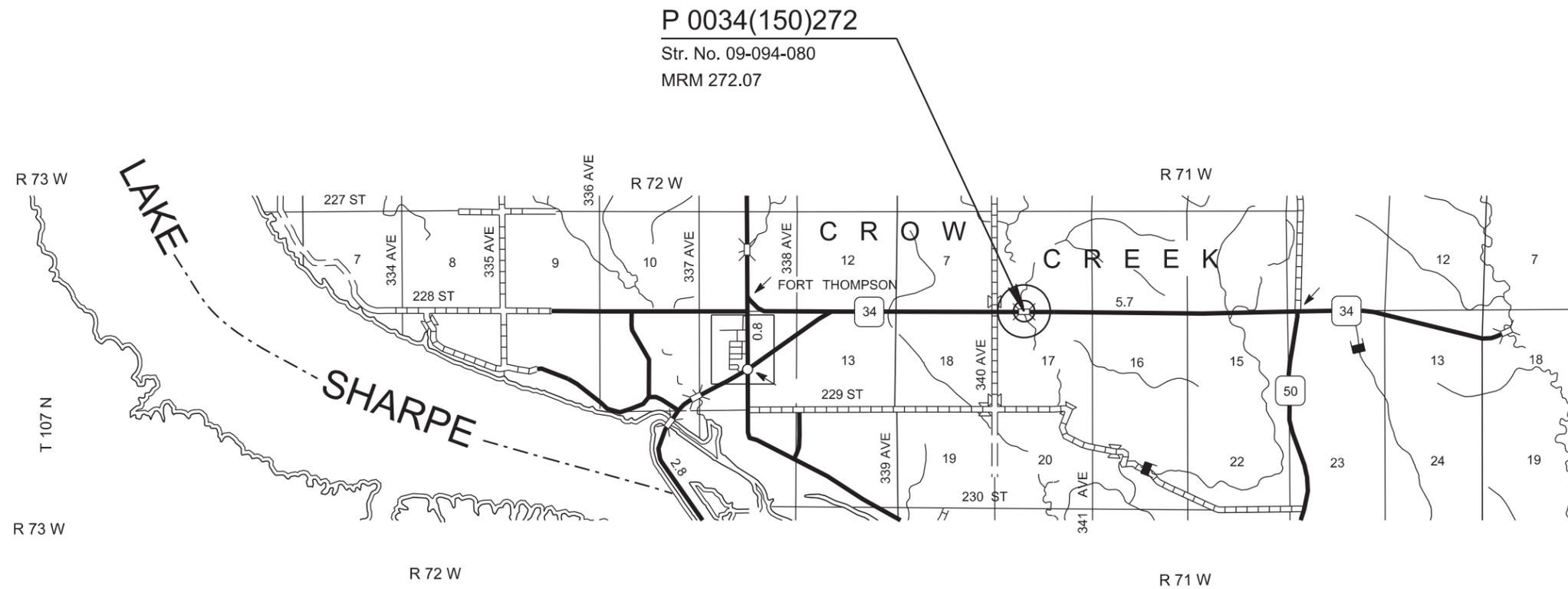


# Section C: Traffic Control Plans

|                             |                |              |                 |
|-----------------------------|----------------|--------------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT        | SHEET<br>NO. | TOTAL<br>SHEETS |
|                             | P 0034(150)272 | C1           | C11             |
| Plotting Date: 08/24/2015   |                |              |                 |

## INDEX OF SHEETS

- C1 General Layout W/Index
- C2-C3 Estimate With General Notes & Tables
- C4-C5 Overwidth Signing Layout and Details
- C6 Pavement Marking Details
- C7-C11 Standard Plates



## SECTION C ESTIMATE OF QUANTITIES

| BID ITEM NUMBER | ITEM                              | QUANTITY | UNIT |
|-----------------|-----------------------------------|----------|------|
| 632E2220        | Guardrail Delineator              | 16       | Each |
| 633E1300        | Pavement Marking Paint, White     | 4        | Gal  |
| 633E1305        | Pavement Marking Paint, Yellow    | 1        | Gal  |
| 634E0010        | Flagging                          | 50.0     | Hour |
| 634E0110        | Traffic Control Signs             | 377      | SqFt |
| 634E0120        | Traffic Control, Miscellaneous    | Lump Sum | LS   |
| 634E0265        | Type 3 Barricade, 6' Double Sided | 3        | Each |
| 634E0280        | Type 3 Barricade, 8' Single Sided | 16       | Each |
| 634E1002        | Detour Signing                    | 785.7    | SqFt |

## SCOPE OF WORK

Work on this project involves, but is not limited to, replacement of bridge, grading, surfacing, guardrail, pavement marking, and erosion control.

