NOTES:

1. THE MAXIMUM WEIGHT OF THIS ASSEMBLY IS 250 POUNDS (115 kg).
2. USE A 14" [355] WHEEL AND TIRE.
3. AUTOMOTIVE AND EQUIPMENT AXLE ASSEMBLIES MAY NOT BE USED FOR TRAILER-MOUNTED SIGN SUPPORTS.
4. OTHER NCHRP 350 OR MASH CRASH TESTED ASSEMBLIES ARE ACCEPTABLE.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILLED DRAWING

REFERENCE DWG. NO. 618-02 STANDARD SPEC. SECTION 618.715

PORTABLE SIGN SUPPORT ASSEMBLY

EFFECTIVE: SEPTEMBER 2014

MONTANA DEPARTMENT OF TRANSPORTATION
PORTABLE BARRICADES

- Rail stripes and 6" (150 mm) width for barricades 3' (0.9 m) or greater in length. For barricades less than 3' (0.9 m) in length, 4" (100 mm) stripes may be used.
- The predominant color for other barricade components is white, but unpainted/annealed metal or aluminum components may be used.
- Where RSSI barricades are to face traffic from two directions, stripping on both the front and rear sides is required.
- Use materials for barricade framework, assembly, attached signs, and means of sign attachment that meet NCHRP 350 and/or MASH requirements for work zone devices, options for sign attachment are:
  - Signs up to 30.5 ft (9.3 m) must be bolted to the top rail.
  - Signs over 30.5 ft (9.3 m) must be bolted to the rails and both upright supports.
  - Signs may be mounted behind the barricade on a separate NCHRP 350 and/or MASH approved sign support.
- Use retro-reflective sheeting as per the contract.
- Rail stripes are 6" (150) in width for barricades 3' (0.9 m) or greater in length. 4" (100) stripes may be used.
- Where both left and right turns are permitted, position barriers so the stripes slope downward in both directions toward the center of the barricade or barriers.

RAIL STRIPES

Where barricades extend entirely across the roadway, position barricades so the stripes slope downward in the direction toward which the road users must turn.

- Use materials for barricade framework, assembly, attached signs, and means of sign attachment that meet NCHRP 350 and/or MASH requirements for work zone devices. Options for sign attachment are:
  - Signs up to 30.5 ft (9.3 m) must be bolted to the top rail.
  - Signs over 30.5 ft (9.3 m) must be bolted to the rails and both upright supports.
  - Signs may be mounted behind the barricade on a separate NCHRP 300 and/or MASH approved sign support.

DESIGNER: SEPTEMBER 2014

Dwg. No. 618-03

See the manual or uniform traffic control device unit Part 6 for additional information.

WEATHER - IN PLACE. WATERPROOF SANDBAGS DURING PERIODS OF FREEZING WEATHER.

USE SANDBAGS OF SUFFICIENT WEIGHT TO HOLD THE BARRICADES IN PLACE. WATERPROOF SANDBAGS DURING PERIODS OF FREEZING WEATHER.

MINIMUM [0.6 m] L = 2'

MINIMUM [0.9 m] L = 3'-0"

MINIMUM [1.2 m] L = 4'

MINIMUM [1.5 m] L = 5'-0"

MINIMUM [1.8 m] L = 6'-6"

MINIMUM [2.4 m] L = 8'-6"

MINIMUM [3.0 m] L = 10'-6"

MINIMUM [4.5 m] L = 15'-0"

MINIMUM [6.0 m] L = 20'-0"

MINIMUM [9.0 m] L = 30'-0"

MINIMUM [12.0 m] L = 40'-0"

MINIMUM [15.0 m] L = 50'-0"

MINIMUM [18.0 m] L = 60'-0"

MINIMUM [20.0 m] L = 70'-0"

MINIMUM [25.0 m] L = 100'-0"

MINIMUM [30.0 m] L = 150'-0"

MINIMUM [50.0 m] L = 500'-0"

UNLESS OTHER UNITS ARE SHOWN.

METRIC AND ARE IN MILLIMETERS (mm) UNITS SHOWN IN BRACKETS [ ] ARE
NOTES:

1. This sign layout is intended to be a permanent installation for the duration of the construction project, as approved by the project manager. Cover or remove any signs when not in use, including speed limit signs not warranted. Remove any sign supports if they will not be needed within 90 days.

2. Post the end of work zone speed limit consisting of one sign when the normal posted speed limit for all vehicles is the same. Use two signs when car, truck and nighttime speed limits are different.

3. Include regulatory signage only if a work zone or roadway has conditions that warrant speed restrictions. Modify regulatory signs to match adjacent regulations.

4. In addition to the signs shown, include the appropriate two-lane work area signs (D.T.D. DWG. 618-08) when a work area is located at the beginning or end of the work zone.

5. Set up this sign layout in each traffic direction.

6. Post the speed limit appropriate for all vehicles for the remainder of the work zone before resuming to normal posted speed limits at the end of the work zone.

* Denotes signs that are unique to Montana.
WORK AREA WITH NO FLAGGER

- Provide a second flagger when required per Section 618.
- Post the speed limit appropriate for all vehicles for the remainder of the work zone before resuming to normal posted speed limits at the end of the work zone.
- Ensure the amber LED flashers meet requirements of Standard Specification 715 and DTL DWG. 618-01.
- Include these signs with all flaggers. Include these signs within work zones when step down is 20 m.p.h. or greater.

