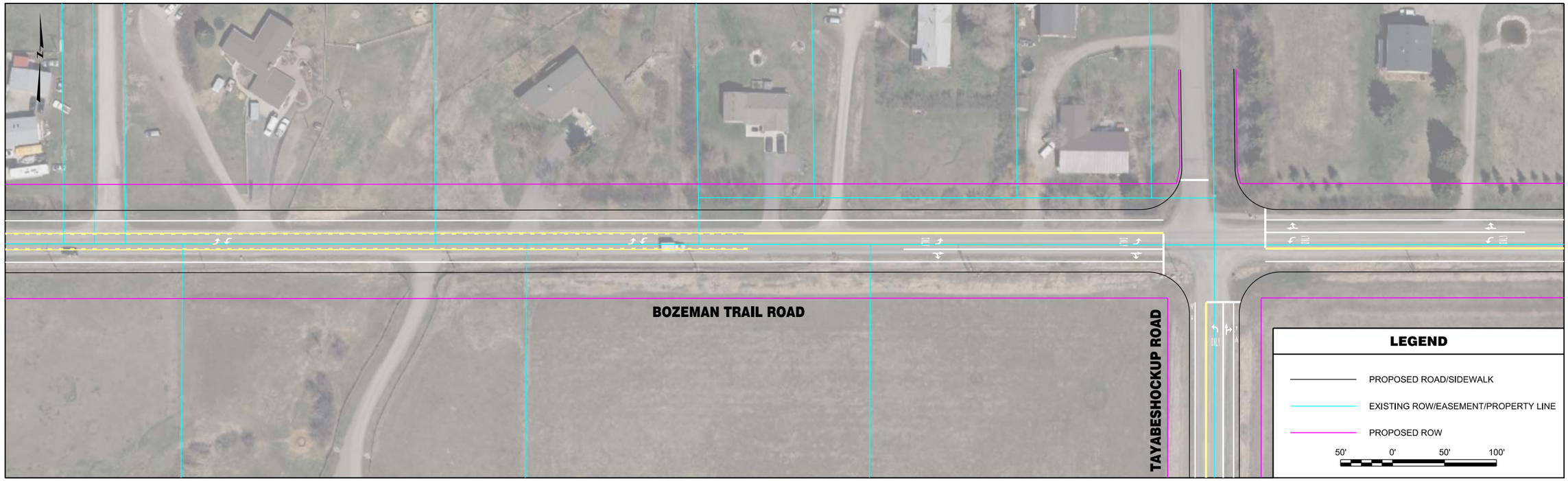

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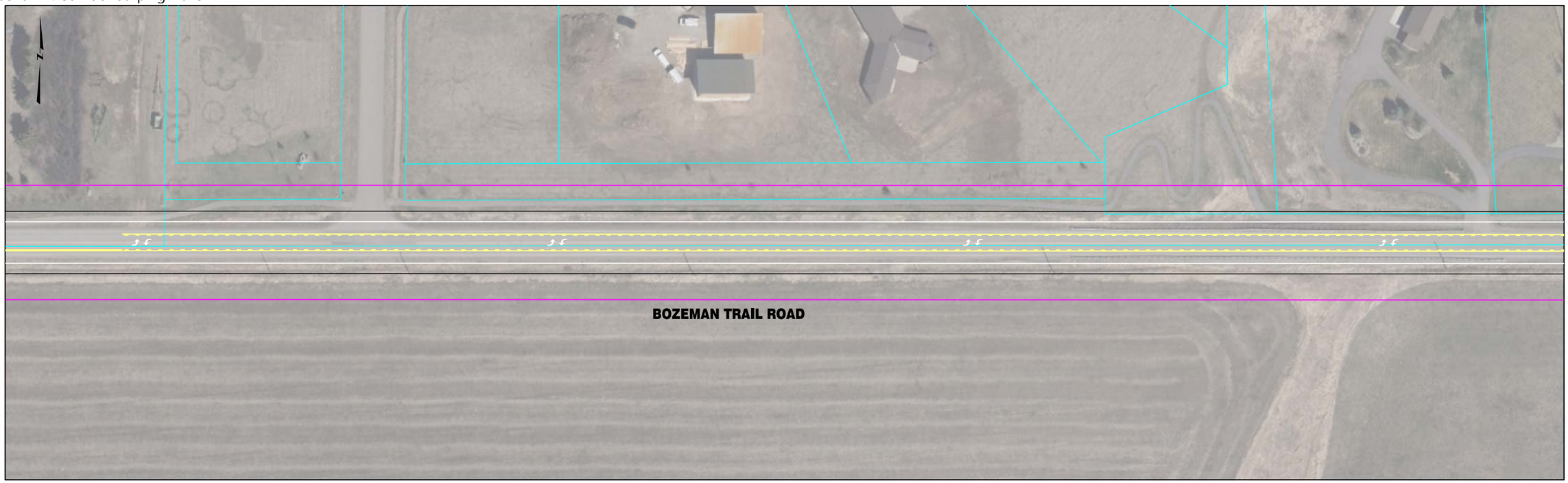

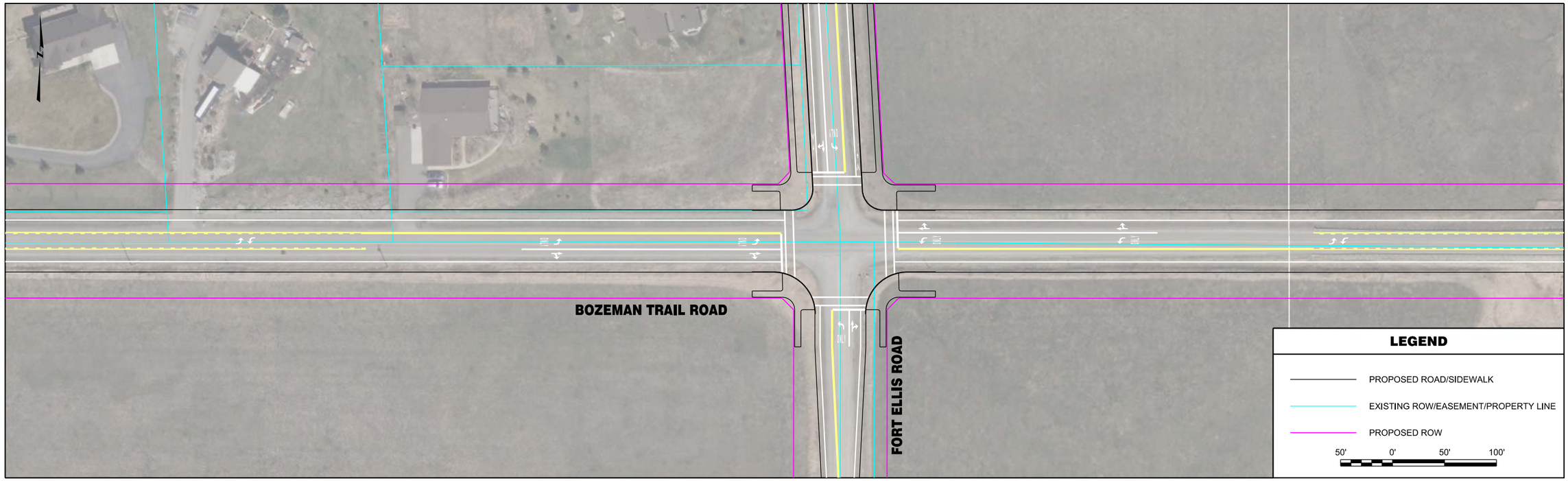

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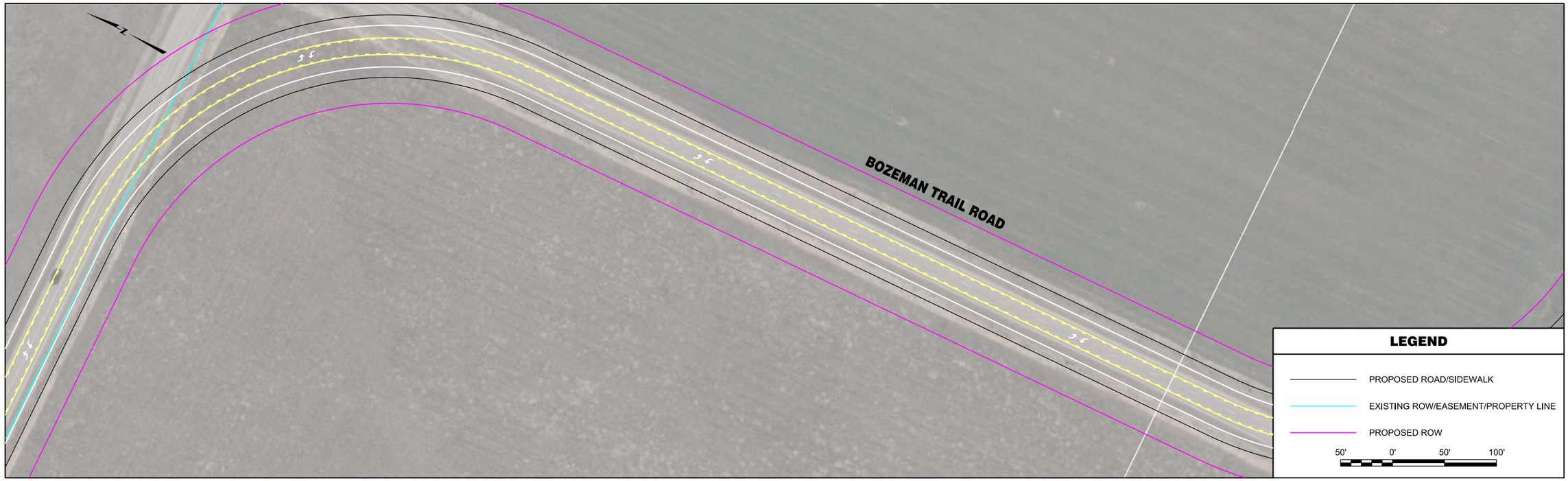

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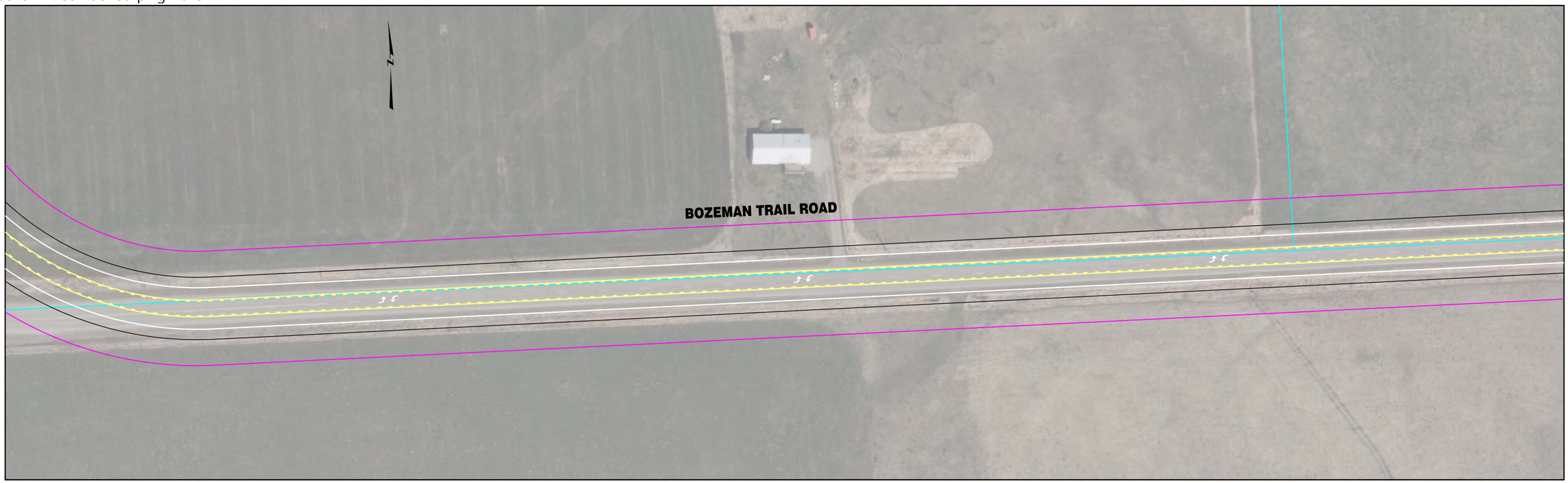

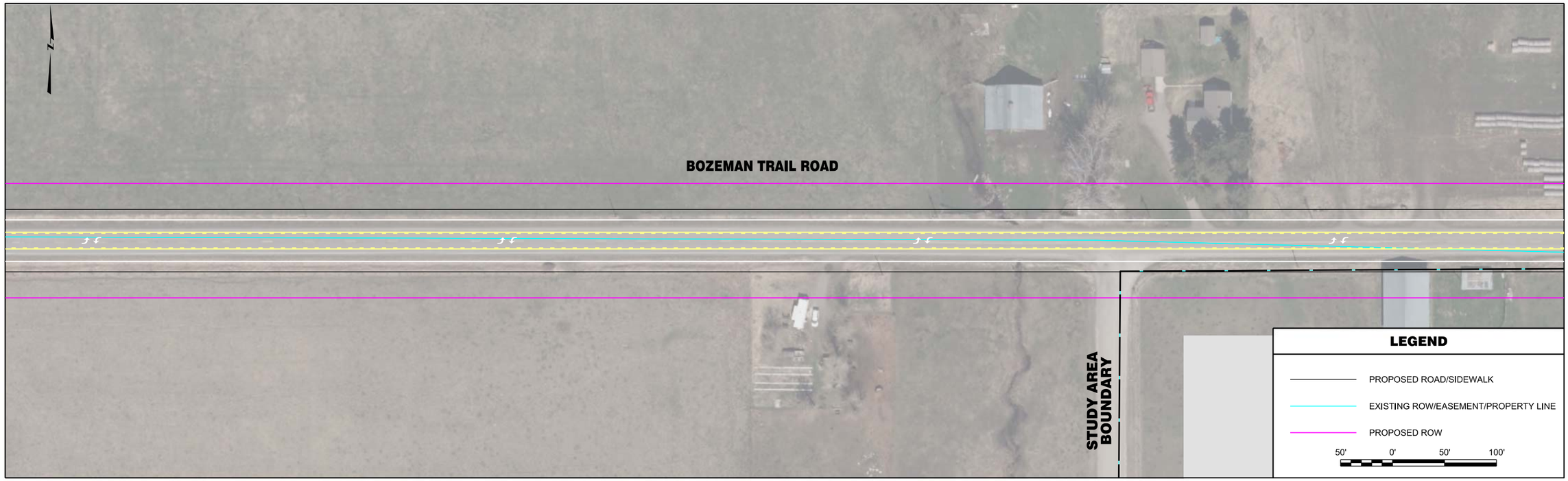

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LEGEND

- PROPOSED ROAD/SIDEWALK
- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

50' 0' 50' 100'

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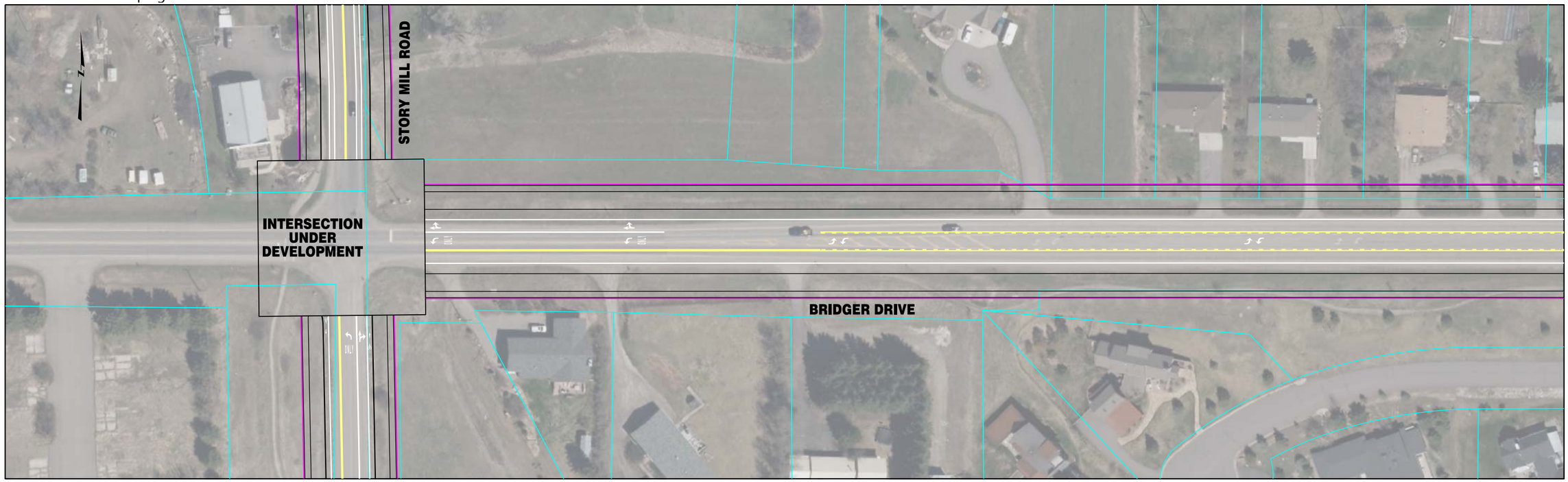

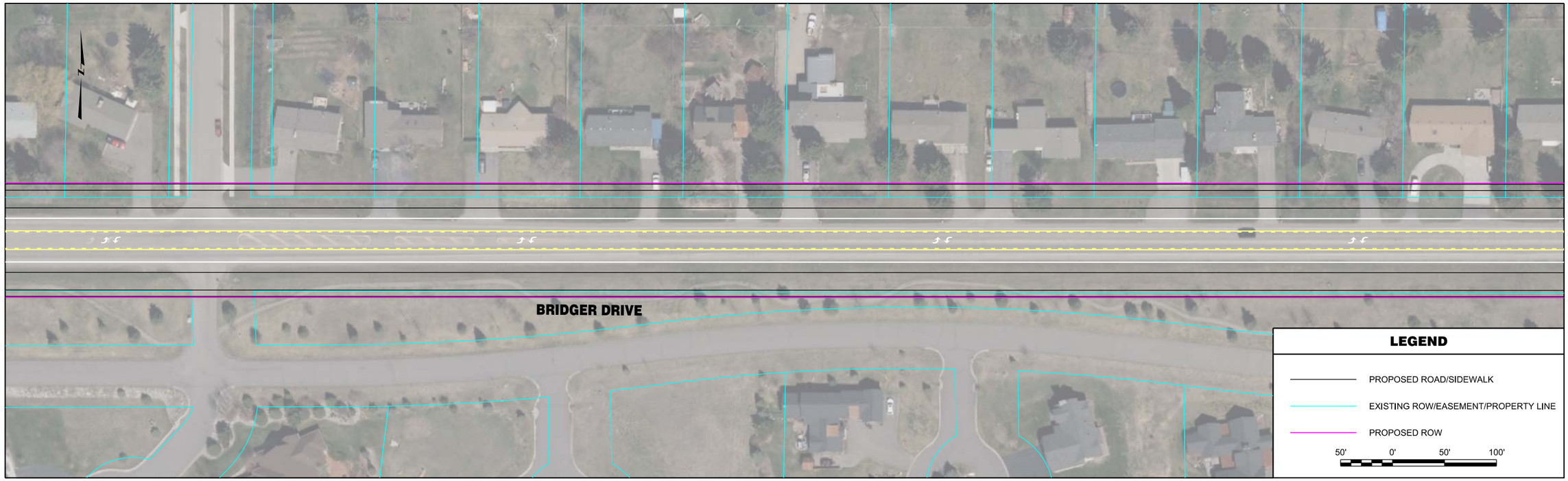

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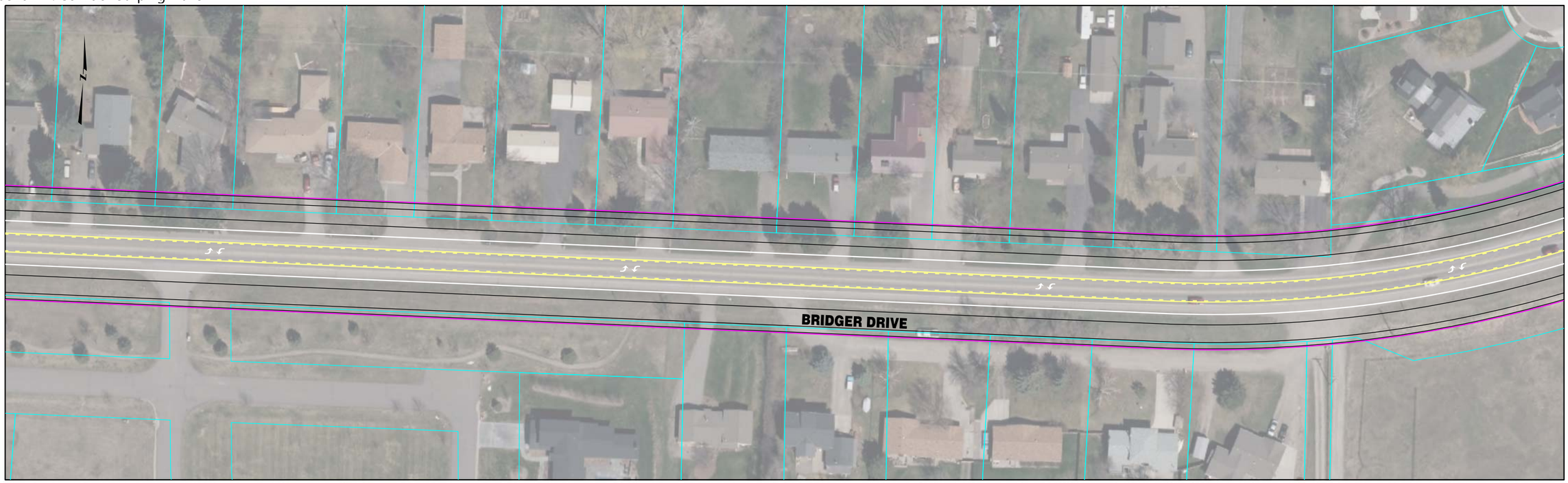

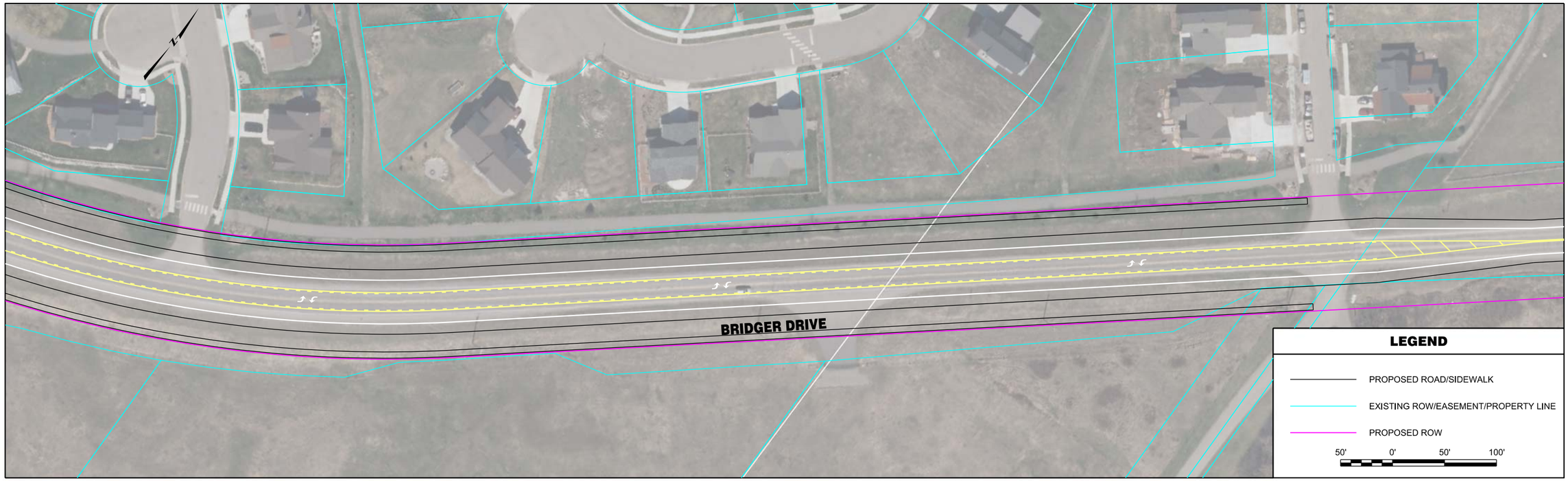

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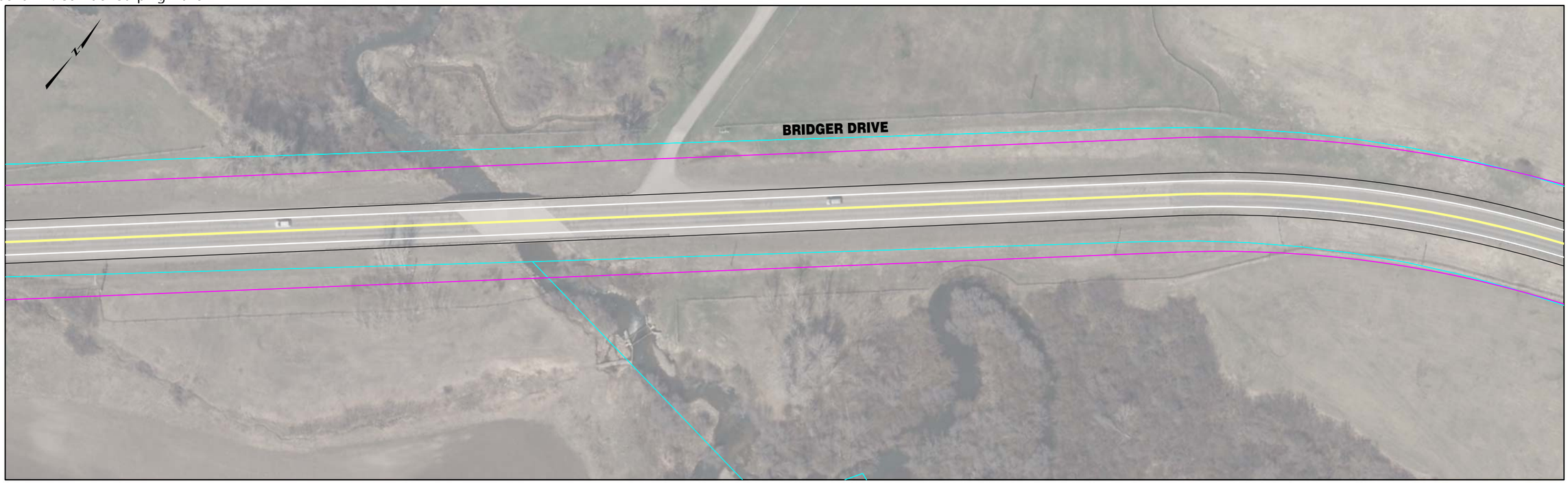

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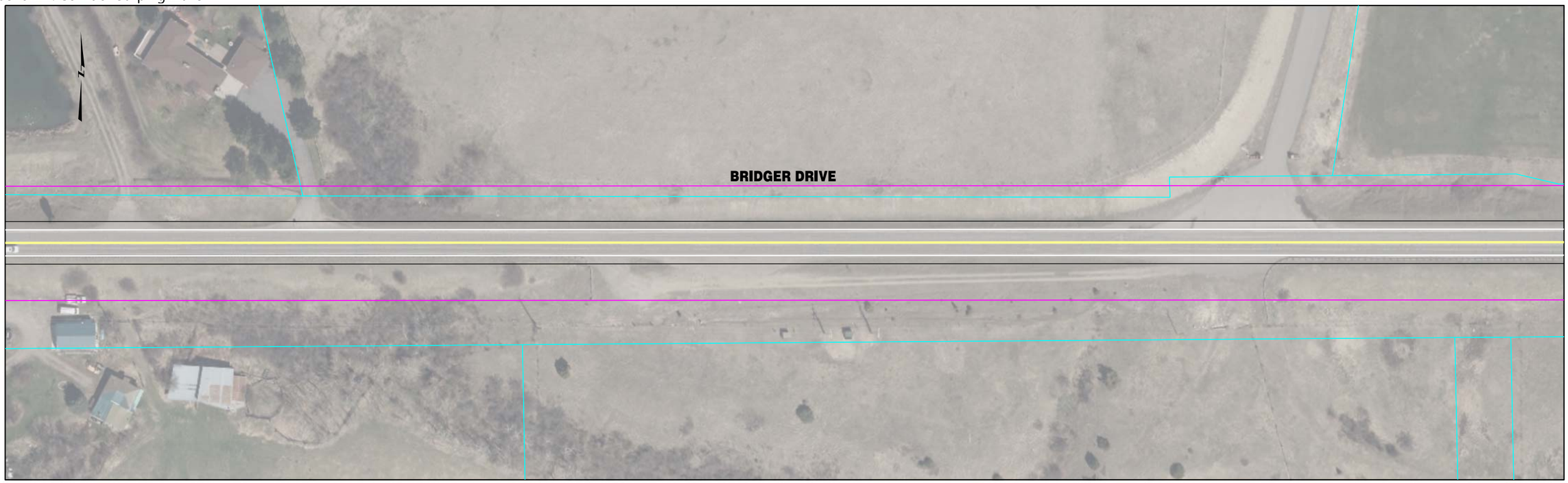

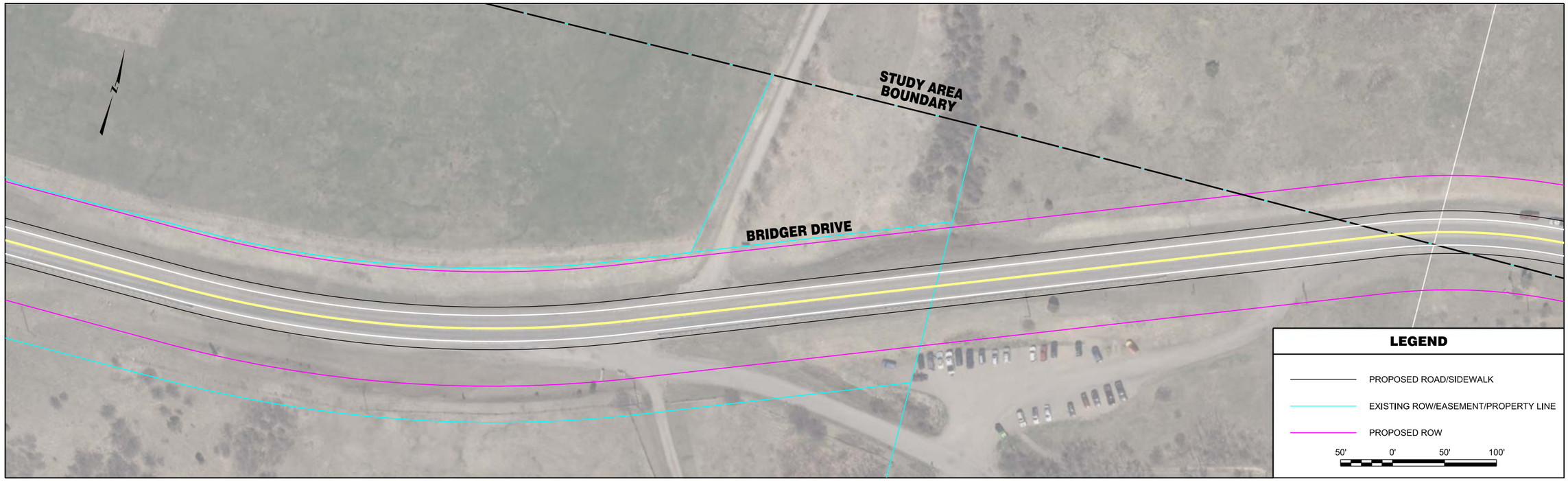

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZU3.dgn 1/26/2017 3:14:35 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **BRIDGER DRIVE STRIPING PLAN**

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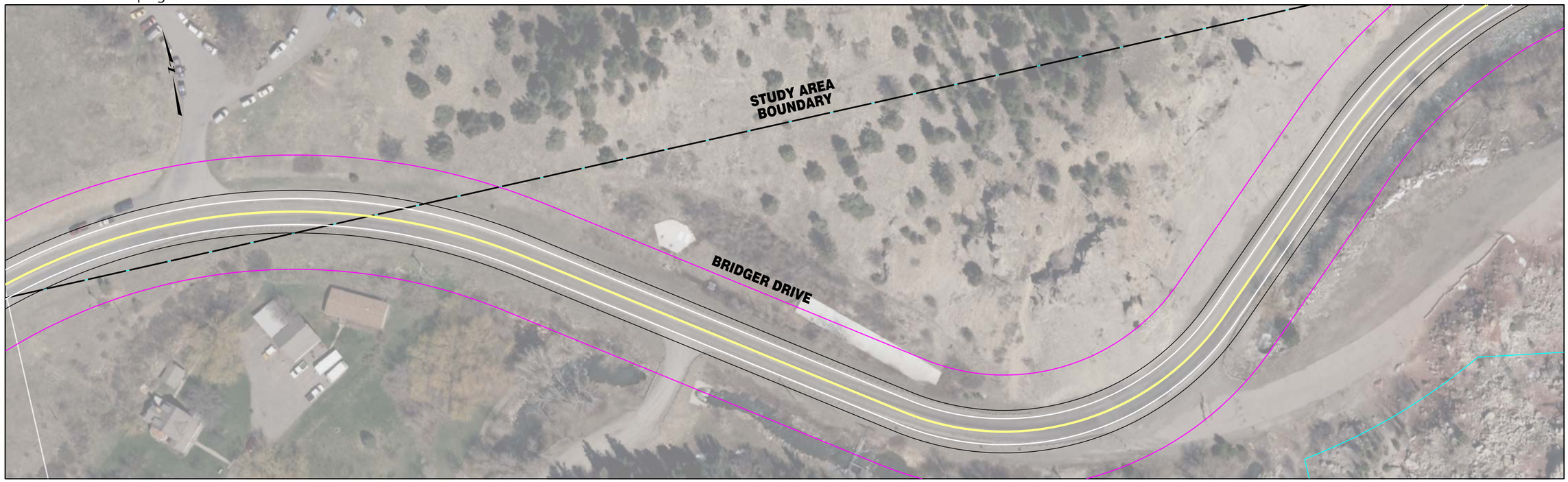

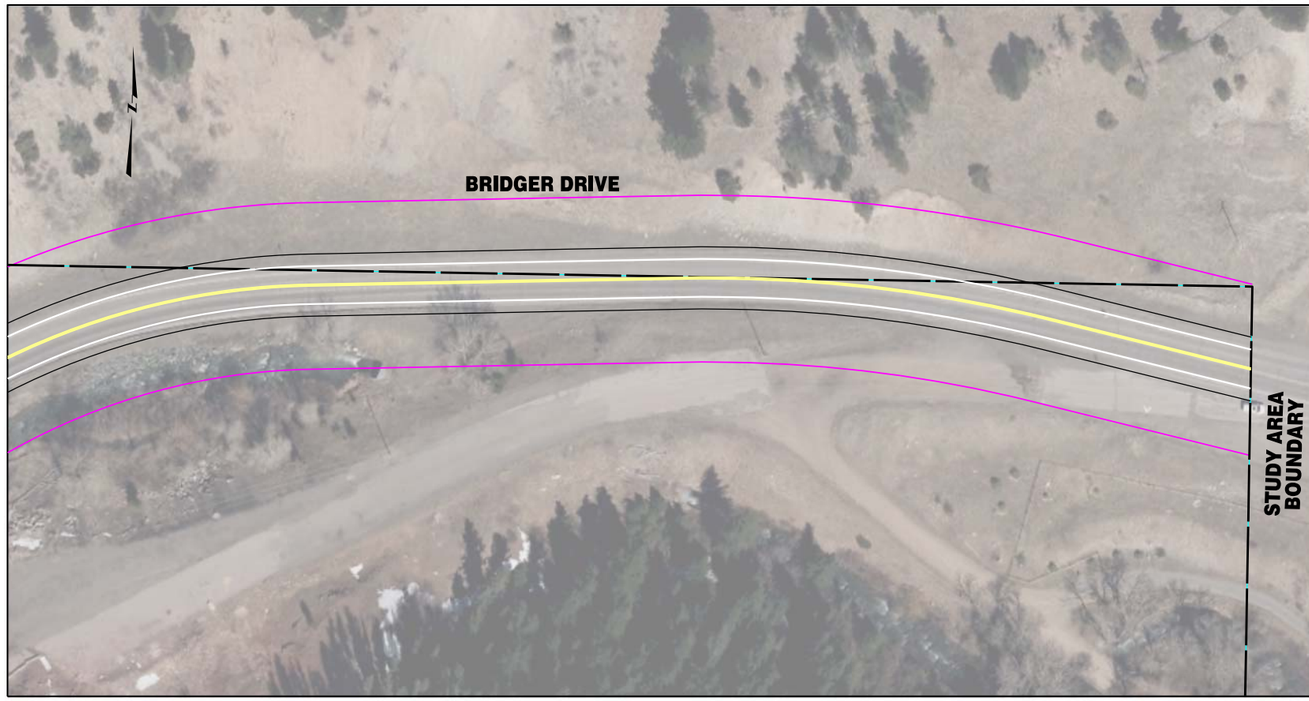

LEGEND

- PROPOSED ROAD/SIDEWALK
- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

50' 0' 50' 100'

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZU3.dgn 1/26/2017 3:14:43 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **BRIDGER DRIVE STRIPING PLAN**

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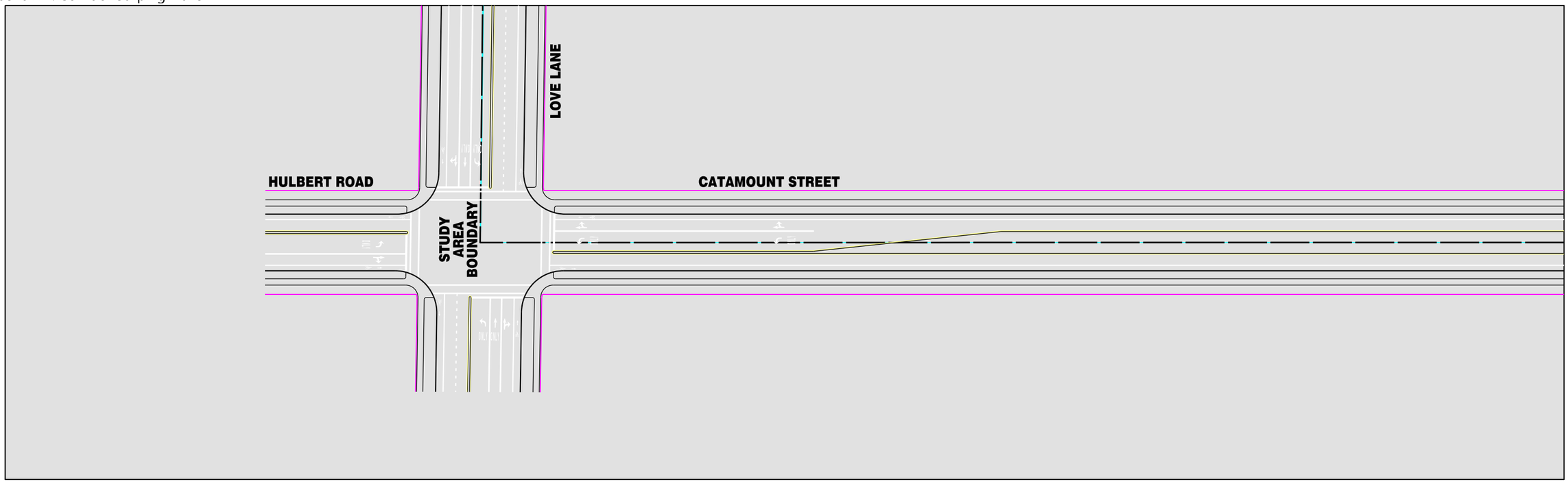

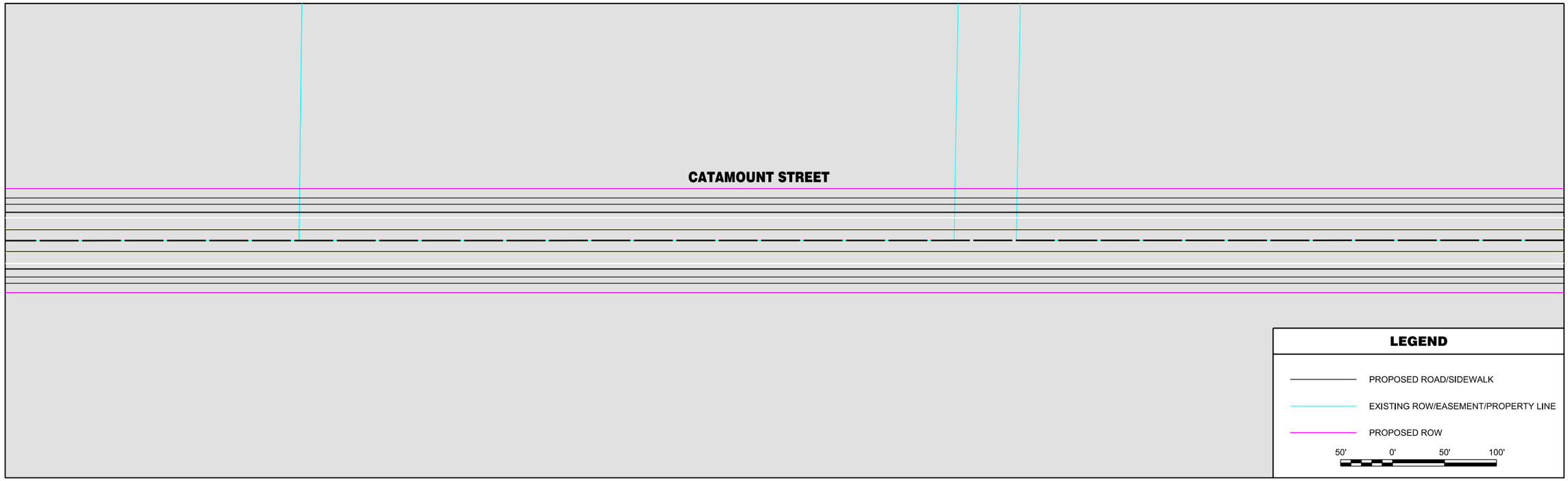

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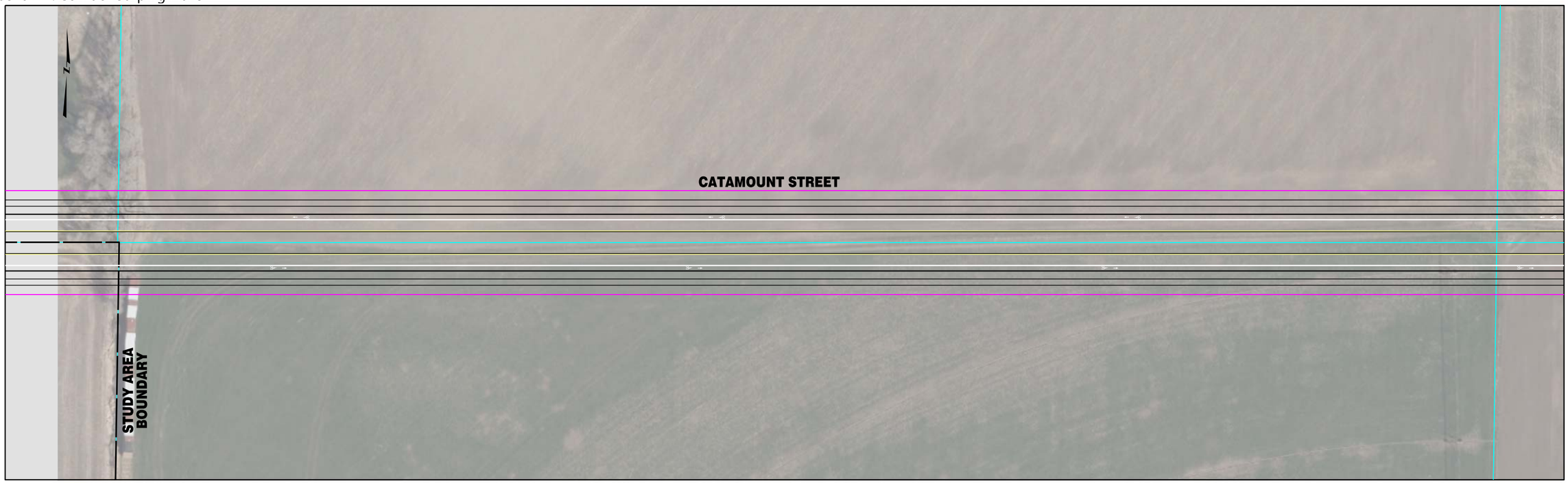

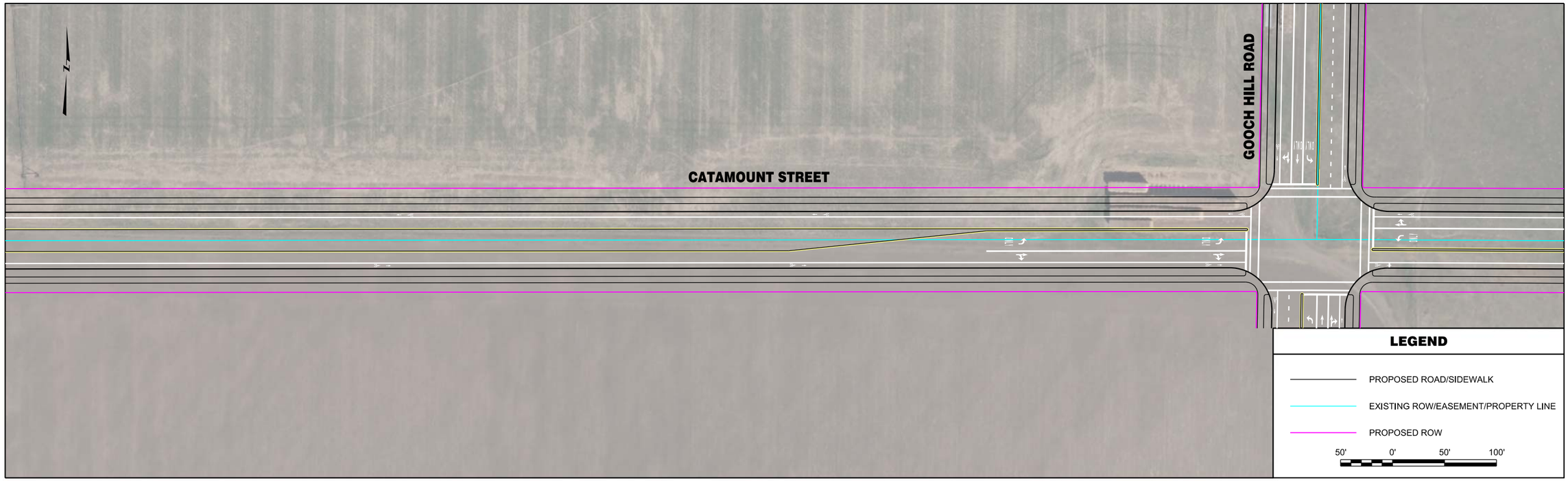

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\Q-Catmount\15602RDPLNZQ1.dw 1/26/2017 3:16:10 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATAMOUNT STREET STRIPING PLAN**

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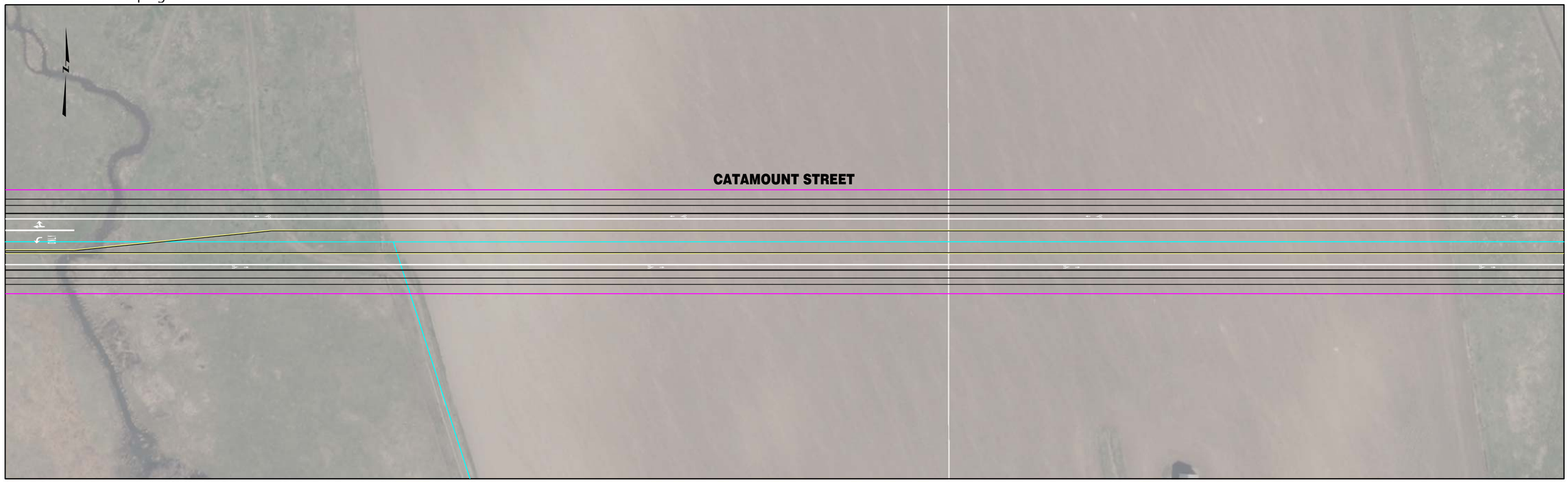

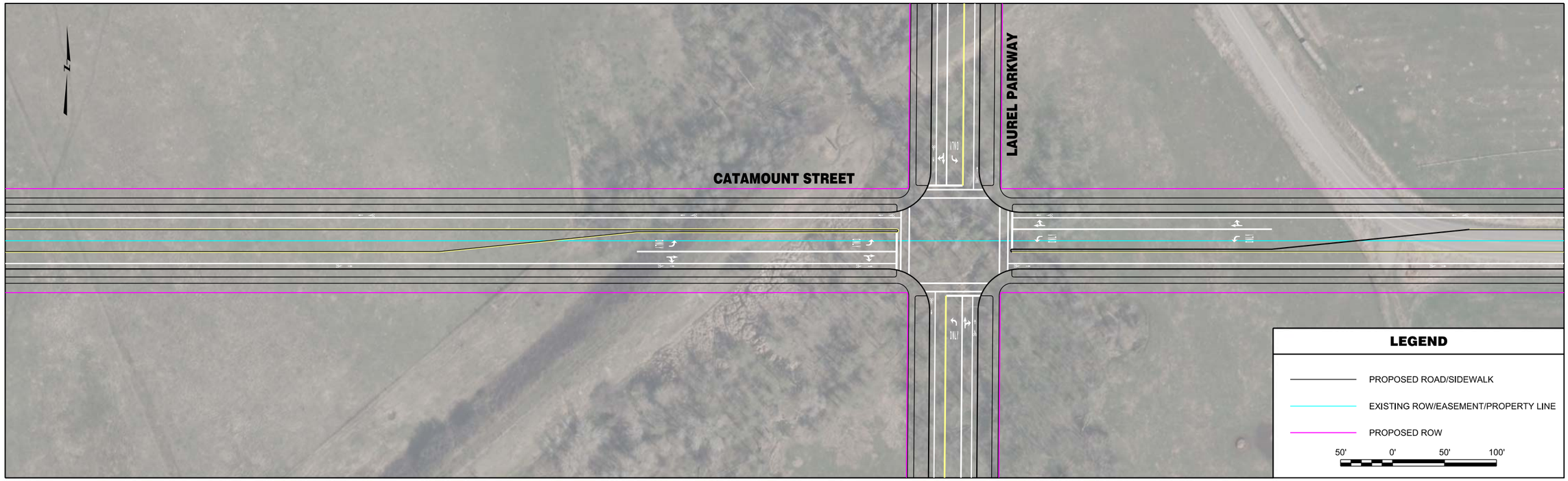

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\Q-Catmount\15602RDPLNZQ1.dw 1/26/2017 3:16:18 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATAMOUNT STREET STRIPING PLAN**

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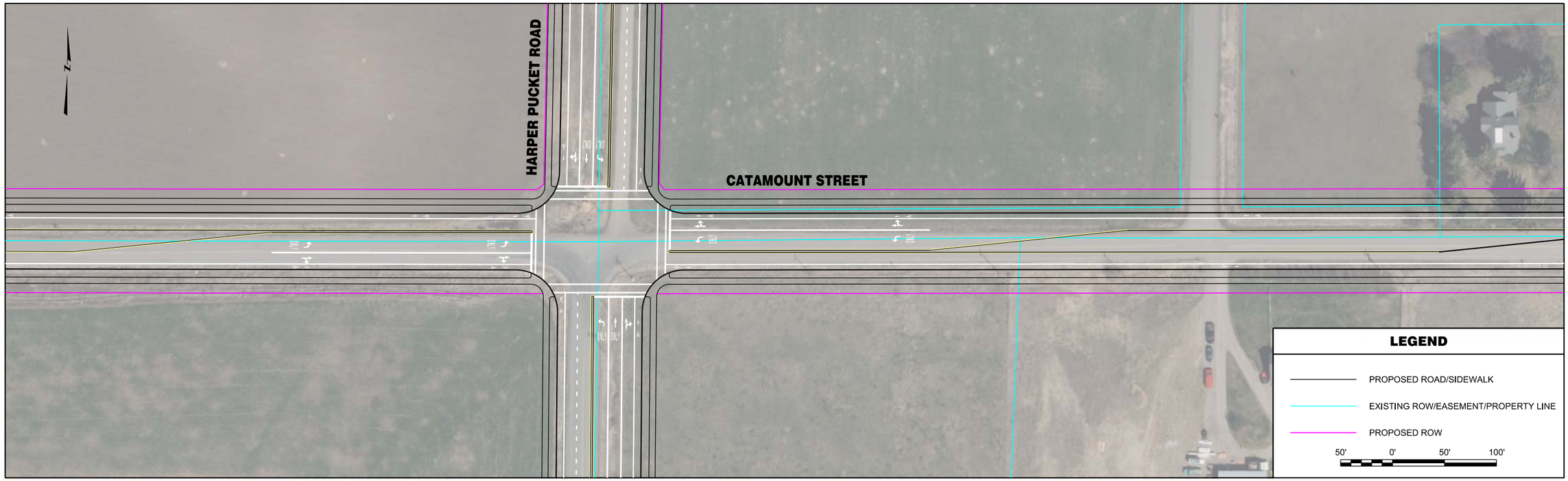

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\Q-Catmount\15602RDPLNZQ1.dw 1/26/2017 3:16:27 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATAMOUNT STREET STRIPING PLAN**	SHEET Page 73 **4**

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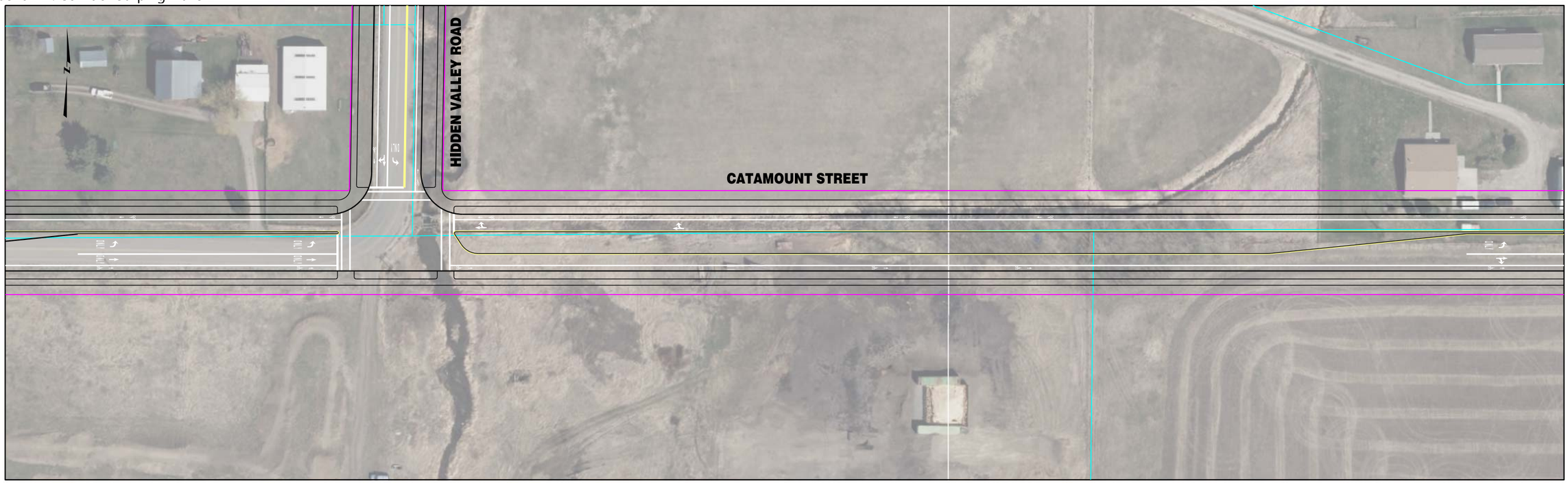

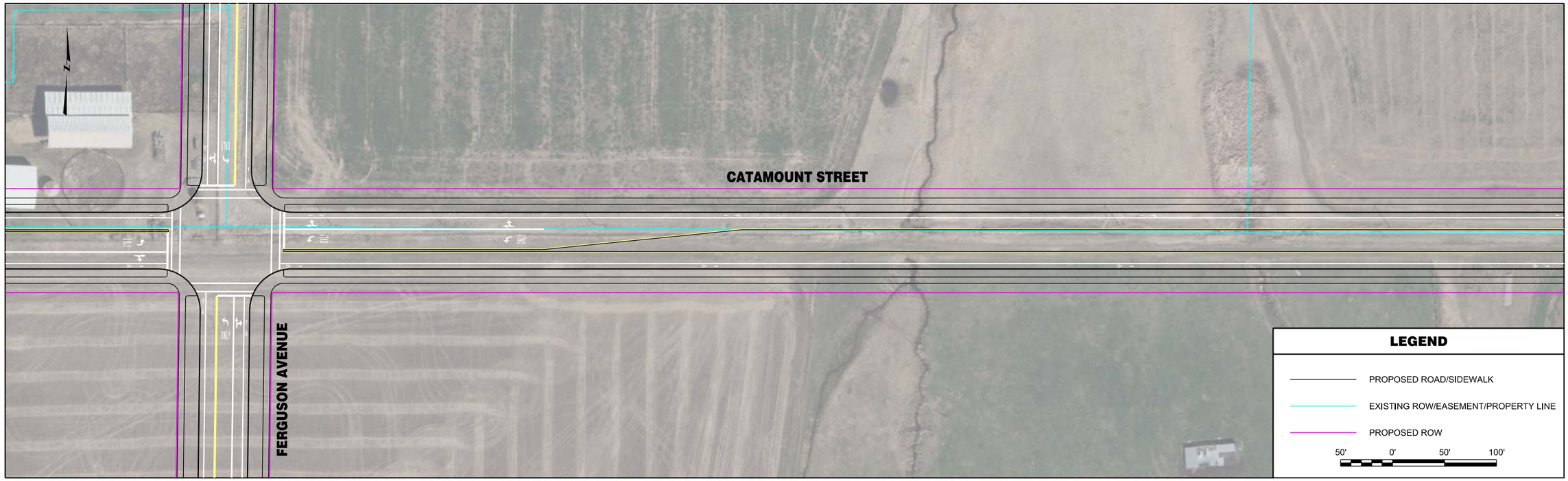

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\Q-Catmount\15602RDPLNZQ2.dg 1/26/2017 3:20:59 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATAMOUNT STREET STRIPING PLAN**

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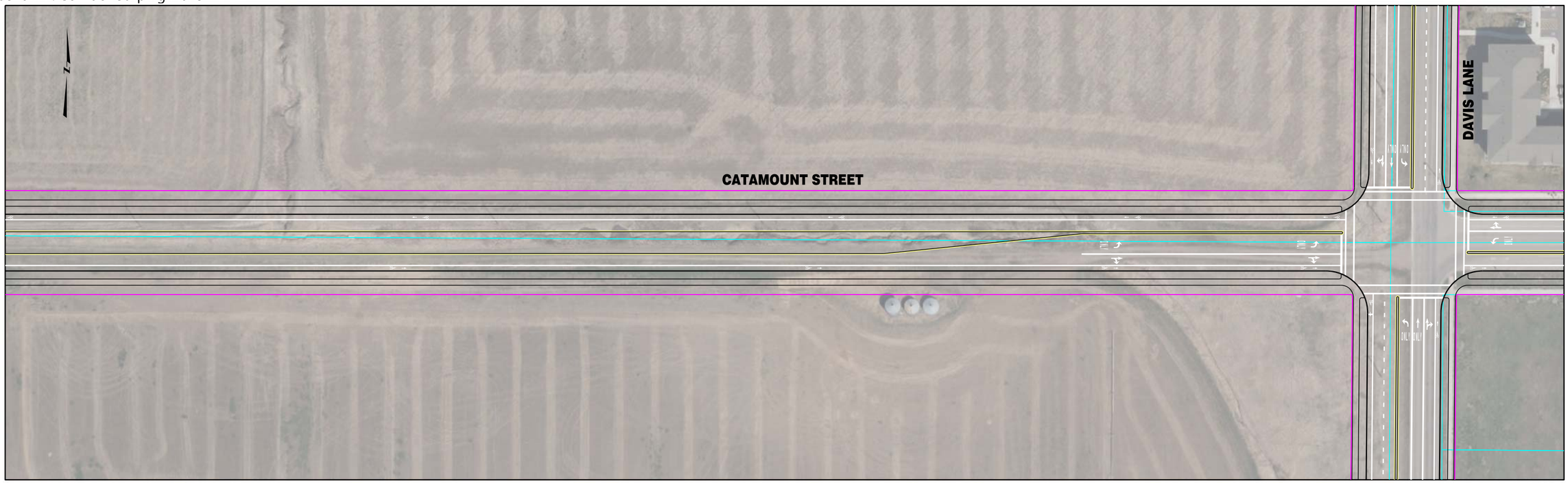

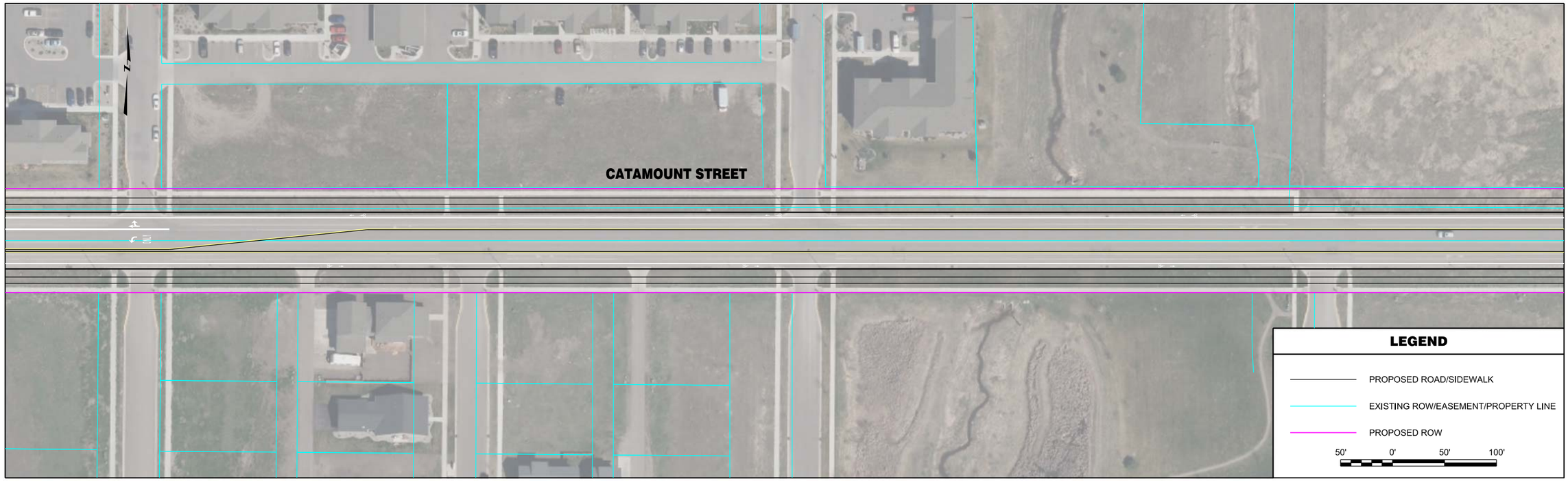

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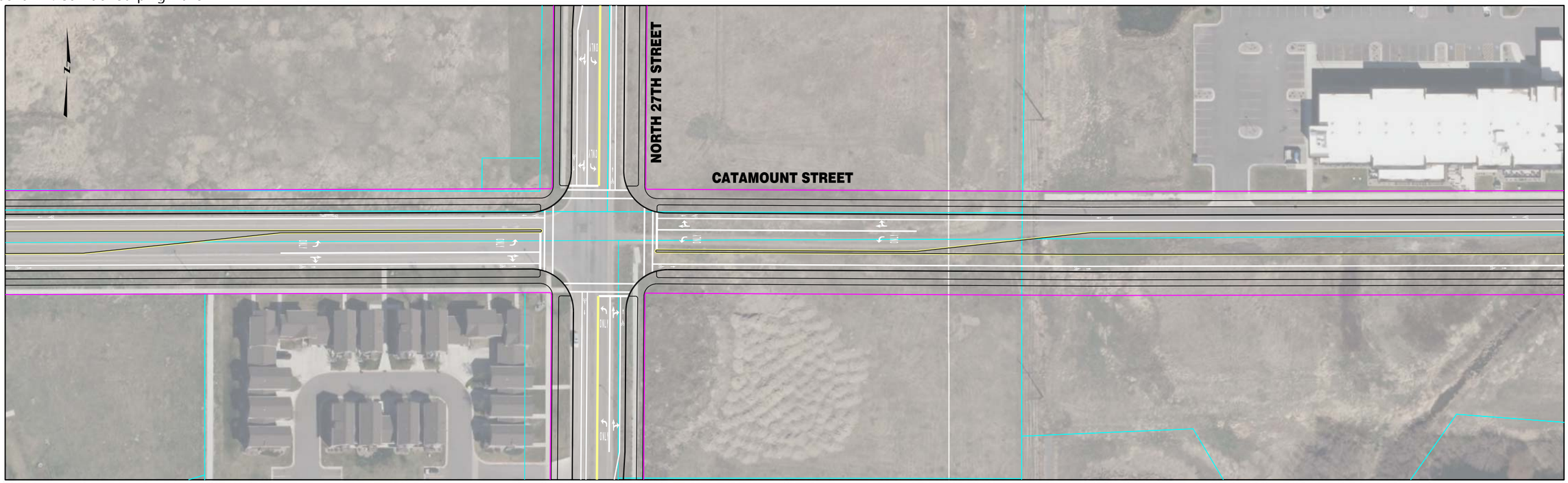

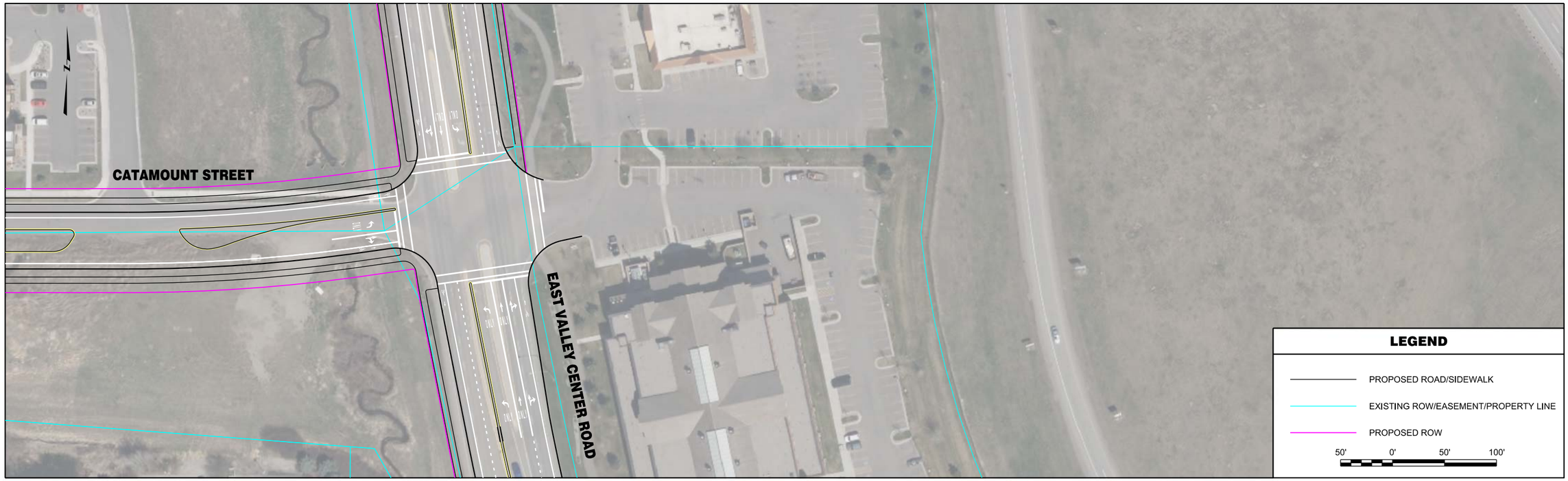

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\FF-Cattail\15602RDPLNZFF1.dgn 1/26/2017 3:19:44 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATTAIL STREET STRIPING PLAN**

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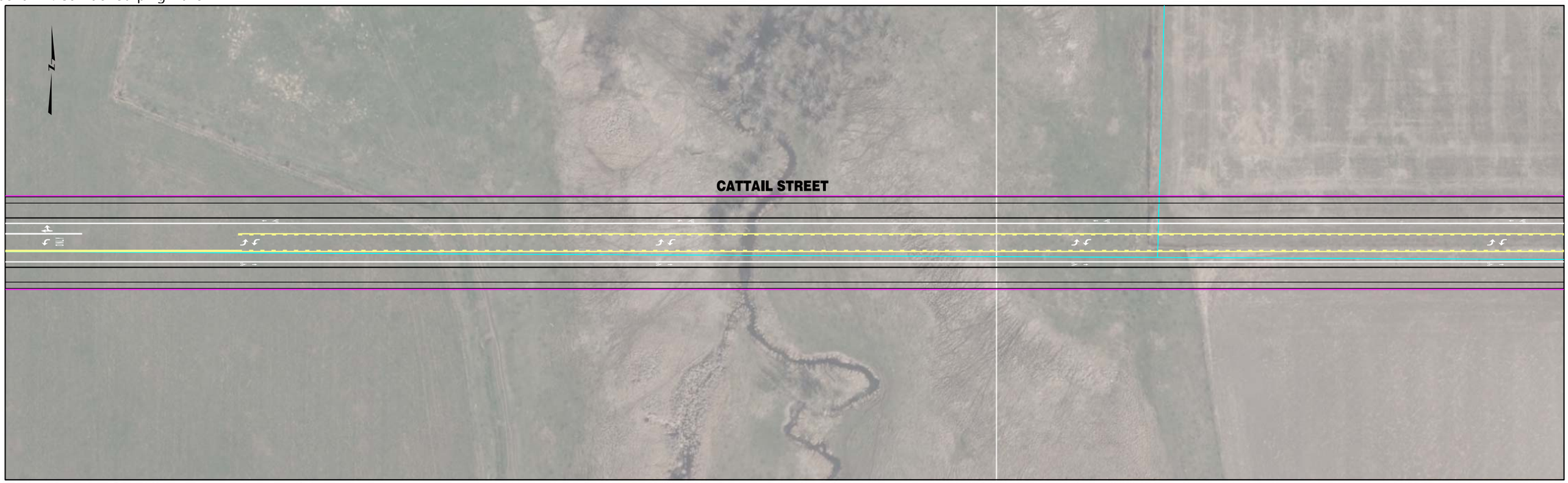

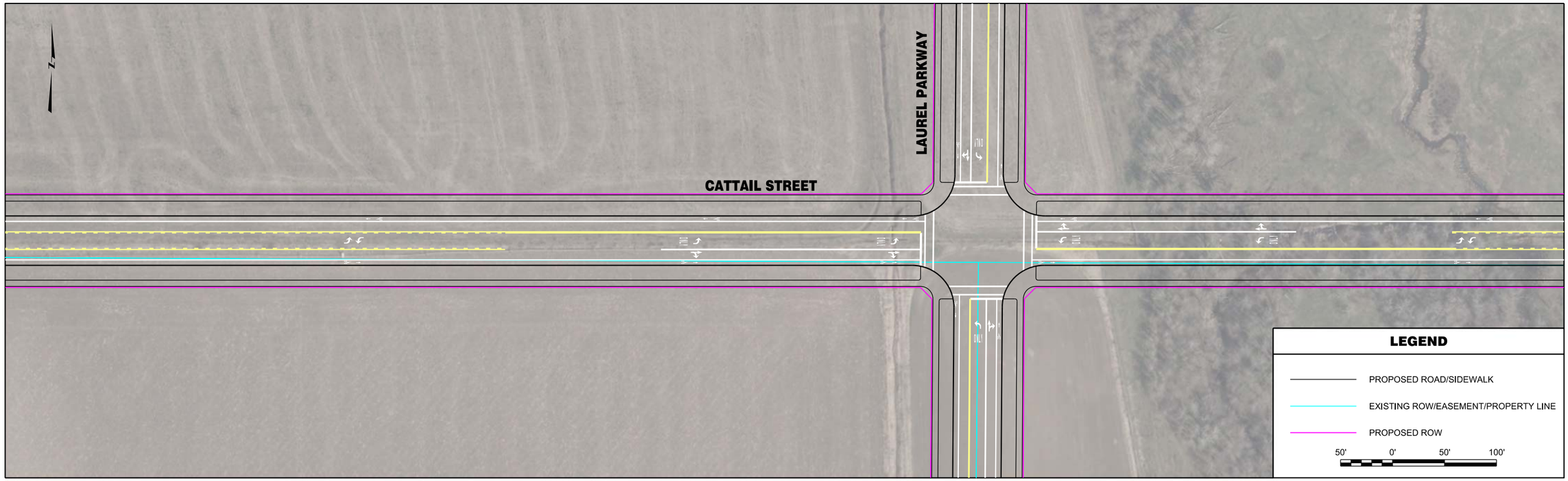

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\FF-Cattail\15602RDPLNZFF1.dgn 1/26/2017 3:19:50 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATTAIL STREET STRIPING PLAN**

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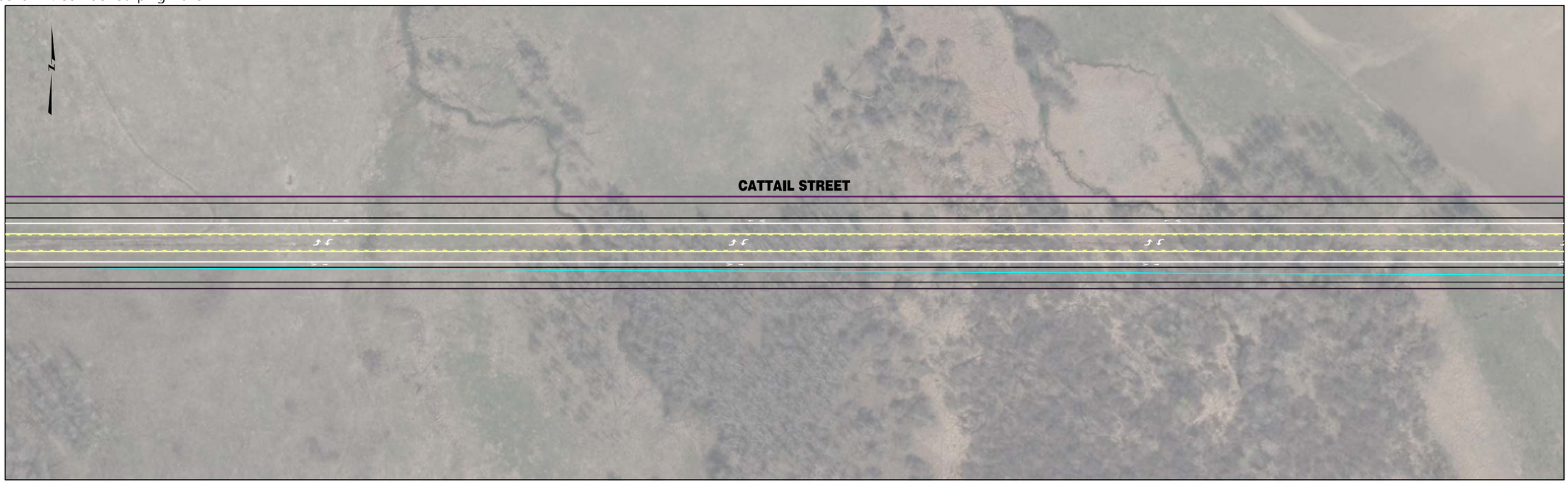

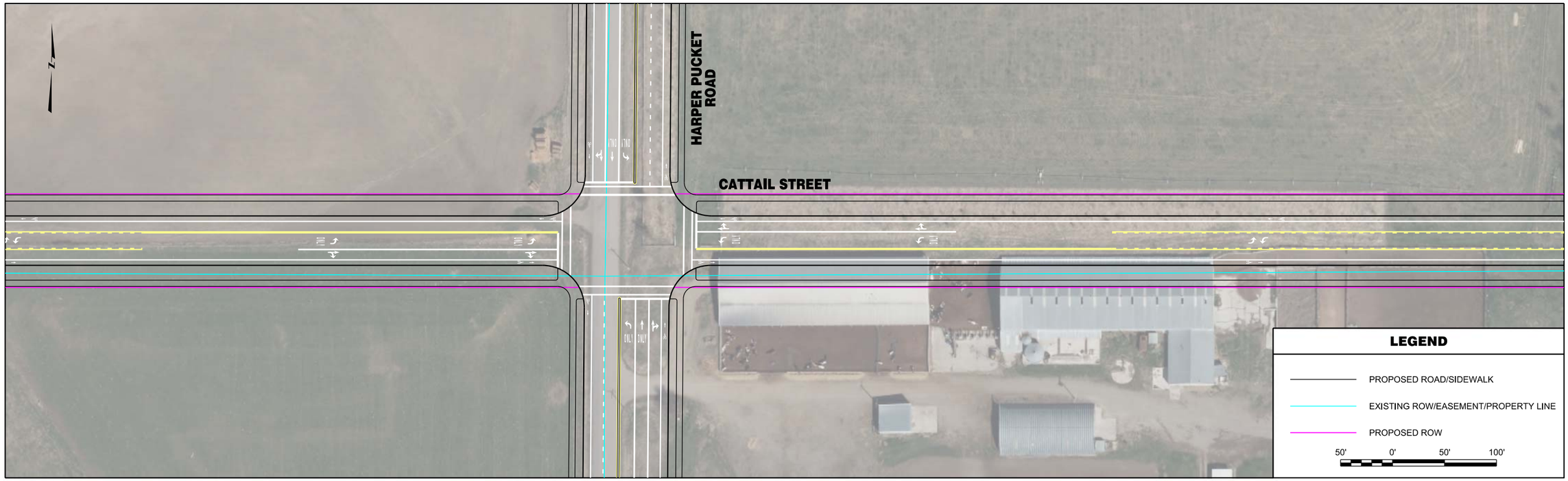

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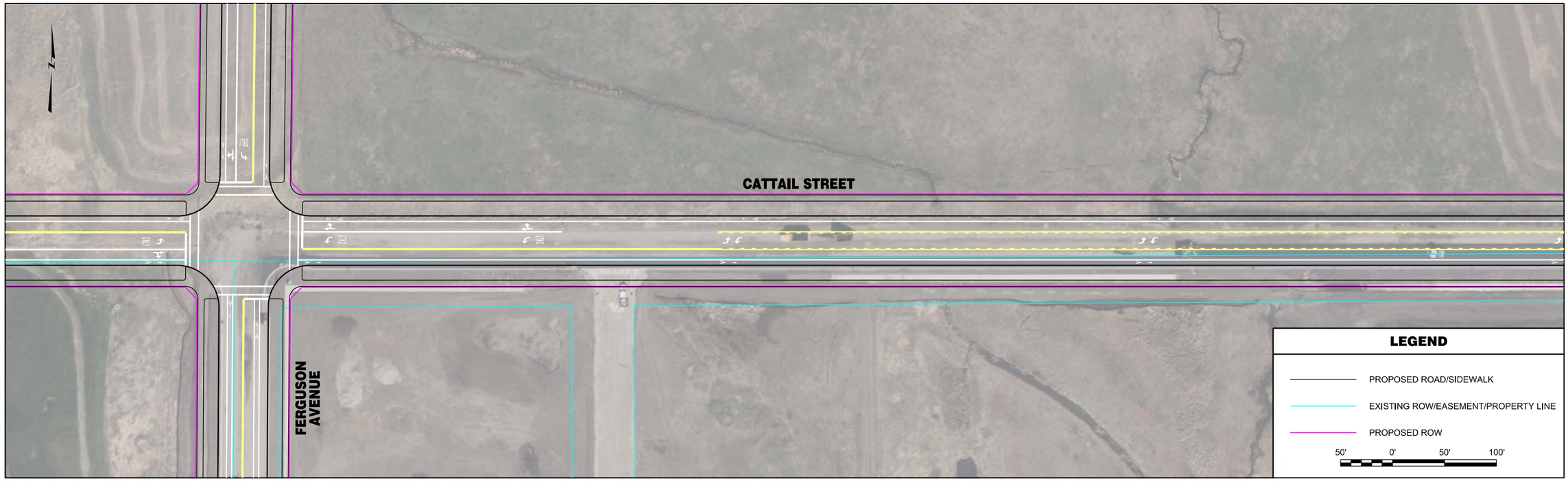

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\FF-Cattail\15602RDPLNZFF2.dgn 1/26/2017 3:20:07 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATTAIL STREET STRIPING PLAN**

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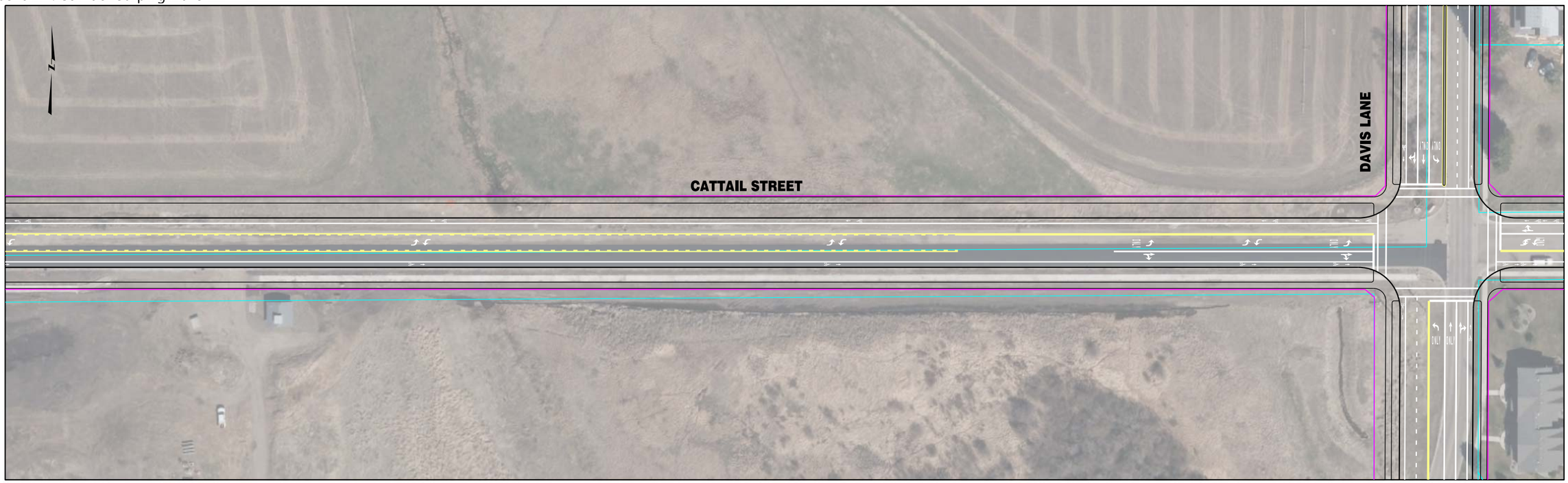

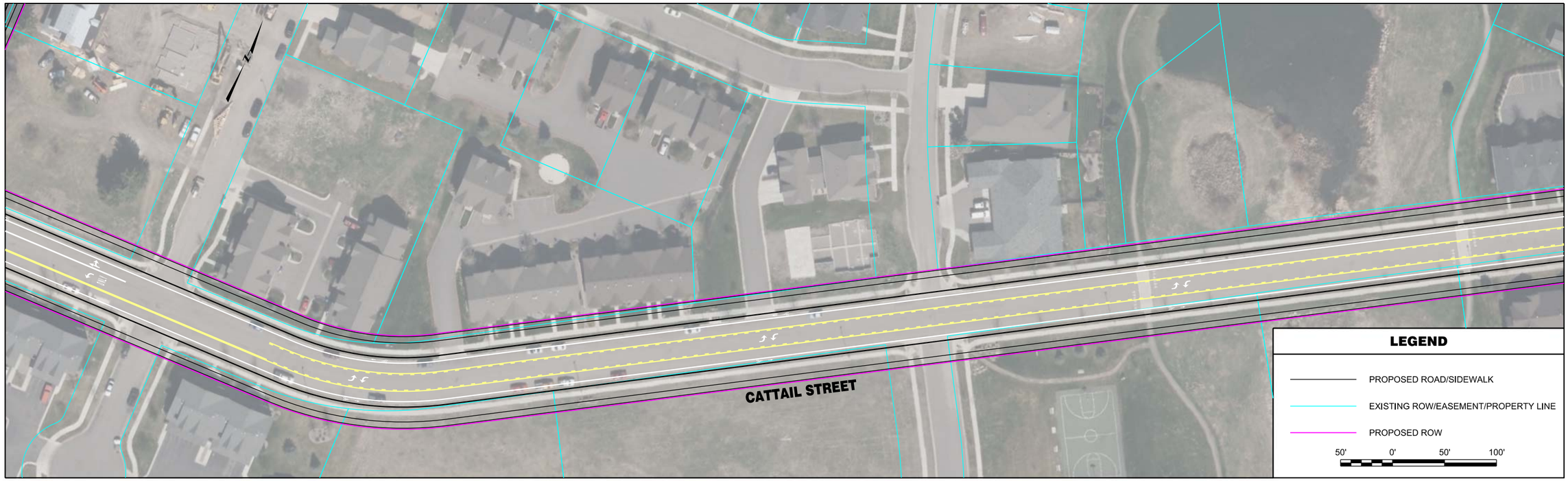

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\FF-Cattail\15602RDPLNZFF2.dgn 1/26/2017 3:20:14 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATTAIL STREET STRIPING PLAN**

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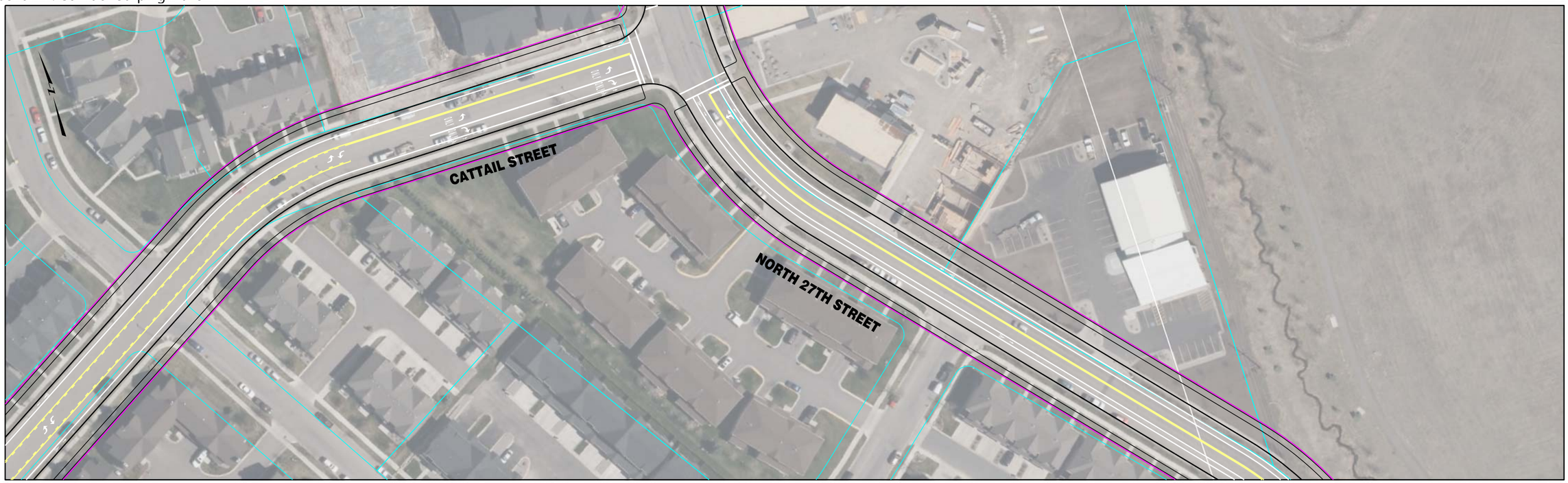

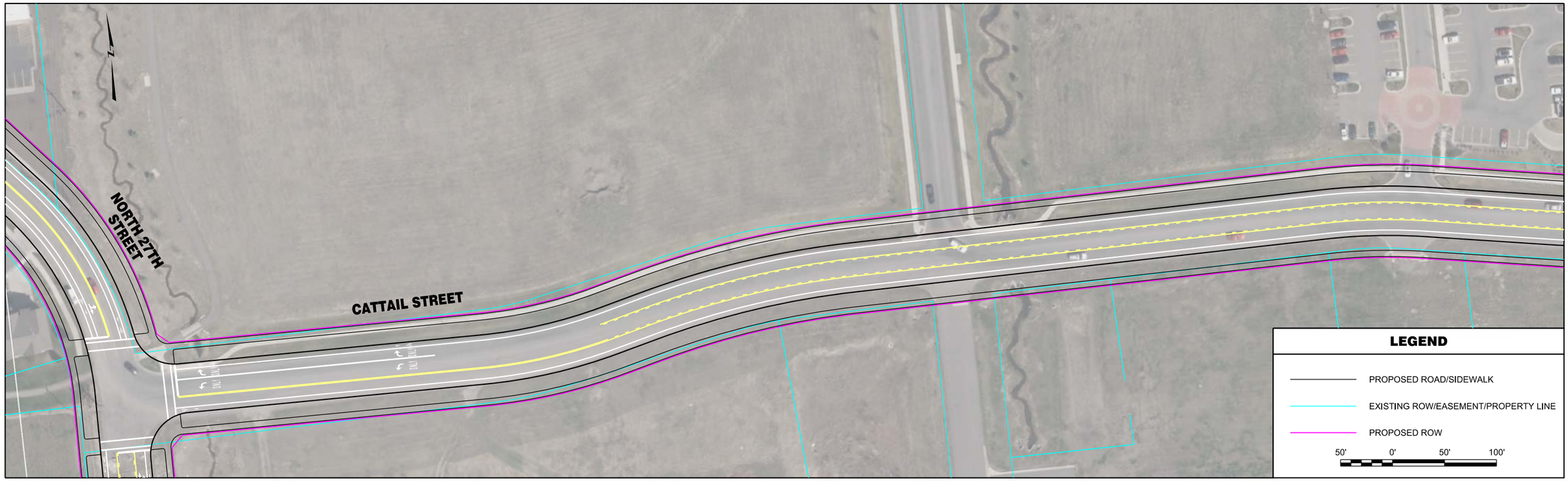

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\FF-Cattail\15602RDPLNZFF2.dgn 1/26/2017 3:20:21 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATTAIL STREET STRIPING PLAN**

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LEGEND

- PROPOSED ROAD/SIDEWALK
- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

50' 0' 50' 100'

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\FF-Cattail\15602RDPLNZFF3.dgn 1/26/2017 3:20:28 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **CATTAIL STREET STRIPING PLAN**

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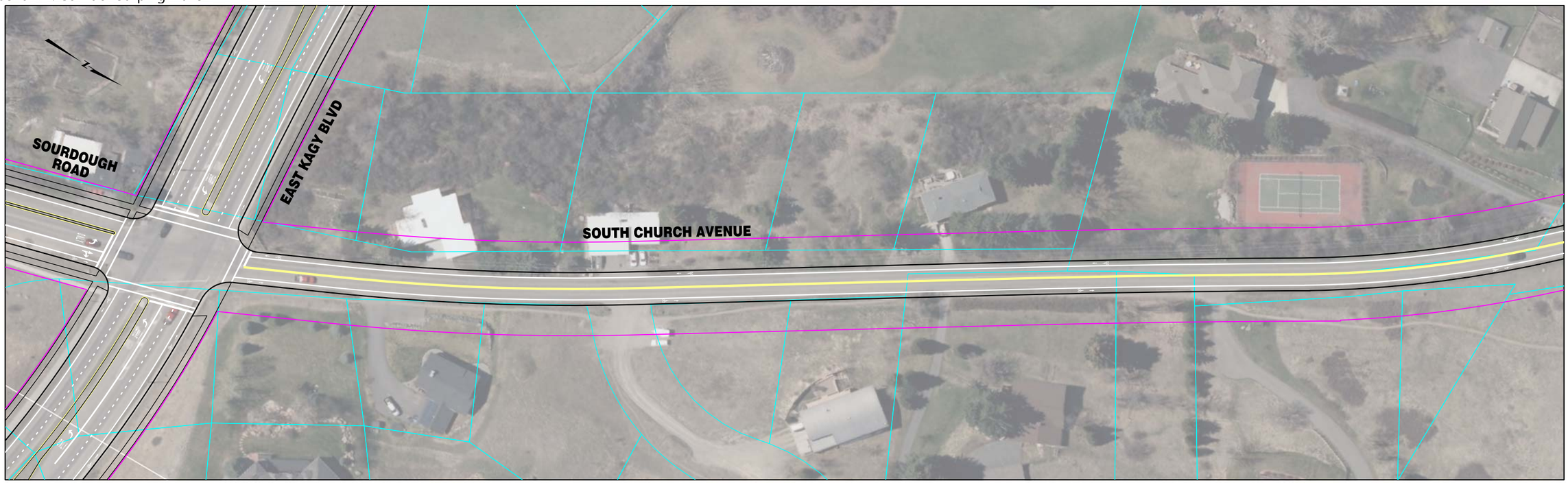

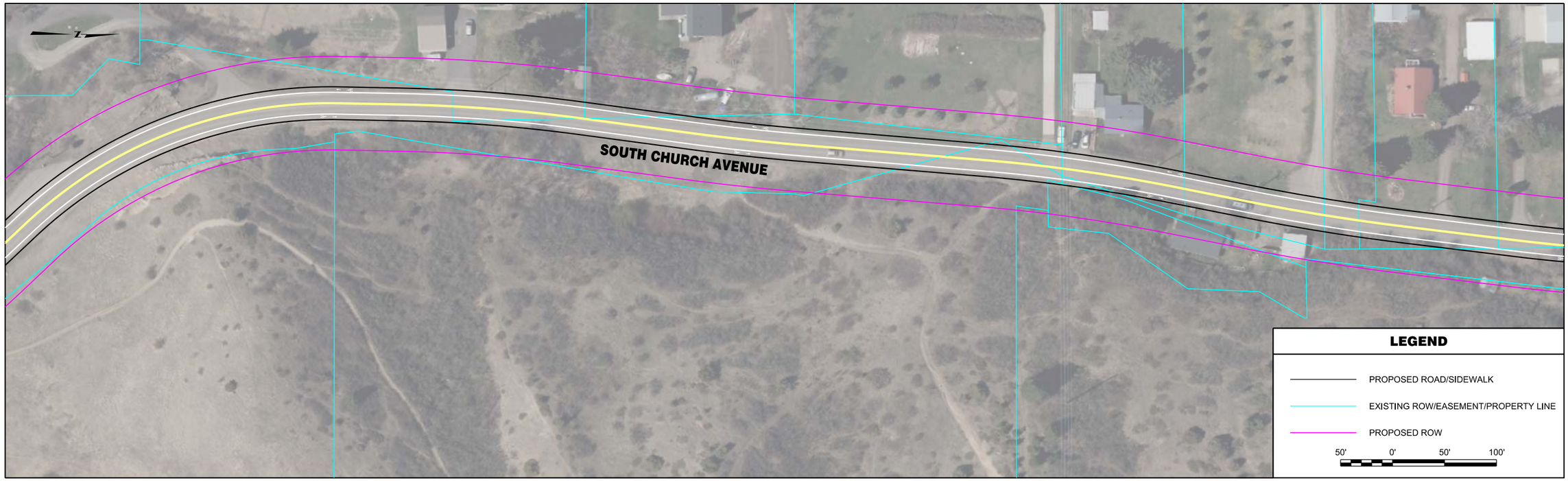

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\PP-Church\15602RDPLNZPP1.dg 1/26/2017 3:22:50 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOUTH CHURCH AVENUE STRIPING PLAN**

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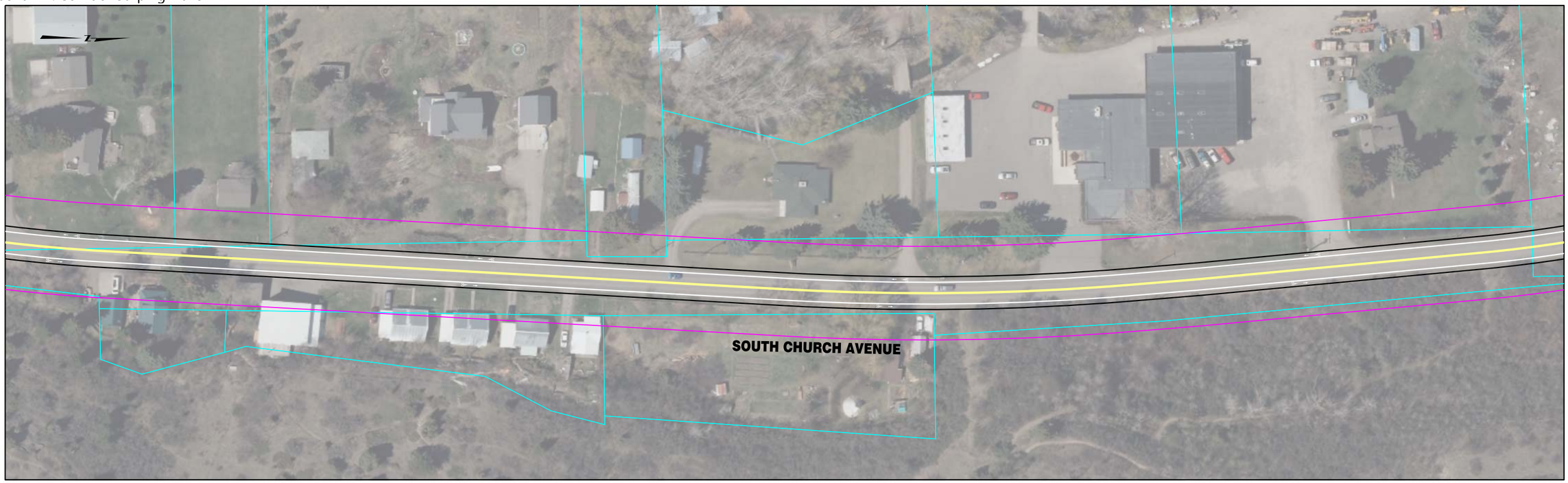