## SEQUENCE OF OPERATIONS

SD 34 shall remain open to traffic with the use of an onsite traffic diversion to allow for replacement of the bridge, necessary grading work and surfacing. The in place structure shall not be closed or removed until the traffic diversion is completed and such time as continuous bridge construction and grading operations can be started and maintained.

The Contractor shall maintain access to all entrances and driveways at all times.

The following Sequence of Operations shall be adhered to. Any changes must be approved in writing by the Area Engineer prior to changes being made.

1. Install preliminary traffic control devices.
2. Install erosion control measures.
3. Construct onsite traffic diversion.
4. Install signing for traffic diversion and close bridge to traffic.
5. Remove bridge, complete grading, bridge construction and surfacing.
6. Install guardrail.
7. Complete permanent pavement markings and permanent signing.
8. Open bridge to traffic and remove detour signing.
9. Remove traffic diversion.
10. Complete final items of work such as seeding and project cleanup.

## GENERAL NOTES

All waste and excess material generated from the various construction activities shall be removed from the ROW as determined by the Engineer.

## TRAFFIC CONTROL

The Contractor shall maintain a minimum 24' wide top on the traffic diversion and place 42" Cones along both shoulders to delineate the edge of the roadway. Cones shall be spaced at maximum spacing of 100 ft.

Flaggers and FLAGGER symbol signs shall be in place when hauling material from one side of the roadway to the other. These shall also be provided when work activities or equipment present a hazard to workers and/or through traffic, or encroaches into driving lanes open to traffic.

The Contractor will be allowed to temporarily close the traffic diversion should the diversion become impassible due to overtopping by water. The roadway should be reopened to traffic as soon as conditions allow. Roadway closure shall not be utilized unless it is determined to be absolutely necessary as approved by the Engineer.

The following has been included in the Itemized List for Traffic Control Signs in the event the traffic diversion becomes impassible and has to be closed:

- 6 - 8 ft single sided barricades for use at each end of the traffic diversion
- 2 - Road Closed signs for use at each end of the traffic diversion
- 2 - Road Closed Ahead signs for use in advance of the closure
- 1 - 6 ft double sided barricade with Road Closed 3 Miles Ahead sign to be placed at the SD34 & SD47 Junction on the north side of Ft. Thompson.
- 1 - 6 ft double sided barricade with Road Closed 3 Miles Ahead sign to be placed at the SD249 & SD47 Junction in Ft. Thompson.
- 1 - 6 ft double sided barricade with Road Closed 2 Miles Ahead sign to be placed at the SD34 & SD50 Junction (Lee's Corner) east of Ft. Thompson.

The above signs shall be staged for immediate deployment if the traffic diversion is required to be closed.

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost of this work shall be incidental to the various contract items unless otherwise specified in the plans. Delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Standard Plates 634.01, 634.03 and 634.23 have been included for traffic control for construction activities prior to structures being removed or miscellaneous work after structure have been constructed.

Work activities during non-daylight hours are subject to prior approval.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

Traffic Control signing, as shown in the itemized list for traffic control signs, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

## GUARDRAIL DELINEATION

4 guardrail delineators shall be placed at each corner of the bridge. Refer to Standard Plate 632.40 for installation details.

## PERMANENT PAVEMENT MARKING PAINT

Included in the Section C Estimate of Quantities is 1 gallon of Pavement Marking Paint, Yellow to mark the centerline skips and 4 gallons of Pavement Marking Paint, White to mark the edge lines on SD34 upon completion of the surfacing.

Pavement Marking Paint will be paid as plans quantity and will not be measured for payment.

Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

All materials shall be applied as per manufacturer's recommendations.

## COLD WEATHER, WATERBORNE PAINT

Waterborne paint applied after October 15 shall be formulated as cold weather waterborne paint and shall be applied in accordance with manufacturer's recommendations, including minimum temperature requirements.