WORK AREA WITH FLAGGER

- These sign layouts also used in conjunction with the permanent layout illustrated on DTL DWG. 618-04 for work areas located at the begin and end of the work zones.
- XX = speed determined by the project manager.
- Include regulatory signing only if there is reason to restrict speed within the work zone. Remove or cover existing regulatory signs to match adjacent regulations.
- Set up this sign layout in each traffic direction. Combine successive work areas when less than 1.0 mile [1.6 km] apart.
- The buffer space may be increased for downgrades and other conditions that affect stopping distance.

NOTES:

- PROVIDE A SECOND FLAGGER WHEN REQUIRED PER SECTION 618.
- POST THE SPEED LIMIT APPROPRIATE FOR ALL VEHICLES FOR THE REMAINDER OF THE WORK ZONE BEFORE RESUMING TO NORMAL POSTED SPEED LIMITS AT THE END OF THE WORK ZONE.
- ENSURE THE AMBER LED FLASHERS MEET REQUIREMENTS OF STANDARD SPECIFICATION 715 AND DTL DWG. 618-01.
- INCLUDE THESE SIGNS WITH ALL FLAGGERS. INCLUDE THESE SIGNS WITHIN WORK ZONES WHEN STEP DOWN IS 20 M.P.H. OR GREATER.

UNITs SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

Detailed Drawing Reference: DWG. NO. 618-08

Two-Lane Work Areas

(MONTANA DEPARTMENT OF TRANSPORTATION)
NOTES:

1. Modify regulatory signs to match adjacent regulations.
2. Set up this sign layout in each traffic direction.
3. The buffer space may be increased for downgrades and other conditions that affect stopping distance.
4. Provide a second flagger when required by Section 618.03.14.
5. XX = Speed determined by the Project Manager.
6. Post the speed limit appropriate for all vehicles for the remainder of the work zone before resuming to normal posted speed limits at the end of the work zone.
7. Ensure the amber LED flashers meet requirements of Standard Specification 715 and DTL DWG 618-01.
8. Include these signs with all flaggers. Include these signs within work zones when step down is 20 M.P.H. or greater.

* Denotes signs that are unique to Montana.
**TEMPORARY TRAFFIC CONTROL SIGNAL DETAIL**

- **W10-6**
  - 24" x 36" (600 x 900)
  - Plastic drums at 20' [6 m] max. spacing in shoulder taper

- **W20-4**
  - 48" x 48" (1200 x 1200)
  - One lane road ahead

- **W3-5**
  - 48" x 48" (1200 x 1200)
  - Use when step down is 20 M.P.H. or greater

- **W3-3**
  - 48" x 48" (1200 x 1200)
  - With LED flashing amber light's

**NOTES:**
1. Modify regulatory signs to match adjacent regulations.
2. Set up this sign layout in each traffic direction.
3. The buffer space may be increased for downgrades and other conditions that affect stopping distance.
4. XX = Speed determined by the project manager.
5. Post the speed limit appropriate for all vehicles for the remainder of the work zone before resuming to normal posted speed limits at the end of the work zone.
6. Remove any conflicting pavement markings between the stop line and work zone boundary.
7. Place temporary pavement markings as shown when roadway surface is paved. (Removable pavement markings may be used.) Upon removal of the temporary traffic control signals, remove all temporary pavement markings and restore permanent or interim pavement markings.
8. Temporary traffic control signals are to meet the physical display and operational requirements of permanent traffic control signals.
9. Establish temporary traffic control signal timing by consulting with an authorized traffic engineer. Ensure that the durations of red clearance intervals are adequate to clear the on-lane section of conflicting vehicles. Incorporate safeguards to avoid the possibility of conflicting signal indications at each end of the work zone.
10. Incorporate any side approach traffic that occurs within the work area boundaries into the mainline signal controlled operation via the use of temporary traffic control signals, devices, etc.
11. Include these signs with all flaggers. Include these signs within work zones when step down is 20 M.P.H. or greater.
12. Insure the amber LED flashers meet requirements of standard specification 715 and DTL DWG. 618-01.

* Denotes signs that are unique to Montana.

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**DETAILED DRAWING**

**REFERENCE**
- DWG. NO.
- STANDARD SPEC.
- SECTION
- 618
- 618-13

**TWO-LANE WORK ZONE LANE CLOSURE - SIGNAL CONTROLLED**

**REVISED**
- EFFECTIVE: SEPTEMBER 2014

**DEPARTMENT OF TRANSPORTATION**
- MONTANA
NOTES:
1. USE THIS SIGN LAYOUT WHEN APPROPRIATE. OTHERWISE REFER TO DTL. DWG. 618-16 WHEN A FLAGGER IS NEEDED.
2. SET UP THIS SIGN LAYOUT IN EACH TRAFFIC DIRECTION, AS NEEDED.
* DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.
NOTES:

1. Set up this sign layout in each traffic direction, as needed.

2. The buffer space may be increased for downgrades and other conditions that affect stopping distance.

3. XX = Speed determined by the project manager.

4. When this occurs outside of a construction project include the W20-1 and R2-15* signs.

5. Post the speed limit appropriate for all vehicles for the remainder of the work zone before resuming to normal posted speed limits at the end of the work zone.

6. When outside of a construction project, post the speed limit consisting of one sign when the normal posted speed limit for all vehicles is the same. Use two signs when car, truck, and nighttime speed limits are different.