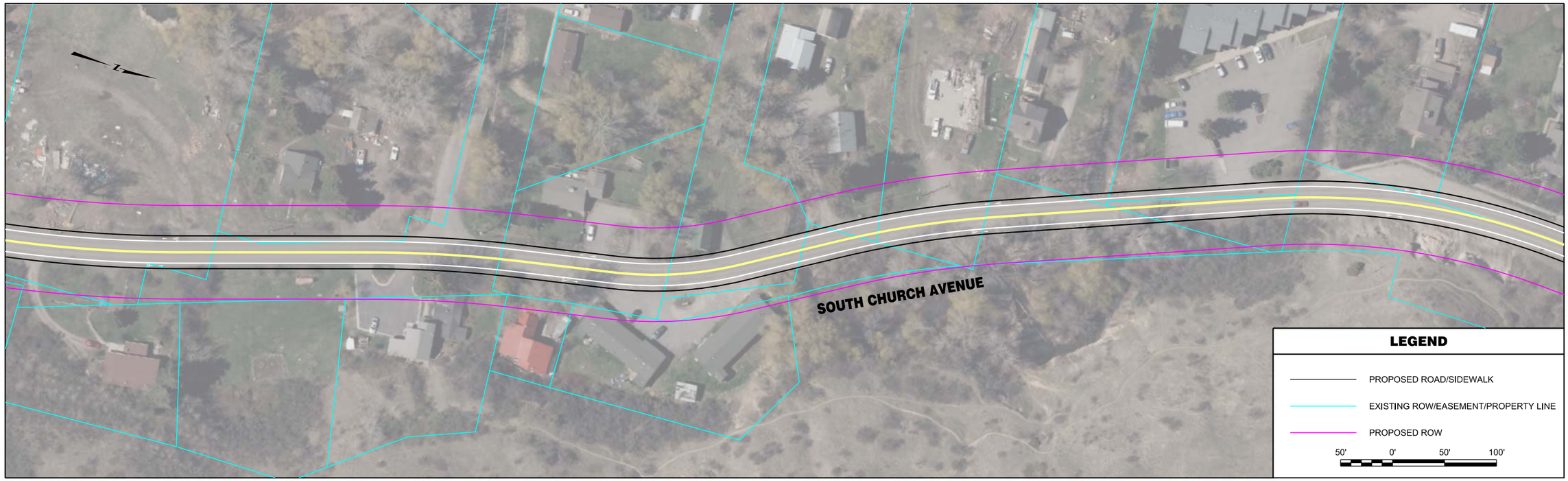

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\PP-Church\15602RDPLNZPP1.dg 1/26/2017 3:22:56 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOUTH CHURCH AVENUE STRIPING PLAN**

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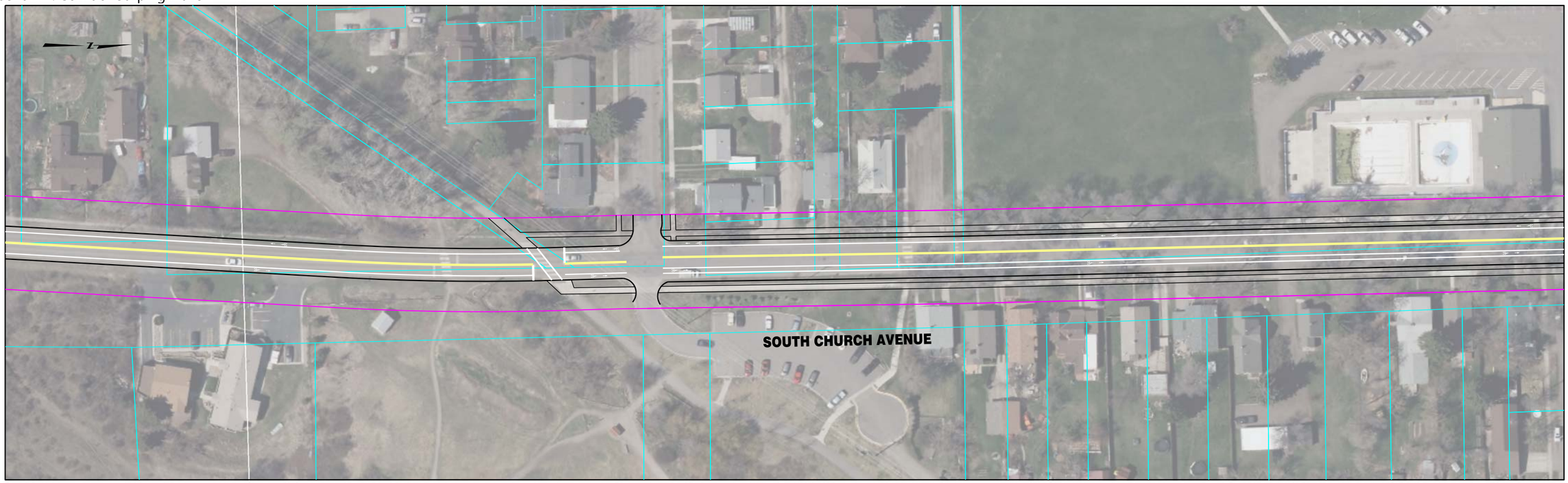

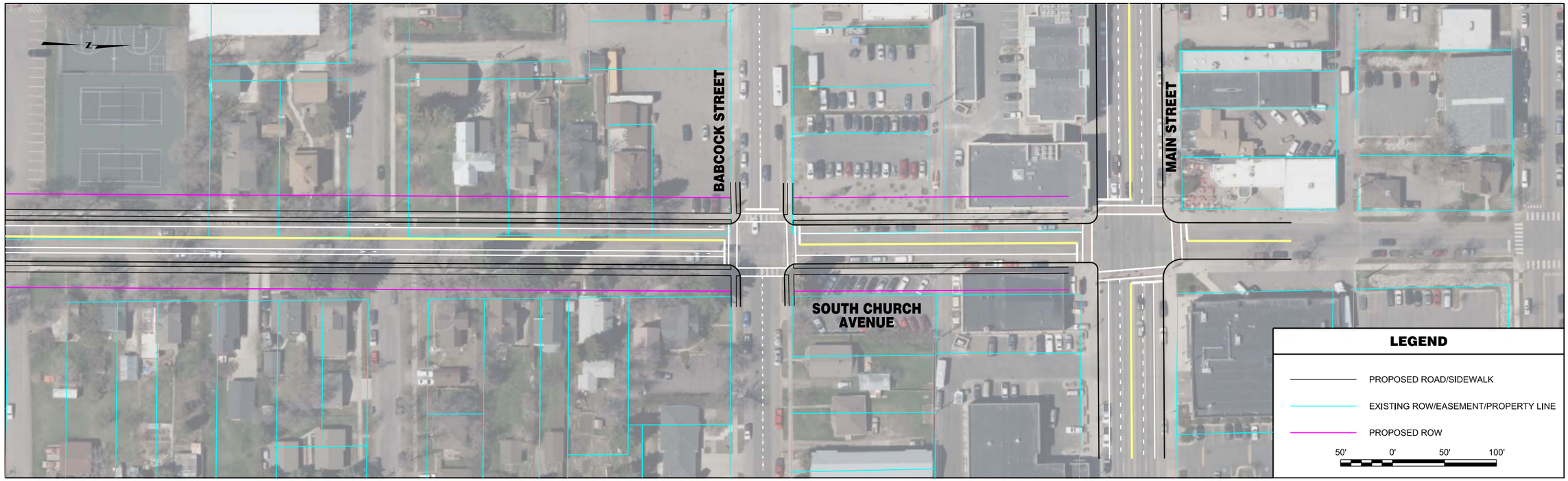

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\PP-Church\15602RDPLNZPP1.dw 1/26/2017 3:23:04 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOUTH CHURCH AVENUE STRIPING PLAN**

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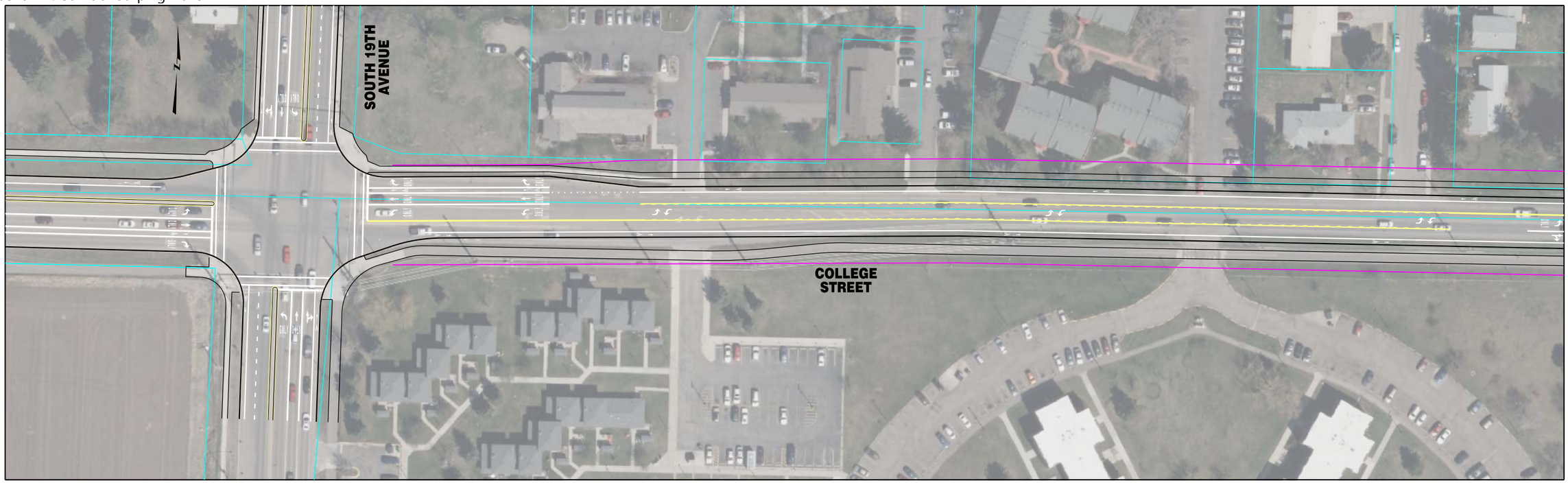

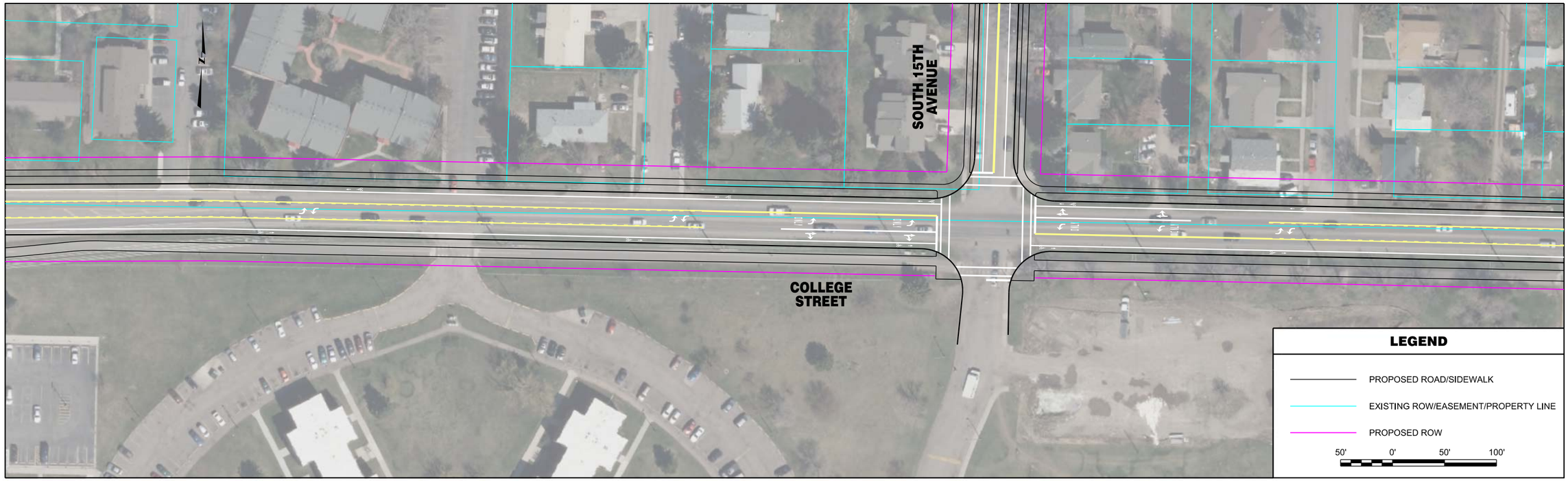

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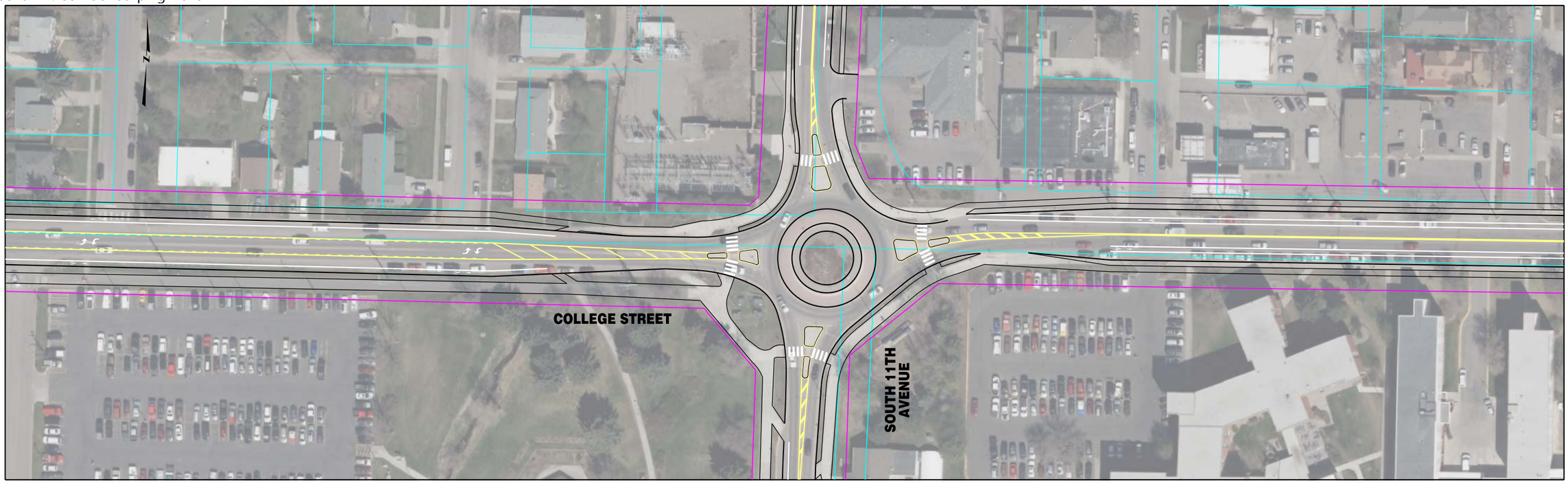

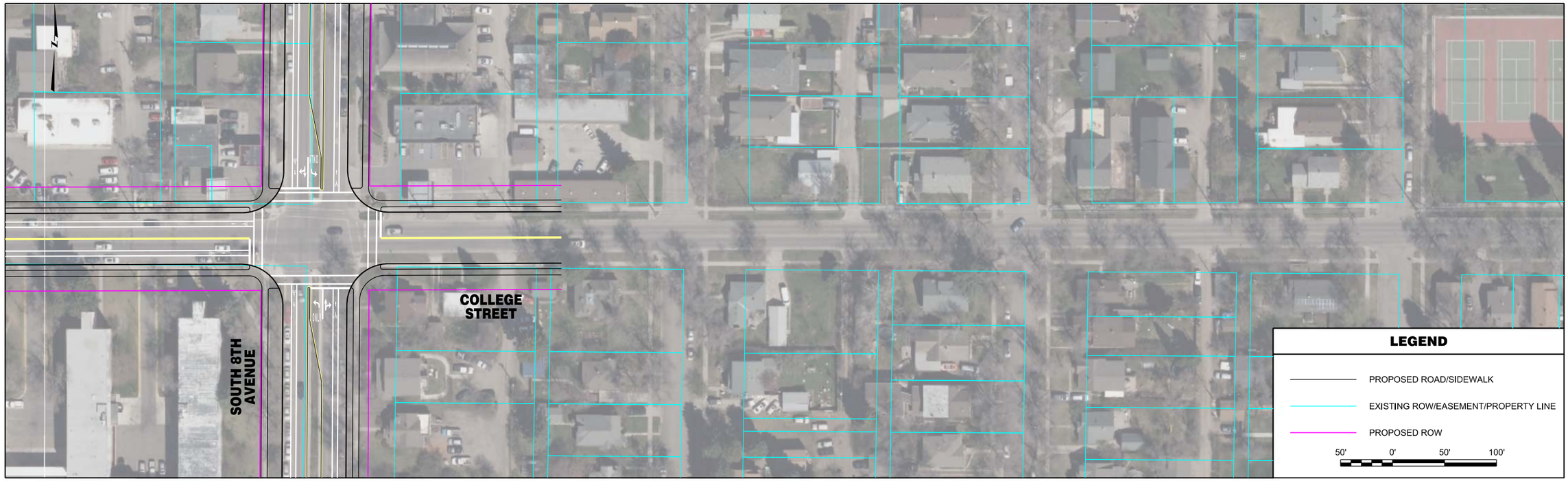

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZA1.dgn 1/26/2017 3:25:49 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **COTTONWOOD ROAD STRIPING PLAN**

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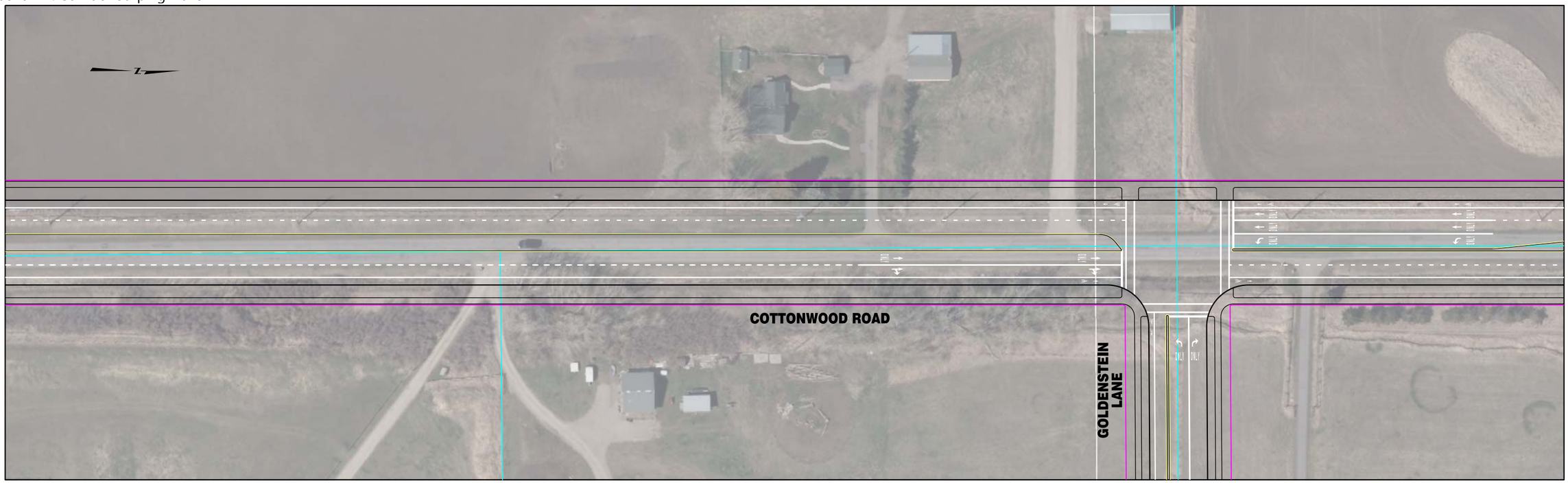

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZA1.dgn 1/26/2017 3:25:58 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **COTTONWOOD ROAD STRIPING PLAN**

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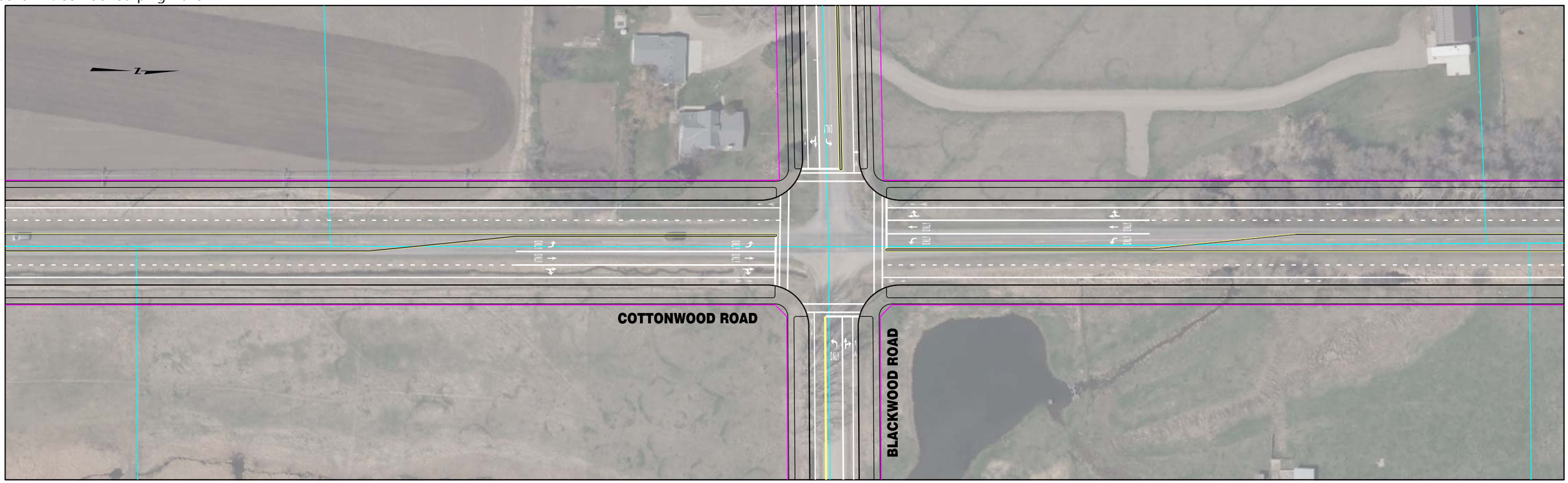

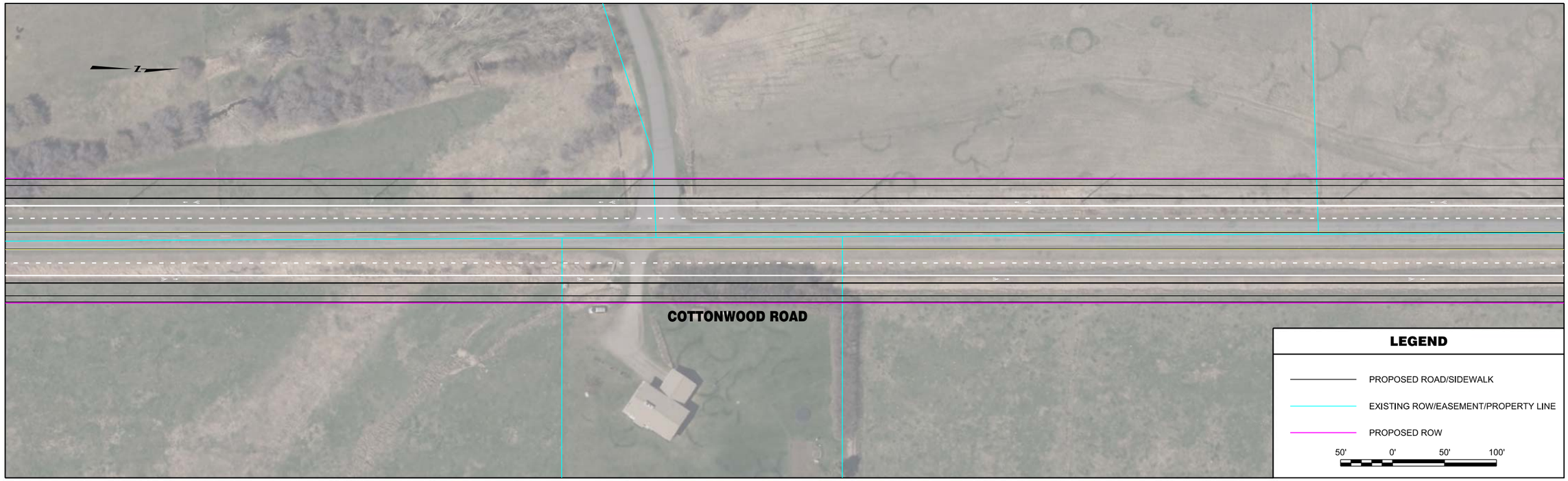

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZA1.dgn 1/26/2017 3:26:06 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **COTTONWOOD ROAD STRIPING PLAN**

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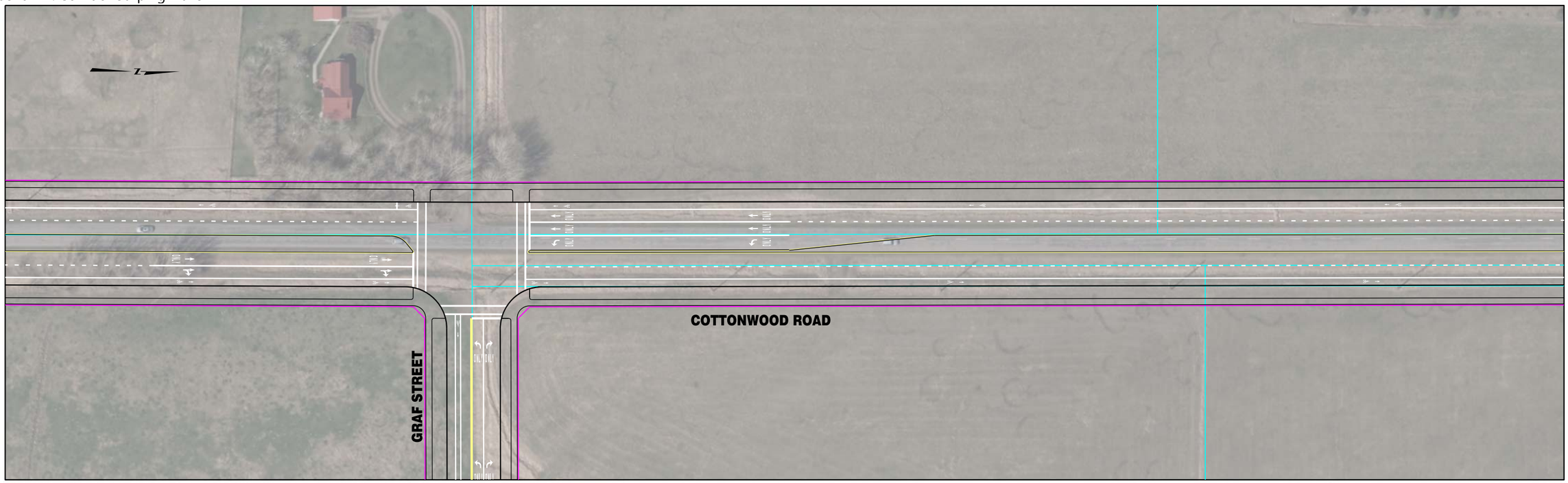

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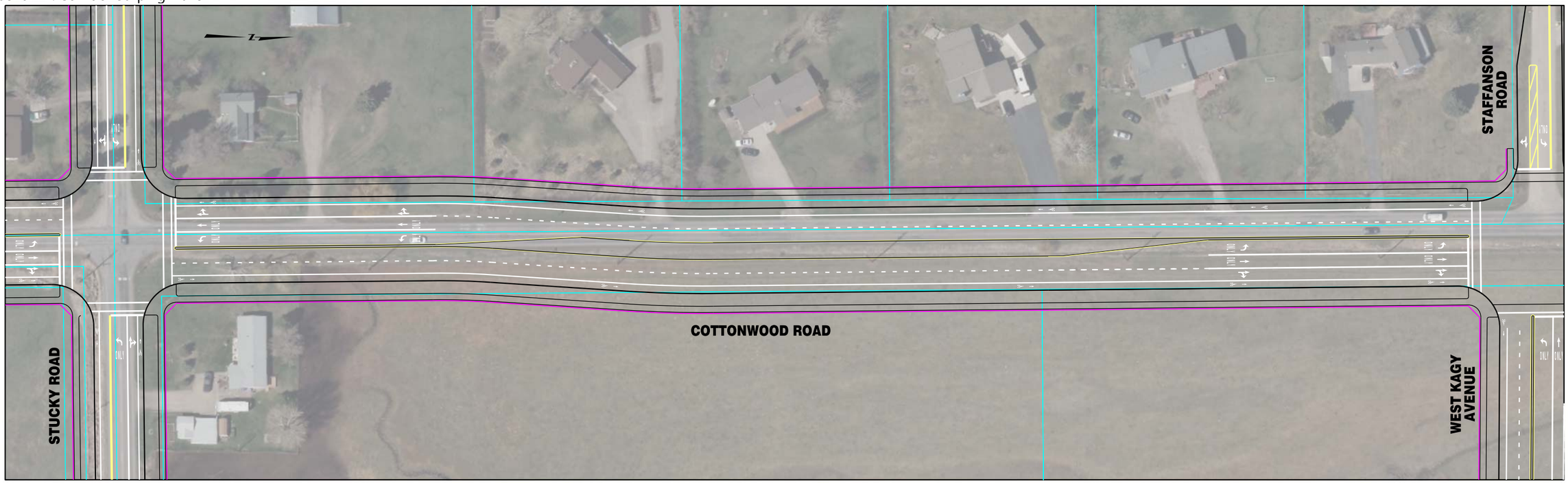

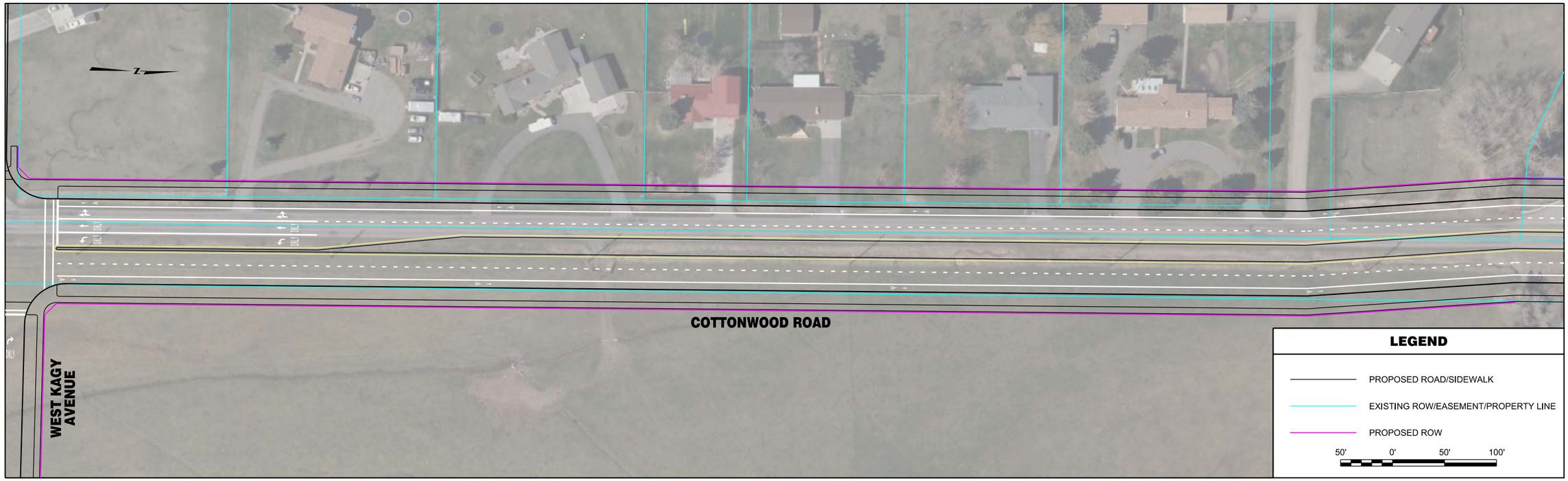

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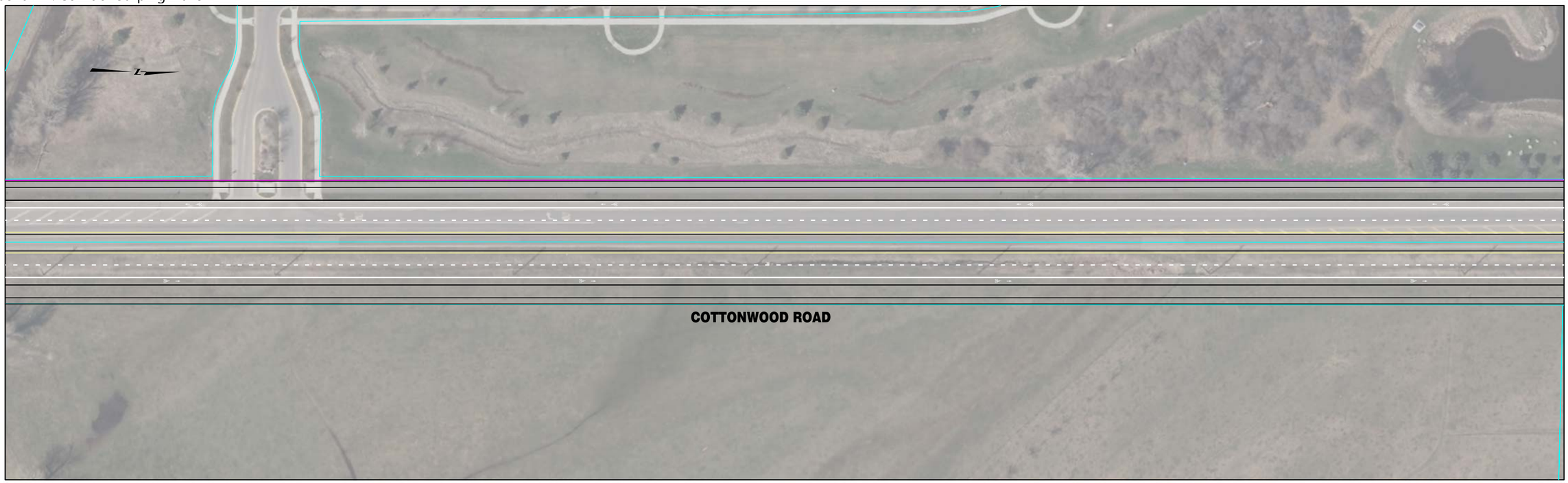

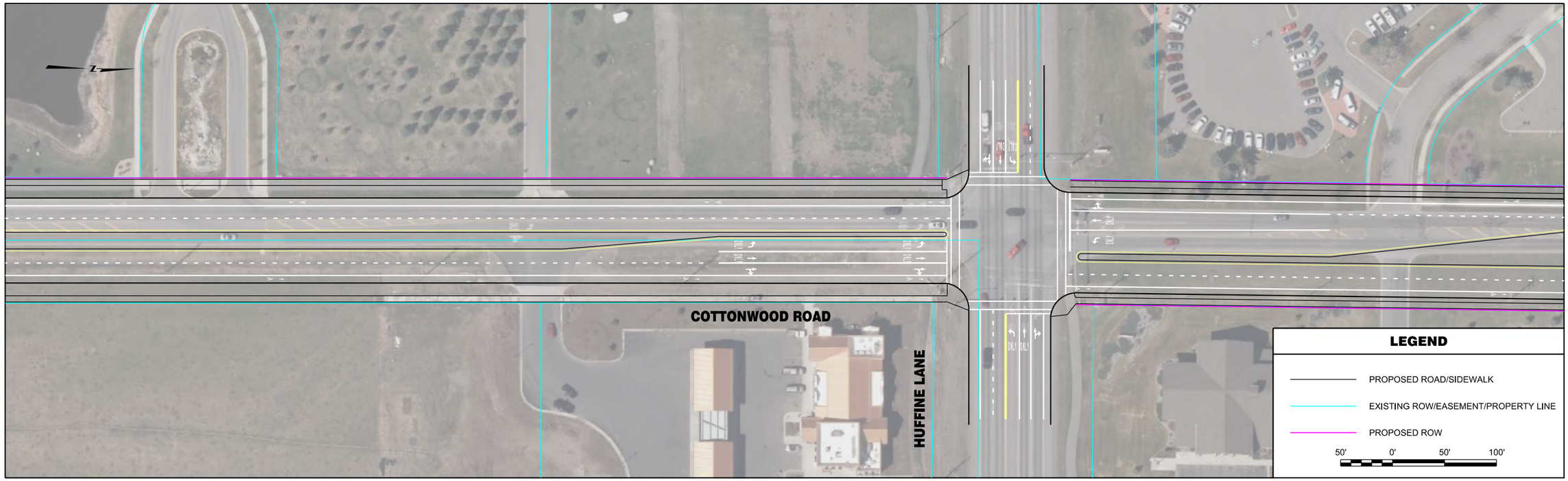

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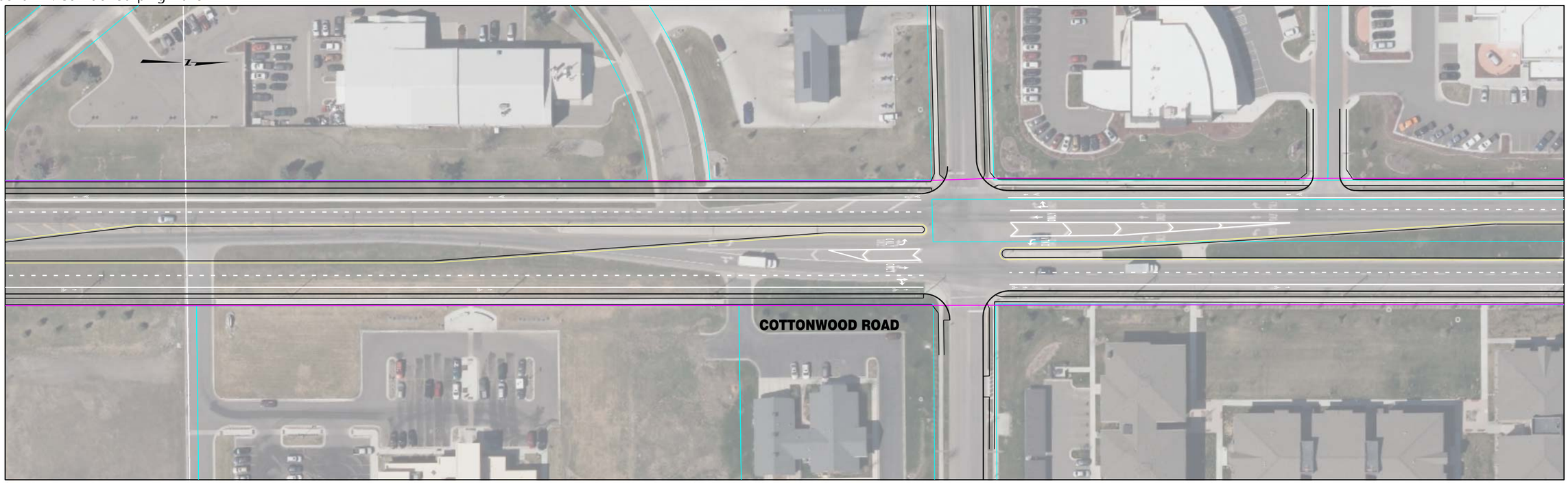

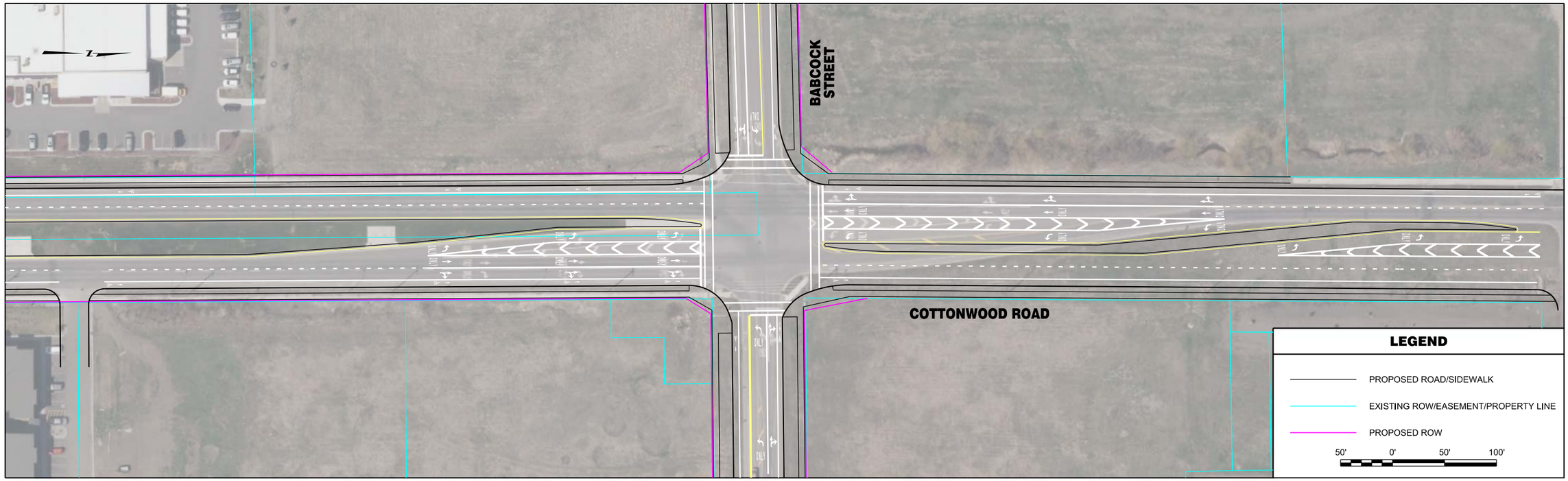

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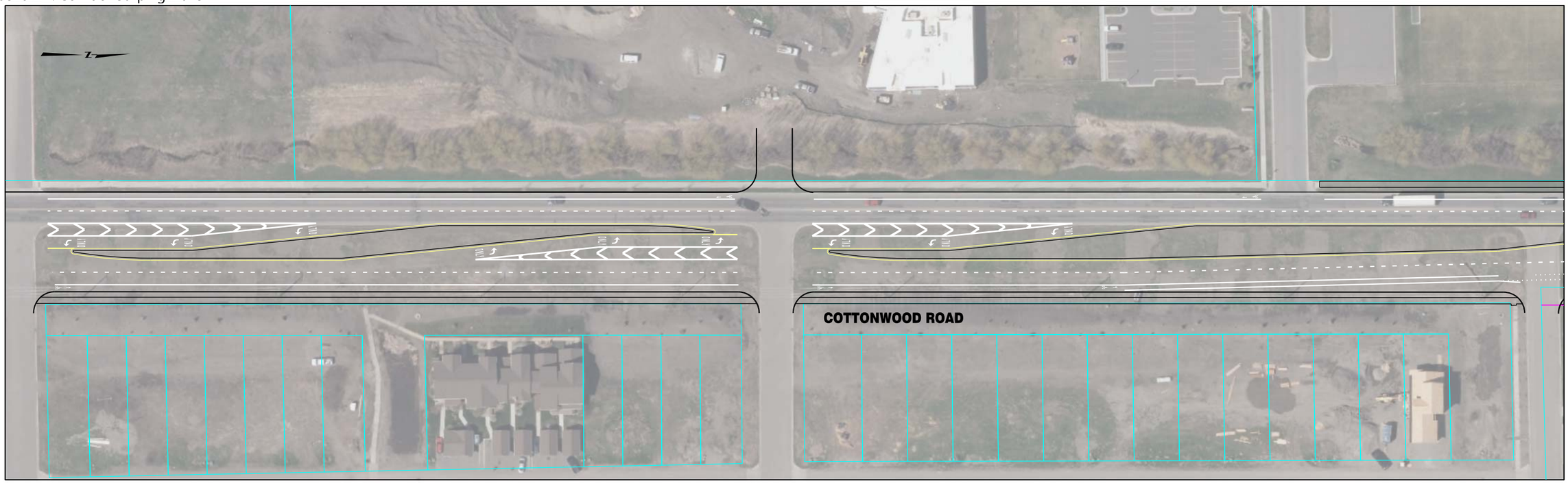

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZA3.dgn 1/26/2017 3:26:58 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **COTTONWOOD ROAD STRIPING PLAN**

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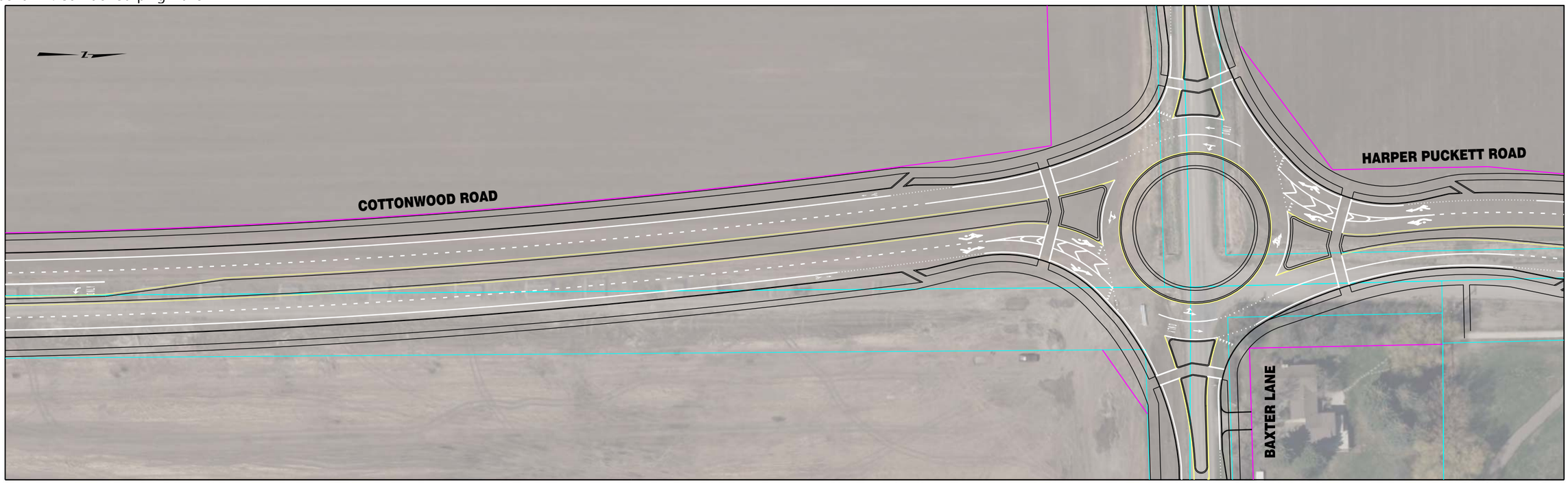

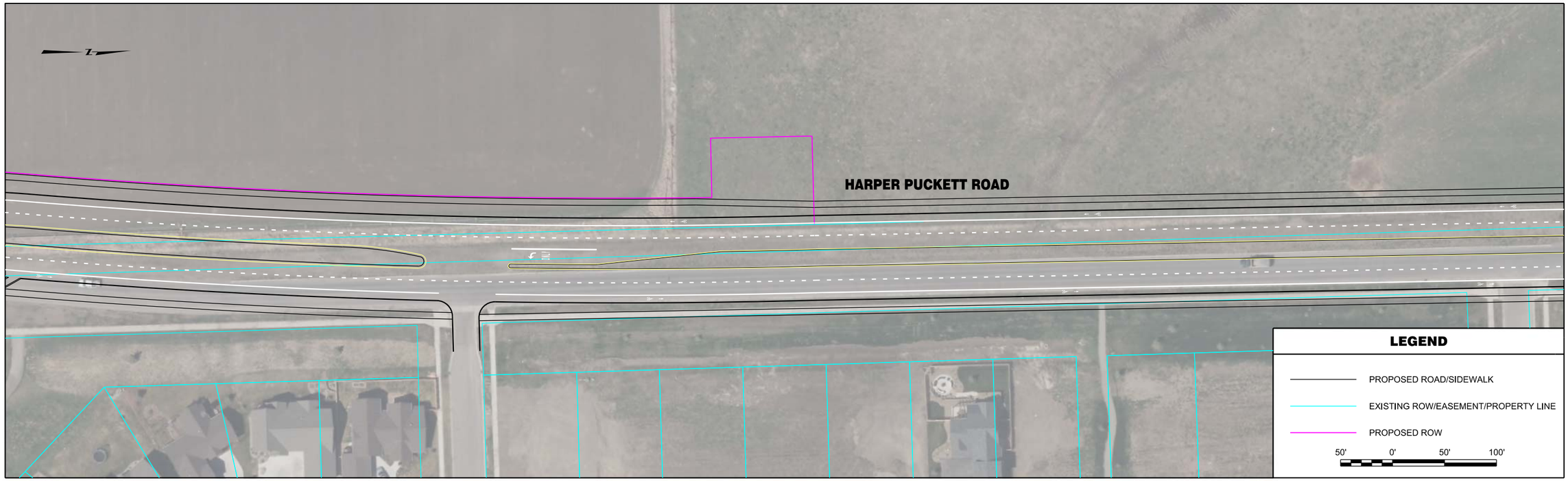

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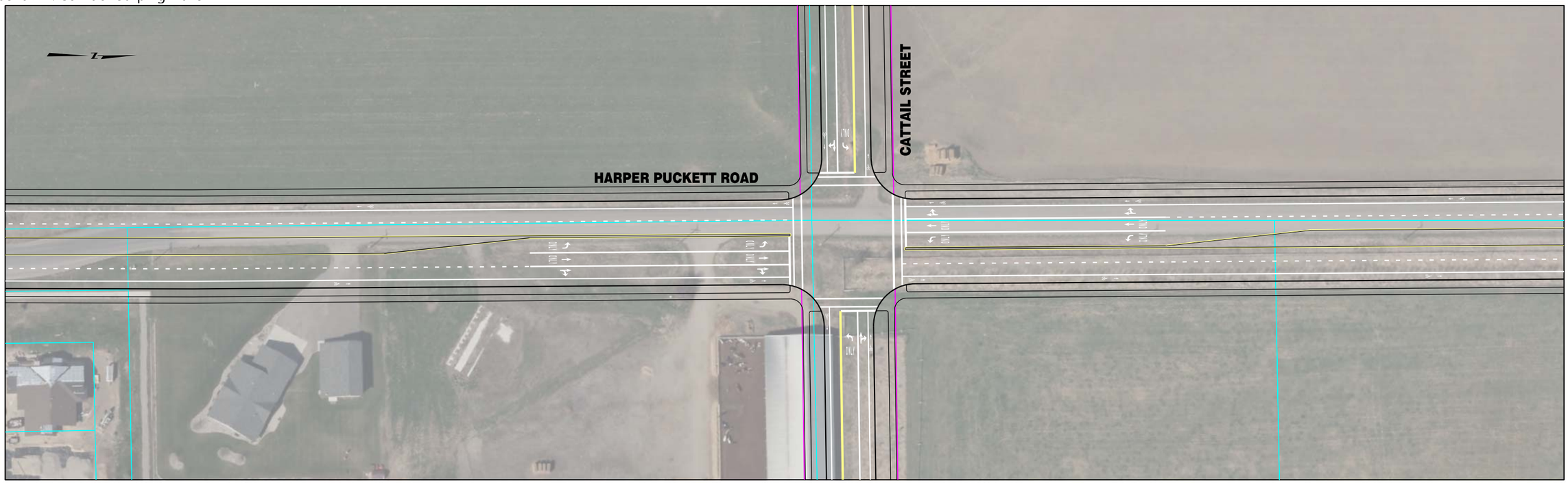

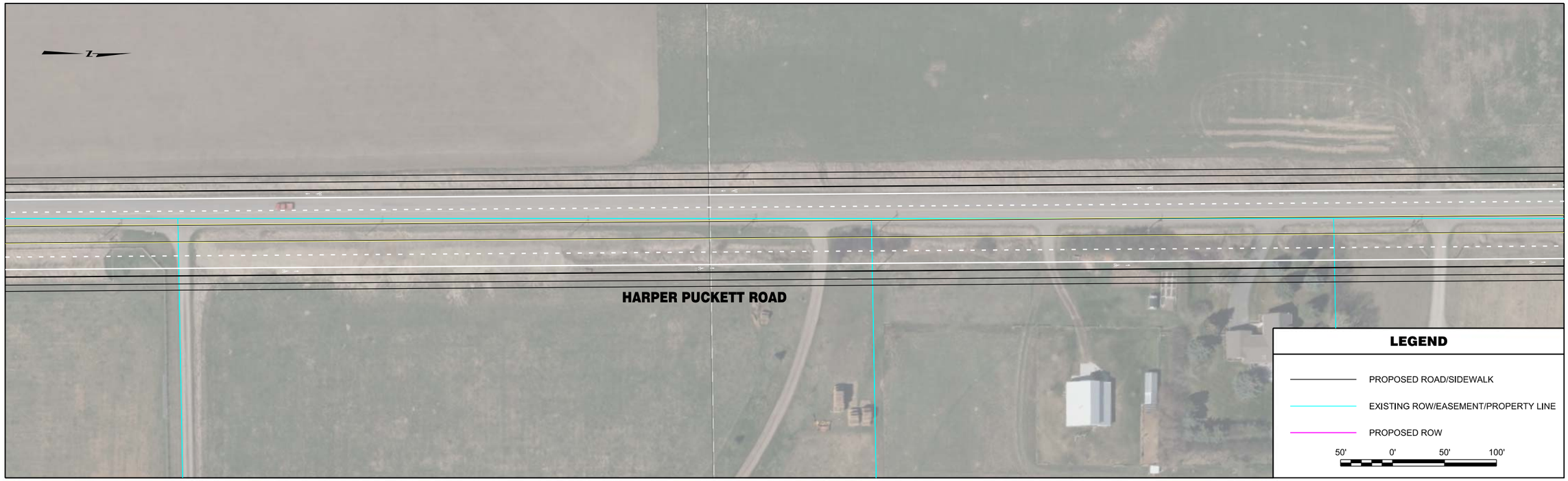

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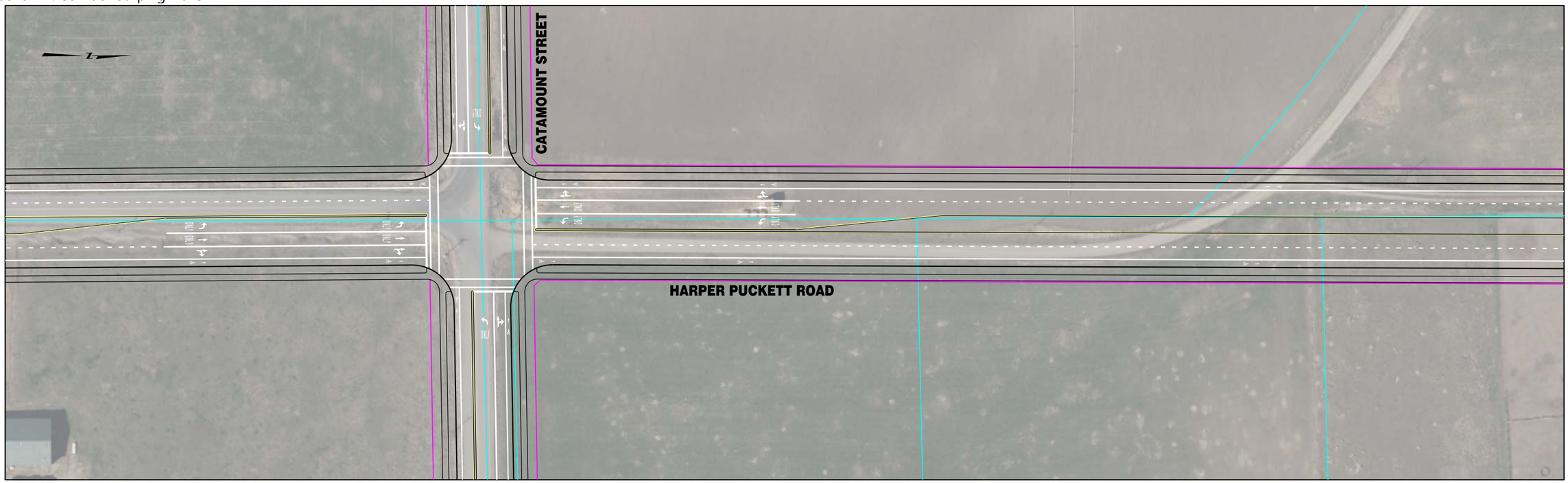

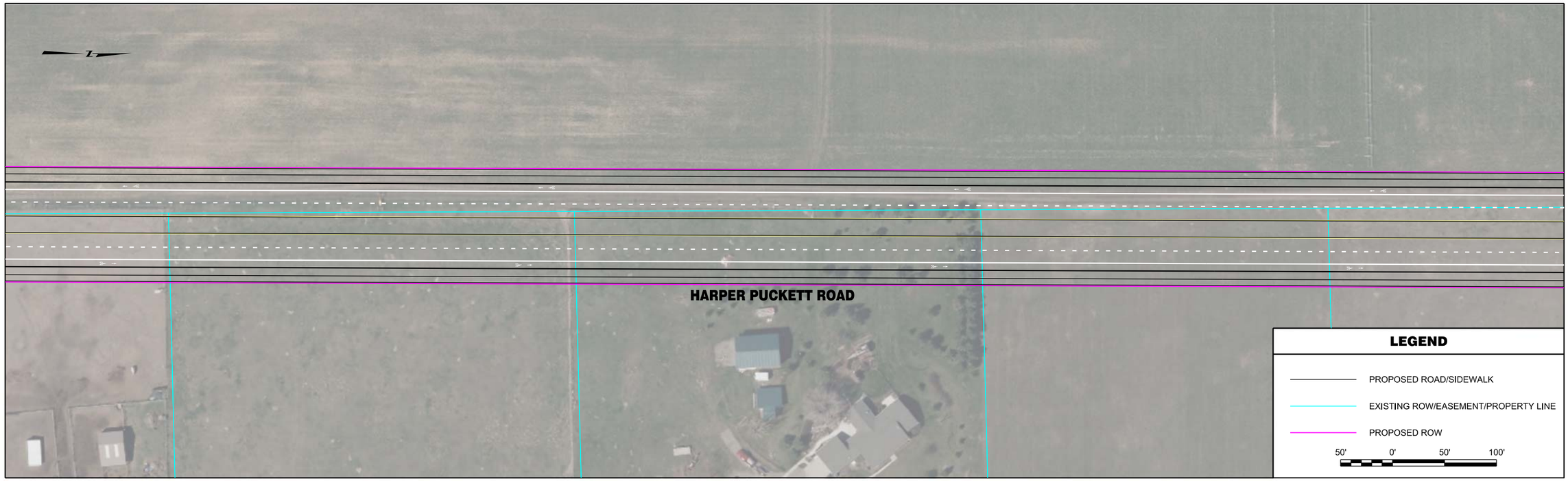

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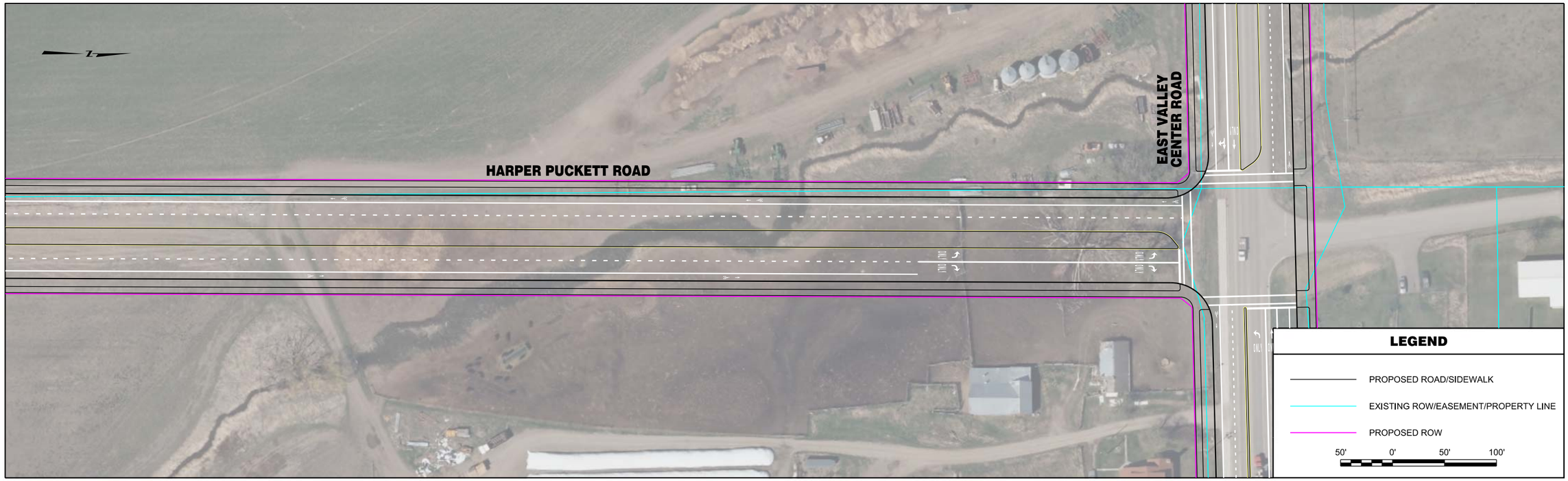

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZA5.dgn 1/26/2017 3:27:37 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **HARPER PUCKETT ROAD STRIPING PLAN**

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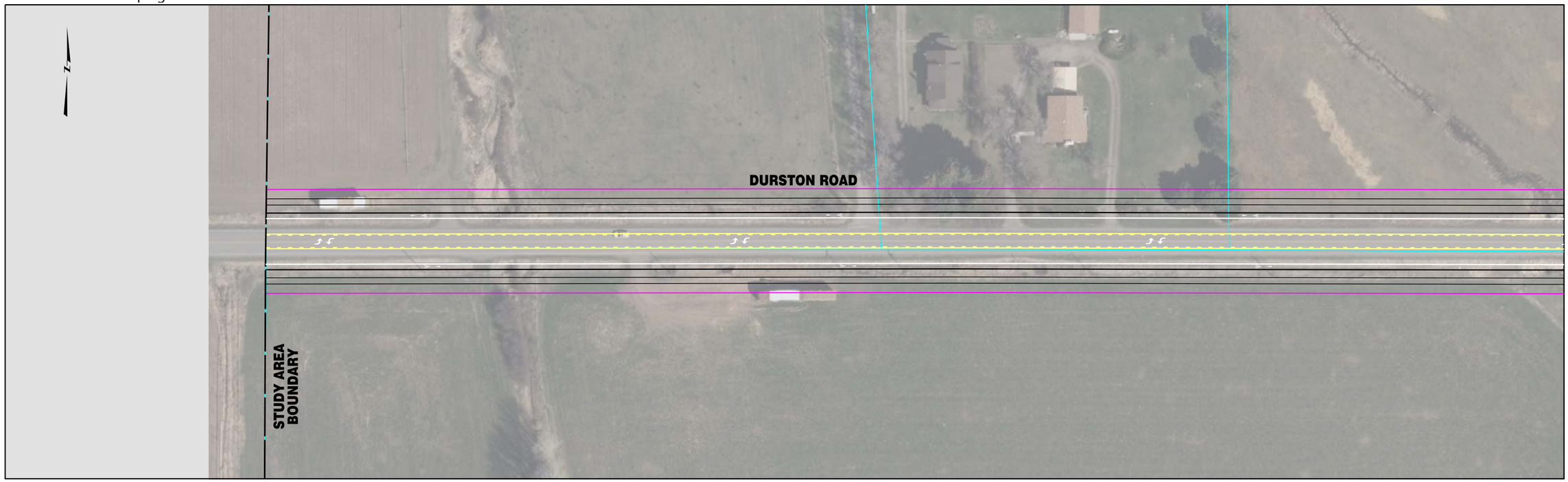

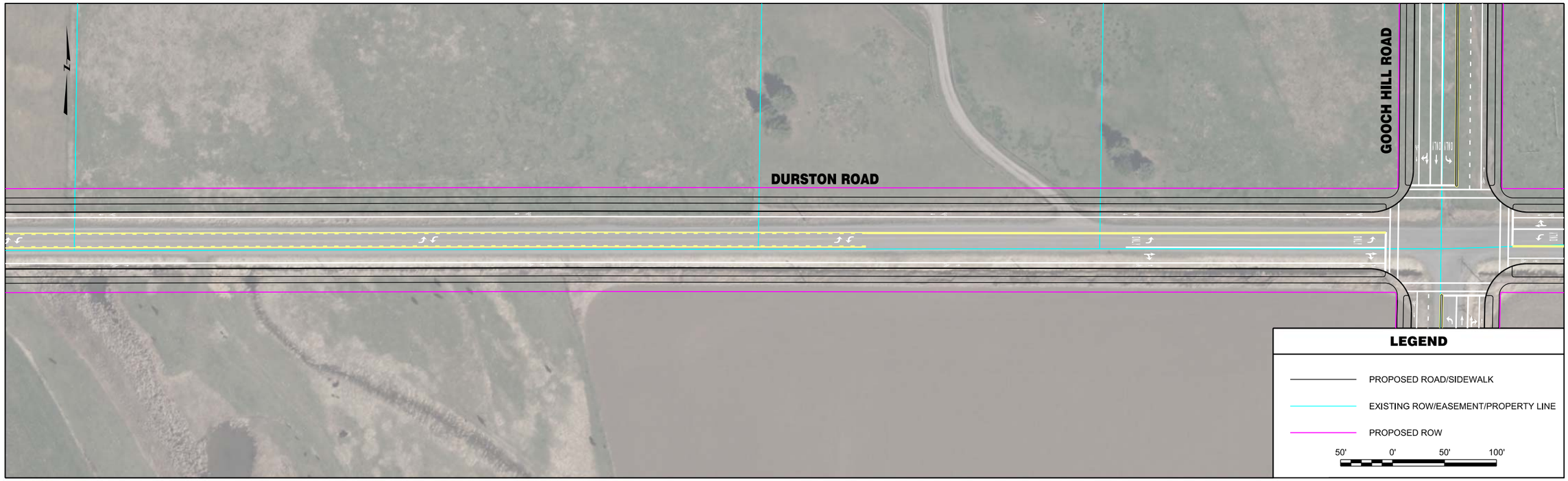

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\O-Durston\15602RDPLNZO1.dgn 1/26/2017 3:31:59 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DURSTON ROAD STRIPING PLAN**	SHEET Page 102 **1**

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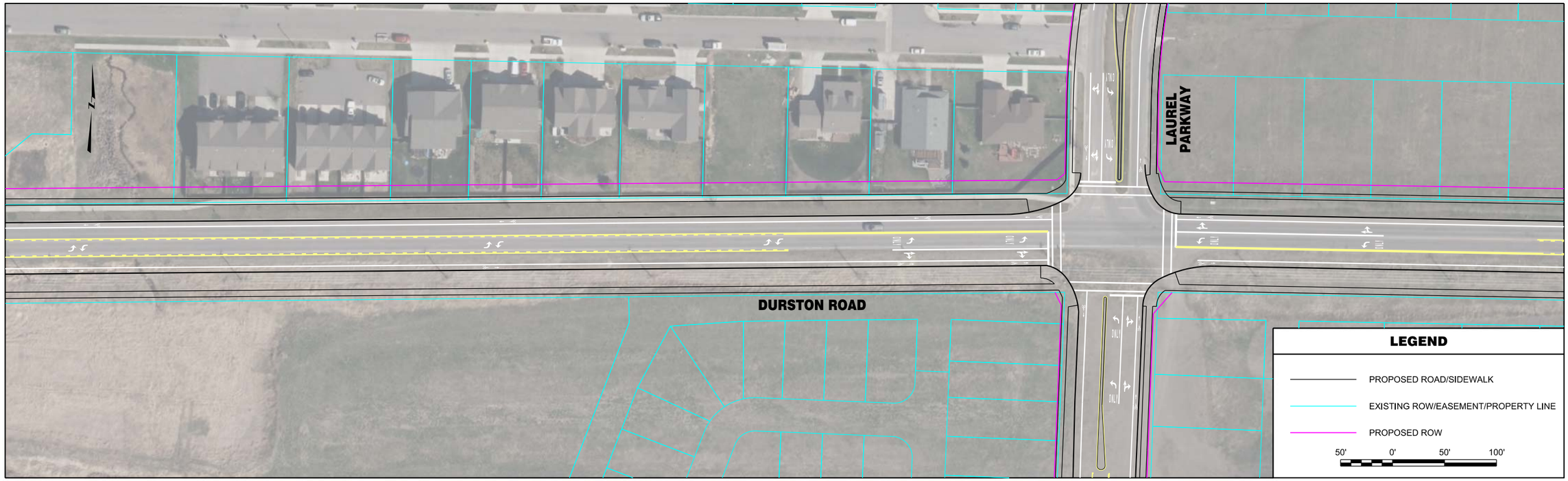

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\O-Durston\15602RDPLNZO1.dgn 1/26/2017 3:32:07 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DURSTON ROAD STRIPING PLAN**

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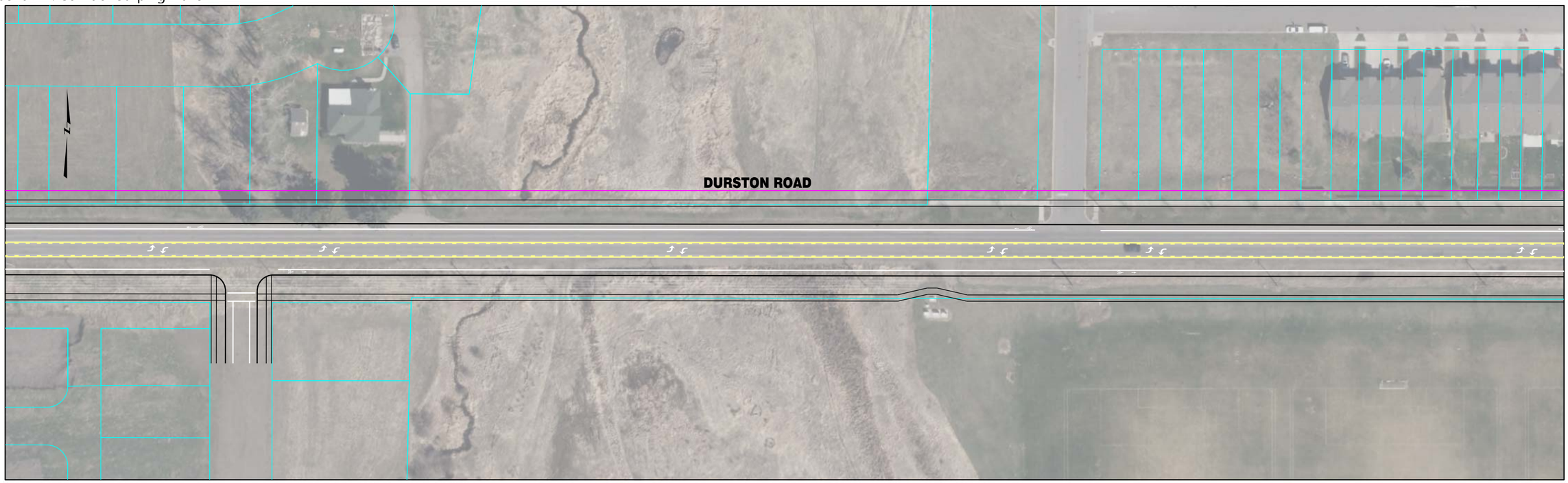

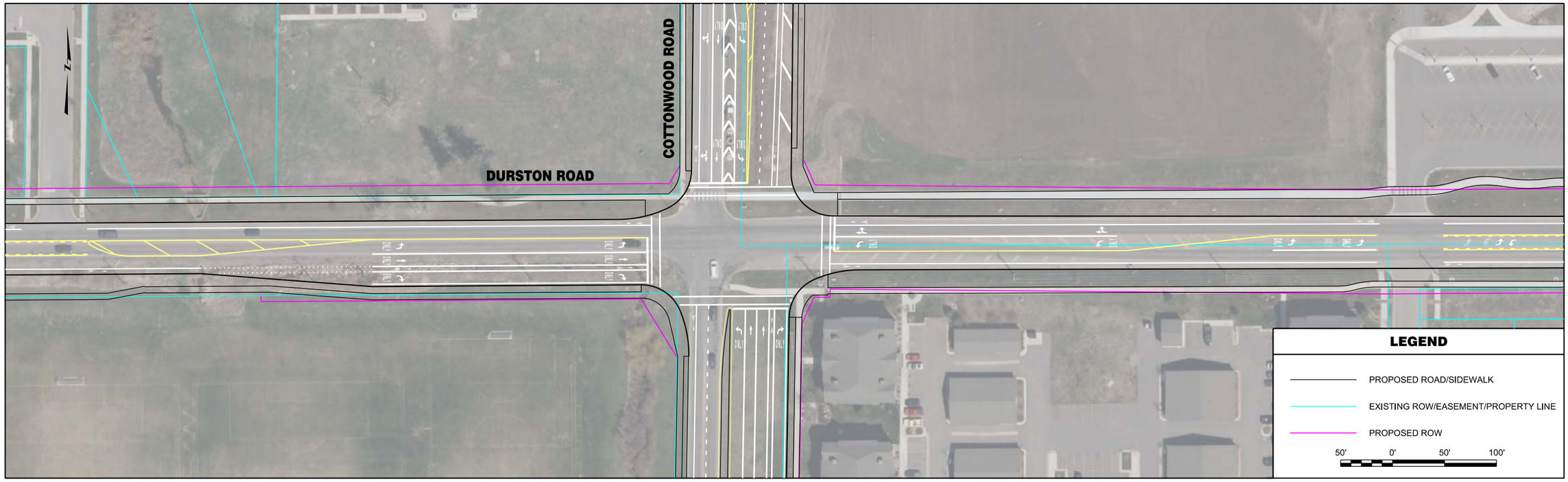

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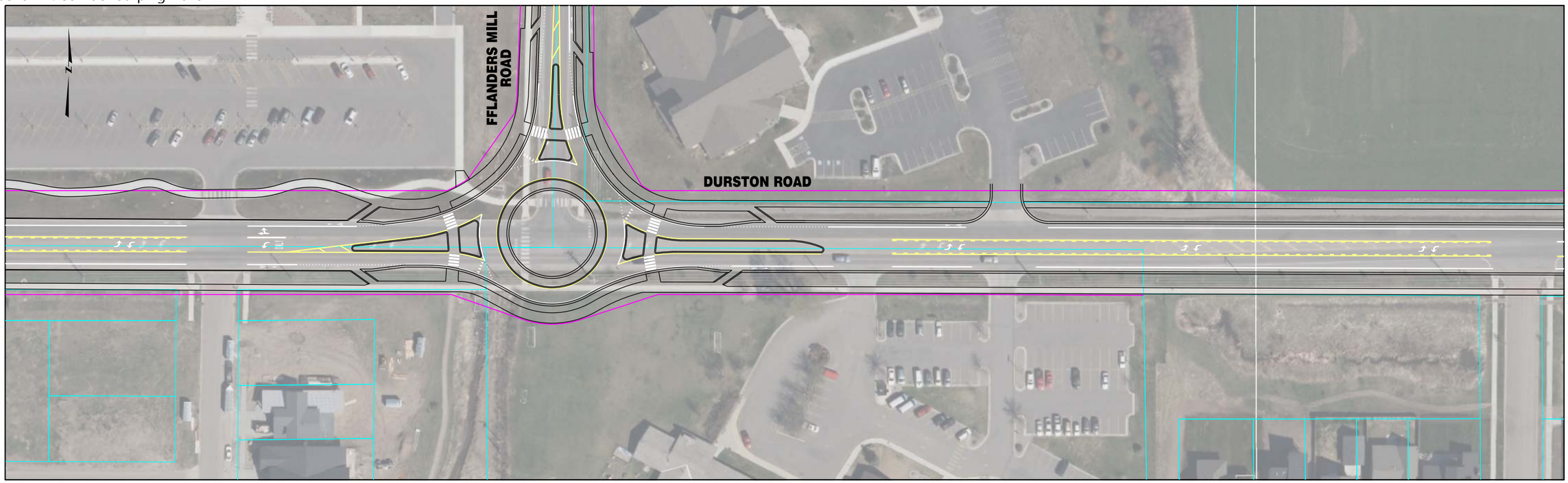

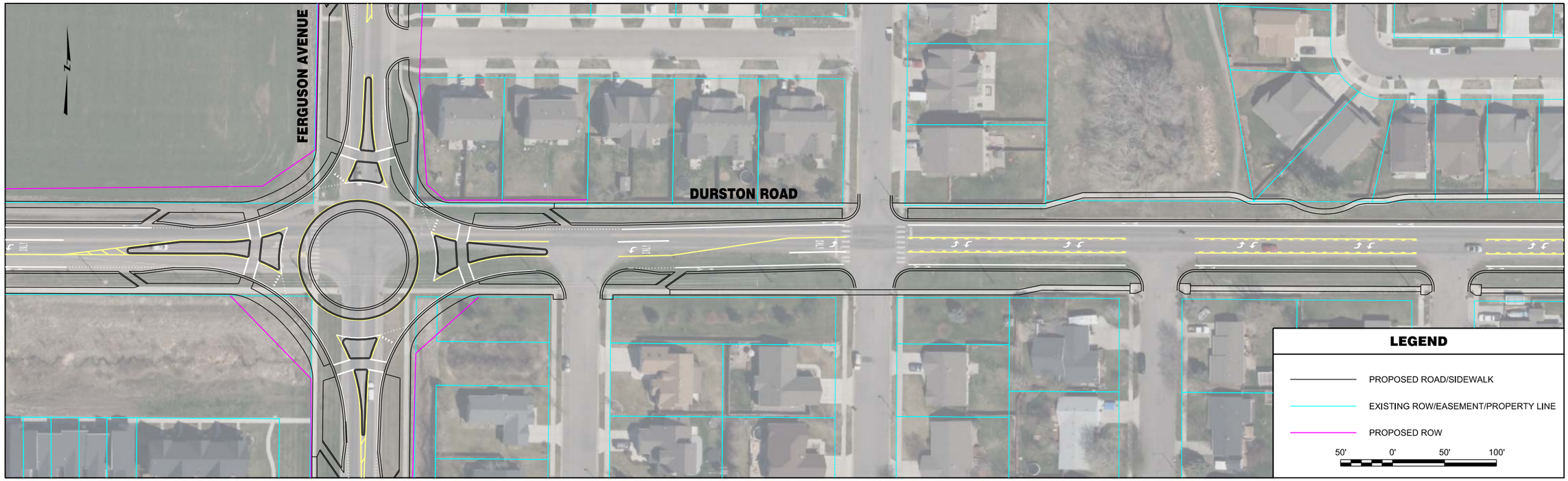

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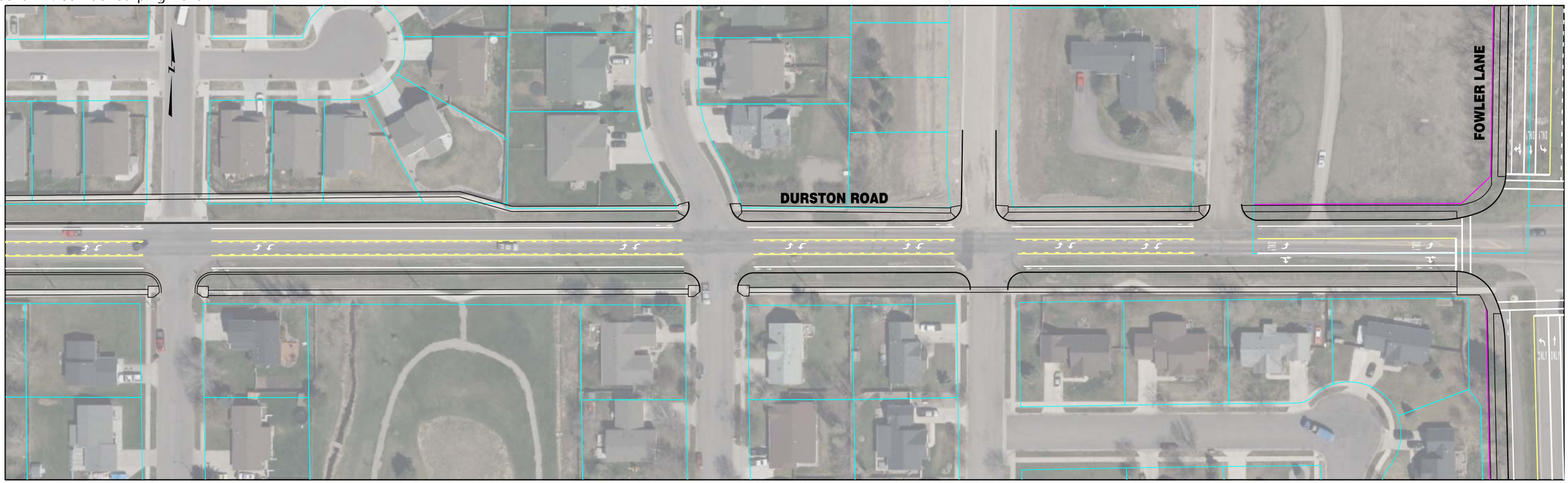

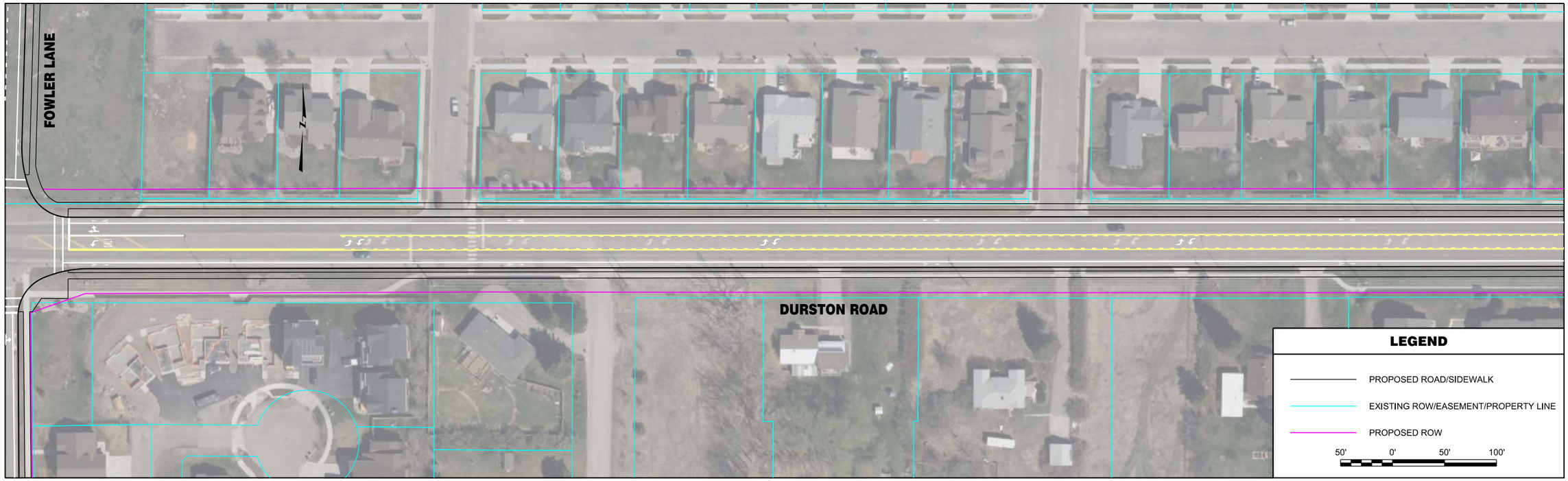

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\O-Durston\15602RDPLNZO2.dgn 1/26/2017 3:32:32 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DURSTON ROAD STRIPING PLAN**

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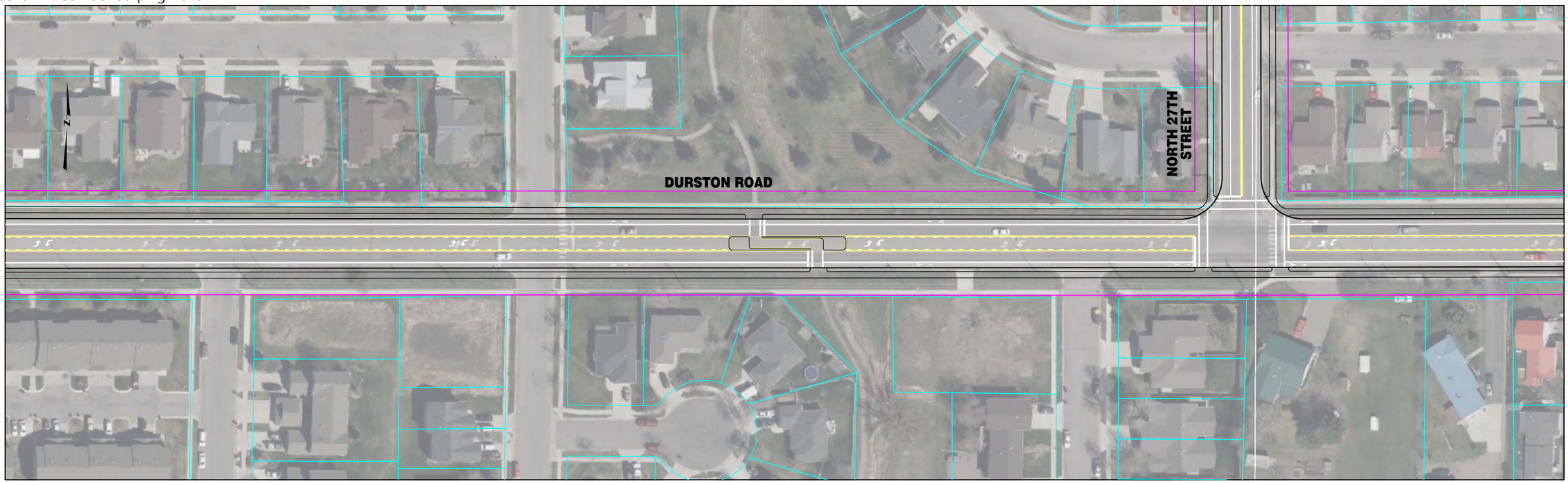

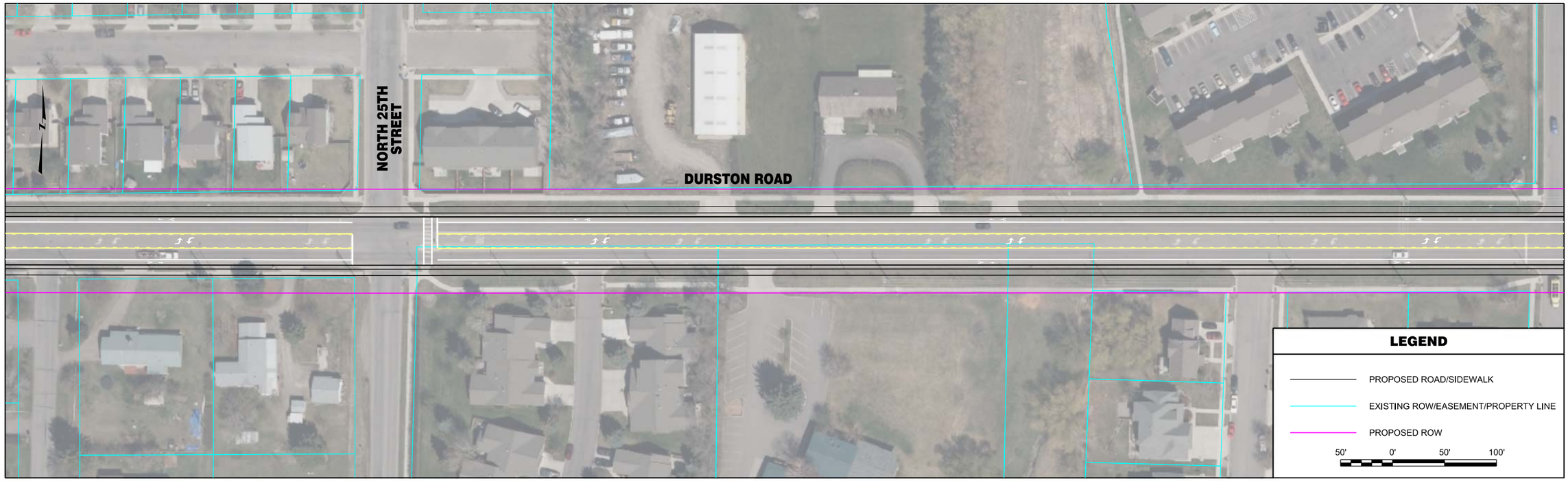

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\O-Durston\15602RDPLNZO2.dgn 1/26/2017 3:32:41 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DURSTON ROAD STRIPING PLAN**	SHEET Page 107 **6**

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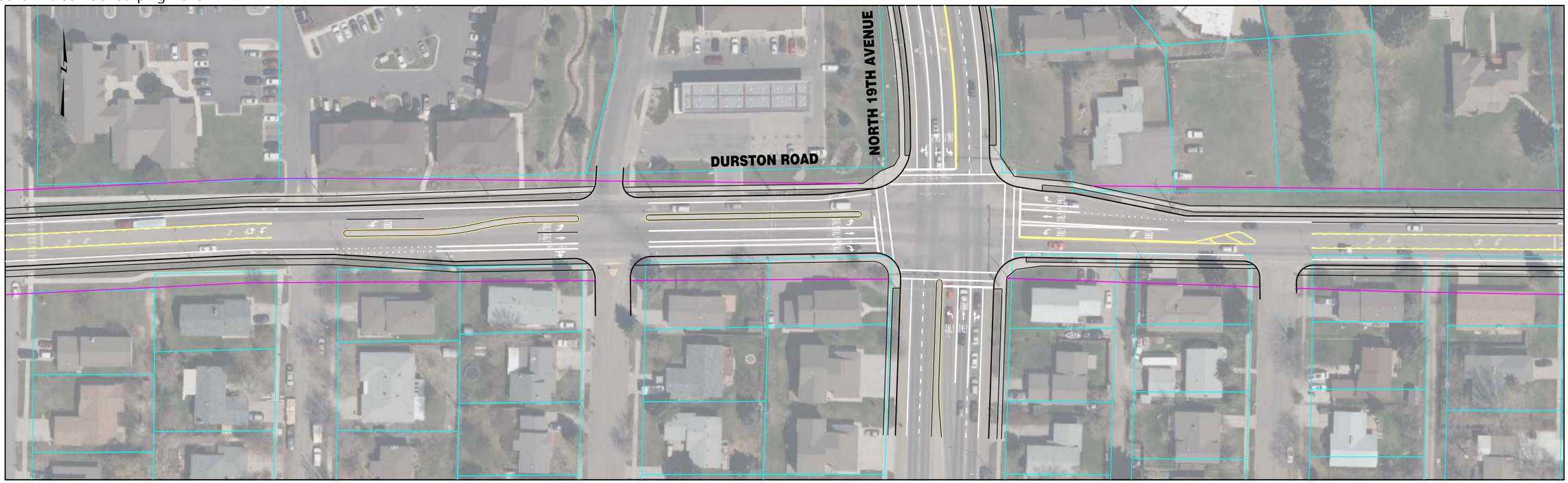

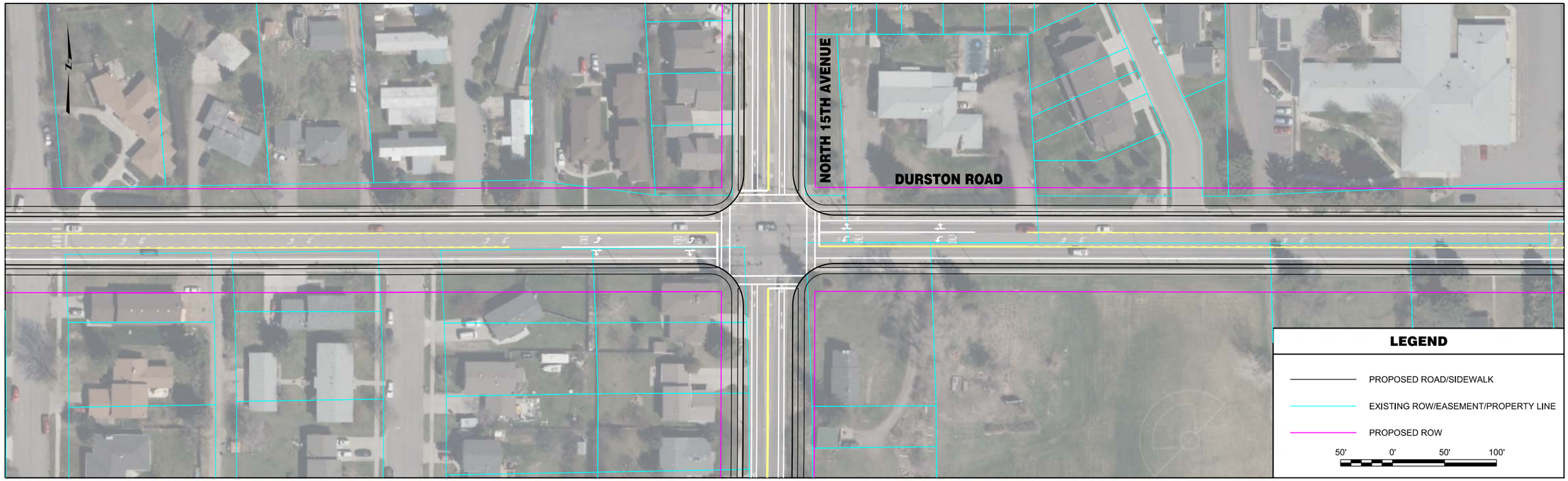

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\O-Durston\15602RDPLNZO3.dgn 1/26/2017 3:32:49 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DURSTON ROAD STRIPING PLAN**

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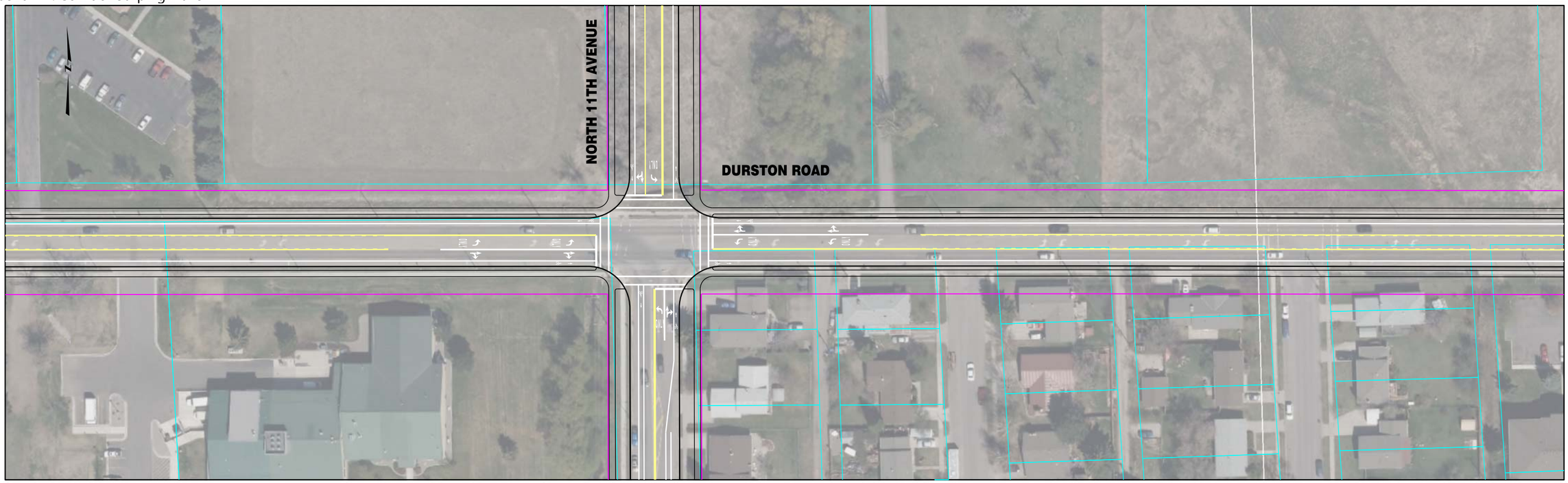

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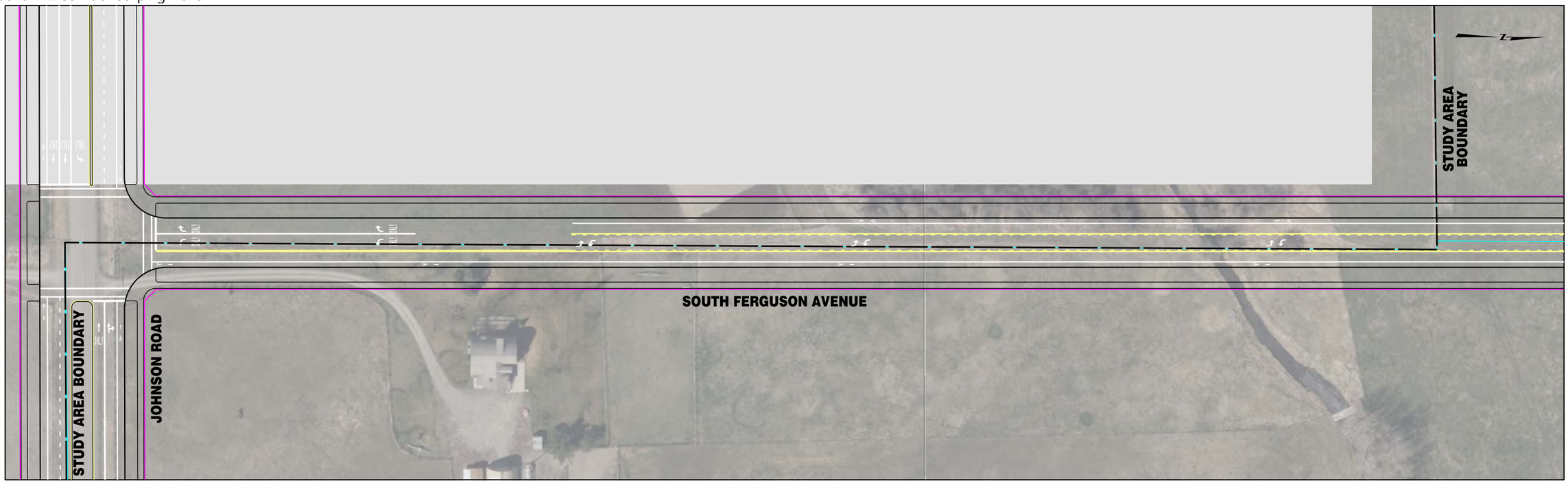