Cold weather waterborne paint shall conform to Section 980 of the Specifications except for the following:

980.1: Resin Binder shall be Fastrack™ XSR manufactured by Dow, or approved equal.

980.1 A. Quantitative Requirements:

Pigment, percent by weight: 60.0 – 63.0 for white and 58.5 – 61.5 for yellow.

Pigment, percent by weight; tested in accordance with ASTM D3723: 60.0 – 63.0 for white and 56.1 – 59.2 for yellow.

Non-volatile Vehicle, percent by weight; tested in accordance with NIST 141C (Method 4051.1): 41.5 minimum for white and 51.5 minimum for yellow.

**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

| SIGN CODE                         | SIGN DESCRIPTION                               | CONVENTIONAL ROAD |           |               |            |
|-----------------------------------|--|-------------------|-----------|---------------|------------|
|                                   |  | NUMBER            | SIGN SIZE | SQFT PER SIGN | SQFT       |
| R11-2                             | ROAD CLOSED                                    | 2                 | 48" x 30" | 10            | 20         |
| R11-3a                            | ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY | 3                 | 60" x 30" | 13            | 39         |
| W1-3                              | REVERSE TURN (L or R)                          | 4                 | 48" x 48" | 16            | 64         |
| W1-6                              | LARGE ARROW (one direction)                    | 6                 | 48" x 24" | 8             | 48         |
| W13-1P                            | ADVISORY SPEED (plaque)                        | 4                 | 30" x 30" | 6             | 24         |
| W20-1                             | ROAD WORK AHEAD                                | 2                 | 48" x 48" | 16            | 32         |
| W20-3                             | ROAD CLOSED AHEAD                              | 2                 | 48" x 48" | 16            | 32         |
| W20-4                             | ONE LANE ROAD AHEAD                            | 2                 | 48" x 48" | 16            | 32         |
| W20-7                             | FLAGGER (symbol)                               | 2                 | 48" x 48" | 16            | 32         |
| W21-5                             | SHOULDER WORK                                  | 2                 | 48" x 48" | 16            | 32         |
| G20-2                             | END ROAD WORK                                  | 2                 | 36" x 18" | 5             | 10         |
| -                                 | TYPE III OBJECT MARKER                         | 4                 | 12" x 36" | 3             | 12         |
| <b>CONVENTIONAL ROAD</b>          |  |                   |           |               |            |
| <b>TRAFFIC CONTROL SIGNS SQFT</b> |  |                   |           |               | <b>377</b> |

**TYPE 3 BARRICADES**

| ITEM DESCRIPTION                  | QUANTITY |
|-----------------------------------|----------|
| Type 3 Barricade, 8' Single Sided | 16 Each  |
| Type 3 Barricade, 6' Double Sided | 3 Each   |

**TABLE OF OVERWIDTH SIGNING (Detour Signing)**

| Quantity     | Sign Description  | Sign Width (Ft) | Sign Height (Ft) | Total (Sq Ft) |
|--------------|---|-----------------|------------------|---------------|
| 5            | Width Restriction - SD34 2 Miles East of Ft. Thompson - Use Alternate Route | 10.5            | 6.5              | 341.25        |
| 6            | Width Restriction - SD34 3 Miles East of Ft. Thompson - Use Alternate Route | 10.5            | 6.5              | 409.5         |
| 2            | No Vehicles over 12 Ft Wide   | 7               | 2.5              | 35            |
| <b>TOTAL</b> |   |                 |                  | <b>785.75</b> |