7. Ensure the amber LED flashers meet requirements of section 715 and DOT DWG. 618-01.

8. Include these signs with all flaggers. Include these signs within work zones when step down is 20 M.P.H. or greater.

* Denotes signs that are unique to Montana.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING

REFERENCE: DWG. NO.
STANDARD SPEC. 618-16
SECTION 618, 715

TWO-LANE EQUIPMENT ENTRANCES

REVISED: OCTOBER 2017
EFFECTIVE: SEPTEMBER 2014

MONTANA DEPARTMENT OF TRANSPORTATION
NOTES:

1. This sign layout is intended to be a permanent installation for the duration of the construction project, as approved by the project manager. Cover or remove signs when not in use, including speed limit signs not warranted. Remove any sign supports if they will not be needed within 90 days.

2. Post the end of work zone speed limit consisting of one limit when the normal posted speed limit for all vehicles is the same. When car and truck speed limits differ, post both limits on a single sign.

3. Include regulatory signing only if a work zone or roadway has conditions that warrant speed restrictions. Modify regulatory signs to match adjacent regulations.

4. Set up this sign layout in each traffic direction.

5. In addition to the signs shown, include the appropriate four-lane work zone signs (DTL. DWG. 618-24) when a work area fails at the begin or end of the work zone.

6. Divided four-lane is shown. For un-divided four-lane, place signs on right side only.

* Denotes signs that are unique to Montana.

**REVISED**

EFFECTIVE: SEPTEMBER 2014

OCTOBER 2017

MTANIA DEPARTMENT OF TRANSPORTATION

**Detaied Drawing Reference**

**Dwg. No.**

618-20

**Section 618**

**Divider Four-Lane Work Zone**

Units shown in brackets ( ) are metric and are in millimeters (mm) unless other units are shown.
MATCH LINE FROM DTL DWG. 618-30

**LEGEND**

- OBLITERATE CONFLICTING PAVEMENT MARKINGS AND FILL ANY EXISTING RUMBLE STRIPS WITH PMS
- PLASTIC DRUMS (SEE NOTES FOR SPACING)
- RAISED RIGID PAVEMENT MARKERS TYPE I (WHITE) OR TYPE II (YELLOW) AT 5' [1.5 m] SPACING
- DOUBLE YELLOW PAINT OR DOUBLE PLASTIC PAVEMENT MARKING TABS AT 5' [1.5 m] SPACING
- FLEXIBLE GLUE-DOWN GUIDE POSTS ON TWO-LANE (SEE NOTES FOR SPACING EXCEPT AS SHOWN)

**NOTES:**

1. SPACE CHANNELIZING DEVICES ON TANGENTS AT INTERVALS IN FEET (METERS) OF NO MORE THAN 2 [0.6] TIMES THE SPEED LIMIT IN M.P.H. AND ON ALL TAPER SECTIONS AT INTERVALS IN FEET (METERS) OF NO MORE THAN 1 [0.3] TIMES THE SPEED LIMIT IN M.P.H. FOR SPEED LIMITS LESS THAN 35 M.P.H. SPACE CHANNELIZING DEVICES AS DIRECTED BY THE PROJECT MANAGER.
2. OBLITERATE ALL PAVEMENT MARKINGS THAT CONFLICT AT ANY TIME DURING OR AFTER MEDIAN CROSSOVER USE.
3. INDICATED SPACINGS ARE INTENDED TO BE A MAXIMUM AND MAY BE REDUCED IF CONDITIONS WARRANT.
4. SEE DET. DWG. 618-03.

**DETAILED DRAWING**

**REFERENCE:** DWG. NO. 618-21

**STANDARD SPEC. SECTION 618**

**TEMPORARY ENTRANCE RAMP MEDIAN CROSSOVER**

**REVISED:** OCTOBER 2017

**EFFECTIVE:** SEPTEMBER 2014
EXIT 1/2 MILE

- **Legend**
  - OBLITERATE CONFLICTING PAVEMENT MARKINGS AND FILL ANY EXISTING RUMBLE STRIPS WITH PMS
  - PLASTIC DRUMS (SEE NOTES FOR SPACING)
  - RAISED RIGID PAVEMENT MARKERS TYPE I (WHITE) OR TYPE II (YELLOW) AT 5 [1.5 m] SPACING
  - DOUBLE YELLOW PAINT OR DOUBLE PLASTIC PAVEMENT MARKING TABS AT 5 [1.5 m] SPACING
  - FLEXIBLE GLUE-DOWN GUIDE POSTS ON TWO-LANE (SEE NOTES FOR SPACING EXCEPT AS SHOWN)

- **Notes:**
  1. SPACE CHANNELIZING DEVICES ON TANGENTS AT INTERVALS IN FEET [METERS] OF NO MORE THAN 2 [0.6] TIMES THE SPEED LIMIT IN M.P.H. AND ON ALL TAPER SECTIONS AT INTERVALS IN FEET [METERS] OF NO MORE THAN 1 [0.3] TIMES THE SPEED LIMIT IN M.P.H. FOR SPEED LIMITS LESS THAN 35 M.P.H., SPACE CHANNELIZING DEVICES AS DIRECTED BY THE PROJECT MANAGER.
  2. OBLITERATE ALL PAVEMENT MARKINGS THAT CONFLICT AT ANY TIME DURING OR AFTER MEDIAN CROSSOVER USE.
  3. INDICATED SPACINGS ARE INTENDED TO BE A MAXIMUM AND MAY BE REDUCED IF CONDITIONS WARRANT.
  4. PROVIDE ADDITIONAL SIGNING FOR EXIT DESTINATION WHEN EXIT DELINEATION IS NOT VISIBLE.
  5. SEE DET. DWG. 618-03.

