

Table 24
Recommended Project/STIP Improvements
Shiloh Interchange - Exit 443

Type	Project ID	Improvement Description	Location	Anticipated Time Frame	General Planning Priority	Estimated Cost	Potential Funding Sources
Safety Related	S S1	Construct sidewalks through corridor	Zoo Dr., I-90 WB ramps to Gabel Rd	5-15 Years (d)	M	\$ 150,000	STPP, CTEP, P, L
	S S2	Upgrade I-90 mainline highway lighting to CIL standards	I-90 at Zoo Dr	10-15 Years (d)	L	\$ 750,000	STPP, IM
Capacity Related	S C1	Install traffic signal*	Zoo Dr / Gabel Rd	0-5 Years(d)	L	\$ 150,000	STPP, STPU, P, L
	S C2	Install traffic signal*	Zoo Dr / future entrance	0-5 Years(d)	L	\$ 150,000	P, L
	S C3	Install traffic signal*	Zoo Dr / I-90 WB ramps	5-10 Years (d)	M	\$ 150,000	STPP, CMAQ
	S C4	Widen Zoo Dr. to 4 or 5 lanes	I-90 EB ramps to Gabel Rd	5-10 Years (d)	M	\$ 600,000	STPP, STPU, CMAQ
	S C5	Add SB RT lane	Zoo Dr / I-90 WB ramps	5-10 Years (d)	M	\$ 50,000	STPP, CMAQ, IM
	S C6	Add 2nd SB LT lane	Zoo Dr / Gabel Rd	5-10 Years (d)	L	\$ 150,000	P, L
	S C7	Install traffic signal*	Zoo Dr / I-90 EB ramps	10-15 Years (d)	M	\$ 150,000	STPP, CMAQ
	S C8	Coordinate signal system	Zoo Dr	10-15 Years (d)	M	\$ 50,000	STPP, STPU, CMAQ, P
	S C9	Add 2nd SB LT lane and 2nd EB LT (off ramp) lane ; widen EB on-ramp	Zoo Dr / I-90 EB ramps	10-15 Years (d)	M	\$ 400,000	STPP, CMAQ
	S C10	Install traffic signal*	Zoo Dr / Shiloh Rd	10-15 Years (d)	L	\$ 150,000	STPP, STPU, CMAQ, P, L
	S C11	Install traffic signal*	Zoo Dr / S Frontage Rd	10-15 Years (d)	L	\$ 150,000	STPP, STPU, P, L
	S C12	Add 2nd SB LT lane	Zoo Dr / Shiloh Rd	10-15 Years (d)	L	\$ 100,000	STPP, STPU, P, L
	S C13	Widen Zoo Dr. to 4 or 5 lanes	Gabel Rd to Shiloh Rd	10-20 Years (d)	L	\$ 700,000	STPP, STPU, CMAQ
	S C14	Add WB RT "free" right turn (requires bridge structure widening)	Zoo Dr / I-90 WB ramps	15-20 Years (d)	H	\$ 800,000	STPP, CMAQ, BR
	S C15	Add 2nd EB LT lane and NB RT lane	Zoo Dr / S Frontage Rd	15-20 Years (d)	L	\$ 200,000	STPP, STPU, SMAQ, P

(d) Timing dependent upon commercial development growth along Zoo Drive and Shiloh Road
 * These intersections currently have signal poles installed (no mast arms) with the existing street lighting.

Funding Source Codes:

STPP = Surface Transportation Program Primary
 STPU = Surface Transportation Program Urban
 STPHS = Surface Transportation Program Hazard Elimination Program
 CTEP = Surface Transportation Enhancement Program
 CMAQ = Congestion Mitigation and Air Quality Improvement Program
 NH = National Highway System Program
 BR = Bridge Replacement Program
 IM = Interstate Maintenance Program
 L = Local Funds
 P = Private Funds

Priority Codes:

H = **High**: Safety project based on a documented accident trend, or capacity improvement involving structure widening and/or advanced planning
 M = **Medium**: Project need is imminent, but not related to a documented safety issue and/or advanced planning not required
 L = **Low**: Project need is projected, but not related to a documented safety issue and/or advanced planning not required

Table 25
Recommended Project/STIP Improvements
South Billings Boulevard Interchange - Exit 447

Type	Project ID	Improvement Description	Location	Anticipated Time Frame *	General Planning Priority	Estimated Cost	Potential Funding Sources
Safety Related	SB S1	Upgrade crossroad and ramp lighting to CIL standards	I-90 at S Billings Blvd	0-5 Years	L	\$ 250,000	STPP
	SB S2	Upgrade I-90 mainline highway lighting to CIL standards	I-90 at S Billings Blvd	0-5 Years	L	\$ 750,000	STPP, IM
	SB S3	Construct sidewalks through corridor (utilize existing sidewalks on I-90 bridge)	S Billings Blvd	0-10 Years	L	\$ 100,000	STPP, CTEP, L, P
Capacity Related	SB C1	Coordinated signal system	S Billings Blvd	5-10 Years	M	\$ 25,000	STPP, STPU, CMAQ
	SB C2	Add NB & WB RT lanes	S Billings Blvd / King Ave	15-20 Years	M	\$ 150,000	L, P
	SB C3	Widen/restripe S. Billings to 4 thru lanes; extend/restripe LT lanes at I-90 on-ramps	S. Billings, King Blvd. to south of project	15-20 Years	M	\$ 800,000	STPP, STPU, CMAQ, L
	SB C4	Install traffic signal	Southgate Dr / King Ave	15-20 Years (d)	L	\$ 200,000	L,P
	SB C5	Add 2nd EB LT lane & WB RT lane	S Billings Blvd / S Frontage - Midland	15-20 Years	L	\$ 200,000	L