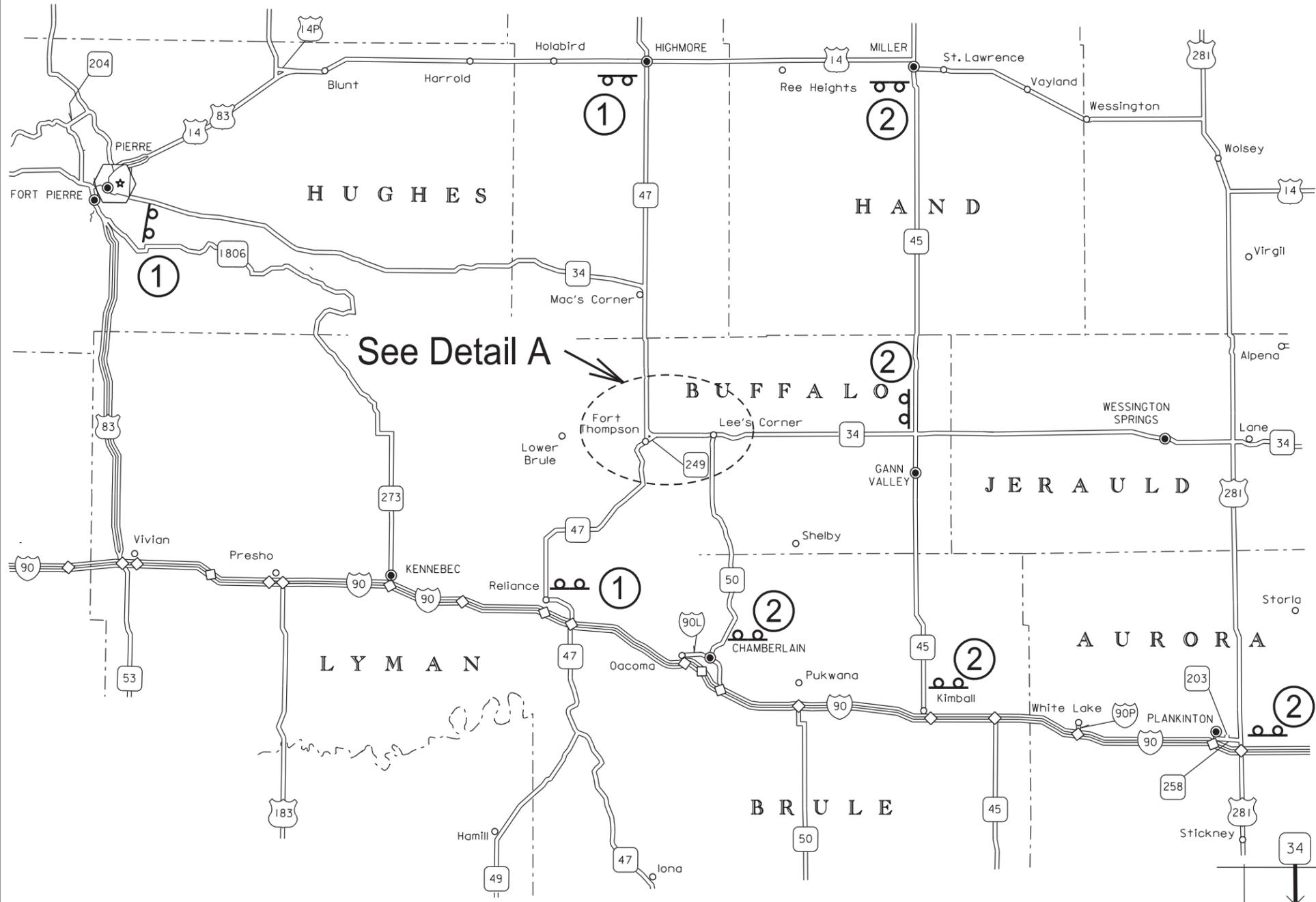
# OVERWIDTH SIGNING LAYOUT

## FIXED LOCATION GROUND MOUNTED BREAKAWAY SUPPORT SIGNS

|                           |                           |                 |                     |
|---------------------------|---------------------------|-----------------|---------------------|
| STATE OF SOUTH DAKOTA     | PROJECT<br>P 0034(150)272 | SHEET NO.<br>C4 | TOTAL SHEETS<br>C11 |
| Plotting Date: 08/24/2015 |                           |                 |                     |