- **Detailed Drawing**

- **Reference:** DWG. NO. 618-22
  - Standard Spec. Section 618
  - Temporary Exit Ramp
  - Median Crossover

- **Revised:** Effective September 2014
  - October 2017

- **Units:** Shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.
ASSUMES AN 120’ [40 m] TAPER APPROACH 80 M.P.H. (LENGTH [270 m] SPEED) TAPER 960’ [290 m]

NOTES:
1. INCLUDE SPEED LIMIT SIGNING IN SPACE PLACED TO REASON TO RESUME WORK IN WORK Zone. REMOVE OR COVER RESPONSIBLE SIGNS TO MATCH ADJACENT REGULATIONS.
2. THE BUFFER SPACE MAY BE INCREASED FOR COMMUNITY AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
3. XX = SPEED DETERMINED BY THE PROJECT MANAGER.
4. WHEN THIS OCCURS OUTSIDE OF A CONSTRUCTION PROJECT, USE W2-3 AND R2-15* SIGNS.
5. SPACE FLEXIBLE GUIDE POSTS ON TANGENTS AT INTERVALS IN FEET [METERS] NO MORE THAN THREE TIMES THE SPEED LIMIT IN M.P.H. SPACE DRUMS OR ALL TAPER SECTIONS AT INTERVALS IN FEET [METERS] NO MORE THAN TWO TIMES THE SPEED LIMIT IN M.P.H. FOR SPEED LIMITS LESS THAN 35 M.P.H., SPACE CHANNELIZING DEVICES AS DIRECTED BY THE PROJECT MANAGER.
6. IF MEDIAN CROSSING IS MORE THAN 300’ [90 m] FROM THE LANE CLOSURE, INCLUDE W-5 SIGNS, AS REQUIRED.
7. POST THE SPEED LIMIT APPROPRIATE FOR ALL VEHICLES FOR THE WORKMANSHIP OF THE WORK ZONE BEFORE RESUMING NORMAL POSTED SPEED LIMITS AT THE END OF WORK ZONE.
8. WHEN OUTSIDE OF A CONSTRUCTION PROJECT, POST THE SPEED LIMIT CONSISTING OF ONE LIMIT WHEN THE NORMAL POSTED SPEED LIMITS REQUIRED FOR ALL VEHICLES IN THE TAMP. NEVER POST A SINGLE SPEED LIMIT SIGN OR COVER SPEED LIMIT SIGNS DURING POST SPEED LIMITS ON A SINGLE SIGN.
9. ENGAGE THE AMBER LED FLASHERS INSTEAD OF REFLECTIVE AMBER LIGHTS FOR ALL VEHICLES IN SERVICE OF SECTION 715 AND DTL Dwg. 618-01-G.
10. POST THE WORK ZONE SIGN AT THE END OF THE WORK ZONE AT THE BEGINNING OF PROJECT.
11. DODGES SIGNS THAT ARE EASIER TO MENTAL.

NOTE:
THESE SIGNS SHOWN IN brackets [ ] UNIT FEET AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING
REFERENCE WDG. NO. 618-28
SECTION 618, 715
DIVIDED FOUR-LANE MEDIAN CROSSING

MONTANA DEPARTMENT OF TRANSPORTATION

OCTOBER 2017 --REVISED--
NOTES:
1. Include regulatory signing only as required. Remove or cover regulatory signing to match adjacent regulations.
2. Illustrated spacings are intended to be a maximum and may be modified by conditions warranted.
3. Use flexi-mold guide posts for spacing.
4. Speed determined by the median crossover design speed (see notes for spacing except as shown).

MATCH LINE
FROM DET.
DWG. NO.
618-24

MATCH LINE
FROM DET.
DWG. NO.
618-30

REFERENCES
DWG. NO.
618-24

REFERENCE
DWG. NO.
618-30
**NOTES:**

1. THESE SIGN LAYOUTS USED IN CONJUNCTION WITH THE LAYOUT ILLUSTRATED ON DTL. DWG. 618-28.
2. INCLUDE REGULATORY SIGNING ONLY AS REQUIRED. REMOVE OR COVER REGULATORY SIGNS TO MATCH ADJACENT REGULATIONS.
3. XX = SPEED DETERMINED BY THE PROJECT MANAGER.
4. SPACE CHANNELIZING DEVICES ON TANGENTS AT INTERVALS IN FEET (METERS) OF NO MORE THAN TWO (0.6) TIMES THE SPEED LIMIT IN M.P.H. AND ON ALL TAPER SECTIONS AT INTERVALS IN FEET (METERS) OF NO MORE THAN ONE (0.3) TIMES THE SPEED LIMIT IN M.P.H. FOR SPEED LIMITS LESS THAN 35 M.P.H., SPACE CHANNELIZING DEVICES AS DIRECTED BY THE PROJECT MANAGER.
5. SPACE FLEXIBLE GLUE-DOWN GUIDE POSTS USED FOR LANE SHIFT TAPER AT INTERVALS IN FEET (METERS) OF M.P.H.
6. THE LANE SHIFT TAPER LENGTH ASSUMES AN 8' (2400) LANE SHIFT OFFSET AND AN 80 M.P.H. APPROACH SPEED. CONTACT THE PROJECT MANAGER IF CONDITIONS VARY.
7. TEMPORARY POSITIVE PROTECTION BARRIER CAN TERMINATE AT THE CENTER OF THE CLOSED LANE FOR ACCESS PURPOSES IF AN APPROVED TEMPORARY IMPACT ATTENUATOR IS USED.
8. PLACE REFLECTIVE MARKERS ALONG THE TOP OF TEMPORARY BARRIER AND ENSURE REFLECTORS ON EXISTING BARRIER ARE INTACT.
9. POST THE SPEED LIMIT APPROPRIATE FOR ALL VEHICLES FOR THE REMAINDER OF THE WORK ZONE BEFORE RESUMING TO NORMAL POSTED SPEED LIMITS AT THE END OF THE WORK ZONE.
10. OBLITERATE CONFLICTING PAVEMENT MARKINGS BEGINNING AT THE SHIFTING TAPER AND CONTINUING THROUGH THE WORK AREA.

* DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.

**UNITS SHOWN IN BRACKETS:**

- **Metric and are in millimeters (mm)**
- **Unless other units are shown.**

**WORK AREA**

**MATCH LINE FROM DTL. DWG. 618-28**

**LANE CLOSURE SERIES**

**DIRECTIONS:**

- **OBLITERATE CONFLICTING PAVEMENT MARKINGS**
- **PLASTIC DRUMS (SEE NOTES FOR SPACING)**
- **FLEXIBLE GLUE-DOWN GUIDE POSTS (SEE NOTES FOR SPACING)**
- **FLEXIBLE GUIDE POSTS**
NOTES:

1. SHORT DURATION ACTIVITIES ARE DEFINED AS THOSE LASTING UP TO ONE HOUR.

2. SHORT-TERM STATIONARY ACTIVITIES ARE DEFINED AS THOSE LASTING GREATER THAN ONE HOUR, UP TO A FULL SHIFT.

3. THE REGULATORY SPEED SIGNS MUST MOVE AS NEEDED TO REMAIN WITHIN 500 FEET [150 m] OF THE WORK AREA.

4. SIGN BOTH TRAVEL DIRECTIONS ON TWO-LANE, TWO-WAY ROADWAYS OR BOTH SHOULDERS ON TWO-LANE, ONE-WAY ROADWAYS.

5. PROVIDE AT LEAST THE DISTANCE SHOWN FOR DELINETER MOUNTED SIGNS.

6. USE REFLECTIVE DEVICES.

XX = NORMAL POSTED SPEED LIMIT(S).

* DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.
NOTES:

1. MINIMUM REGULATORY SIGN SIZE IS 24" X 30" (600 x 750) ON TWO-LANE ROADS.
2. ON ROADWAYS WITH HIGH TRAFFIC VOLUMES OR VISIBILITY RESTRICTIONS, A 500' [150 m] SPACING FOR ALL SIGNS IS RECOMMENDED.
3. SPACE CHANNELIZING DEVICES AT INTERVALS IN FEET (METERS) EQUAL TO TWICE [0.6 TIMES] THE SPEED LIMIT IN M.P.H. THROUGH THE BUFFER AND WORK AREA.
4. IF A NEED ARISES TO INCREASE VEHICLE STORAGE, ADD AN ADDITIONAL W20-7a "FLAGGER AHEAD" SIGN BETWEEN THE R2-1 AND W3-4 SIGNS AND CONSIDER AN ADDITIONAL ADVANCE FLAGGER.
5. A MIRROR IMAGE OF THIS SIGN SEQUENCE IS REQUIRED FOR THE TRAFFIC FROM THE OPPOSITE DIRECTION.
6. FOR MORE INFORMATION OR CLARIFICATION CONTACT THE DISTRICT TRAFFIC ENGINEER. FOR EXAMPLE, IF WORK ZONE IS close TO A HORIZONTAL CURVE, A VERTICAL CURVE, A BRIDGE, INTERCHANGE, POOR SIGHT DISTANCE, OR OTHER SPECIAL CONDITION.
7. COVER ANY CONFLICTING SIGNS IN THE WORK ZONE.
8. SHORT-TERM WORK ZONE SIGNING IS NOT REQUIRED TO BE POST MOUNTED.
9. THE BUFFER SPACE CAN BE LATERAL AND LONGITUDINAL AND MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
10. TYPICALLY 2 MILES [3.2 km] IS THE MAX WORK AREA. HOWEVER, WHEN SIGHT DISTANCE, BUFFER ZONES OR ACCOMPLISHMENT RATES FOR EQUIPMENT ARE CONSIDERED, SOME MINOR ADJUSTMENTS TO THIS MAX. MAY BE CONSIDERED.

XX = NORMAL POSTED SPEED LIMIT(S). * DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.
NOTES:

1. Minimum regulatory sign size is 24" x 30" [600 x 750] on two-lane roads.

2. On roadways with high traffic volumes or visibility restrictions, a 500' [150 m] spacing for all signs is recommended.

3. If a need arises to increase vehicle storage, add an additional W20-7a "Flagger Ahead" sign between the R2-1 and W3-A signs and/or consider an additional advance flagger.

4. A mirror image of this sign sequence is required for the traffic from the opposite direction.

5. For more information or clarification contact the District Traffic Engineer. For example, if work zone is close to a horizontal curve, a vertical curve, a bridge, interchange, poor sight distance or other special condition.

6. Cover any conflicting signs in the work zone.

7. Short-term work zone signing is not required to be post mounted.

8. The buffer space can be lateral and longitudinal and may be increased for downgrades and other conditions that affect stopping distance.

9. XX = Normal posted speed limit(s).

* denotes signs that are unique to Montana.

Units shown in brackets [ ] are metric and are in millimeters (mm) unless other units are shown.
NOTES:

1. Use a minimum 320 [100 m] shoulder taper.

2. Use thirteen approved channelizing devices for a 12 [3.6 m] lane closure taper [80 m.p.h. spaced at 80 [22 m.]]. Assume that the taper is a minimum length of 960 [300 m].