(a) With opening of City of Billings Traffic Operations Center

(d) Timing dependent upon commercial development growth along Zoo Drive and Shiloh Road

Funding Source Codes:

STPP = Surface Transportation Program Primary

STPU = Surface Transportation Program Urban

STPHS = Surface Transportation Program Hazard Elimination Program

CTEP = Surface Transportation Enhancement Program

CMAQ = Congestion Mitigation and Air Quality Improvement Program

NH = National Highway System Program

BR= Bridge Replacement Program

IM= Interstate Maintenance Program

L = Local Funds

P = Private Funds

Priority Codes:

H = **High**; Safety project based on a documented accident trend, or capacity improvement involving structure widening and/or advanced planning

M = **Medium**; Project need is imminent, but not related to a documented safety issue and/or advanced planning not required

L = **Low**; Project need is projected, but not related to a documented safety issue and/or advanced planning not required

Table 26
Recommended Project/STIP Improvements
27th Street Interchange - Exit 450

Type	Project ID	Improvement Description	Location	Anticipated Time Frame	General Planning Priority	Estimated Cost	Potential Funding Sources
Safety Related	27 S1	Widen EB on-ramp for truck turns	27th St / I-90 EB on-ramp	0 Years	H	\$ 150,000	STPP, STPHS, IM, NH
	27 S2	Modify barriers to improve intersection sight distance	27th St	0 Years	L	\$ 50,000	STPP, STPHS, BR, NH
	27 S3	Construct sidewalks (except on I-90 bridge) and crosswalks at ramp terminals	27th St	0-5 Years	L	\$ 100,000	STPP, CTEP, L, P, NH
Capacity Related	27 C1	Install traffic signal	27th St / I-90 WB ramps	10-15 Years	M	\$ 200,000	STPP, CMAQ
	27 C2	Install traffic signal	27th St / I-90 EB ramps	10-15 Years	M	\$ 200,000	STPP, CMAQ
	27 C3	Coordinate signal system	27th St	10-15 Years	M	\$ 25,000	STPP, CMAQ

Funding Source Codes:

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 NH = National Highway System Program
 BR= Bridge Replacement Program
 IM= Interstate Maintenance Program
 L = Local Funds
 P = Private Funds

Priority Codes:

H = **High**; Safety project based on a documented accident trend, or capacity improvement involving structure widening and/or advanced planning
 M = **Medium**; Project need is imminent, but not related to a documented safety issue and/or advanced planning not required
 L = **Low**; Project need is projected, but not related to a documented safety issue and/or advanced planning not required

Table 27
Recommended Project/STIP Improvements
US 87 Lockwood Interchange - Exit 452

Type	Project ID	Improvement Description	Location	Anticipated Time Frame	General Planning Priority	Estimated Cost	Potential Funding Sources
Safety Related	LK S1	Interim safety improvements to mitigate SB LT (EB on ramp) accidents	I-90 EB Ramps / US 87	0 Years	H	\$ 25,000	STPP, STPHS, NH
	LK S2	Construct sidewalks & crosswalks except on I-90 bridge	I-90 at US 87	0-10 Years	L	\$ 100,000	STPP, CTEP, L, P, NH
	LK S3	Upgrade crossroad and ramp lighting to meet CIL standards	I-90 at US 87	15-20 Years	L	\$ 250,000	STPP, NH
	LK S4	I-90 mainline highway lighting does not meet CIL standards	I-90 at US 87	15-20 Years	L	\$ 750,000	STPP, IM
Capacity Related	LK C1	Construct roundabout interchange (2 roundabouts) / remove signals / incorporate Coburn Rd	I-90 Interchange	5-10 Years	H	\$ 4,000,000	STPP, STPHS, CMAQ, NH

Funding Source Codes:

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 STPU = Surface Transportation Program Urban
 STPHS = Surface Transportation Program Hazard Elimination Program
 CTEP = Surface Transportation Enhancement Program
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 NH = National Highway System Program
 BR= Bridge Replacement Program
 IM= Interstate Maintenance Program
 L = Local Funds
 P = Private Funds

Priority Codes:

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 M = **Medium**; Project need is imminent, but not related to a documented safety issue and/or advanced planning not required
 L = **Low**; Project need is projected, but not related to a documented safety issue and/or advanced planning not required

Table 28
Recommended Project/STIP Improvements
Johnson Lane Interchange - Exit 455