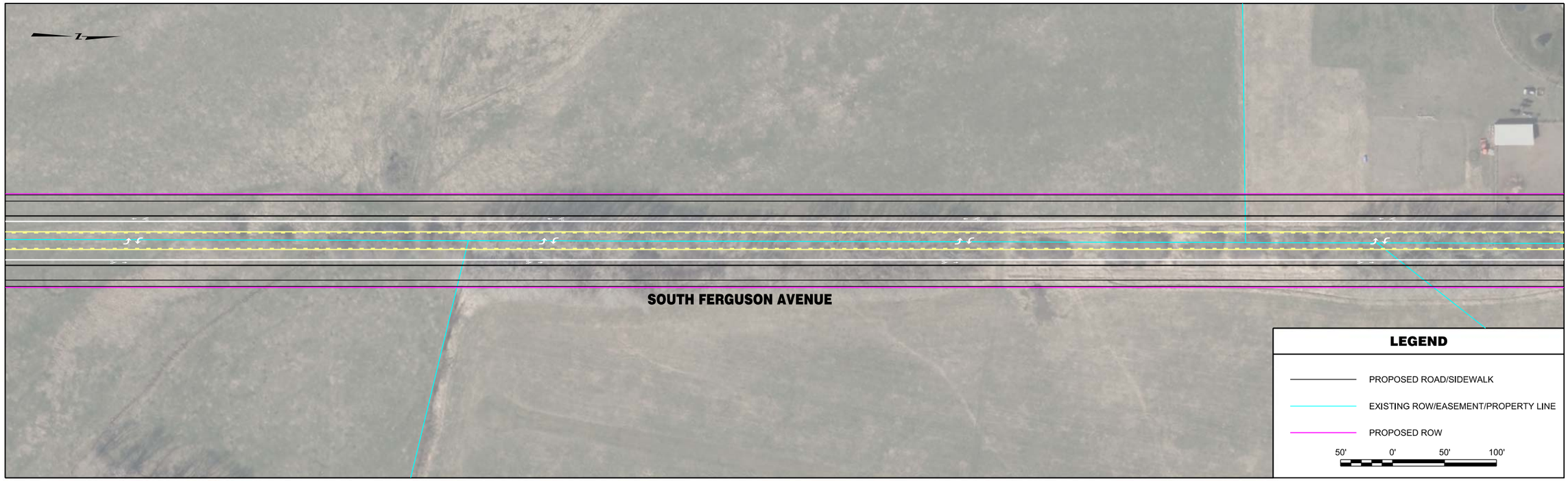

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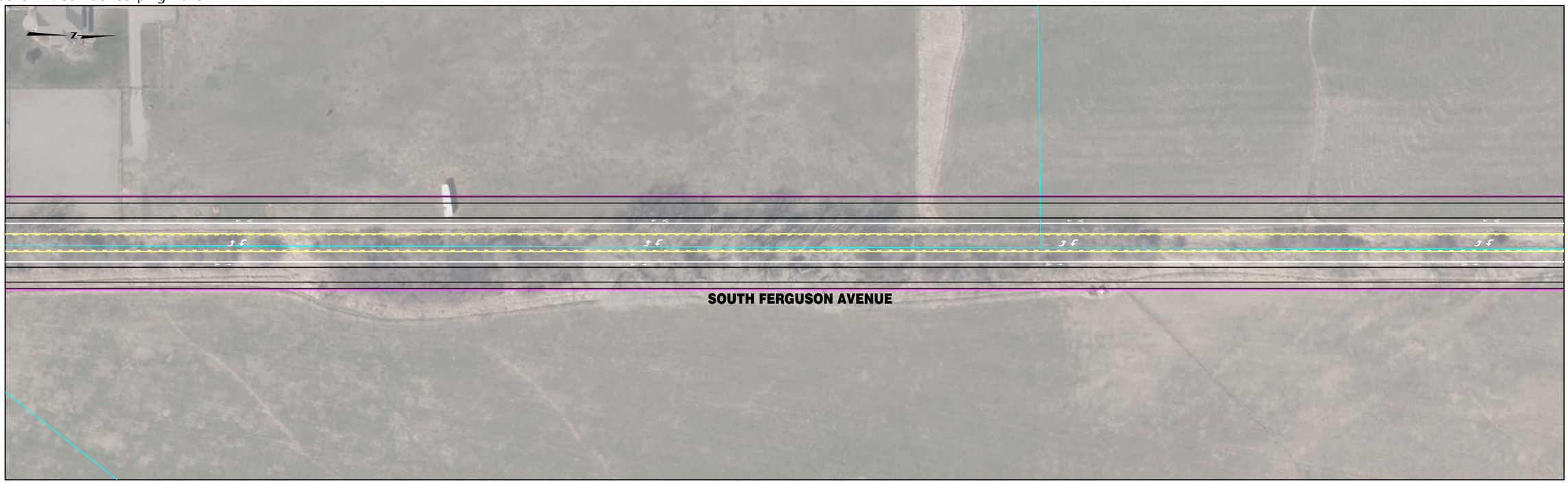

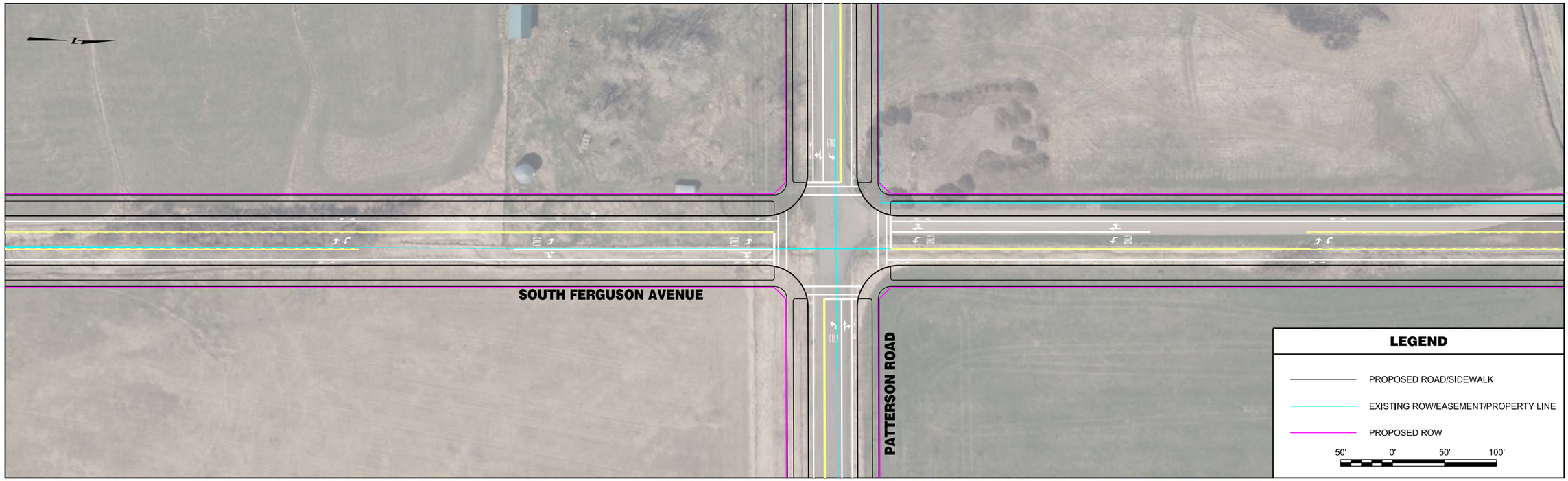

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII1.dgn 1/26/2017 3:34:37 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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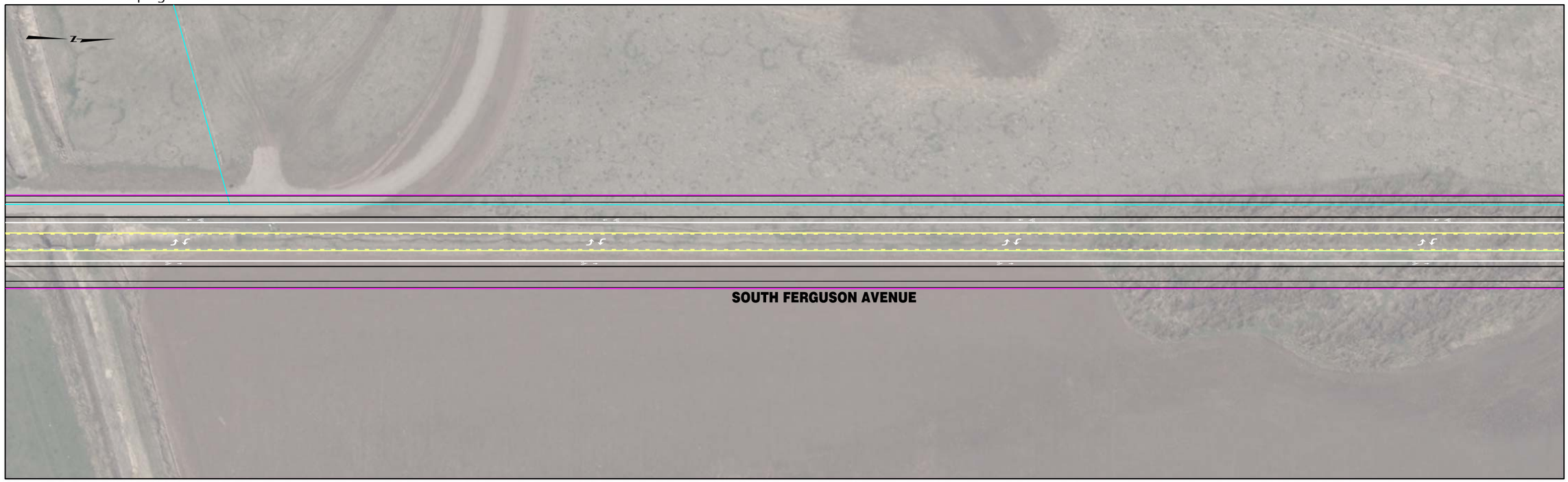

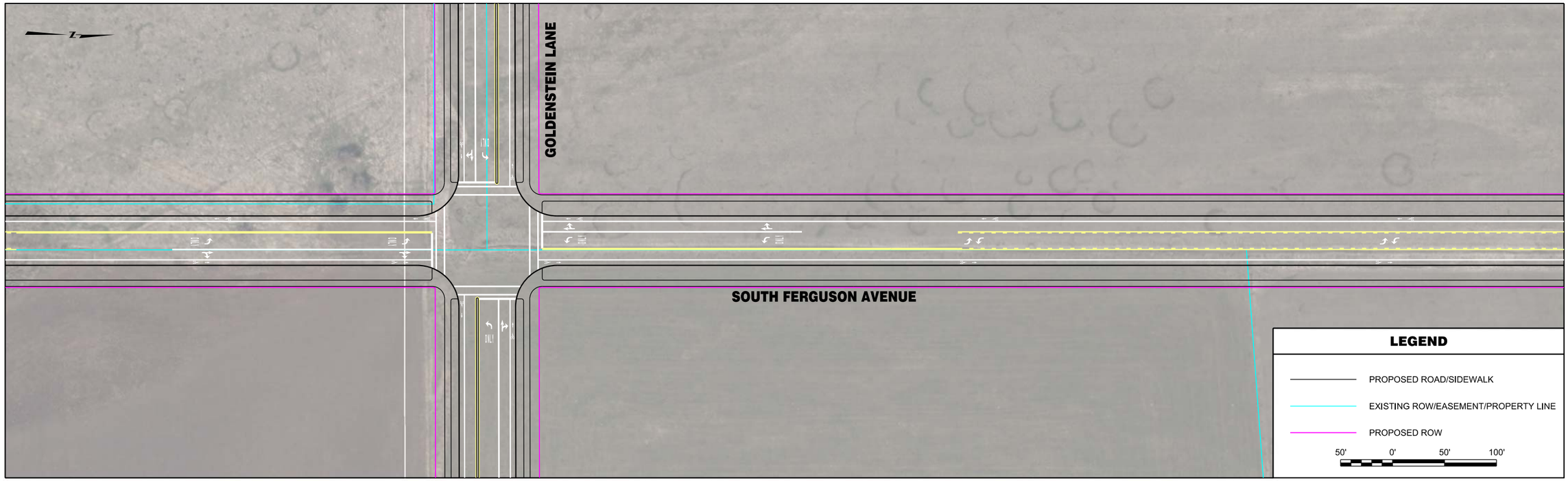

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII1.dgn 1/26/2017 3:34:44 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**	SHEET Page 112 **3**

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII2.dgn 1/26/2017 3:34:53 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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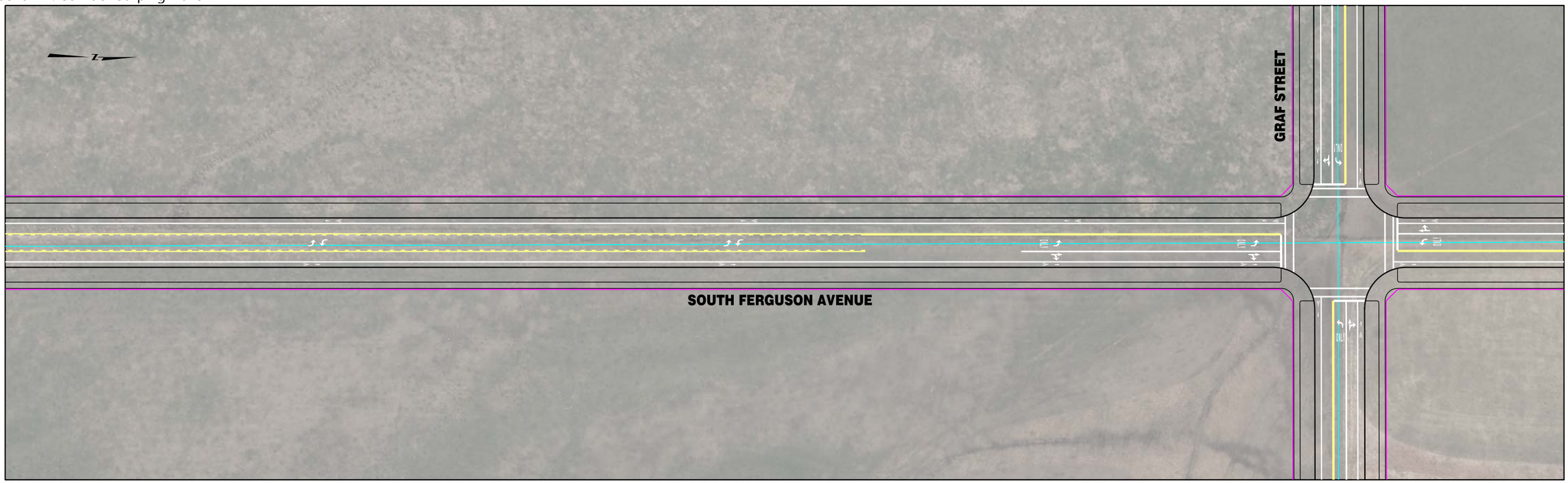

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII2.dgn 1/26/2017 3:35:02 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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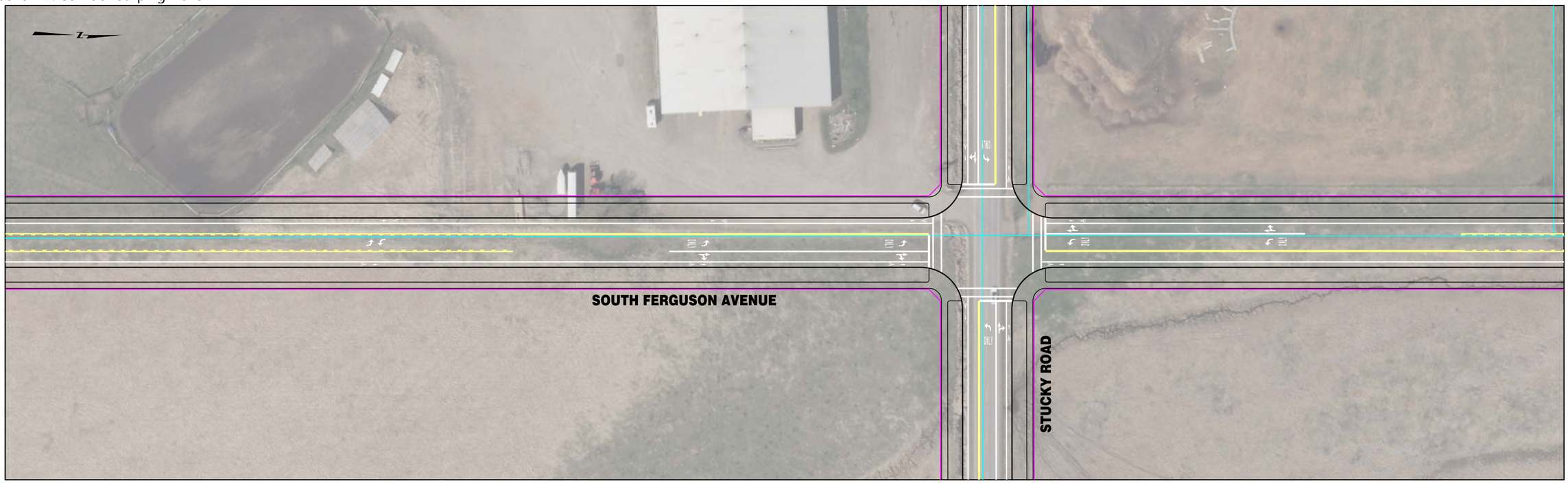

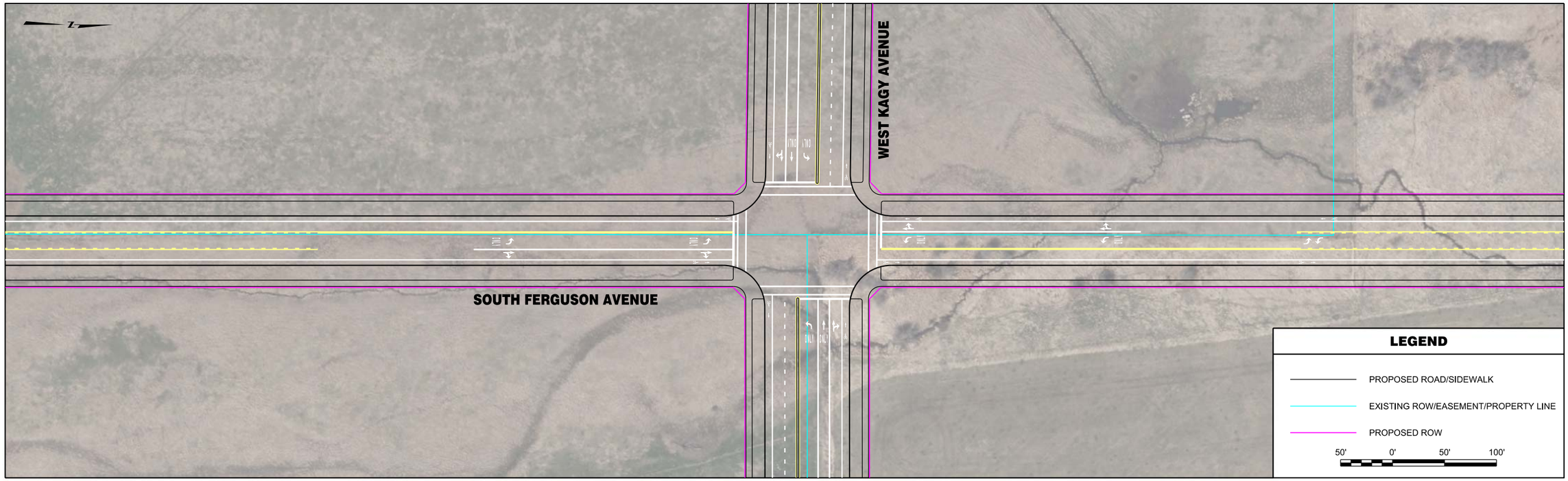

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII2.dgn 1/26/2017 3:35:11 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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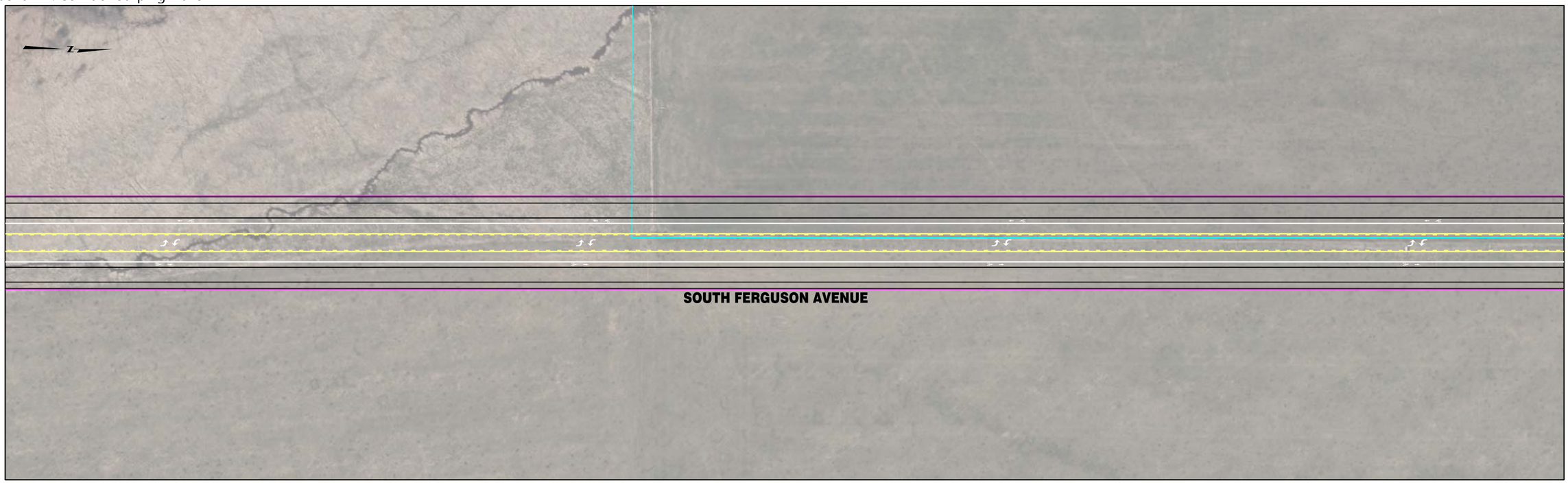

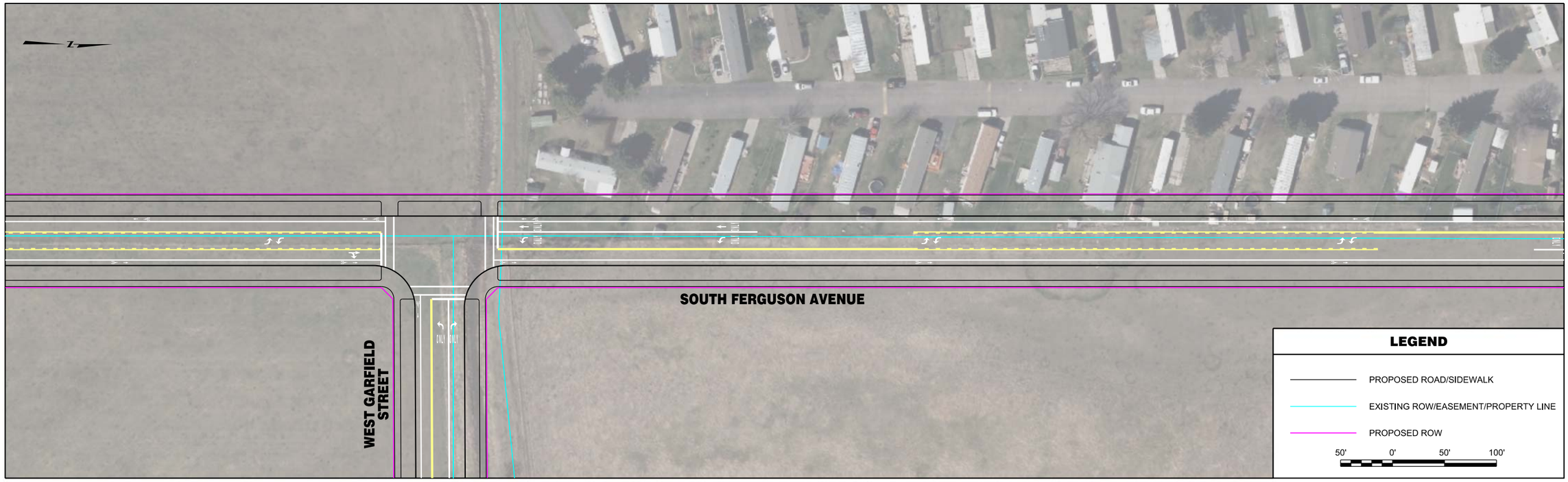

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII3.dgn 1/26/2017 3:35:21 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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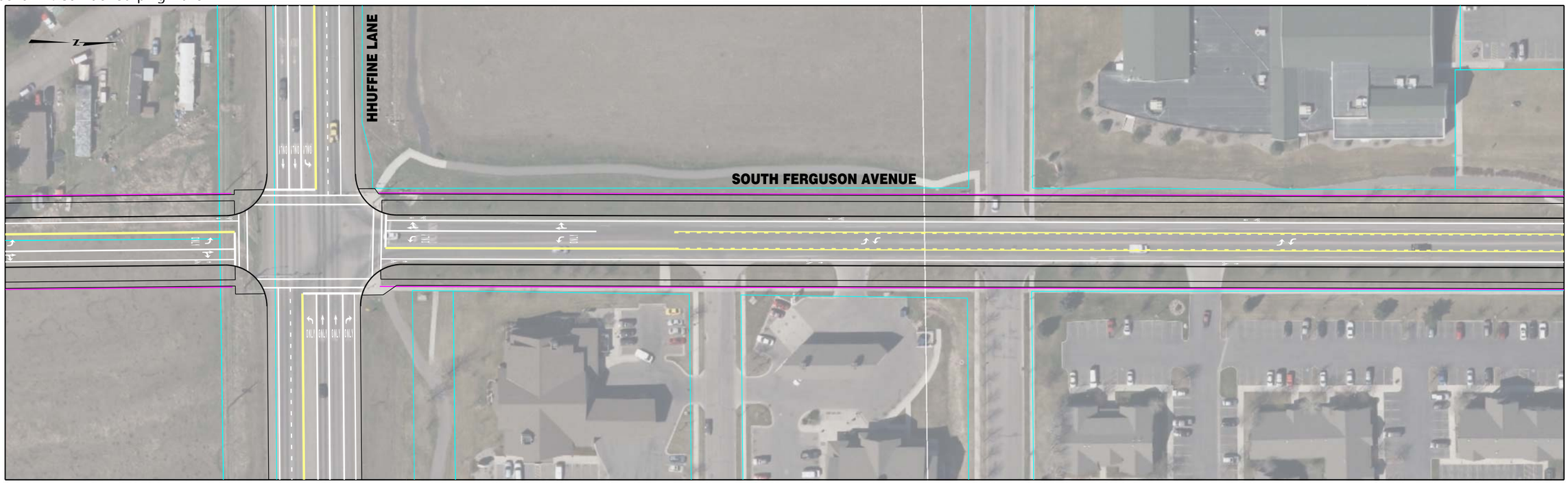

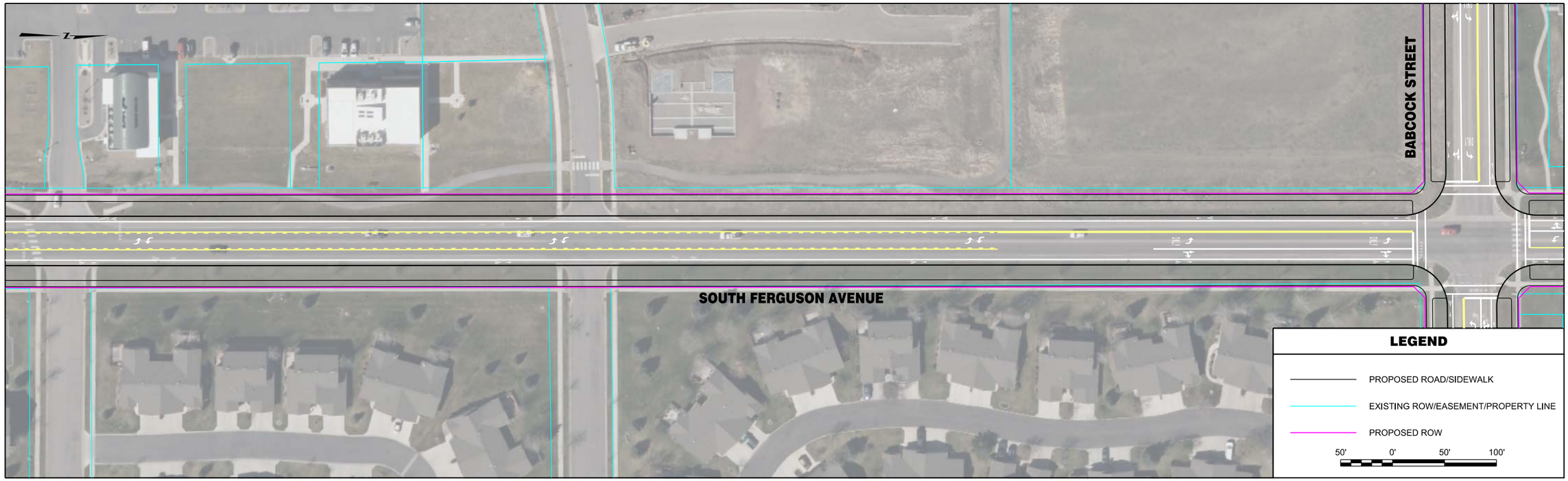

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII3.dgn 1/26/2017 3:35:30 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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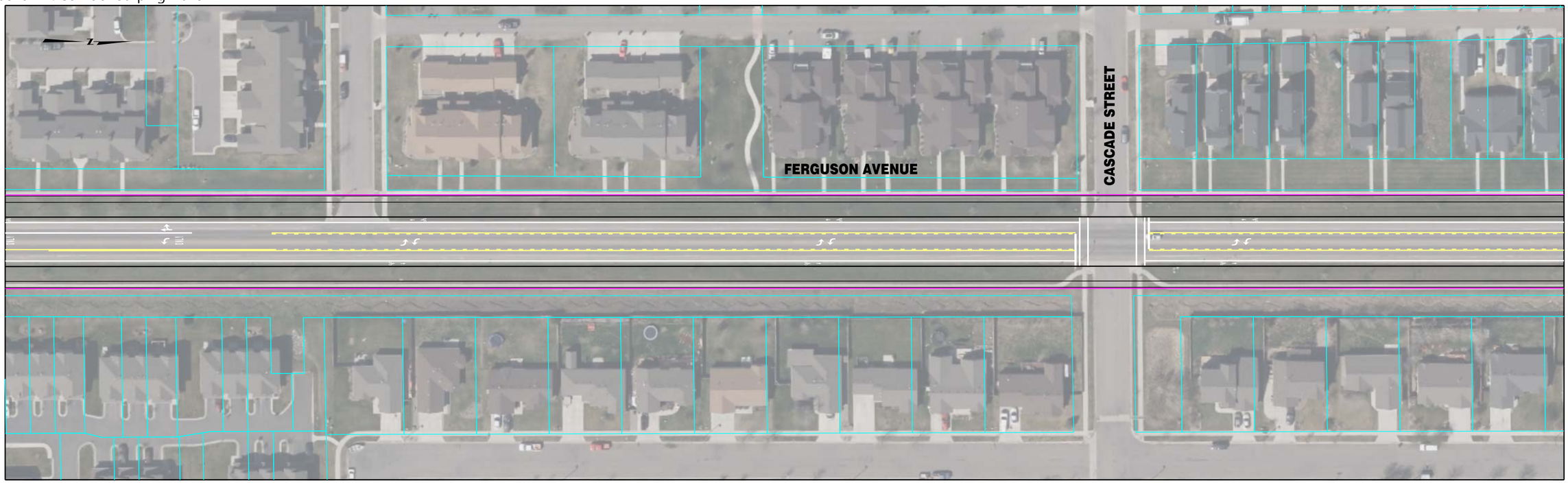

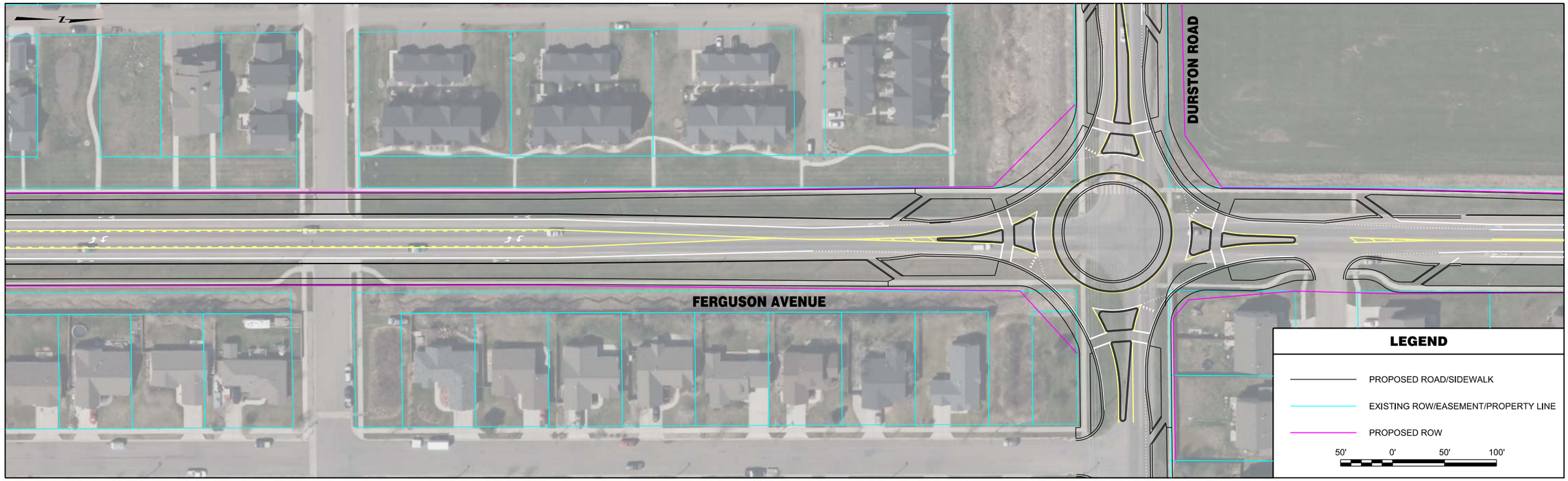

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII3.dgn 1/26/2017 3:41:47 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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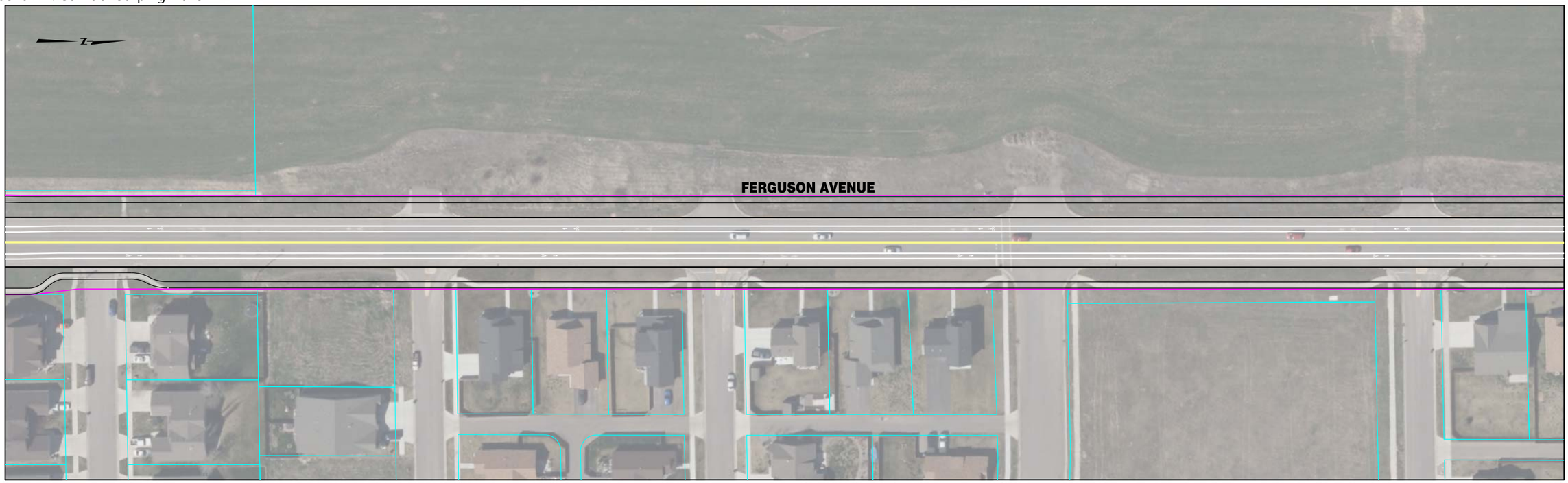

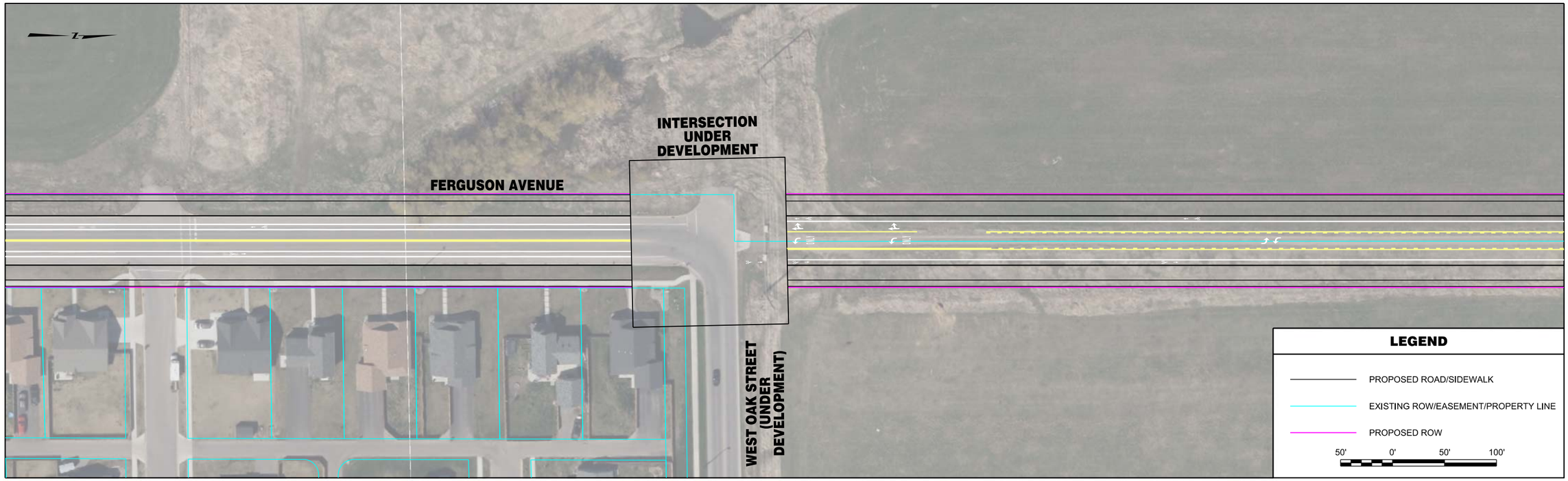

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII4.dgn 1/26/2017 3:35:49 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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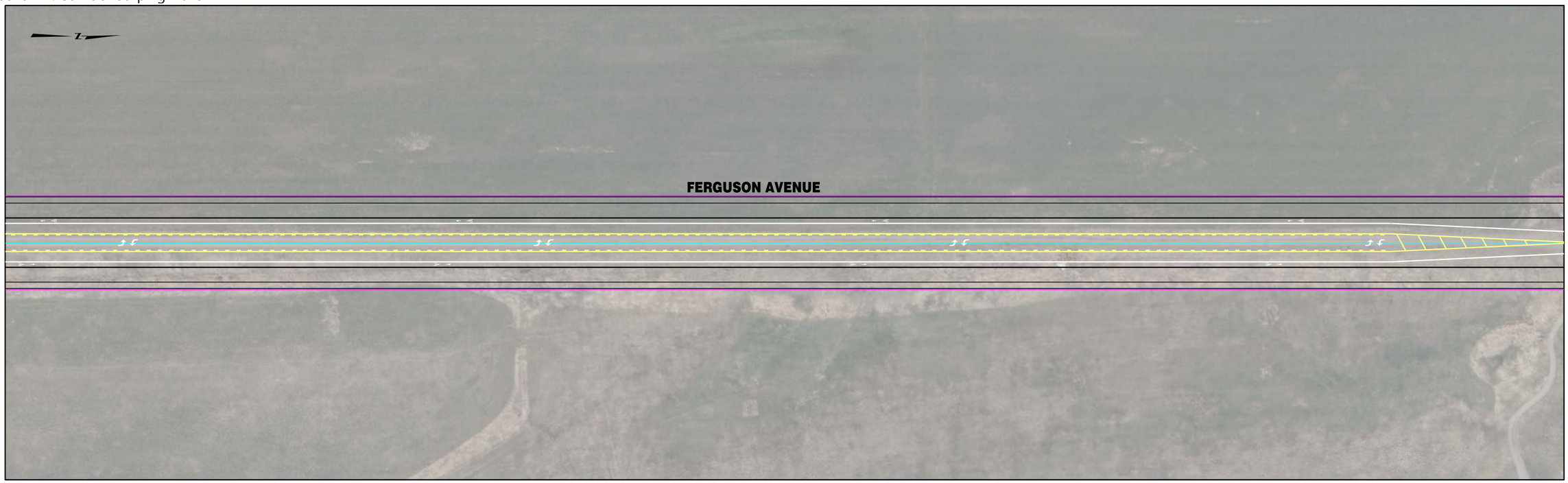

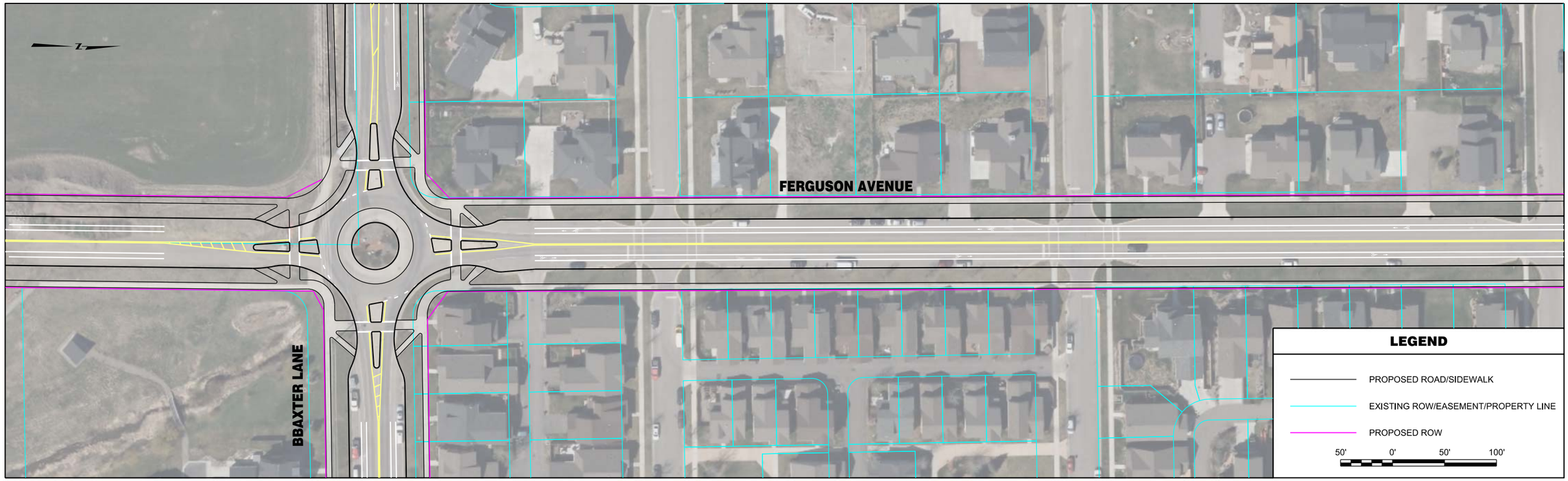

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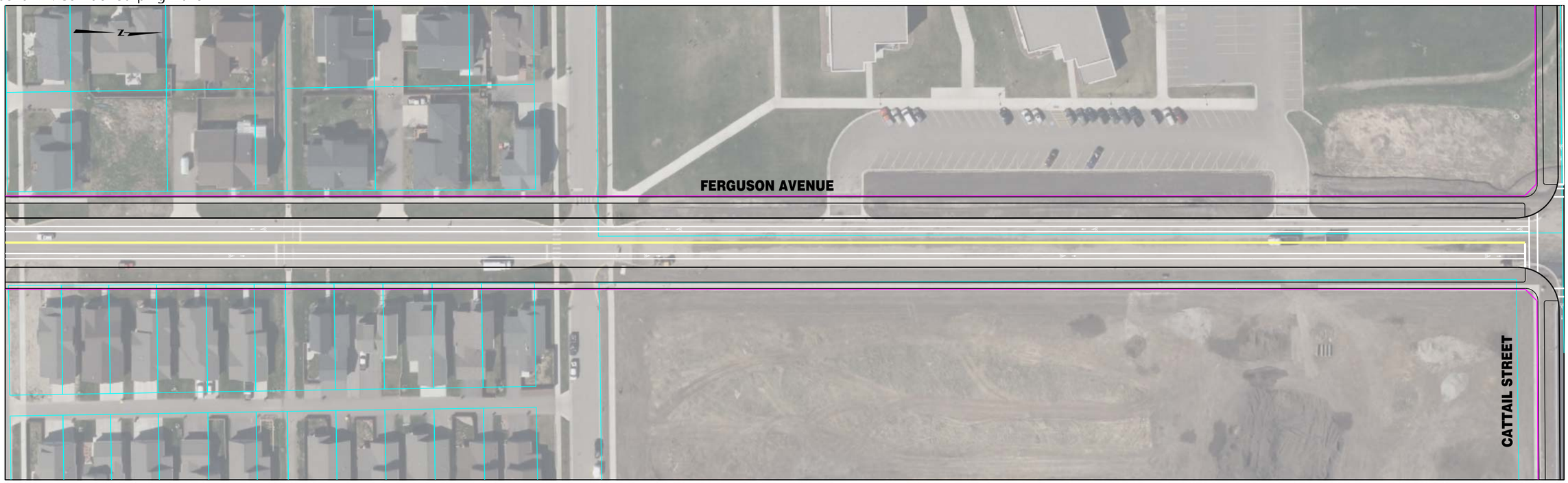

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII4.dgn 1/26/2017 3:36:11 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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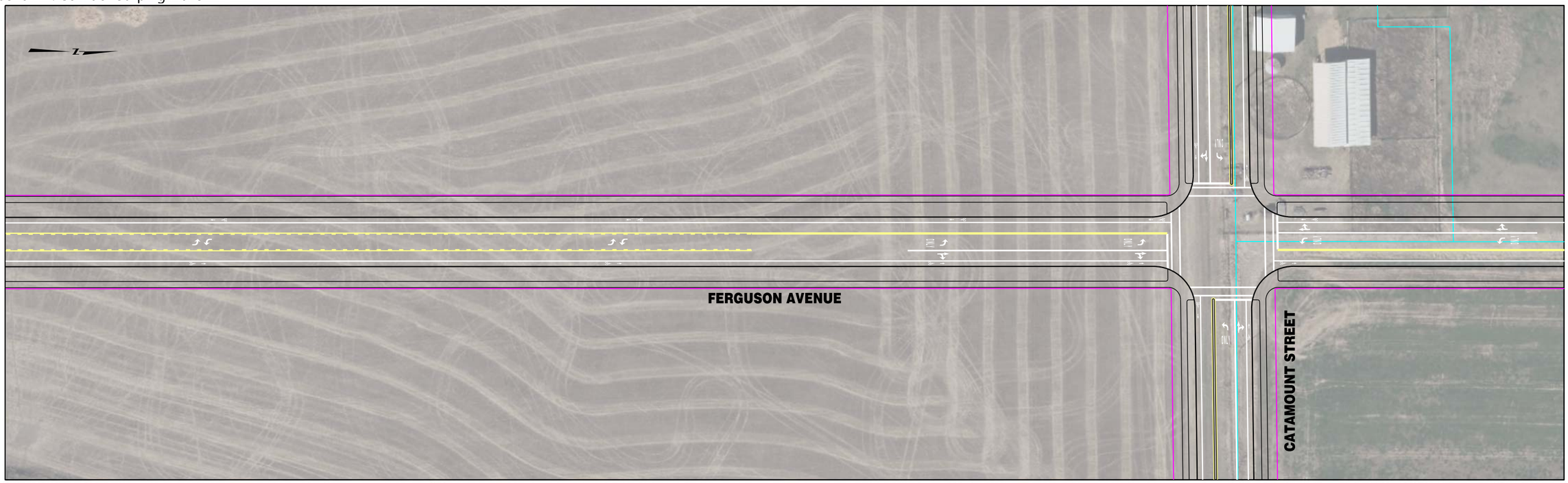

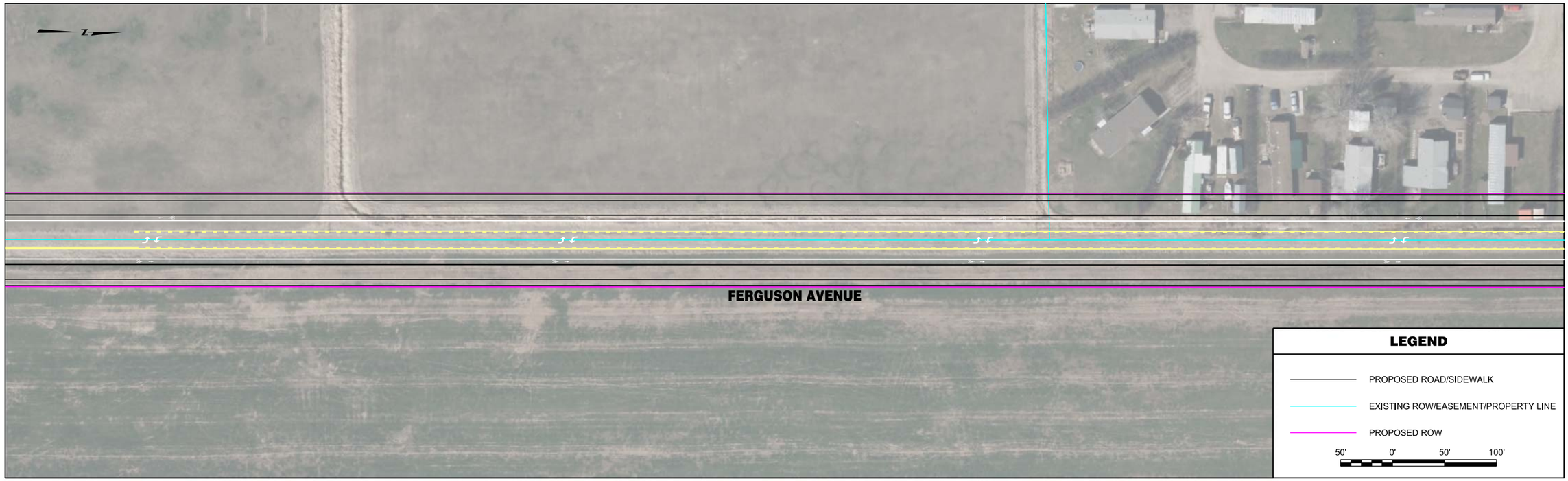

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII5.dgn 1/26/2017 3:36:24 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**	SHEET Page 122 **13**

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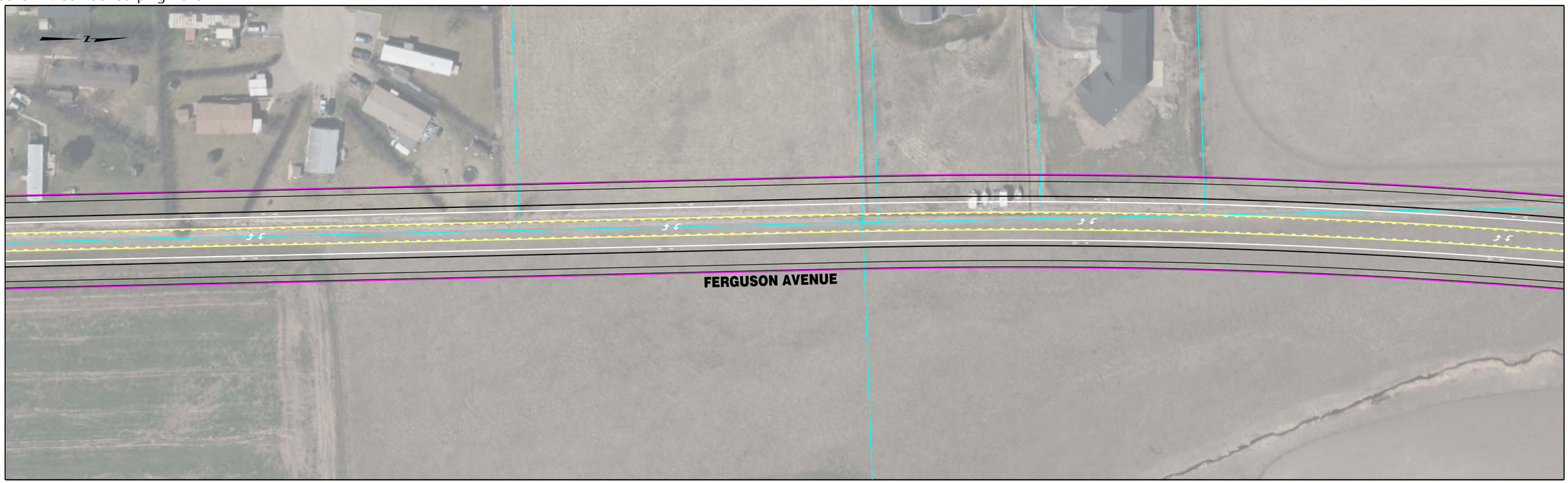

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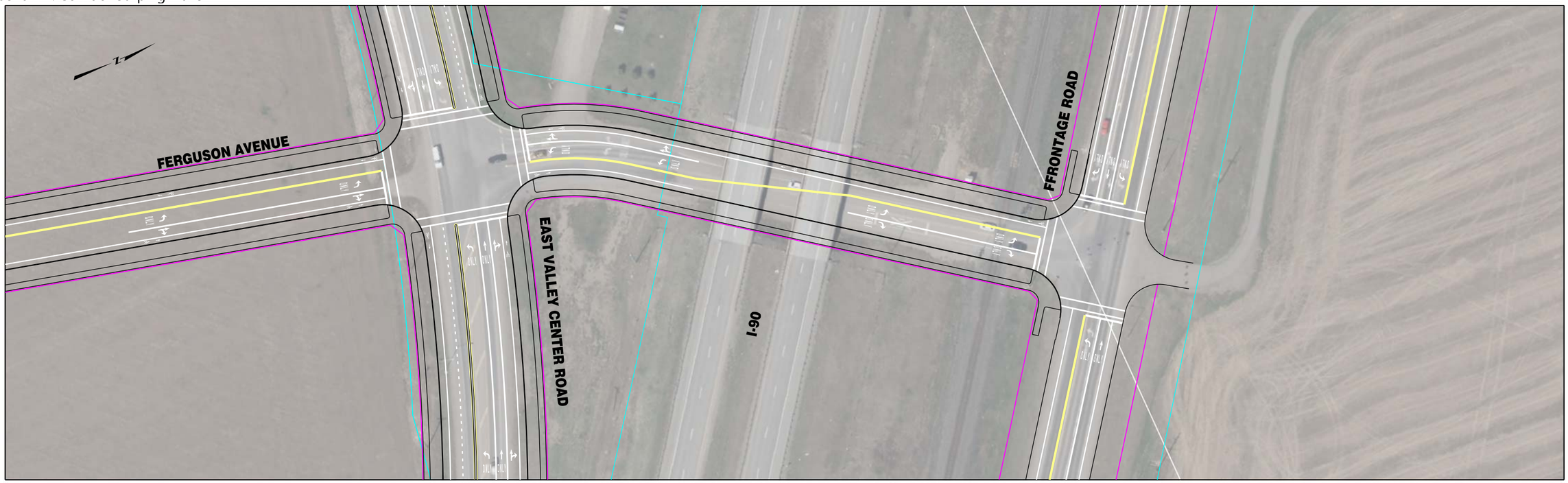

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\II-Ferguson\15602RDPLNZII5.dgn 1/26/2017 3:36:49 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FERGUSON AVENUE STRIPING PLAN**

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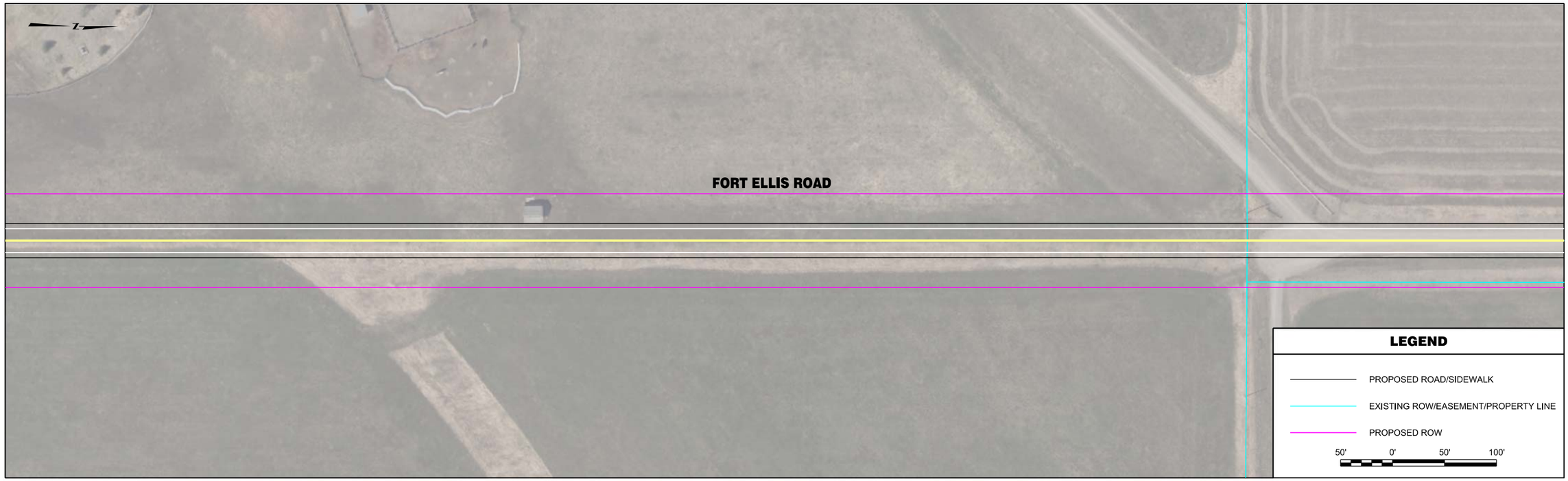

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZNN1.dgn 1/26/2017 3:39:45 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FORT ELLIS ROAD STRIPING PLAN**

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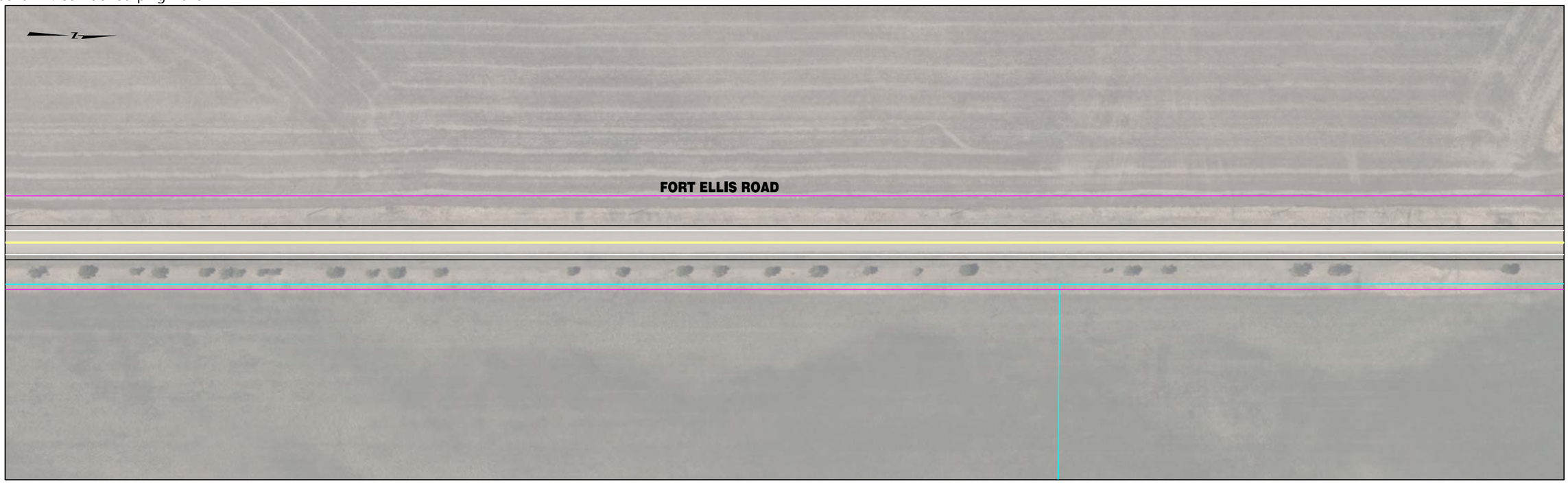

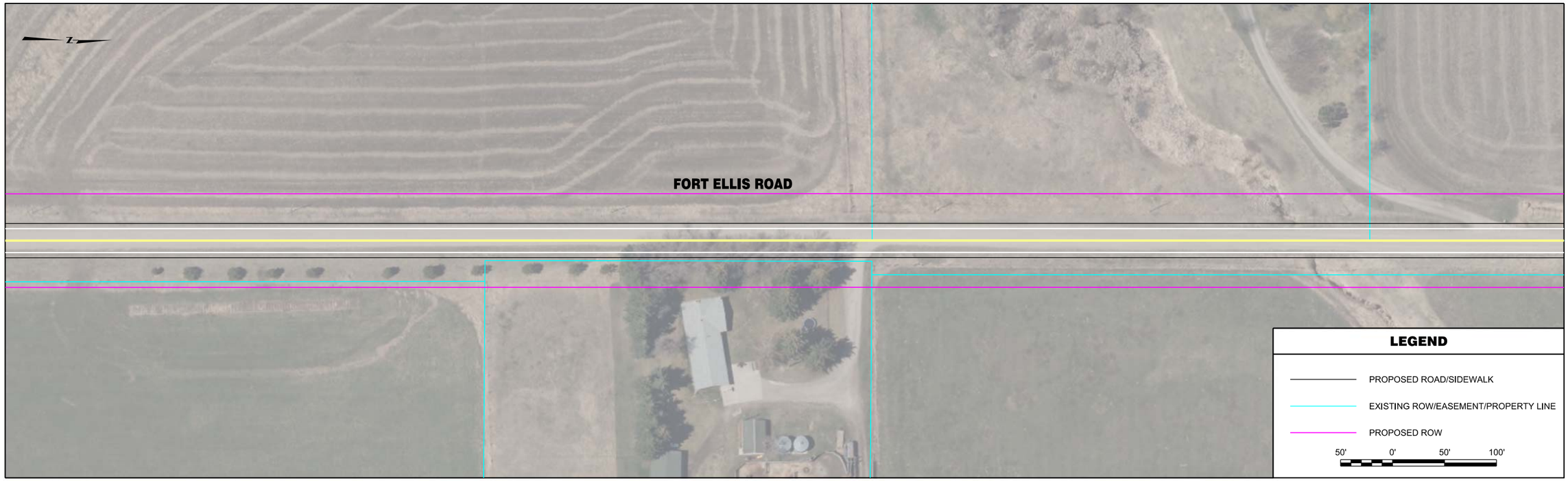

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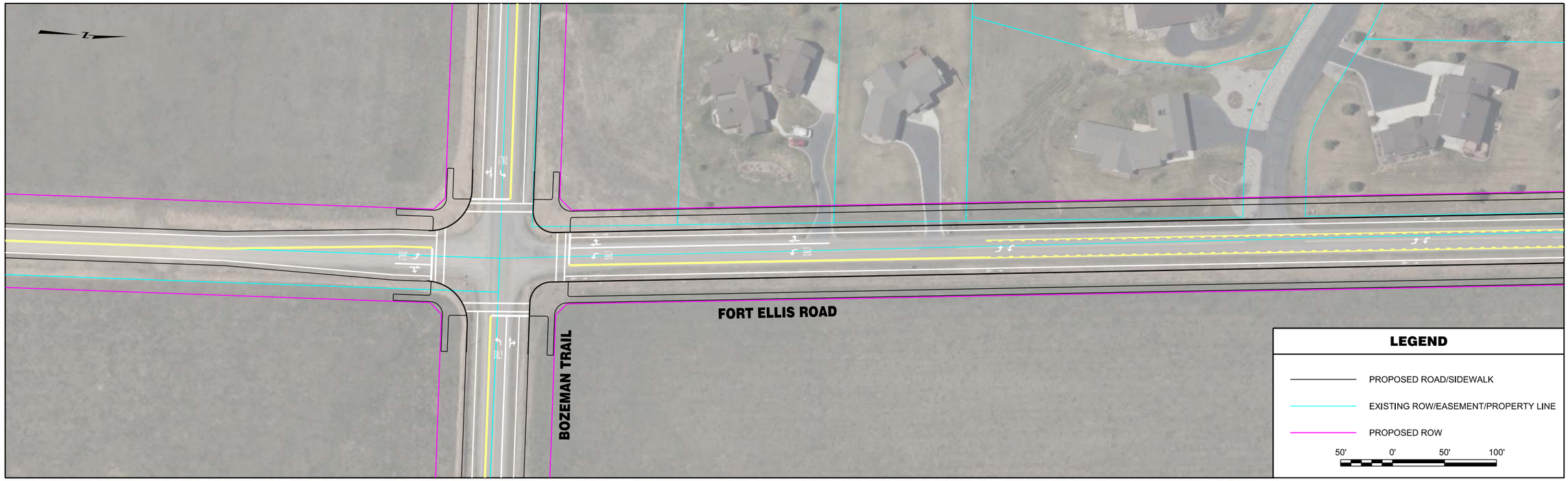

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZNN1.dgn 1/26/2017 3:40:01 PM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FORT ELLIS ROAD STRIPING PLAN**

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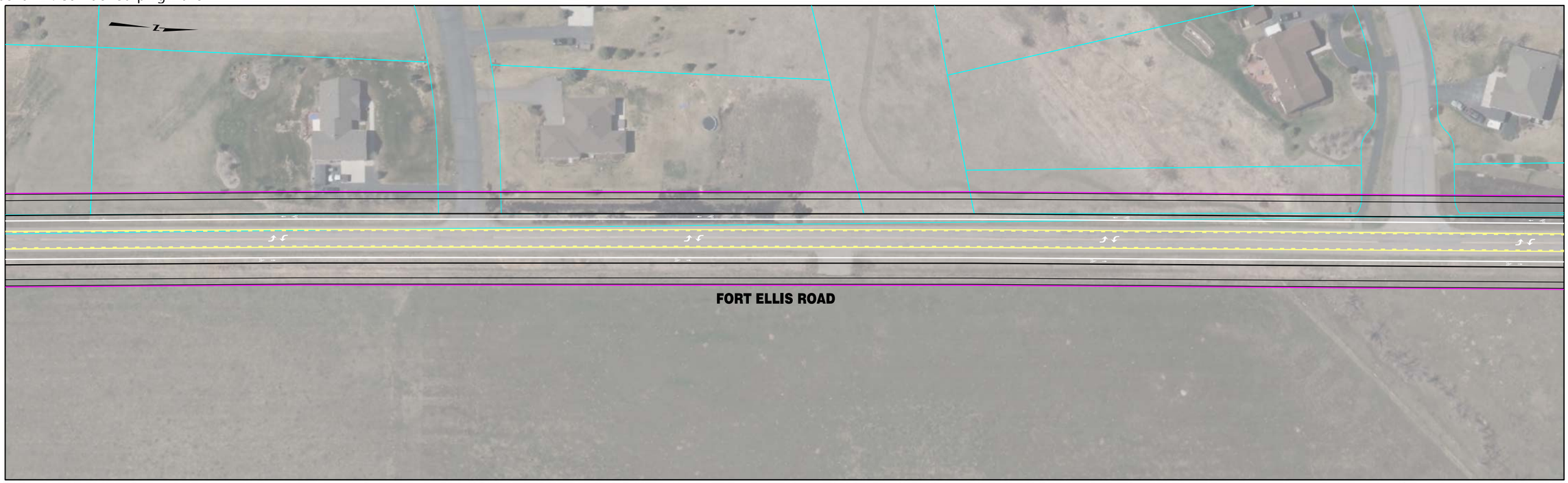

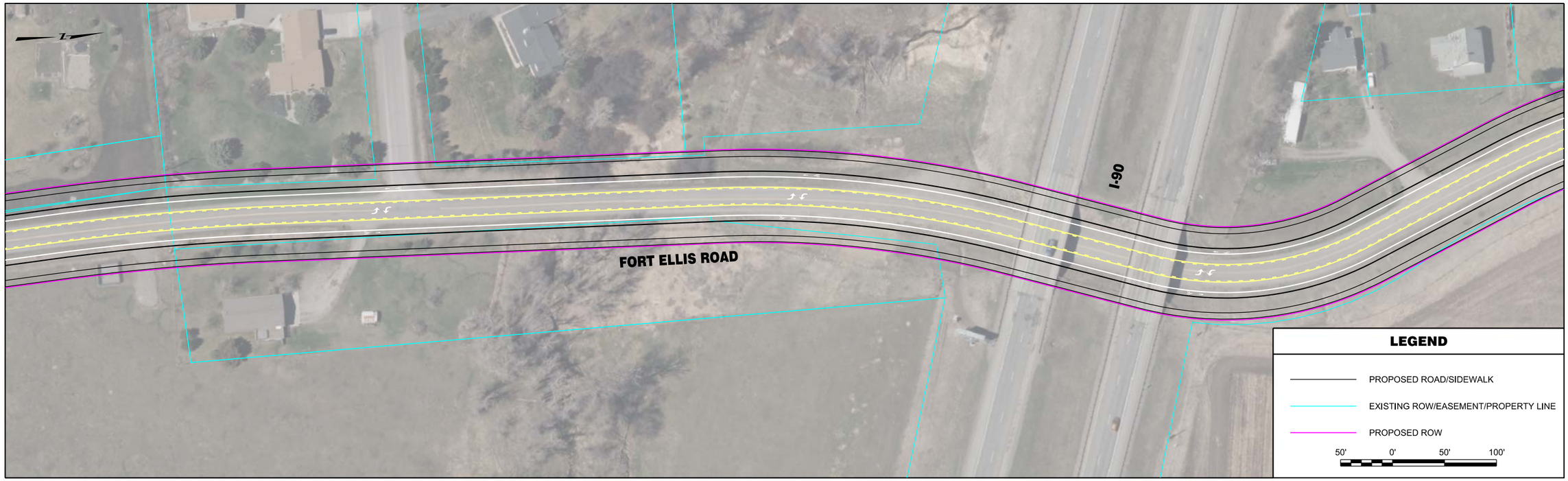

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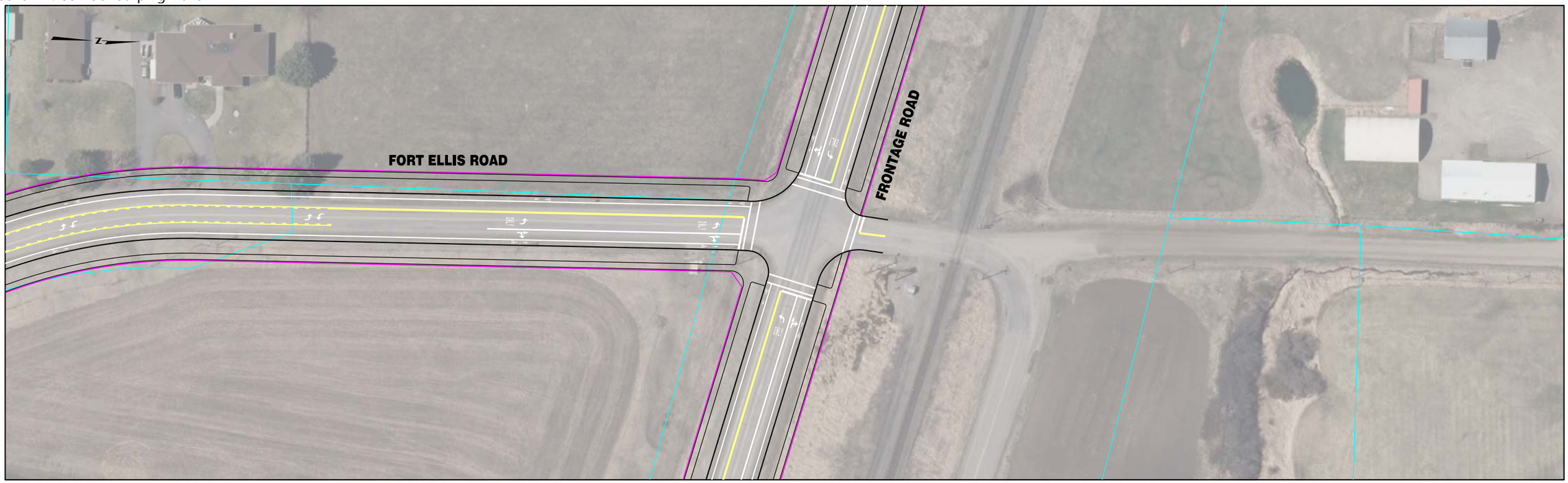

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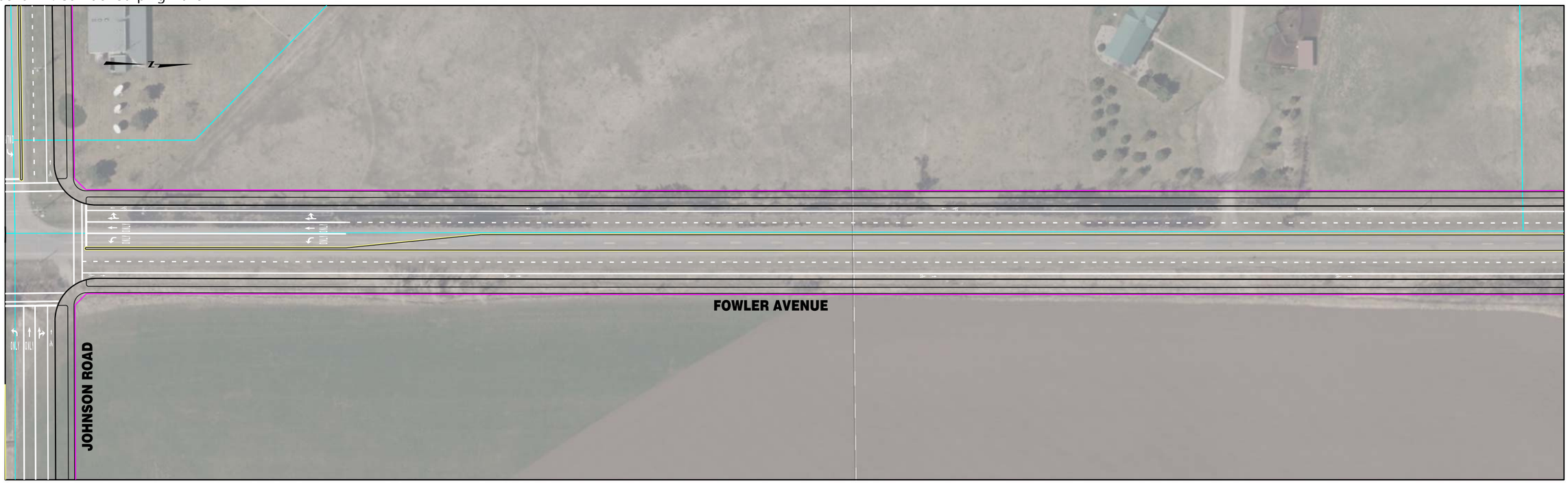

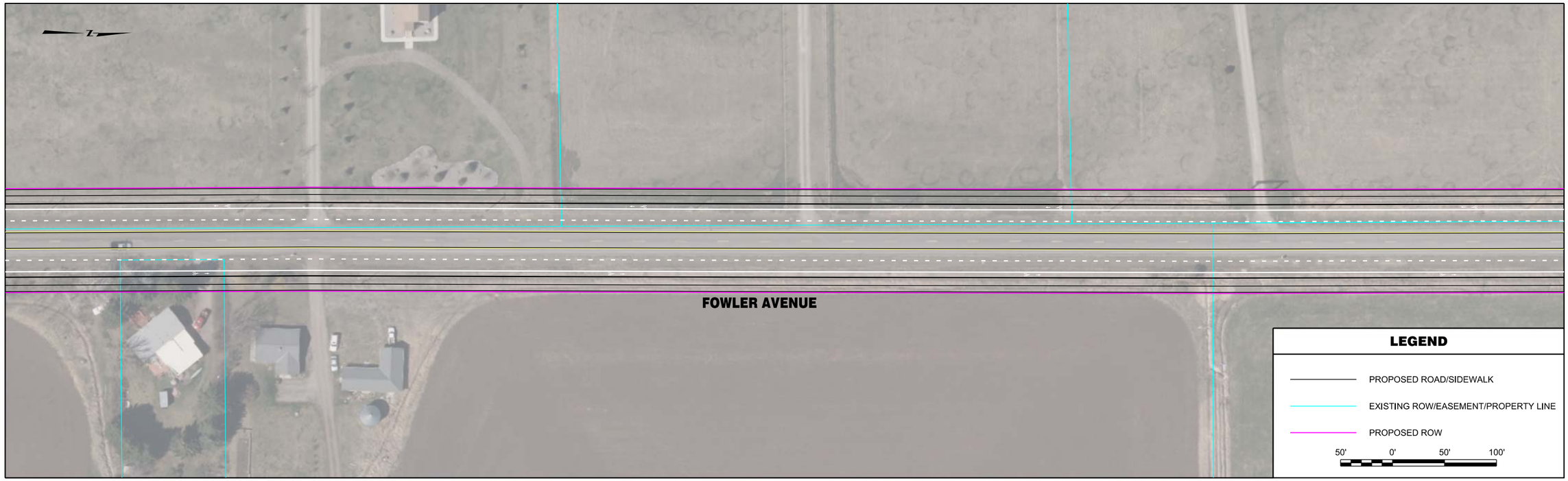

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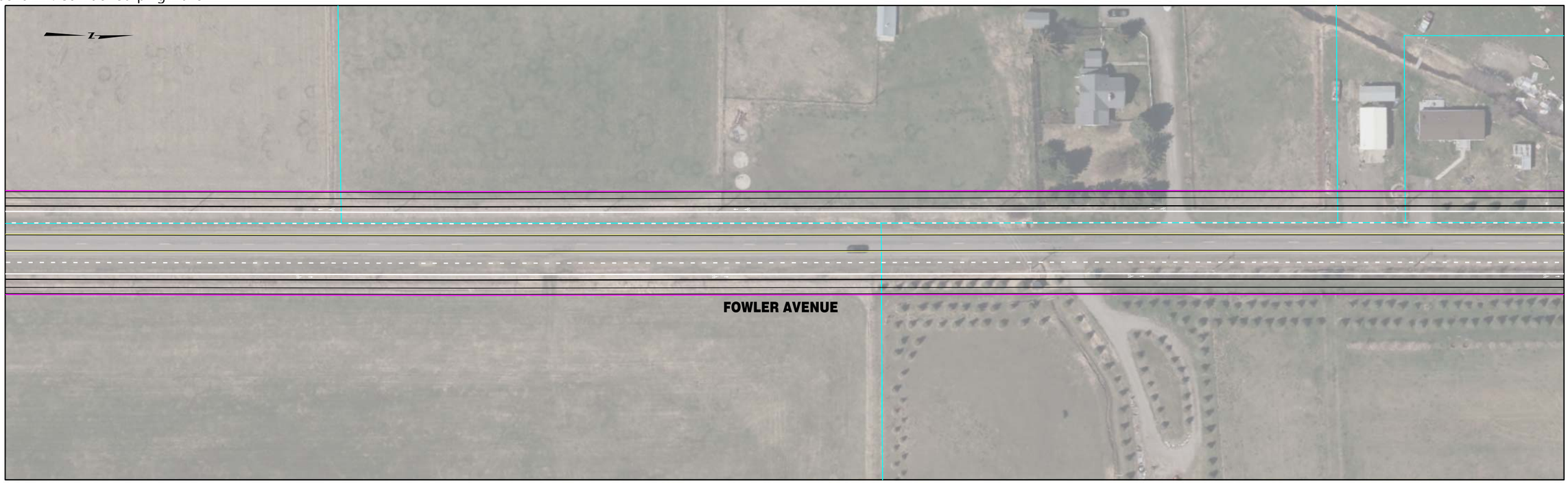

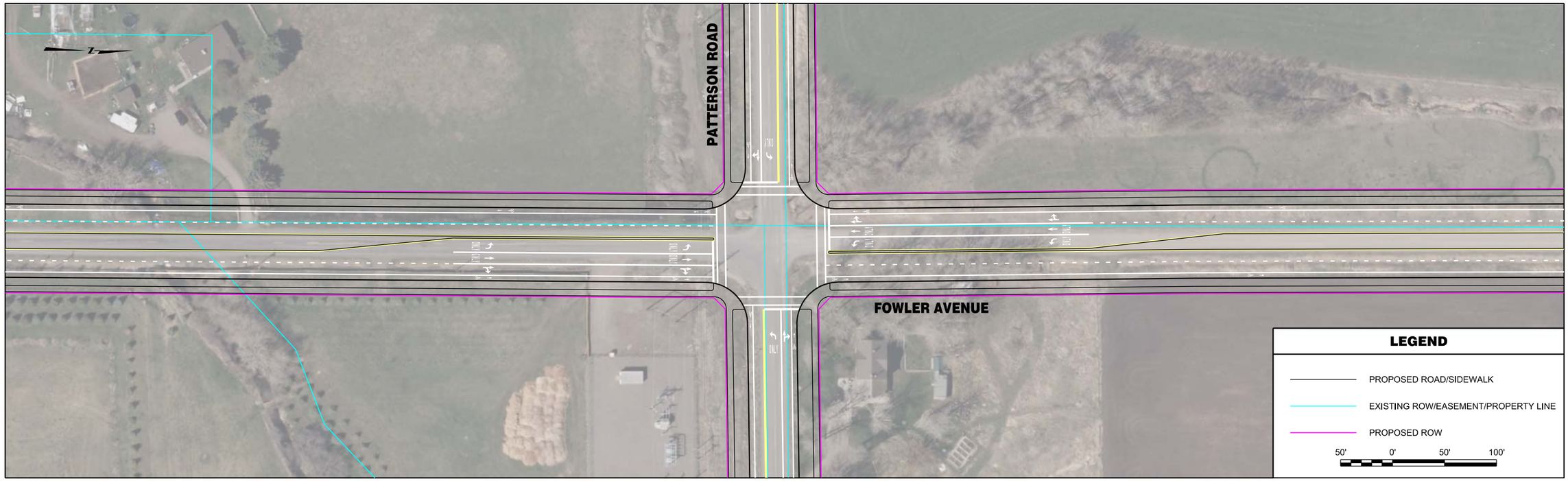

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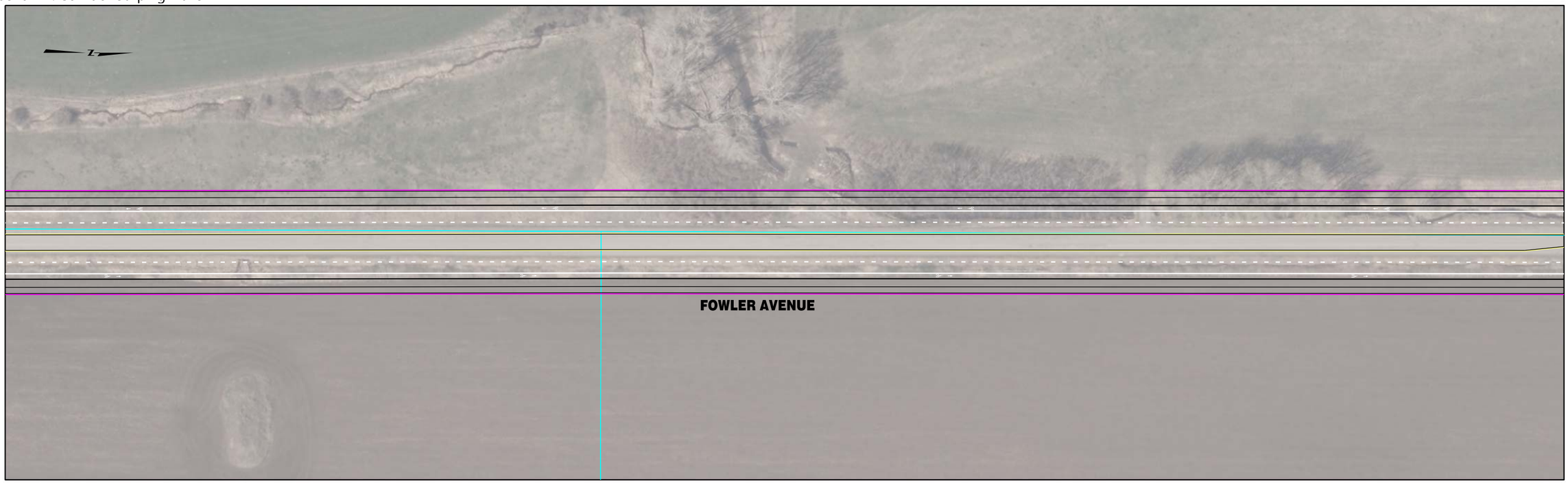

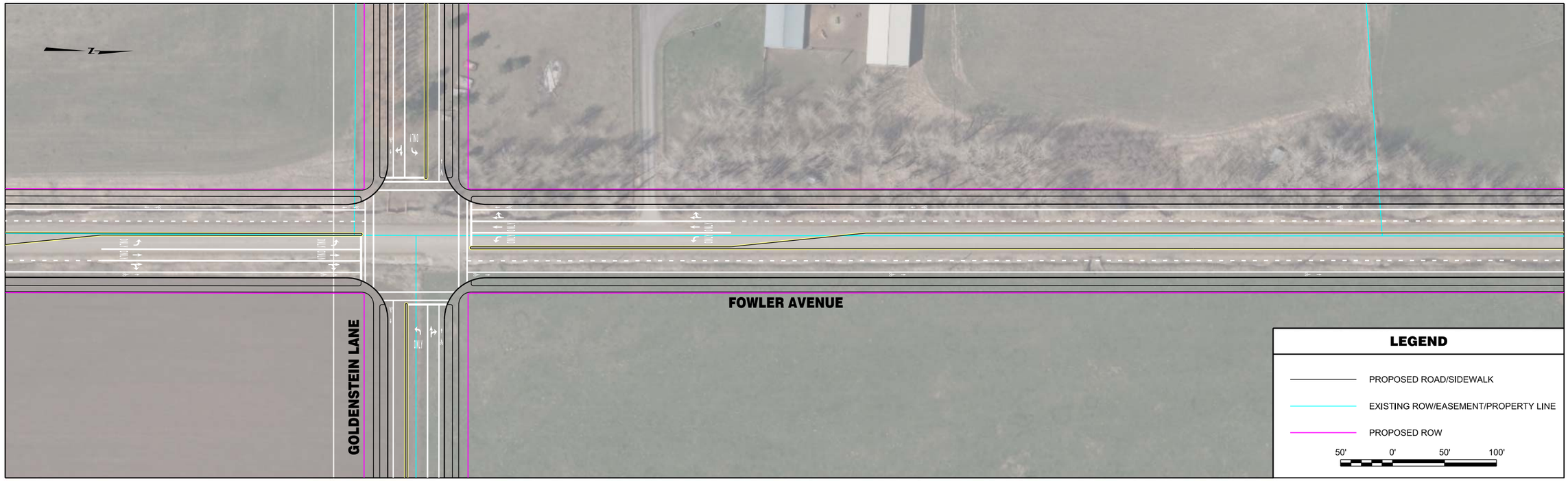

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC1.dgn 1/30/2017 10:09:35 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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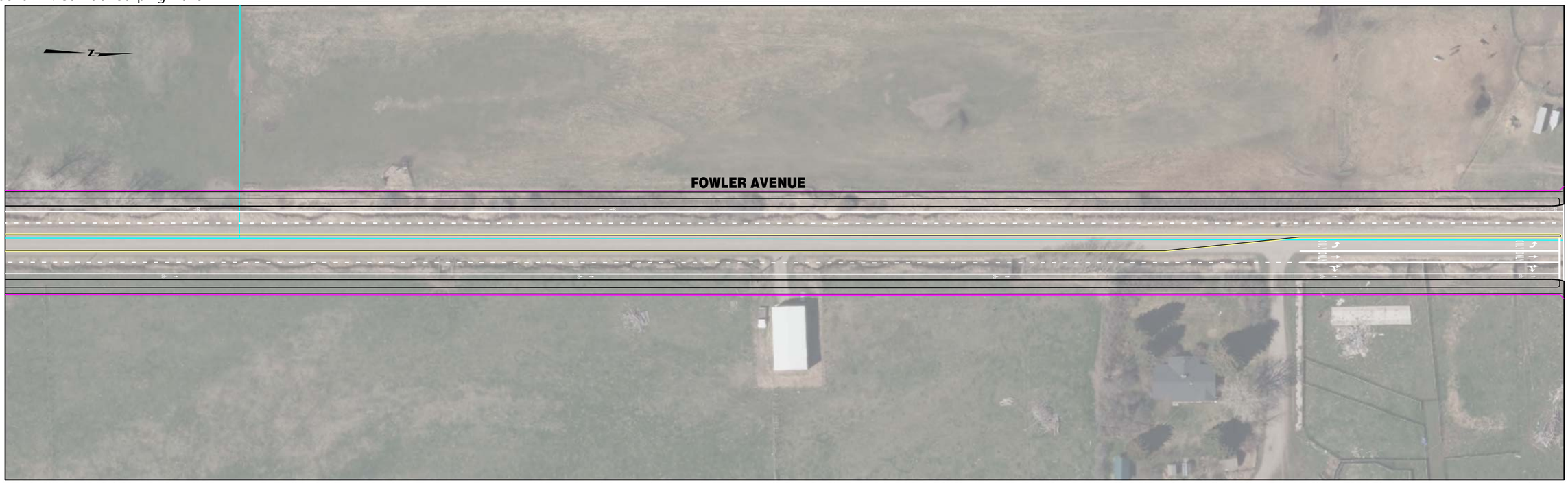

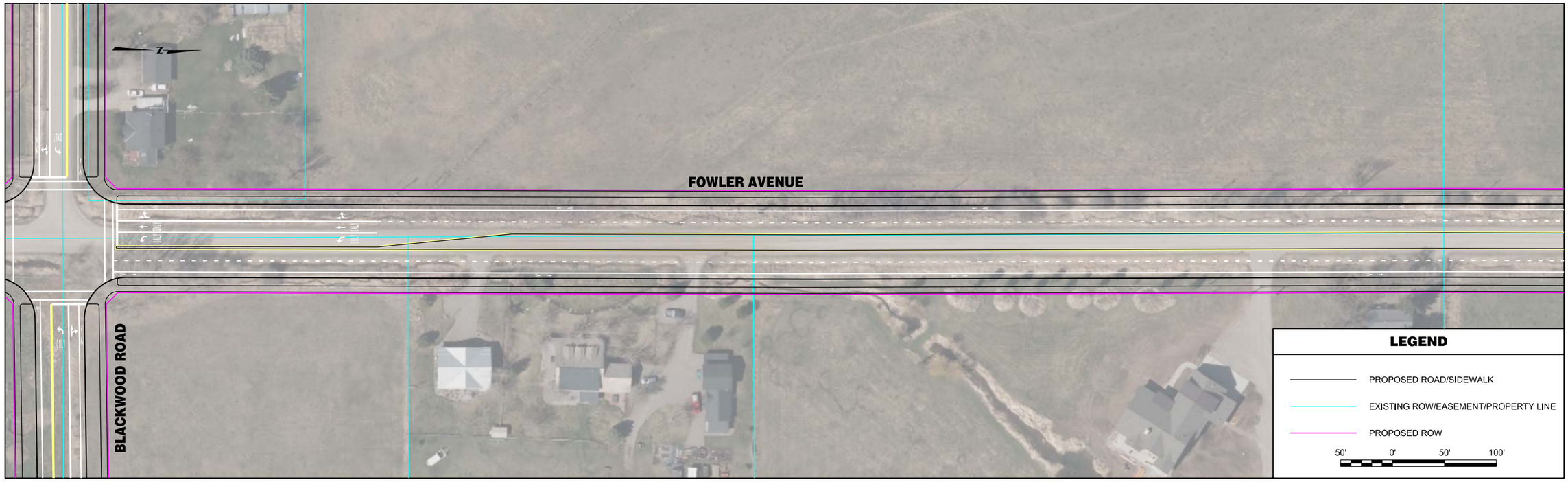

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC2.dgn 1/30/2017 10:09:44 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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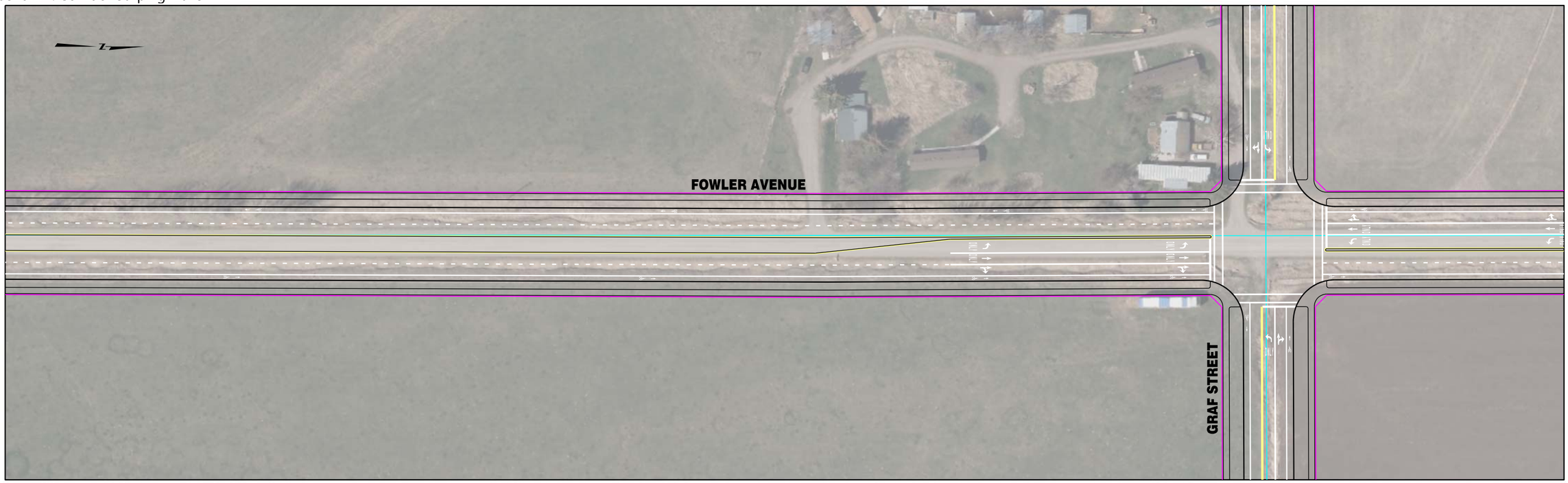

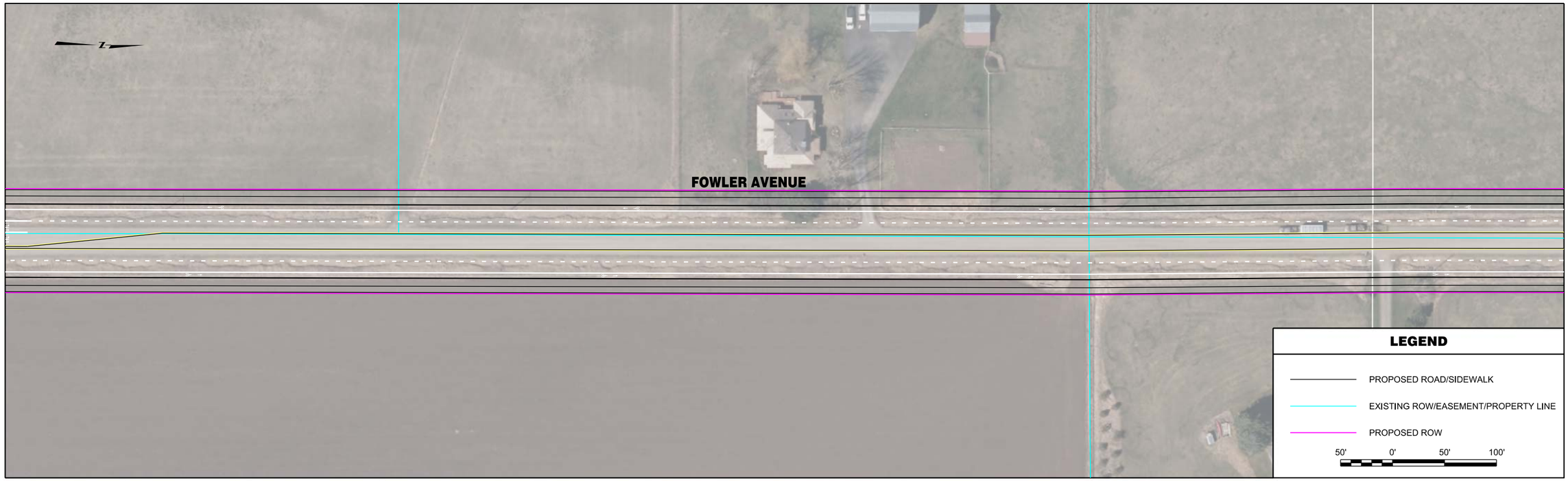

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC2.dgn 1/30/2017 10:10:28 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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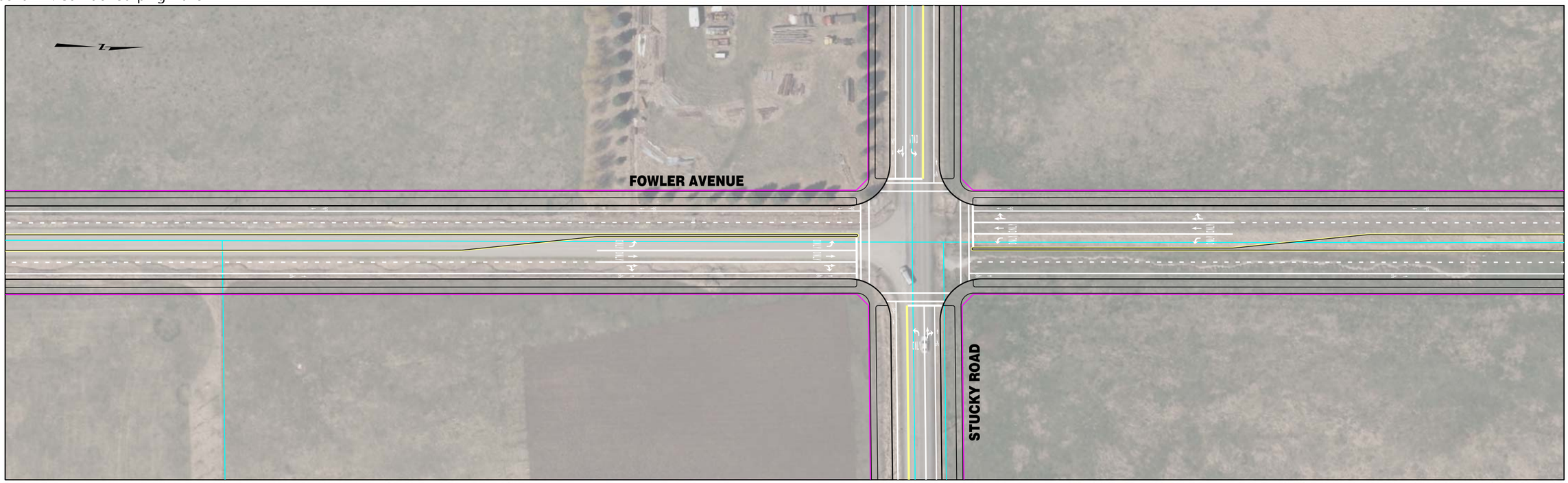