3. Space channelizing devices at intervals in feet [meters] equal to twice [0.6 times] the speed limit in [m.p.h.] through the buffer and work area.

4. Place the arrow board on the shoulder at the start of the travel lane closure taper.

5. The buffer space can be lateral and longitudinal. Keep the buffer space clear of equipment and personnel.

6. For more information or clarification contact the district traffic engineer. For example, if work area is close to a horizontal curve, a vertical curve, a bridge, interchange, poor sight distance or other special condition.

7. Cover any conflicting signs in the work area.

8. Short-term work zone signing is not required to be post mounted.

9. When the work area changes within the work zone, these signs should be moved to reflect the actual work area.

10. Typically 2 miles [3.2 km] is the max. work area. However, when sight distance, buffer zones or accomplishment rates for equipment are considered, some minor adjustments to this max. may be considered.

11. XX = normal posted speed limit(s).

* Denotes signs that are unique to Montana.

**XX = normal posted speed limit(s).
MOBILE OPERATIONS ON MULTILANE ROAD

- Make sure to provide adequate sight distance for vehicles approaching from the rear.
- Maintain a minimum spacing between the work vehicle and the shadow vehicle to avoid road users from driving in between.
- Use the minimum arrow board size is type B, 60 inches x 30 inches (1500 x 750).
- Ensure the distance between the work location and the shadow vehicle to provide adequate sight distance for vehicles approaching from the front.

MOBILE OPERATIONS ON TWO-LANE ROAD

- Ensure that the work vehicle occupies an interior lane of a directional roadway using a right shoulder to part (required), or work in widths of 15 feet or shallower. Shadow vehicle 2 using the right-hand shadow with a sign indicating work is taking place in the interior lane.
- On high-speed roadways, a third shadow vehicle may be used with shadow vehicle 1 in the closed lane, shadow vehicle 2 straddling the edge line, and shadow vehicle 3 on the shoulder. Where adequate shoulder width is not available, shadow vehicle 2 may also straddle the edge line.
- The minimum arrow board size is type A, 60 inches x 30 inches (1500 x 750).
- Ensure the distance between the work location and the shadow vehicle to provide adequate sight distance for vehicles approaching from the front.

NOTES:

- Place appropriate lane closure sign on shadow vehicle 2 so as not to obscure the arrow board.
- Cover or turn the sign legends on vehicle-mounted signs from view when work is not in progress.
- Whenever adequate stopping sight distance from the rear, maintain a minimum distance from the cover or turn the sign legends on vehicle-mounted signs from view when work is not in progress.
- Truck-mounted attenuator is required for shadow vehicle.
- Truck-mounted attenuator is required for shadow vehicle.
- Cover or turn the sign legends on vehicle-mounted signs from view when work is not in progress.
- Use sign shape and legend appropriate to the type of work.

REFERENCES:

- MONTANA DEPARTMENT OF TRANSPORTATION
- EFFECTIVE: OCTOBER 2017
- DWG. NO. 618-M4
- SECTION STANDNO SPEC.
- STANDARD UNITS SHOWN IN BRACKETS [ ] ARE METERS AND ARE IN MILLIMETERS (MM) UNLESS OTHER UNITS ARE SHOWN.
** POSTED SPEED LIMIT FOR WORK ZONE **

<table>
<thead>
<tr>
<th>SPEED LIMIT</th>
<th>SIGN SPACING</th>
<th>TAPER LENGTH</th>
<th>SPACING OF CHANNELIZING DEVICES (MAX.)</th>
<th>BUFFER SPACE (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(M.P.H.)</td>
<td>(FEET [m])</td>
<td>(FEET [m])</td>
<td>FEET (m)</td>
<td>FEET (m)</td>
</tr>
</tbody>
</table>

**NOTES:**

1. USE THIS SIGN LAYOUT IN URBAN APPLICATIONS ONLY. USE THE RURAL, OPEN ROADWAY SIGNING DETAILS WHEN HIGHER SPEED LIMITS ARE USED.

2. INCLUDE SPEED LIMIT SIGNS ONLY IF THERE IS A REASON TO RESTRICT SPEED. COVER CONFLICTING EXISTING SPEED LIMIT SIGNS.

3. THE BUFFER SPACE MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.

4. THIS LAYOUT SHOULD ONLY BE USED WHEN THERE IS AT LEAST 10' [3.0 m] IN WIDTH BETWEEN THE CHANNELIZING DEVICES AND THE EDGE OF PAVEMENT.

5. LARGER SIGN SIZES MAY BE APPROVED BY THE PROJECT MANAGER.

6. PLACE END ROAD WORK SIGNS AT END OF PROJECT LIMITS.

7. POST EXISTING SPEED LIMIT IF CHANGED BY WORK ZONE.

8. SEE DTL. DWG. 618-03.

**LEGEND**

- F - FLEXIBLE GUIDE POSTS
- P - PLASTIC DRUMS
- * - DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.