Type	Project ID	Improvement Description	Location	Anticipated Time Frame	General Planning Priority	Estimated Cost	Potential Funding Sources
Safety Related	JL S1	Improve vertical clearance; lower Johnson Lane	I-90 bridge over Johnson Ln	0 Years	H	\$ 200,000	STPP, STPHS
	JL S2	Add intersection streetlight	Johnson Ln / I-90 WB ramp	0 Years	M	\$ 10,000	STPP
	JL S3	Add crosswalk & ped push buttons / signal indications	north leg of Old Hardin Rd at Johnson Ln	0 Years	M	\$ 15,000	STPP, CTEP
	JL S4	Construct sidewalks & crosswalks	Johnson Ln	0-10 Years	L	\$ 100,000	STPP, CTEP, L, P
	JL S5	Upgrade crossroad and ramp lighting to meet CIL standards	Johnson Ln	5-10 Years (d)	L	\$ 250,000	STPP
	JL C1	Upgrade I-90 mainline highway lighting to meet CIL standards	I-90 at Johnson Ln	5-10 Years (d)	L	\$ 750,000	STPP, IM
	Capacity Related	JL C2	Access management at Flying J service station	Old Hardin Rd west of Johnson Ln	0-5 Years	M	Requires coordination with private owner
JL C3		Construct roundabout interchange (2 roundabouts) / incorporate N Frontage Rd	I-90 Interchange	5-15 Years (d)	H	\$ 5,000,000	STPP, CMAQ, L, P, IM
JL C4		Add 2nd SB LT lane and WB LT lane	Johnson Ln / Old Hardin Rd	10-15 Years	M	\$ 200,000	STPP, CMAQ, L

(d) Timing dependent upon development growth north of I-90 along N Frontage Rd

Funding Source Codes:

- STPP = Surface Transportation Program Primary
- STPU = Surface Transportation Program Urban
- STPHS = Surface Transportation Program Hazard Elimination Program
- CTEP = Surface Transportation Enhancement Program
- CMAQ = Congestion Mitigation and Air Quality Improvement Program
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Priority Codes:

- H = **High**; Safety project based on a documented accident trend, or capacity improvement involving structure widening and/or advanced planning
- M = **Medium**; Project need is imminent, but not related to a documented safety issue and/or advanced planning not required
- L = **Low**; Project need is projected, but not related to a documented safety issue and/or advanced planning not required

Table 29
Peak Hour Intersection LOS w/ Improvements
Shiloh Interchange - Exit 443

Intersection and Critical Movements	2023 w/ Improvements					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
Zoo Dr & Shiloh Rd	6.6	A	7.4	A	9.8	A
<i>Eastbound Approach</i>	<i>13.4</i>	<i>B</i>	<i>13.1</i>	<i>B</i>	<i>16.3</i>	<i>B</i>
Eastbound Left	13.9	B	14.1	B	19.8	B
Eastbound Through	13.0	B	12.3	B	13.6	B
Eastbound Right	11.9	B	10.8	B	11.6	B
<i>Westbound Approach</i>	<i>3.5</i>	<i>A</i>	<i>4.2</i>	<i>A</i>	<i>4.9</i>	<i>A</i>
Westbound Left	13.0	B	11.5	B	13.0	B
Westbound Through	13.1	B	12.3	B	13.5	B
Westbound Right	0.8	A	0.6	A	1.0	A
<i>Northbound Approach</i>	<i>12.5</i>	<i>B</i>	<i>13.7</i>	<i>B</i>	<i>19.8</i>	<i>B</i>
Northbound Left	9.4	A	10.5	B	14.5	B
Northbound Through	13.4	B	14.5	B	21.6	C
Northbound Right	11.0	B	10.9	B	15.3	B
<i>Southbound Approach</i>	<i>4.3</i>	<i>A</i>	<i>5.0</i>	<i>A</i>	<i>8.1</i>	<i>A</i>
Southbound Left	4.7	A	5.3	A	9.3	A
Southbound Through	3.3	A	4.7	A	6.8	A
Southbound Right	3.3	A	4.5	A	6.2	A
Zoo Dr & Gabel Dr / Pierce Pkwy	15.8	B	16.0	B	21.0	C
<i>Eastbound Approach (Zoo)</i>	<i>16.2</i>	<i>B</i>	<i>18.0</i>	<i>B</i>	<i>21.9</i>	<i>C</i>
Eastbound Left	11.6	B	12.6	B	11.3	B
Eastbound Through + Right	17.1	B	19.0	B	23.4	C
<i>Westbound Approach (Zoo)</i>	<i>15.7</i>	<i>B</i>	<i>15.8</i>	<i>B</i>	<i>14.4</i>	<i>B</i>
Westbound Left	13.3	B	12.6	B	17.0	B
Westbound Through	19.5	B	19.7	B	17.4	B
Westbound Right	11.4	B	10.2	B	10.5	B
<i>Northbound Approach (Pierce)</i>	<i>20.5</i>	<i>C</i>	<i>19.4</i>	<i>B</i>	<i>33.8</i>	<i>C</i>
Northbound Left	18.8	B	18.1	B	25.9	C
Northbound Through	23.4	C	22.9	C	41.3	D
Northbound Right	19.4	B	17.6	B	32.5	C
<i>Southbound Approach (Gabel)</i>	<i>12.6</i>	<i>B</i>	<i>11.9</i>	<i>B</i>	<i>21.2</i>	<i>C</i>
Southbound Left	11.4	B	10.6	B	20.1	C
Southbound Through	16.7	B	15.8	B	26.1	C
Southbound Right	12.4	B	11.3	B	19.9	B