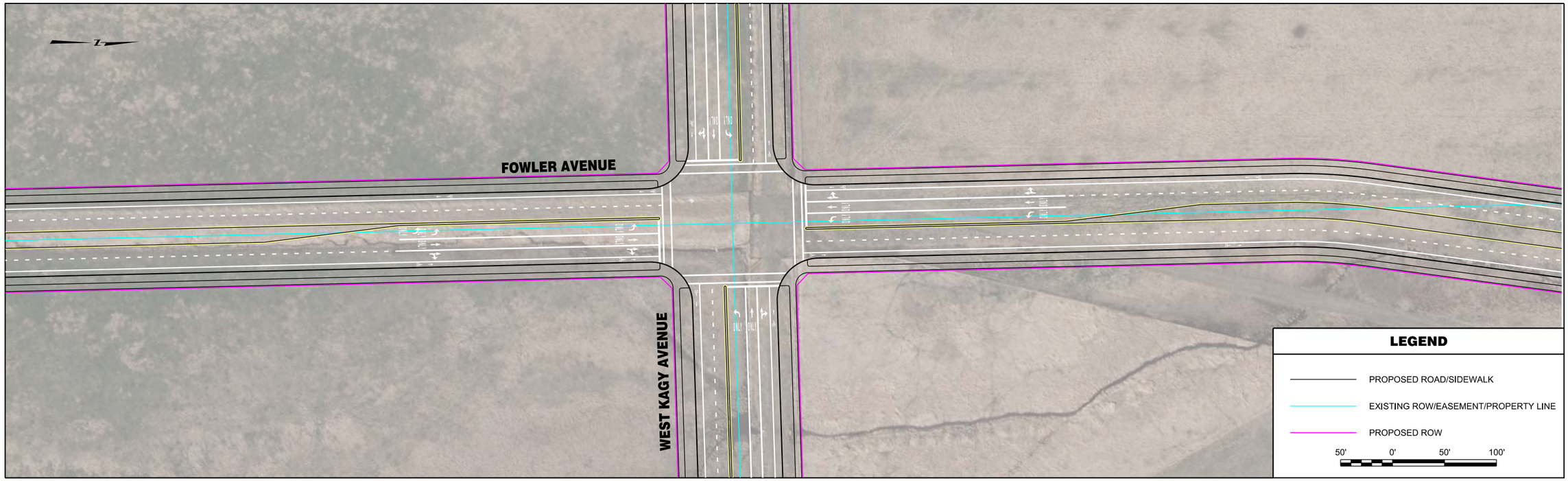

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC2.dgn 1/30/2017 10:10:35 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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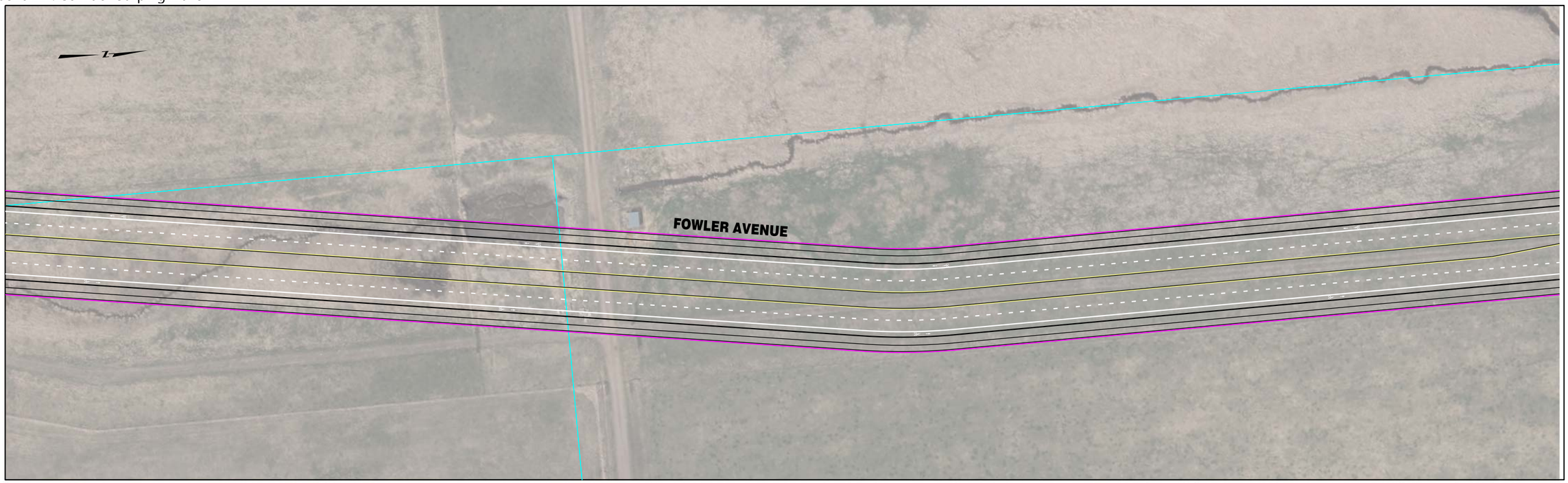

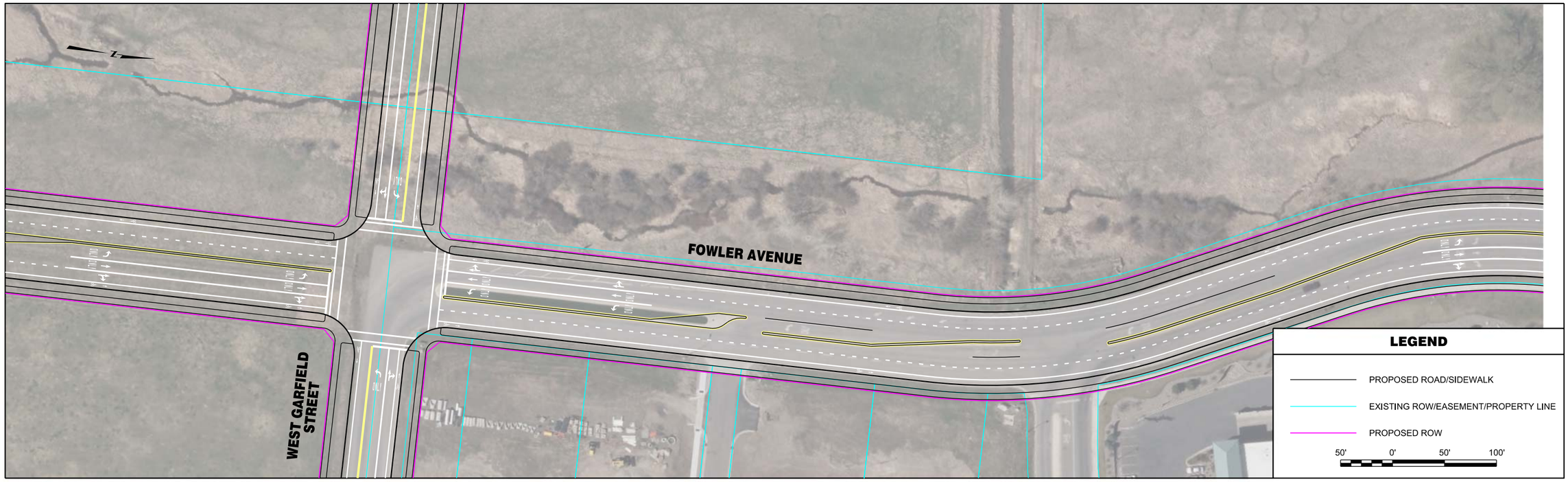

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC3.dgn 1/30/2017 10:10:42 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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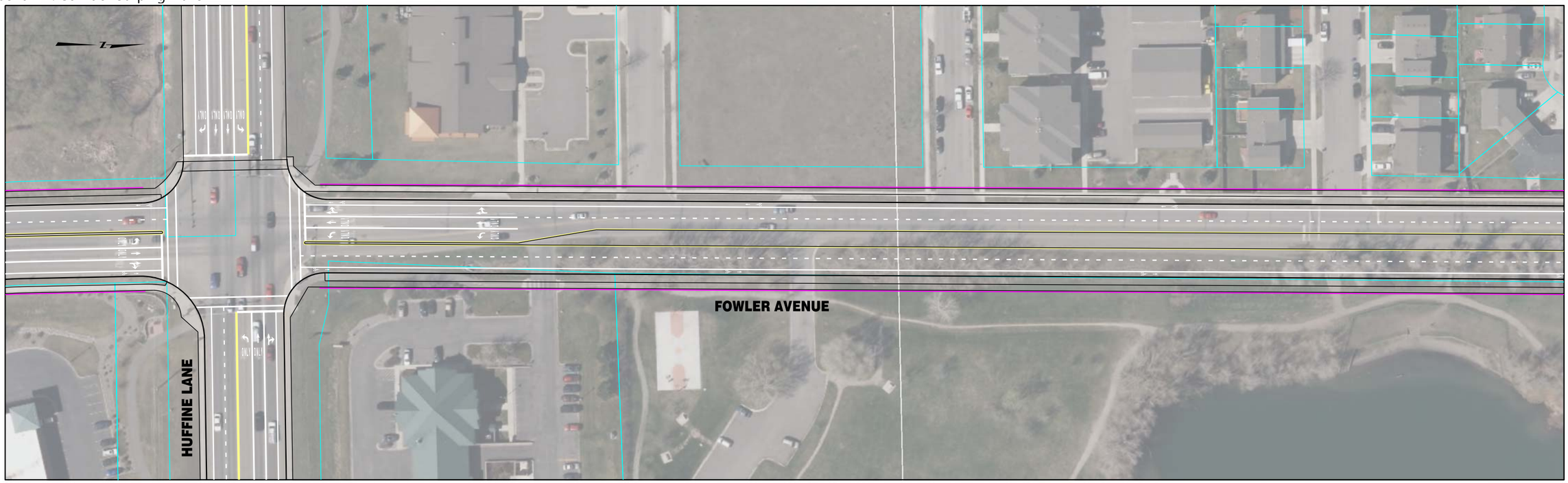

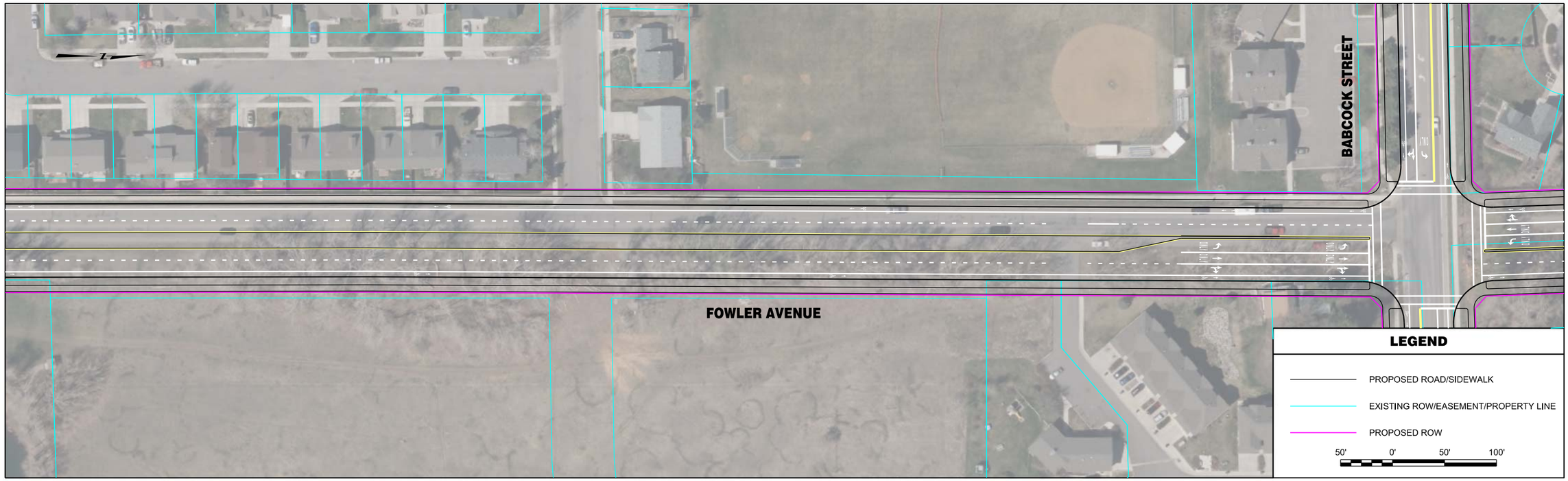

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC3.dgn 1/30/2017 10:10:48 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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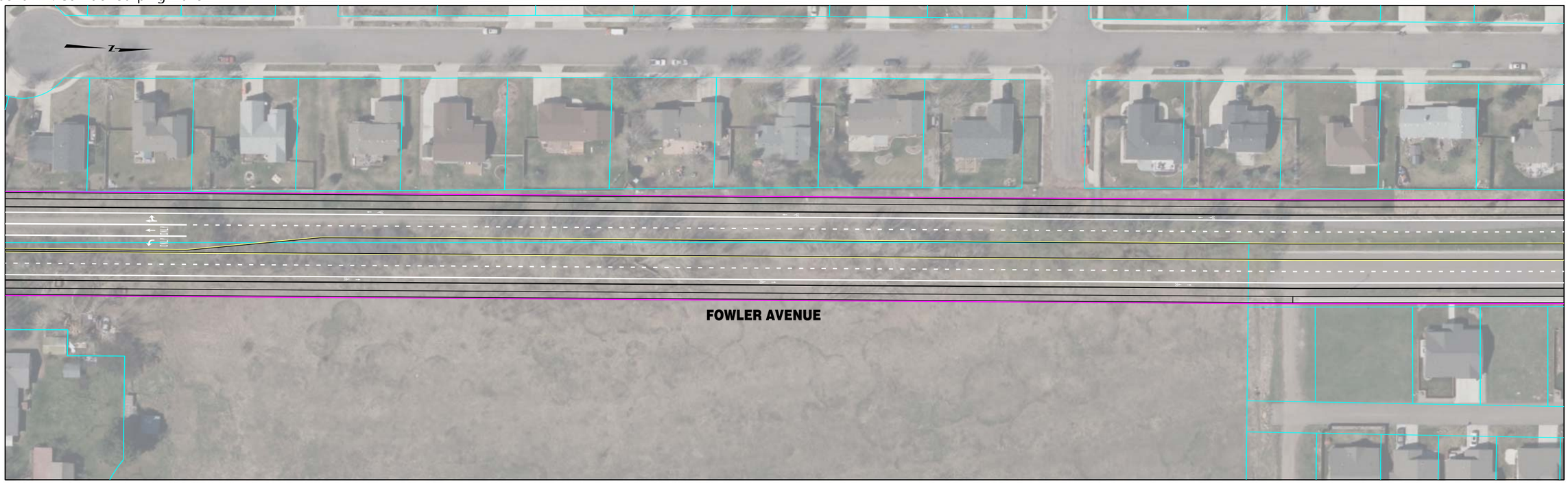

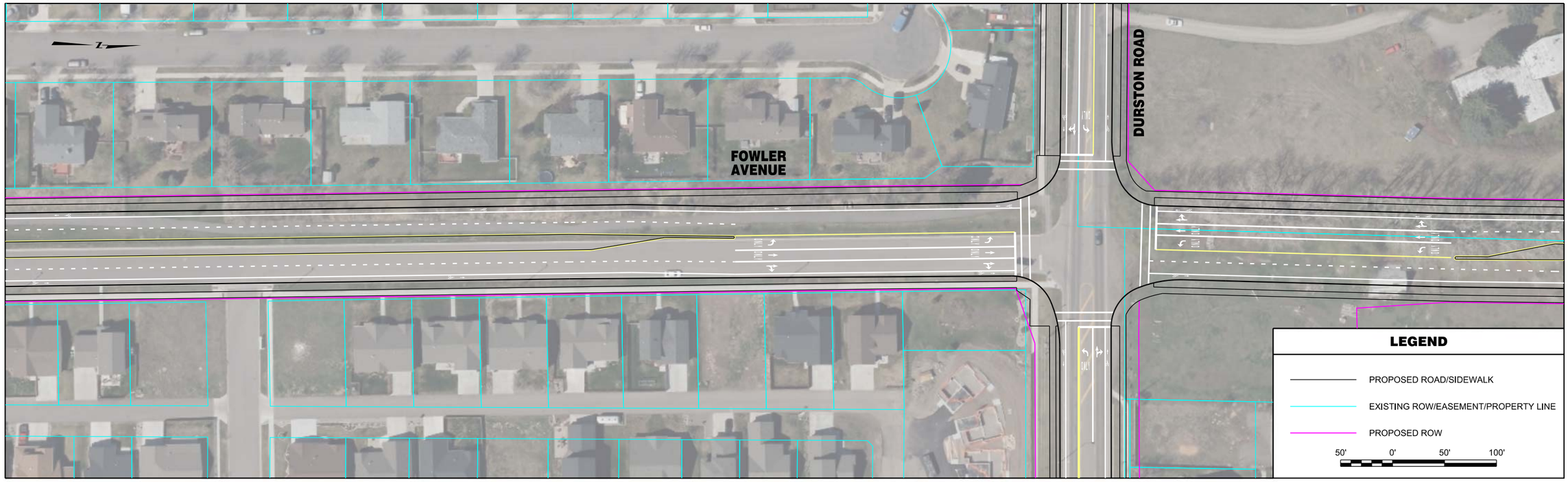

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC3.dgn 1/30/2017 10:10:58 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE STRIPING PLAN**

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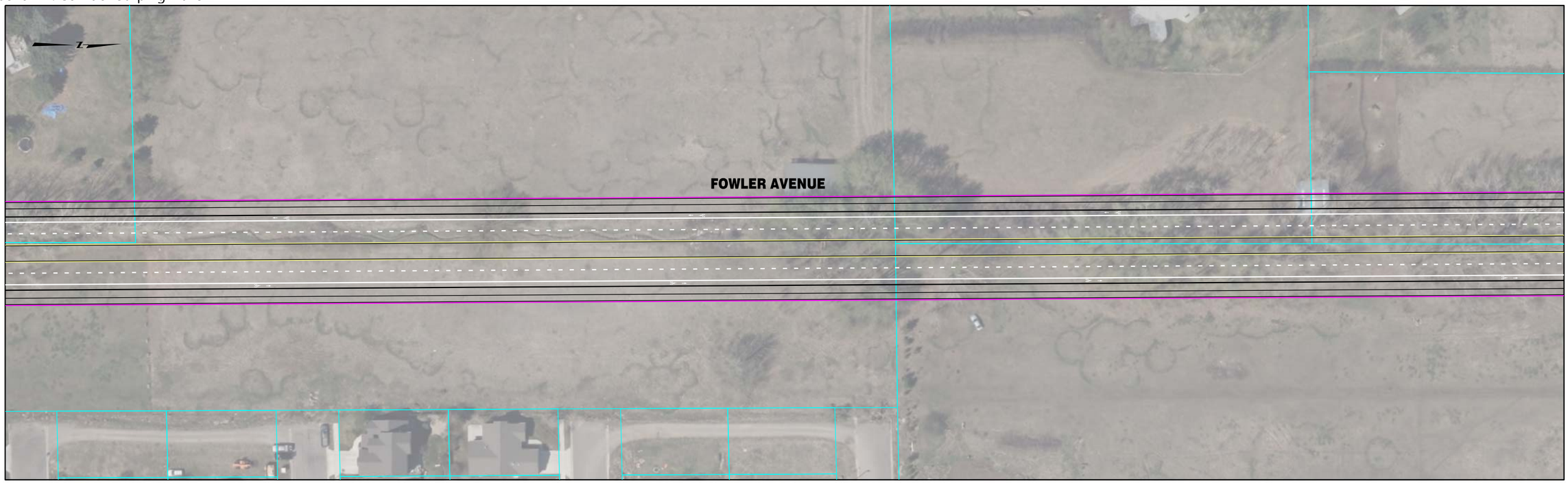

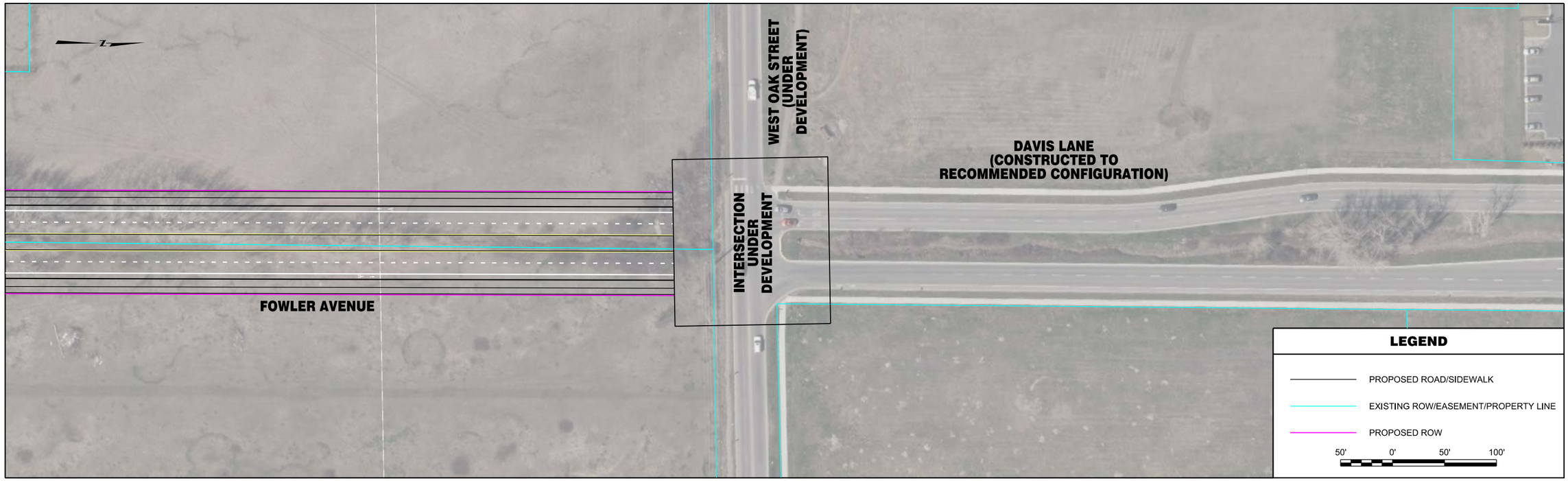

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC4.dgn 1/30/2017 10:11:07 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FOWLER AVENUE & DAVIS LANE STRIPING PLAN**

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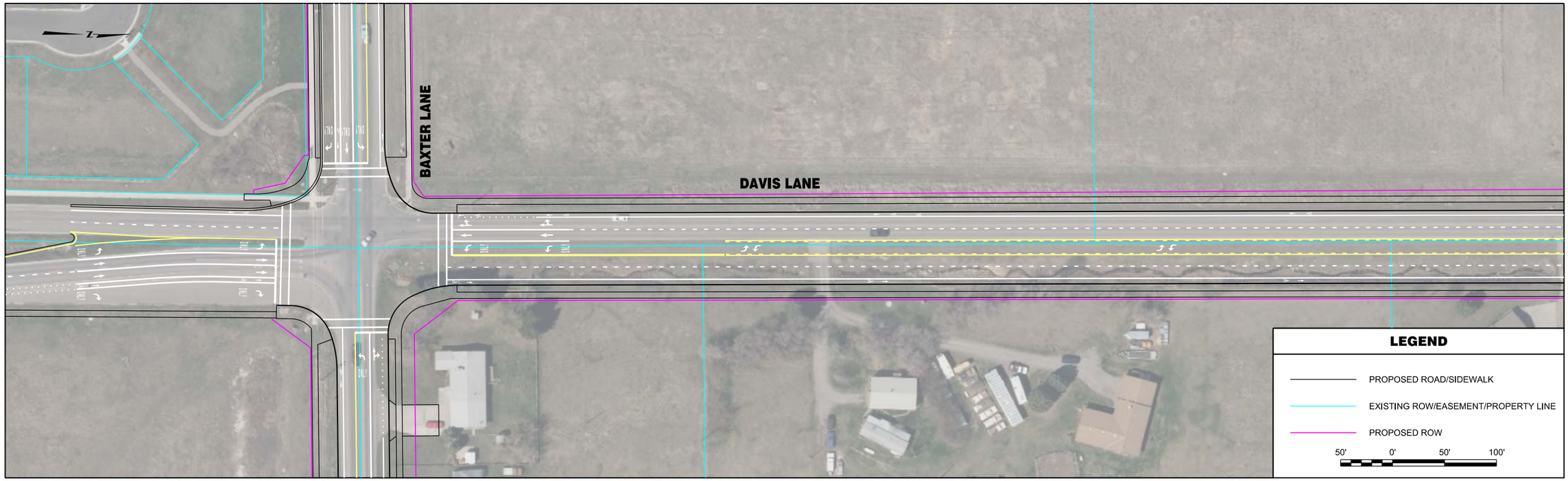

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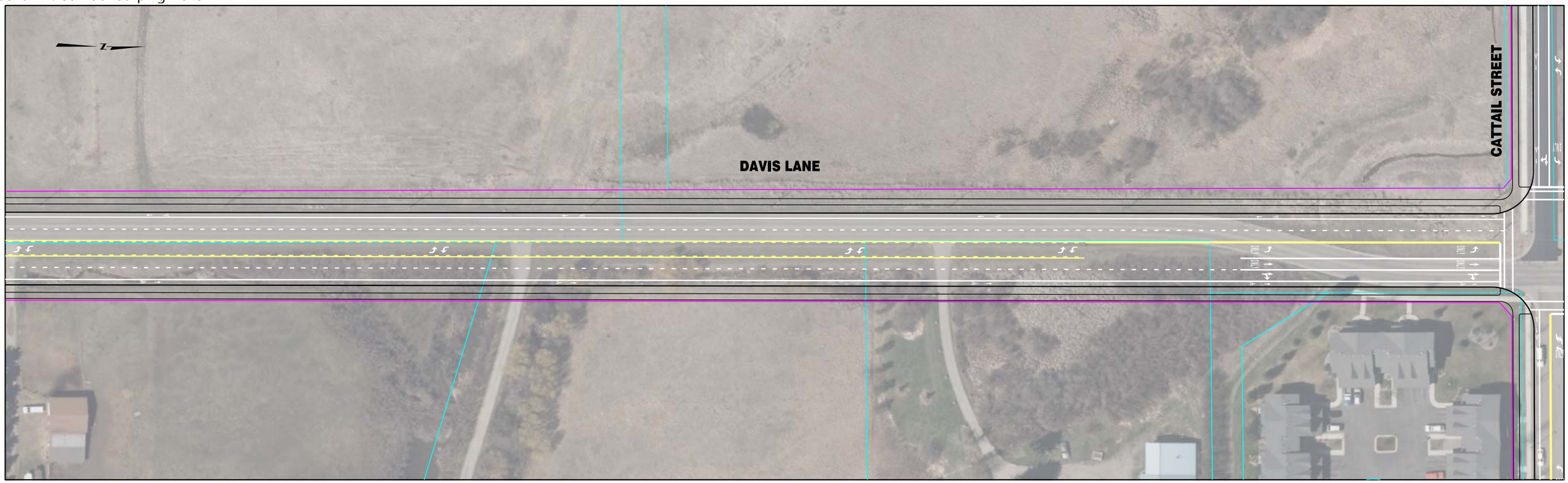

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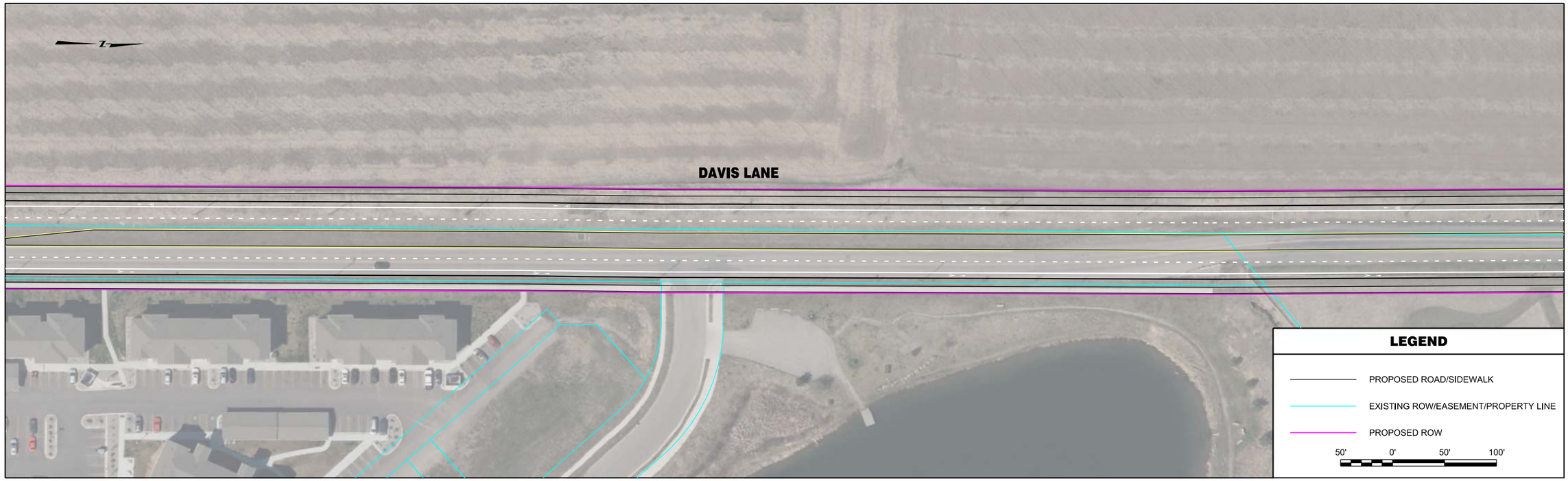

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC5.dgn 1/30/2017 10:11:29 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DAVIS LANE STRIPING PLAN**

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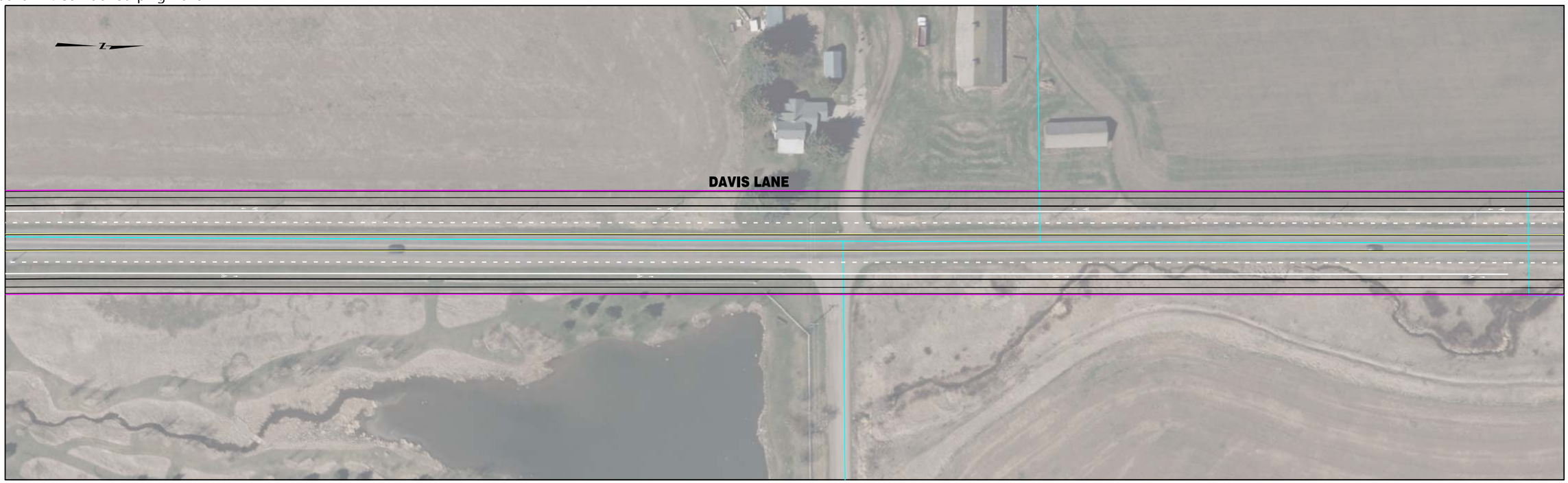

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZC5.dgn 1/30/2017 10:11:37 AM joeh	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **DAVIS LANE STRIPING PLAN**

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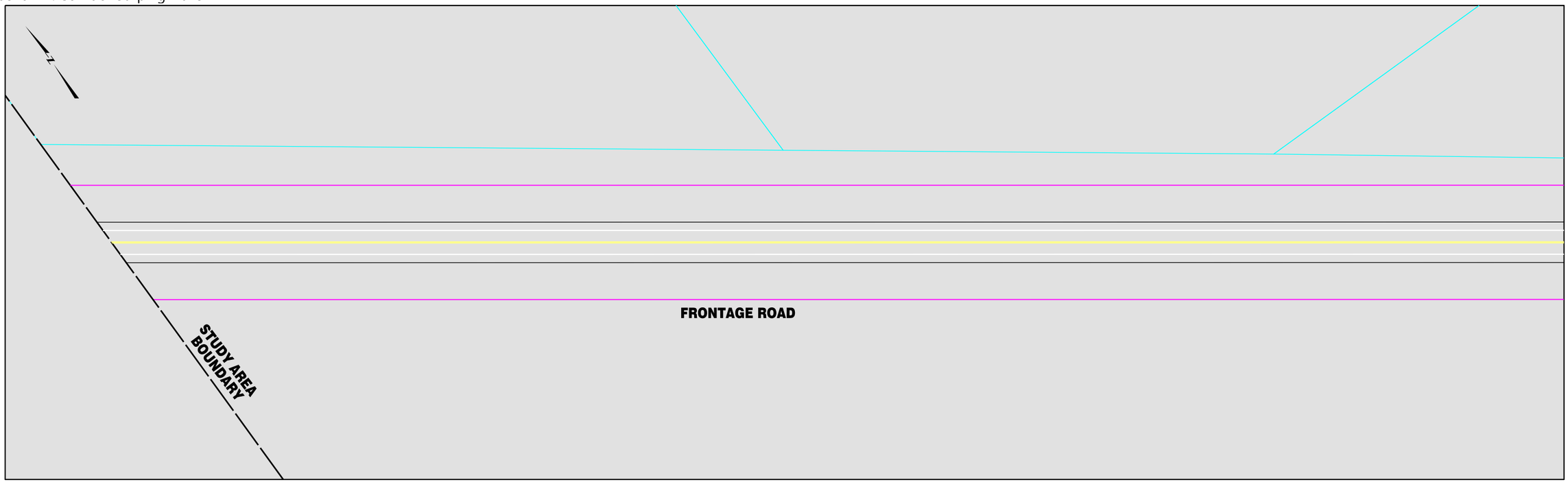

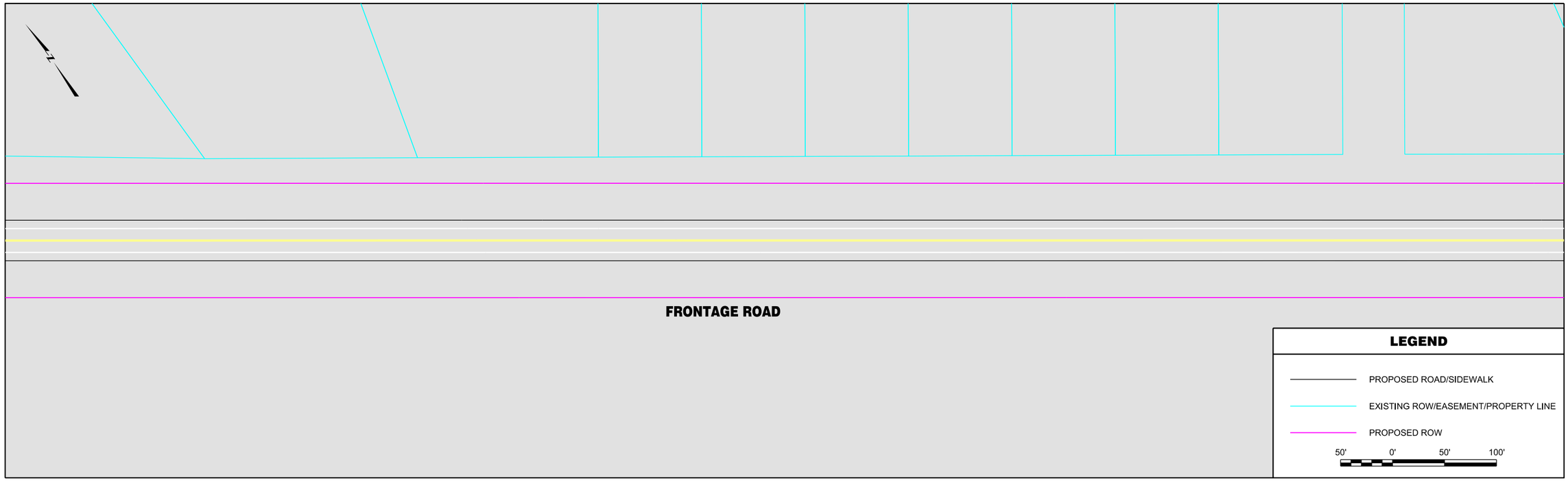

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW1.dg 1/26/2017 3:35:27 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**

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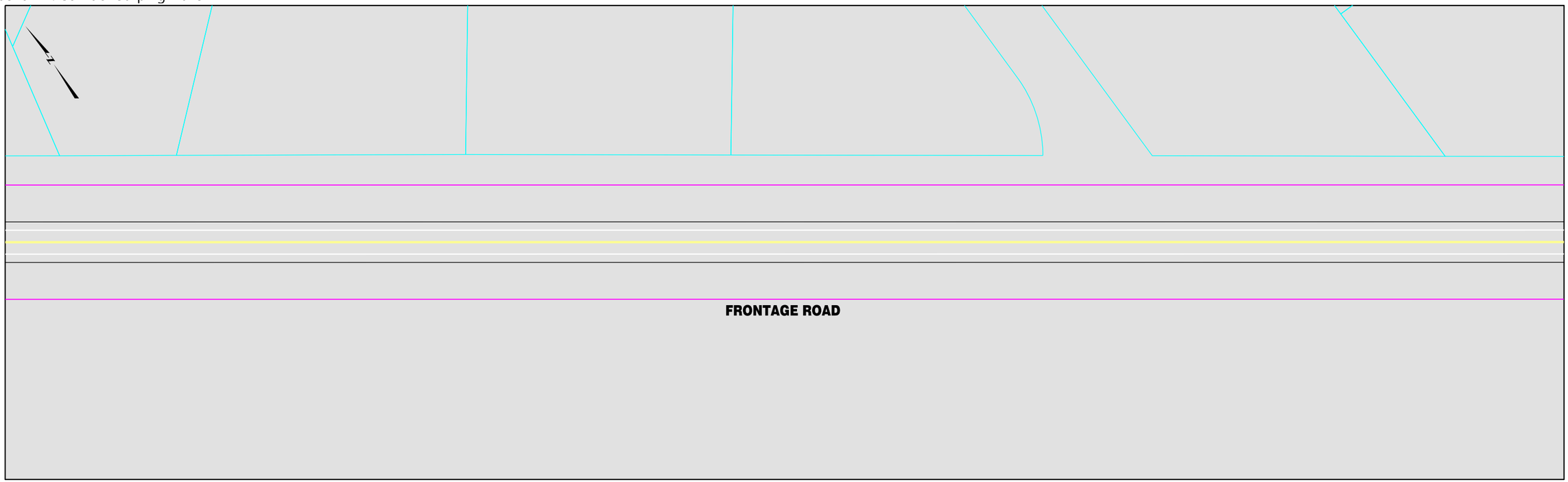

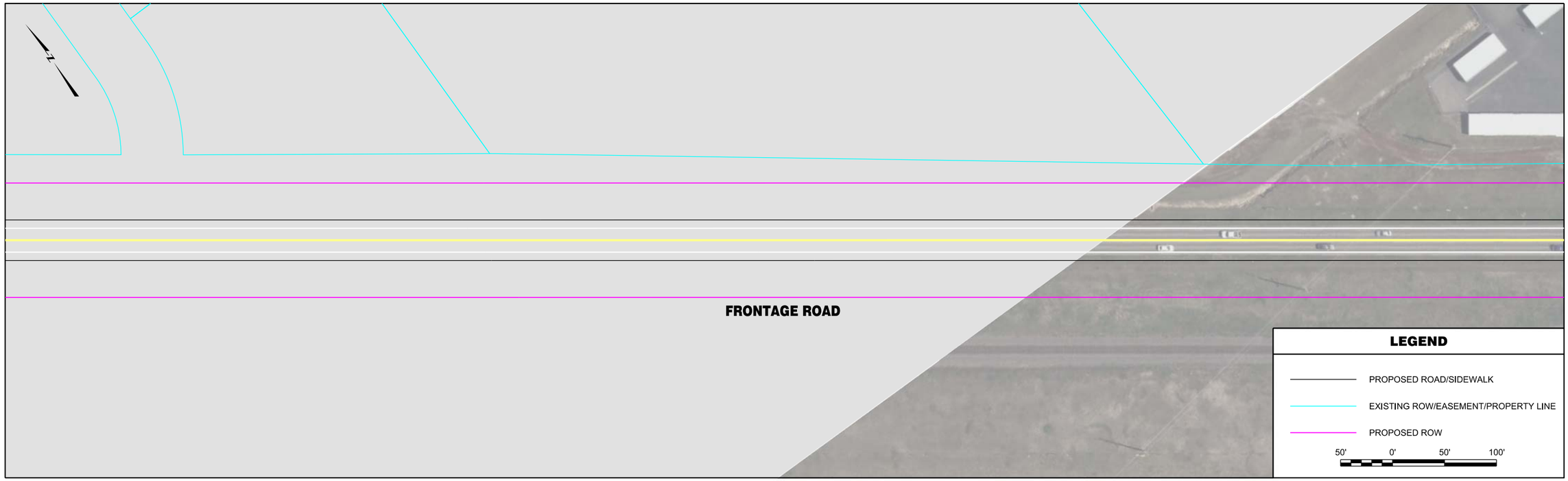

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW1.dg 1/26/2017 3:35:31 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**

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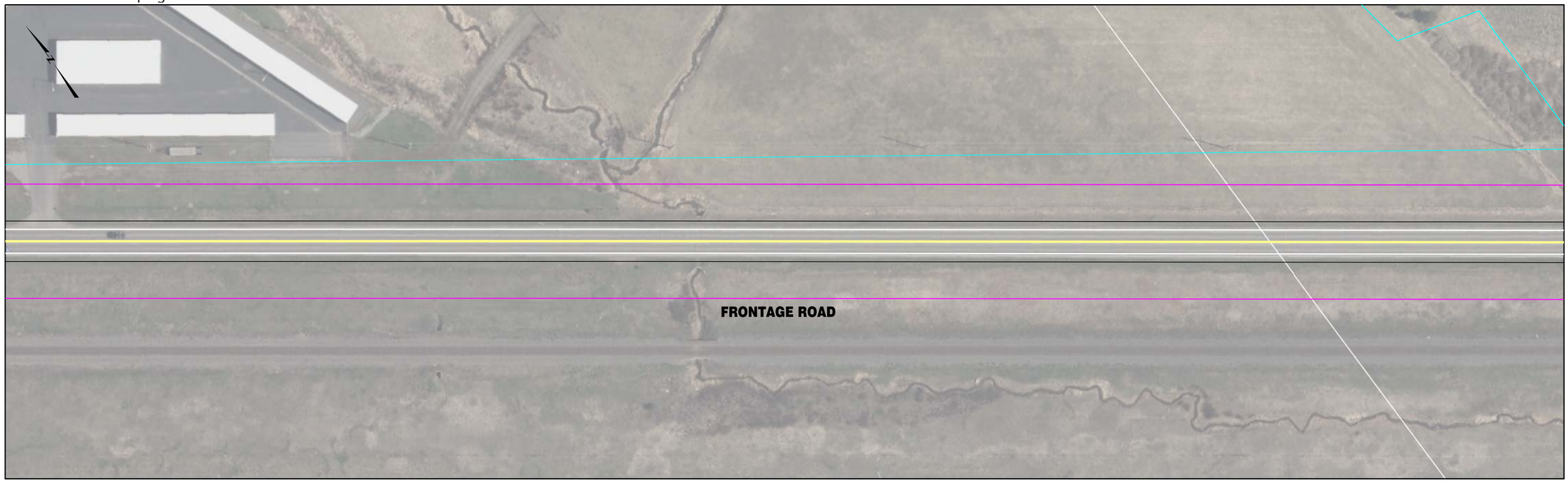

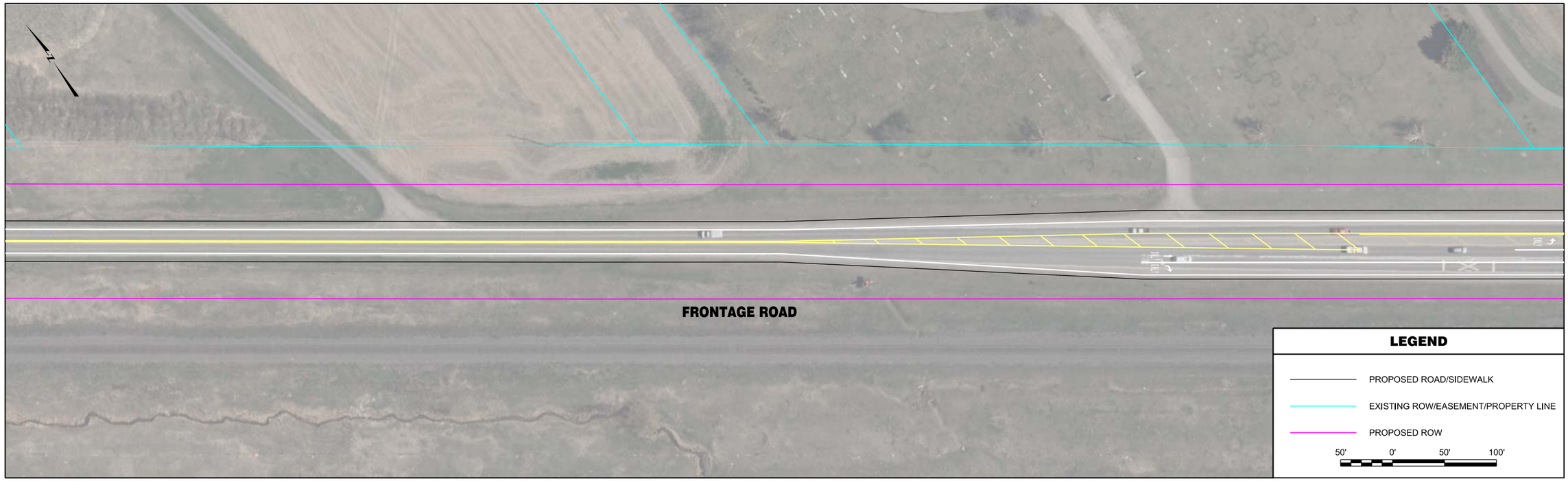

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW1.dw 1/26/2017 3:35:39 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**	SHEET Page 146 **3**

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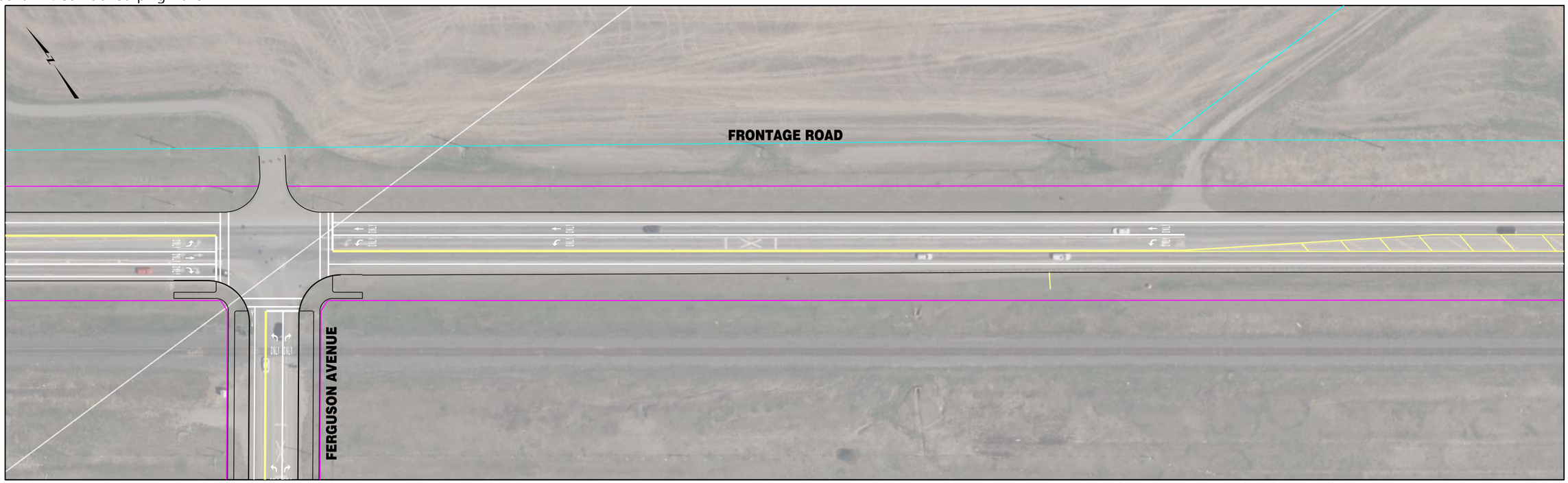

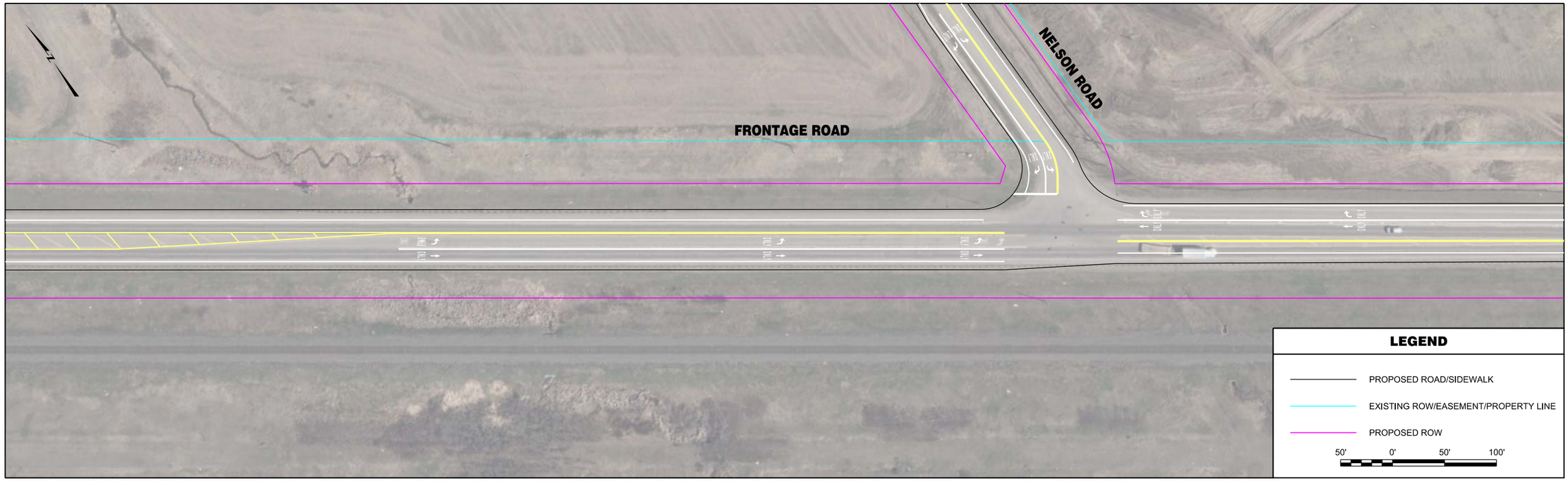

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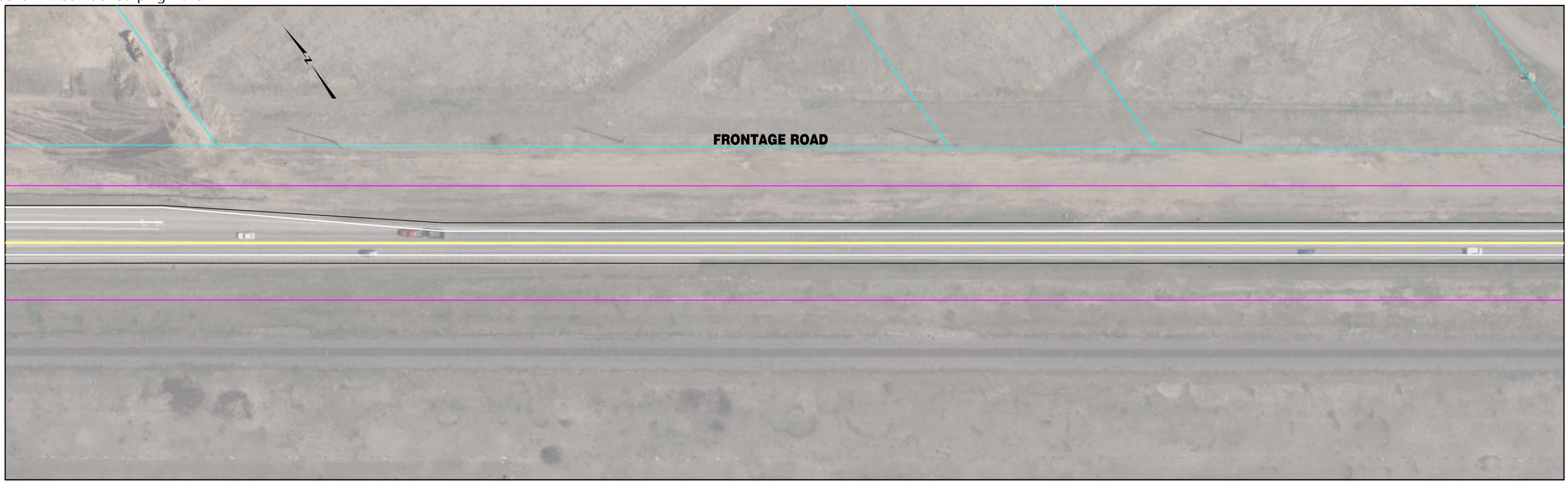

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW2.dg 1/26/2017 3:35:59 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**	SHEET Page 148 **5**

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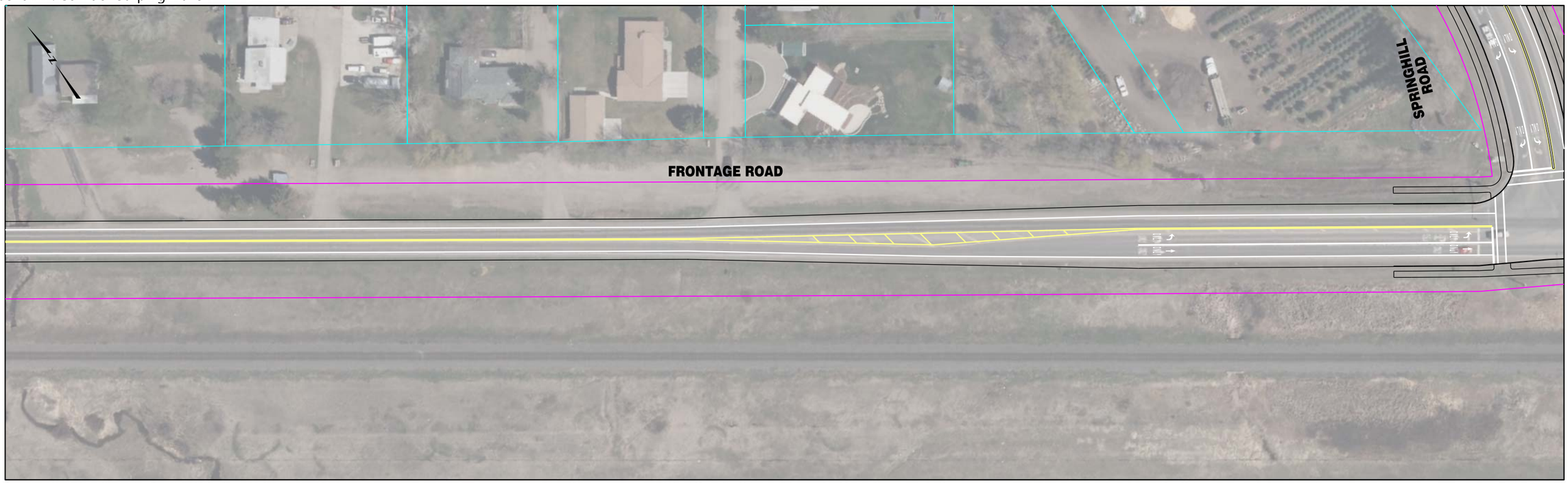

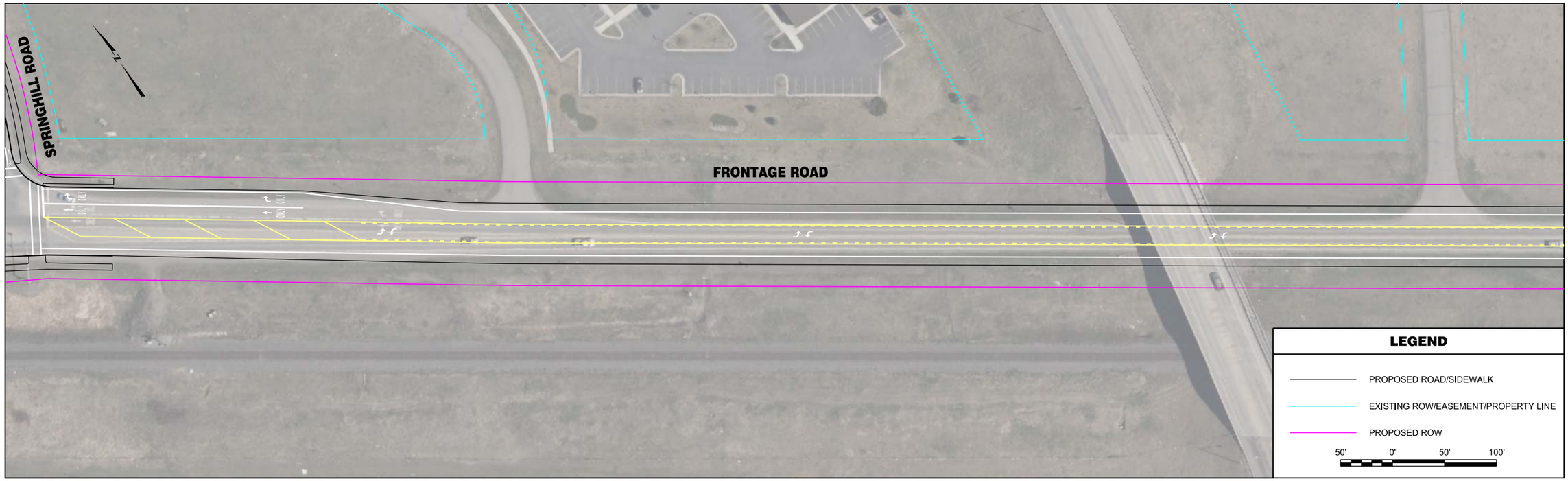

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW2.dg 1/26/2017 3:36:09 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**

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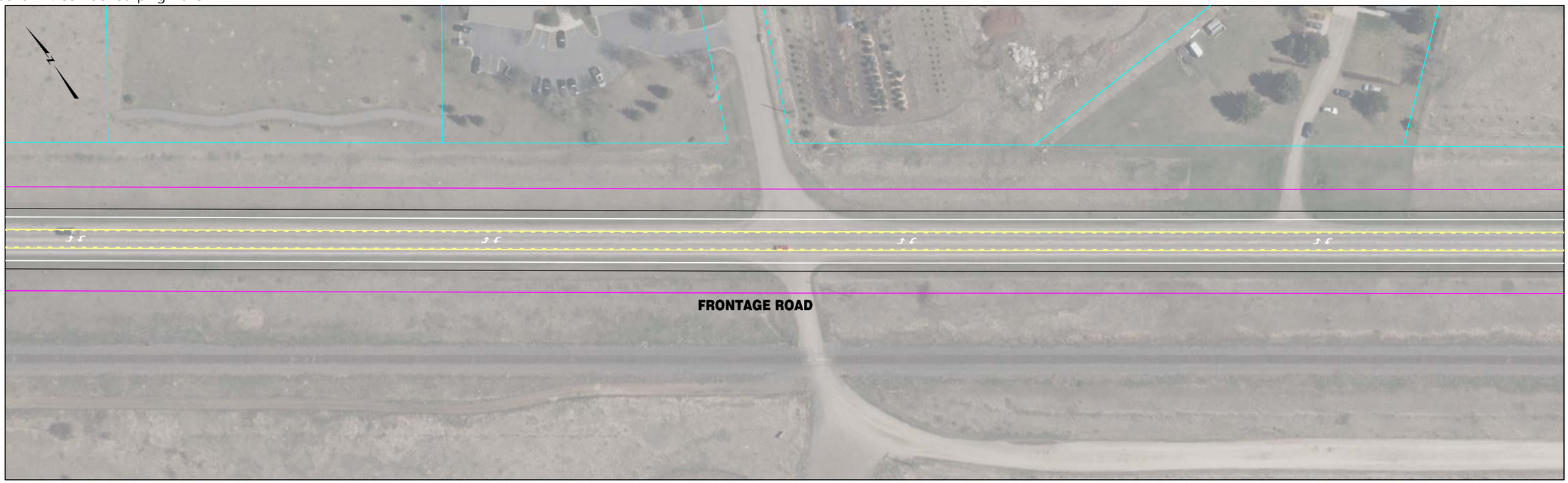

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW3.dg 1/26/2017 3:36:22 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**

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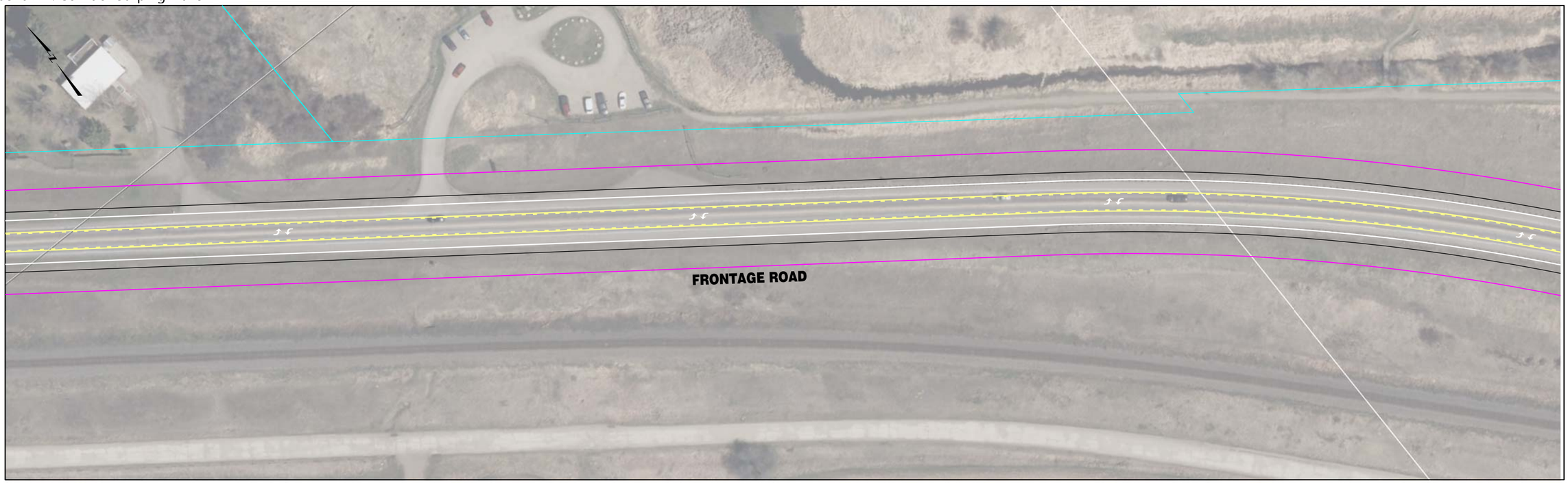

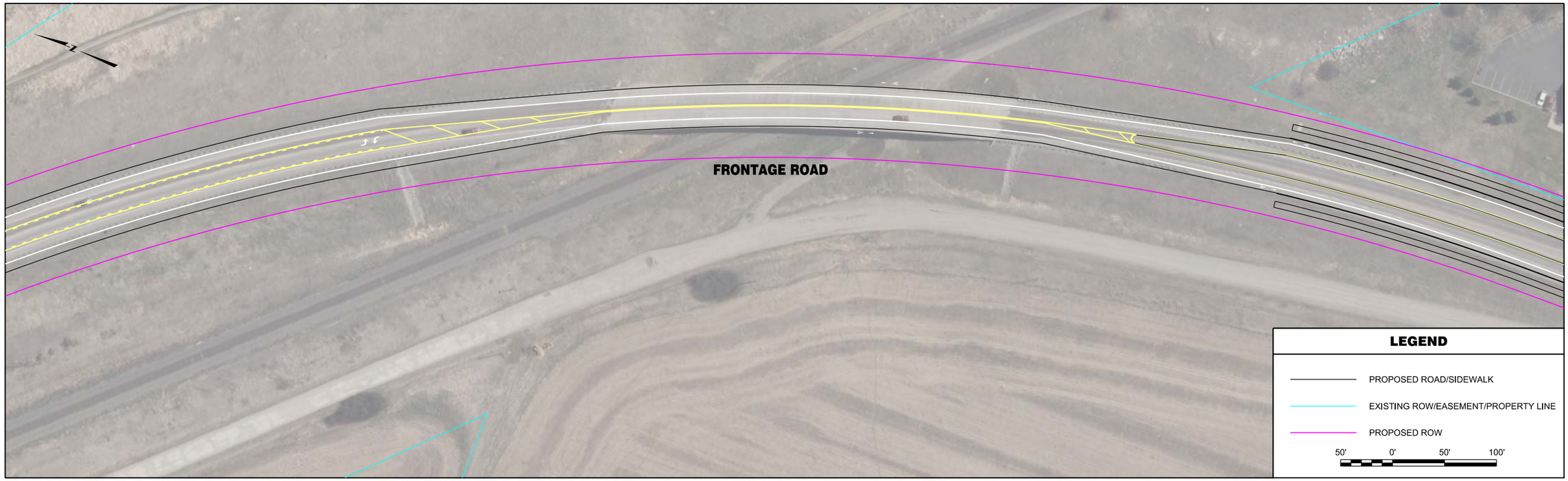

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW3.dw 1/26/2017 3:36:36 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**

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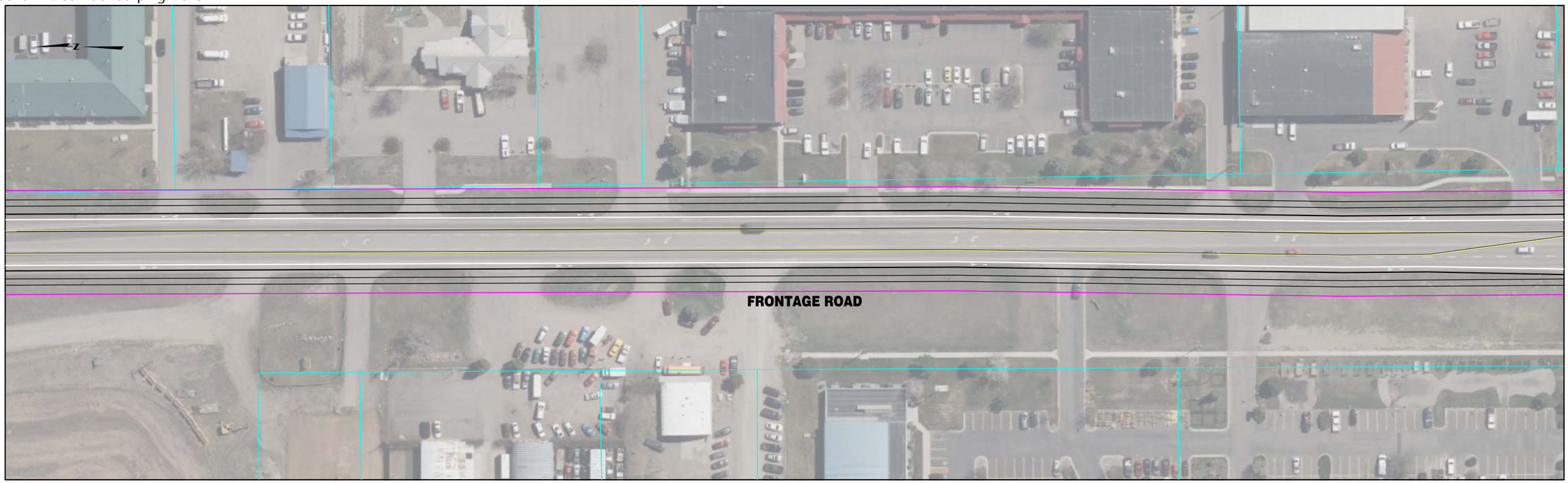

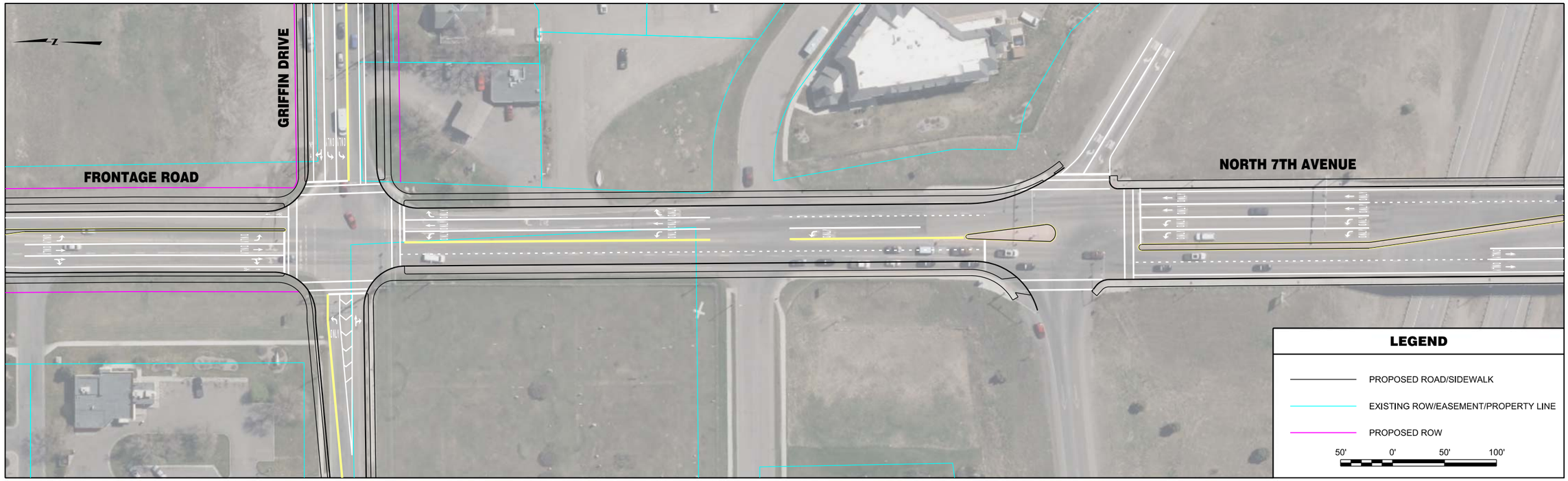

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\W-Frontage\15602RDPLNZW3.dg 1/26/2017 3:36:47 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **FRONTAGE ROAD STRIPING PLAN**

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\EE_Garfield\15602RDPLNZEE1.dwg 1/26/2017 3:34:09 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GARFIELD STREET STRIPING PLAN**

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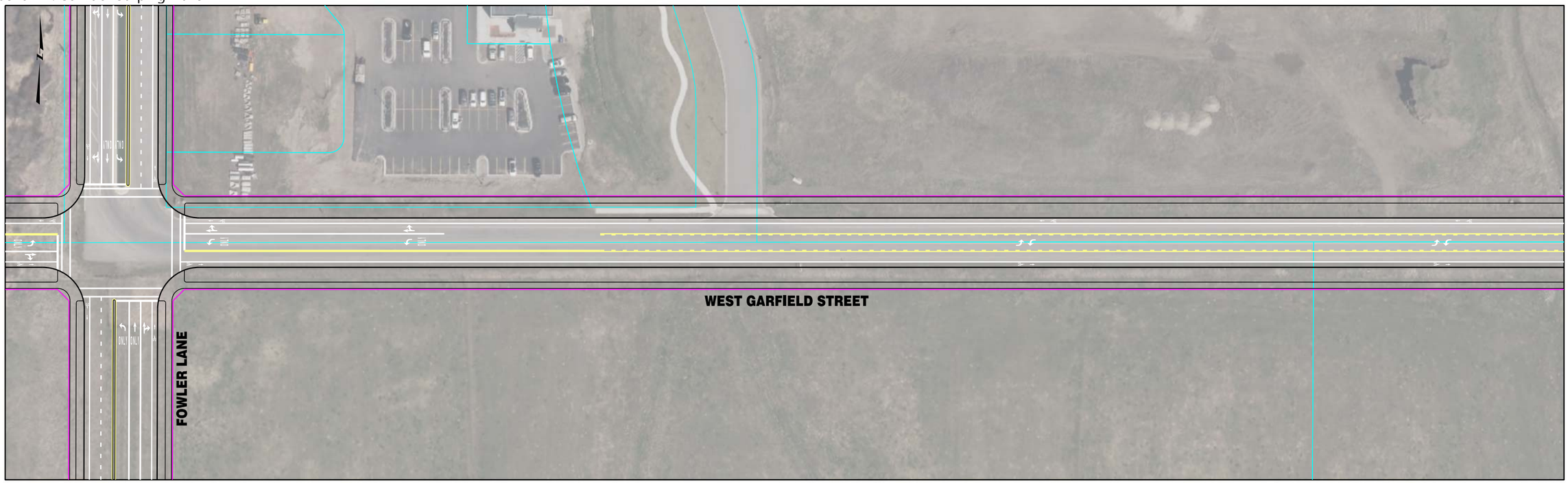

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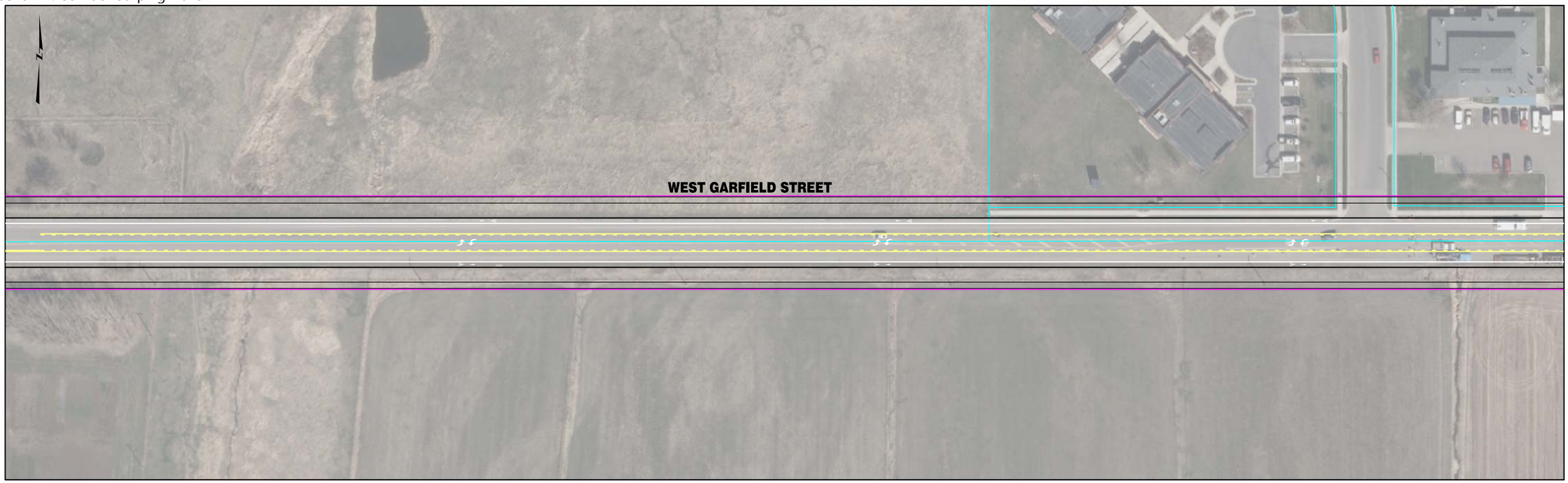

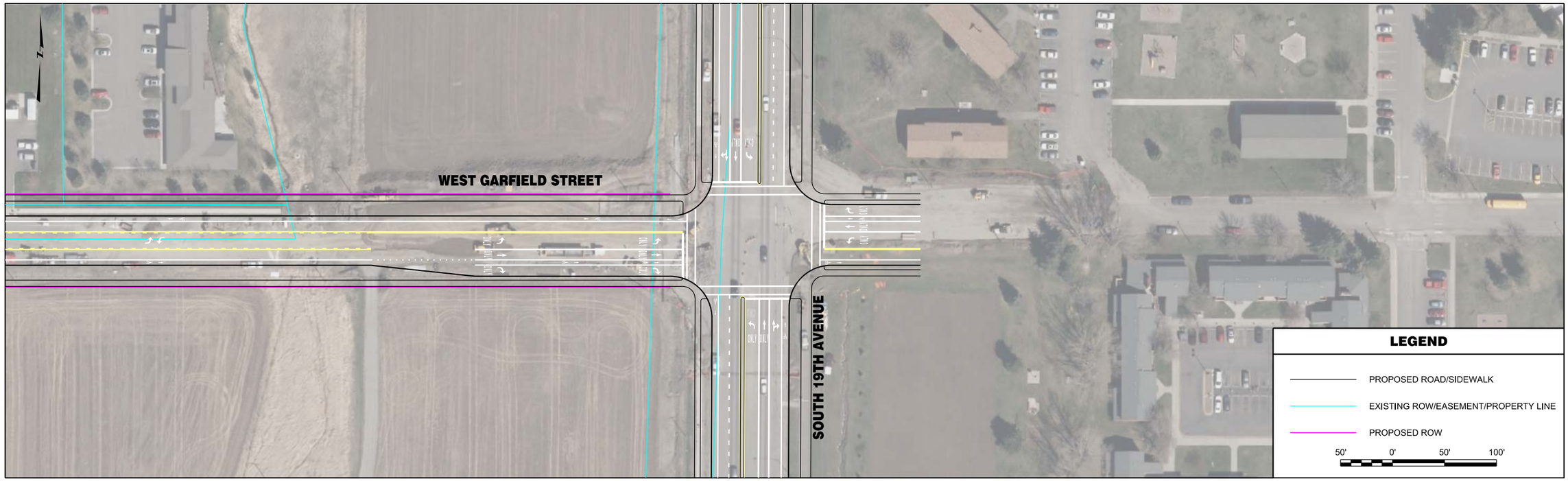

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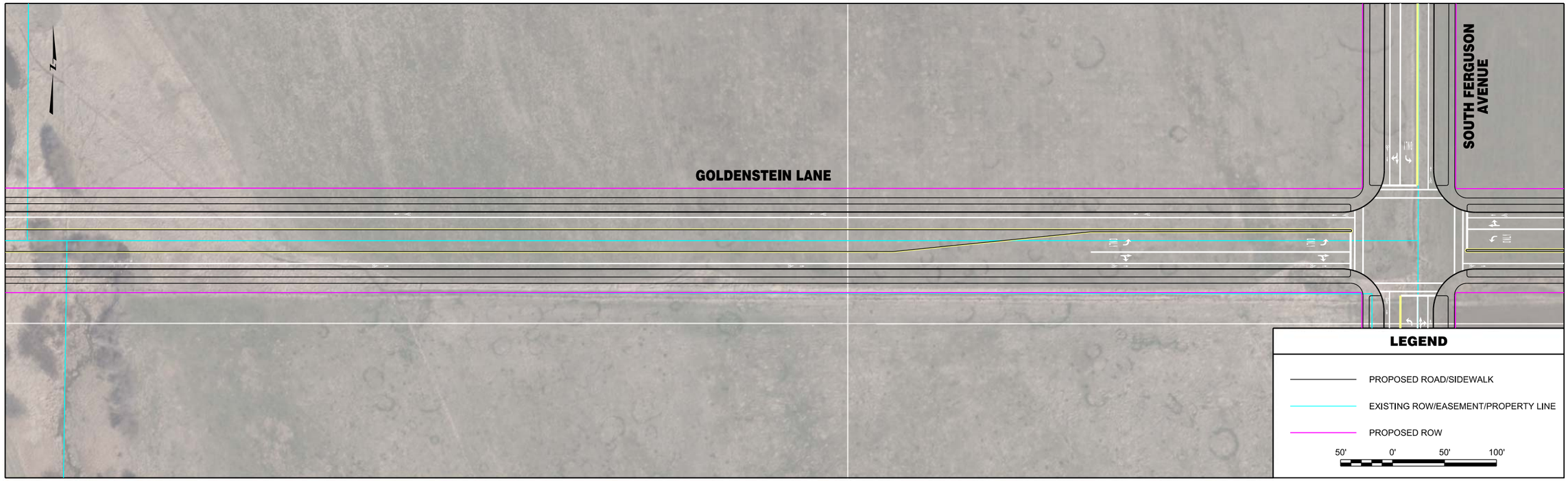

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZH1.dgn 1/26/2017 3:31:31 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GOLDENSTEIN LANE STRIPING PLAN**

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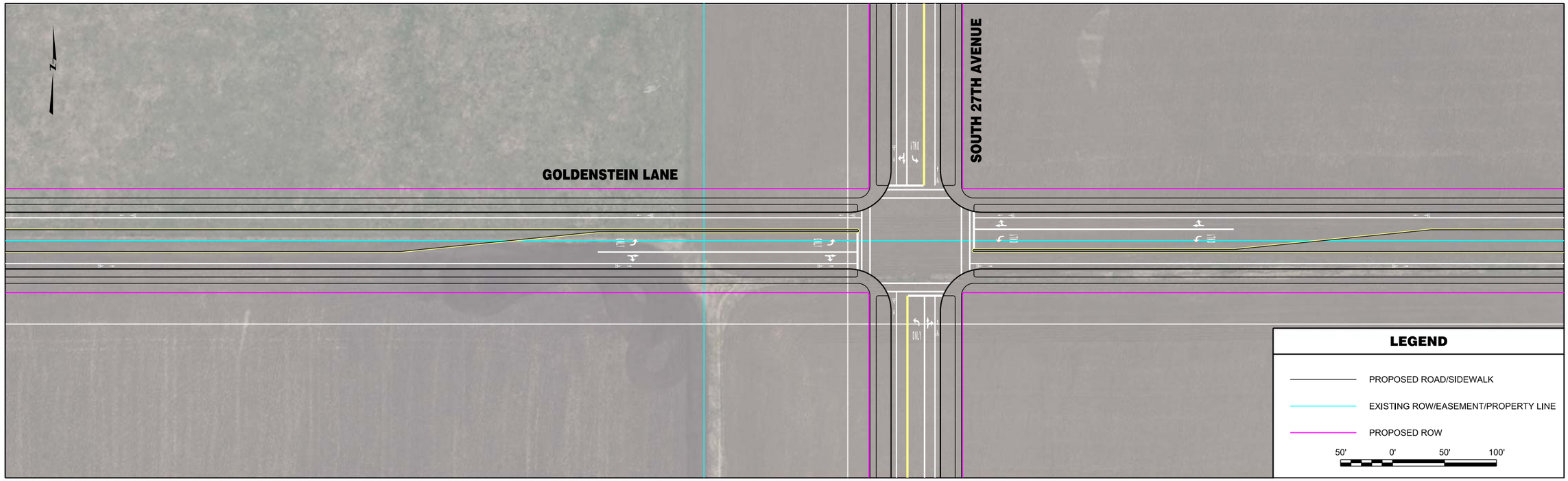

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZH2.dgn 1/26/2017 3:31:44 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GOLDENSTEIN LANE STRIPING PLAN**

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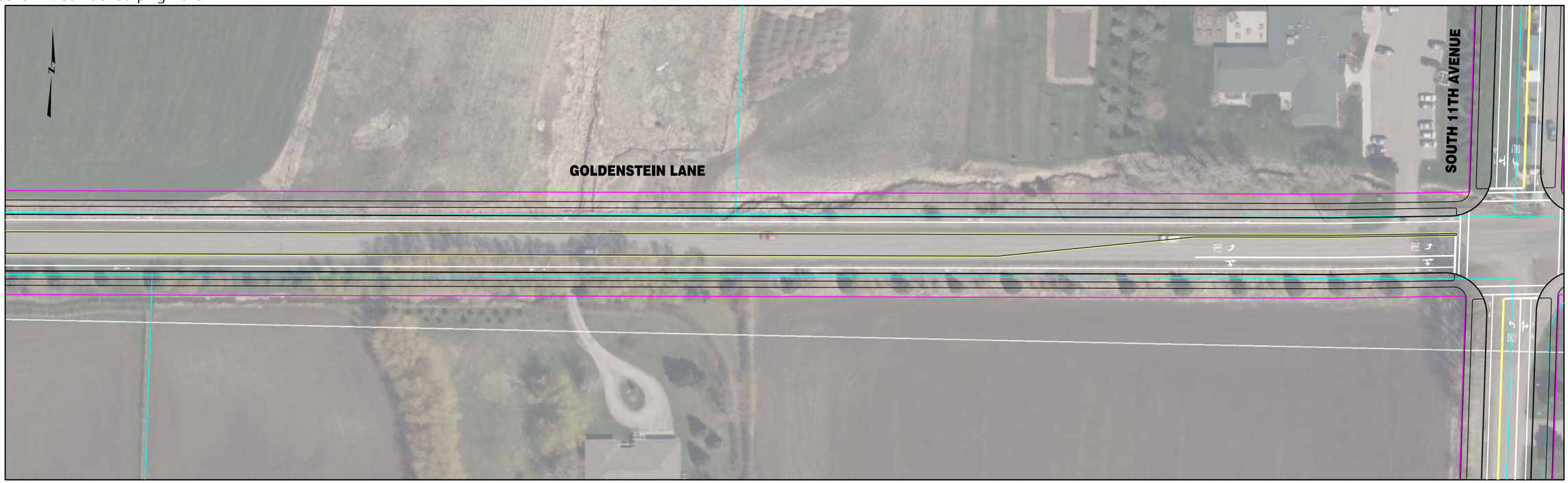

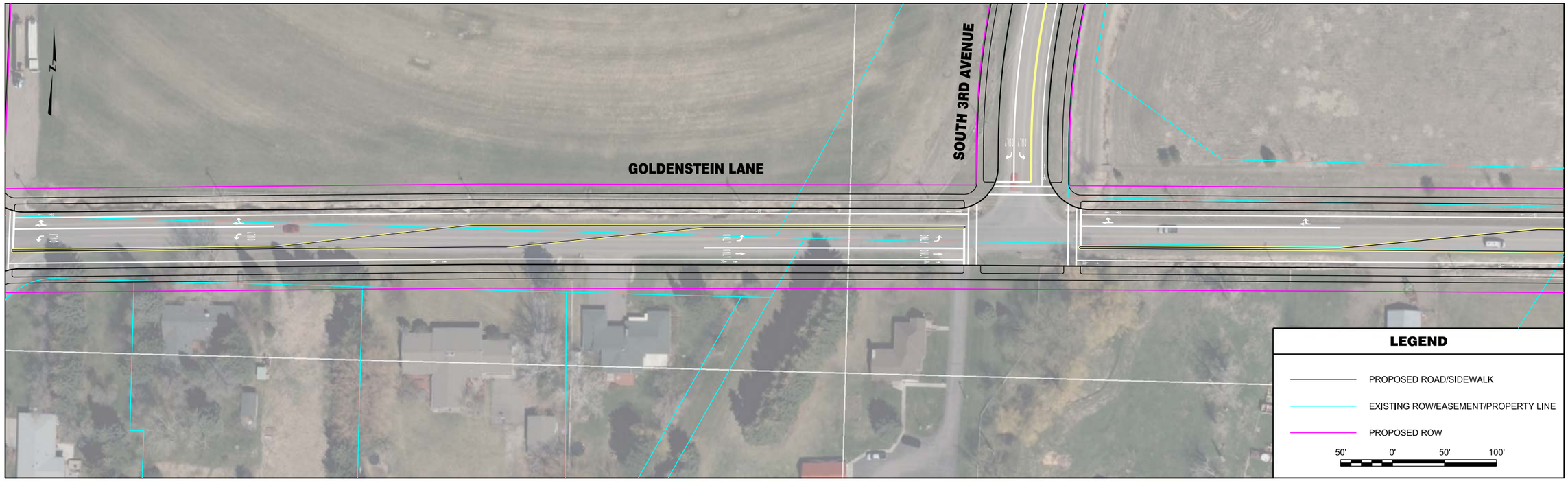

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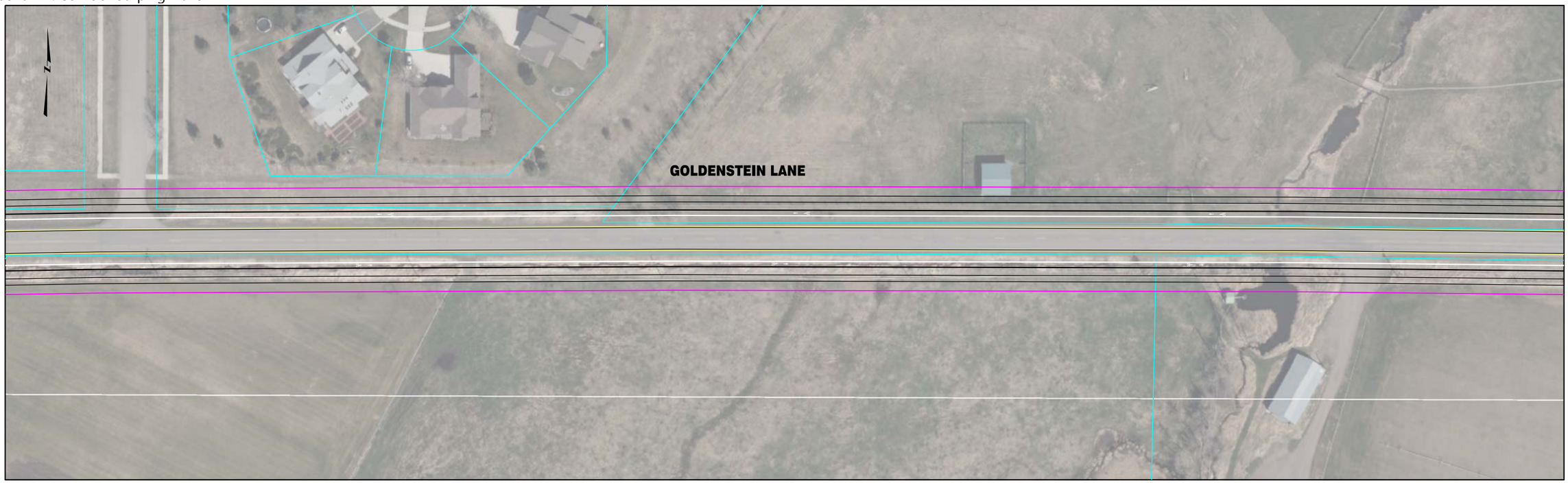

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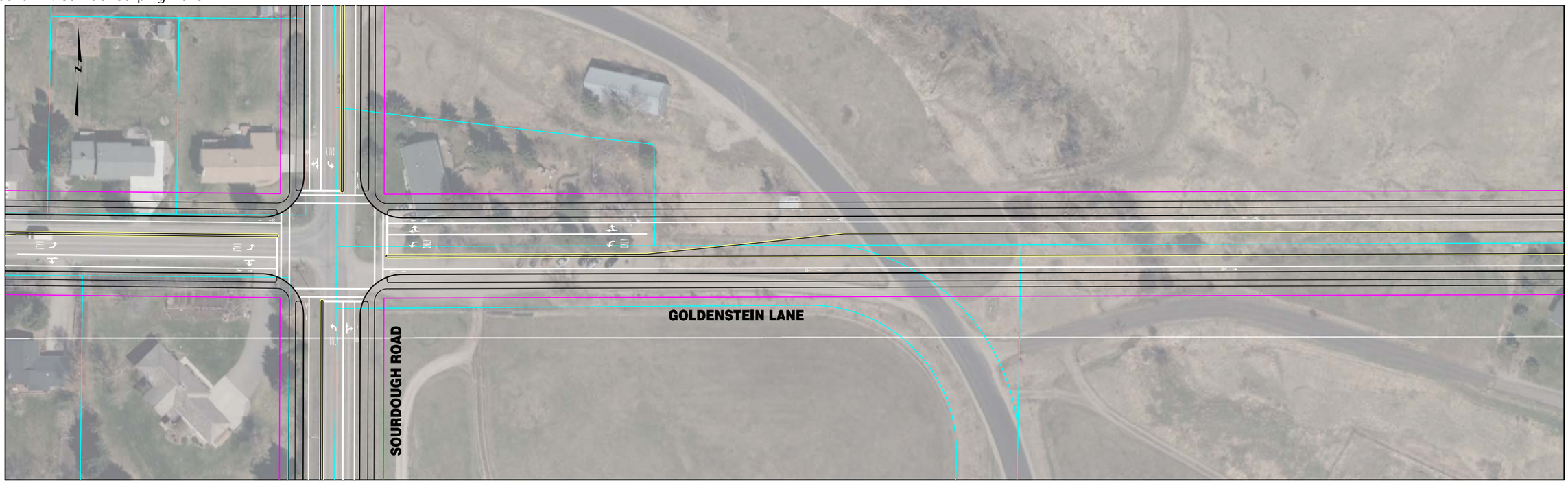

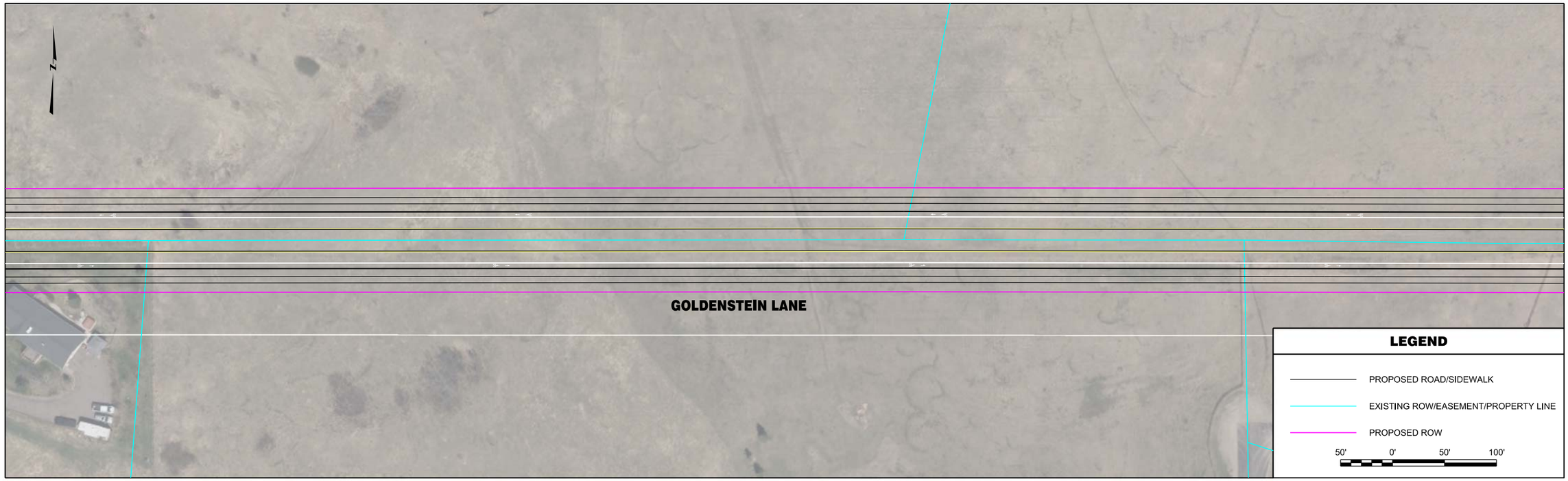

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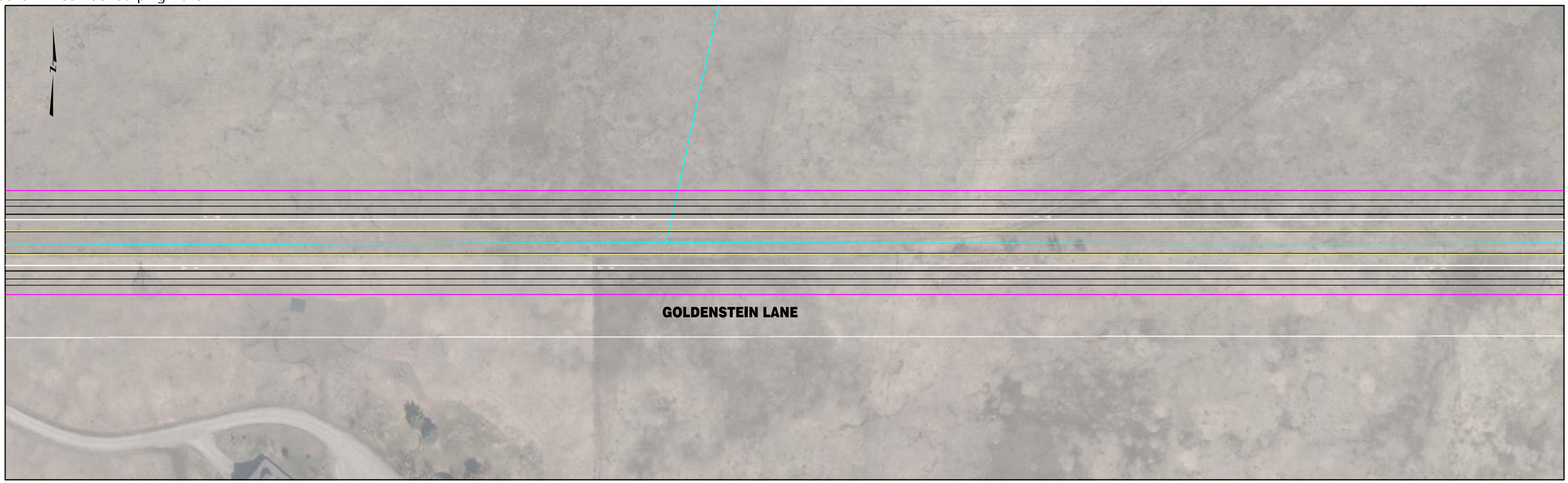