**XX** - SPEED DETERMINED BY THE PROJECT MANAGER (25 M.P.H. OR 35 M.P.H.)

**UNITS SHOWN IN BRACKETS ( ) ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED.**

**DETAILED DRAWING**

**REFERENCE DWG. NO. STANDARD SPEC.**

618-U02 618

**SECTION 618**

**WORK ZONE OCCUPIES ONE HALF OF ROAD (LOW SPEED URBAN TWO-LANE, TWO-WAY ROAD)**

**REVISED OCTOBER 2017**

**EFFECTIVE: SEPTEMBER 2014**

**MTA MONTANA DEPARTMENT OF TRANSPORTATION**
<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT FOR WORK ZONE</th>
<th>SIGN SPACING (A)</th>
<th>TAPER LENGTH (T)</th>
<th>SPACING OF CHANNELIZING DEVICES (MAX.) (G)**</th>
<th>BUFFER SPACE (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(M.P.H.)</td>
<td>FEET (m)</td>
<td>FEET (m)</td>
<td>FEET (m)</td>
<td>FEET (m)</td>
</tr>
</tbody>
</table>

** SPACE ALL CHANNELIZING DEVICES AT “G” UNLESS OTHERWISE NOTED.

NOTES:
1. USE THIS SIGN LAYOUT IN URBAN APPLICATIONS ONLY. USE THE RURAL, OPEN ROADWAY SIGNING DETAILS WHEN HIGHER SPEED LIMITS ARE USED.
2. INCLUDE SPEED LIMIT SIGNS ONLY IF THERE IS A REASON TO RESTRICT SPEED. COVER CONFLICTING EXISTING SPEED LIMIT SIGNS.
3. THE BUFFER SPACE MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
4. THIS LAYOUT SHOULD ONLY BE USED WHEN THERE IS AT LEAST 10' [3 m] IN WIDTH BETWEEN THE CHANNELIZING DEVICES AND THE EDGE OF PAVEMENT. PROVIDE NO PARKING SIGNS WHEN APPROPRIATE.
5. LARGER SIGNS MAY BE APPROVED BY THE PROJECT MANAGER.
6. PLACE END ROAD WORK SIGNS AT END OF PROJECT LIMITS.
7. POST EXISTING SPEED LIMIT IF CHANGED BY WORK ZONE.
8. SEE DTL DWG. 608-03

LEGEND
- FLEXIBLE GUIDE POSTS
- PLASTIC DRUMS
- DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.
XX = SPEED DETERMINED BY THE PROJECT MANAGER (25 M.P.H. OR 35 M.P.H.)

UNITS SHOWN IN BRACKETS () ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

DETAILED DRAWING
REFERENCE DWG. NO.
STANDARD SPEC.
SECTION 618
WORK ZONE IN CENTER OF ROAD (URBAN TWO-LANE, TWO-WAY ROAD)

REVISED: EFFECTIVE: SEPTEMBER 2014
OCTOBER 2017
MONTANA DEPARTMENT OF TRANSPORTATION
NOTES:

1. Minimal traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use the appropriate parking lane closure when needed.

2. Do not direct pedestrians into a lane of moving traffic.

3. Where speeds exceed 25 M.P.H., physical barriers should be used to separate the temporary walkway from vehicular traffic. Flexible guide posts with detectable edging is the minimum requirement for separation. Provide larger physical barriers, as determined by the project manager, on a case by case basis.

4. See DTL. DWG. 618-03.

5. Provide a physical barrier, with a minimum 6 inch [150 mm] height detectable edging, between the pedestrian detour walkway and the work area. Provide larger physical barriers to protect pedestrians from hazards in the work area, as determined by the project manager.

6. Ensure that entire walkway meets ADA requirements. Provide a minimum walkway width of 5 feet [1525 mm] and a firm, stable, slip resistant walking surface along entire walkway.

7. Provide temporary ramps and detectable edging (minimum 6 inch height [150 mm] on both sides of walkway) along temporary pedestrian detour route. See MUTCD for additional guidance.

8. Place R9-11 on sign posts (as shown below) if business access is not required. Place Type I barricade on sidewalk with R9-11 sign if business access is not required.

9. Place Type I barricade on sidewalk with R9-9 sign.

---

LEGEND

- - FLEXIBLE GUIDE POSTS

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.
NOTES:

1. COVER PEDESTRIAN TRAFFIC SIGNAL DISPLAYS CONTROLLING CLOSED CROSSWALKS.
2. ONLY TRAFFIC CONTROL DEVICES CONTROLLING PEDESTRIAN FLOWS ARE SHOWN. OTHER DEVICES MAY BE NEEDED TO CONTROL TRAFFIC ON THE STREETS.
3. SEE DTL. DWG. 618-03.
4. WHEN POSSIBLE, USE THE EXISTING INTERSECTION CROSSWALKS FOR PEDESTRIAN DETOURS. AS A LAST OPTION, USE THE MID-BLOCK TEMPORARY PEDESTRIAN CROSSING SHOWN BELOW. FOR LONG-TERM STATIONARY WORK, THE DOUBLE YELLOW CENTERLINE AND/OR LANE LINES ARE REMOVED BETWEEN CROSSWALK LINES. PROVIDE A MINIMUM WALKWAY WIDTH OF 5 FEET (1525 mm) AND A FIRM, STABLE, SLIP RESISTANT WALKING SURFACE ACROSS BOULEVARDS AND OTHER AREAS ALONG THE TEMPORARY PEDESTRIAN WALKWAY. PROVIDE YIELD PAVEMENT MARKINGS AS SHOWN BELOW.

5. PLACE R9-9 AND R9-10 SIGNS ON TYPE I BARRICADES ON SIDEWALK.
6. PROVIDE TEMPORARY RAMPS FOR PEDESTRIAN CROSSWALK WHEN REQUIRED.
7. PLACE R9-11 AND R9-11a ON SIGN POSTS (AS SHOWN BELOW) IF BUSINESS ACCESS IS REQUIRED. PLACE TYPE I BARRICADE ON SIDEWALK WITH R9-11 OR R9-11a SIGN IF BUSINESS ACCESS IS NOT REQUIRED.