Improvements Analyzed	Location	Category
Install traffic signal	Zoo Dr / future entrance	Traffic Control (Signal)
Install traffic signal	Zoo Dr / Gabel Rd	
Install traffic signal	Zoo Dr / I-90 WB ramps	
Install traffic signal	Zoo Dr / Shiloh Rd	
Install traffic signal	Zoo Dr / I-90 EB ramps	
Install traffic signal	Zoo Dr / S Frontage Rd	
Coordinate signal system	Zoo Dr	Capacity
Widen Zoo Dr. to 4 or 5 lanes	I-90 EB ramps to Gabel Rd	
Add 2nd SB LT lane	Zoo Dr / Gabel Rd	
Add SB RT lane	Zoo Dr / I-90 WB ramps	
Add 2nd SB LT lane and 2nd EB LT (off ramp) lane ; widen EB on-ramp	Zoo Dr / I-90 EB ramps	
Add 2nd SB LT lane	Zoo Dr / Shiloh Rd	
Widen Zoo Dr. to 4 or 5 lanes	Gabel Rd to Shiloh Rd	
Add WB RT "free" right turn	Zoo Dr / I-90 WB ramps	
Add 2nd EB LT lane and NB RT lane	Zoo Dr / S Frontage Rd	

Intersection and Critical Movements	2023 w/ Improvements					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
Zoo Dr & I-90 WB ramp	19.2	B	12.0	B	17.1	B
<i>Westbound Approach</i>	<i>22.0</i>	<i>C</i>	<i>26.2</i>	<i>C</i>	<i>30.3</i>	<i>C</i>
Westbound Left + Through	46.9	D	39.1	D	46.3	D
Westbound Right	0.8	A	0.2	A	0.3	A
<i>Northbound Approach</i>	<i>10.0</i>	<i>A</i>	<i>8.0</i>	<i>A</i>	<i>16.4</i>	<i>B</i>
Northbound Left	28.9	C	8.0	A	19.8	B
Northbound Through	3.8	A	8.0	A	15.3	B
<i>Southbound Approach</i>	<i>24.3</i>	<i>C</i>	<i>9.1</i>	<i>A</i>	<i>11.7</i>	<i>B</i>
Southbound Through	25.5	C	16.6	B	27.1	C
Southbound Right	19.8	B	0.6	A	1.9	A
Zoo Dr & I-90 EB ramp	20.8	C	20.8	C	24.4	C
<i>Eastbound Approach</i>	<i>34.6</i>	<i>C</i>	<i>40.9</i>	<i>D</i>	<i>45.6</i>	<i>D</i>
Eastbound Left	34.0	C	33.5	C	39.8	D
Eastbound Left + Through + Right	33.9	C	33.5	C	42.1	D
Eastbound Right	36.0	D	53.6	D	54.2	D
<i>Northbound Approach</i>	<i>27.2</i>	<i>C</i>	<i>13.5</i>	<i>B</i>	<i>17.2</i>	<i>B</i>
Northbound Through	16.4	B	13.6	B	18.6	B
Northbound Right	33.0	C	13.5	B	15.3	B
<i>Southbound Approach</i>	<i>5.8</i>	<i>A</i>	<i>7.7</i>	<i>A</i>	<i>18.3</i>	<i>B</i>
Southbound Left	6.1	A	8.3	A	33.0	C
Southbound Through	5.5	A	7.2	A	7.4	A
Zoo Dr & S Frontage Rd	20.6	C	17.2	B	25.9	C
<i>Eastbound Approach (S Frontage)</i>	<i>17.1</i>	<i>B</i>	<i>22.2</i>	<i>C</i>	<i>26.0</i>	<i>C</i>
Eastbound Left	14.0	B	18.5	B	26.3	C
Eastbound Through	21.9	C	26.4	C	26.8	C
Eastbound Right	14.7	B	18.4	B	22.9	C
<i>Westbound Approach (S Frontage)</i>	<i>21.6</i>	<i>C</i>	<i>25.1</i>	<i>C</i>	<i>35.3</i>	<i>D</i>
Westbound Left	21.6	C	20.4	C	23.8	C
Westbound Through	23.8	C	31.4	C	43.8	D
Westbound Right	17.8	B	20.2	C	29.5	C
<i>Northbound Approach (Future Zoo)</i>	<i>22.8</i>	<i>C</i>	<i>14.1</i>	<i>B</i>	<i>27.0</i>	<i>C</i>
Northbound Left	23.0	C	9.6	A	26.9	C
Northbound Through	23.7	C	14.7	B	28.2	C
Northbound Right	15.1	B	10.8	B	14.6	B
<i>Southbound Approach (Zoo)</i>	<i>22.0</i>	<i>C</i>	<i>11.1</i>	<i>B</i>	<i>16.1</i>	<i>B</i>
Southbound Left	26.1	C	8.2	A	19.5	B
Southbound Through	24.8	C	13.0	B	17.5	B
Southbound Right	7.9	A	7.5	A	12.0	B

Table 30
Peak Hour Intersection LOS w/ Improvements
South Billings Boulevard Interchange - Exit 447