PLOT SCALE - 1:155000

PLOT NAME - 2



①

**WIDTH RESTRICTION**

34

**12 FT MAXIMUM  
2 MILES EAST  
OF FT. THOMPSON**

**USE ALT. ROUTE**

②

**WIDTH RESTRICTION**

34

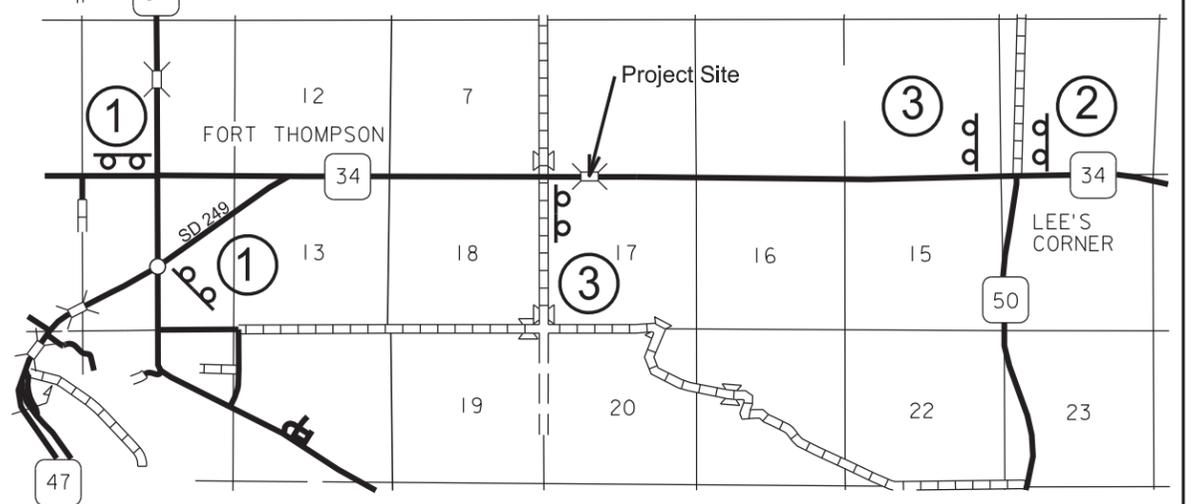
**12 FT MAXIMUM  
3 MILES EAST  
OF FT. THOMPSON**

**USE ALT. ROUTE**

③

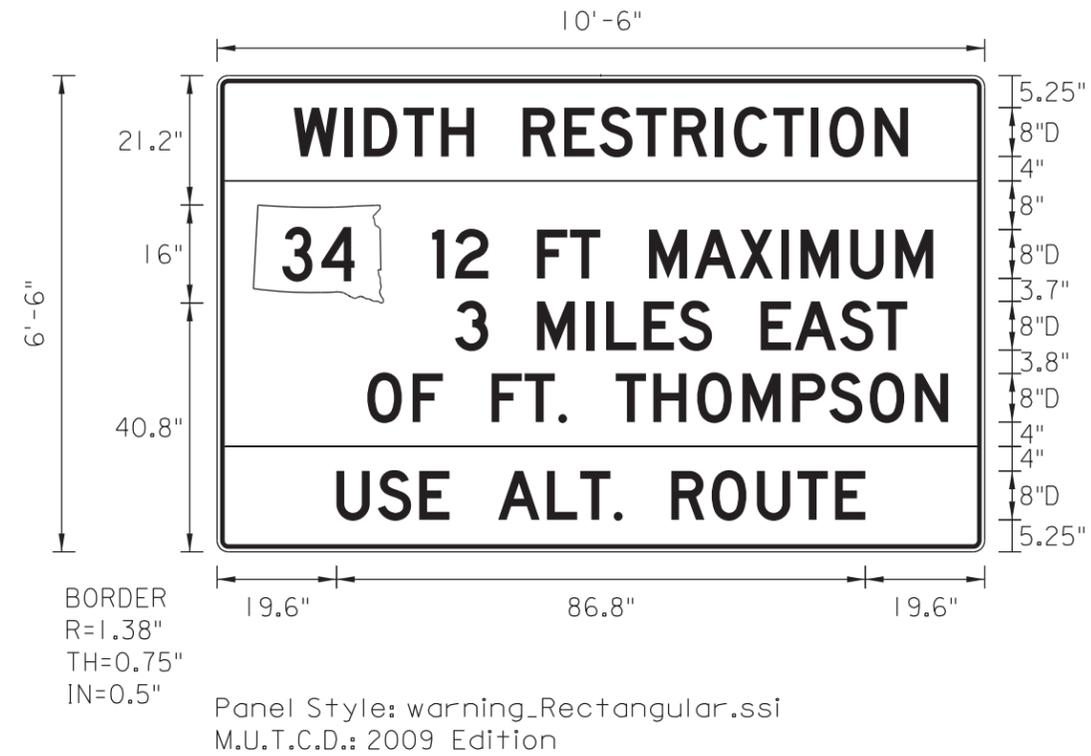
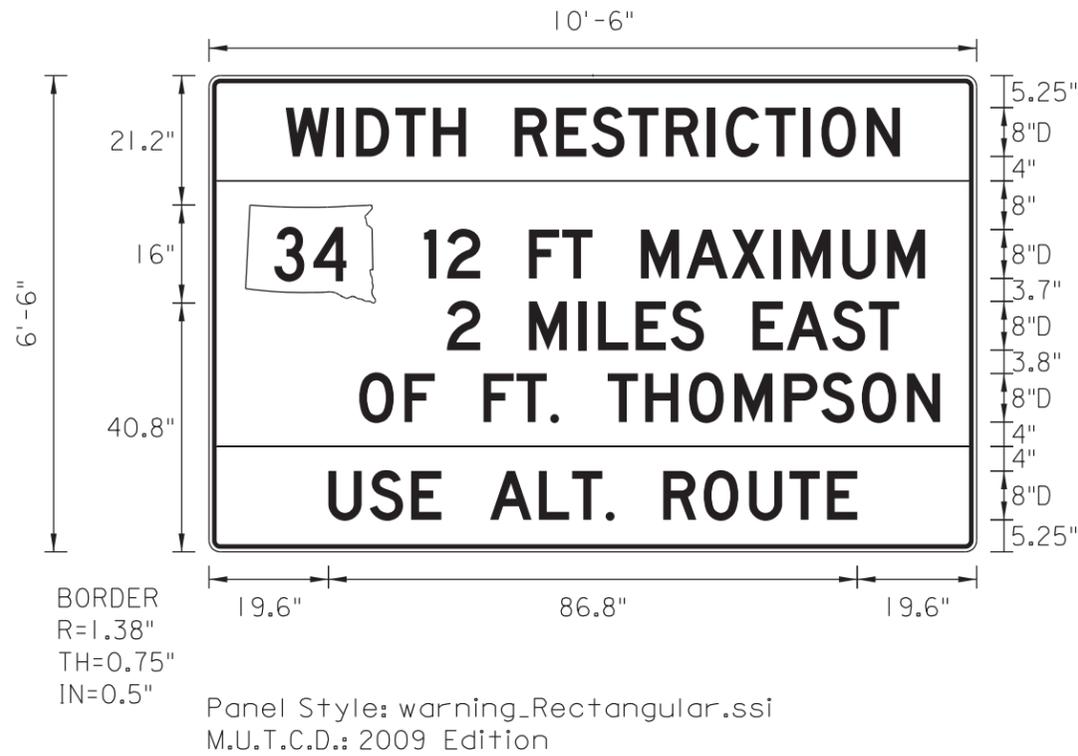
**NO VEHICLES  
OVER 12 FT WIDE**