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.

NOTE 1:

W20-1
36" x 36"
[900 x 900]
(Optional)
<table>
<thead>
<tr>
<th>POSTED SPEED LIMIT FOR WORK ZONE</th>
<th>SIGN SPACING (A)</th>
<th>TAPER LENGTH (L)</th>
<th>SPACING OF CHANNELIZING DEVICES (MILLIMETERS) (G)**</th>
<th>BUFFER SPACE (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(M.P.H.)</td>
<td>FEET [m]</td>
<td>FEET [m]</td>
<td>FEET [m]</td>
<td>FEET [m]</td>
</tr>
<tr>
<td>25</td>
<td>100 (30)</td>
<td>125 (40)</td>
<td>25 (8)</td>
<td>50 (15)</td>
</tr>
<tr>
<td>35</td>
<td>100 (30)</td>
<td>245 (84)</td>
<td>35 (12)</td>
<td>100 (30)</td>
</tr>
</tbody>
</table>

** SPACE ALL CHANNELIZING DEVICES AT "G" UNLESS OTHERWISE NOTED.

NOTES:

1. USE THIS SIGN LAYOUT IN URBAN APPLICATIONS ONLY. USE THE RURAL, OPEN ROADWAY SIGNING DETAILS WHEN HIGHER SPEED LIMITS ARE USED.
2. INCLUDE SPEED LIMIT SIGNS ONLY IF THERE IS A REASON TO RESTRICT SPEED. COVER OR REMOVE CONFLICTING EXISTING SPEED LIMIT SIGNS.
3. THE BUFFER SPACE MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
4. LARGER SIGN SIZES MAY BE APPROVED BY THE PROJECT MANAGER.
5. PLACE END ROAD WORK SIGN AT END OF PROJECT LIMITS.
6. POST EXISTING SPEED LIMIT IF CHANGED BY WORK ZONE.

LEGEND

- ** FLEXIBLE GUIDE POSTS
- • PLASTIC DRUMS
- ** DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.
- XX SPEED DETERMINED BY THE PROJECT MANAGER (25 M.P.H. OR 35 M.P.H.)

UNITS SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.
**SPEED LIMIT XX AHEAD CLOSED LEFT LANE AHEAD WORK ROAD WORK END PRESENT WORKERS WHEN DOUBLE FINES OF TRANSPORTATION MONTANA DEPARTMENT --REVISED-- OCTOBER 2017 DWG. NO. DETAILED DRAWING (MULTI-LANE, UNDIVIDED ROAD) (LOW SPEED URBAN LEFT LANE CLOSURES)

** SPACE ALL CHANNELIZING DEVICES AT "G" UNLESS OTHERWISE NOTED.

**NOTES:**

1. USE THIS SIGN LAYOUT IN URBAN APPLICATIONS ONLY. USE THE RURAL, OPEN ROADWAY SIGNING DETAILS WHEN HIGHER SPEED LIMITS ARE USED.
2. INCLUDE SPEED LIMIT SIGNS ONLY IF THERE IS A REASON TO RESTRICT SPEED. COVER OR REMOVE CONFLICTING EXISTING SPEED LIMIT SIGNS.
3. THE BUFFER SPACE MAY BE INCREASED FOR DOWNGRADES AND OTHER CONDITIONS THAT AFFECT STOPPING DISTANCE.
4. LARGER SIGN SIZES MAY BE APPROVED BY THE PROJECT MANAGER.
5. PLACE END ROAD WORK SIGNS AT END OF PROJECT LIMITS.
6. POST EXISTING SPEED LIMIT IF CHANGED BY WORK ZONE.
7. SEE DTL. DWG. 618-03.

**LEGEND**

- FLEXIBLE GUIDE POSTS
- PLASTIC DRUMS
- DENOTES SIGNS THAT ARE UNIQUE TO MONTANA.

XX = SPEED DETERMINED BY THE PROJECT MANAGER (25 M.P.H. OR 35 M.P.H.)

UNITs SHOWN IN BRACKETS [ ] ARE METRIC AND ARE IN MILLIMETERS (mm) UNLESS OTHER UNITS ARE SHOWN.
AHEAD WORK ROAD SPEED LIMIT XX

SPEED LIMIT XX

ROAD WORK END

PRESENT WORKERS WHEN DOUBLE FINES

OF TRANSPORTATION MONTANA DEPARTMENT --REVISED-- OCTOBER 2017

DETAILED DRAWING REFERENCE DWG. NO. 618-U35
SECTION 618

DOUBLE LANE CLOSURE (URBAN MULTI-LANE, UNDIVIDED ROAD)

---REVISED--- EFFECTIVE: SEPTEMBER 2014

MONTANA DEPARTMENT OF TRANSPORTATION
**NOTES:**

1. **Use this sign layout in urban applications only.** Use the rural open roadway signing details when higher speed limits are used.

2. **Include speed limit signs only if there is a reason to restrict speed. C**over or remove conflicting existing speed limit signs.

3. **The buffer space may be increased for downgrades and other conditions that affect stopping distance.**

4. **Larger sign sizes may be approved by the project manager.**

5. **Place end road work signs at end of project limits.**

6. **Post existing speed limit if changed by work zone.**

7. **See DTL DWG. 618-03.**

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**LEGEND**

- F - Flexible guide posts
- P - Plastic drums
- N - Denotes signs that are unique to Montana.

**XX** - Speed determined by the project manager, (25 M.P.H. or 35 M.P.H.)