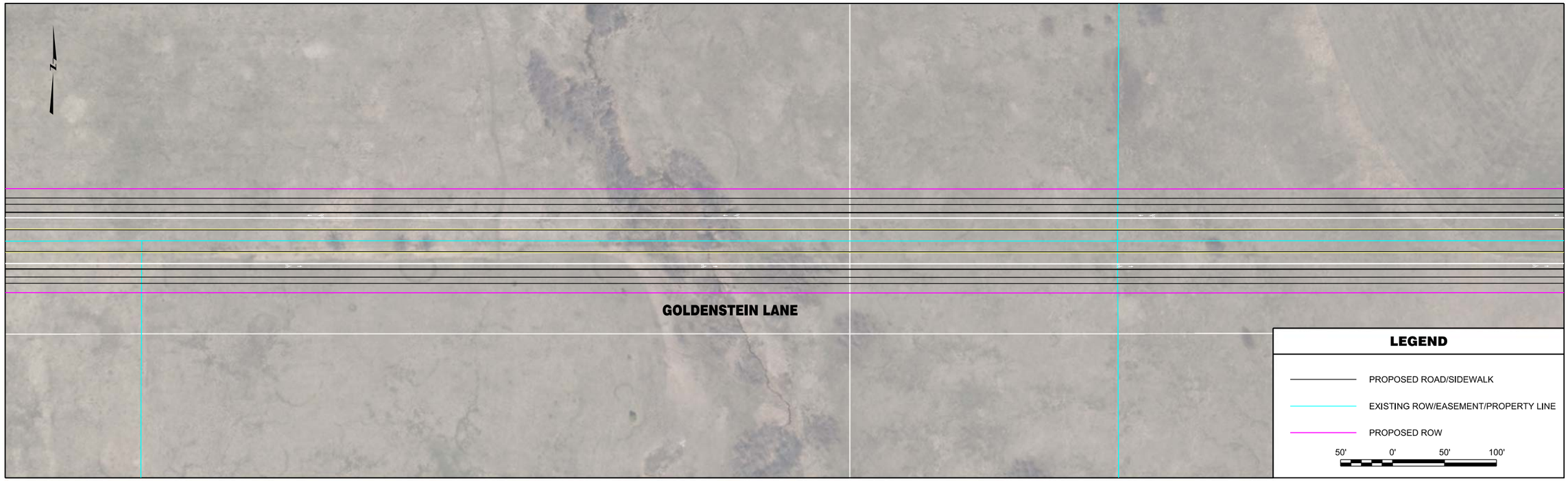

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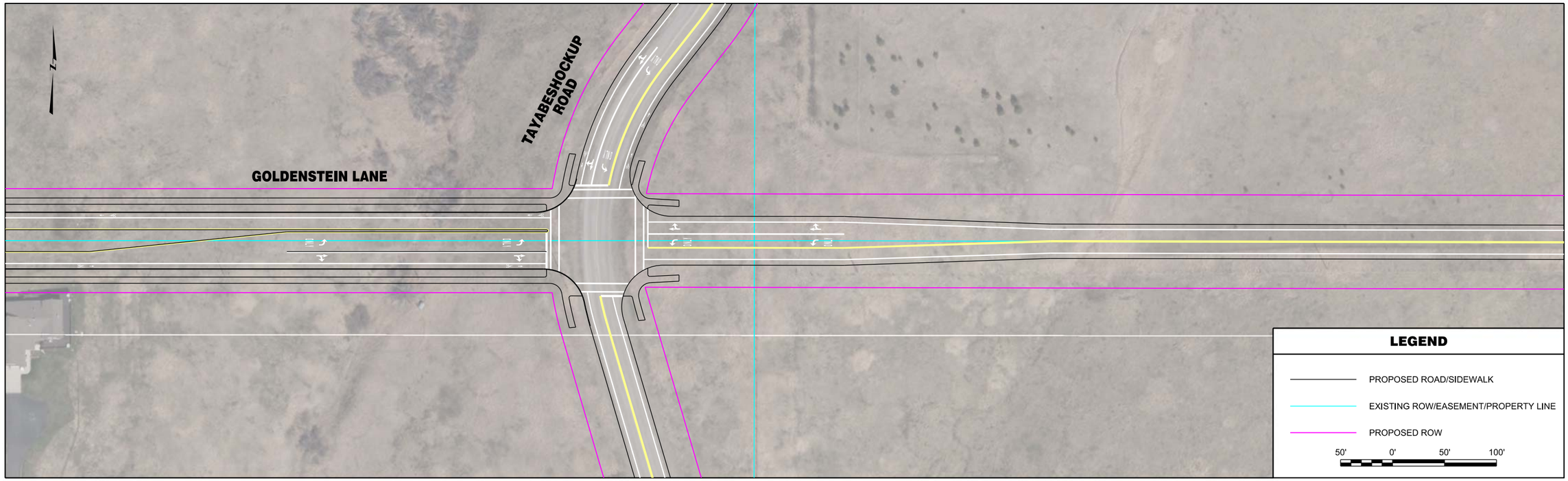

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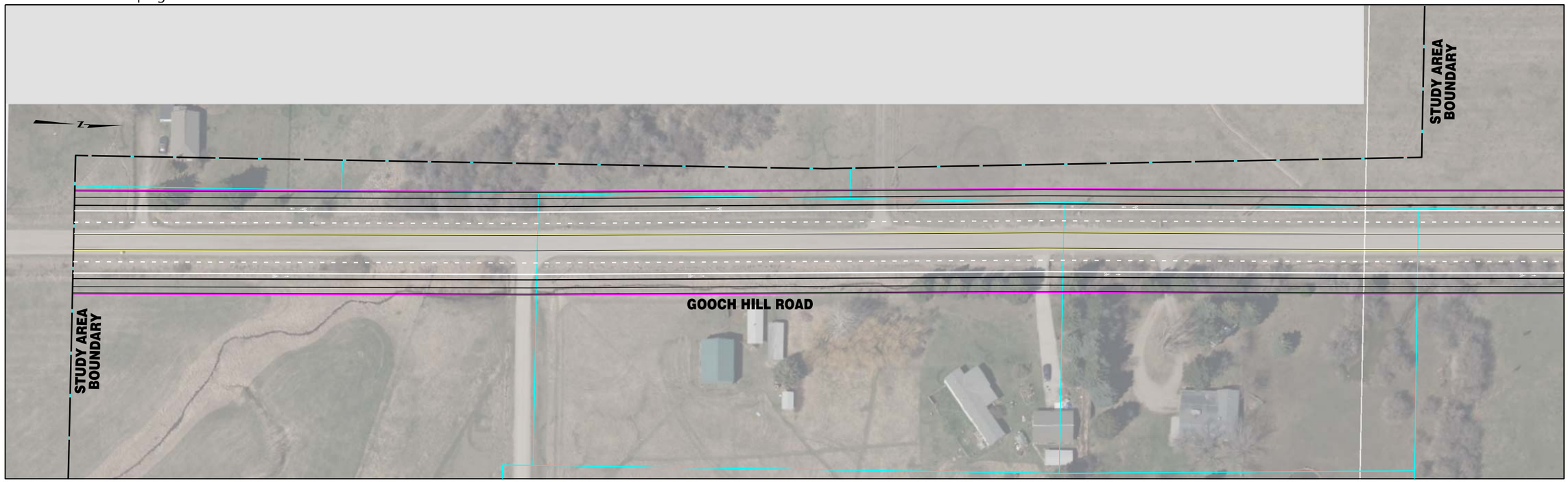

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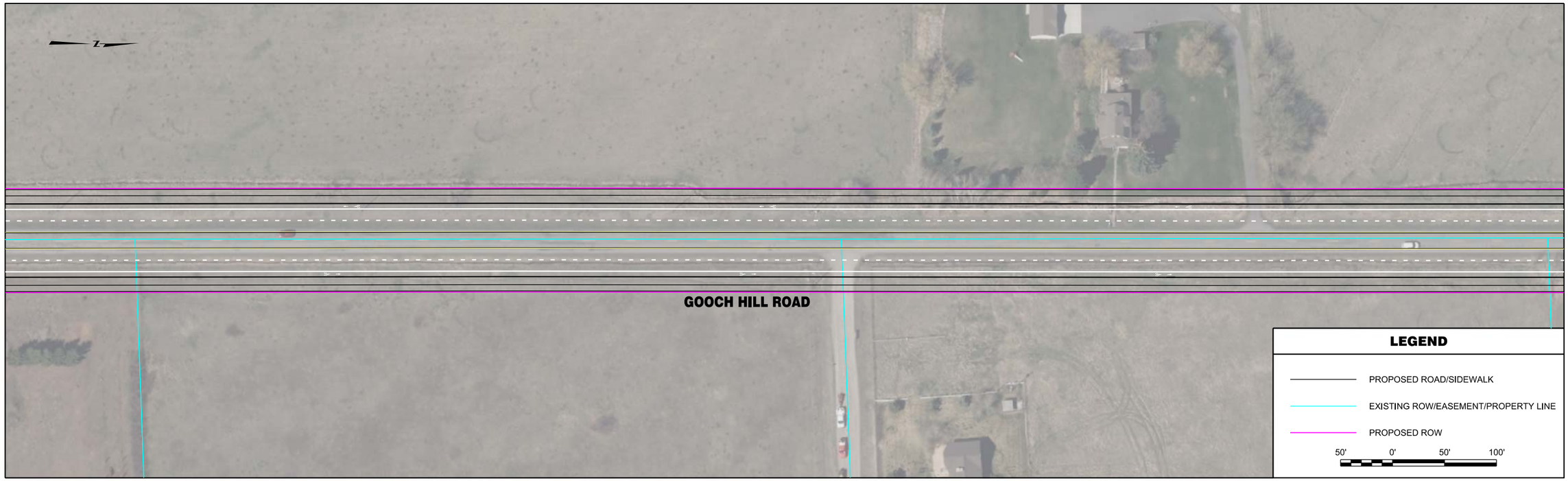

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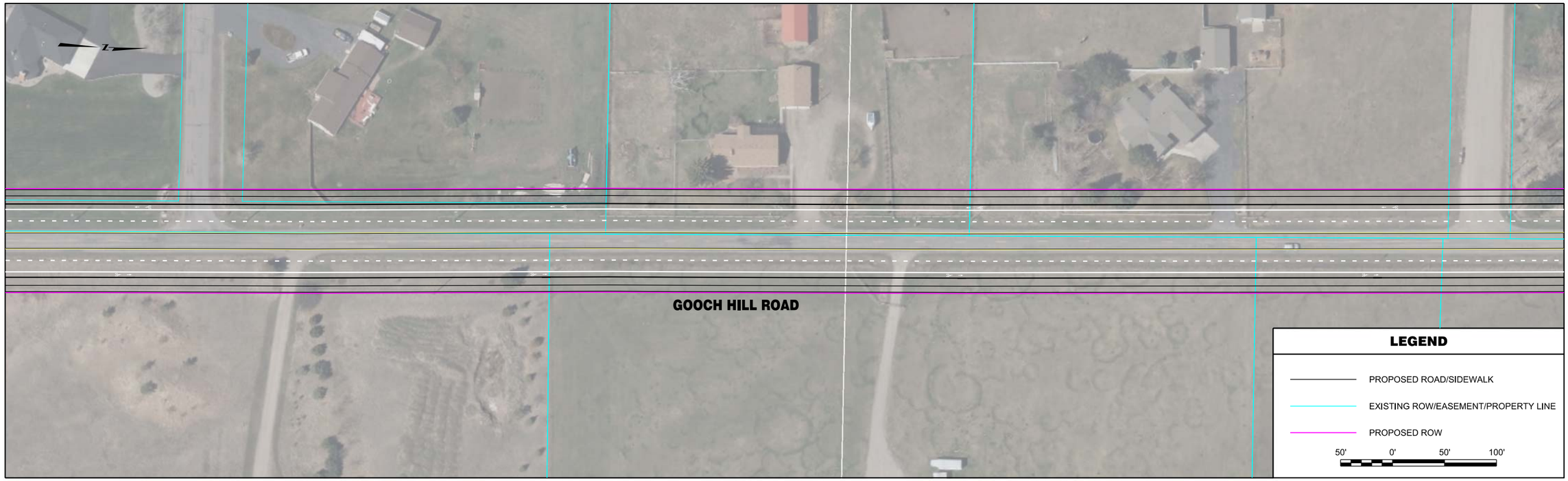

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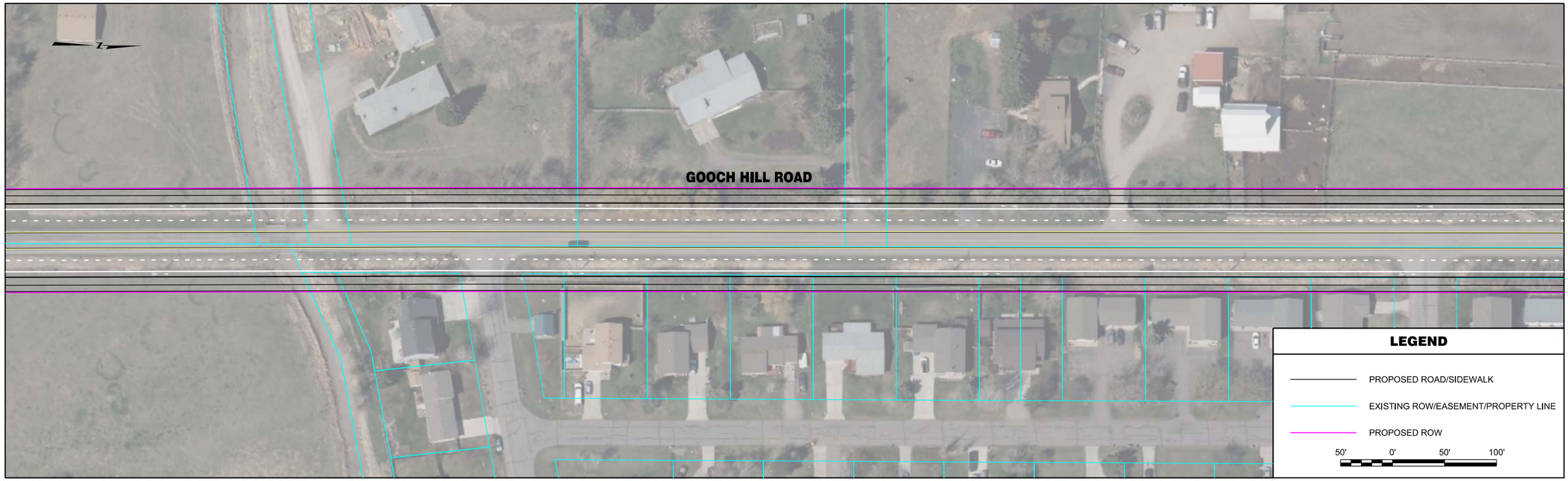

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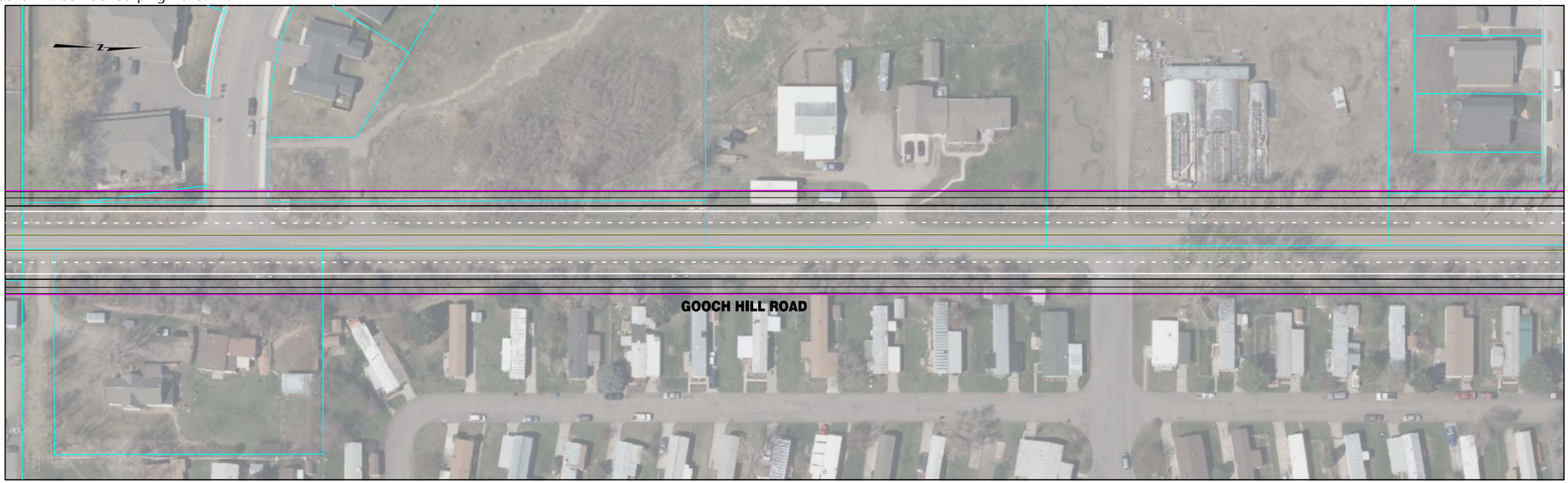

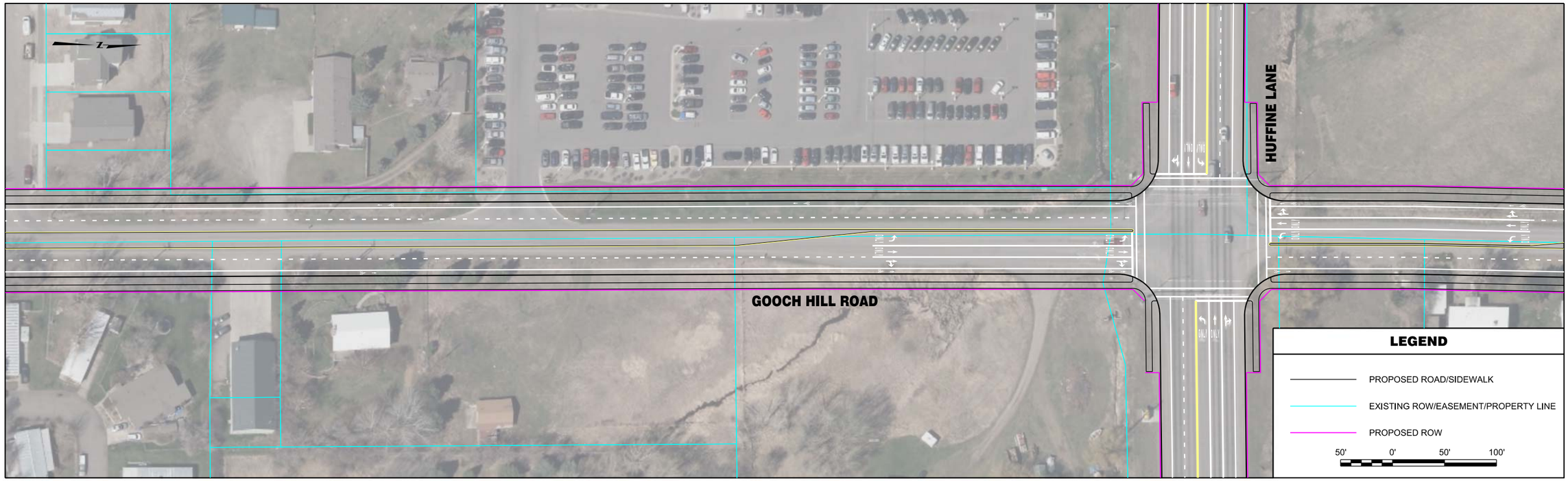

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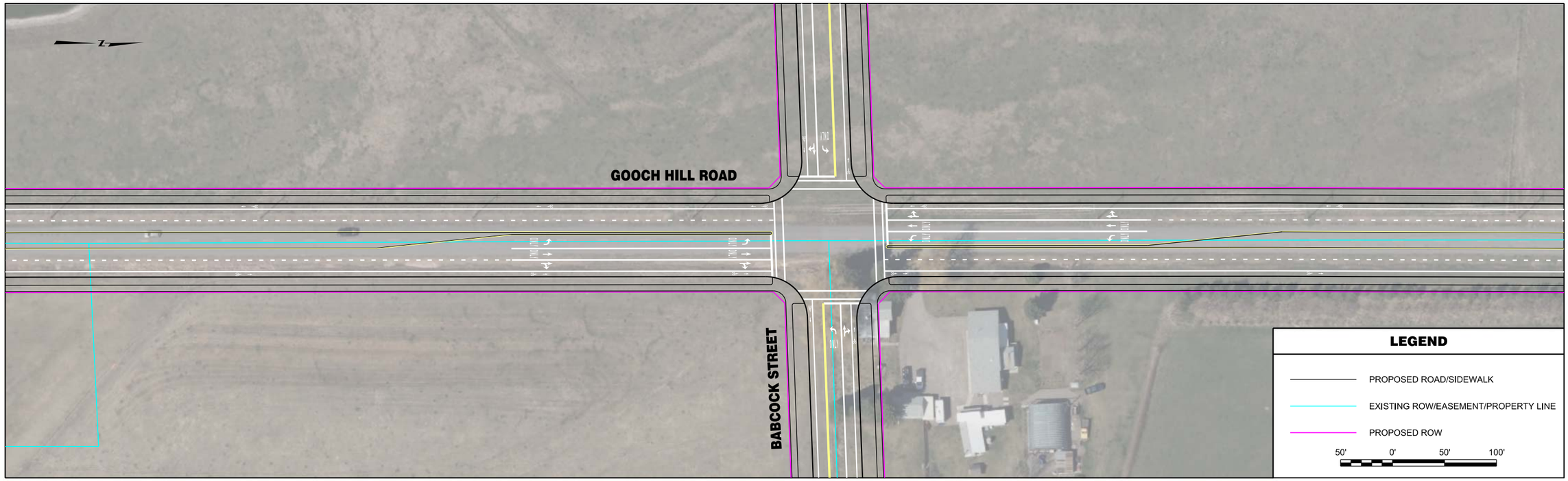
Appendix K: Corridor Striping Plans



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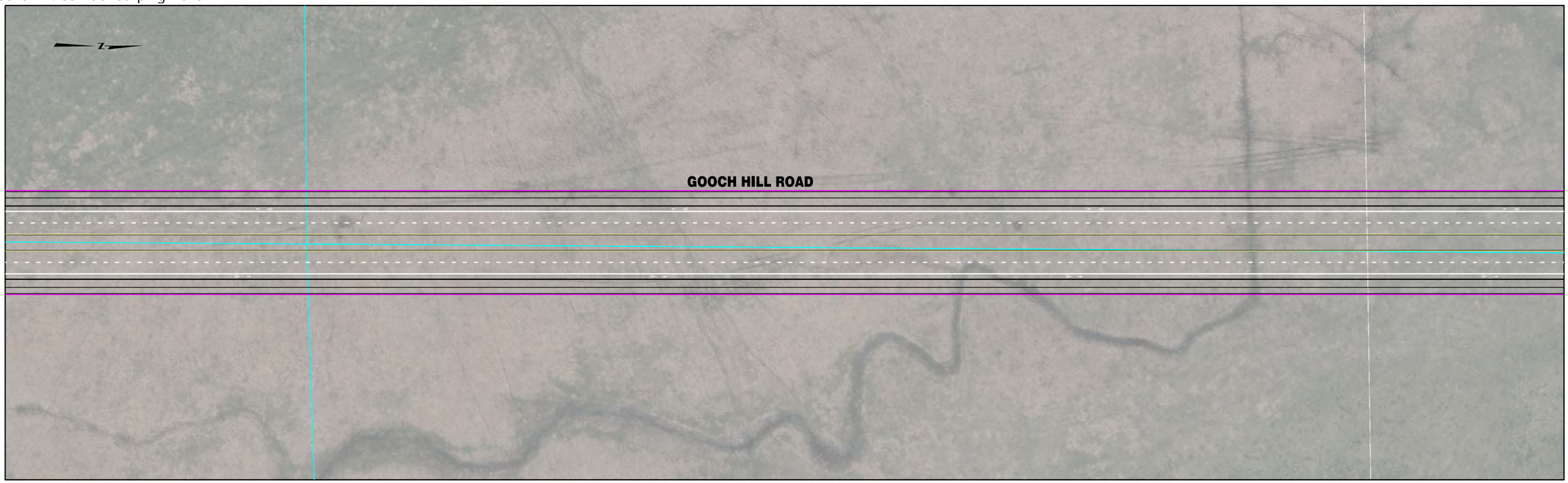

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\B-GoochHil\15602RDPLNZB4.dgn 1/26/2017 3:24:05 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GOOCH HILL ROAD STRIPING PLAN**

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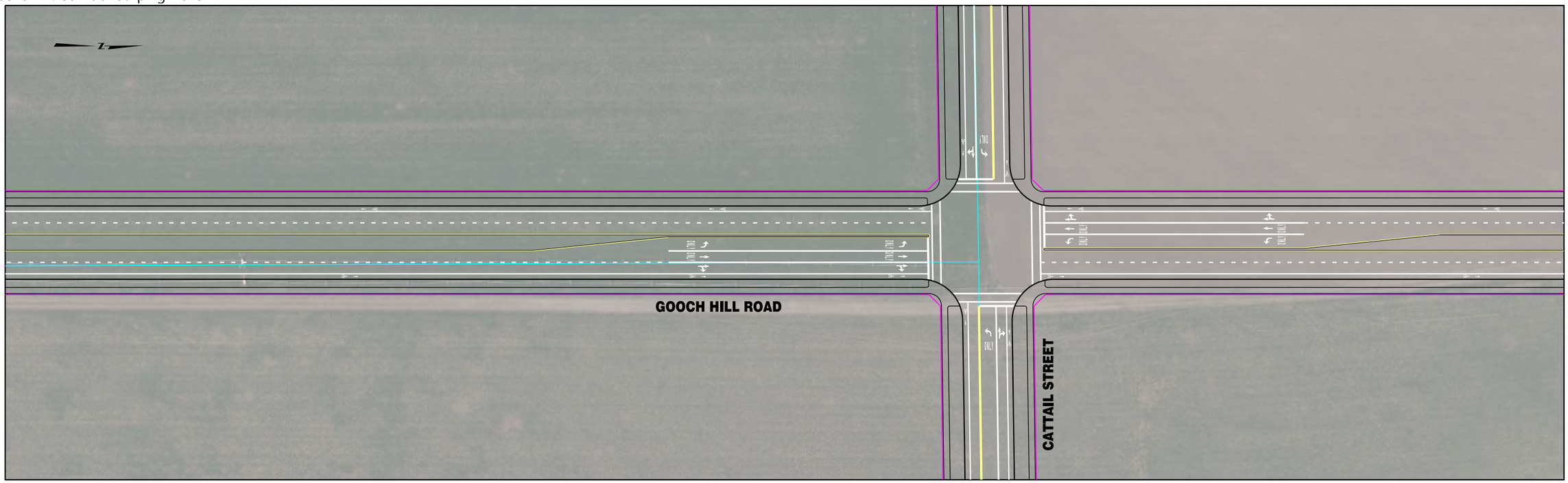

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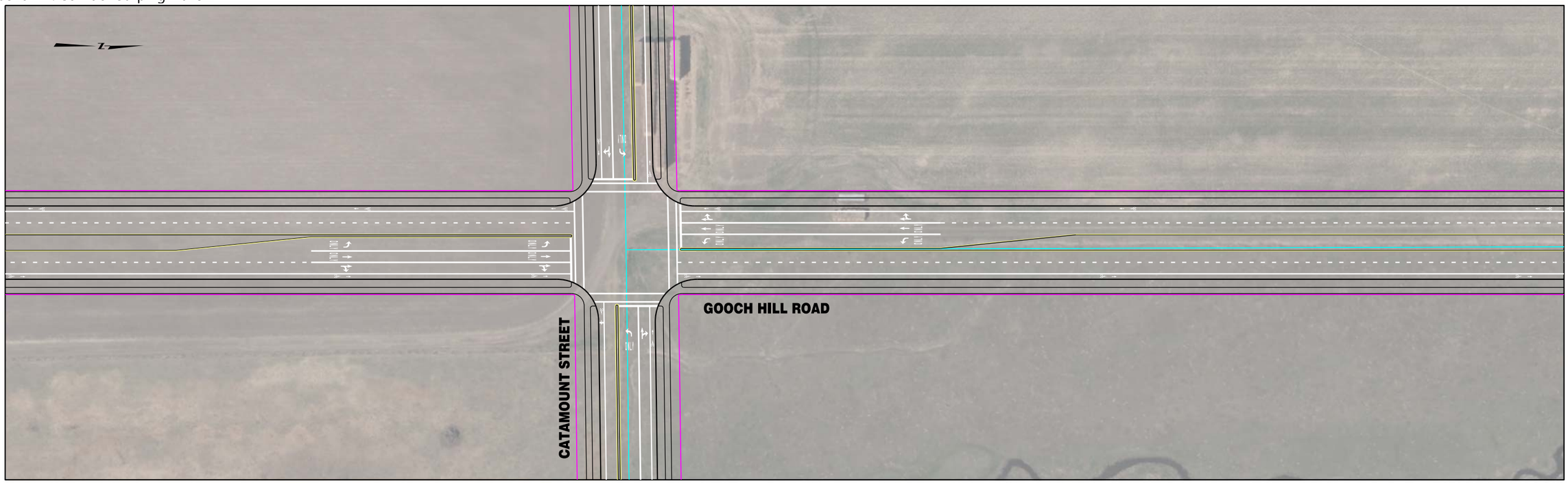

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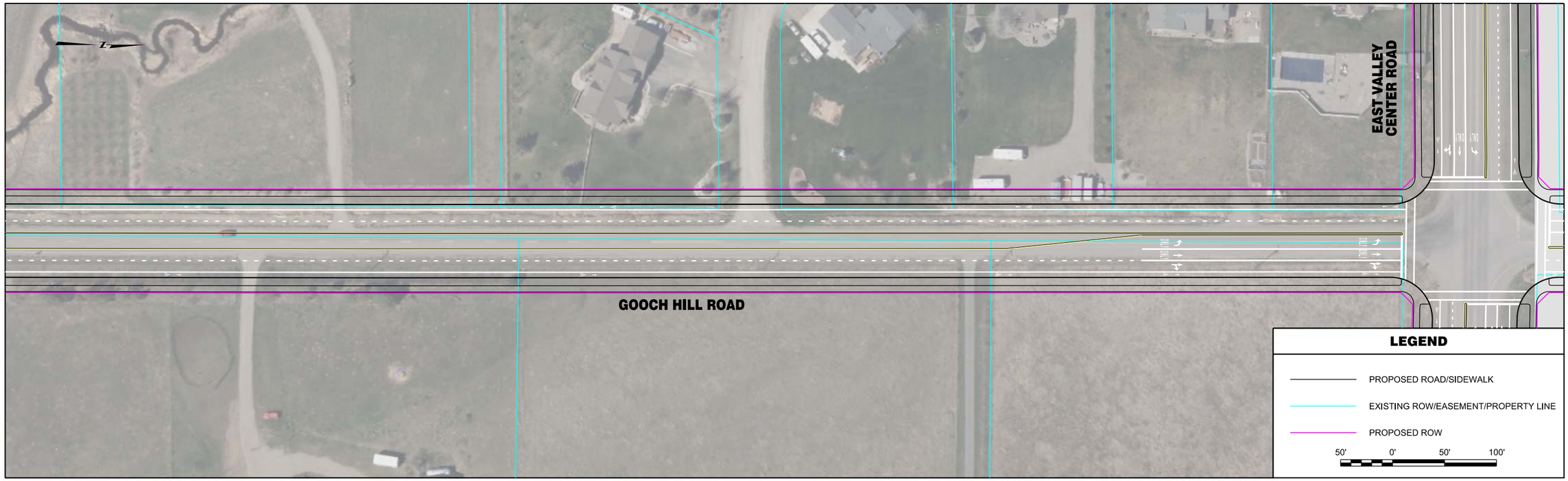

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ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\B-GoochHill\15602RDPLNZB5.dgn 1/26/2017 3:24:44 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GOOCH HILL ROAD STRIPING PLAN**

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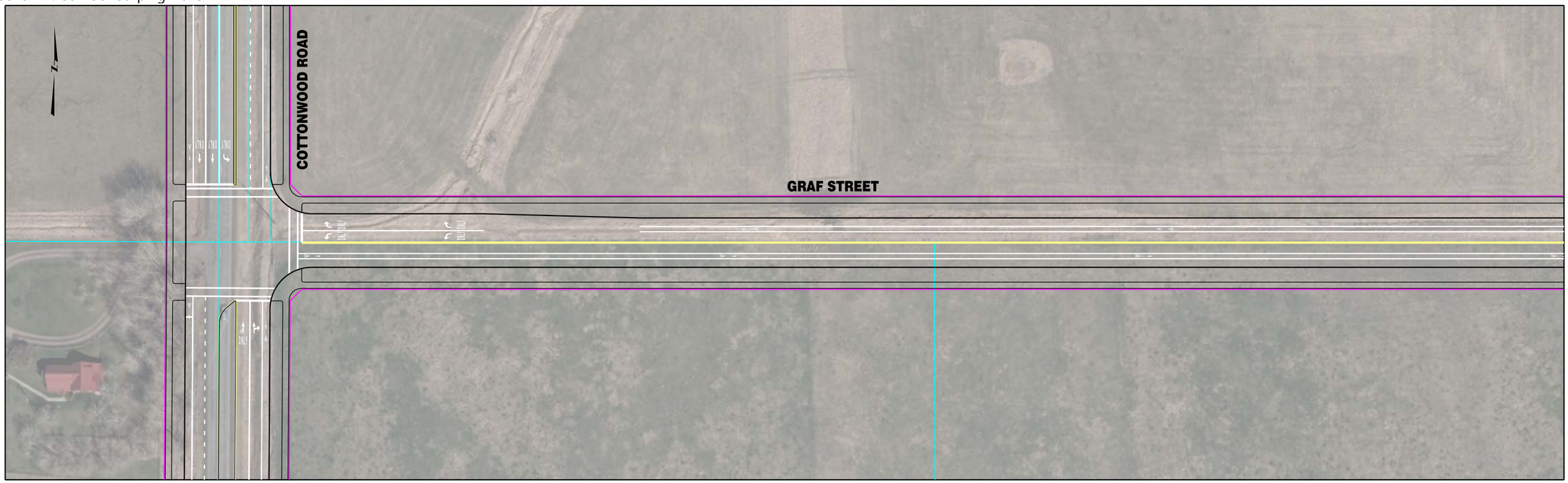

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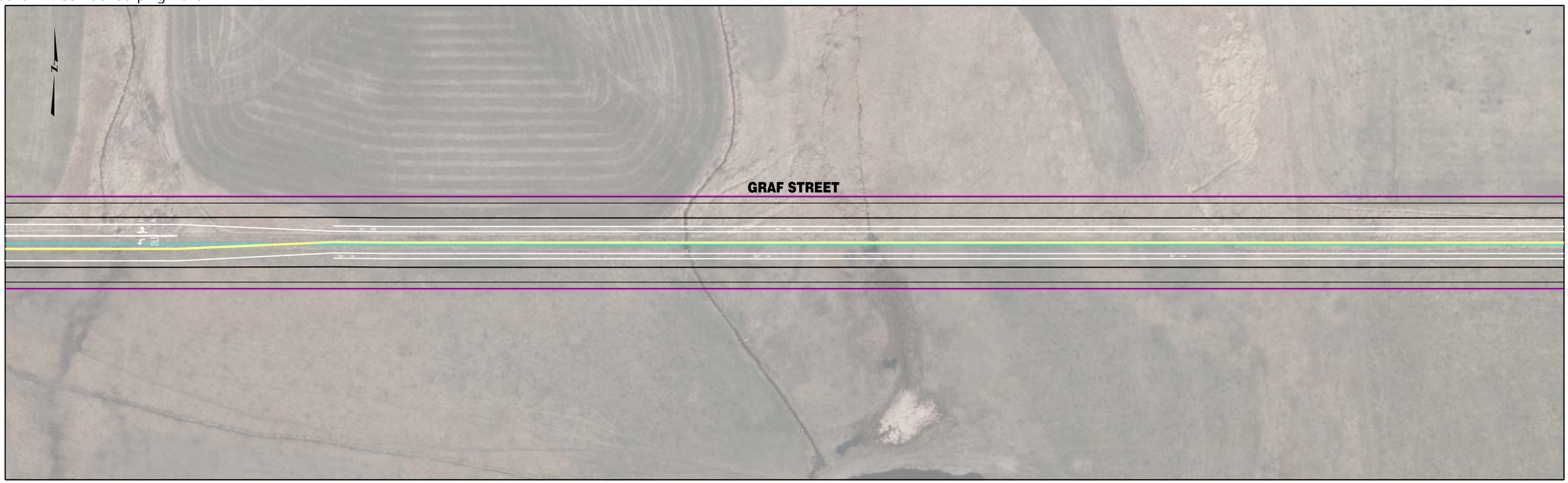

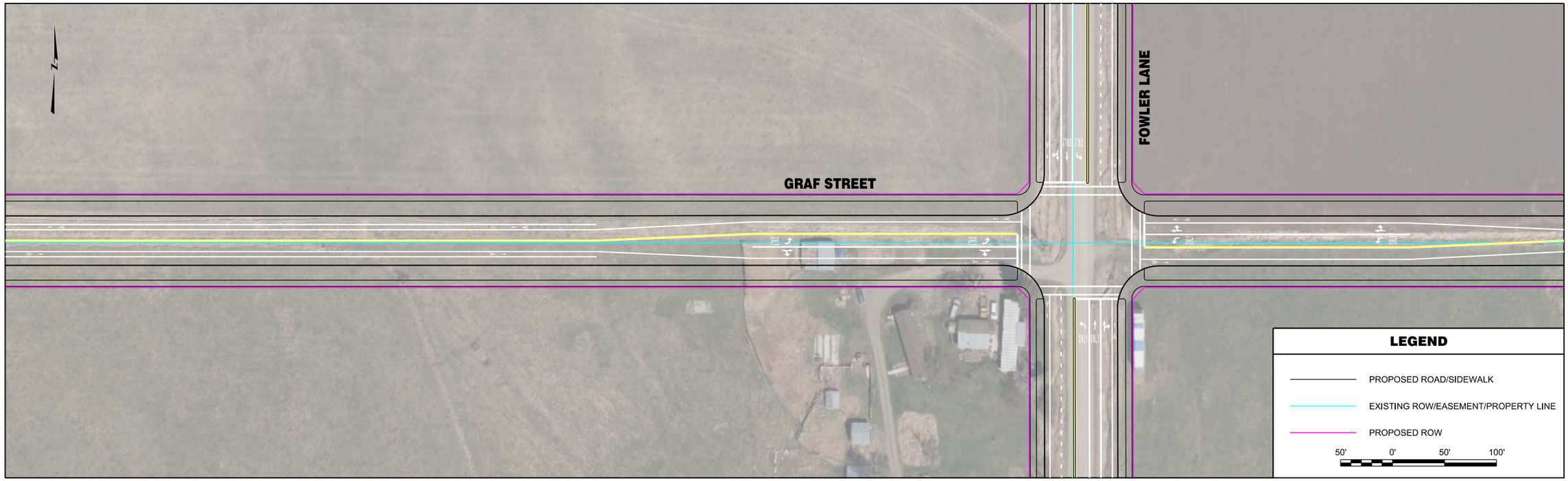

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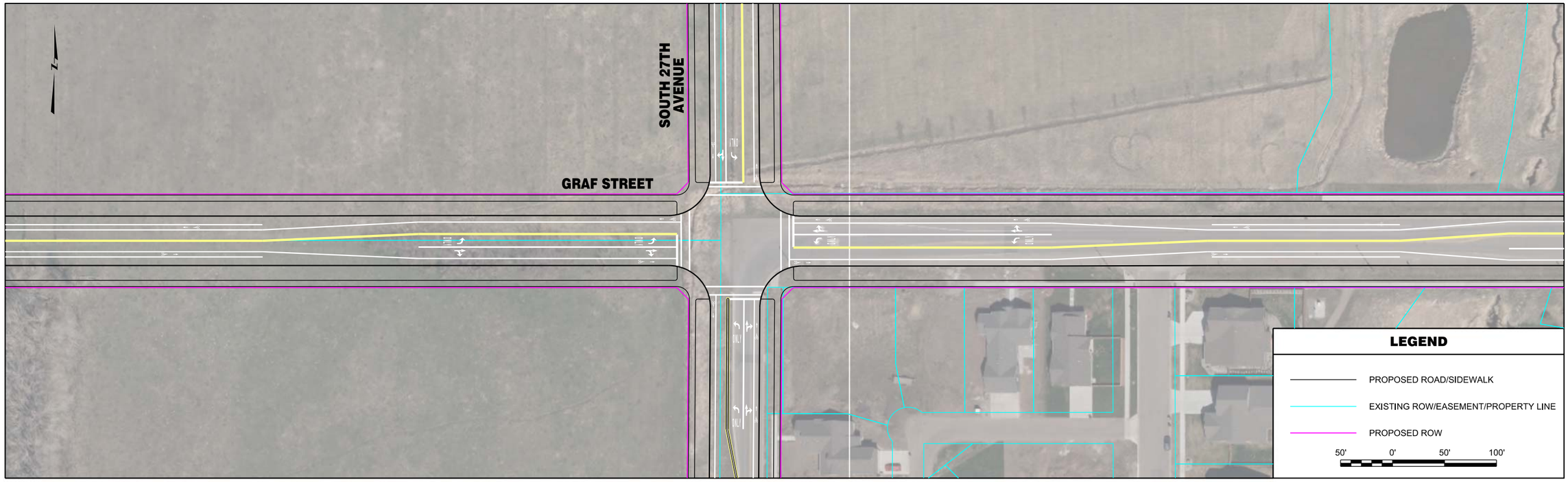

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\BB-Graf\15602RDPLNZBB1.dgn 1/26/2017 3:20:53 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GRAF STREET STRIPING PLAN**

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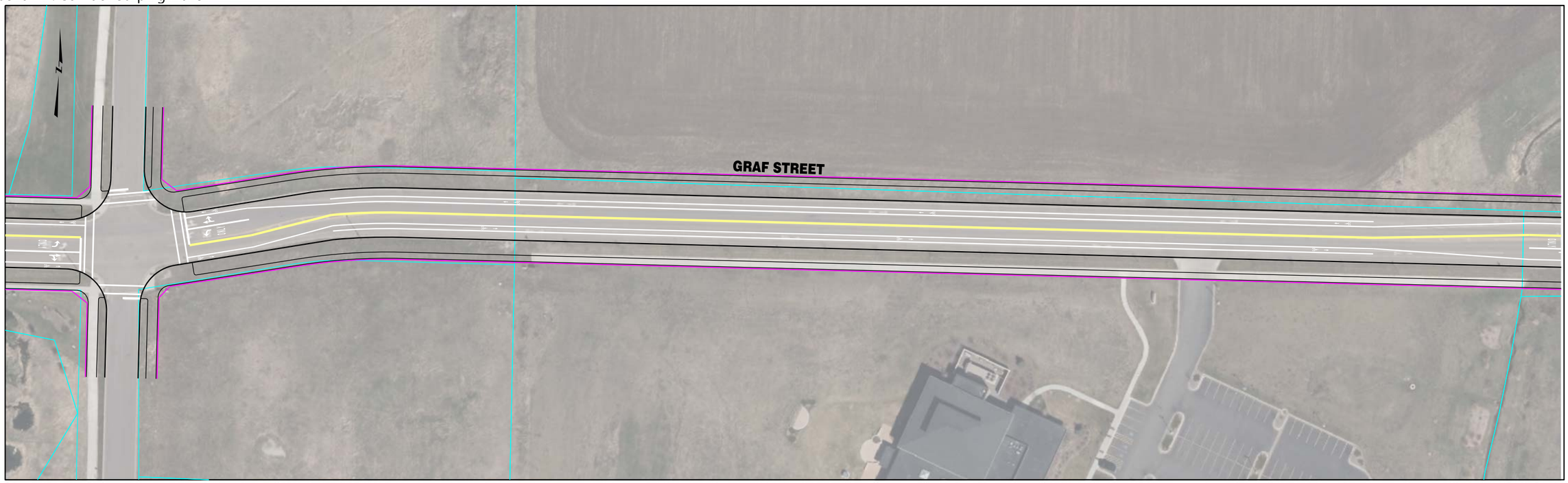

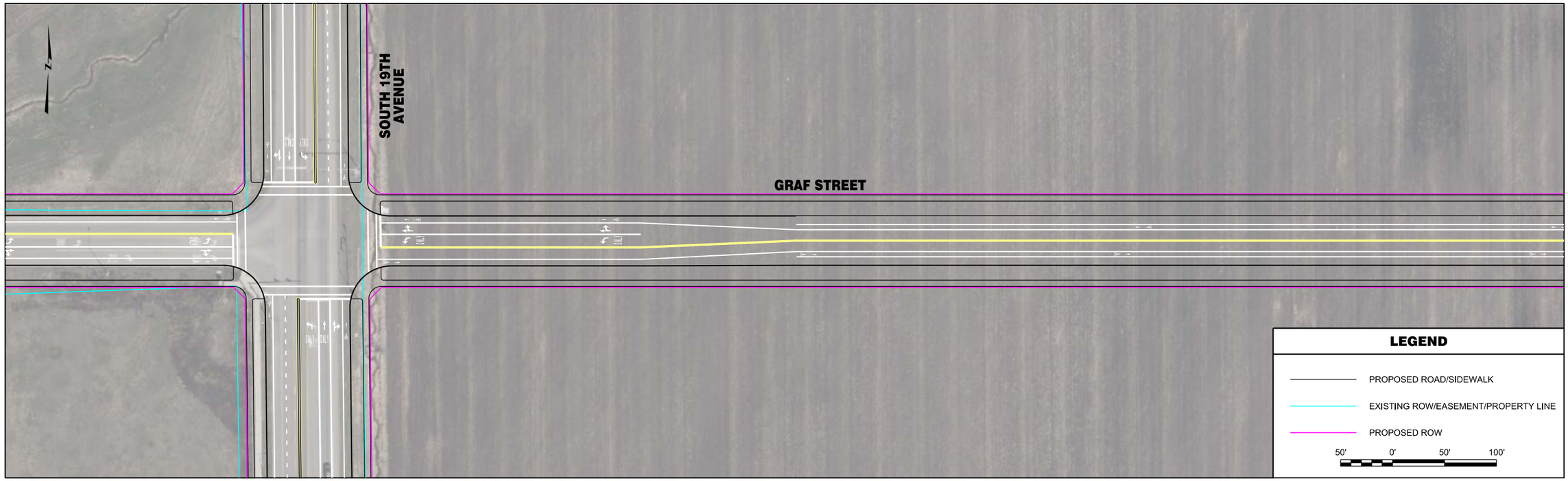

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\BB-Graf\15602RDPLNZBB2.dgn 1/26/2017 3:21:01 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GRAF STREET STRIPING PLAN**	SHEET Page 184 **4**

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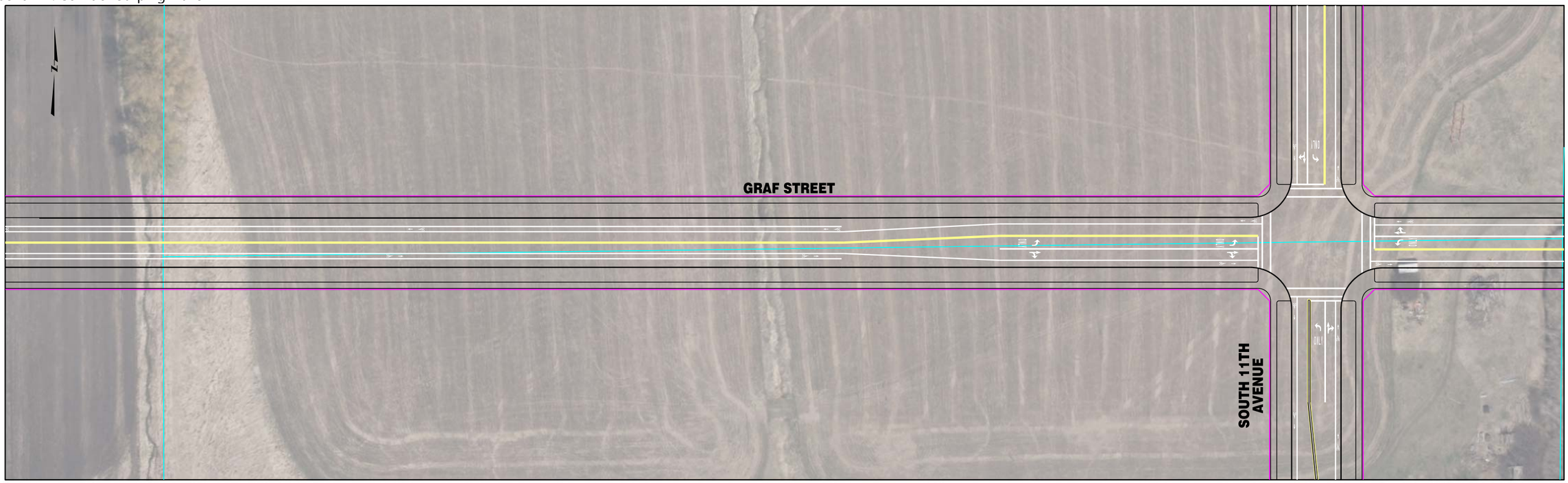

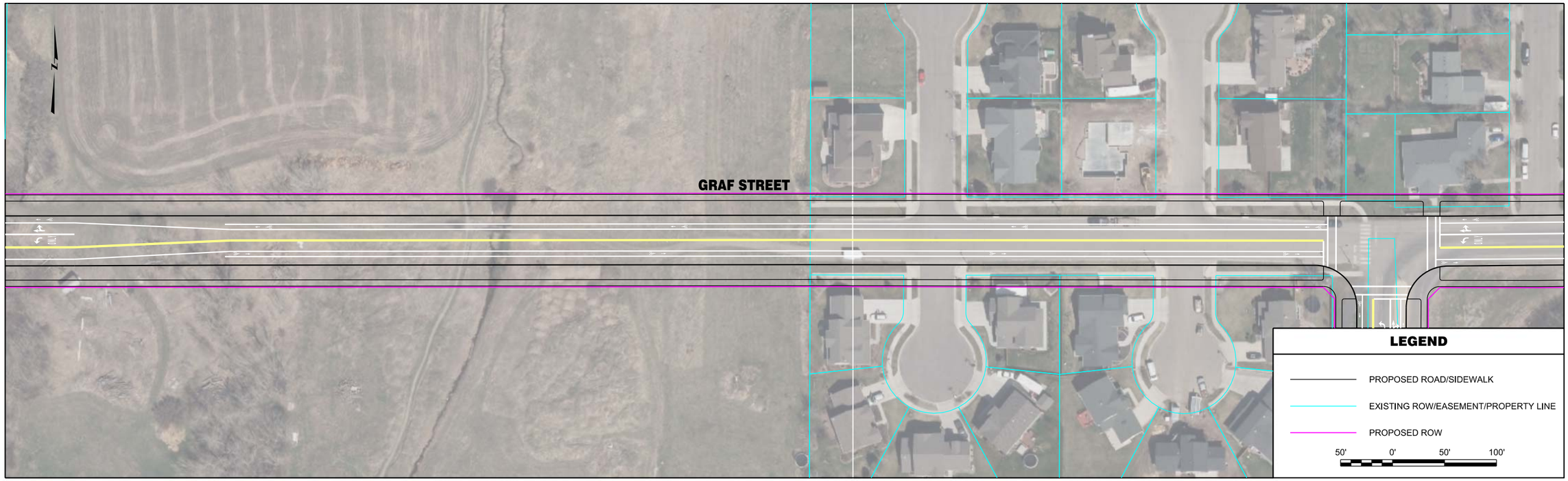

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\BB-Graf\15602RDPLNZBB2.dgn 1/26/2017 3:21:09 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GRAF STREET STRIPING PLAN**	SHEET Page 185 **5**

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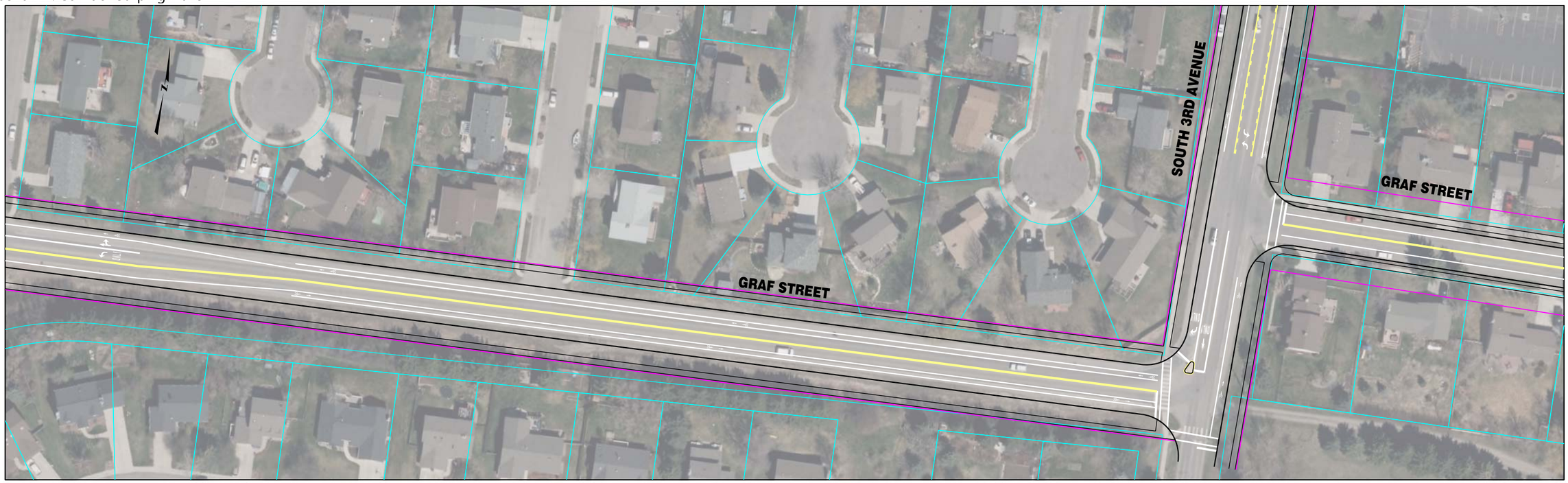

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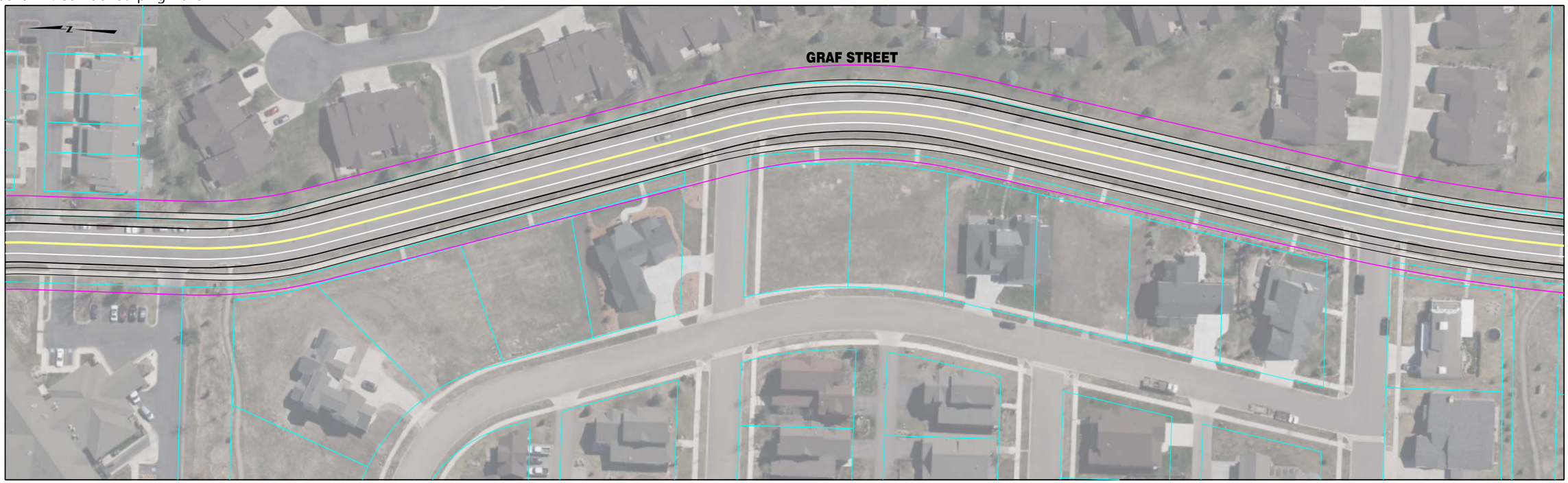

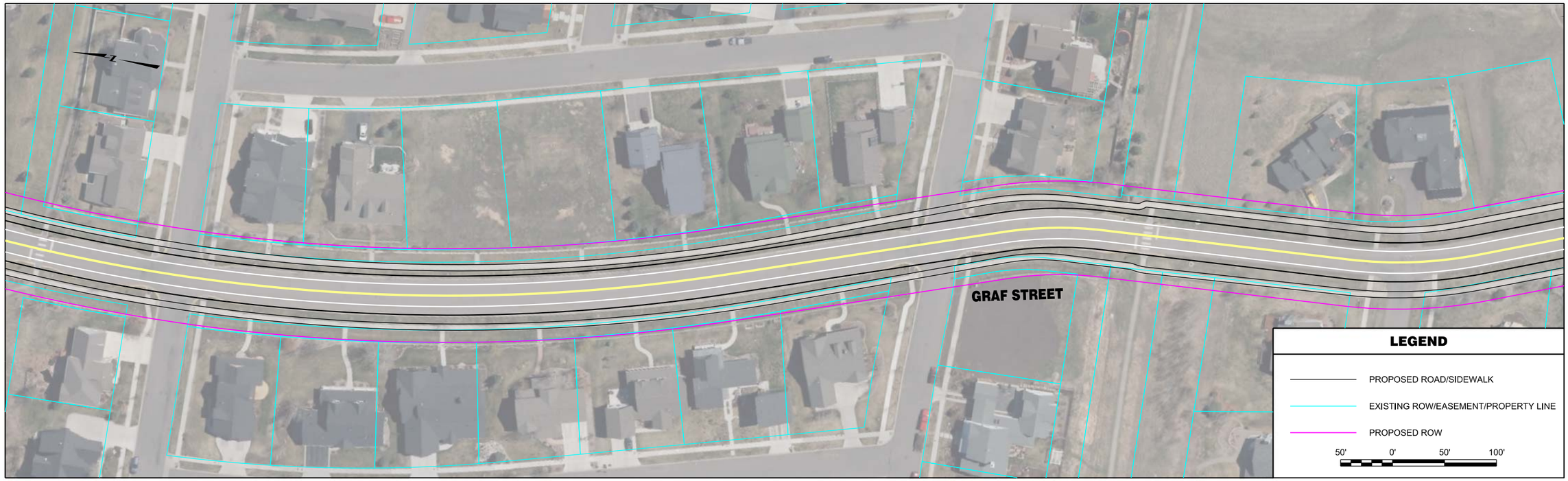

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\BB-Graf\15602RDPLNZBB3.dgn 1/26/2017 3:21:24 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GRAF STREET STRIPING PLAN**

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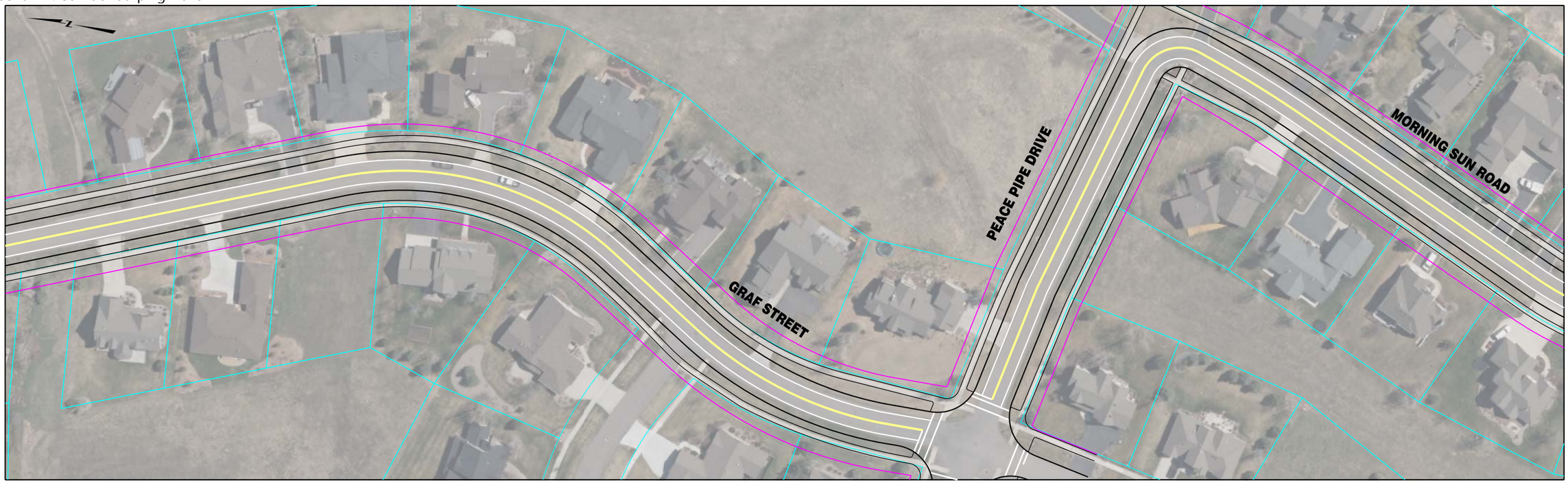

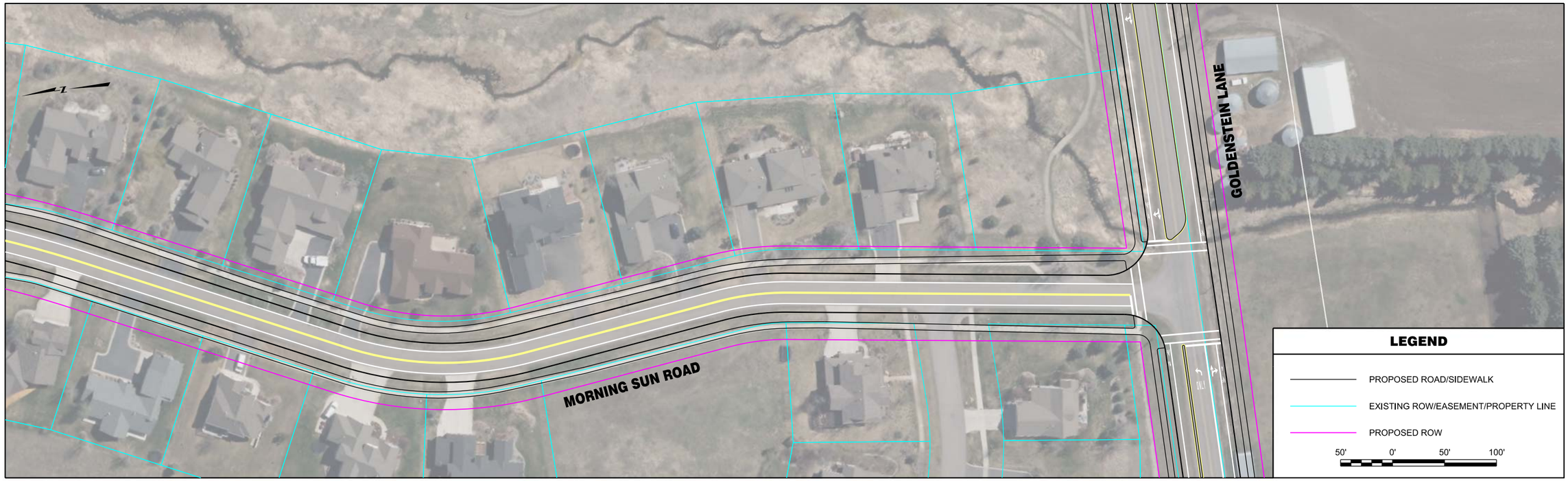

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\BB-Graf\15602RDPLNZBB3.dgn 1/26/2017 3:21:31 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **GRAF STREET STRIPING PLAN**

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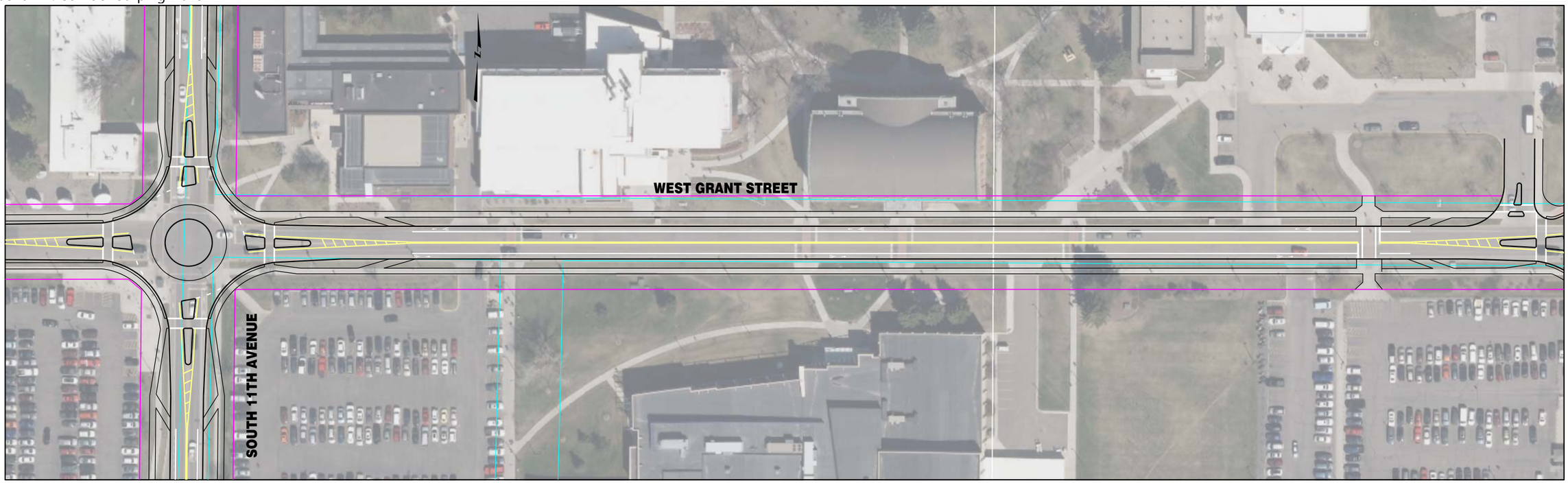

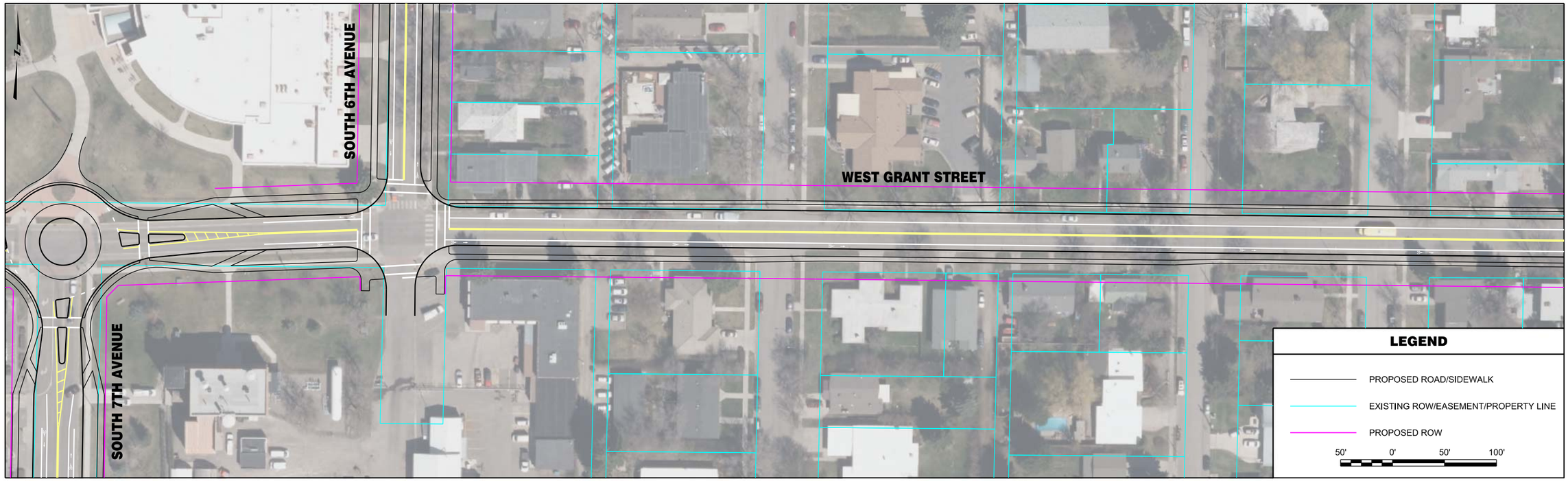

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\ZZ-Grant\15602RDPLNZZZ1.dgn 1/26/2017 3:19:45 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **WEST GRANT STREET STRIPING PLAN**

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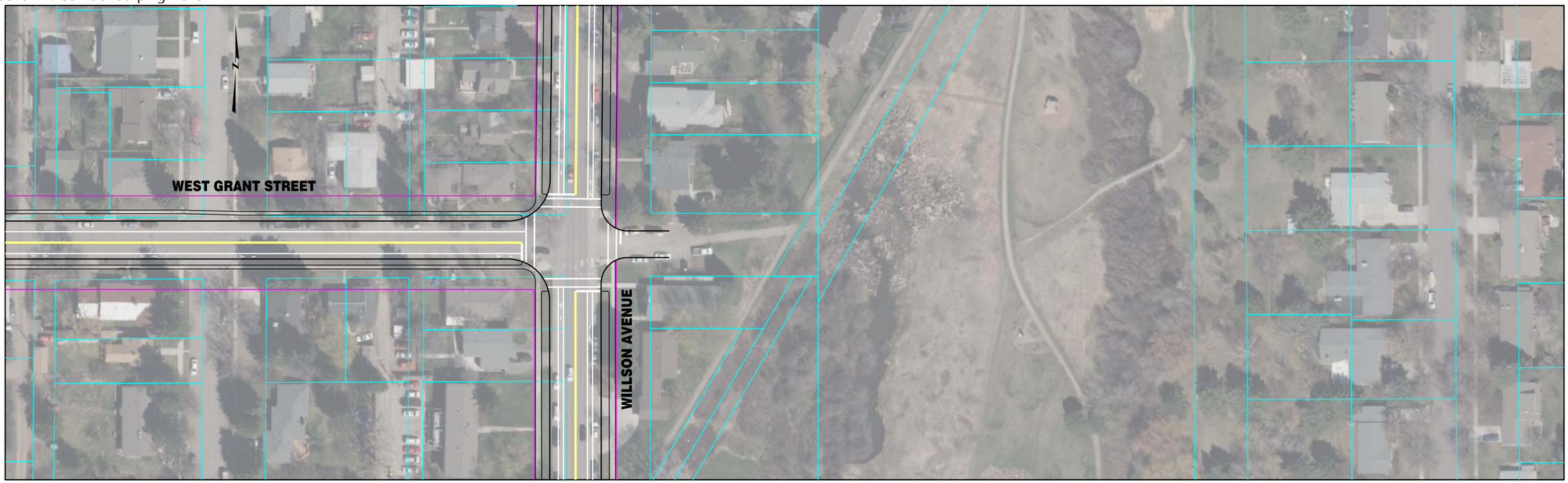

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- PROPOSED ROW

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\ZZ-Grant\15602RDPLNZZZ1.dgn 1/26/2017 3:19:52 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **WEST GRANT STREET STRIPING PLAN**	SHEET Page 190 **2**

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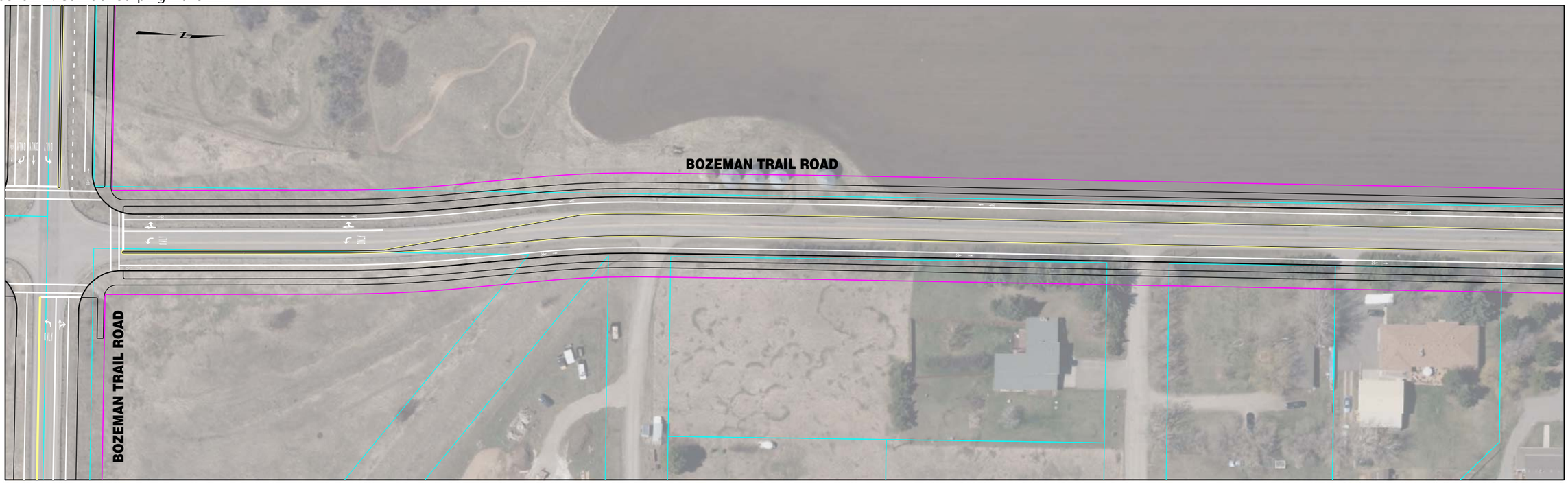

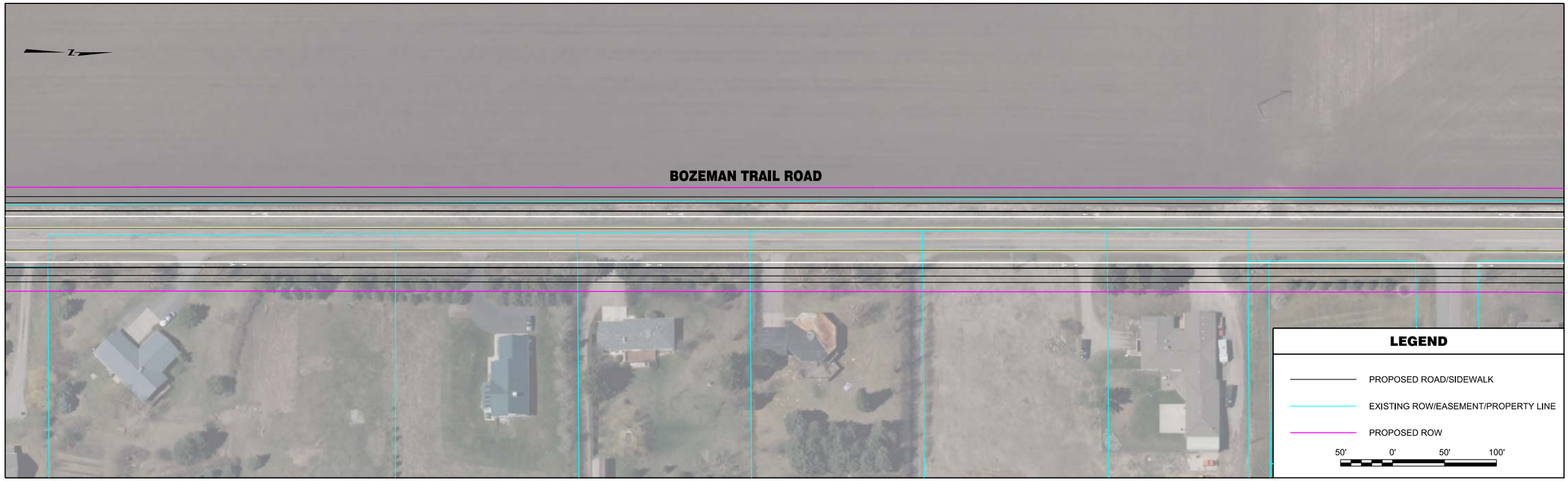

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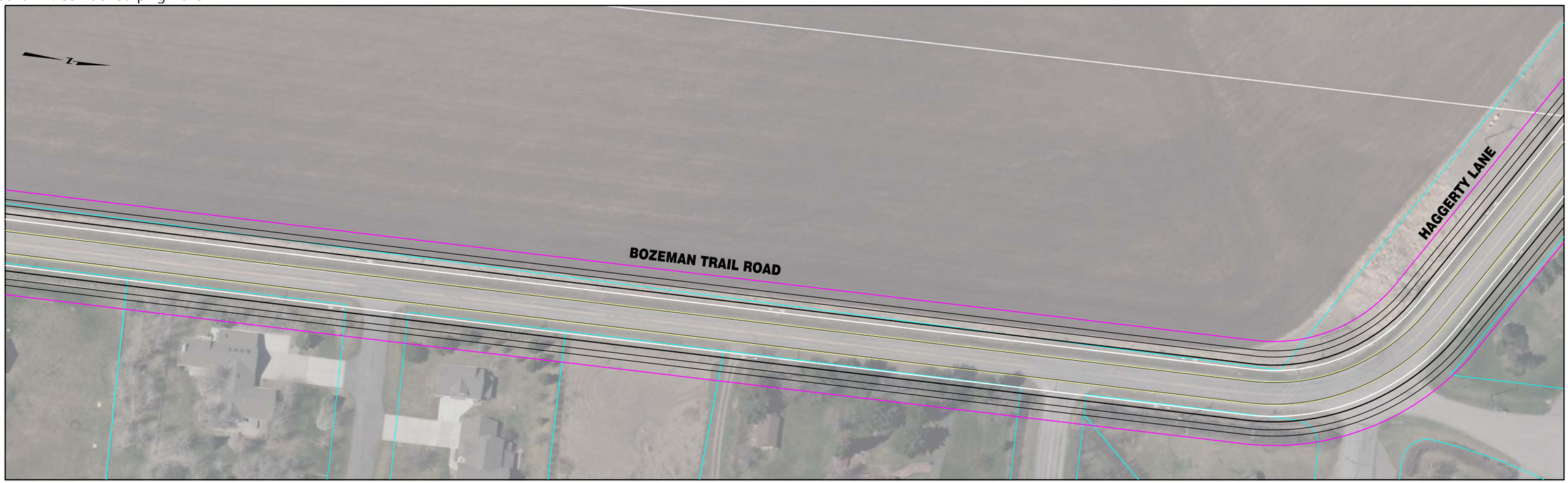

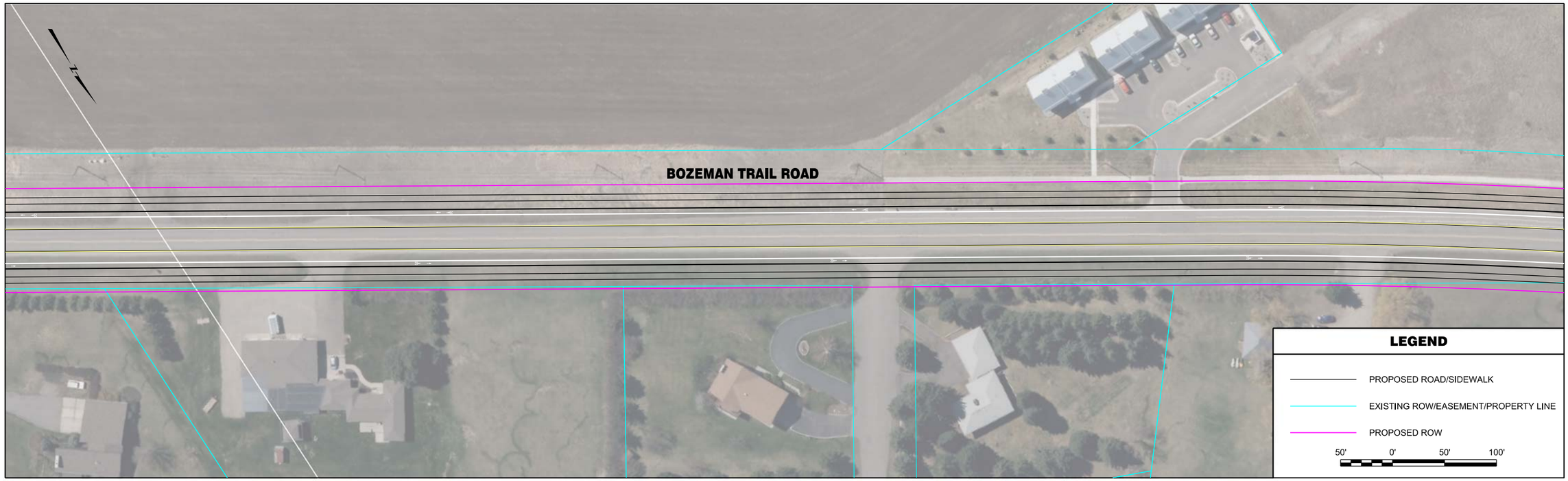

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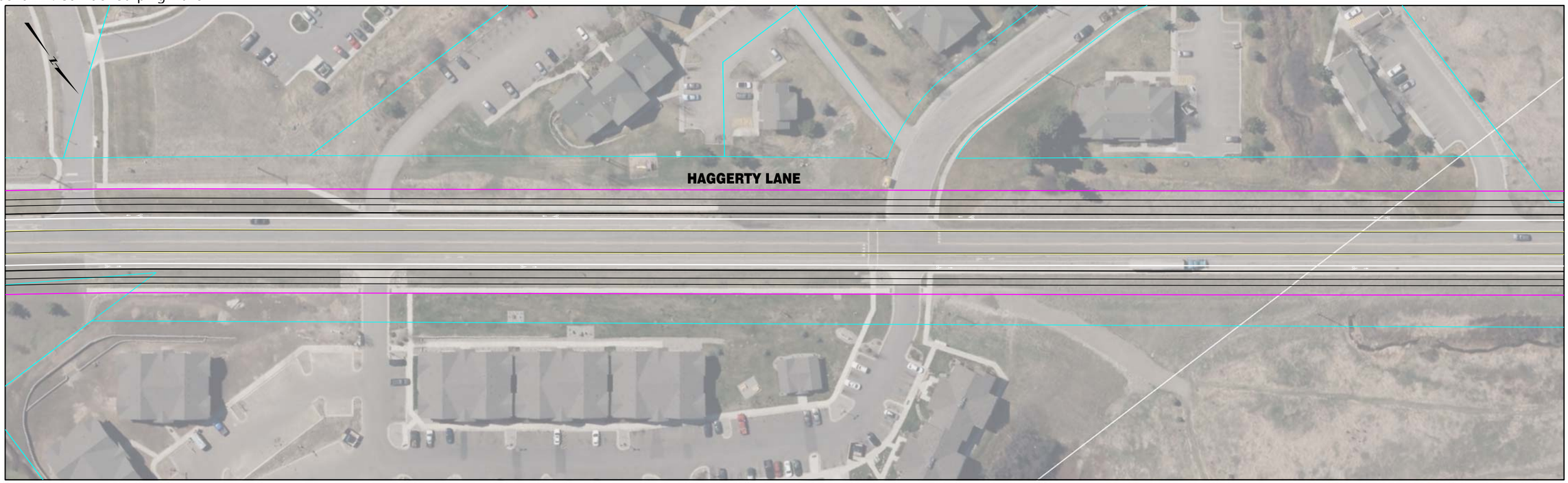

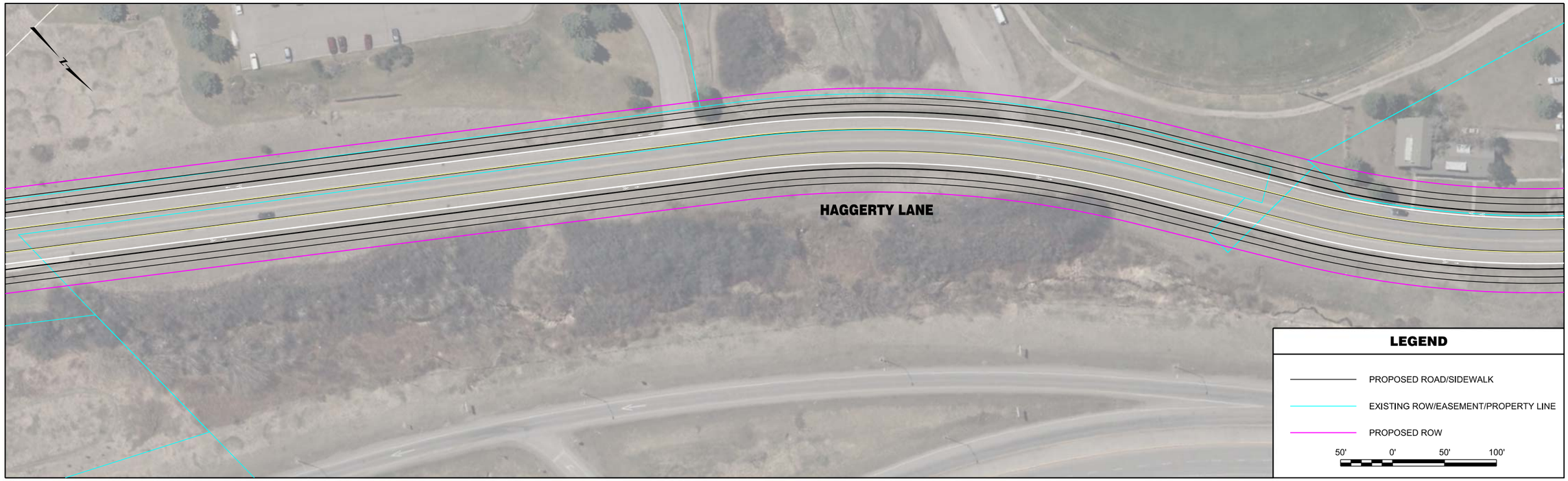

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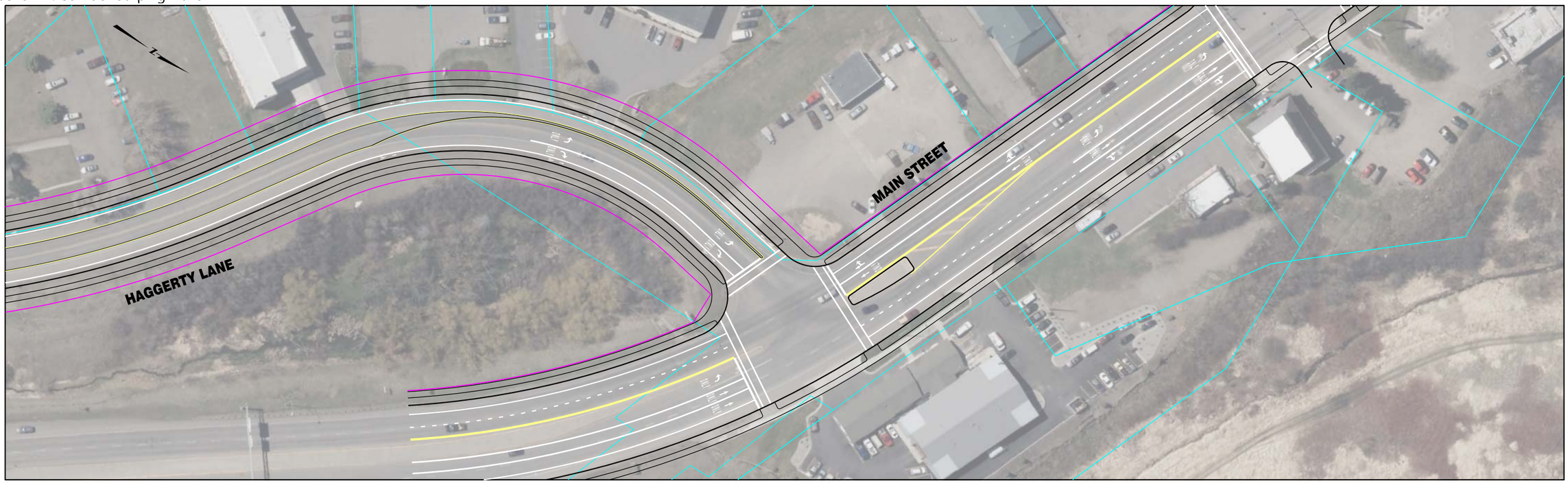

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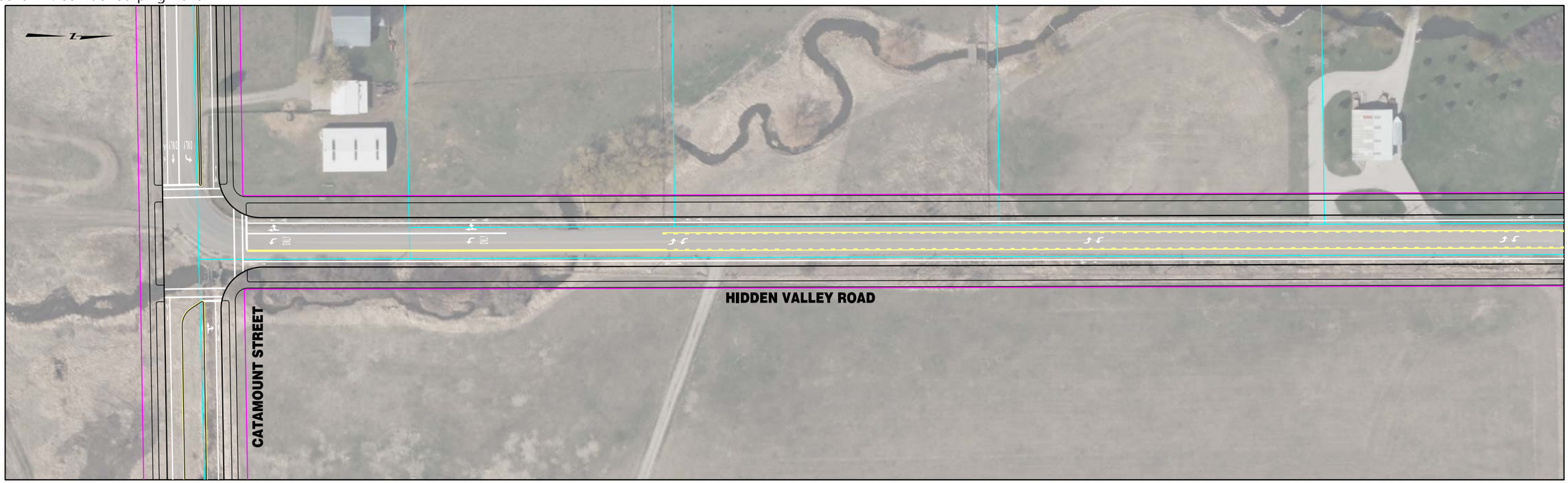

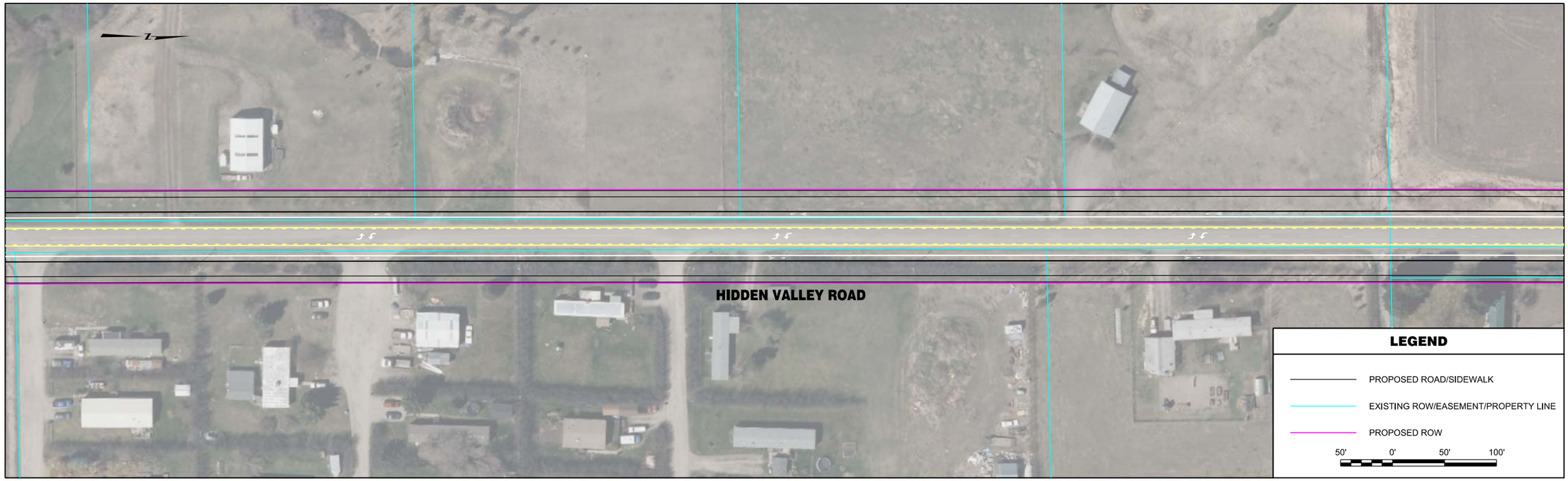

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZHH1.dgn 1/26/2017 3:18:54 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **HIDDEN VALLEY ROAD STRIPING PLAN**

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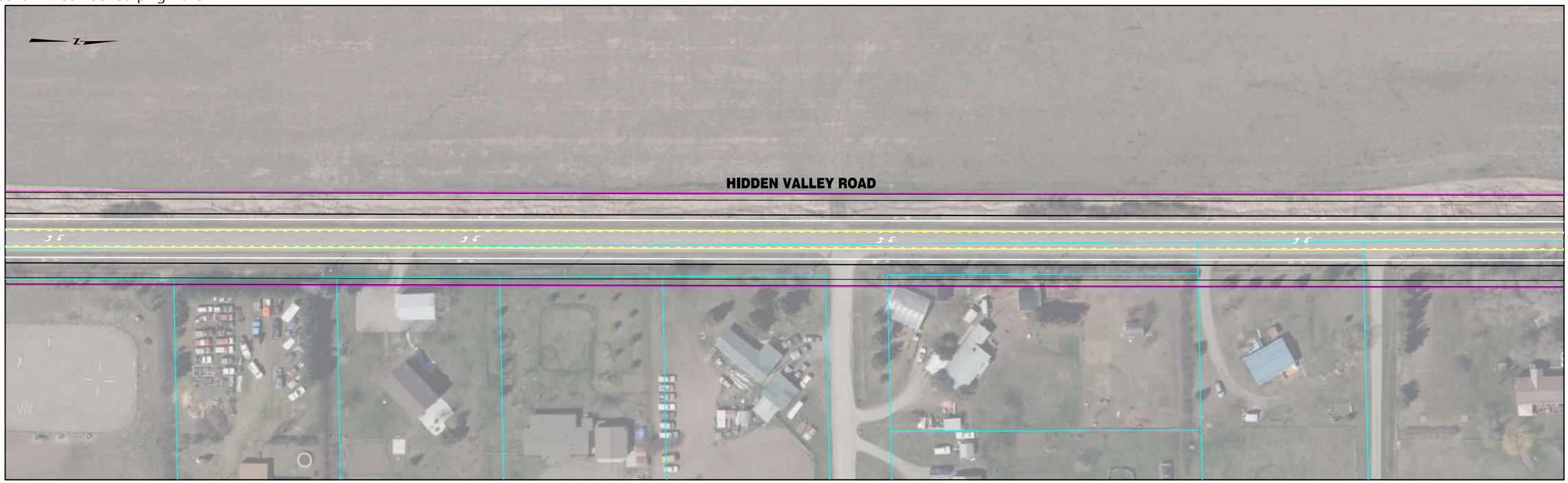

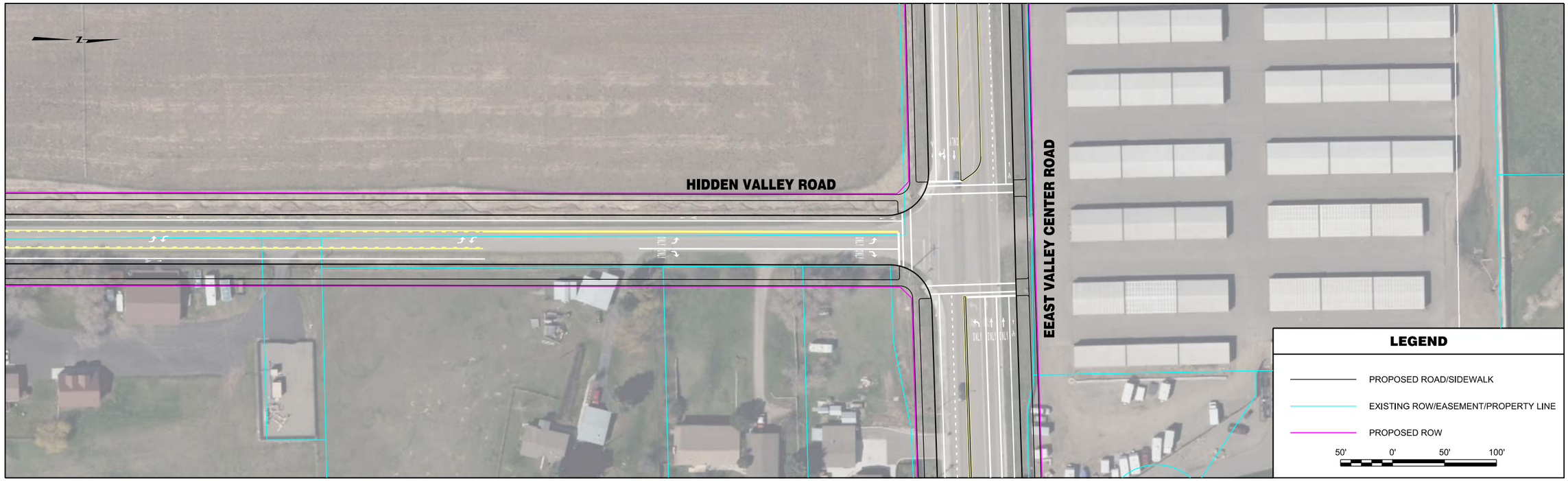

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZHH1.dgn 1/26/2017 3:19:01 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **HIDDEN VALLEY ROAD STRIPING PLAN**