Intersection and Critical Movements	2023 w/ Improvements					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
SIGNAL CONTROL						
S Billings Blvd & King Ave	15.6	B	17.9	B	21.8	C
<i>Eastbound Approach</i>	31.4	C	27.3	C	36.8	D
Eastbound Left	29.9	C	25.3	C	33.2	C
Eastbound Through	34.2	C	32.9	C	44.4	D
Eastbound Right	31.3	C	24.3	C	33.5	C
<i>Westbound Approach</i>	28.9	C	23.8	C	36.7	D
Westbound Left	27.1	C	20.8	C	39.4	D
Westbound Through	31.8	C	28.4	C	34.2	C
Westbound Right	26.4	C	22.1	C	30.8	C
<i>Northbound Approach</i>	5.2	A	9.6	A	12.9	B
Northbound Left	2.5	A	14.4	B	9.1	A
Northbound Through	6.9	A	10.2	B	15.0	B
Northbound Right	2.2	A	2.9	A	11.9	B
<i>Southbound Approach</i>	11.5	B	17.0	B	14.2	B
Southbound Left	9.7	A	12.1	B	10.4	B
Southbound Through + Right	11.6	B	17.8	B	14.5	B
SIGNAL CONTROL						
S Billings Blvd & I-90 WB ramp	20.4	C	14.6	B	14.7	B
<i>Westbound Approach</i>	32.5	C	34.7	C	44.1	D
Westbound Left + Through	26.4	C	35.7	D	37.8	D
Westbound Right	36.6	D	33.3	C	50.1	D
<i>Northbound Approach</i>	15.8	B	8.6	A	5.0	A
Northbound Left	19.7	B	9.1	A	12.2	B
Northbound Through	13.7	B	8.3	A	1.0	A
<i>Southbound Approach</i>	19.8	B	10.3	B	12.9	B
Southbound Through	15.4	B	10.9	B	12.5	B
Southbound Right	29.2	C	8.5	A	13.9	B
SIGNAL CONTROL						
S Billings Blvd & I-90 EB ramp	17.6	B	19.0	B	19.9	B
<i>Eastbound Approach</i>	32.7	C	43.0	D	40.3	D
Eastbound Left + Through	24.8	C	28.7	C	30.6	C
Eastbound Right	36.6	D	53.1	D	47.9	D
<i>Northbound Approach</i>	14.8	B	15.2	B	18.8	B
Northbound Through	14.9	B	14.6	B	18.7	B
Northbound Right	14.4	B	17.8	B	19.1	B
<i>Southbound Approach</i>	13.5	B	9.3	A	11.4	B
Southbound Left	24.2	C	15.9	B	23.3	C
Southbound Through	9.6	A	7.8	A	8.6	A

Intersection and Critical Movements	2023 w/ Improvements					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
STOP CONTROL						
King Ave & Southgate	5.7	A	7.5	A	7.0	A
<i>Eastbound Approach</i>	0.5	A	0.4	A	0.7	A
Eastbound Left	8.0	A	7.5	A	7.8	A
Eastbound Through + Right	0.0	A	0.0	A	0.0	A
<i>Westbound Approach</i>	4.2	A	6.3	A	4.0	A
Westbound Left	8.2	A	8.4	A	8.2	A
Westbound Through + Right	0.0	A	0.0	A	0.0	A
<i>Northbound Approach</i>	10.2	B	12.8	B	12.5	B
Northbound Left	26.7	D	27.5	D	22.9	C
Northbound Through + Right	9.7	A	10.9	B	11.4	B
<i>Southbound Approach</i> Left + Through + Right	62.4	F	50.2	F	61.3	F
SIGNAL CONTROL						
S Billings & S Frontage Rd	17.6	B	16.3	B	20.4	C
<i>Eastbound Approach</i>	32.0	C	27.1	C	27.4	C
Eastbound Left	32.9	C	27.6	C	27.8	C
Eastbound Through + Right	25.3	C	23.8	C	24.8	C
<i>Westbound Approach</i>	32.2	C	31.6	C	33.5	C
Westbound Left	39.5	D	38.8	D	44.8	D
Westbound Through	35.1	D	36.2	D	40.1	D
Westbound Right	29.5	C	30.2	C	30.6	C
<i>Northbound Approach</i>	16.7	B	16.4	B	24.6	C
Northbound Left	11.0	B	15.9	B	31.1	C
Northbound Through + Right	16.9	B	16.5	B	24.3	C
<i>Southbound Approach</i>	9.6	A	10.1	B	14.8	B
Southbound Left	19.9	B	10.0	A	40.2	D
Southbound Through + Right	7.5	A	10.1	B	9.6	A

Improvements Analyzed	Location	Category
Install traffic signal	S Billings Blvd / Midland Rd	Traffic Control (Signal)
Coordinated signal system	S Billings Blvd	
Install traffic signal	Southgate Dr / King Ave	
Add NB & WB RT lanes	S Billings Blvd / King Ave	Capacity
Widen S. Billings to 4 thru lanes; extend/restripe LT lane	S. Billings, King to south of project	
Add 2nd EB LT lane & WB RT lane	S Billings Blvd / S Frontage - Midland	

Table 31
Peak Hour Intersection LOS w/ Improvements
27th Street Interchange - Exit 450