**Detail A**

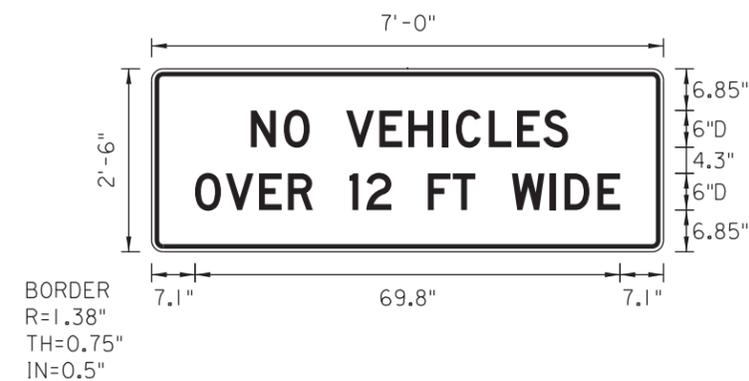
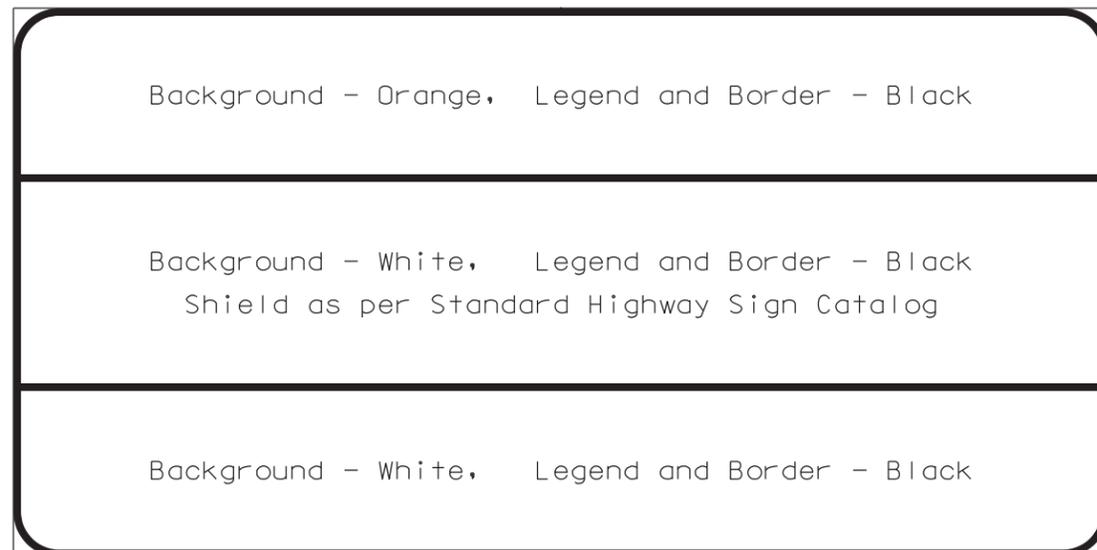