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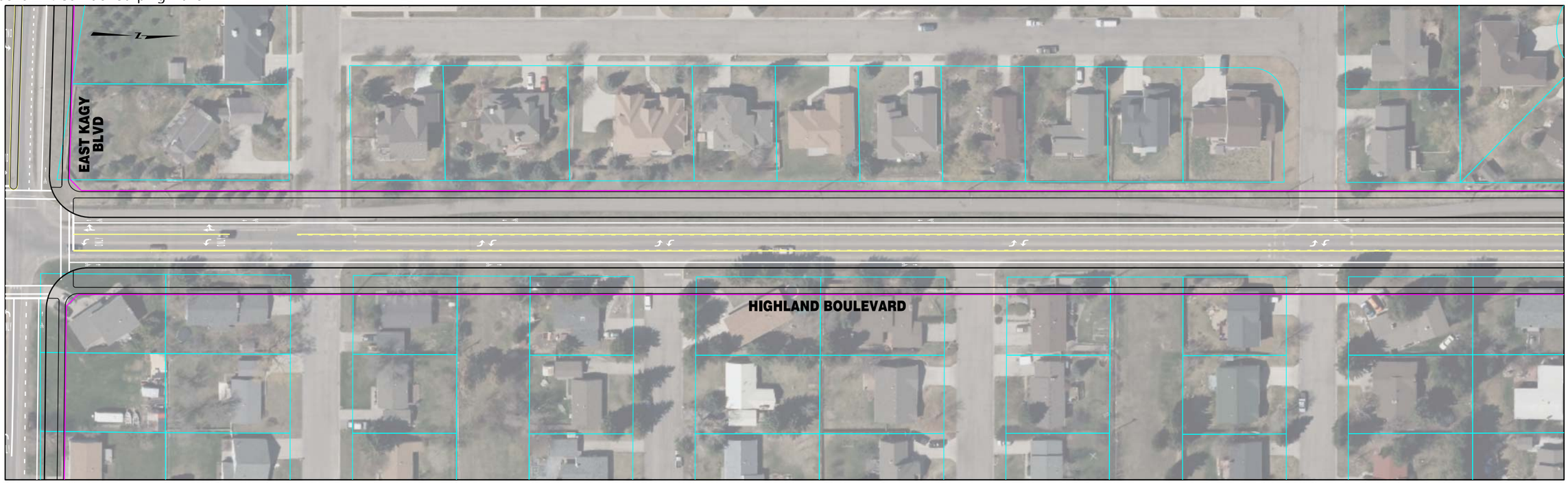

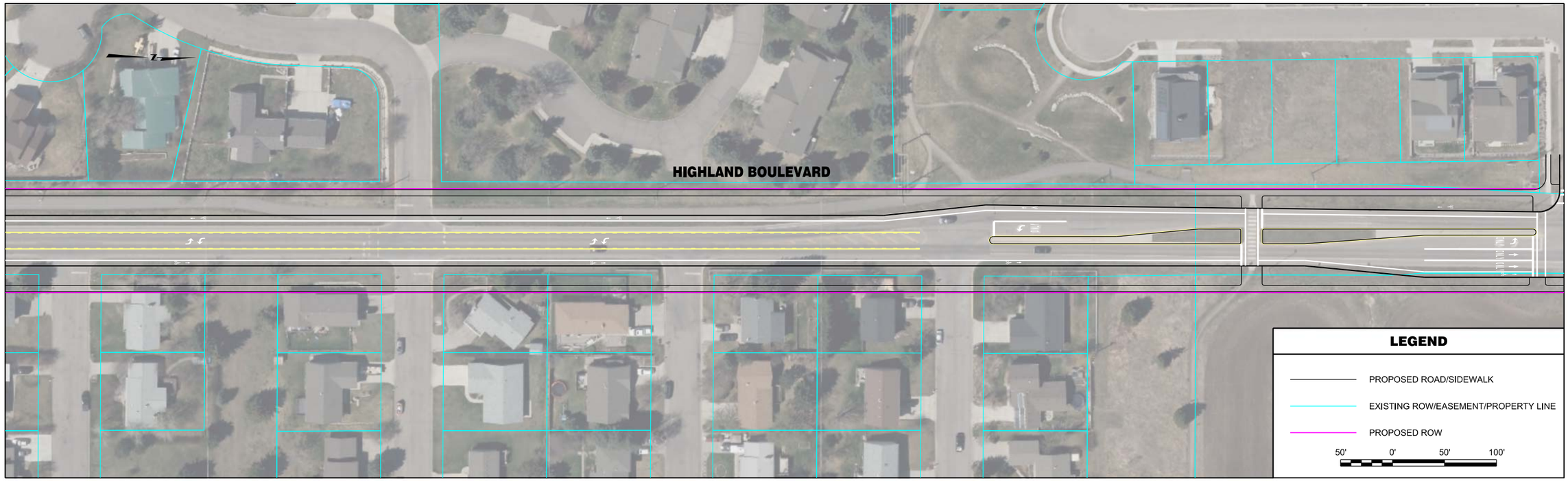

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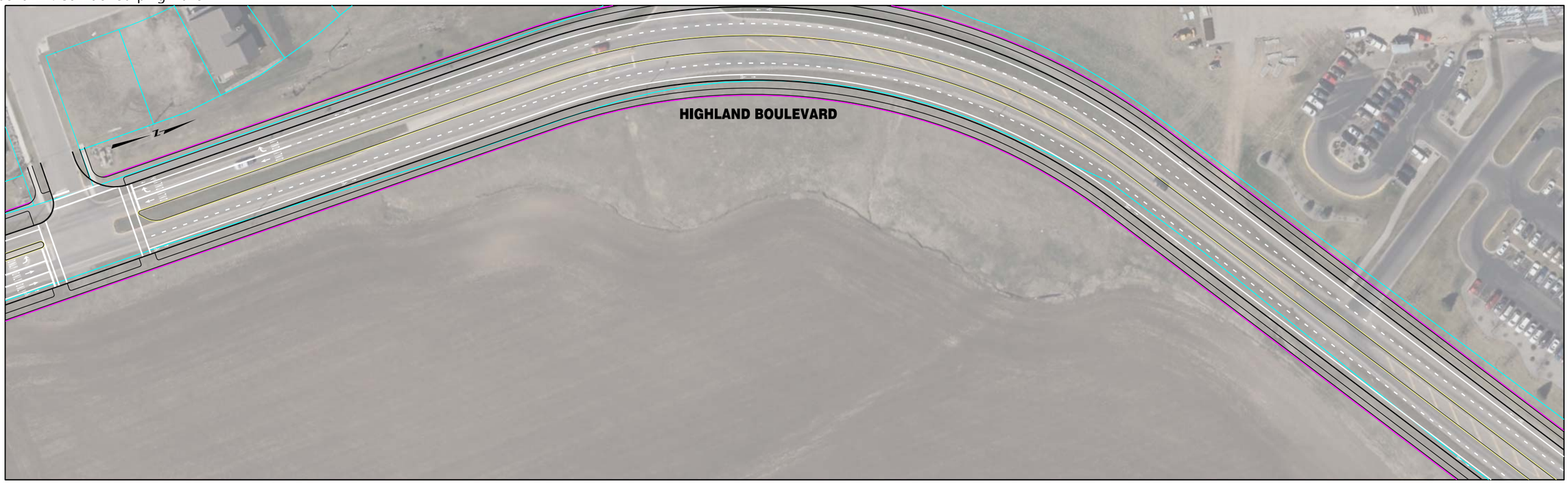

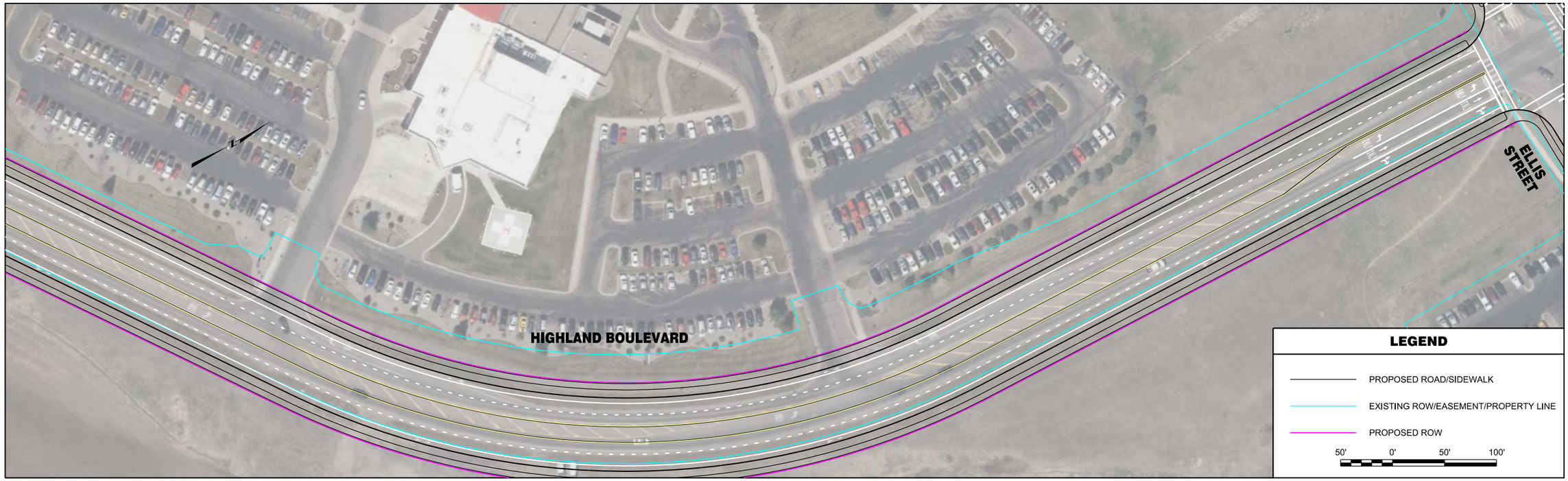

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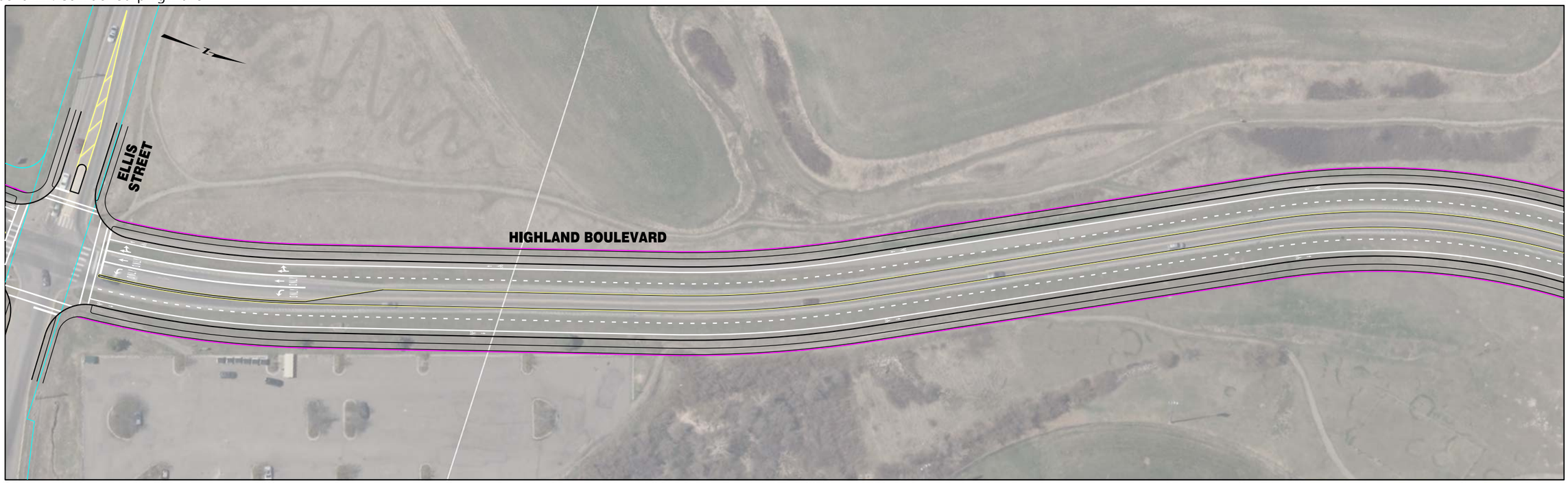

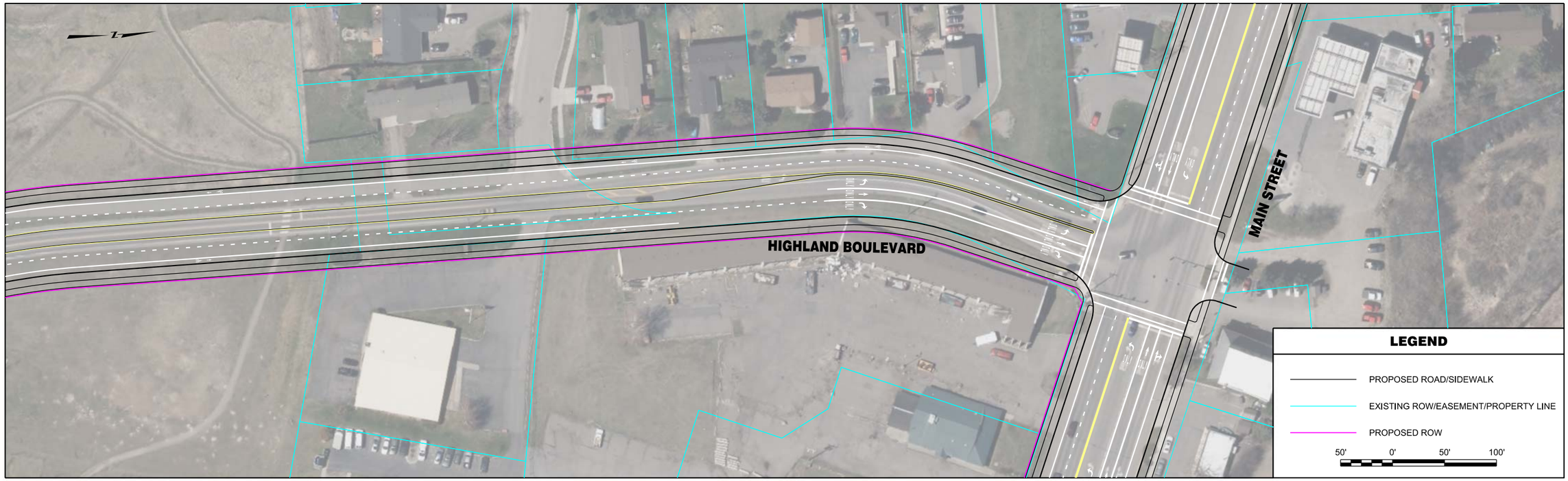

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\E-Highland\15602RDPLNZE1.dgn 1/26/2017 3:18:11 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE **BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **HIGHLAND BOULEVARD STRIPING PLAN**	SHEET Page 199 **3**

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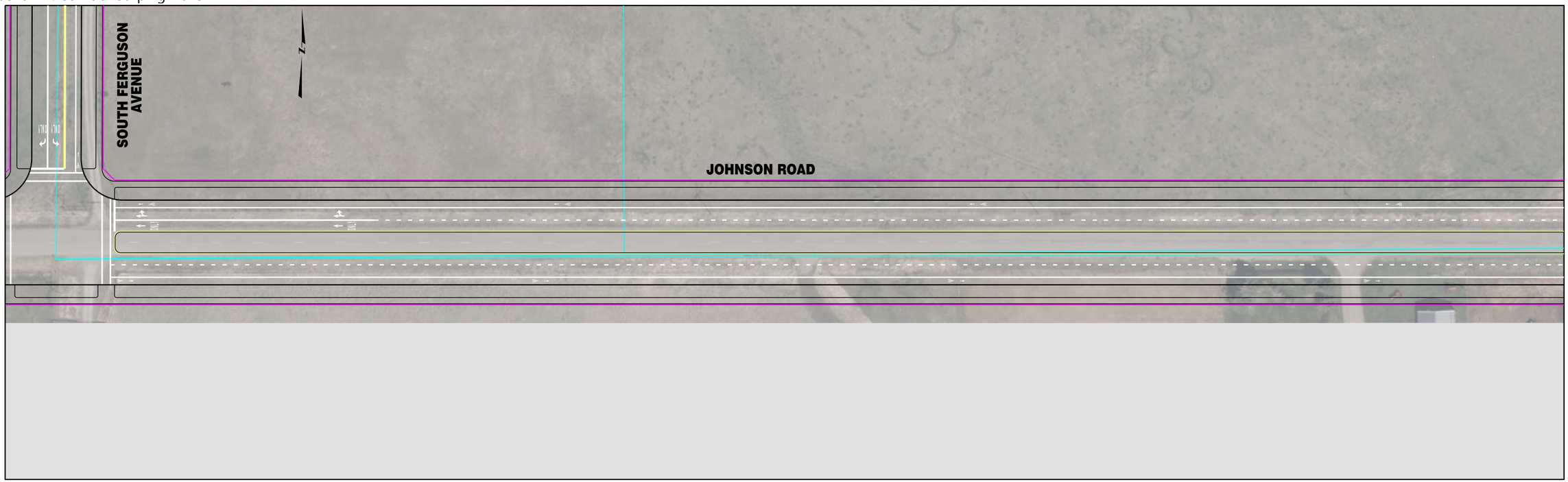

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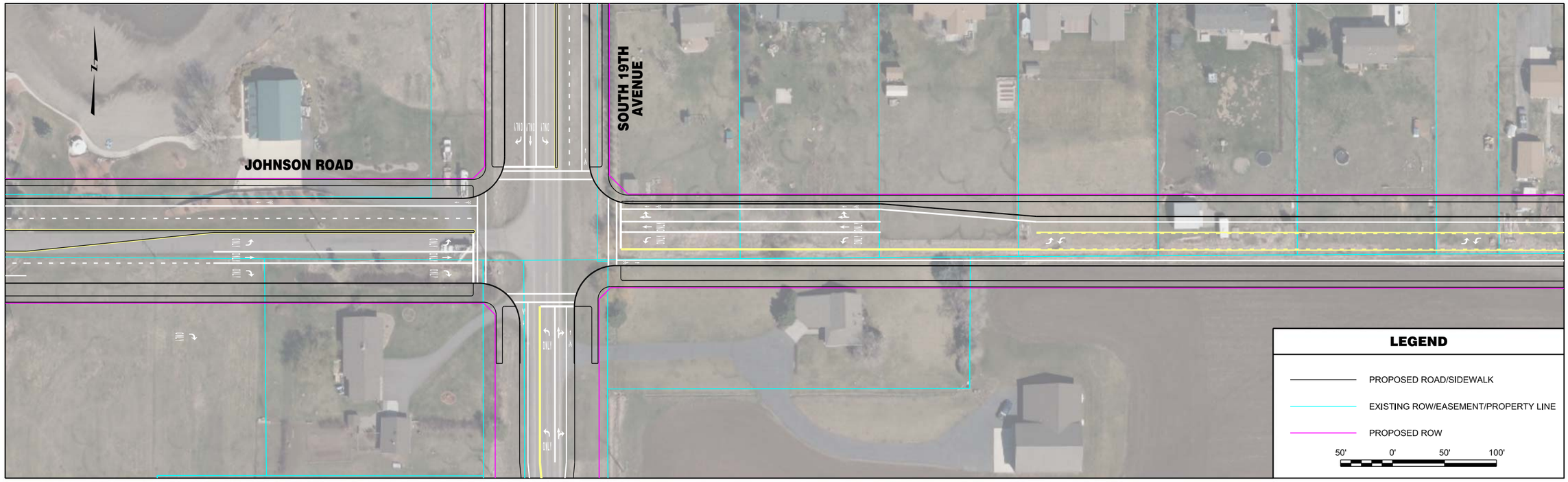

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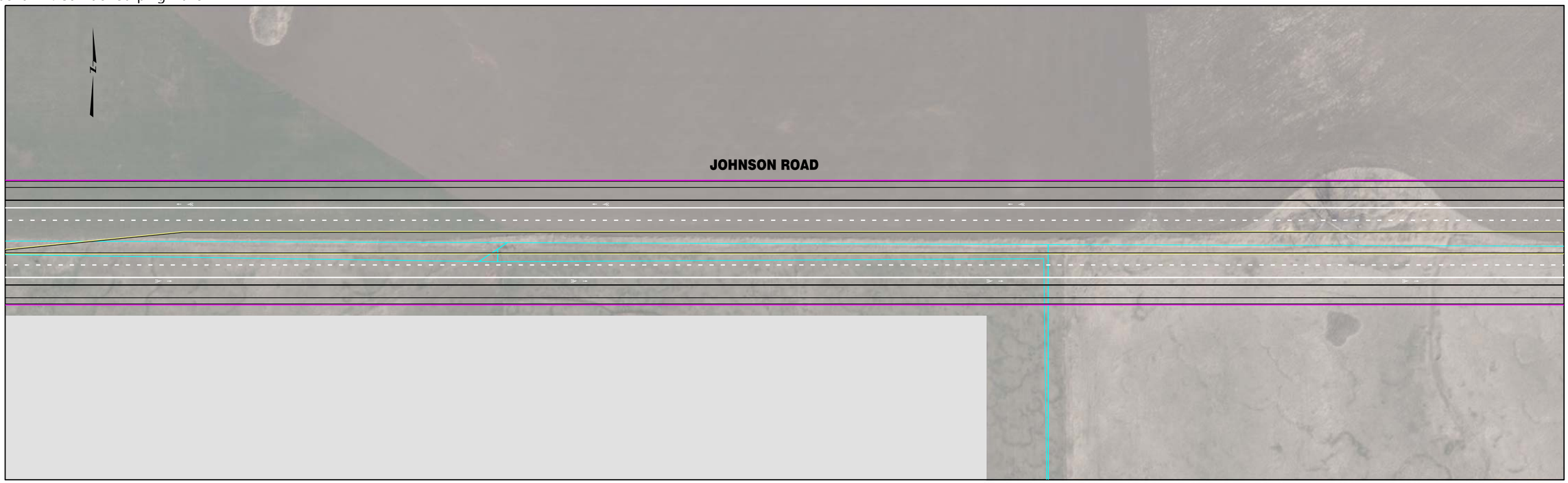

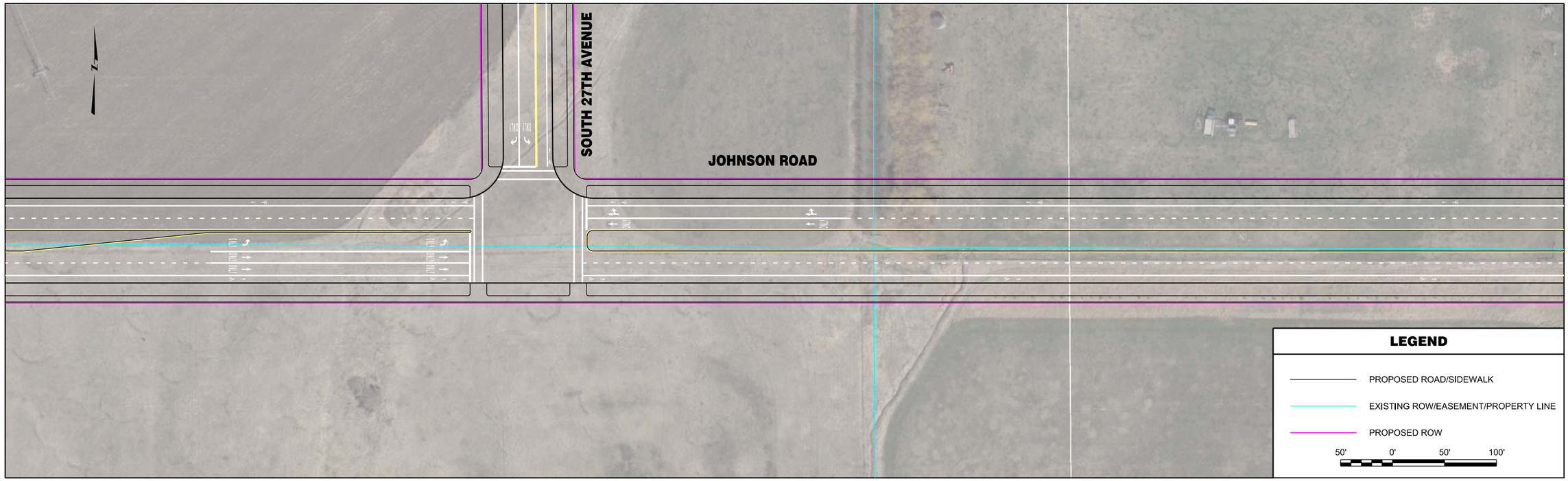

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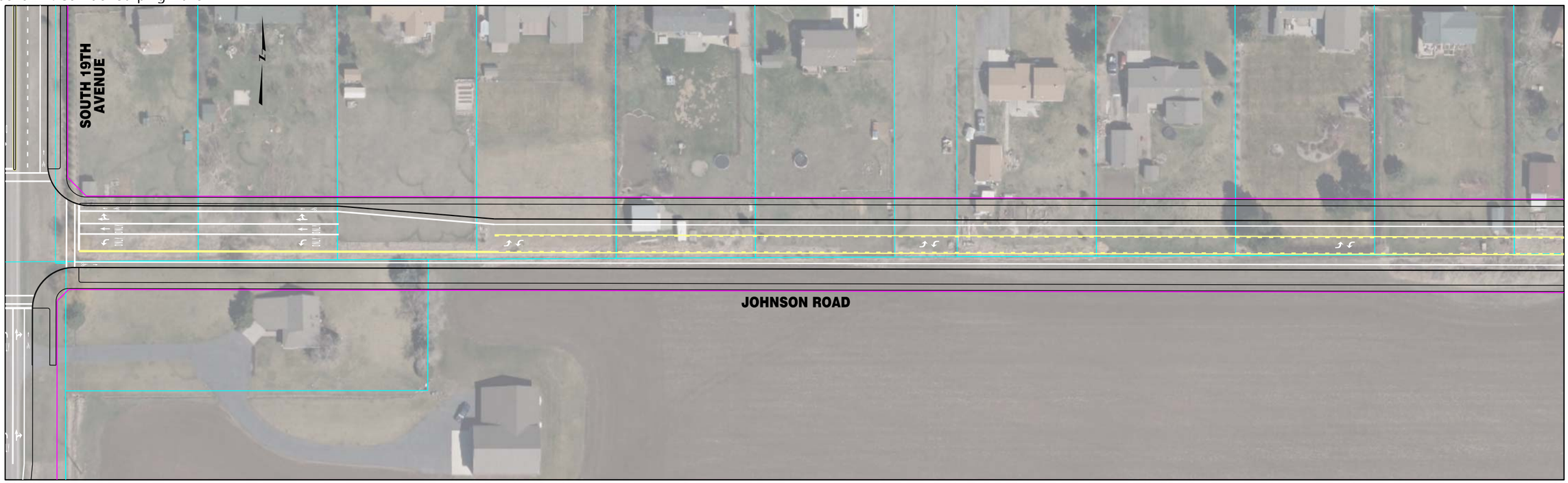

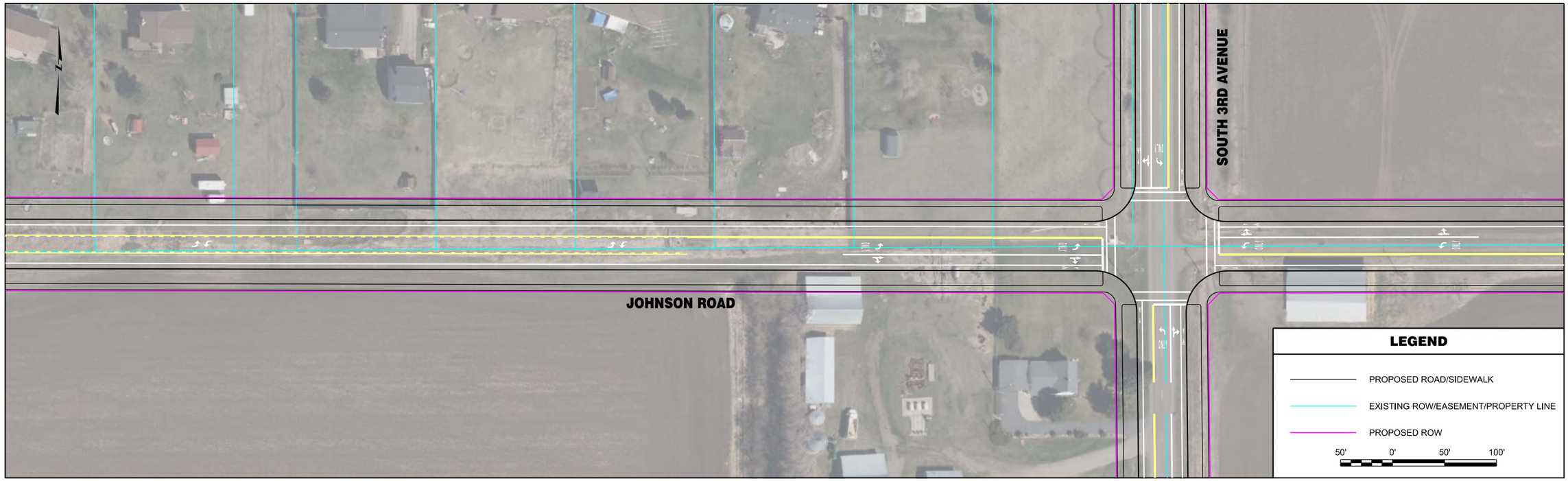

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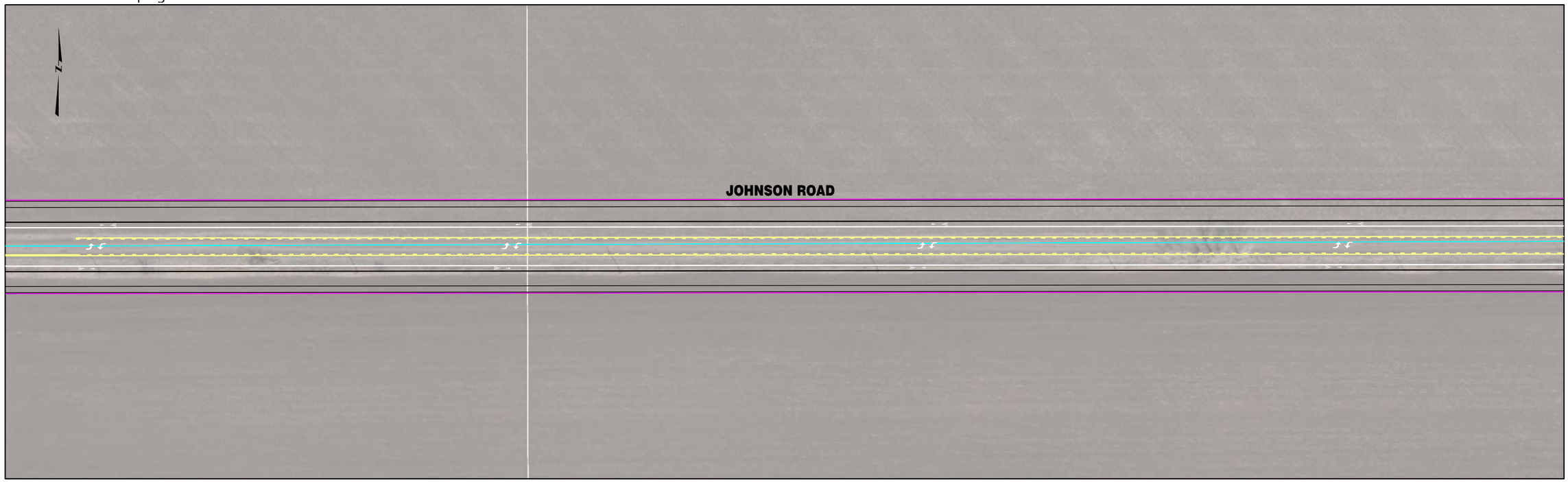

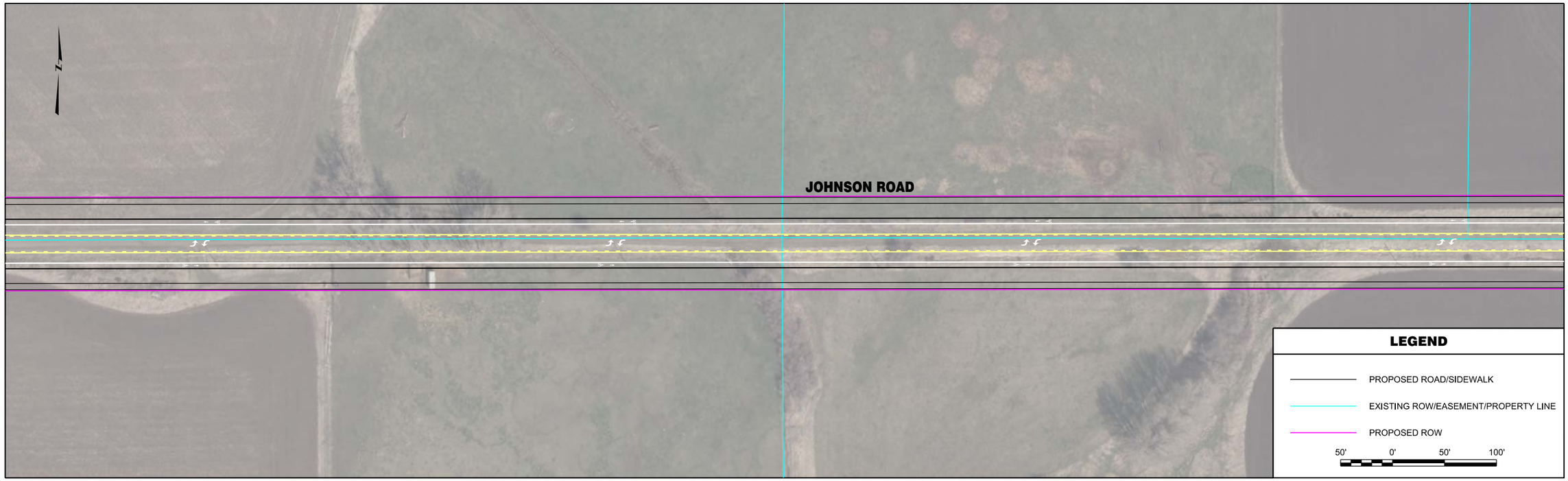

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\G-Johnson\15602RDPLNZG2.dgn 1/26/2017 3:14:43 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **JOHNSON ROAD STRIPING PLAN**

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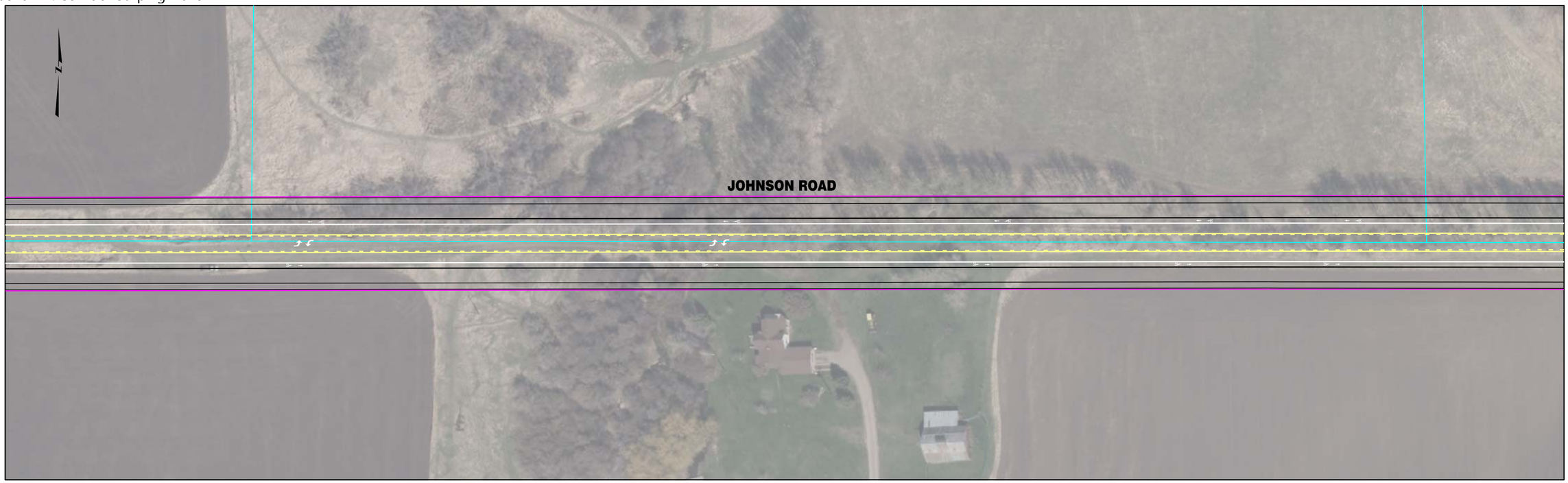

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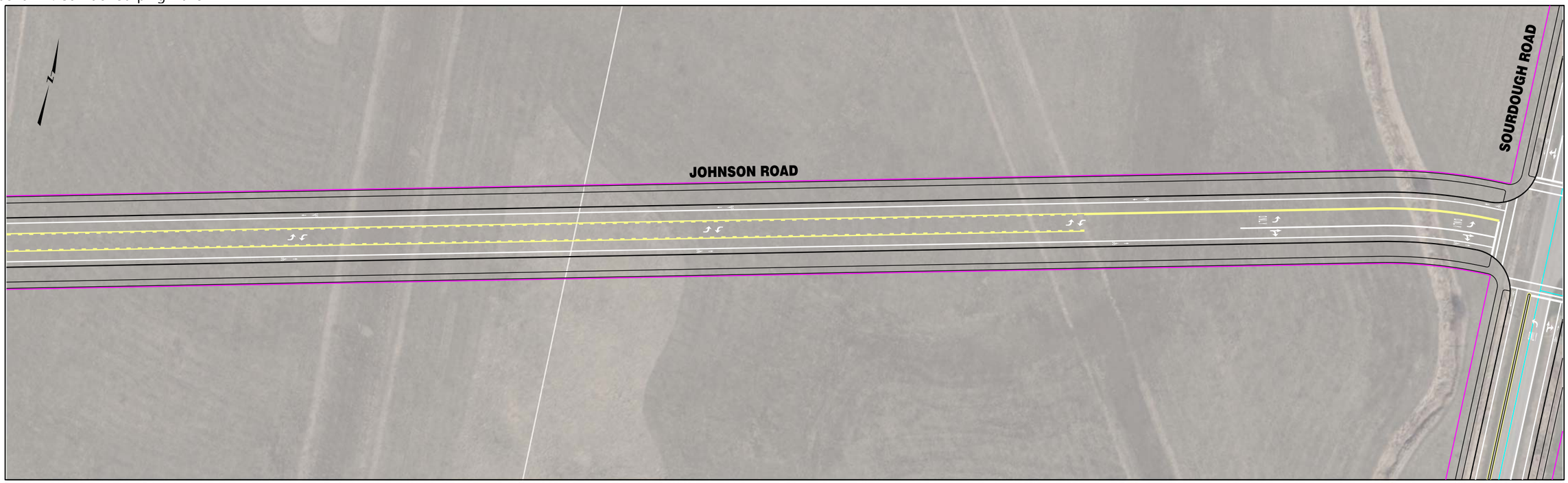

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LEGEND

- PROPOSED ROAD/SIDEWALK
- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\G-Johnson\15602RDPLNZG3.dgn 1/26/2017 3:15:07 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **JOHNSON ROAD STRIPING PLAN**

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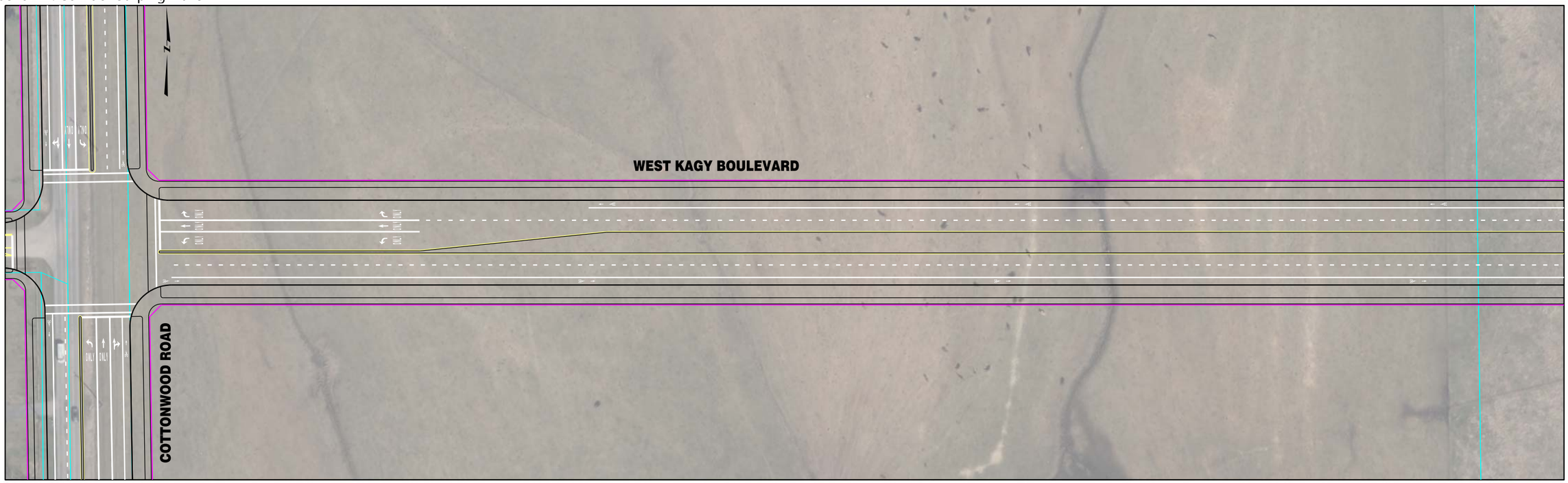

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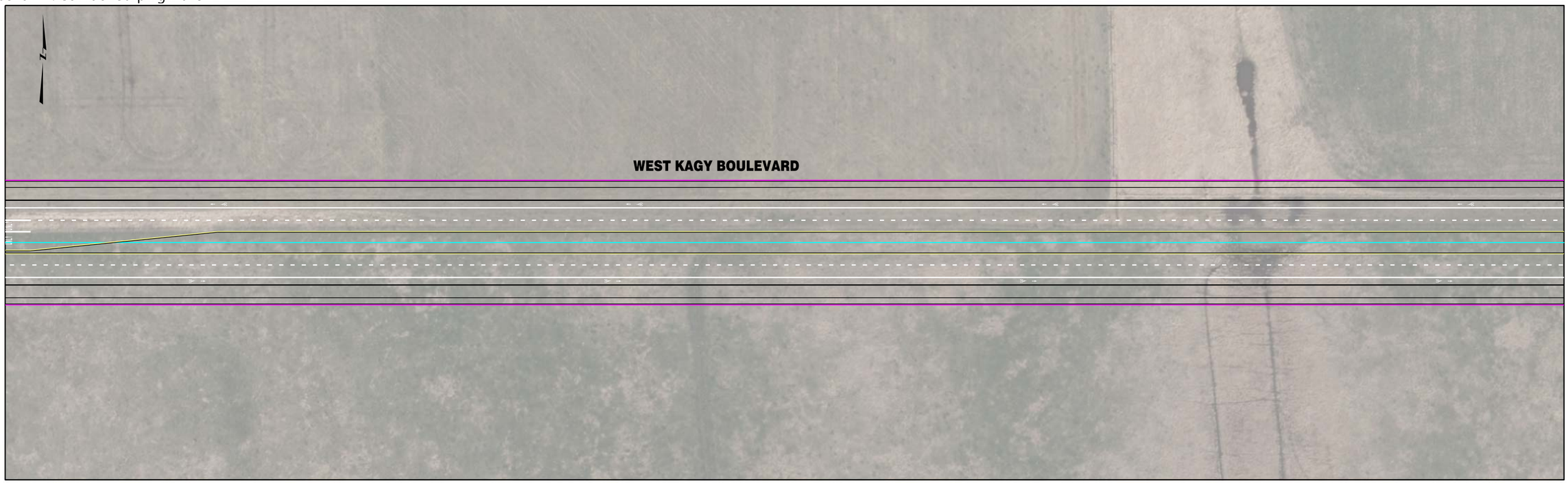

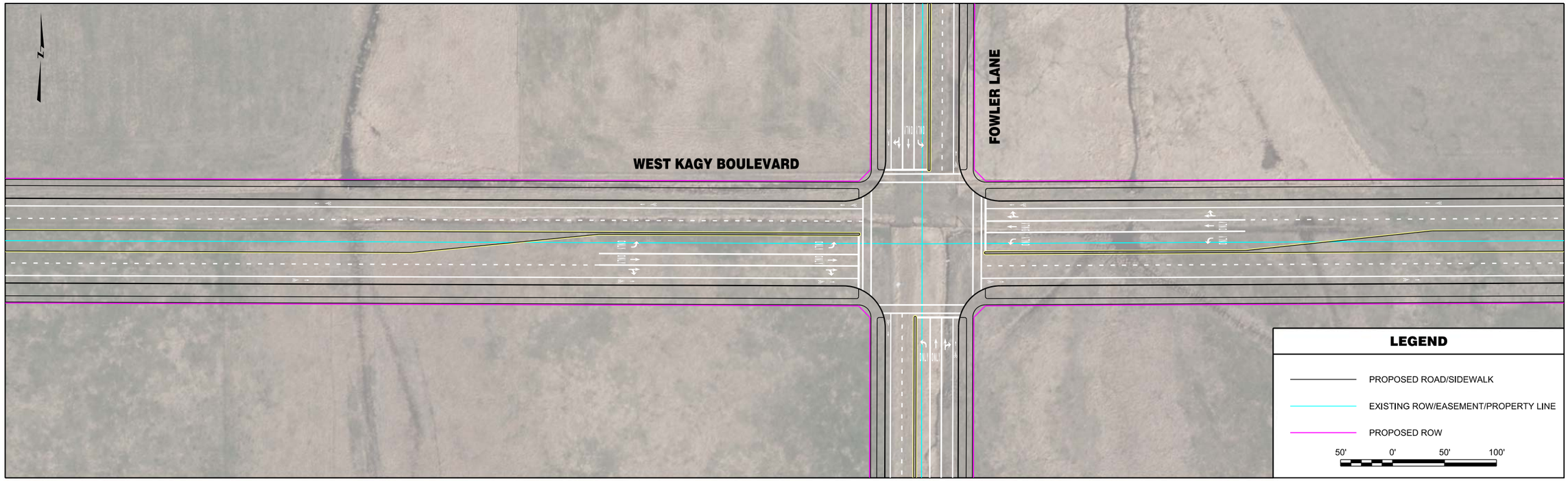

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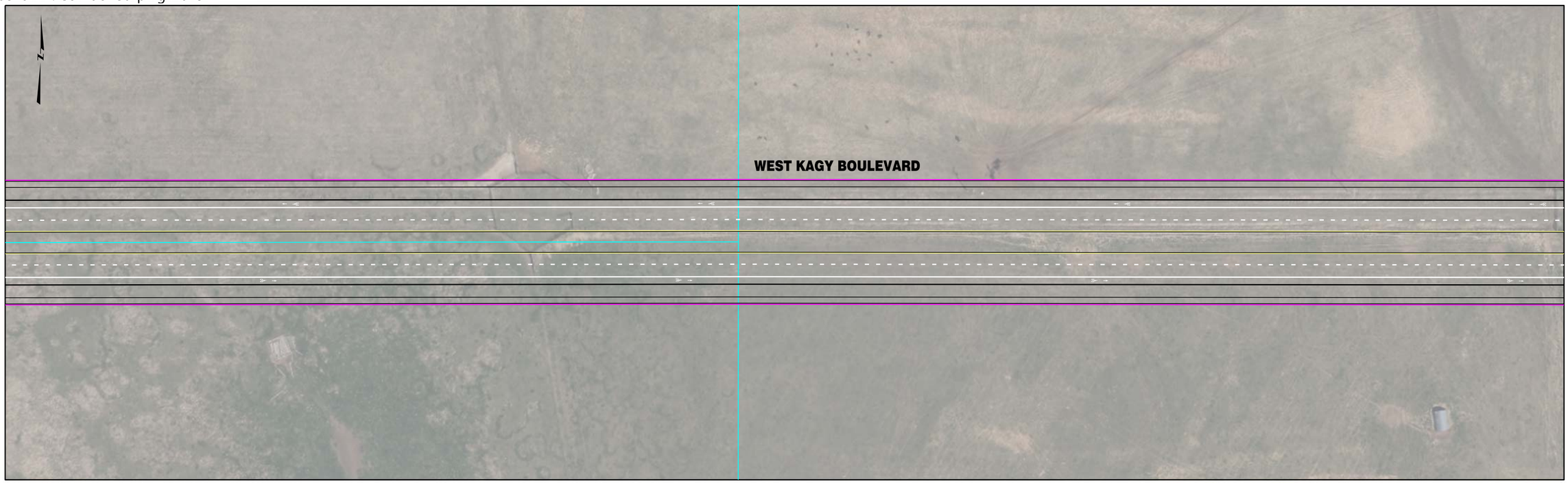

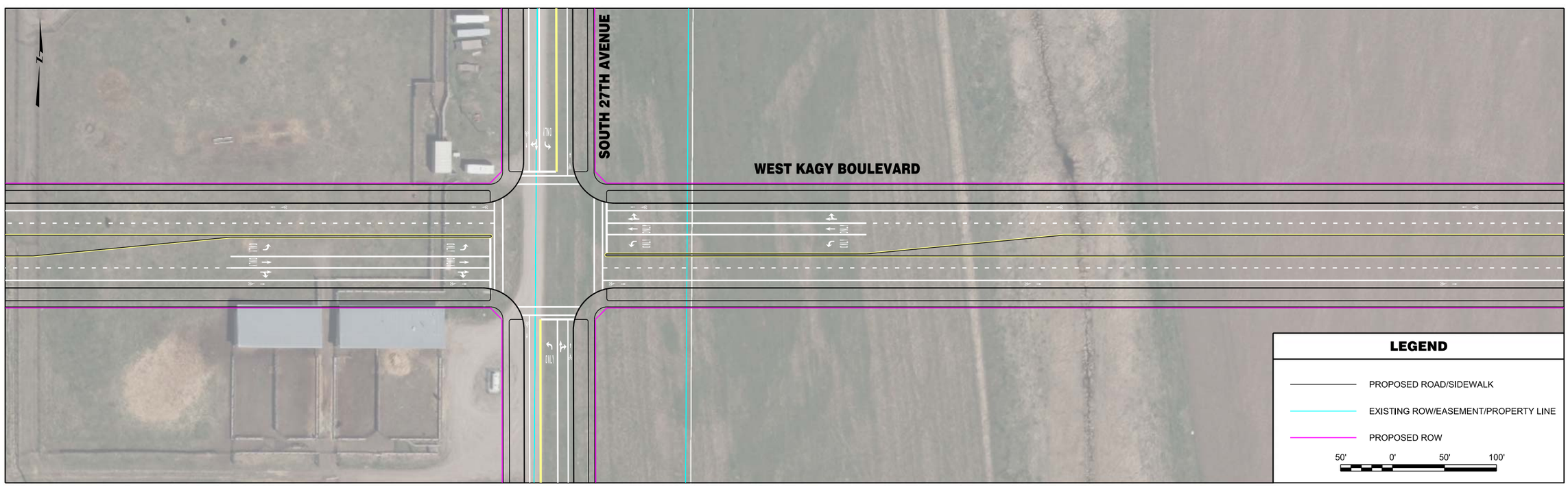

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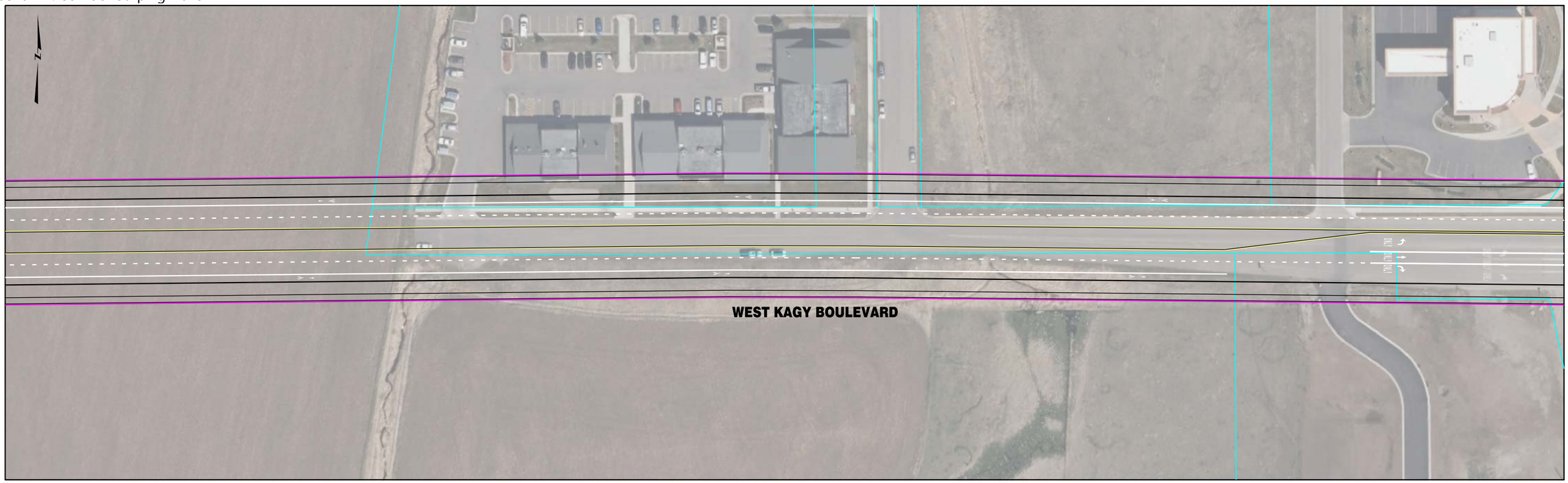

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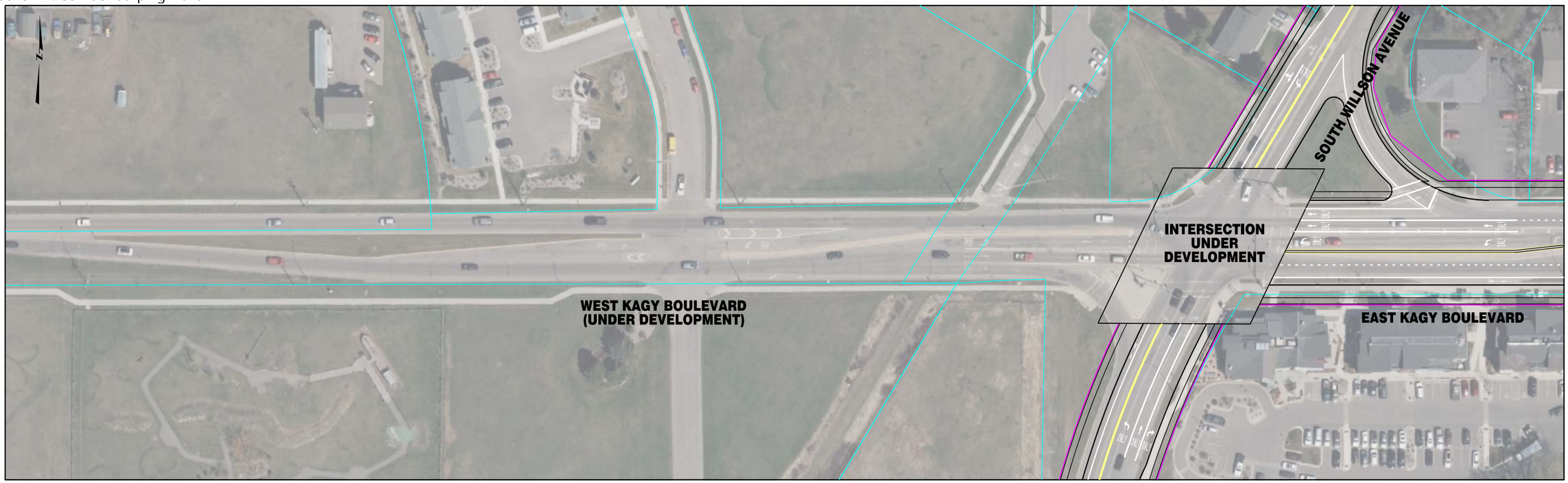

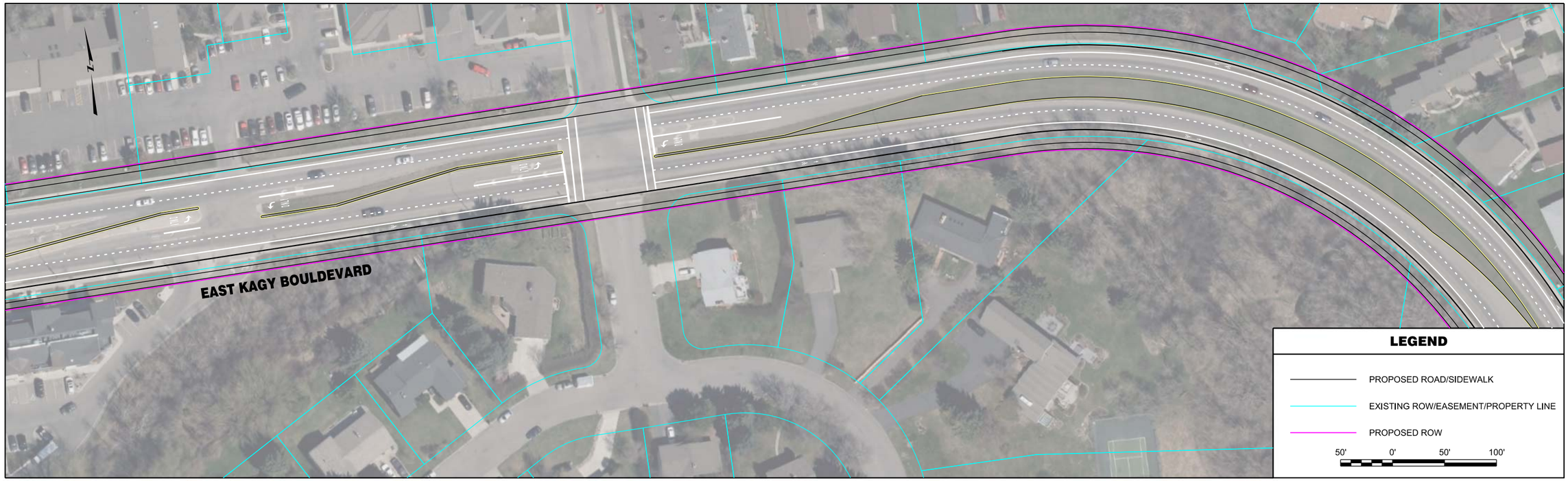

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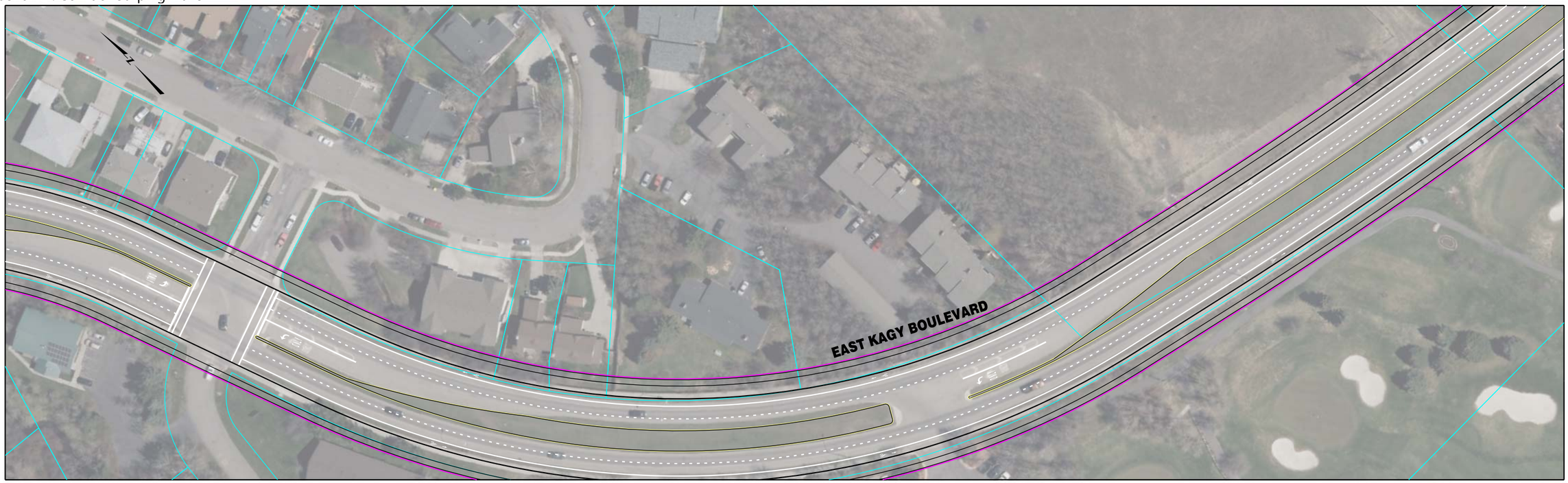

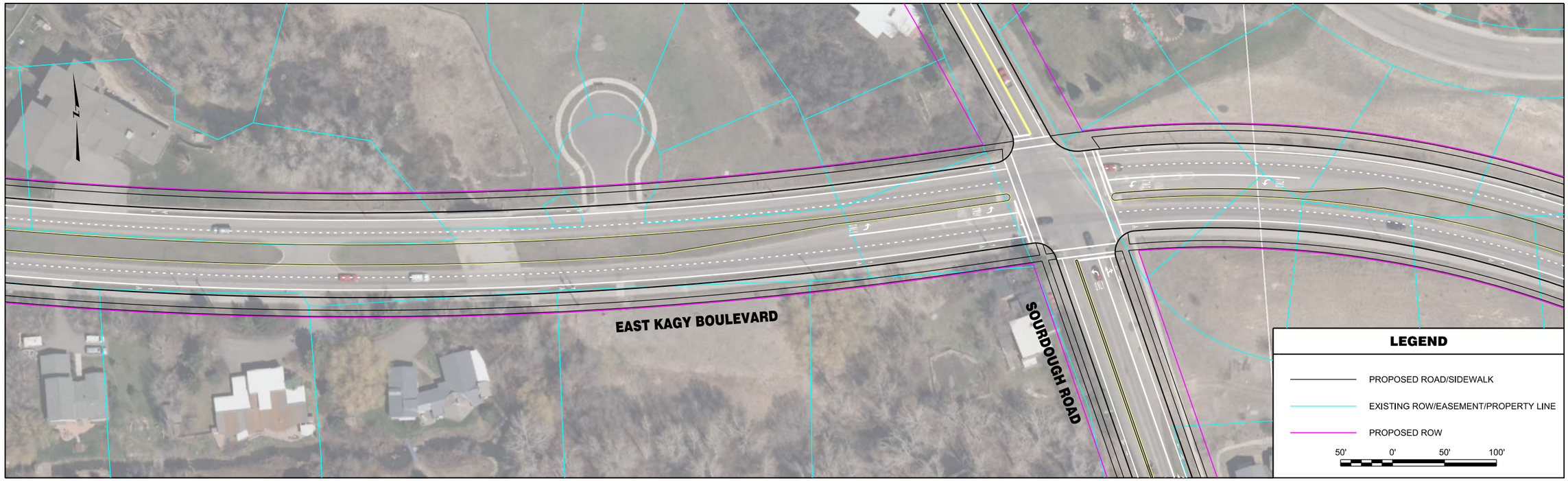

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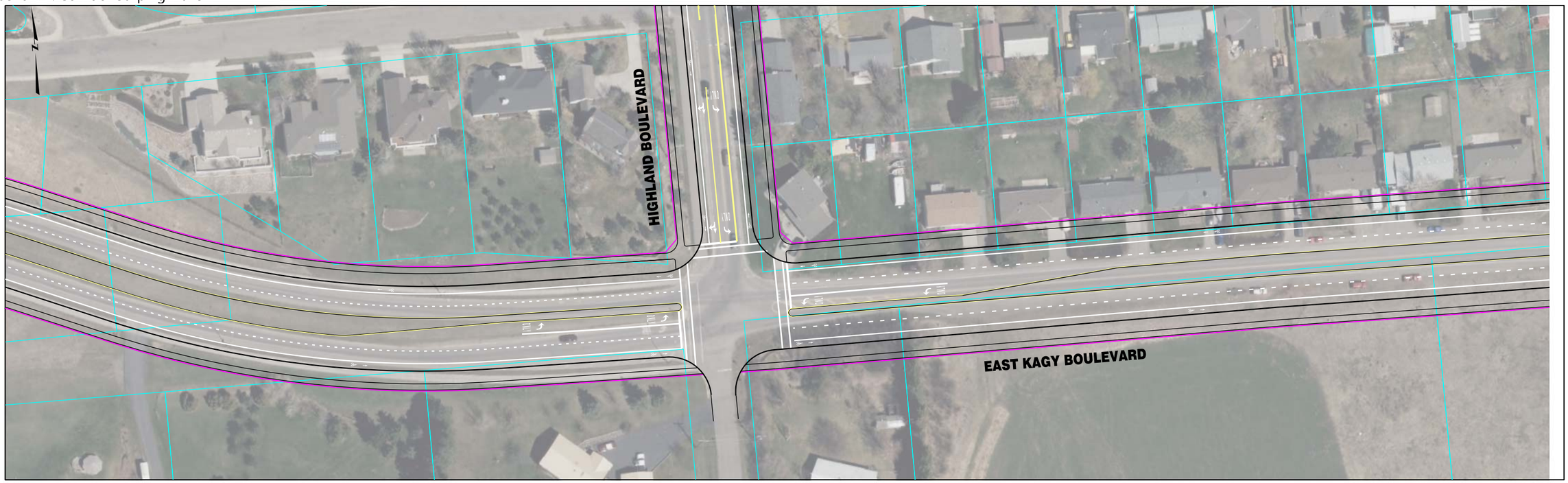

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZJ3.dgn 1/26/2017 3:10:06 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **EAST KAGY BOULEVARD STRIPING PLAN**

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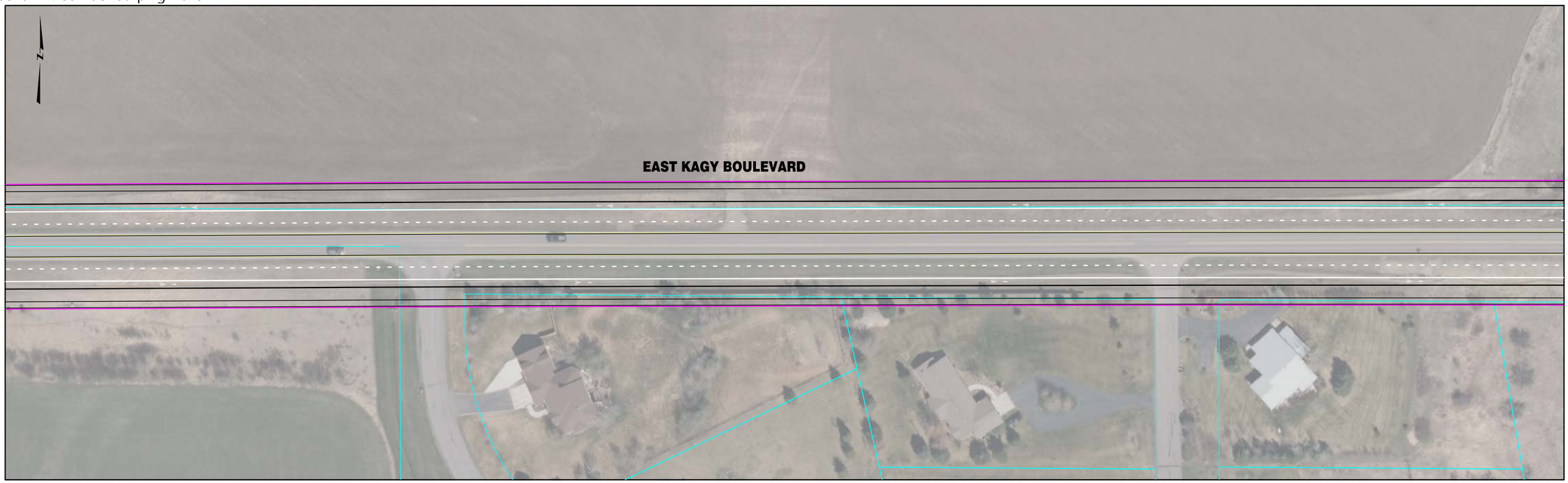

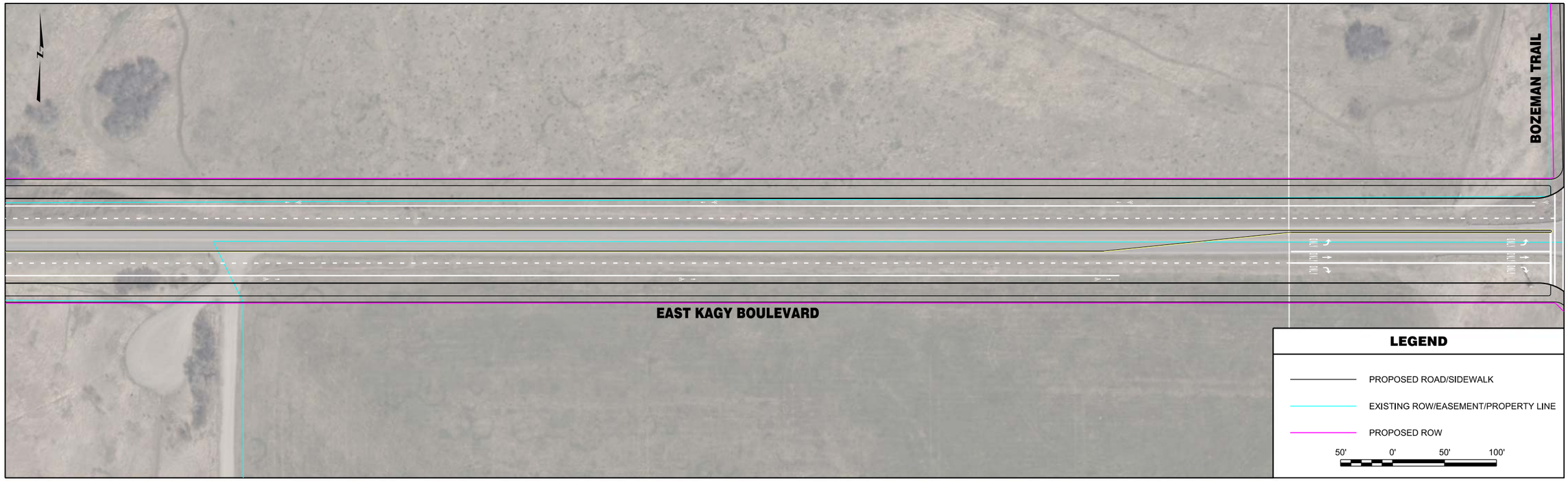

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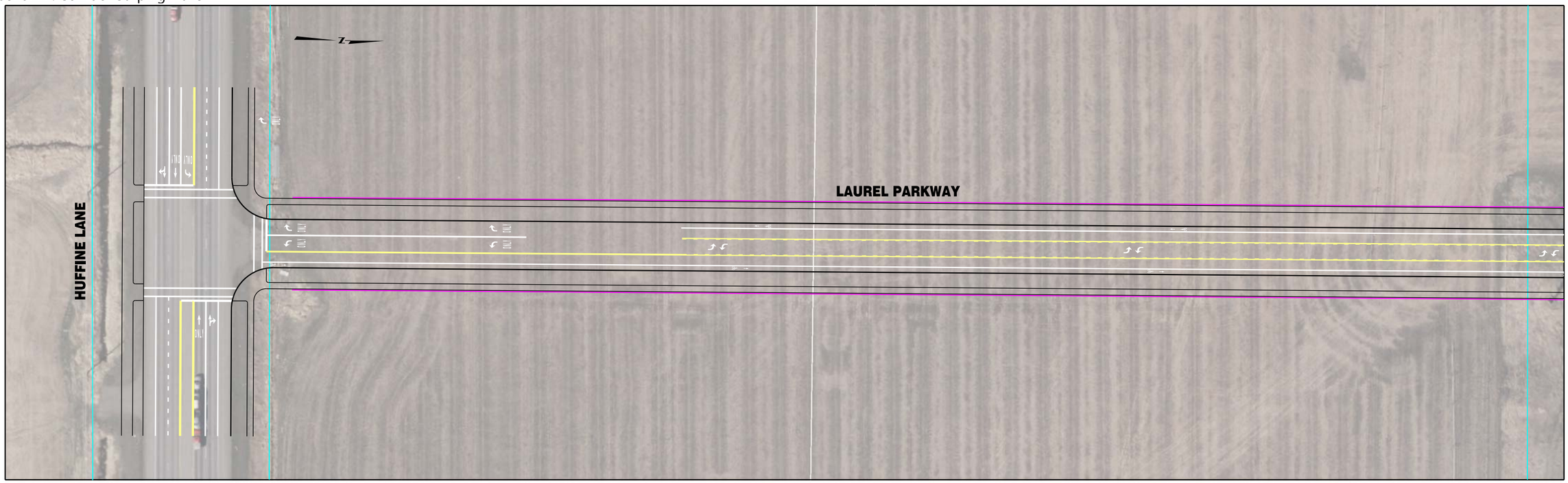

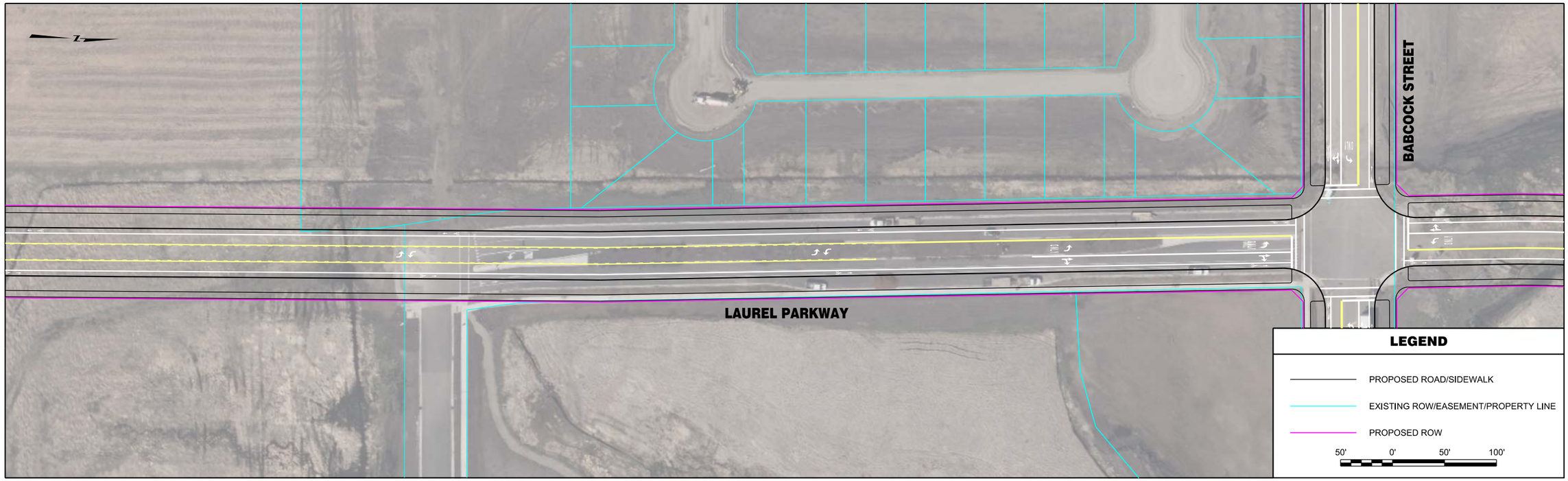

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZGG1.dgn 1/26/2017 3:07:45 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **LAUREL PARKWAY STRIPING PLAN**

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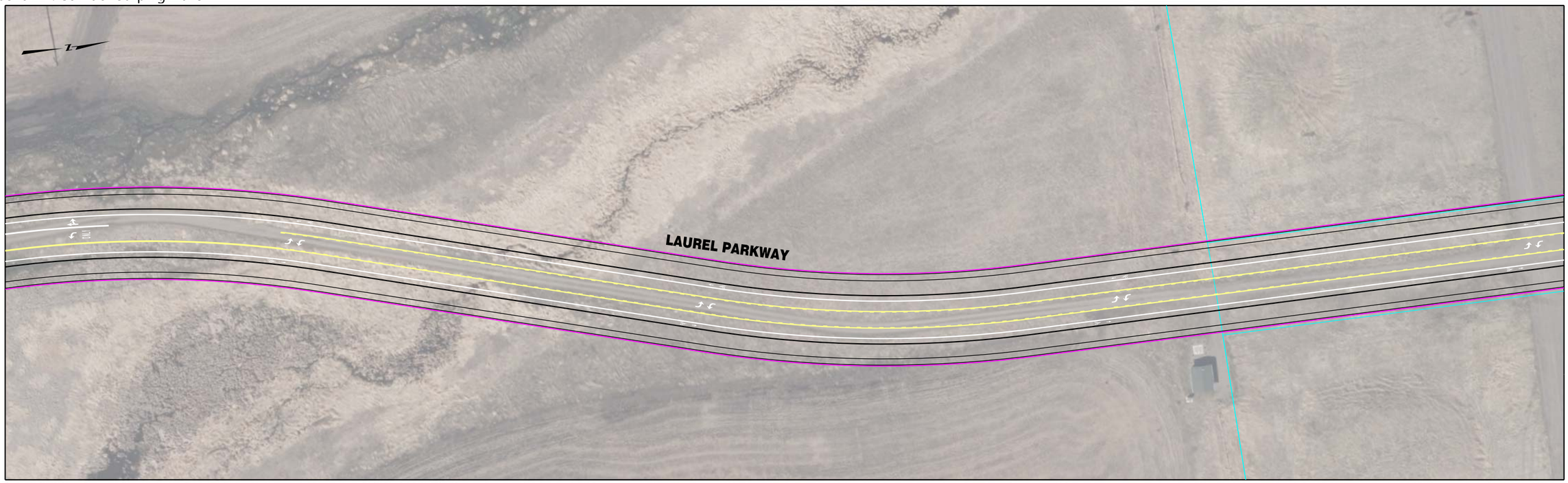

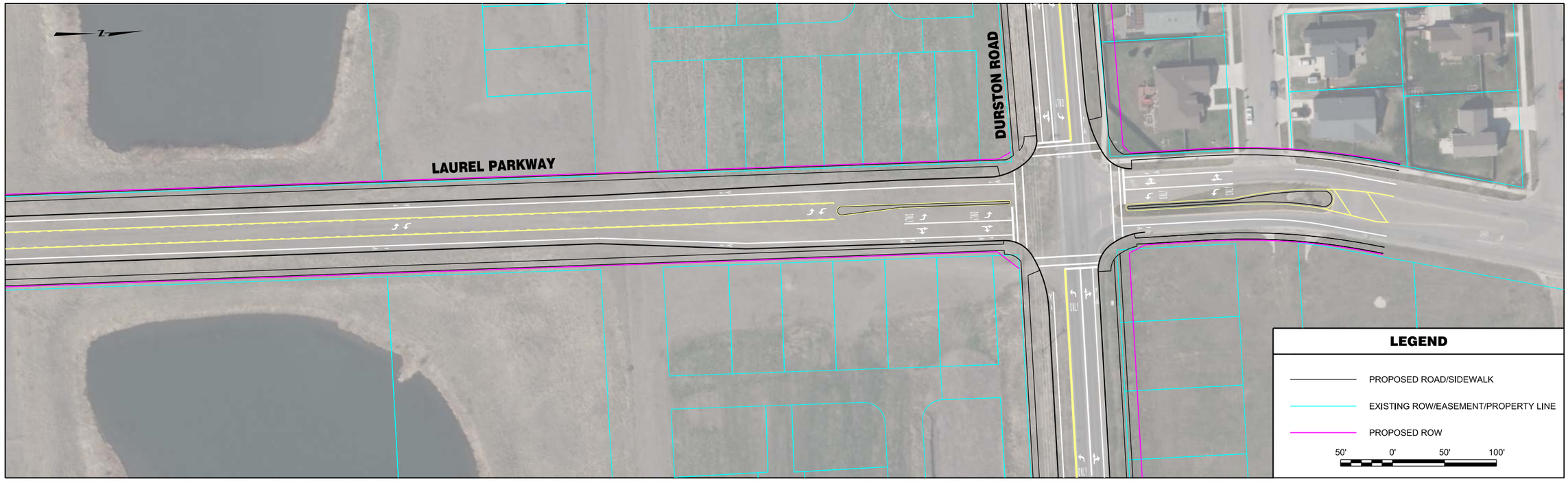

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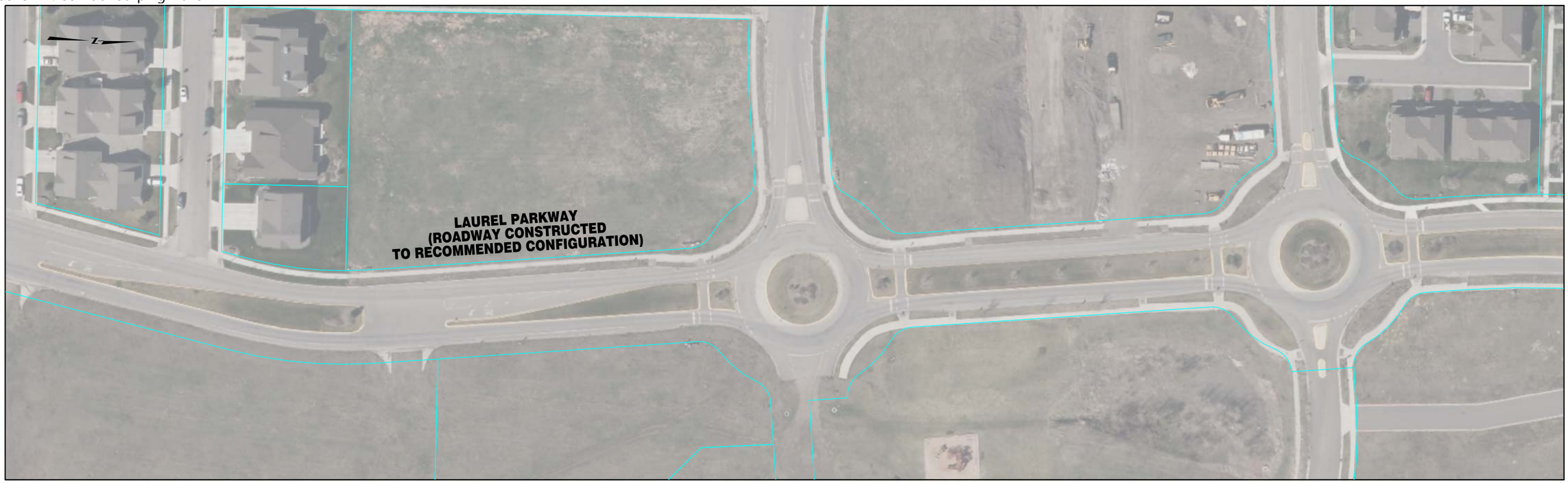

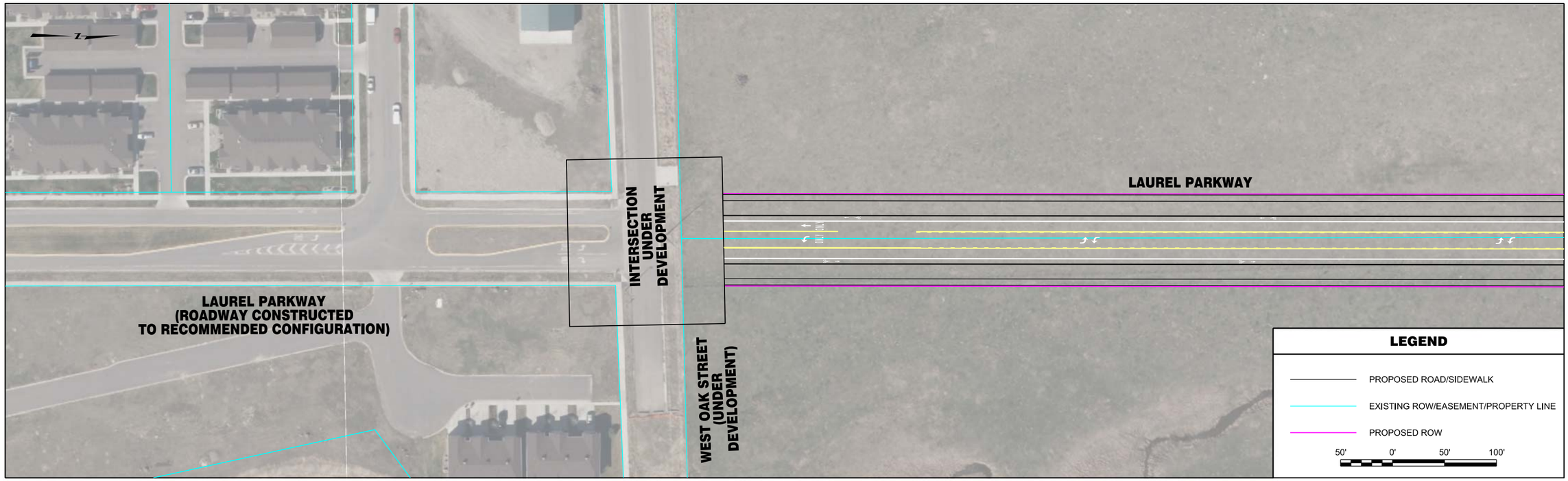

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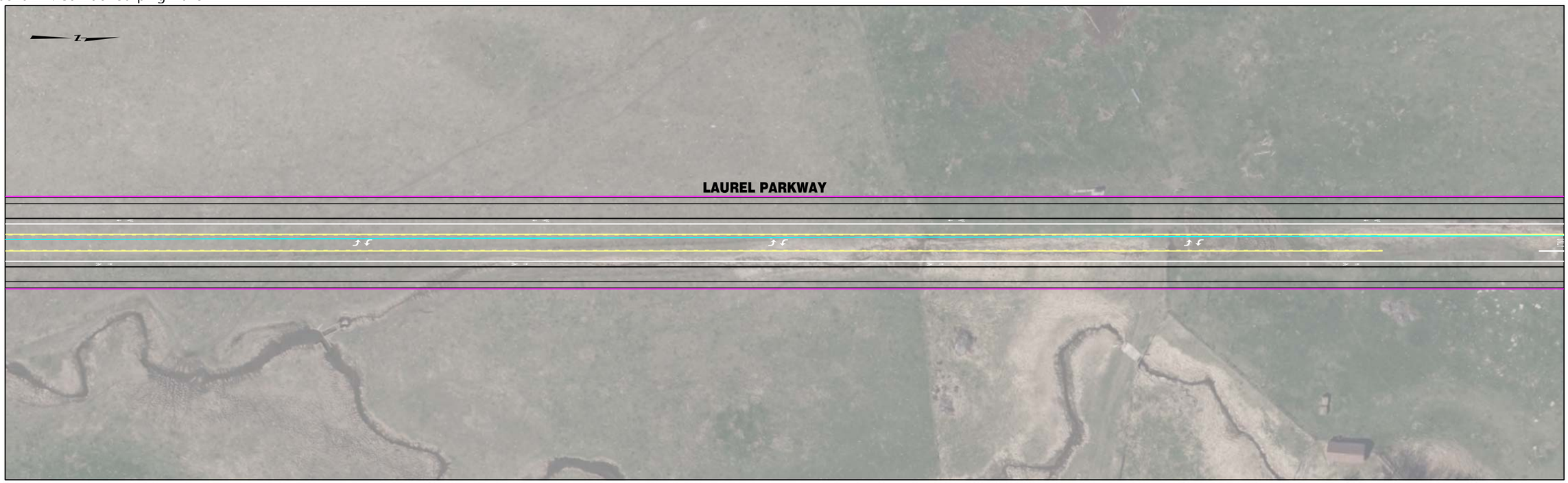

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZGG2.dgn 1/26/2017 3:08:04 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **LAUREL PARKWAY STRIPING PLAN**

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZGG2.dgn 1/26/2017 3:08:11 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **LAUREL PARKWAY STRIPING PLAN**

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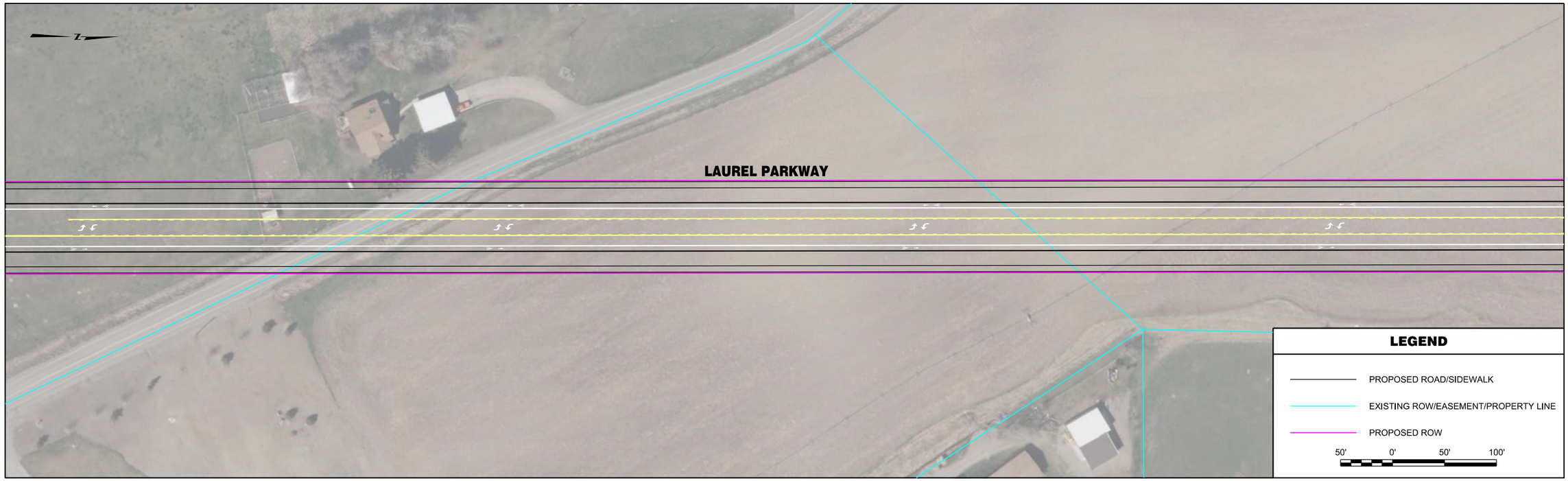

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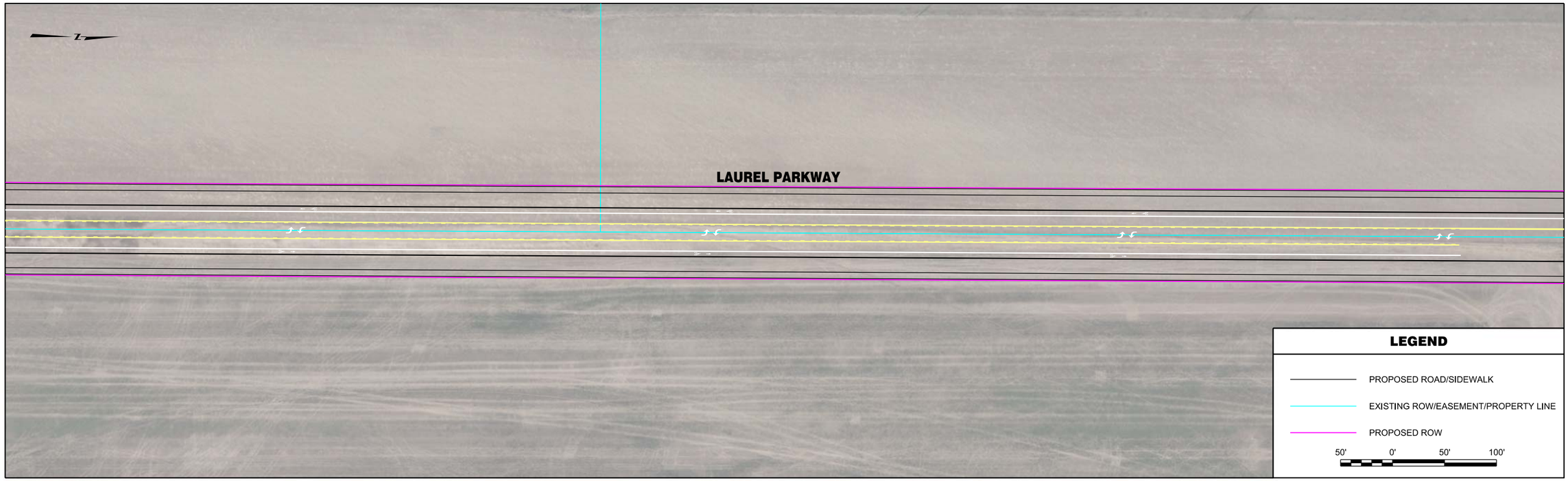

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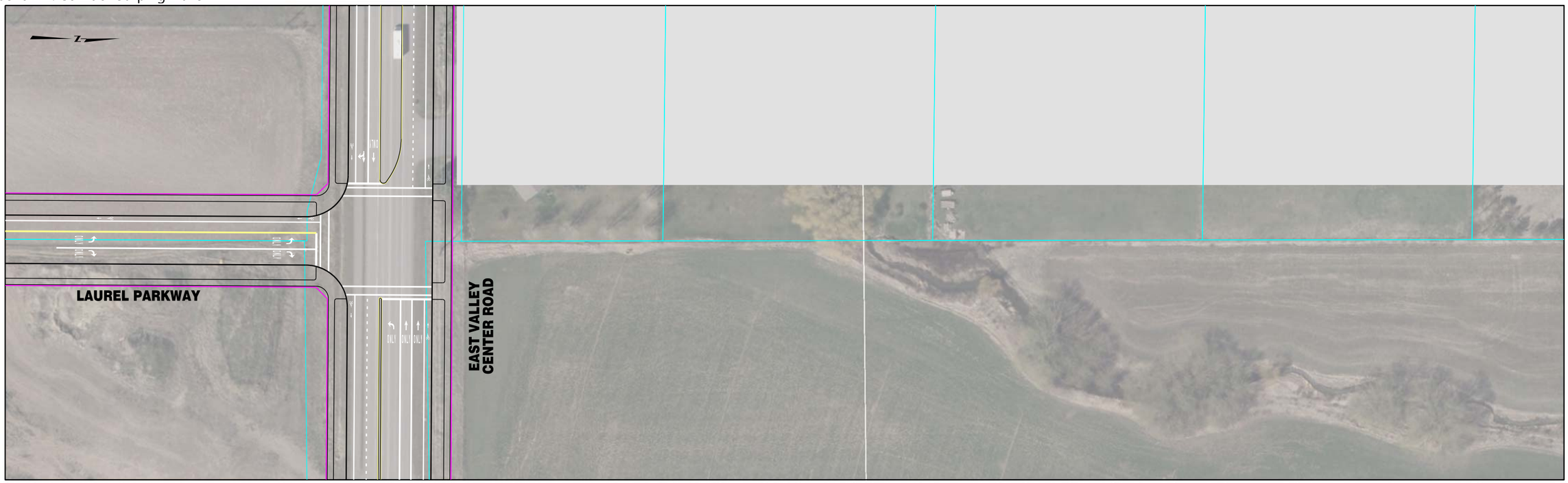

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- PROPOSED ROW

50' 0' 50' 100'

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZGG3.dgn 1/26/2017 3:08:32 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **LAUREL PARKWAY STRIPING PLAN**

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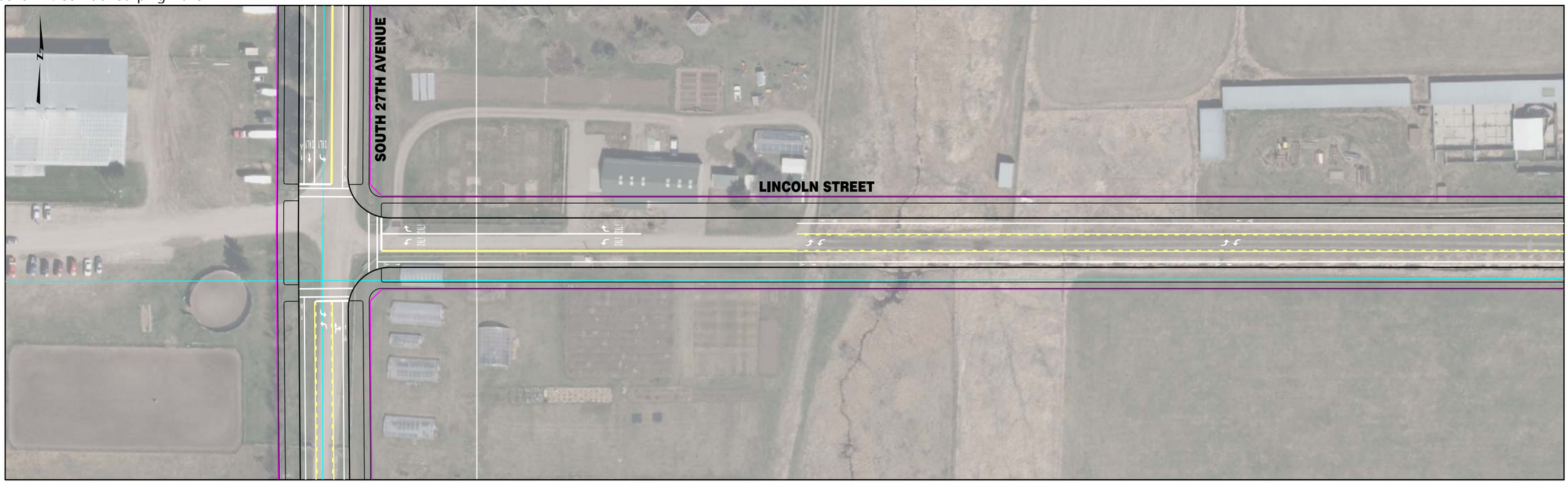