Intersection and Critical Movements	2023 w/ Improvements					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
SIGNAL CONTROL						
27th St & State Ave	24.2	C	21.6	C	24.4	C
<i>Eastbound Approach (State)</i>	36.1	D	26.7	C	32.3	C
Eastbound Left + Through	39.6	D	29.3	C	35.2	D
Eastbound Right	26.9	C	20.3	C	28.3	C
<i>Westbound Approach (State)</i>	39.6	D	27.9	C	35.4	D
Westbound Left + Through	39.8	D	28.3	C	37.9	D
Westbound Right	39.2	D	27.0	C	30.6	C
<i>Northbound Approach (27th)</i>	18.0	B	15.8	B	17.5	B
Northbound Left	40.5	D	33.4	C	45.1	D
Northbound Through	12.9	B	11.7	B	9.1	A
Northbound Right	10.4	B	6.4	A	7.5	A
<i>Southbound Approach (27th)</i>	23.4	C	23.3	C	22.5	C
Southbound Left	59.8	E	71.9	E	72.2	E
Southbound Through + Right	19.9	B	19.5	B	20.3	C
SIGNAL CONTROL						
27th St & I-90 WB ramp	6.8	A	6.9	A	6.5	A
<i>Eastbound Approach (27th) Thru + Right</i>	3.3	A	1.3	A	1.2	A
<i>Westbound Approach (27th) Left + Thru</i>	2.9	A	5.0	A	2.2	A
<i>Southbound Approach (I-90 ramp) Left + Thru + Right</i>	16.2	B	27.5	C	31.5	C
SIGNAL CONTROL						
27th St & I-90 EB ramp	11.8	B	11.6	B	14.7	B
<i>Eastbound Approach (27th) Left + Thru</i>	4.0	A	12.0	B	3.2	A
<i>Westbound Approach (27th) Thru + Right</i>	6.4	A	21.0	C	4.6	A
<i>Northbound Approach (I-90 ramp) Left + Thru + Right</i>	16.9	B	5.4	A	34.1	C
STOP CONTROL						
27th St & Garden Ave	6.6	A	5.6	A	4.8	A
<i>Eastbound Approach (27th) Left + Right</i>	10.5	B	10.1	B	9.9	A
<i>Northbound Approach (Garden) Left + Thru</i>	7.0	A	6.9	A	7.0	A
<i>Southbound Approach (Garden) Thru + Right</i>	0.0	A	0.0	A	0.0	A

Improvements Analyzed	Location	Category
Install traffic signal	27th St / I-90 WB ramps	Traffic Control (Signal)
Install traffic signal	27th St / I-90 EB ramps	
Coordinate signal system	27th St	

Table 32
Peak Hour Intersection LOS w/ Improvements
US 87 Lockwood Interchange - Exit 452

Intersection and Critical Movements	2023					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
US 87 and N Frontage Rd.	SIGNAL CONTROL					
	8.5	A	10.0	A	16.6	B
<i>Eastbound Approach</i>	3.1	A	4.0	A	10.3	B
Eastbound Left	6.0	A	4.7	A	10.0	A
Eastbound Through + Right	1.8	A	3.7	A	10.4	B
<i>Westbound Approach</i>	6.3	A	7.0	A	15.6	B
Westbound Left	3.6	A	6.0	A	14.0	B
Westbound Through + Right	6.3	A	7.1	A	15.7	B
<i>Northbound Approach</i>	34.2	C	24.0	C	15.6	B
Northbound Left	34.4	C	24.4	C	16.0	B
Northbound Through + Right	34.1	C	23.7	C	15.3	B
<i>Southbound Approach</i>	29.1	C	23.0	C	25.8	C
Southbound Left + Through	37.6	D	30.3	C	38.1	D
Southbound Right	27.3	C	19.3	B	18.4	B
	ROUNDABOUT (4-Leg, 2-Lane Circulatory)					
US 87 and I-90 WB ramp	2.5	A	2.1	A	5.6	A
<i>Westbound Approach (I-90 WB Off Ramp)</i>	4.2	A	2.4	A	3.6	A
<i>Southbound Approach (US 87)</i>	3.0	A	2.4	A	13.8	B
<i>Northbound Approach (US 87)</i>	3.0	A	1.8	A	3.6	A
	ROUNDABOUT (5-Leg, 2-Lane Circulatory)					
US 87, I-90 EB ramp, and Coburn Rd	2.8	A	2.7	A	4.4	A
<i>Southbound Approach (US 87)</i>	2.4	A	1.8	A	4.2	A
<i>Eastbound Approach (I-90 EB Off Ramp)</i>	3.0	A	3.0	A	9.0	A
<i>Northbound Approach 1 (Coburn Road)</i>	6.0	A	4.8	A	16.2	B
<i>Northbound Approach 2 (US 87)</i>	4.8	A	3.0	A	6.6	A

Improvements Analyzed	Location	Category
Construct roundabout interchange (2 roundabouts) / remove signals / incorporate Coburn Rd	I-90 at US 87	Capacity

Table 33
Peak Hour Intersection LOS w/ Improvements
Johnson Lane Interchange - Exit 455