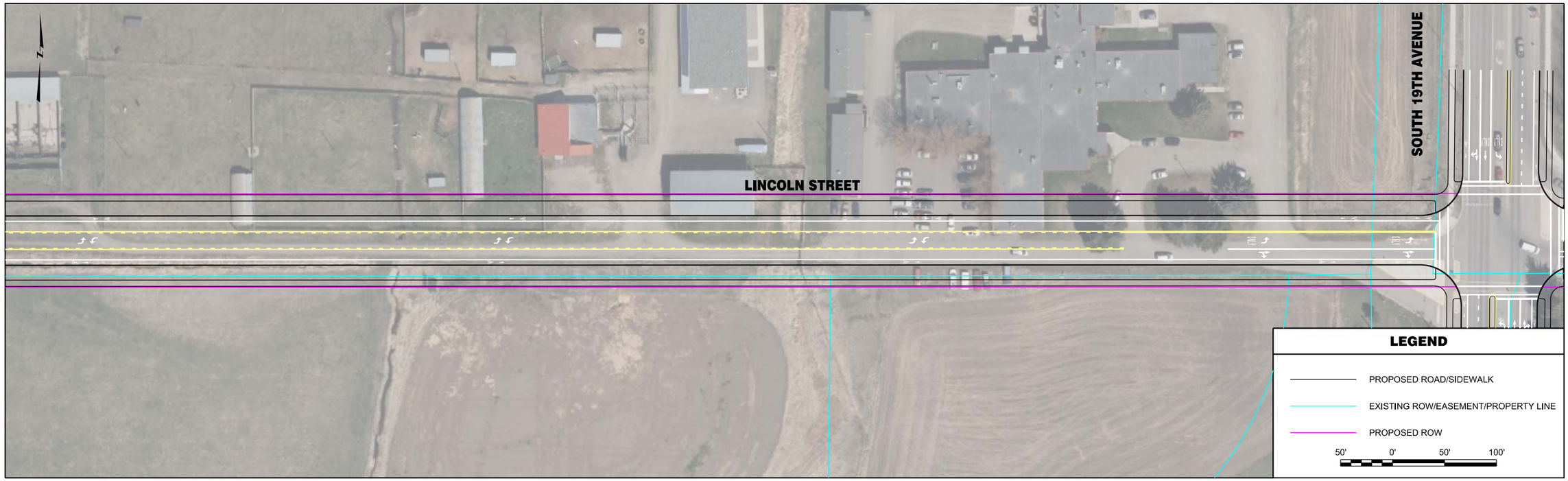

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\DD-Lincoln\15602RDPLNZDD1.dwg 1/26/2017 3:05:11 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **LINCOLN STREET STRIPING PLAN**

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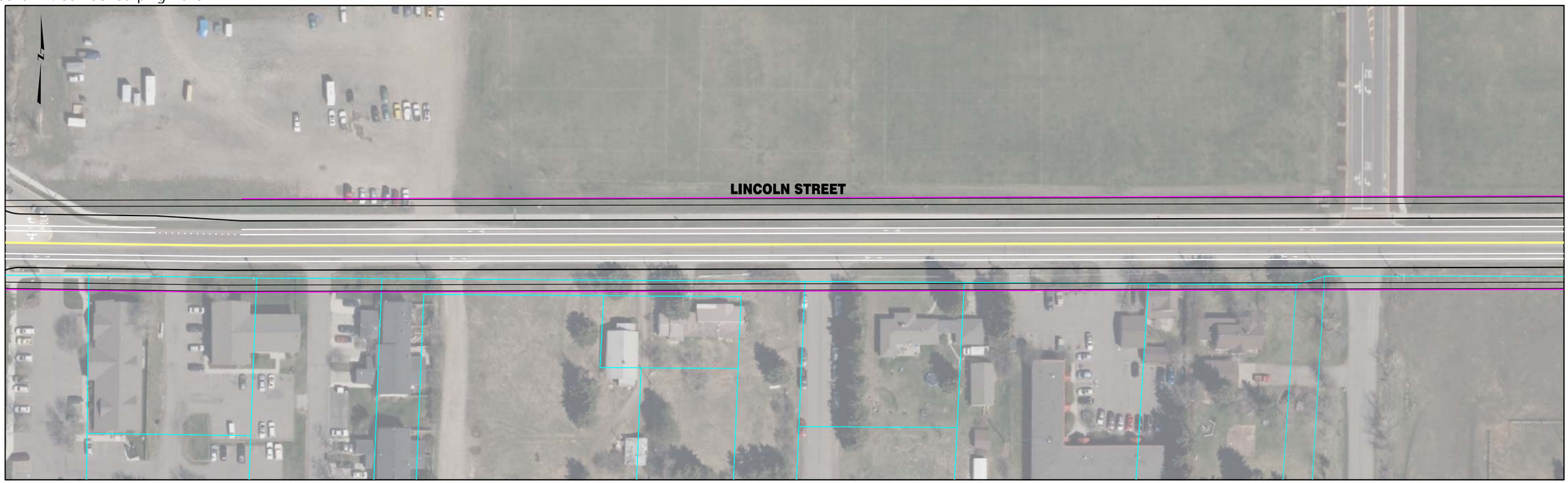

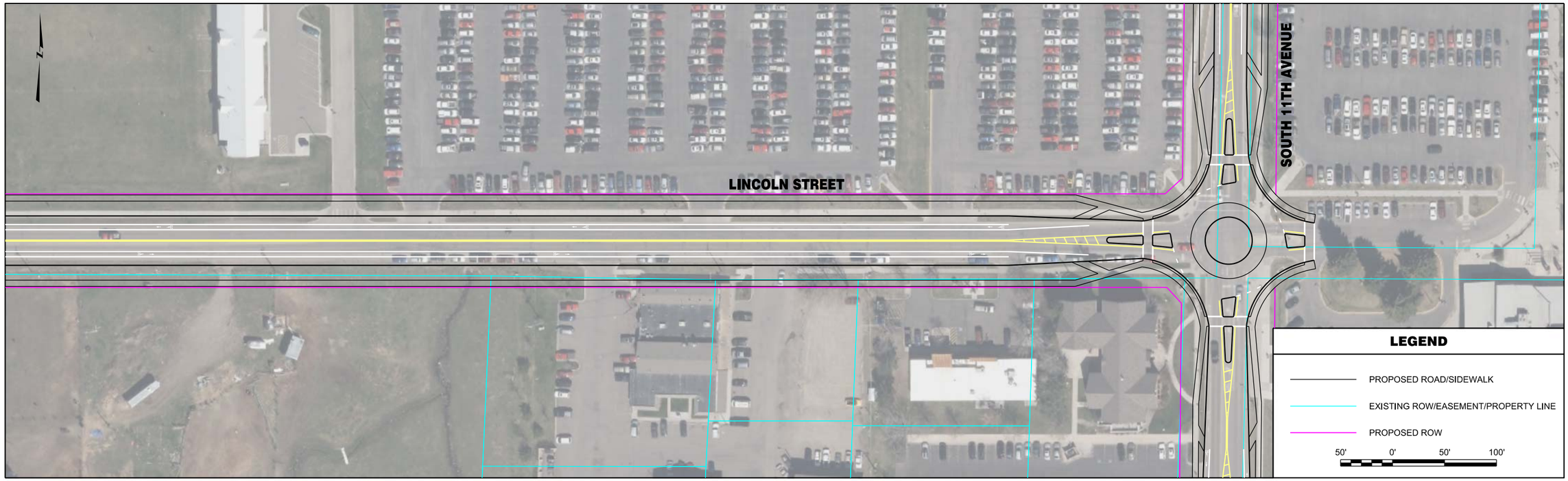

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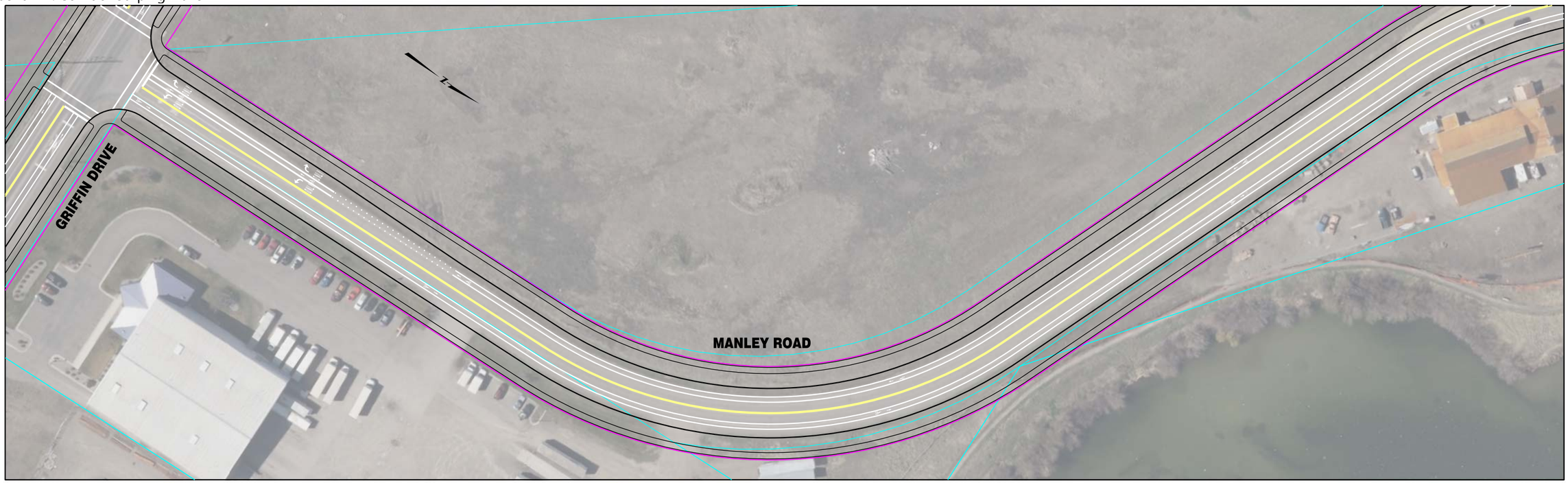
Appendix K: Corridor Striping Plans



RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\RR-Manley\15602RDPLNZRR1.dwg 1/26/2017 3:03:42 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **MANLEY ROAD STRIPING PLAN**

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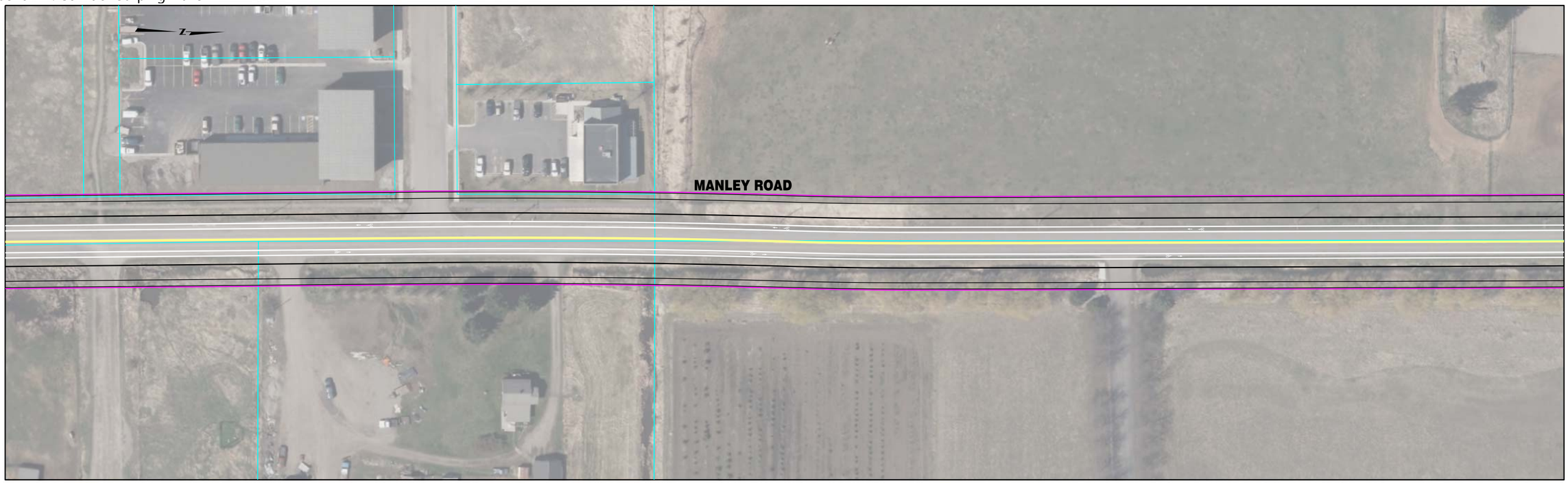

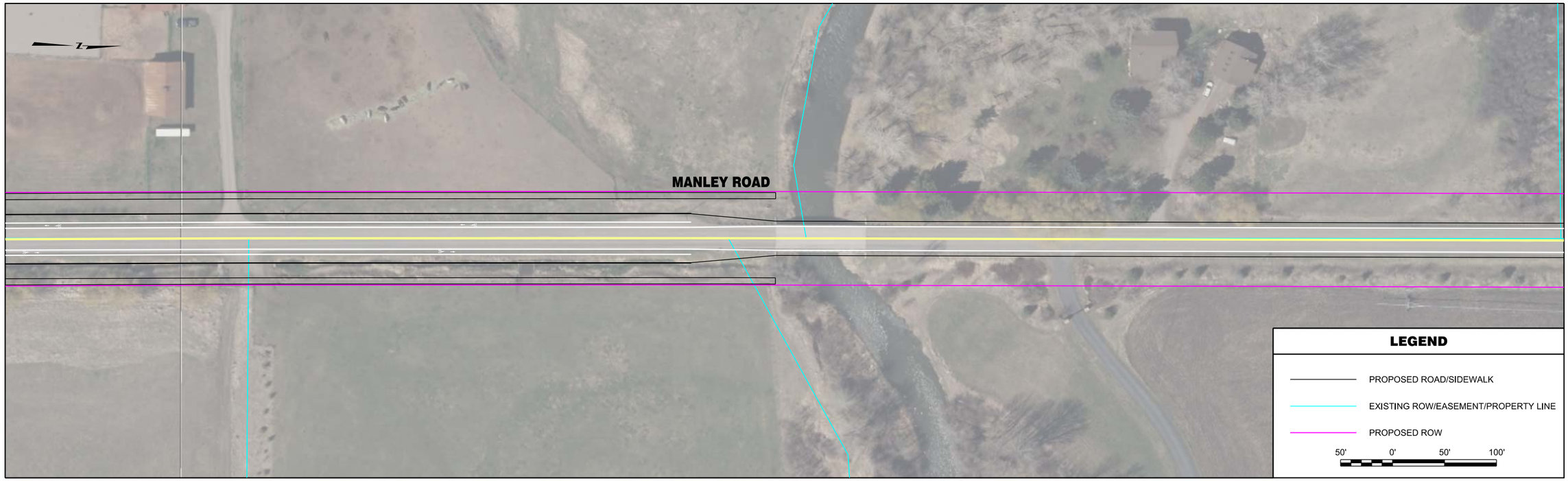

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\RR-Manley\15602RDPLNZRR1.dwg 1/26/2017 3:03:49 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **MANLEY ROAD STRIPING PLAN**

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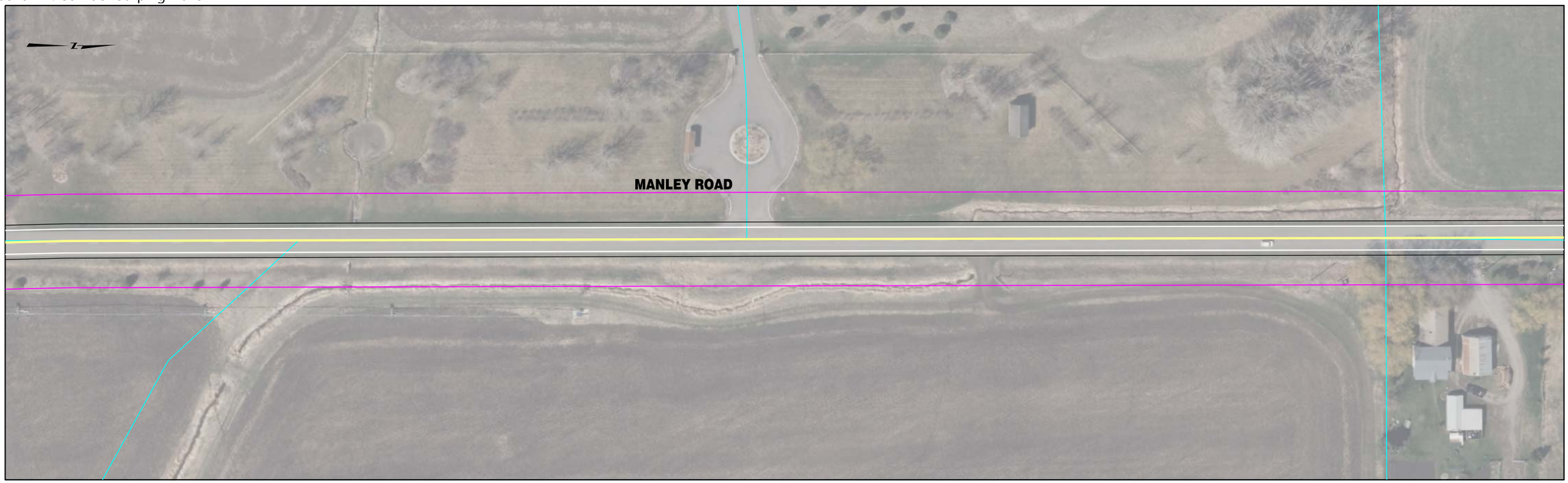

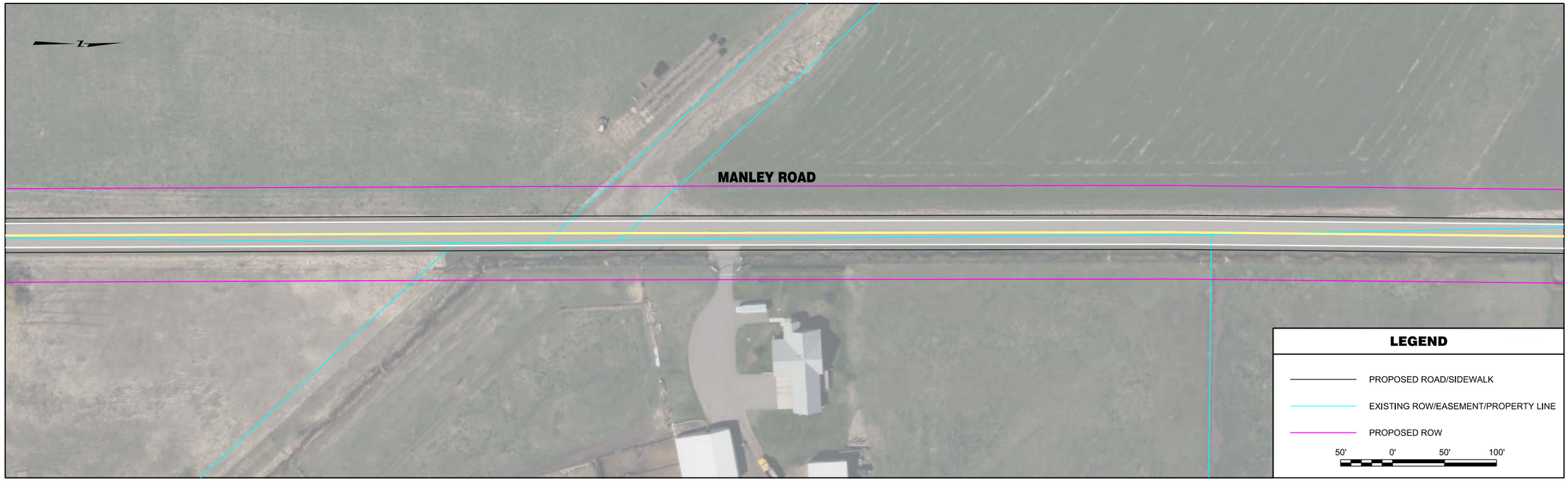

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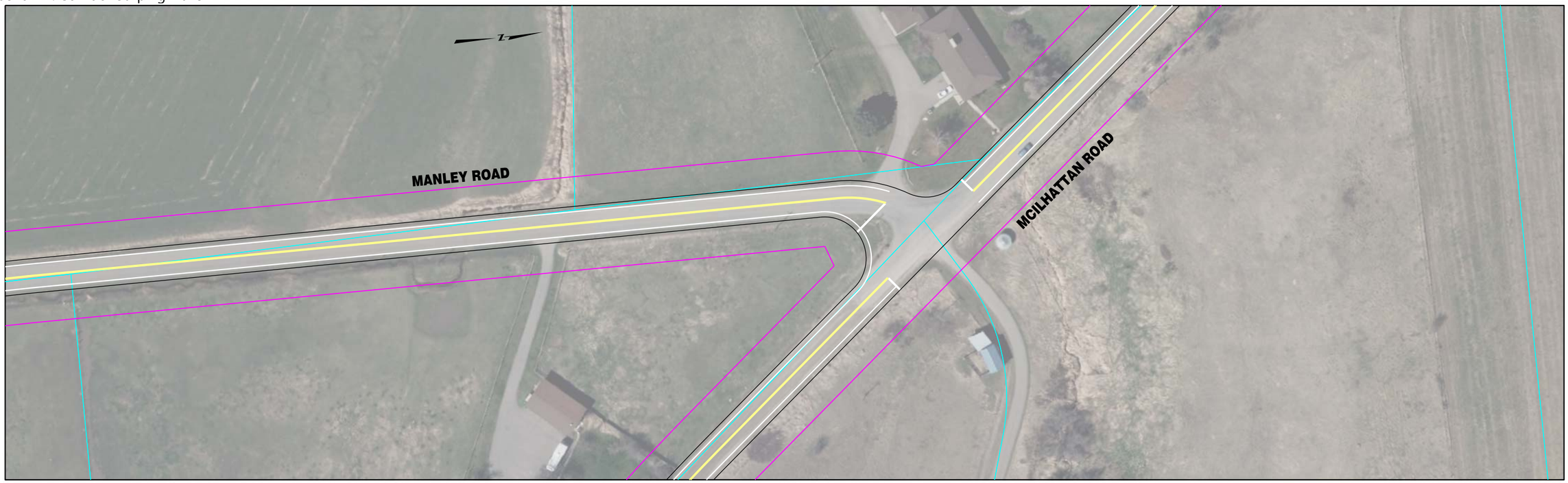

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- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\RR-Manley\15602RDPLNZRR2.dwg 1/26/2017 3:04:10 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **MANLEY ROAD STRIPING PLAN**

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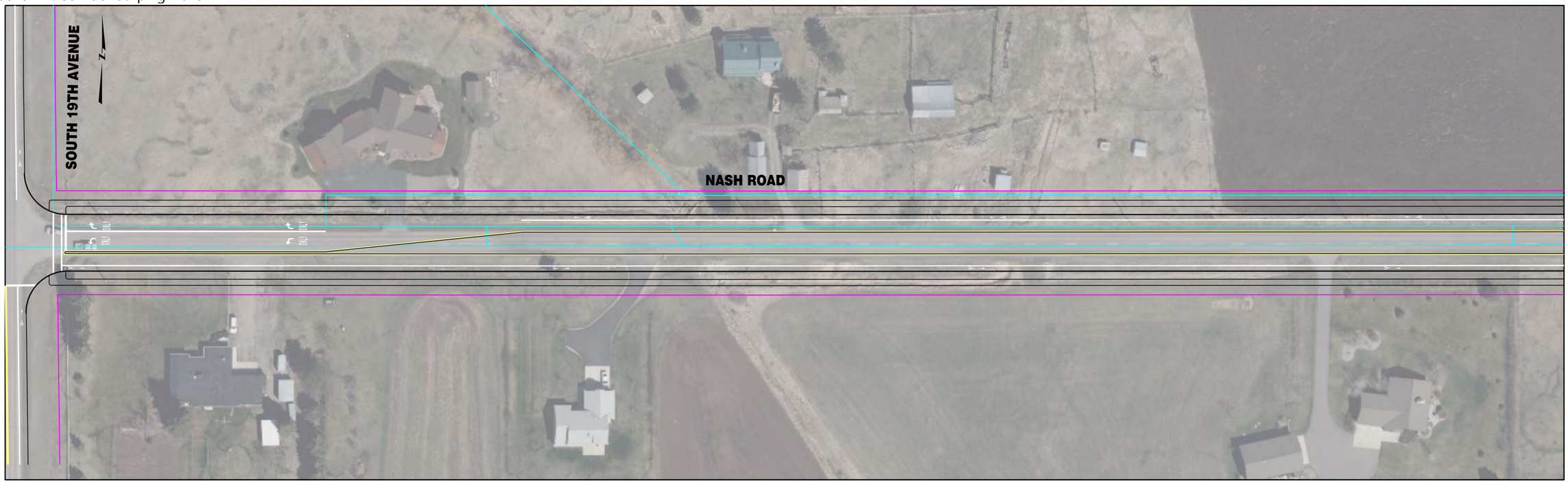

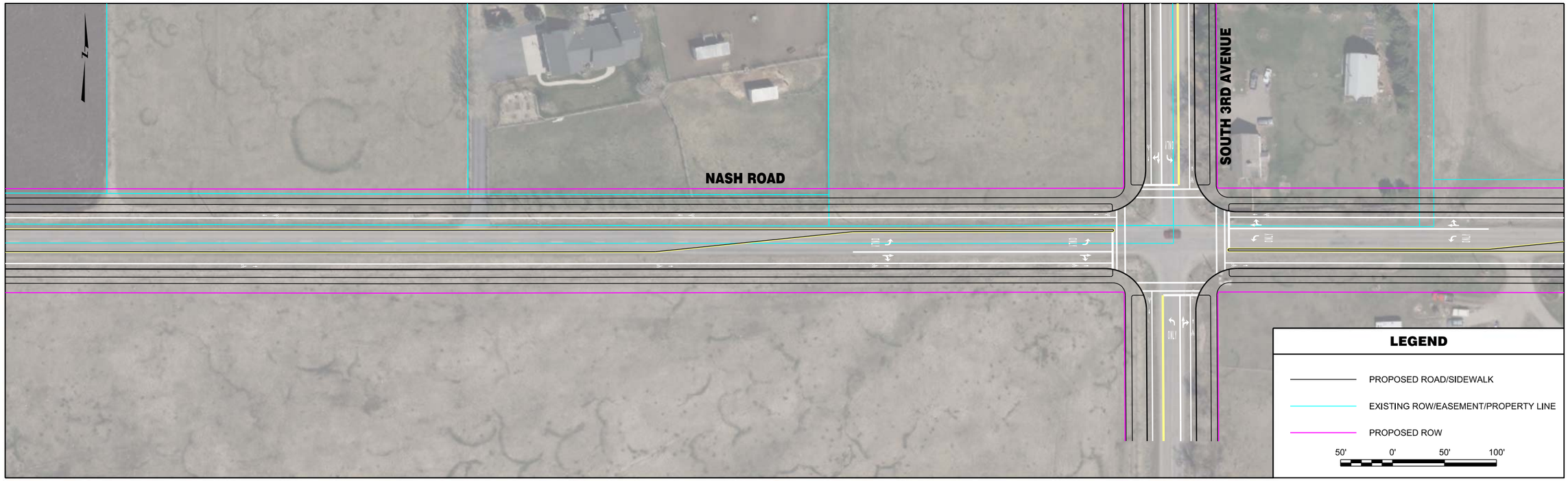

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\L-Nash\15602RDPLNZL1.dgn 1/26/2017 3:02:13 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **NASH ROAD STRIPING PLAN**

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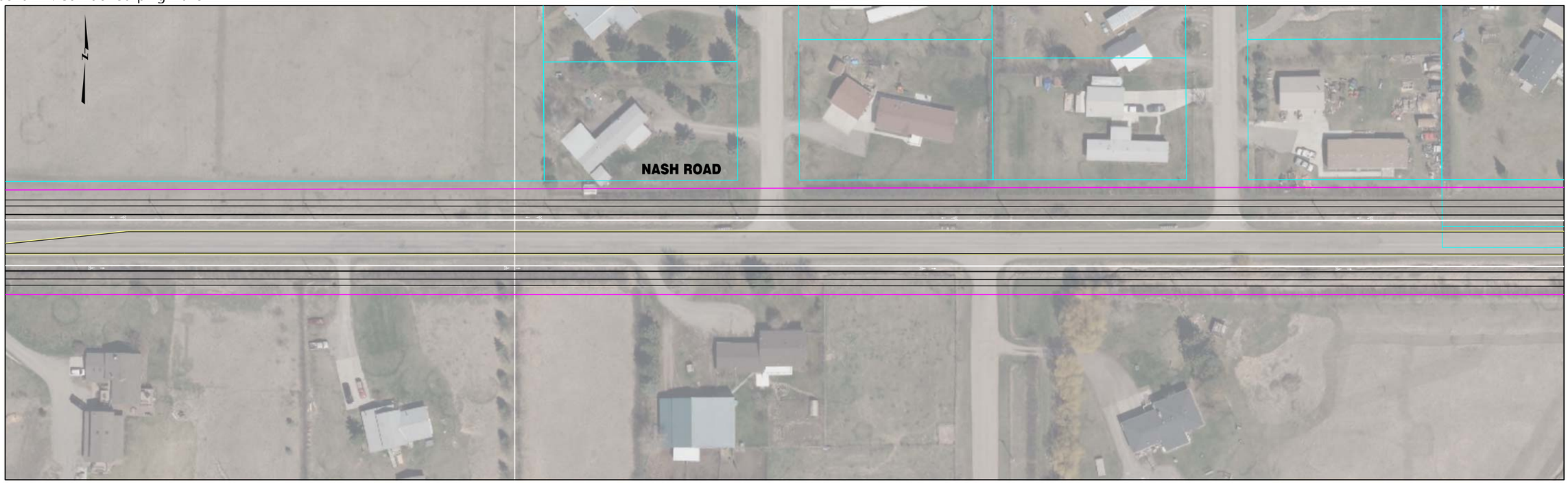

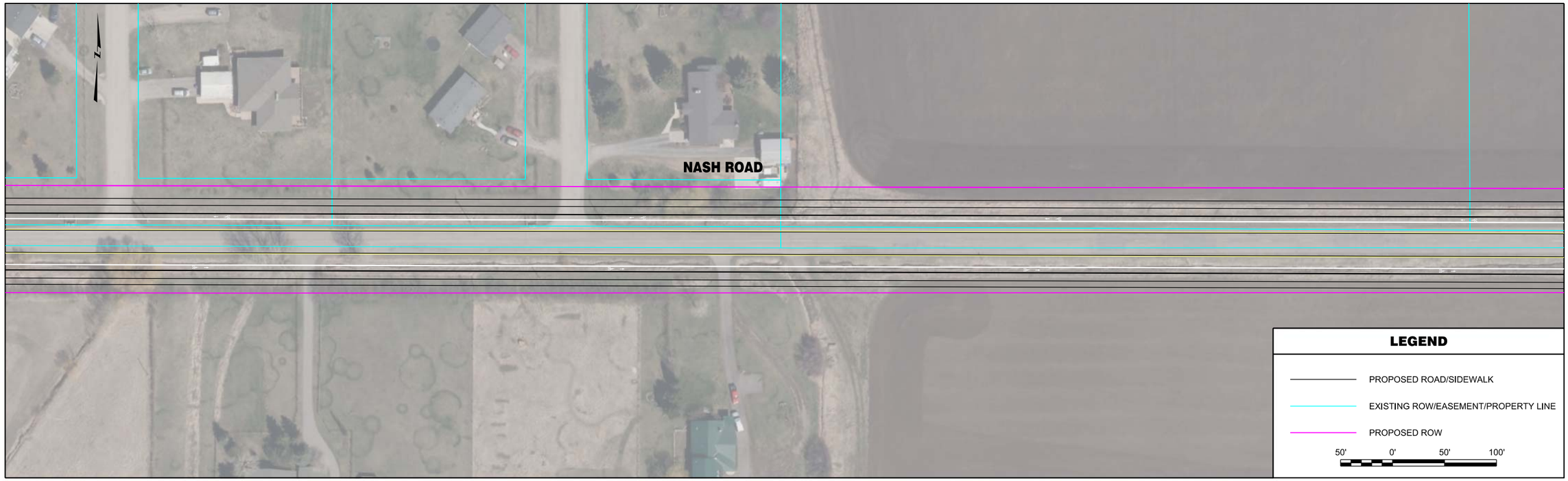

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\L-Nash\15602RDPLNZL1.dgn 1/26/2017 3:02:19 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **NASH ROAD STRIPING PLAN**

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RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\L-Nash\15602RDPLNZL1.dgn 1/26/2017 3:02:28 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **NASH ROAD STRIPING PLAN**

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LEGEND

- PROPOSED ROAD/SIDEWALK
- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

50' 0' 50' 100'

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\L-Nash\15602RDPLNZL2.dgn 1/26/2017 3:02:35 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **NASH ROAD STRIPING PLAN**

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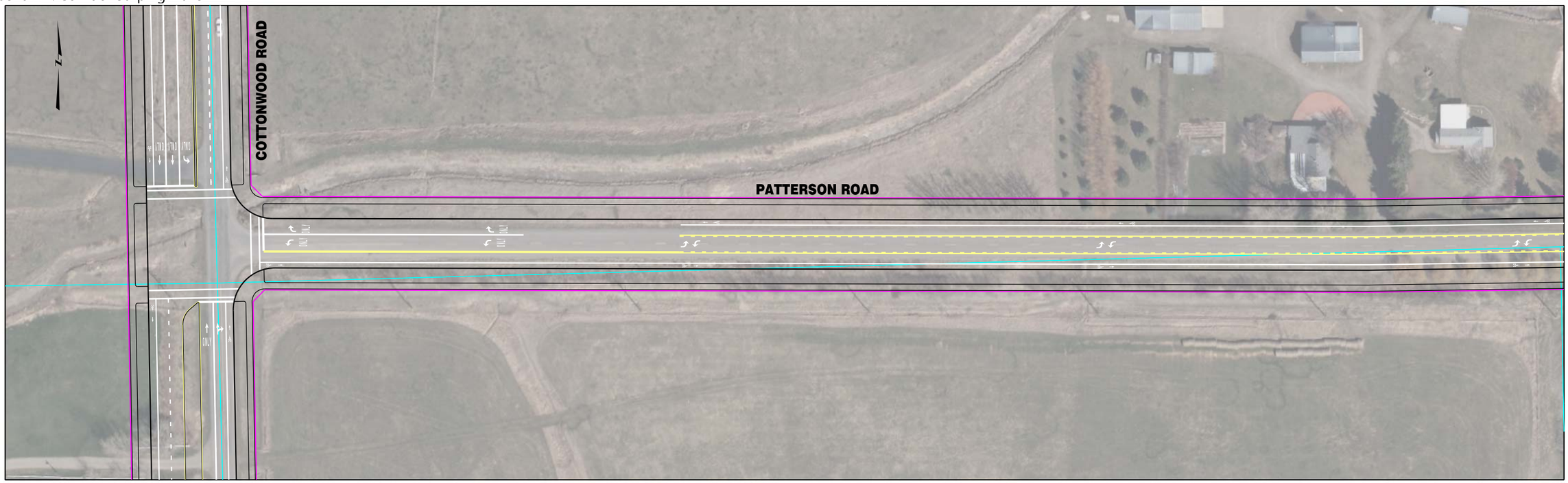

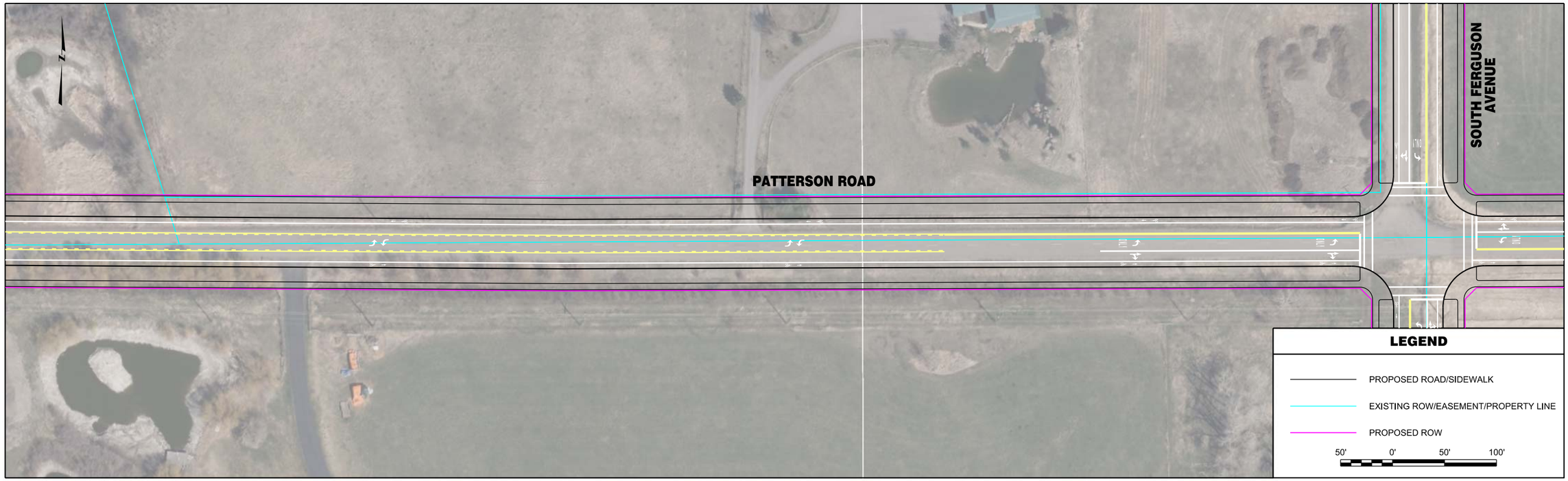

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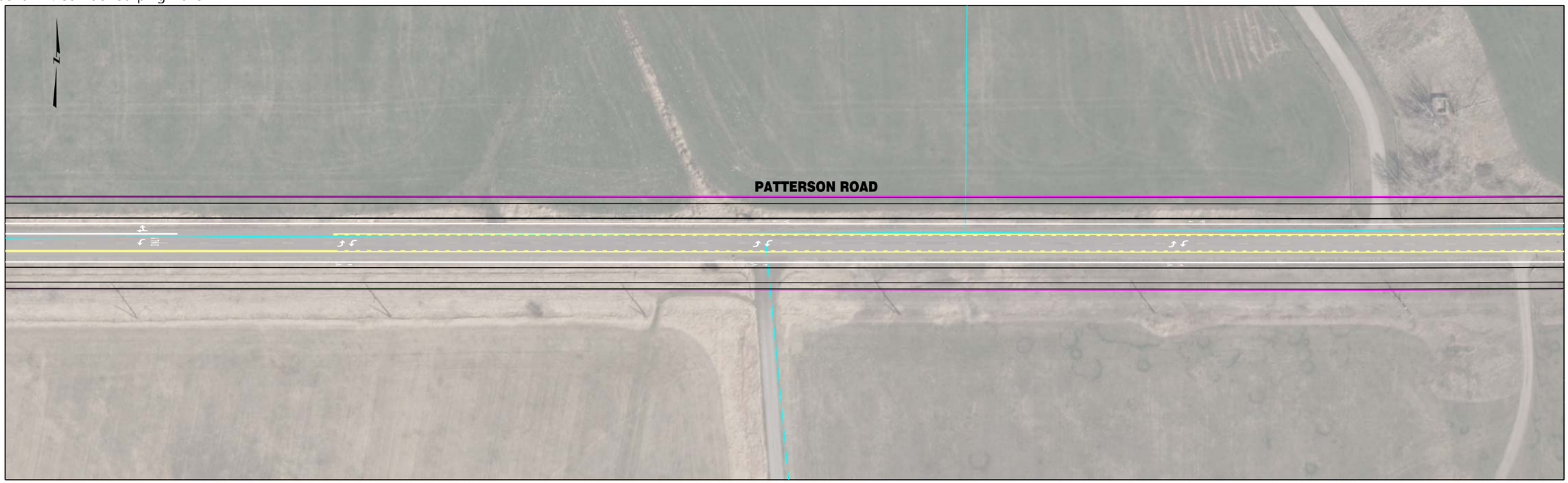

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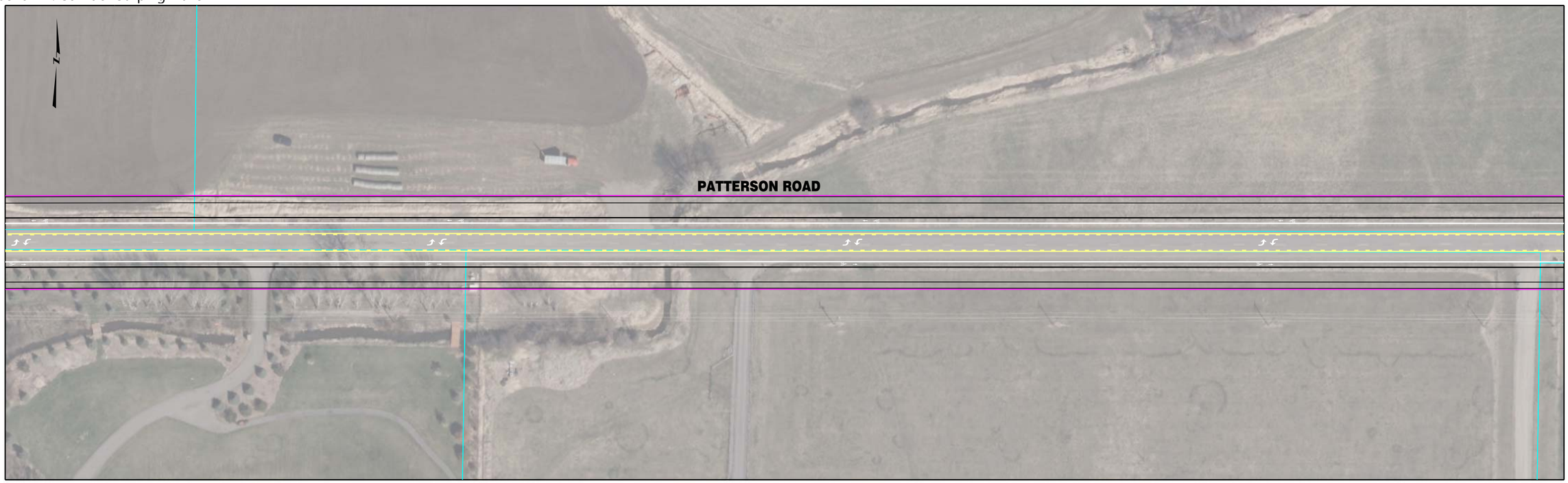

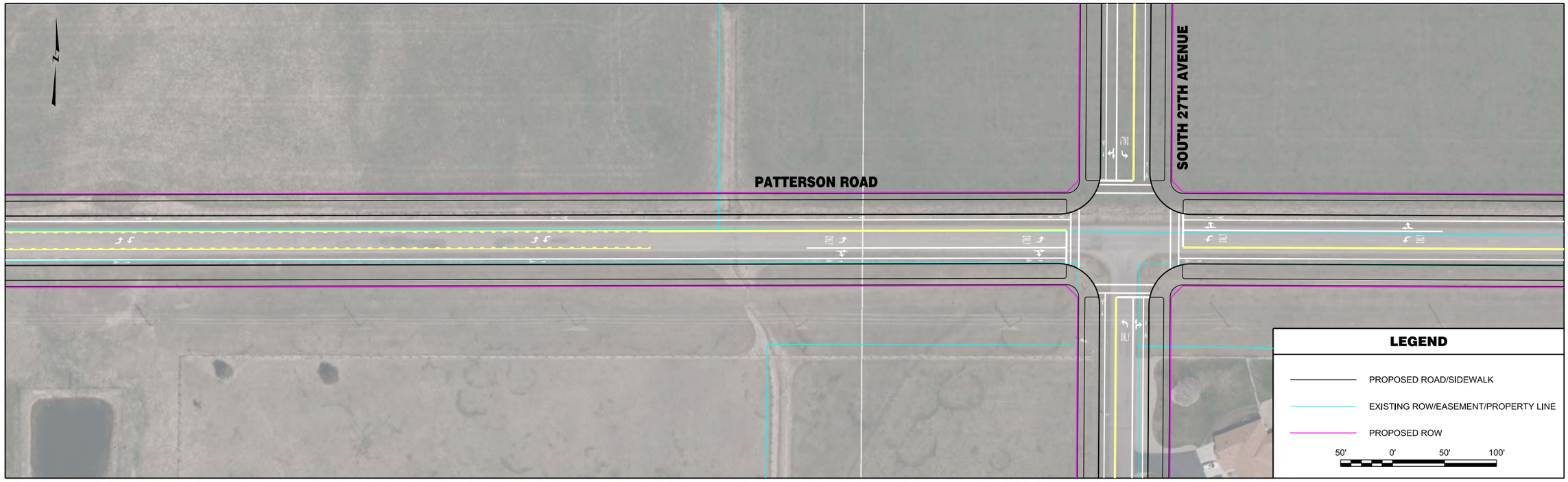

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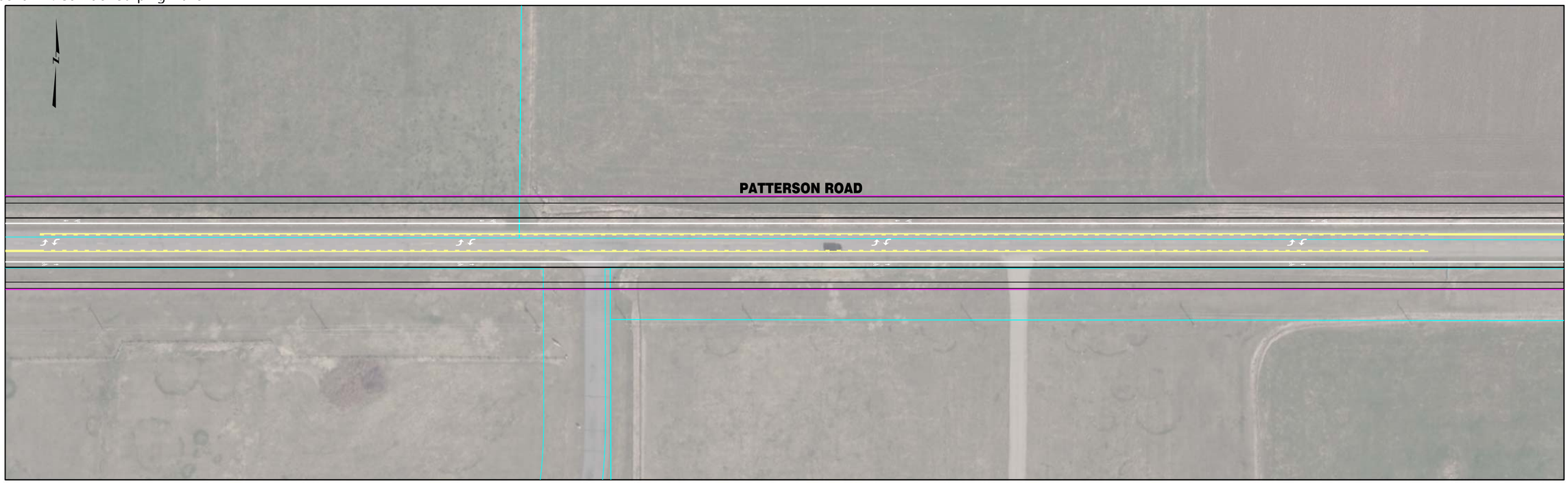

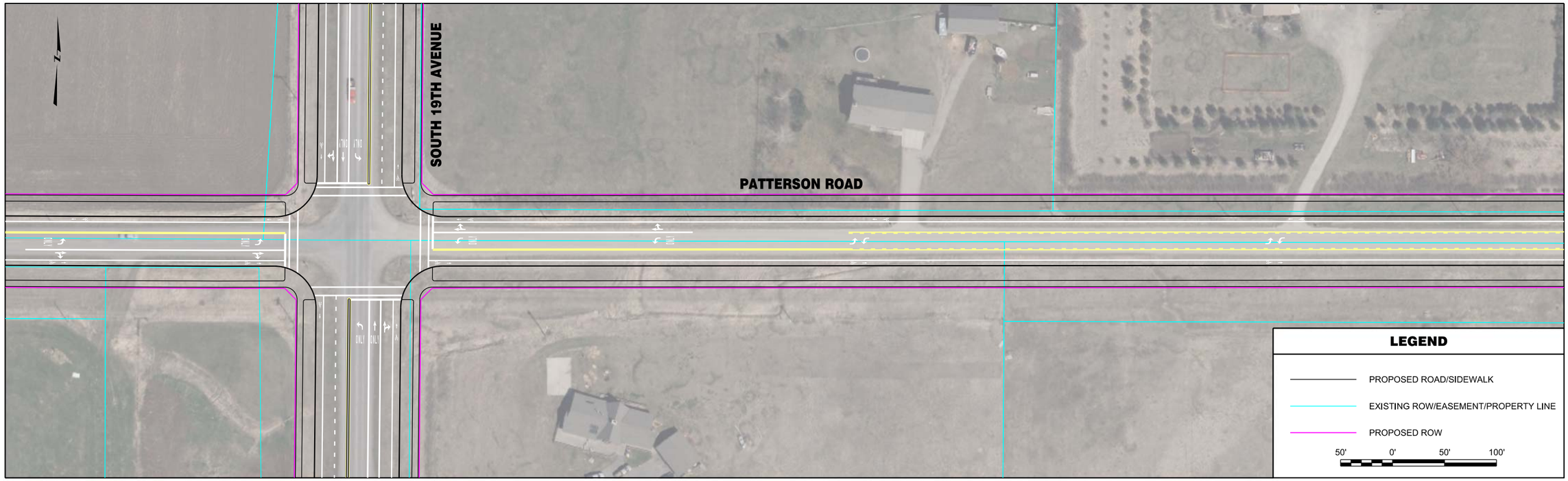

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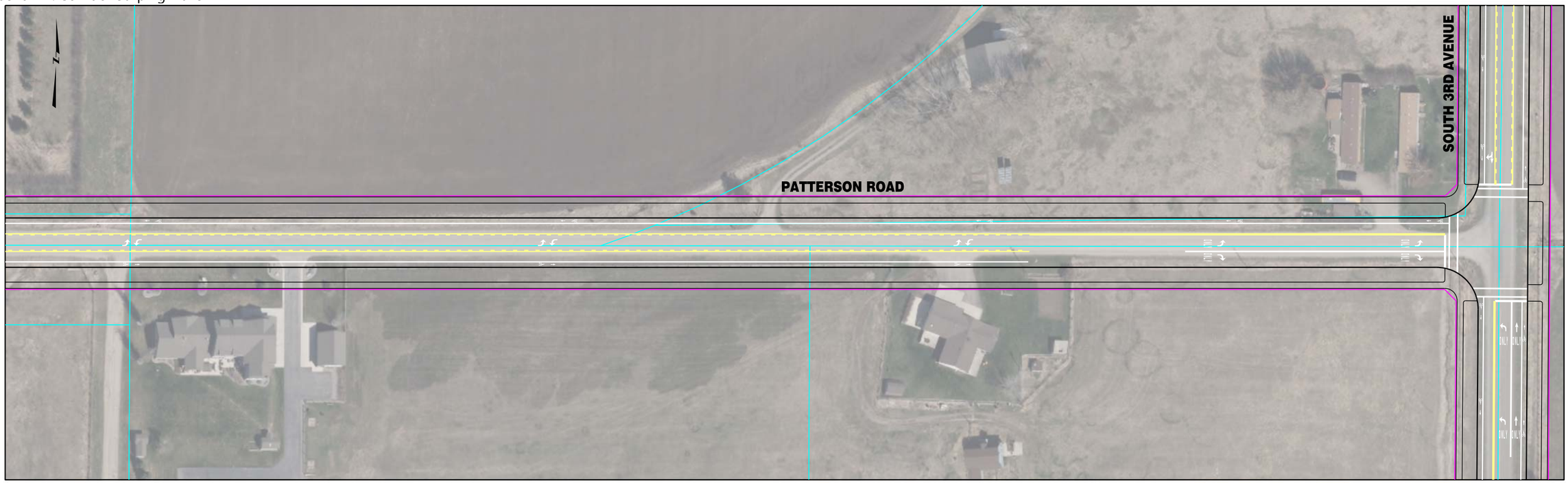

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- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

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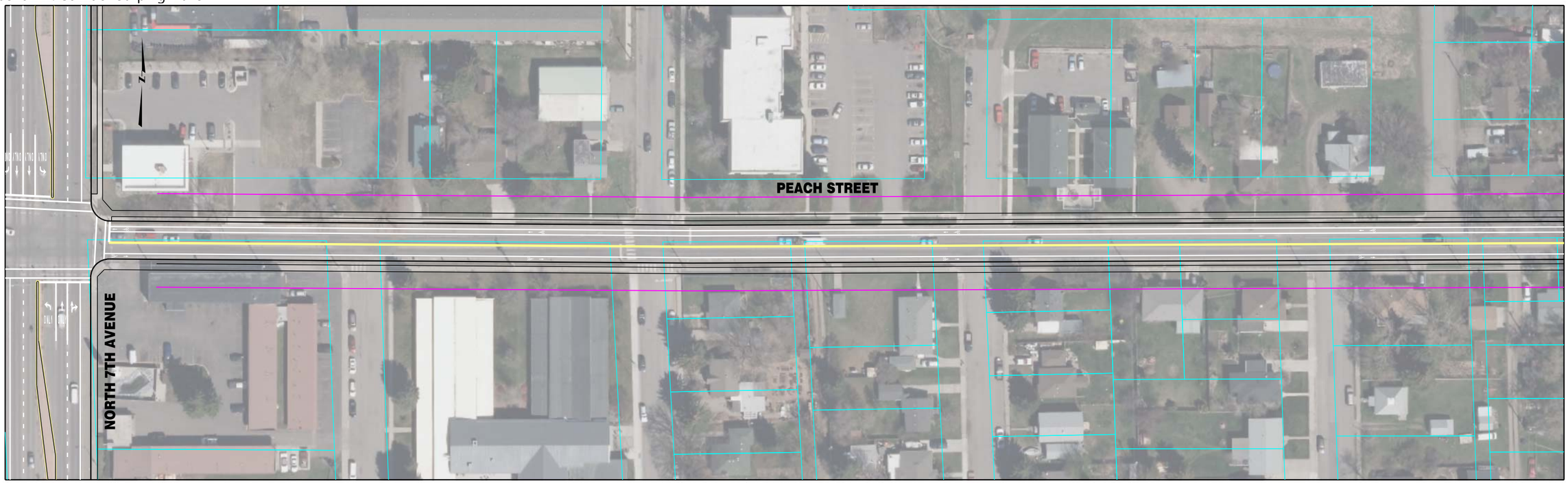

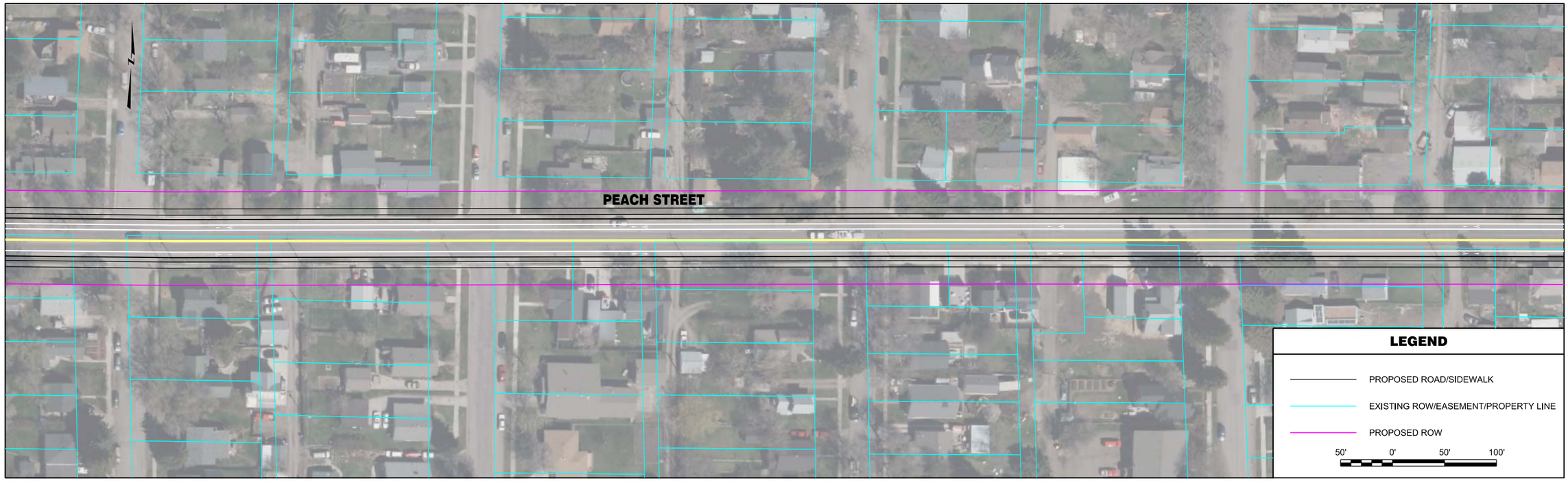

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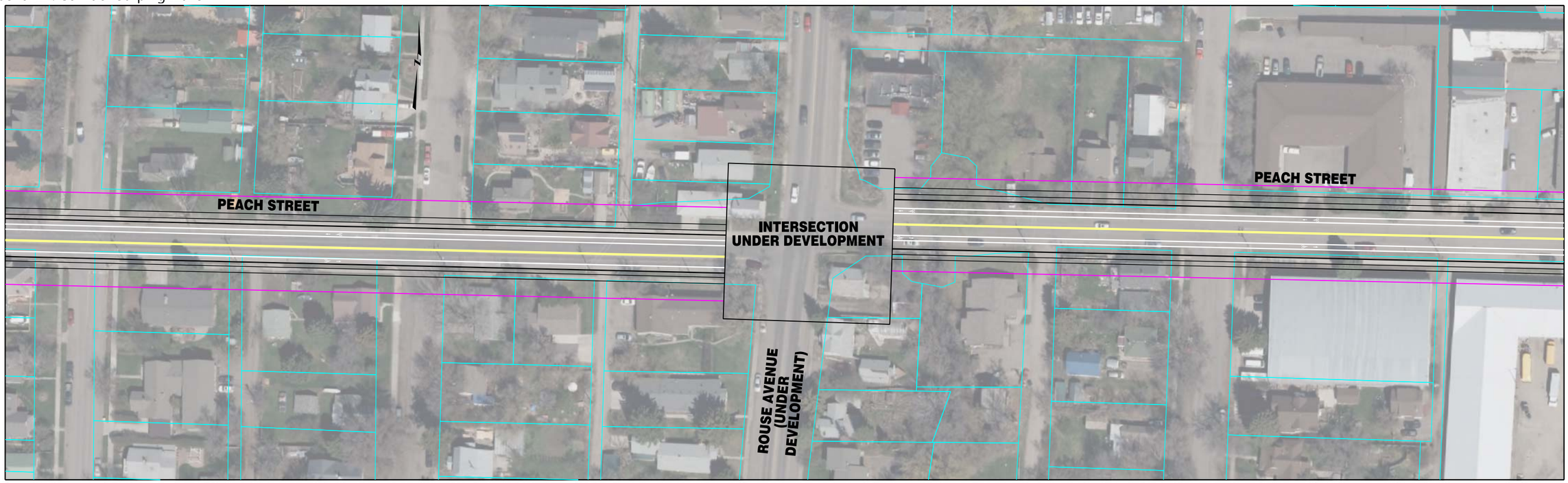

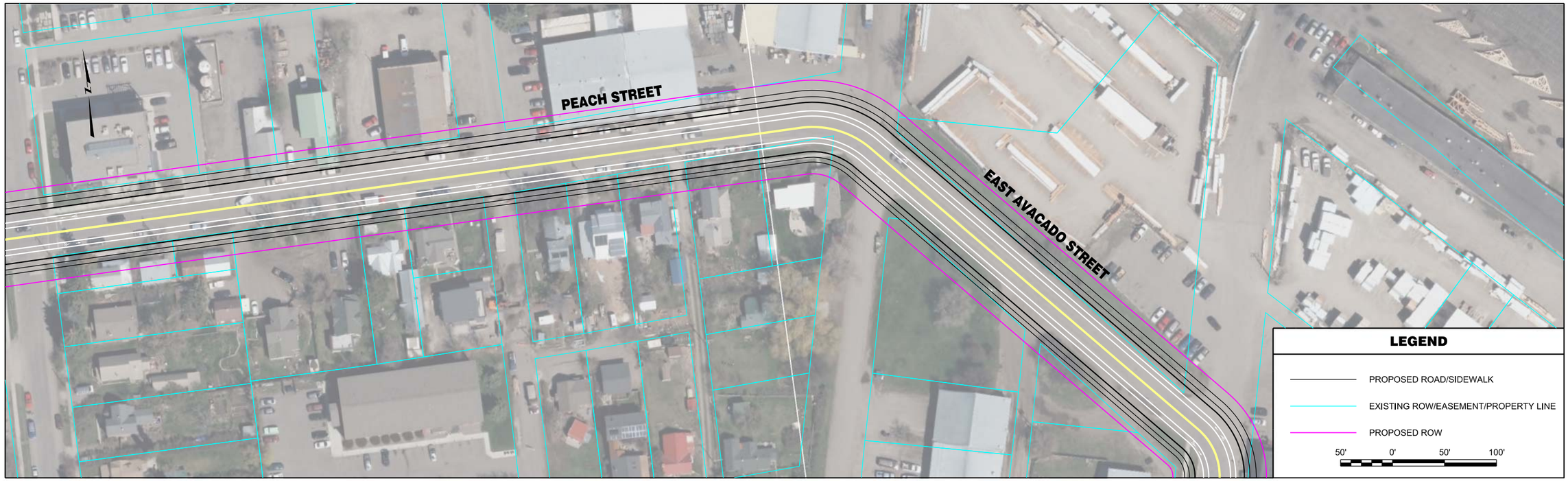

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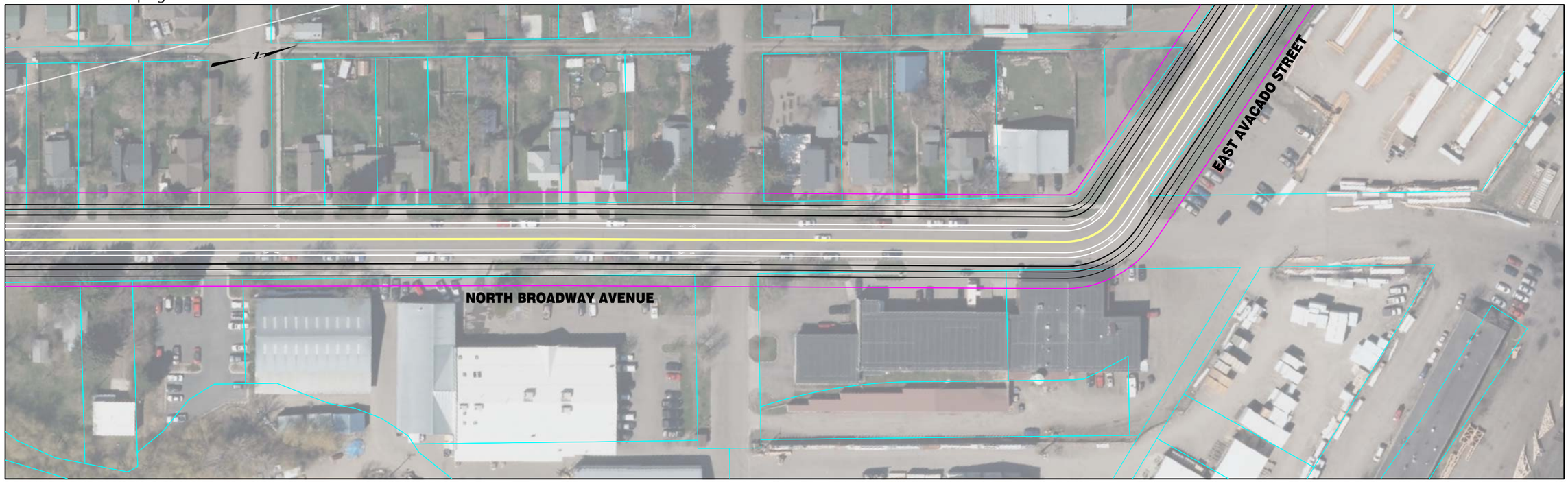

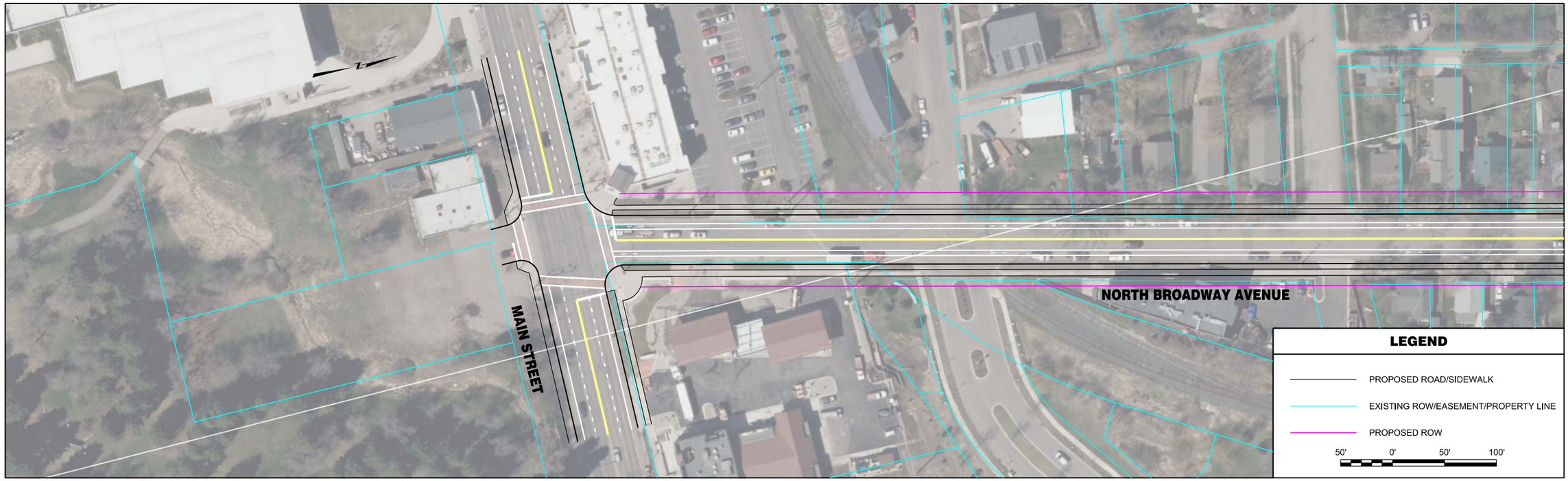

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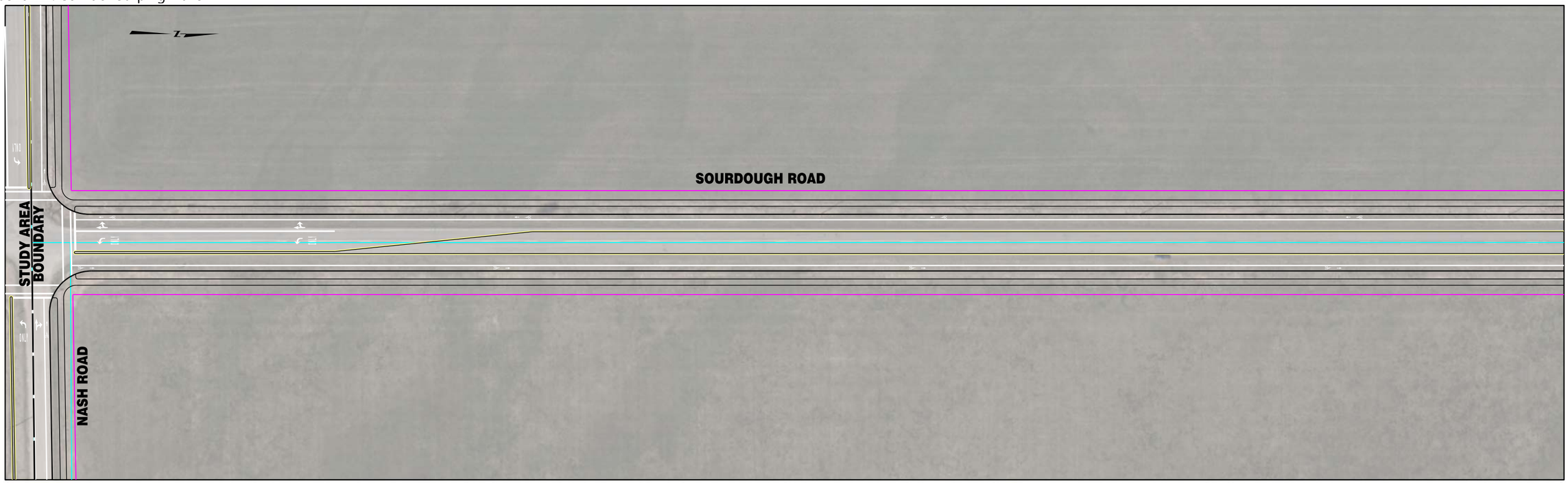

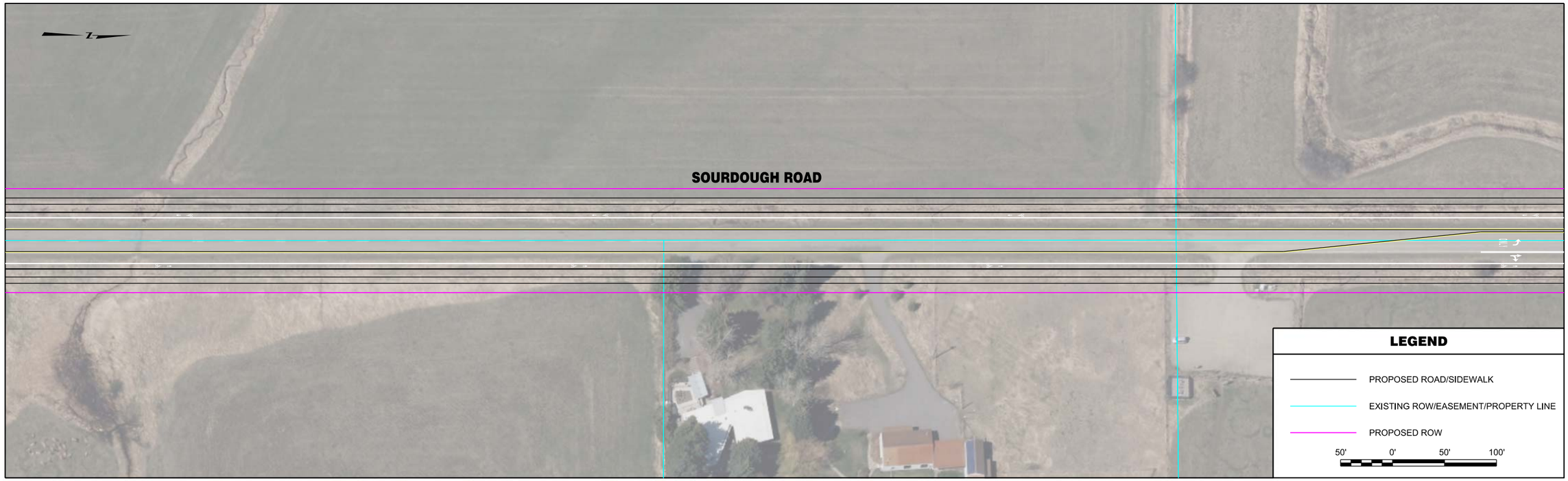

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\D-Sourdough\15602RDPLNZD1.dwg 1/26/2017 2:53:08 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOURDOUGH ROAD STRIPING PLAN**

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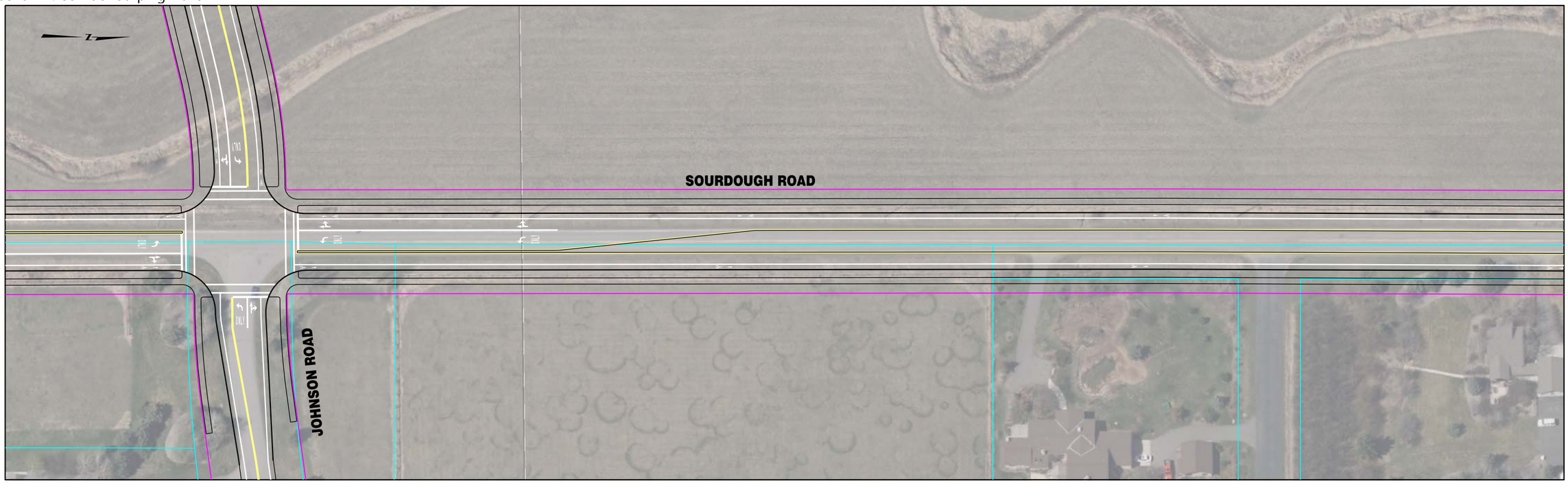

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\D-Sourdough\15602RDPLNZD1.dwg 1/26/2017 2:53:15 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOURDOUGH ROAD STRIPING PLAN**

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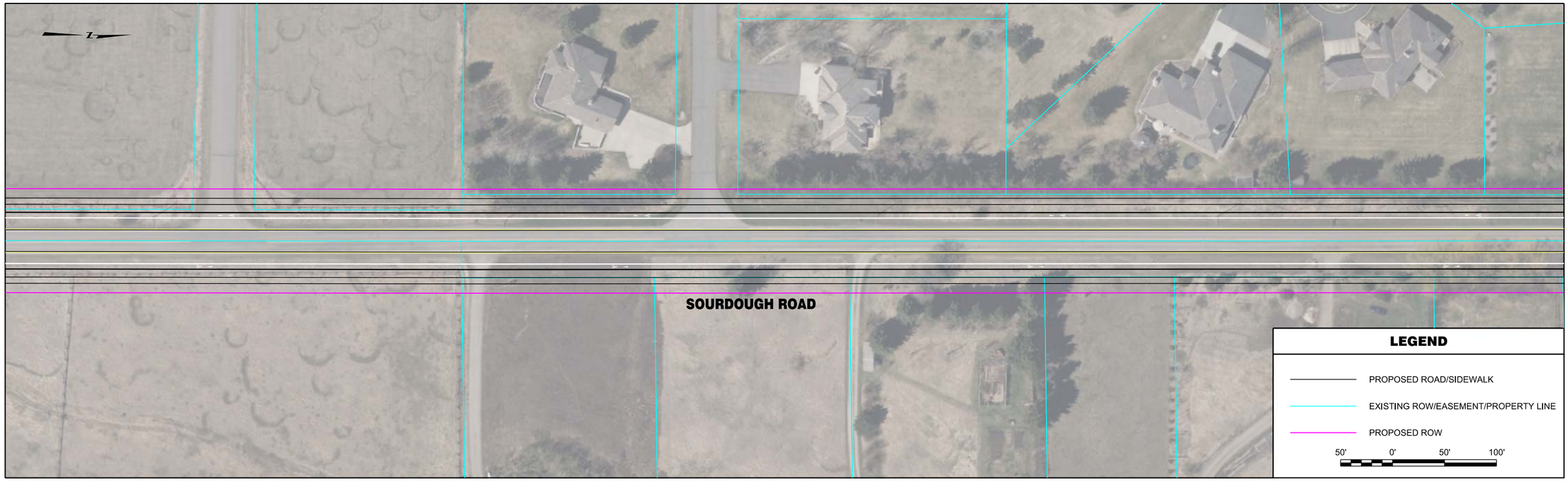
Appendix K: Corridor Striping Plans



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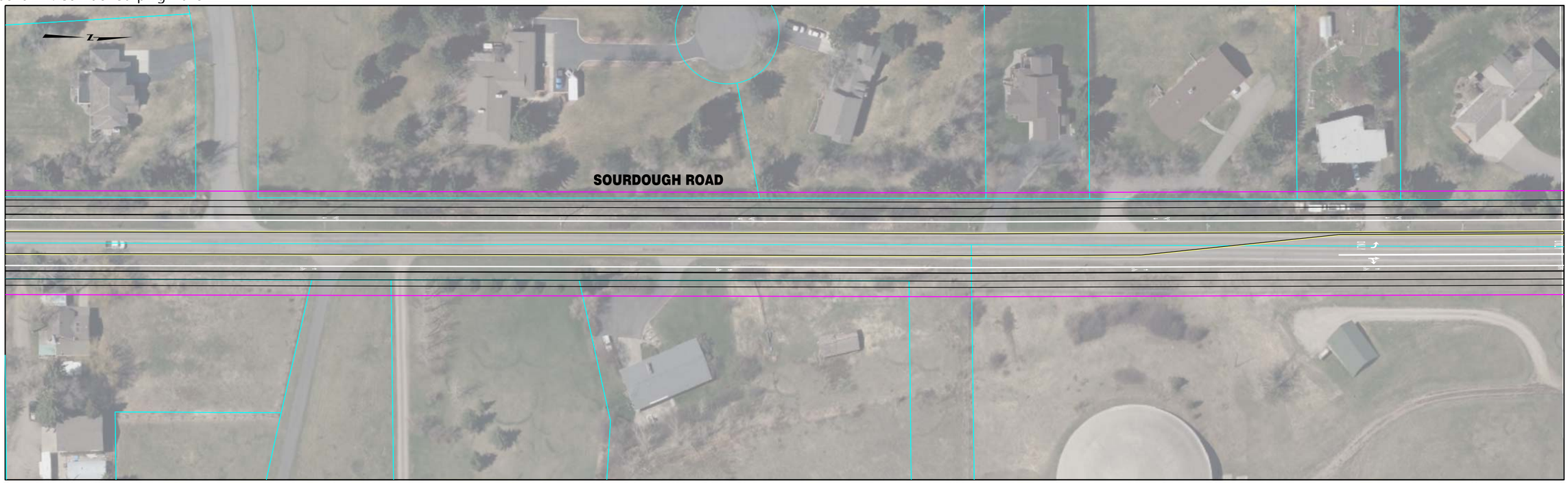

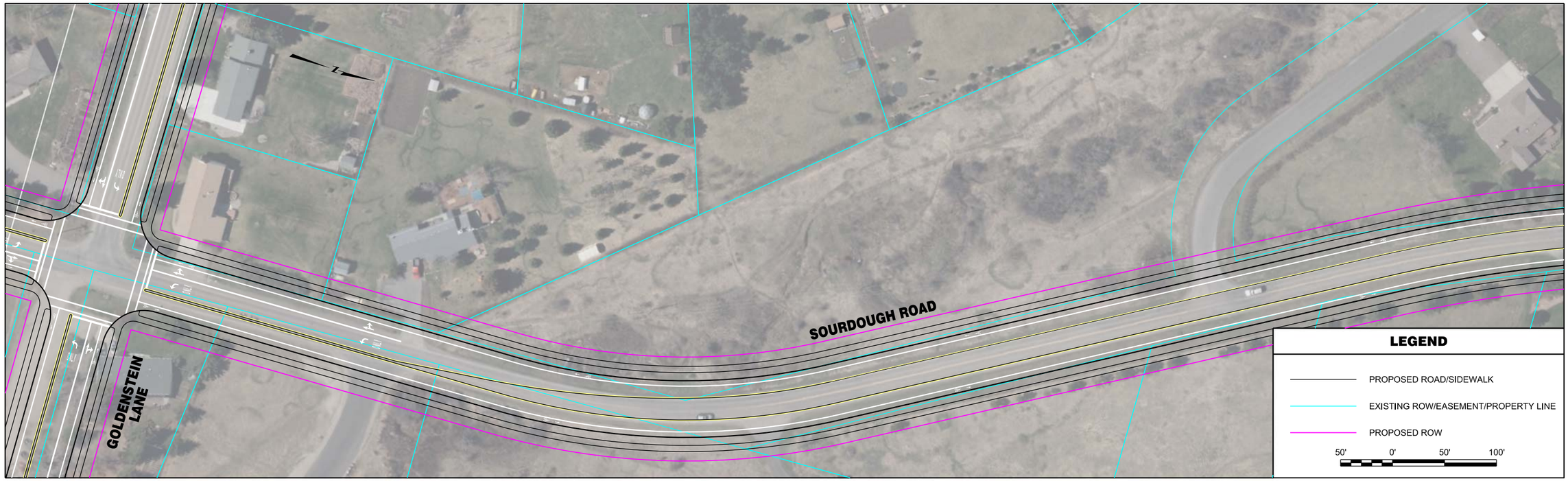

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\D-Sourdough\15602RDPLNZD2.dwg 1/26/2017 2:53:30 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOURDOUGH ROAD STRIPING PLAN**

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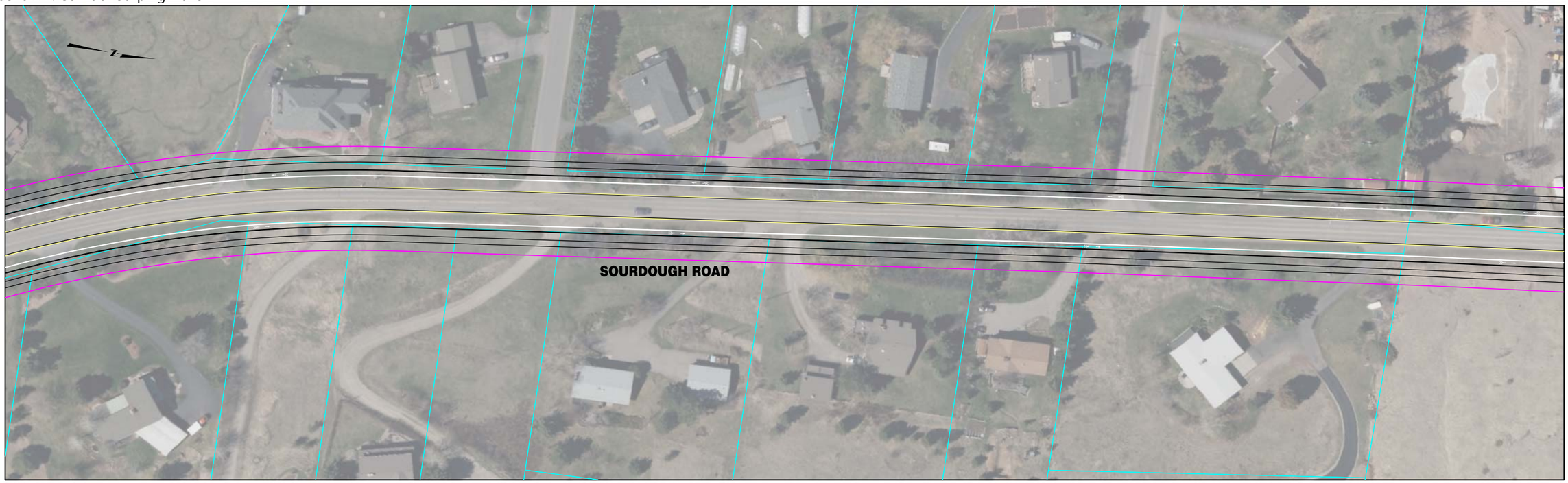

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\D-Sourdough\15602RDPLNZD2.dwg 1/26/2017 2:53:36 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOURDOUGH ROAD STRIPING PLAN**

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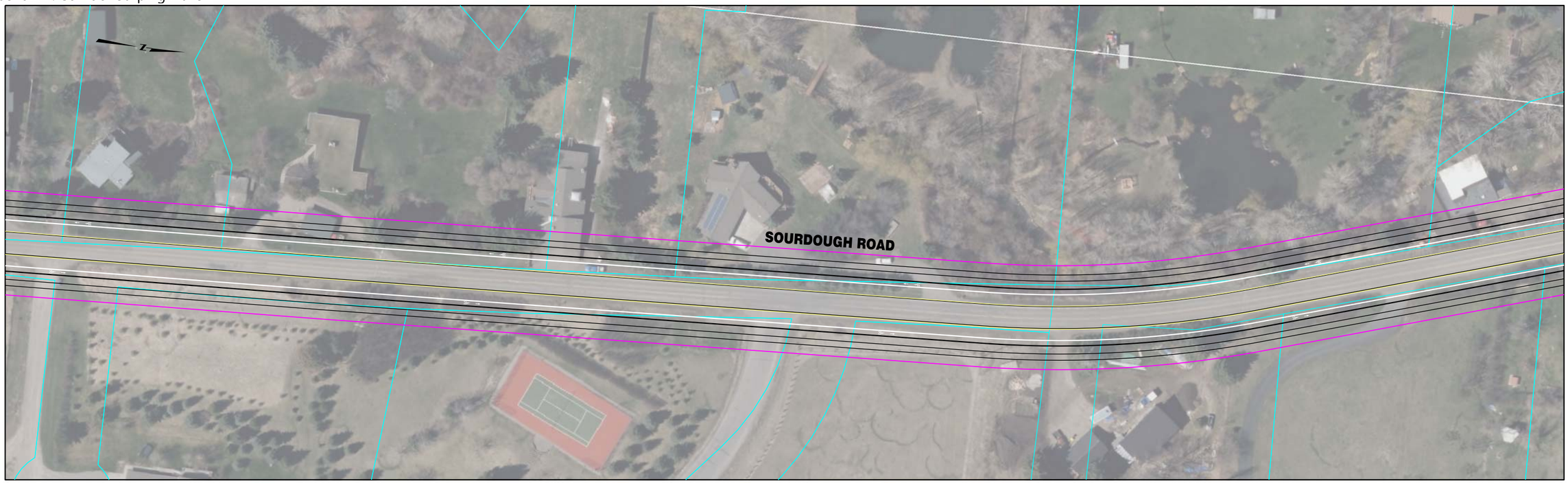
Appendix K: Corridor Striping Plans



RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\D-Sourdough\15602RDPLNZD2.dwg 1/26/2017 2:53:43 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOURDOUGH ROAD STRIPING PLAN**

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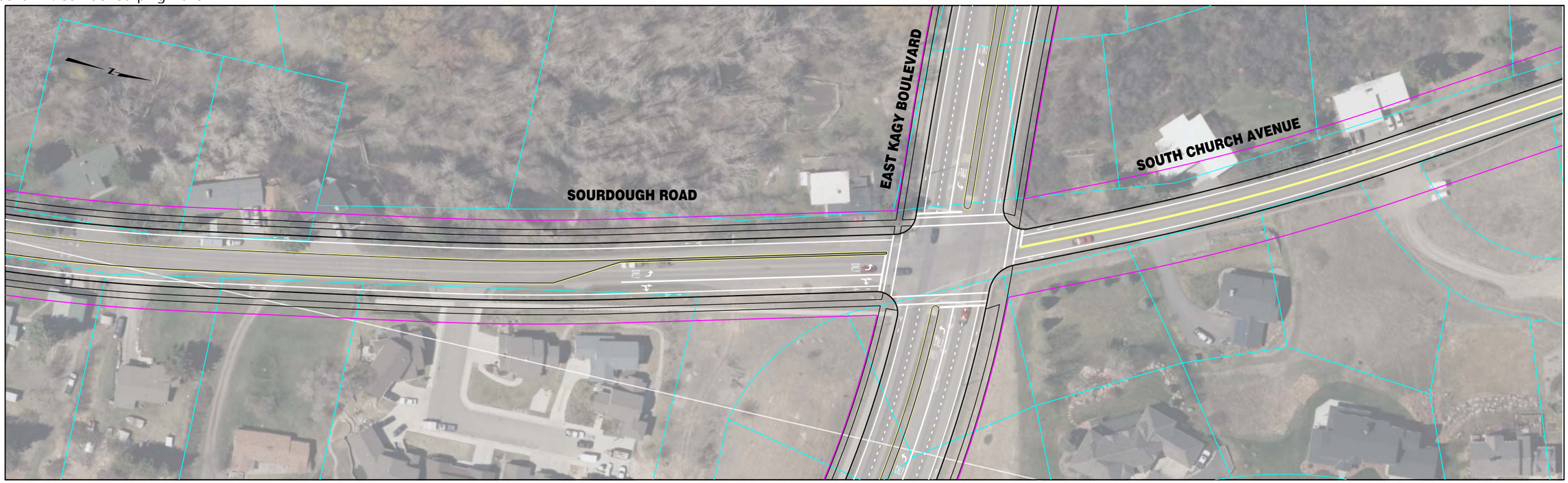

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LEGEND

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- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

100' 0' 100' 200'

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\D-Sourdough\15602RDPLNZD3.dwg 1/26/2017 2:53:50 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SOURDOUGH ROAD STRIPING PLAN**

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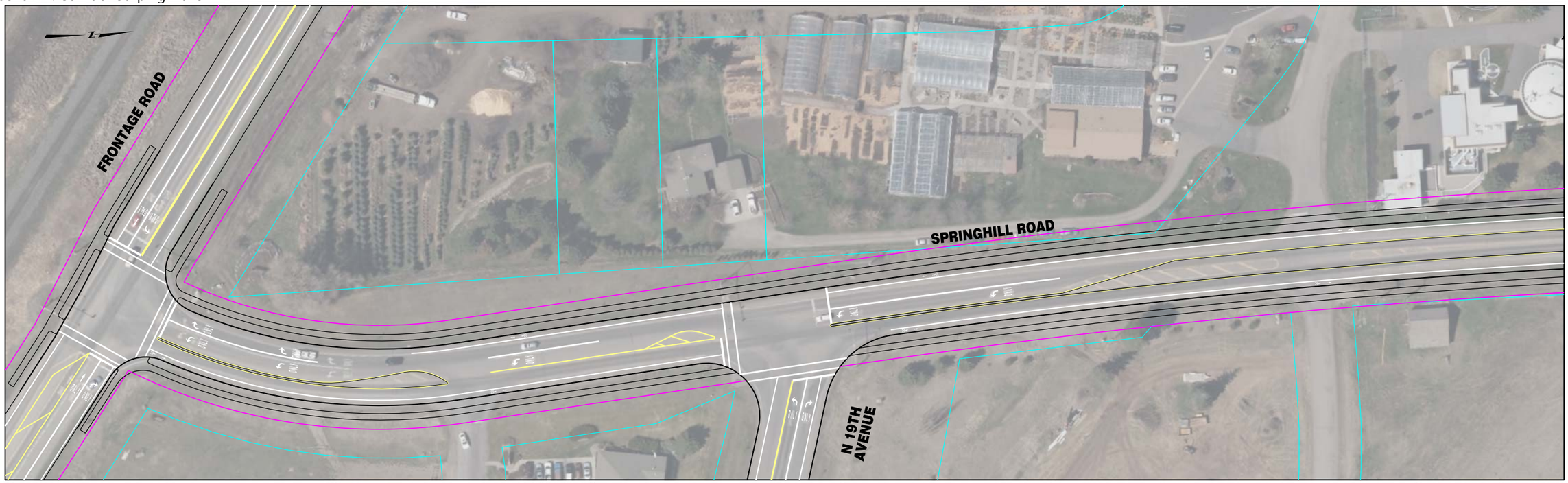

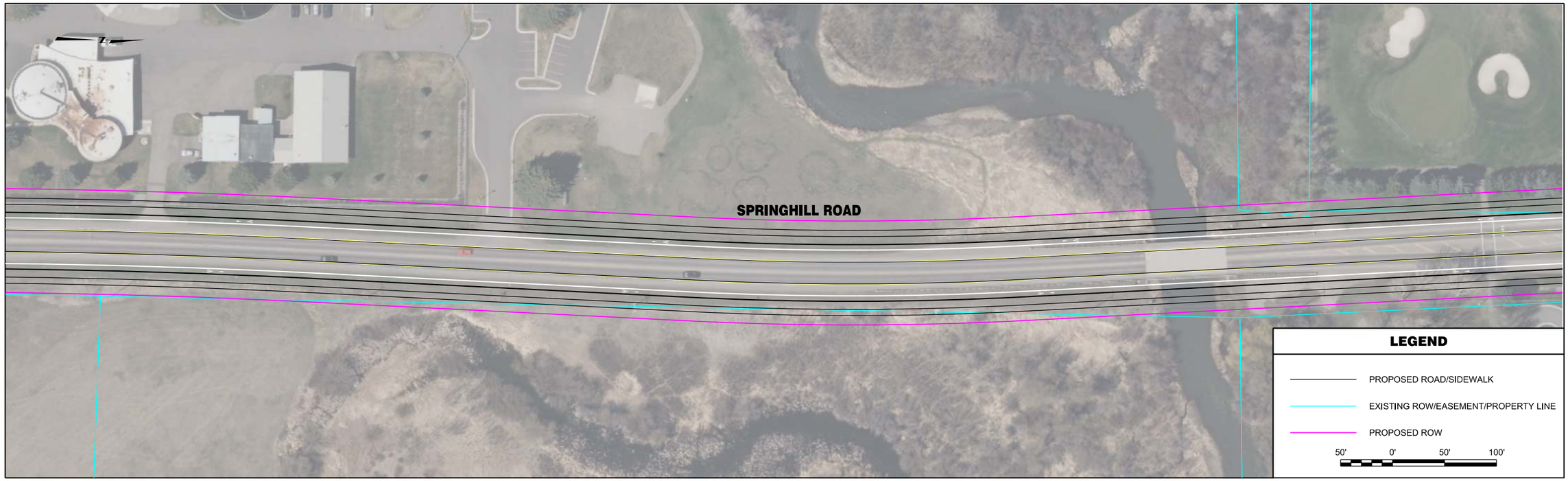

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\V-Springhill15602RDPLNZV1.dgn 1/26/2017 2:52:19 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SPRINGHILL ROAD STRIPING PLAN**

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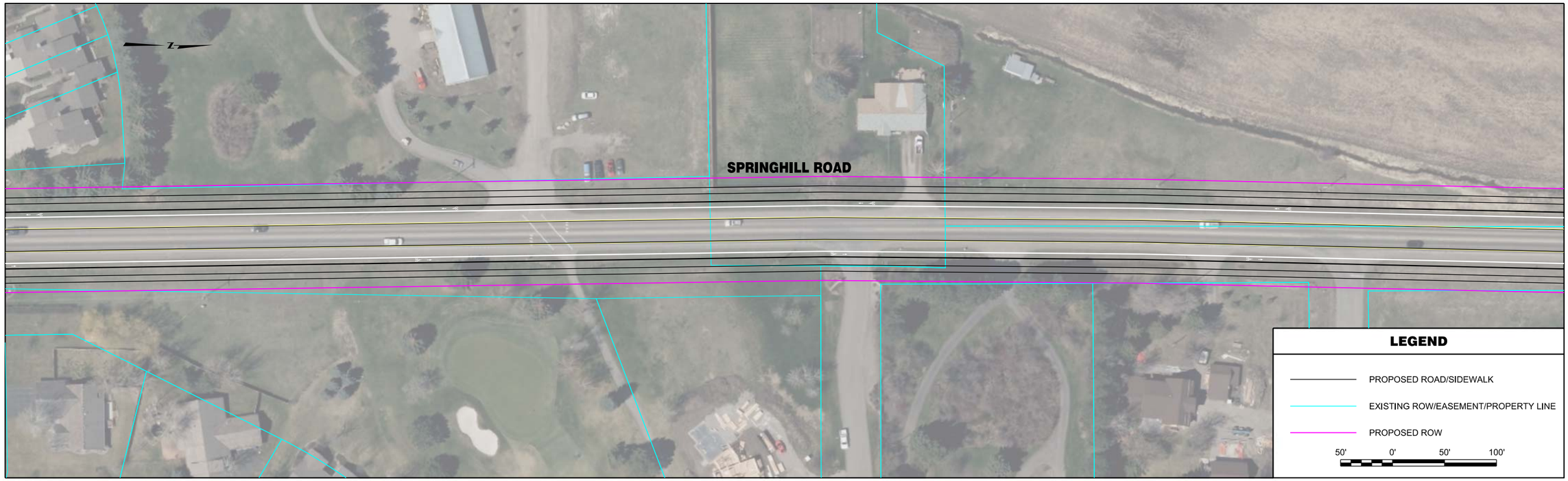

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\V-Springhill15602RDPLNZV1.dgn 1/26/2017 2:49:53 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **SPRINGHILL ROAD STRIPING PLAN**

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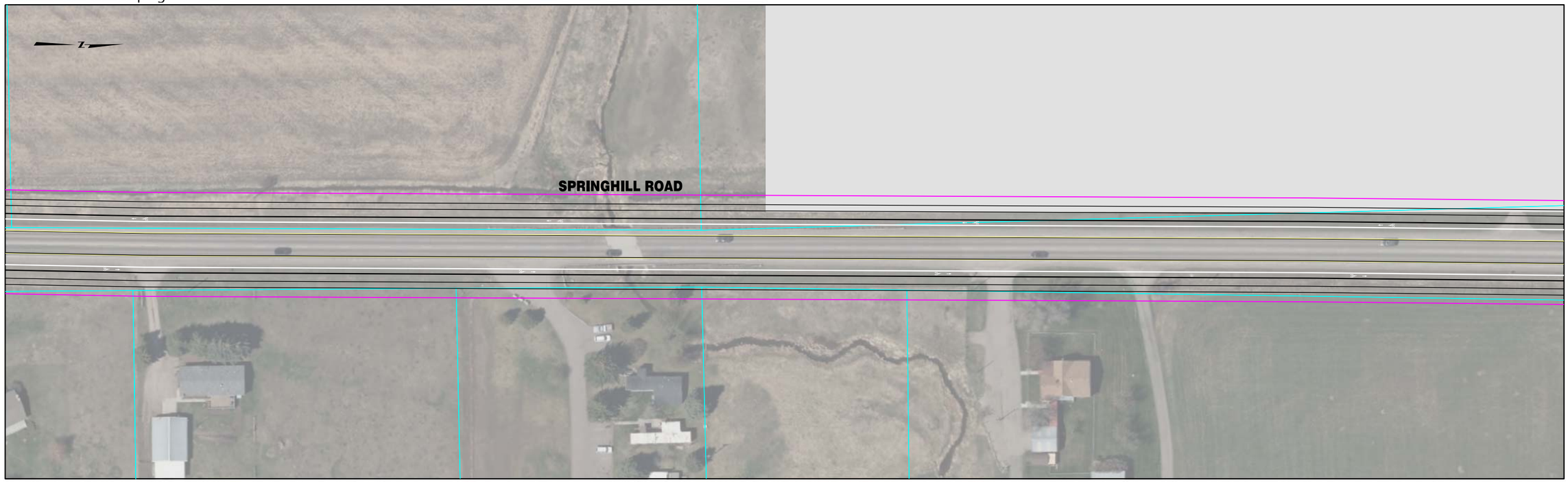