Intersection and Critical Movements	2023					
	AM Pk Hr		Noon Pk Hr		PM Pk Hr	
	Delay	LOS	Delay	LOS	Delay	LOS
ROUNDABOUT (6-Leg, 2-Lane Circulatory)						
Johnson Lane & N. Frontage Rd. & I-90 WR ramp	8.0	A	3.7	A	4.1	A
<i>Westbound Approach 1 (I-90 WB Off Ramp)</i>	9.0	A	4.8	A	4.2	A
<i>Westbound Approach 2 (N Frontage Rd)</i>	16.8	B	6.6	A	6.6	A
<i>Southbound Approach (Johnson Ln)</i>	9.0	A	4.8	A	4.8	A
<i>Eastbound Approach (N. Frontage Rd)</i>	7.2	A	3.6	A	8.4	A
<i>Northbound Approach (Johnson Ln)</i>	15.0	B	4.2	A	4.2	A
ROUNDABOUT (4-Leg, 1-Lane Circulatory)						
Johnson Lane and I-90 EB ramp	11.9	B	4.5	A	4.5	A
<i>Southbound Approach (Johnson Ln)</i>	3.6	A	3.6	A	4.8	A
<i>Eastbound Approach (I-90 EB Off Ramp)</i>	4.8	A	4.2	A	7.2	A
<i>Northbound Approach (Johnson Ln)</i>	34.2	C	5.4	A	7.2	A
SIGNAL CONTROL						
Johnson Lane and Old Hardin	39.9	D	15.9	B	19.5	B
<i>Eastbound Approach</i>	27.7	C	21.2	C	29.2	C
Eastbound Left	44.9	D	29.7	C	46.7	D
Eastbound Through + Right	7.0	A	13.3	B	18.7	B
<i>Westbound Approach</i>	46.9	D	20.3	C	19.6	B
Westbound Left	13.6	B	22.6	C	28.4	C
Westbound Through	14.2	B	24.5	C	28.6	C
Westbound Right	52.2	D	18.7	B	15.7	B
<i>Northbound Approach</i>	45.9	D	18.2	B	29.5	C
Northbound Left	24.3	C	16.7	B	25.3	C
Northbound Through + Right	47.8	D	18.5	B	30.2	C
<i>Southbound Approach</i>	18.0	B	8.7	A	12.0	B
Southbound Left	18.2	B	8.9	A	12.9	B
Southbound Through	16.8	B	7.8	A	10.1	B
Southbound Right	18.1	B	8.9	A	10.5	B
STOP CONTROL						
Old Hardin and Becraft Lane	12.4	B	2.7	A	4.3	A
<i>Eastbound Approach</i> Through + Right	0.0	A	0.0	A	0.0	A
<i>Northbound Approach</i> Left + Right	46.2	E	15.5	C	31.5	D
<i>Westbound Approach</i> Left + Through	0.3	A	0.4	A	0.5	A

Recommended Improvement	Location	Category
Construct roundabout interchange (2 roundabouts) / incorporate N Frontage Rd	I-90 at Johnson Ln	Capacity
Add 2nd SB LT lane and WB LT lane	Johnson Ln / Old Hardin Rd	