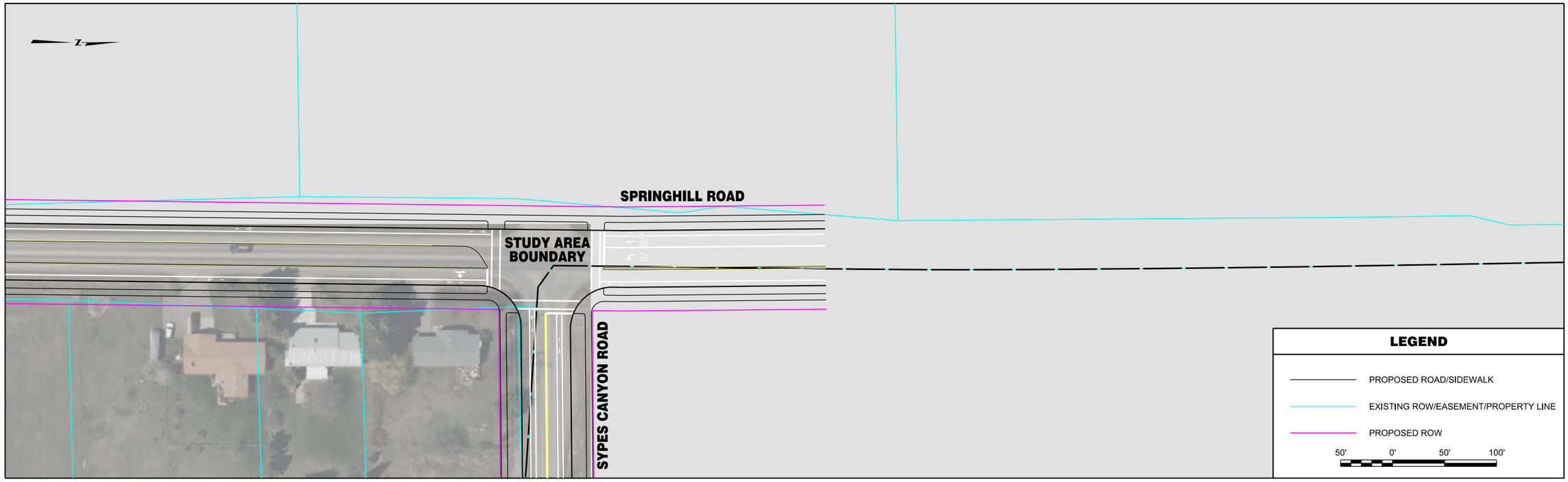

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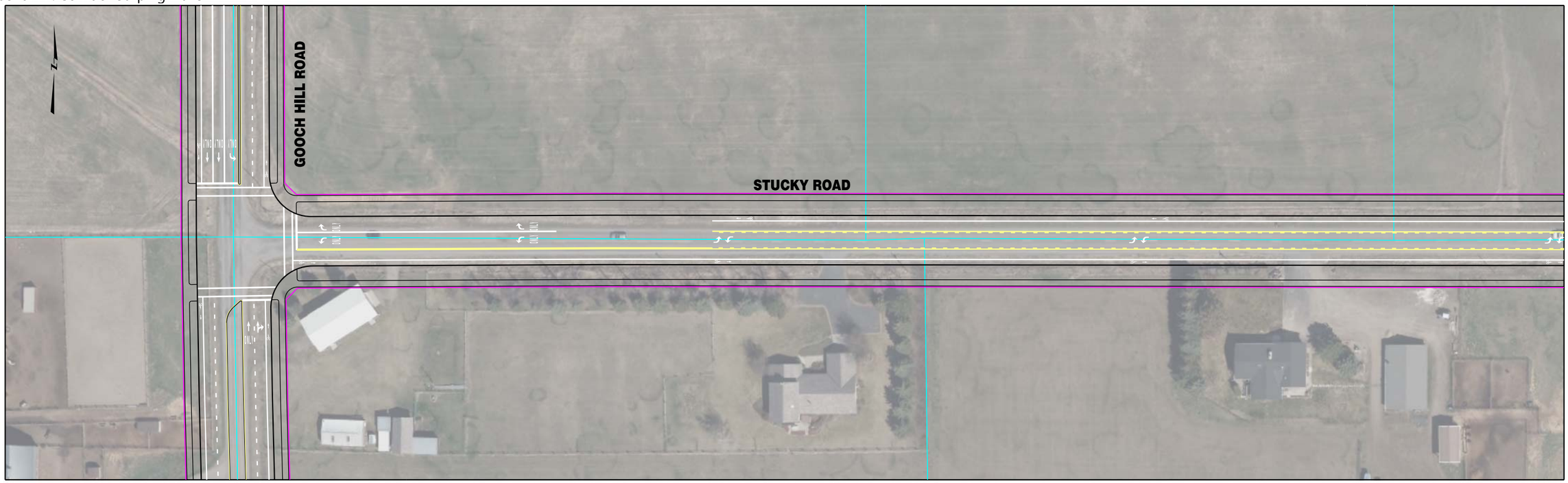

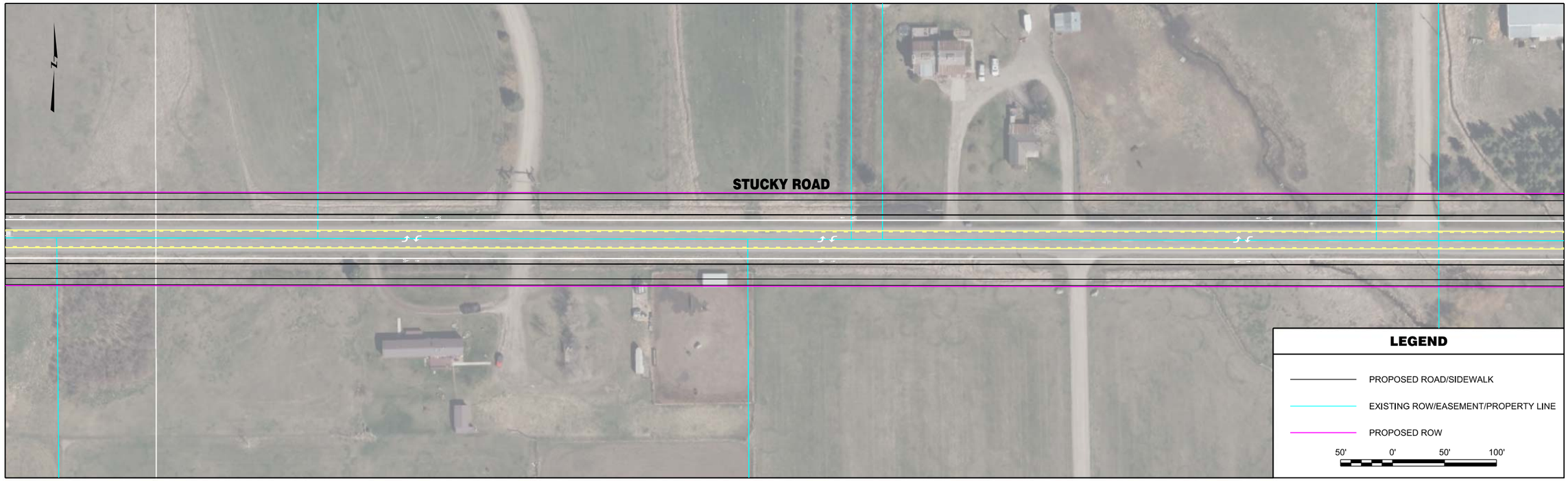

ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\CC-Stucky\15602RDPLNZCC1.dw 1/26/2017 2:48:09 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **STUCKY ROAD STRIPING PLAN**

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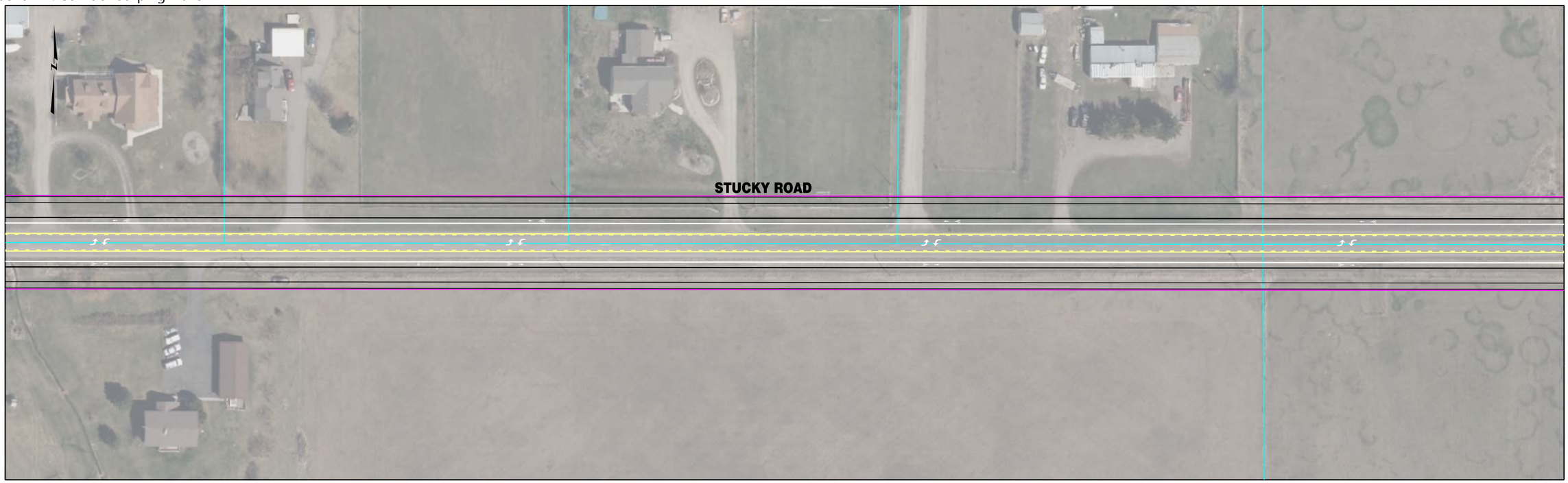

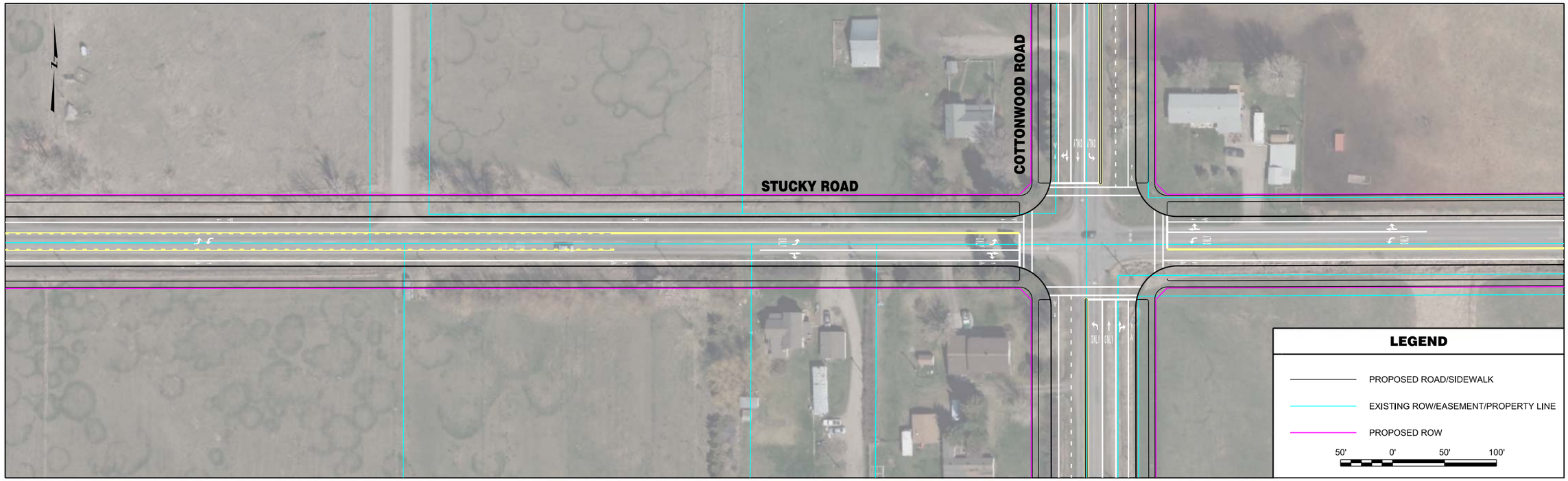

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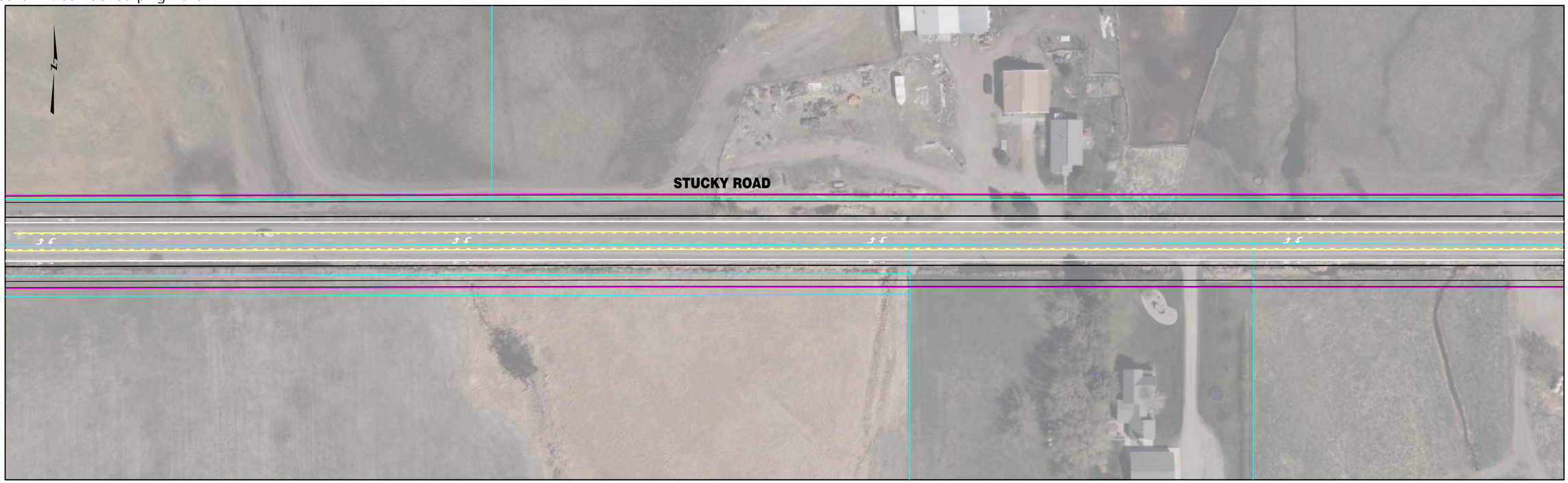

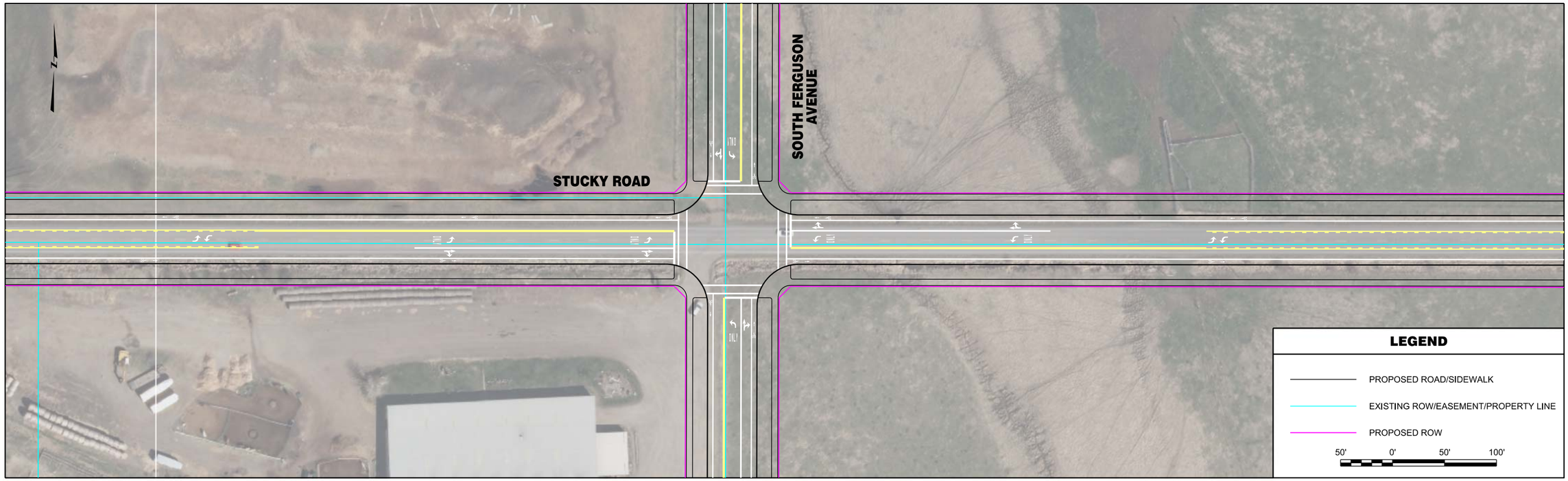

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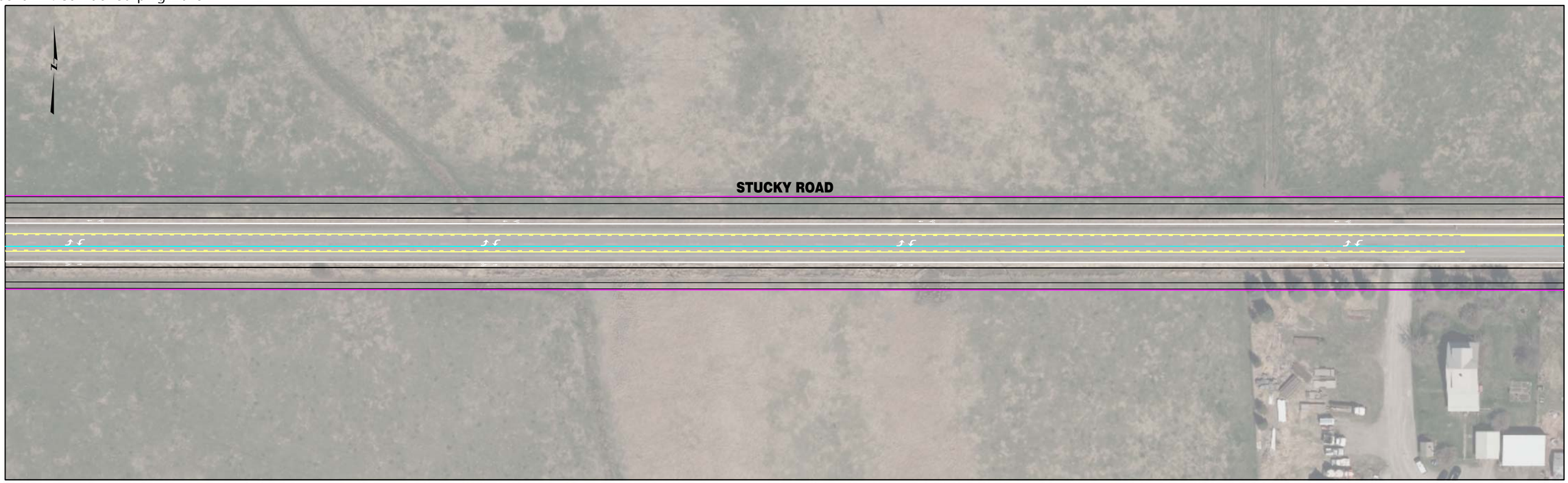

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\CC-Stucky\15602RDPLNZCC2.dw 1/26/2017 2:48:28 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **STUCKY ROAD STRIPING PLAN**

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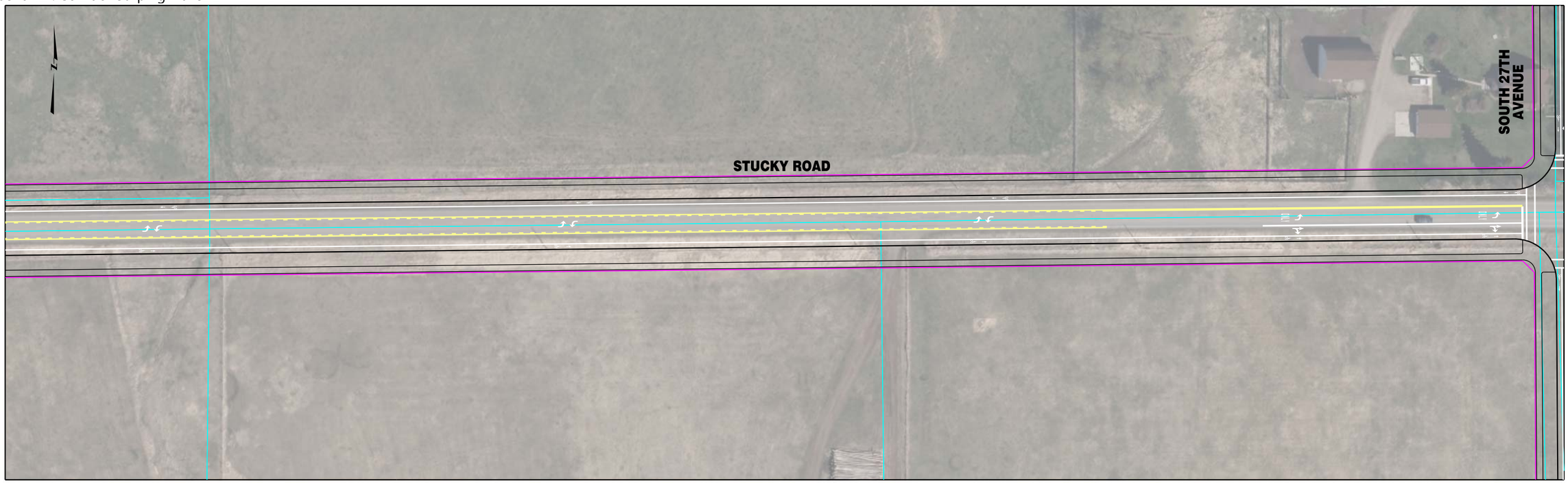

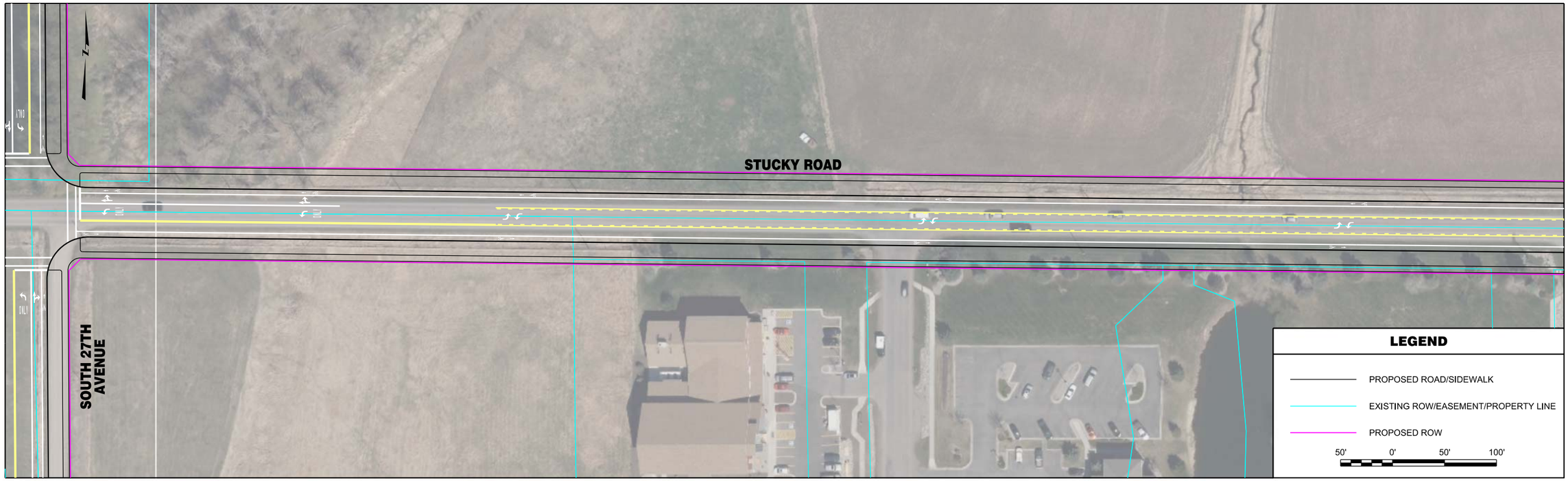

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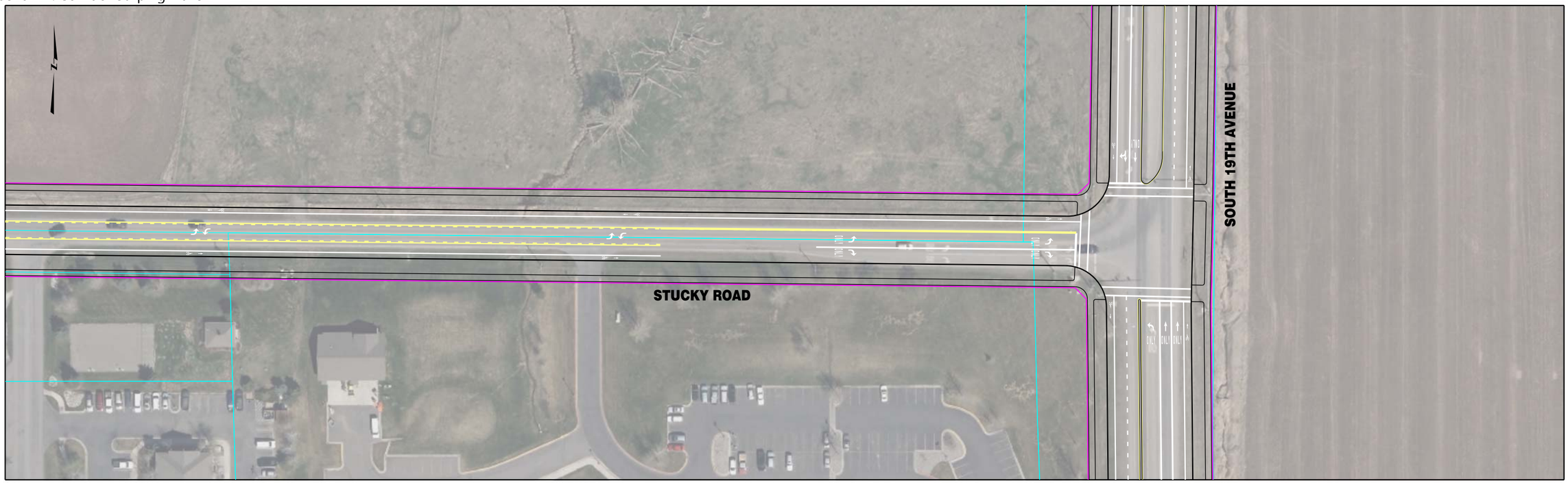

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LEGEND

- PROPOSED ROAD/SIDEWALK
- EXISTING ROW/EASEMENT/PROPERTY LINE
- PROPOSED ROW

50' 0' 50' 100'

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\CC-Stucky\15602RDPLNZCC2.dw 1/26/2017 2:48:44 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **STUCKY ROAD STRIPING PLAN**

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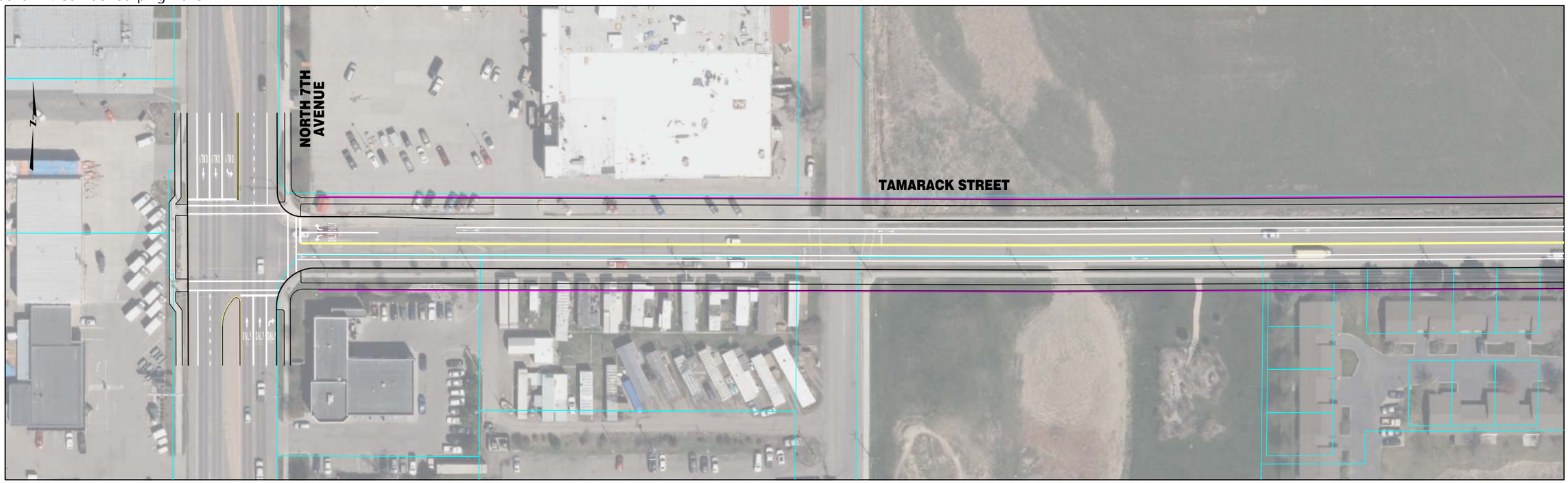

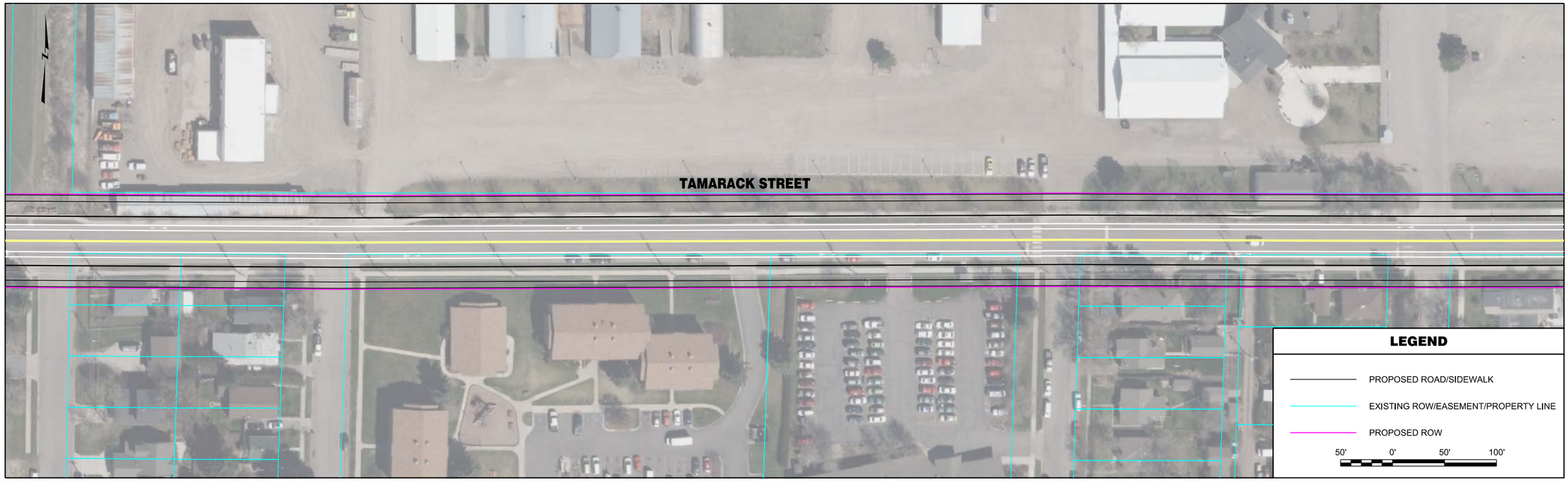

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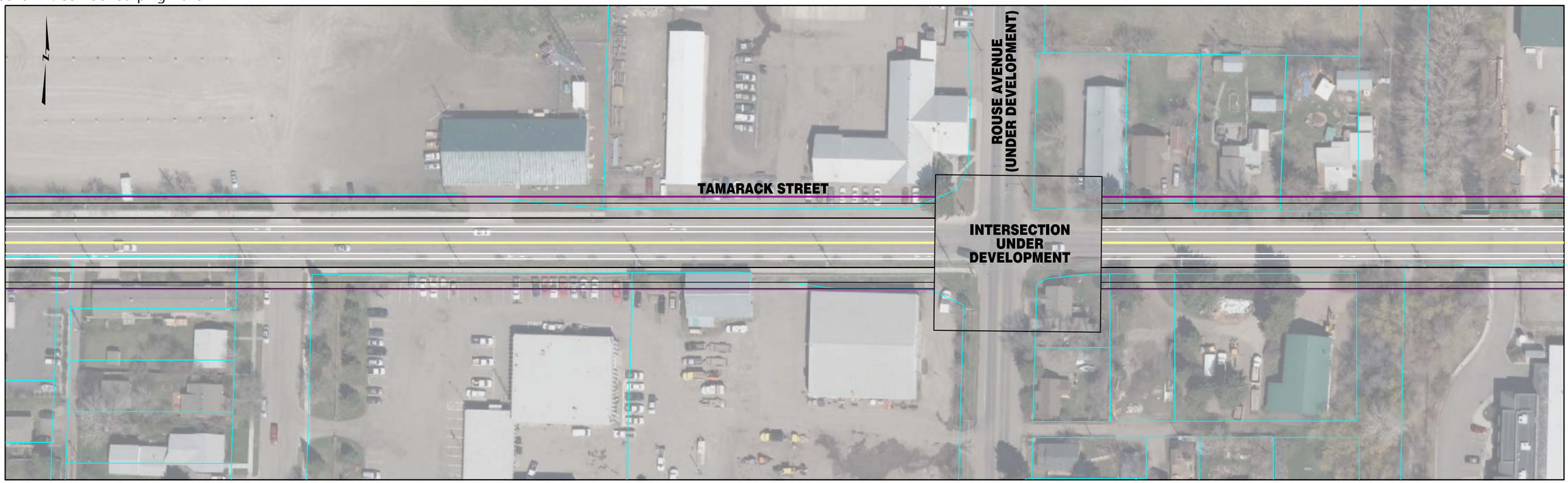

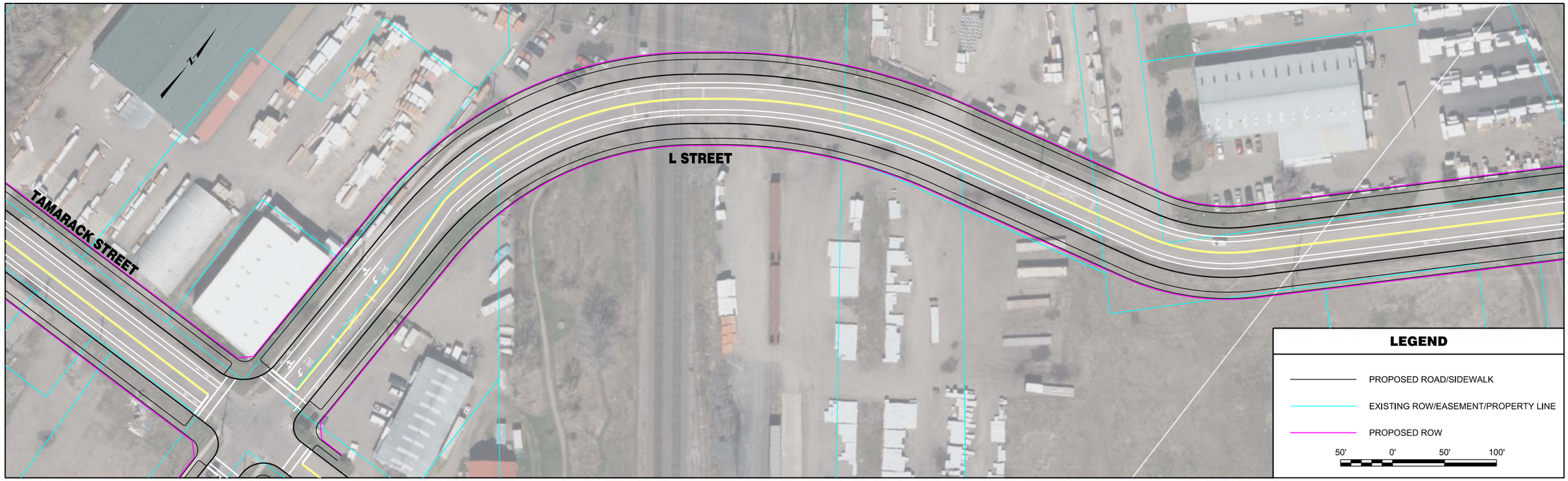

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZVV1.dgn 1/26/2017 2:45:14 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **TAMARACK & L STREET STRIPING PLAN**

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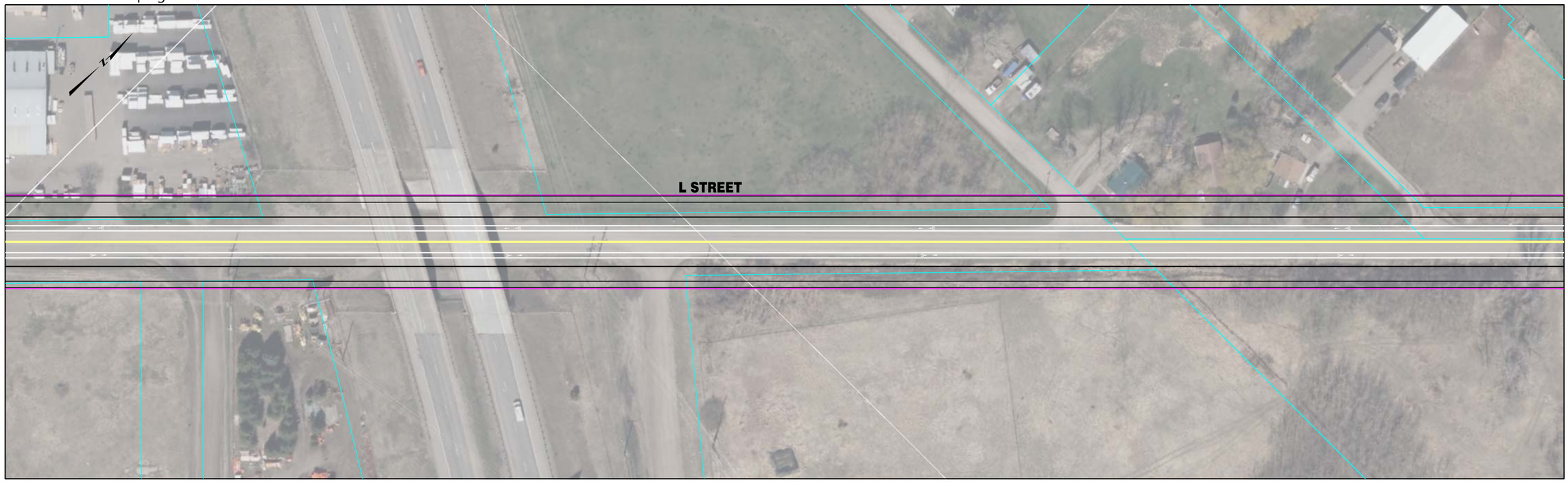

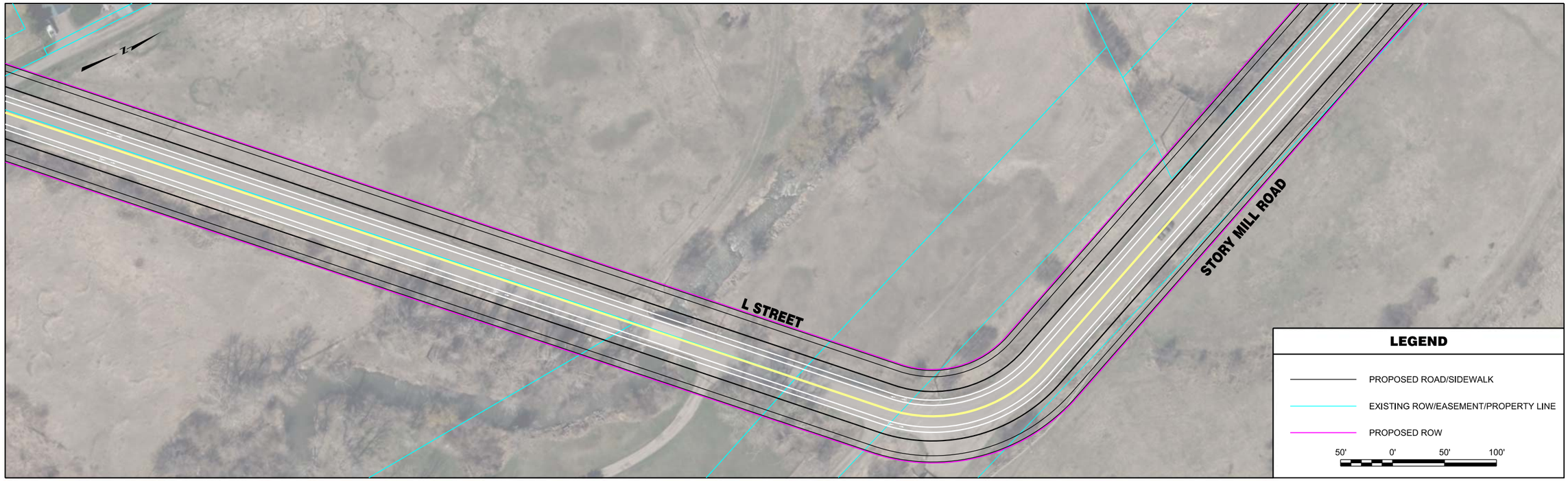

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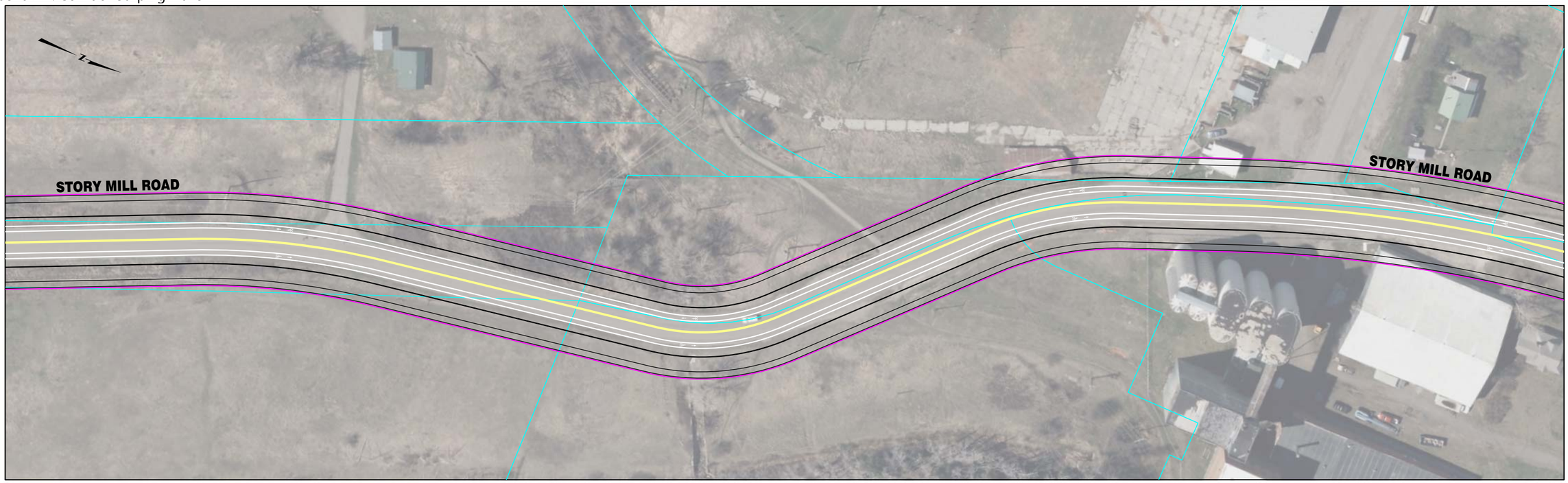

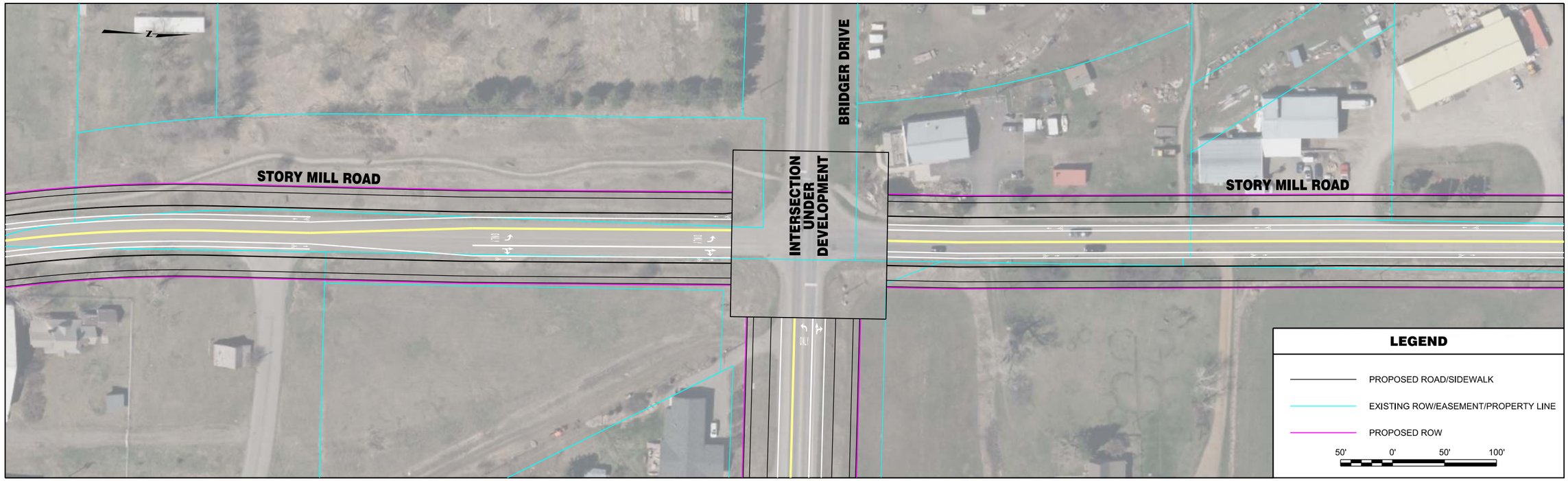

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZVV2.dgn 1/26/2017 2:45:28 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **STORY MILL ROAD STRIPING PLAN**

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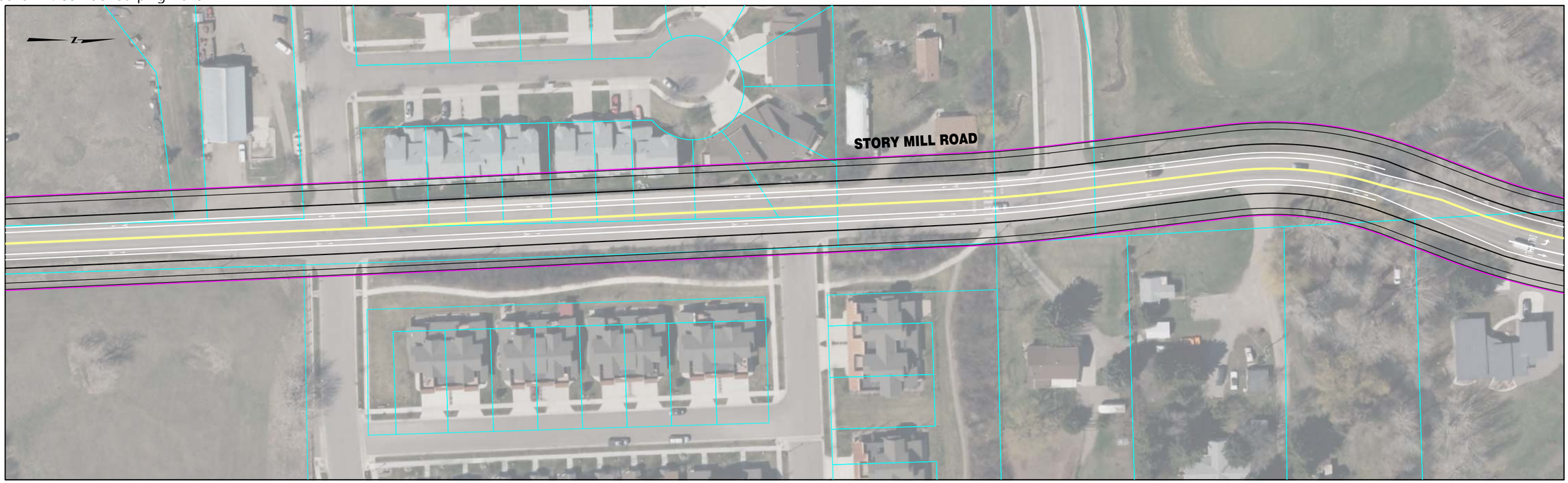

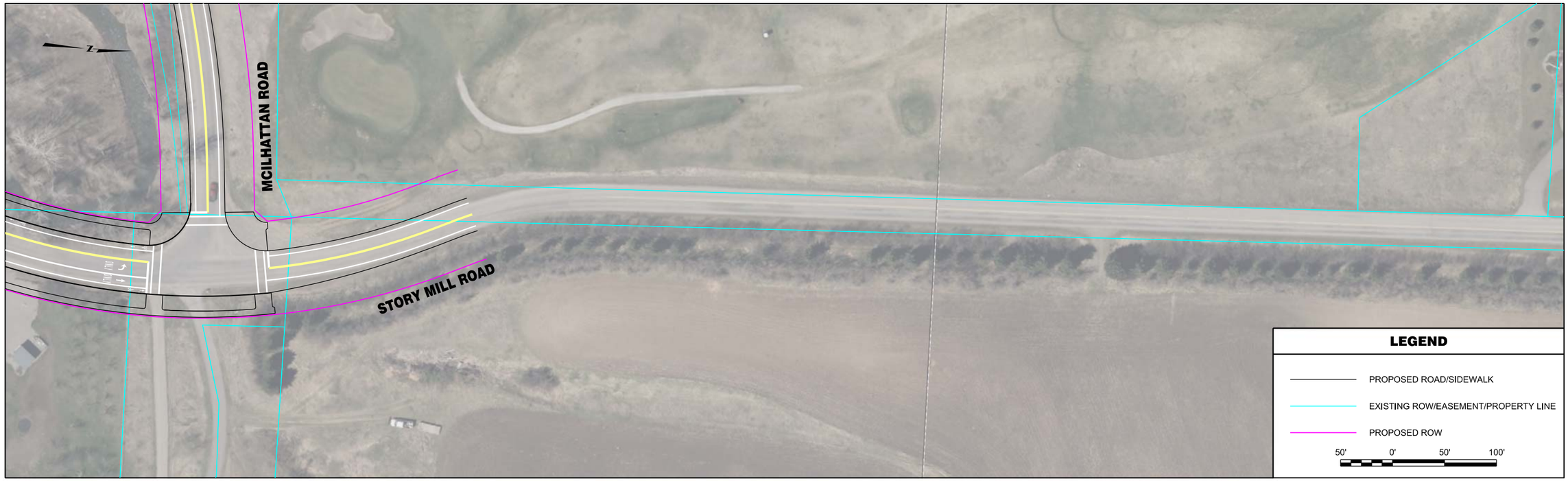

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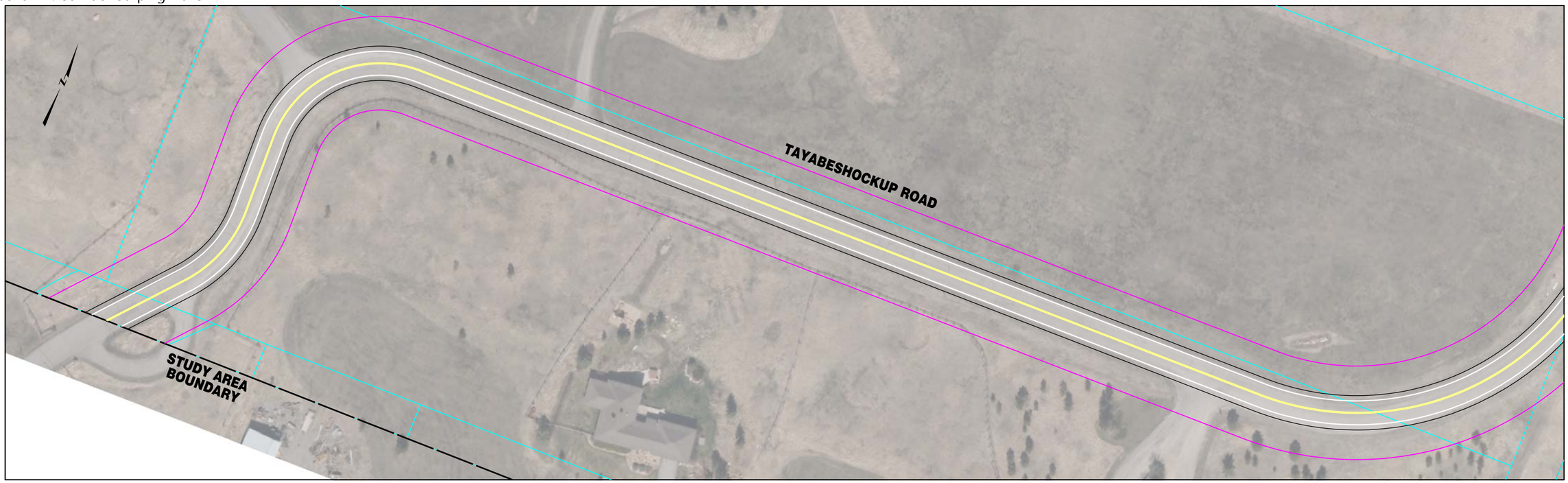

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZMM1.dgn 1/26/2017 2:43:31 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **TAYABESHOCKUP ROAD STRIPING PLAN**

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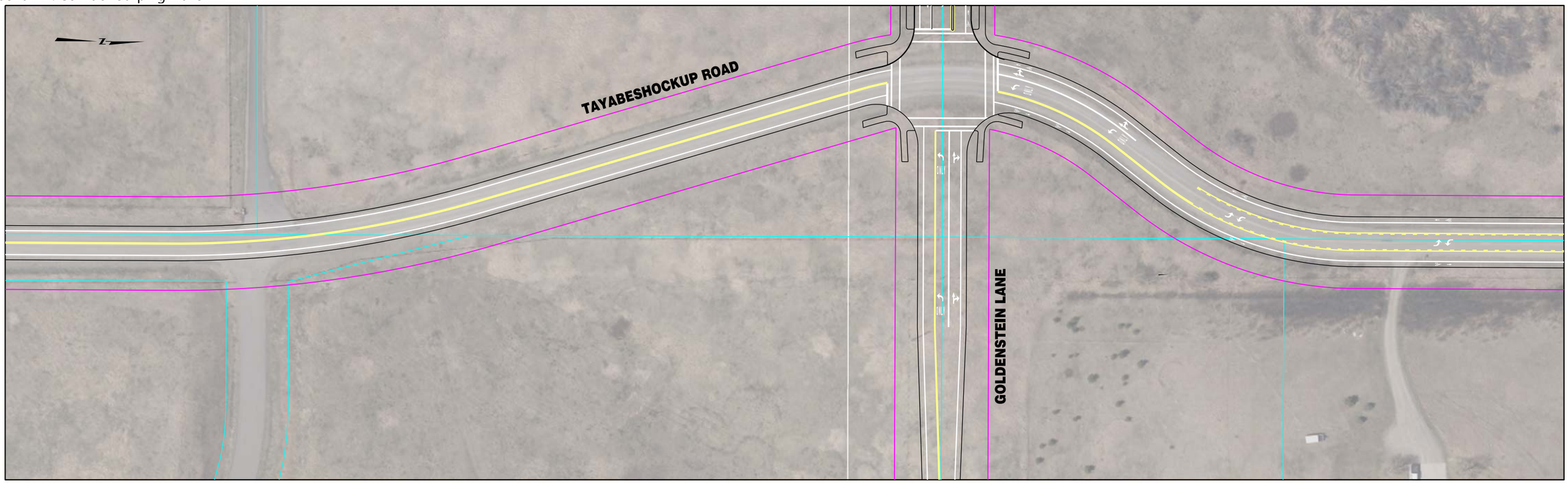

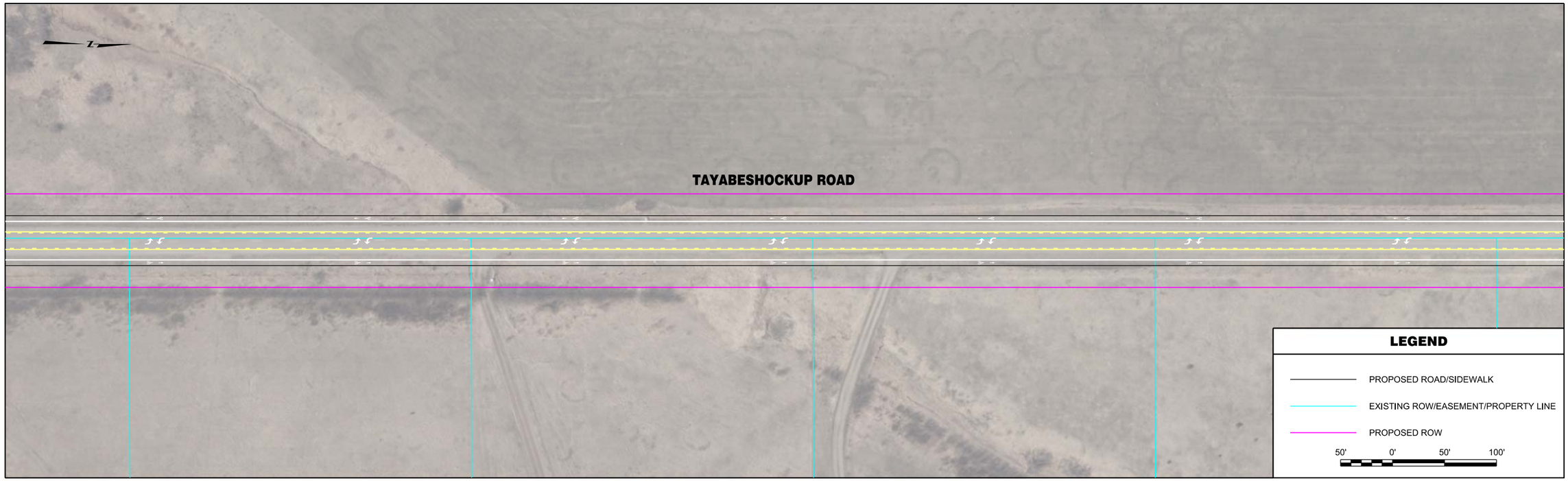

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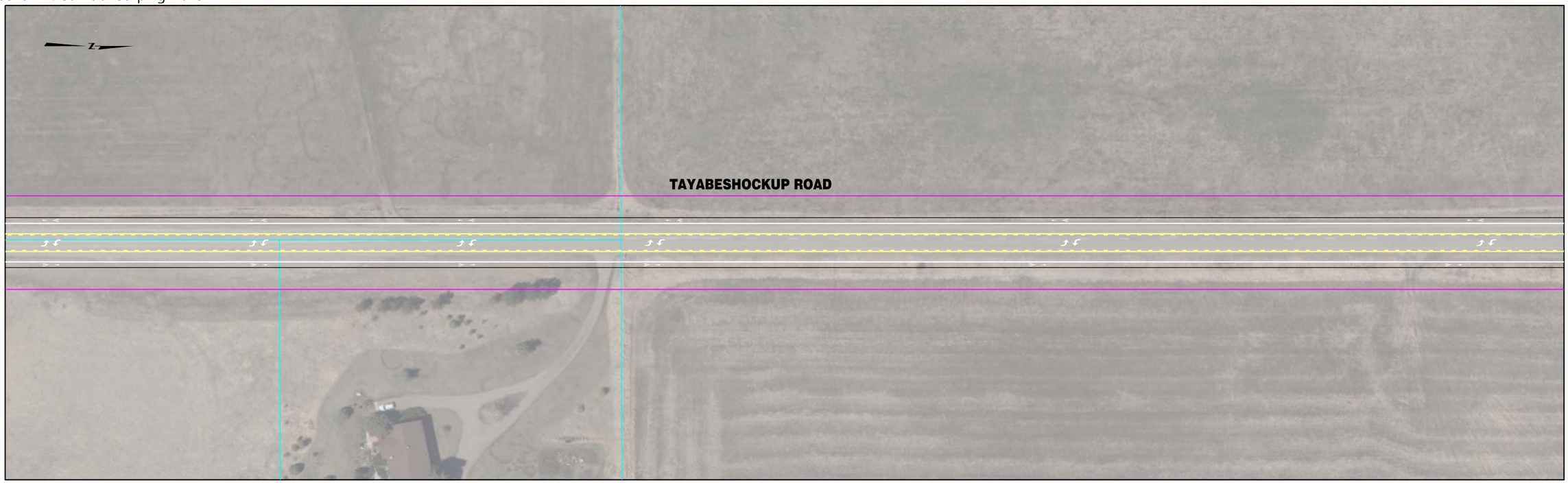

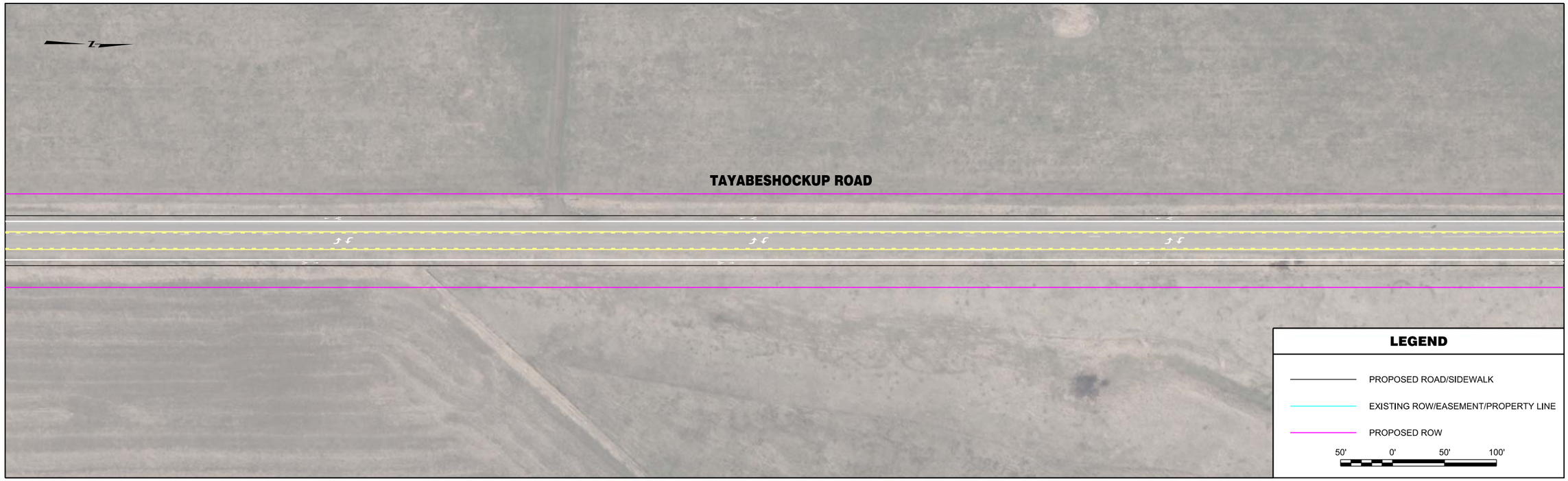

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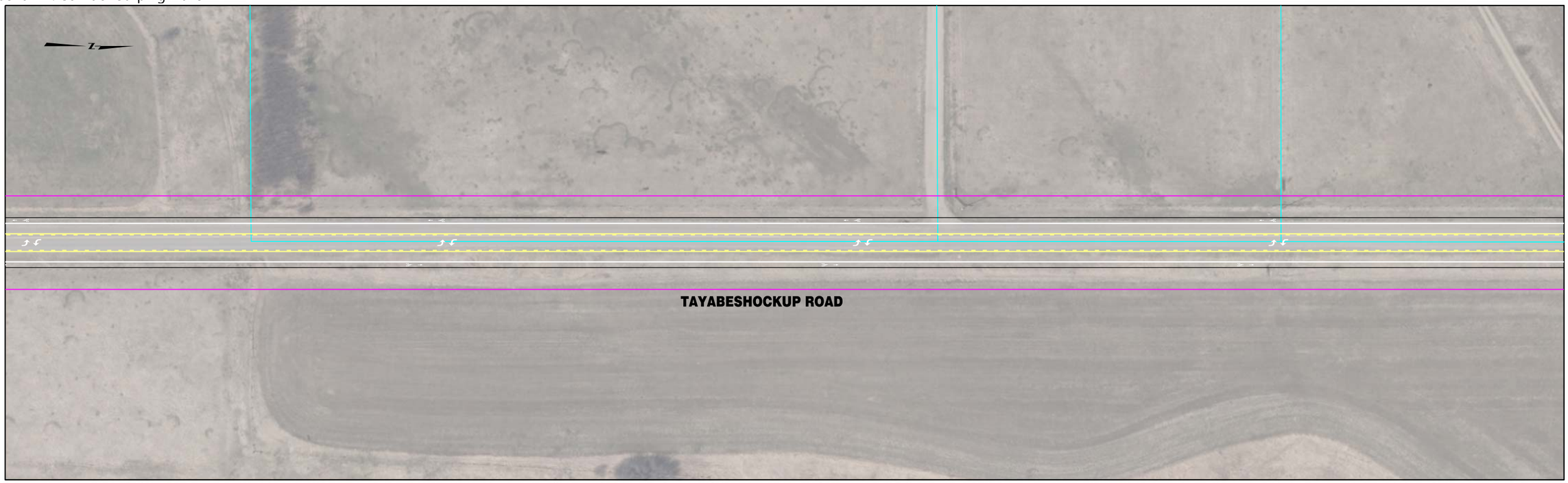

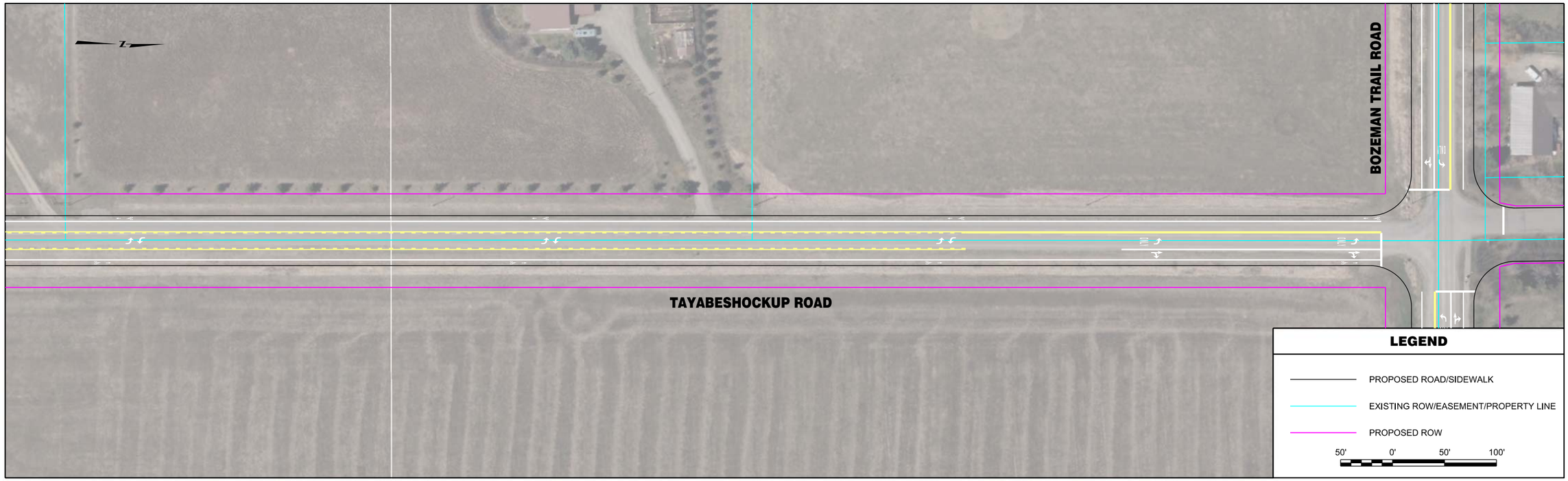

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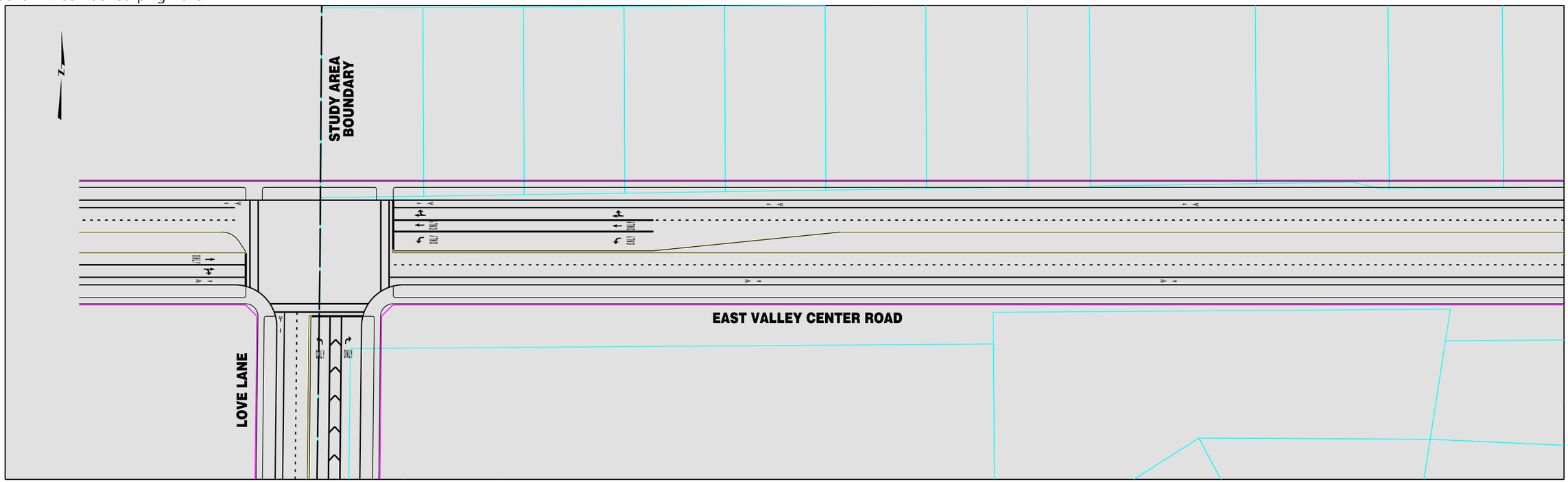

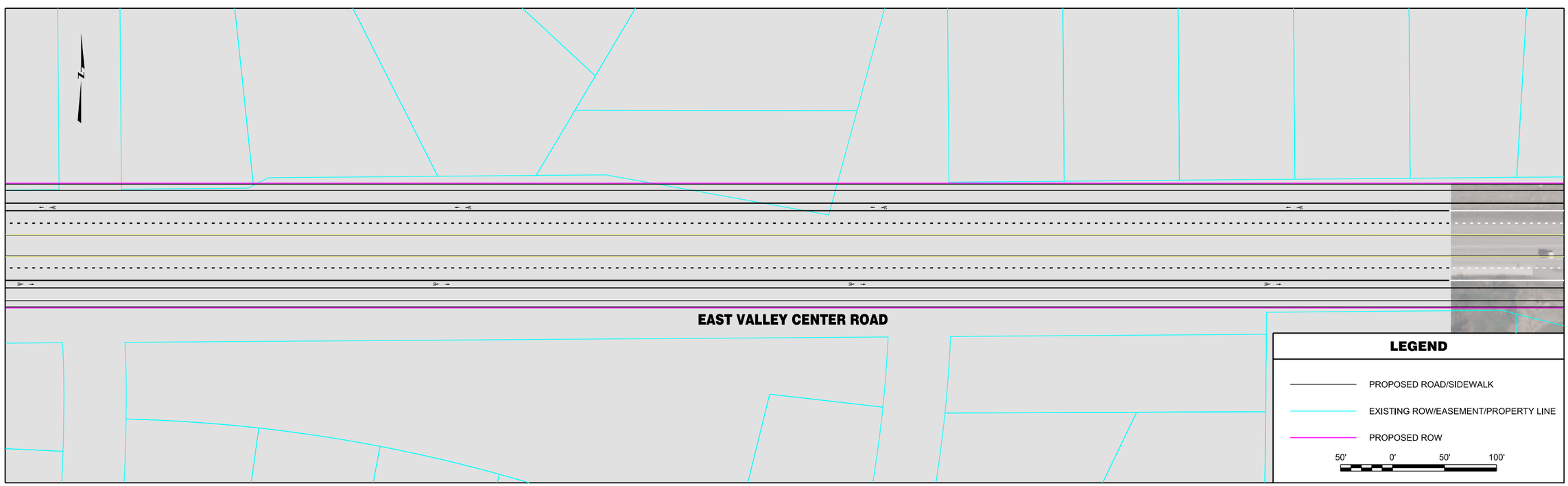

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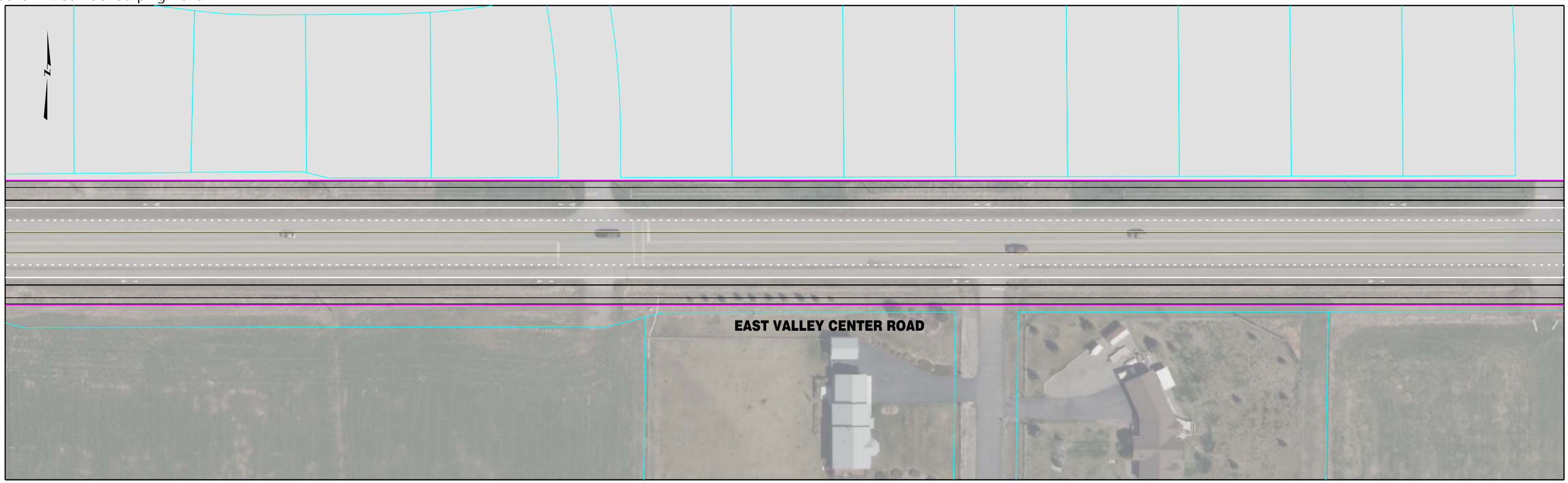

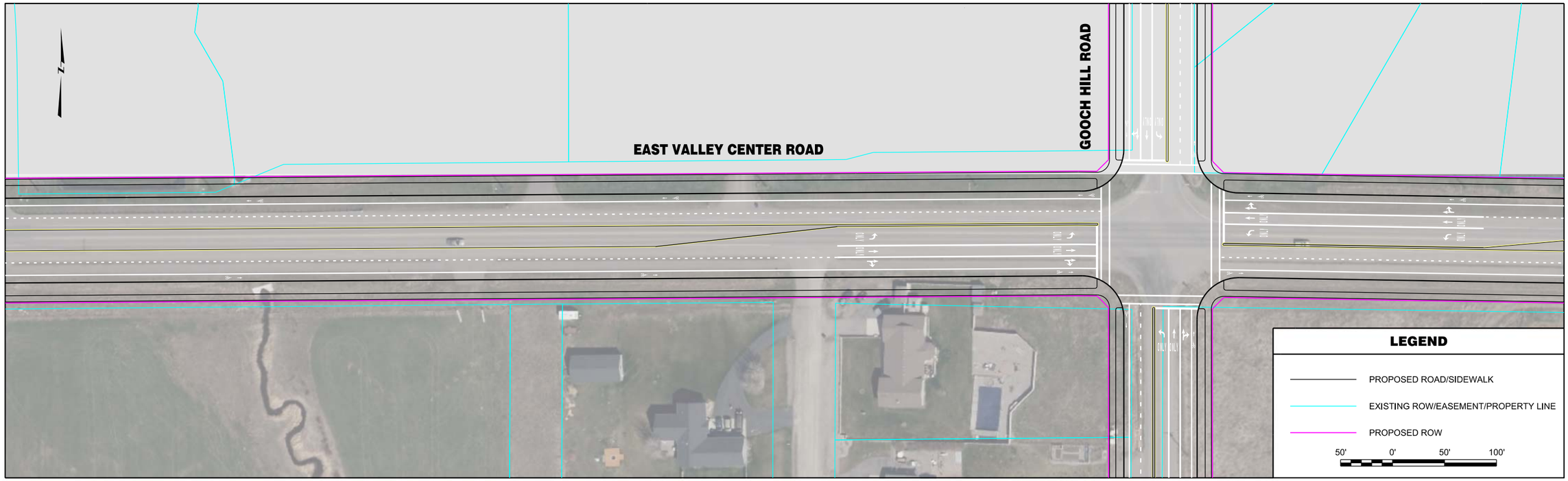

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZR1.dgn 1/26/2017 2:37:28 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **VALLEY CENTER ROAD STRIPING PLAN**

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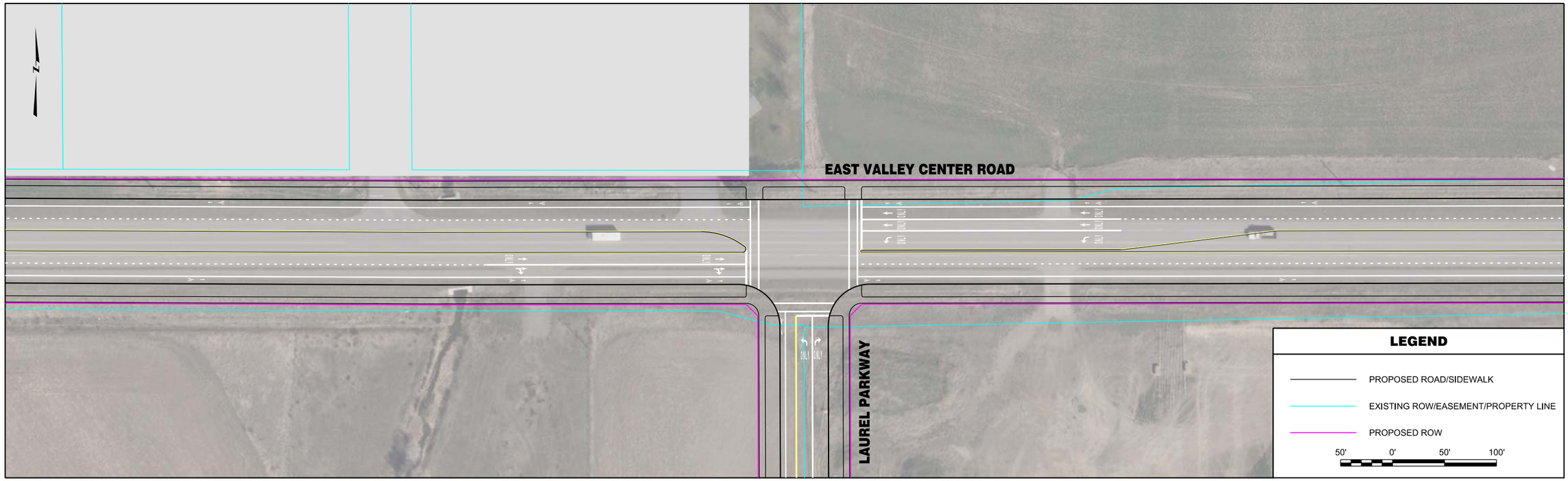

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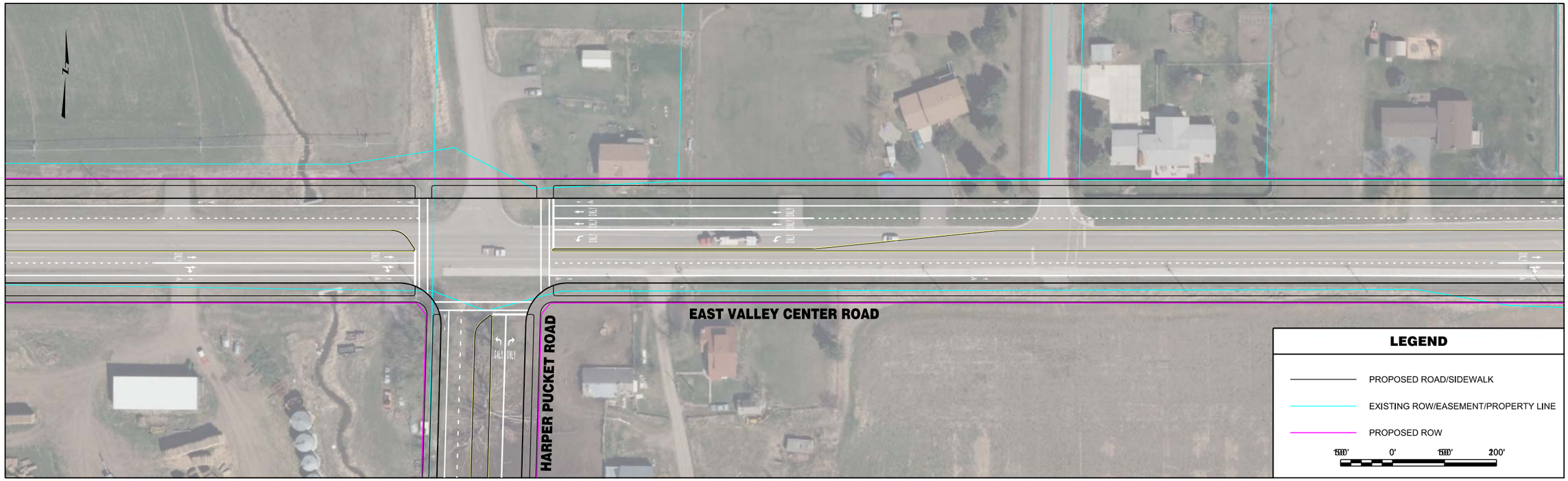

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZR2.dgn 1/26/2017 2:37:39 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **VALLEY CENTER ROAD STRIPING PLAN**

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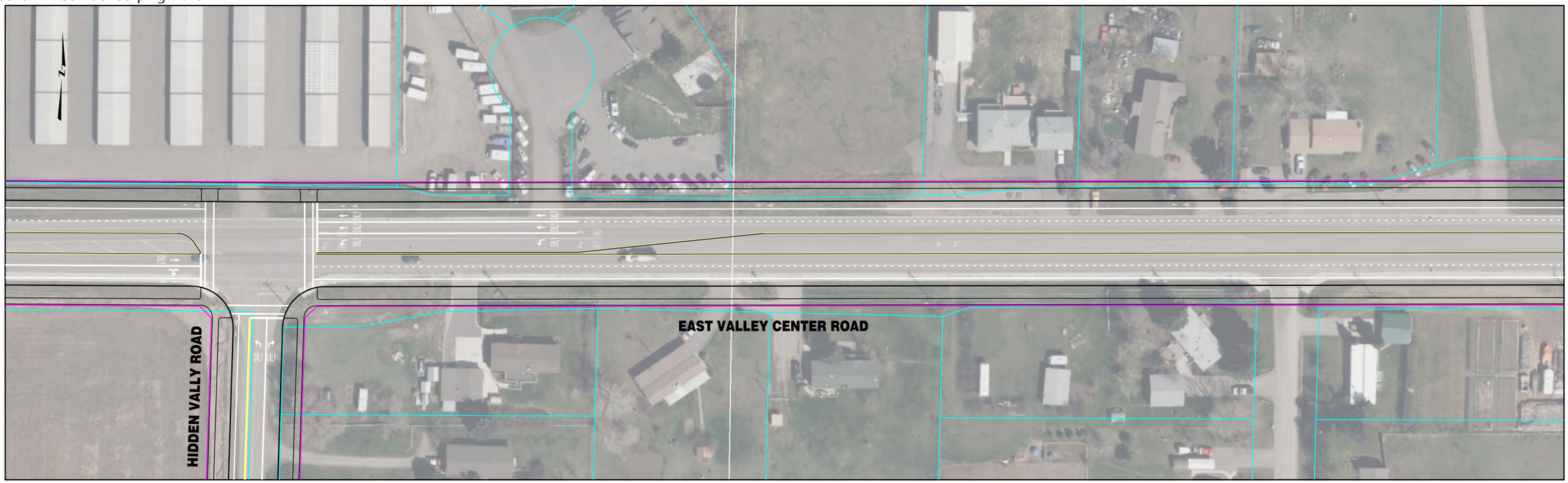

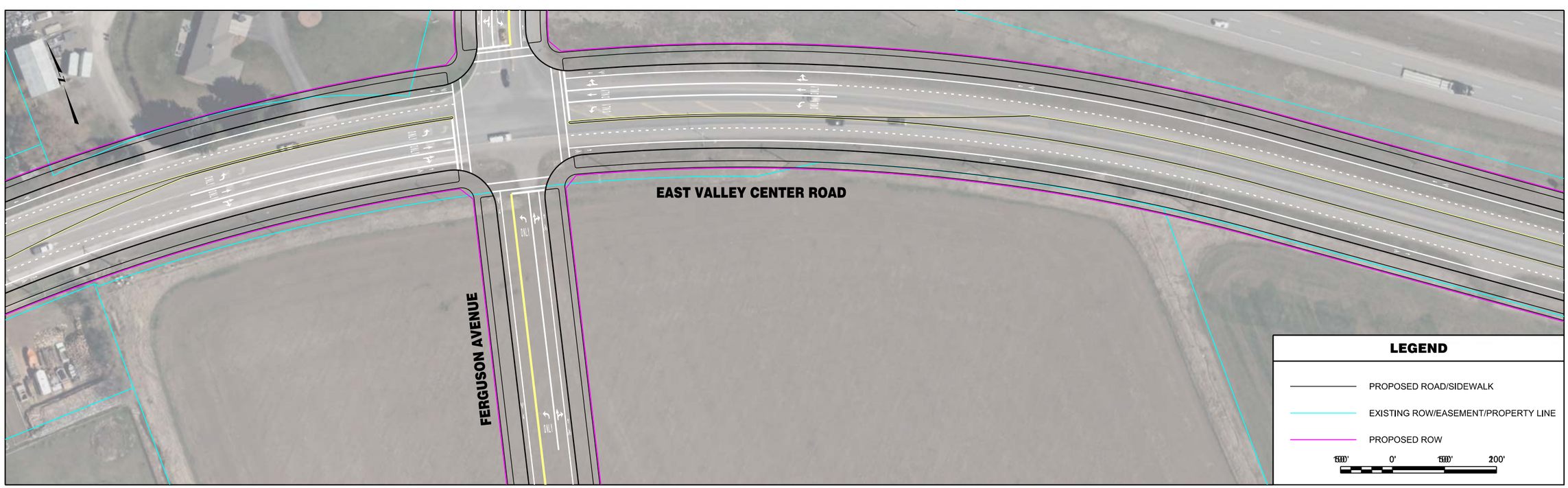

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZR2.dgn 1/26/2017 2:37:45 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **VALLEY CENTER ROAD STRIPING PLAN**

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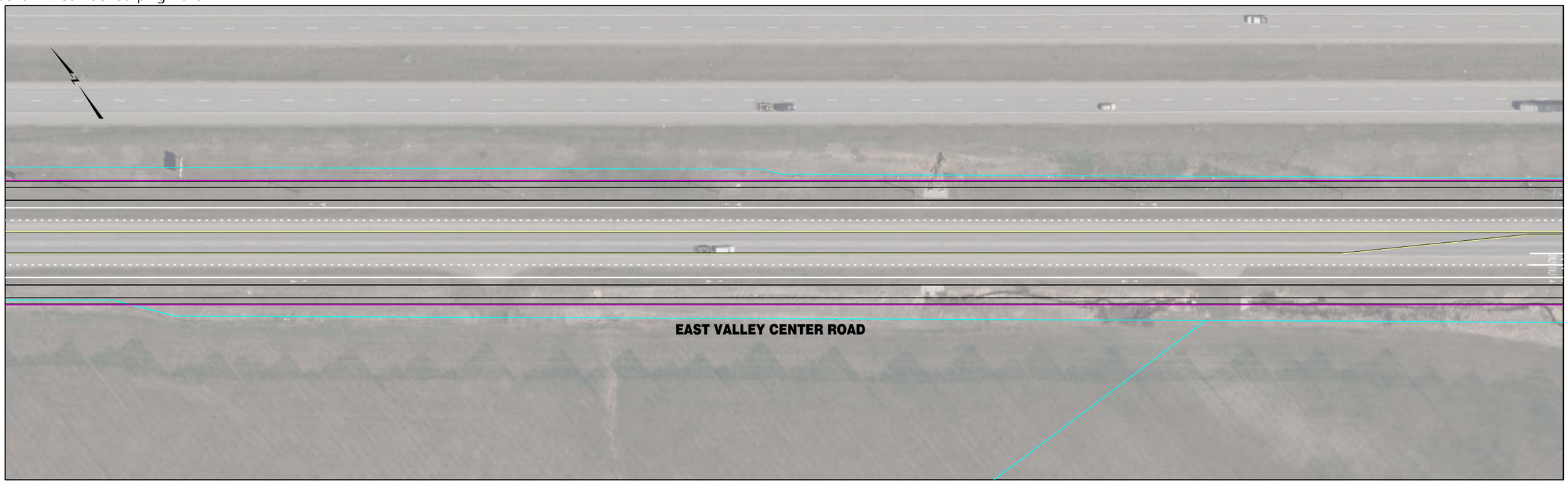

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZR2.dgn 1/26/2017 2:37:51 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **VALLEY CENTER ROAD STRIPING PLAN**

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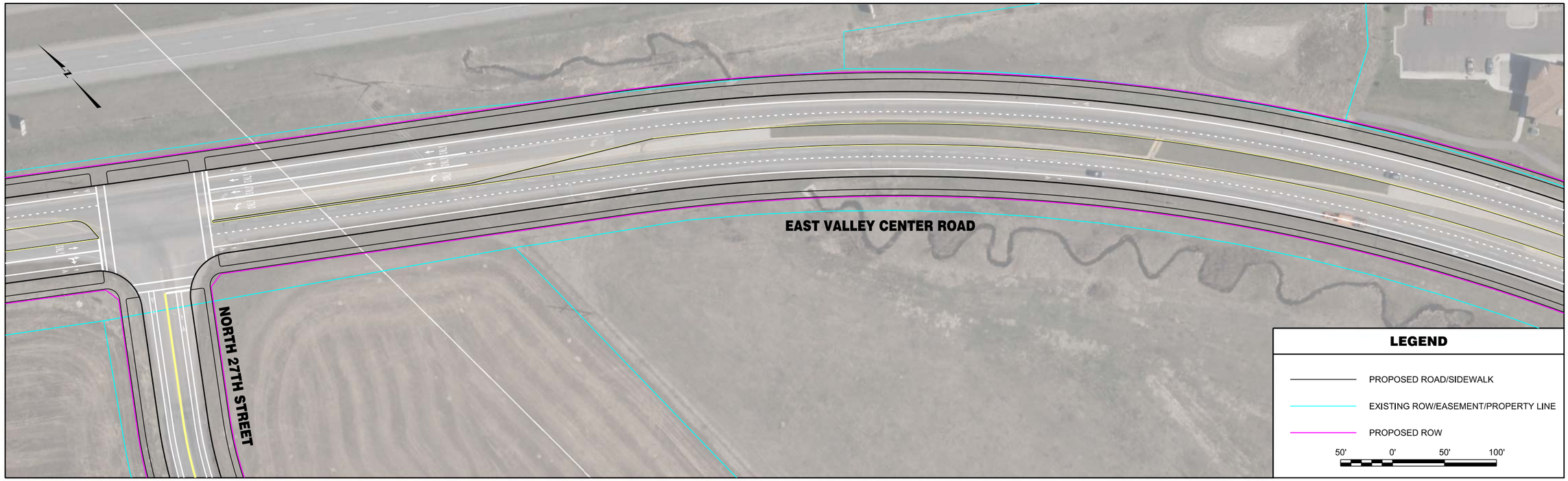

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZR3.dgn 1/26/2017 2:37:58 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **VALLEY CENTER ROAD STRIPING PLAN**

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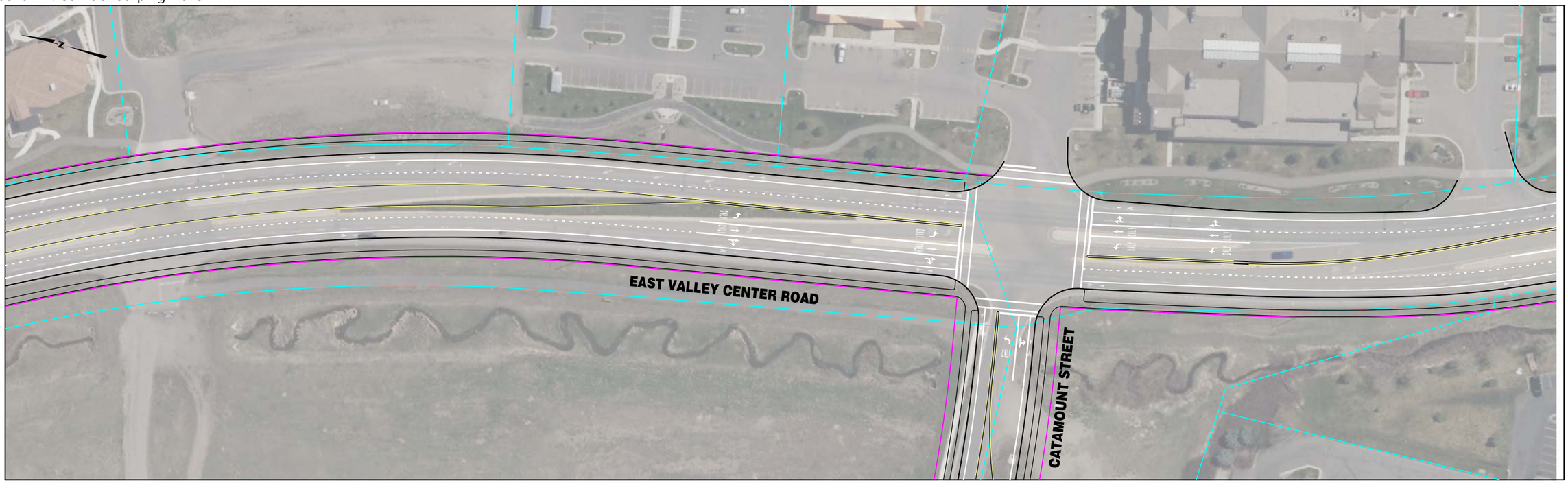

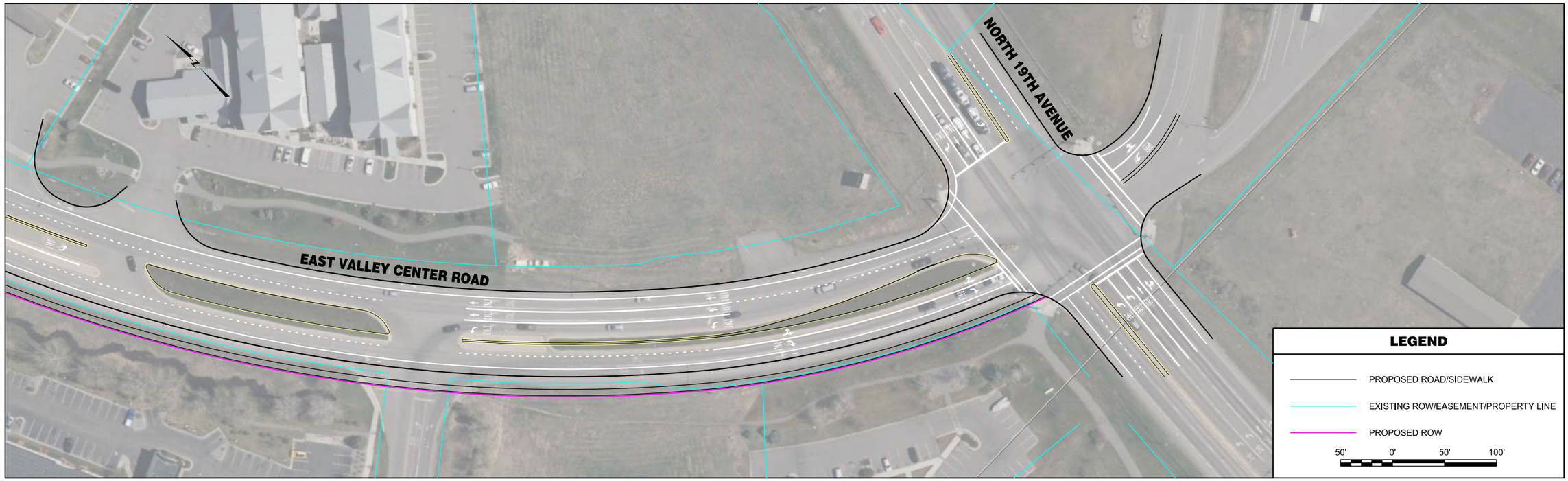

RPA ROBERT PECCIA & ASSOCIATES CIVIL ENGINEERING | PLANNING | SURVEYING | LANDSCAPE ARCHITECTURE	...\15602RDPLNZR3.dgn 1/26/2017 2:38:04 PM shane	PROJECT NO. DESIGNED BY REVIEWED BY CHECKED BY	PRELIMINARY NOT FOR CONSTRUCTION	*Bozeman, Montana*	PROJECT TITLE	**BOZEMAN CITYWIDE STRIPING PLAN**	SHEET TITLE **VALLEY CENTER ROAD STRIPING PLAN**