Table 34
Recommended Project/STIP Improvements
All Study Interchanges

Type	Project ID	Improvement Description	Location	Anticipated Time Frame	General Planning Priority	Estimated Cost	Potential Funding Sources	
Safety Related	27 S1	Widen EB on-ramp for truck turns	27th St / I-90 EB on-ramp	0 Years	H	\$ 150,000	STPP, STPHS, IM, NH	
	LK S1	Interim safety improvements to mitigate SB LT (EB on ramp) accidents	I-90 EB Ramps / US 87	0 Years	H	\$ 25,000	STPP, STPHS, NH	
	JL S1	Improve vertical clearance; lower Johnson Lane	I-90 bridge over Johnson Ln	0 Years	H	\$ 200,000	STPP, STPHS	
	JL S2	Add intersection streetlight	Johnson Ln / I-90 WB ramp	0 Years	M	\$ 10,000	STPP	
	JL S3	Add crosswalk & ped push buttons / signal indications	north leg of Old Hardin Rd at Johnson Ln	0 Years	M	\$ 15,000	STPP, CTEP	
	27 S2	Modify barriers to improve intersection sight distance	27th St	0 Years	L	\$ 50,000	STPP, STPHS, BR, NH	
	SB S1	Upgrade crossroad and ramp lighting to CIL standards	I-90 at S Billings Blvd	0-5 Years	L	\$ 250,000	STPP	
	SB S2	Upgrade I-90 mainline highway lighting to CIL standards	I-90 at S Billings Blvd	0-5 Years	L	\$ 750,000	STPP, IM	
	27 S3	Construct sidewalks (except on I-90 bridge) and crosswalks at ramp terminals	27th St	0-5 Years	L	\$ 100,000	STPP, CTEP, L, P, NH	
	SB S3	Construct sidewalks through corridor (utilize existing sidewalks on I-90 bridge)	S Billings Blvd	0-10 Years	L	\$ 100,000	STPP, CTEP, L, P	
	LK S2	Construct sidewalks & crosswalks except on I-90 bridge	I-90 at US 87	0-10 Years	L	\$ 100,000	STPP, CTEP, L, P, NH	
	JL S4	Construct sidewalks & crosswalks	Johnson Ln	0-10 Years	L	\$ 100,000	STPP, CTEP, L, P	
	JL S5	Upgrade crossroad and ramp lighting to meet CIL standards	Johnson Ln	5-10 Years (d)	L	\$ 250,000	STPP	
	JL C1	Upgrade I-90 mainline highway lighting to meet CIL standards	I-90 at Johnson Ln	5-10 Years (d)	L	\$ 750,000	STPP, IM	
	S S1	Construct sidewalks through corridor	Zoo Dr., I-90 WB ramps to Gabel Rd	5-15 Years (d)	M	\$ 150,000	STPP, CTEP, P, L	
	S S2	Upgrade I-90 mainline highway lighting to CIL standards	I-90 at Zoo Dr	10-15 Years (d)	L	\$ 750,000	STPP, IM	
	LK S3	Upgrade crossroad and ramp lighting to meet CIL standards	I-90 at US 87	15-20 Years	L	\$ 250,000	STPP, NH	
	LK S4	I-90 mainline highway lighting does not meet CIL standards	I-90 at US 87	15-20 Years	L	\$ 750,000	STPP, IM	
	Capacity Related	JL C2	Access management at Flying J service station	Old Hardin Rd west of Johnson Ln	0-5 Years	M	n/a	STPP, L, P
		S C1	Install traffic signal*	Zoo Dr / Gabel Rd	0-5 Years(d)	L	\$ 150,000	STPP, STPU, P, L
S C2		Install traffic signal*	Zoo Dr / future entrance	0-5 Years(d)	L	\$ 150,000	P, L	
LK C1		Construct roundabout interchange (2 roundabouts) / remove signals / incorporate Coburn Rd	I-90 Interchange	5-10 Years	H	\$ 4,000,000	STPP, STPHS, CMAQ, NH	
SB C1		Coordinated signal system	S Billings Blvd	5-10 Years	M	\$ 25,000	STPP, STPU, CMAQ	
S C3		Install traffic signal*	Zoo Dr / I-90 WB ramps	5-10 Years (d)	M	\$ 150,000	STPP, CMAQ	
S C4		Widen Zoo Dr. to 4 or 5 lanes	I-90 EB ramps to Gabel Rd	5-10 Years (d)	M	\$ 600,000	STPP, STPU, CMAQ	
S C5		Add SB RT lane	Zoo Dr / I-90 WB ramps	5-10 Years (d)	M	\$ 50,000	STPP, CMAQ, IM	
S C6		Add 2nd SB LT lane	Zoo Dr / Gabel Rd	5-10 Years (d)	L	\$ 150,000	P, L	
JL C3		Construct roundabout interchange (2 roundabouts) / incorporate N Frontage Rd	I-90 Interchange	5-15 Years (d)	H	\$ 5,000,000	STPP, CMAQ, L, P, IM	
27 C1		Install traffic signal	27th St / I-90 WB ramps	10-15 Years	M	\$ 200,000	STPP, CMAQ	
27 C2		Install traffic signal	27th St / I-90 EB ramps	10-15 Years	M	\$ 200,000	STPP, CMAQ	
27 C3		Coordinate signal system	27th St	10-15 Years	M	\$ 25,000	STPP, CMAQ	
JL C4		Add 2nd SB LT lane and WB LT lane	Johnson Ln / Old Hardin Rd	10-15 Years	M	\$ 200,000	STPP, CMAQ, L	
S C7		Install traffic signal*	Zoo Dr / I-90 EB ramps	10-15 Years (d)	M	\$ 150,000	STPP, CMAQ	
S C8		Coordinate signal system	Zoo Dr	10-15 Years (d)	M	\$ 50,000	STPP, STPU, CMAQ, P	
S C9		Add 2nd SB LT lane and 2nd EB LT (off ramp) lane ; widen EB on-ramp	Zoo Dr / I-90 EB ramps	10-15 Years (d)	M	\$ 400,000	STPP, CMAQ	
S C10		Install traffic signal*	Zoo Dr / Shiloh Rd	10-15 Years (d)	L	\$ 150,000	STPP, STPU, CMAQ, P, L	
S C11		Install traffic signal*	Zoo Dr / S Frontage Rd	10-15 Years (d)	L	\$ 150,000	STPP, STPU, P, L	
S C12		Add 2nd SB LT lane	Zoo Dr / Shiloh Rd	10-15 Years (d)	L	\$ 100,000	STPP, STPU, P, L	
S C13	Widen Zoo Dr. to 4 or 5 lanes	Gabel Rd to Shiloh Rd	10-20 Years	L	\$ 700,000	STPP, STPU, CMAQ		
S C14	Add WB RT "free" right turn (requires bridge structure widening)	Zoo Dr / I-90 WB ramps	15-20 Years (d)	H	\$ 800,000	STPP, CMAQ, BR		
SB C2	Add NB & WB RT lanes	S Billings Blvd / King Ave	15-20 Years	M	\$ 150,000	L, P		
SB C3	Widen/restripe S. Billings to 4 thru lanes; extend/restripe LT lanes at I-90 on-ramps	S. Billings, King Blvd. to south of project	15-20 Years	M	\$ 800,000	STPP, STPU, CMAQ, L		
SB C5	Add 2nd EB LT lane & WB RT lane	S Billings Blvd / S Frontage - Midland	15-20 Years	L	\$ 200,000	L		
S C15	Add 2nd EB LT lane and NB RT lane	Zoo Dr / S Frontage Rd	15-20 Years (d)	L	\$ 200,000	STPP, STPU, CMAQ, P		
SB C4	Install traffic signal	Southgate Dr / King Ave	15-20 Years (d)	L	\$ 200,000	L, P		

(d) Timing dependent upon development growth in the immediate interchange area (see specific interchange table for more information)

* These intersections currently have signal poles installed (no mast arms) with the existing street lighting.

Funding Source Codes:

- STPP = Surface Transportation Program Primary
- STPU = Surface Transportation Program Urban
- STPHS = Surface Transportation Program Hazard Elimination Program
- CTEP = Surface Transportation Enhancement Program
- CMAQ = Congestion Mitigation and Air Quality Improvement Program
- NH = National Highway System Program
- BR = Bridge Replacement Program
- IM = Interstate Maintenance Program
- L = Local Funds
- P = Private Funds

Priority Codes:

- H = High; Safety project based on a documented accident trend, or capacity improvement involving structure widening and/or advanced planning
- M = Medium; Project need is imminent, but not related to a documented safety issue and/or advanced planning not required
- L = Low; Project need is projected, but not related to a documented safety issue and/or advanced planning not required