PLOTTED FROM - TRAB17882

FILE - ... \02RW OVERALL DETOUR LAYOUT.DGN

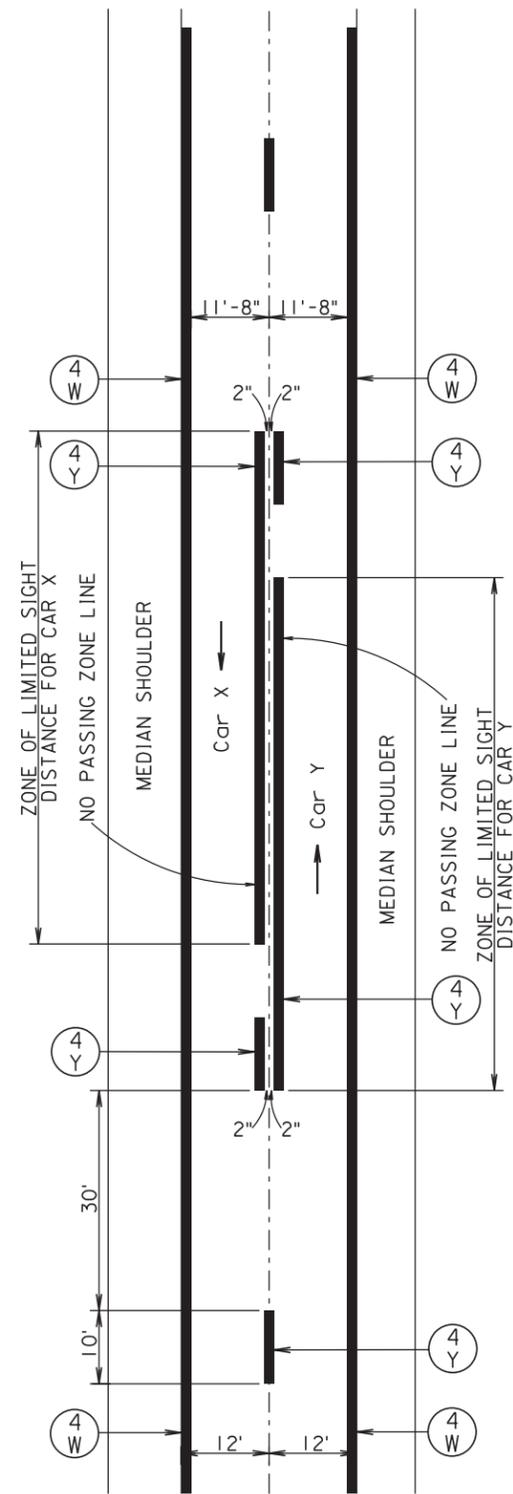


### Typical Layout



The above signs shall be:  
White Background with Back Text and Border

**TWO LANE  
UNDIVIDED ROADWAY**



| KEY      | ITEM      |
|----------|-----------|
| (4)<br>W | 4" White  |
| (4)<br>Y | 4" Yellow |

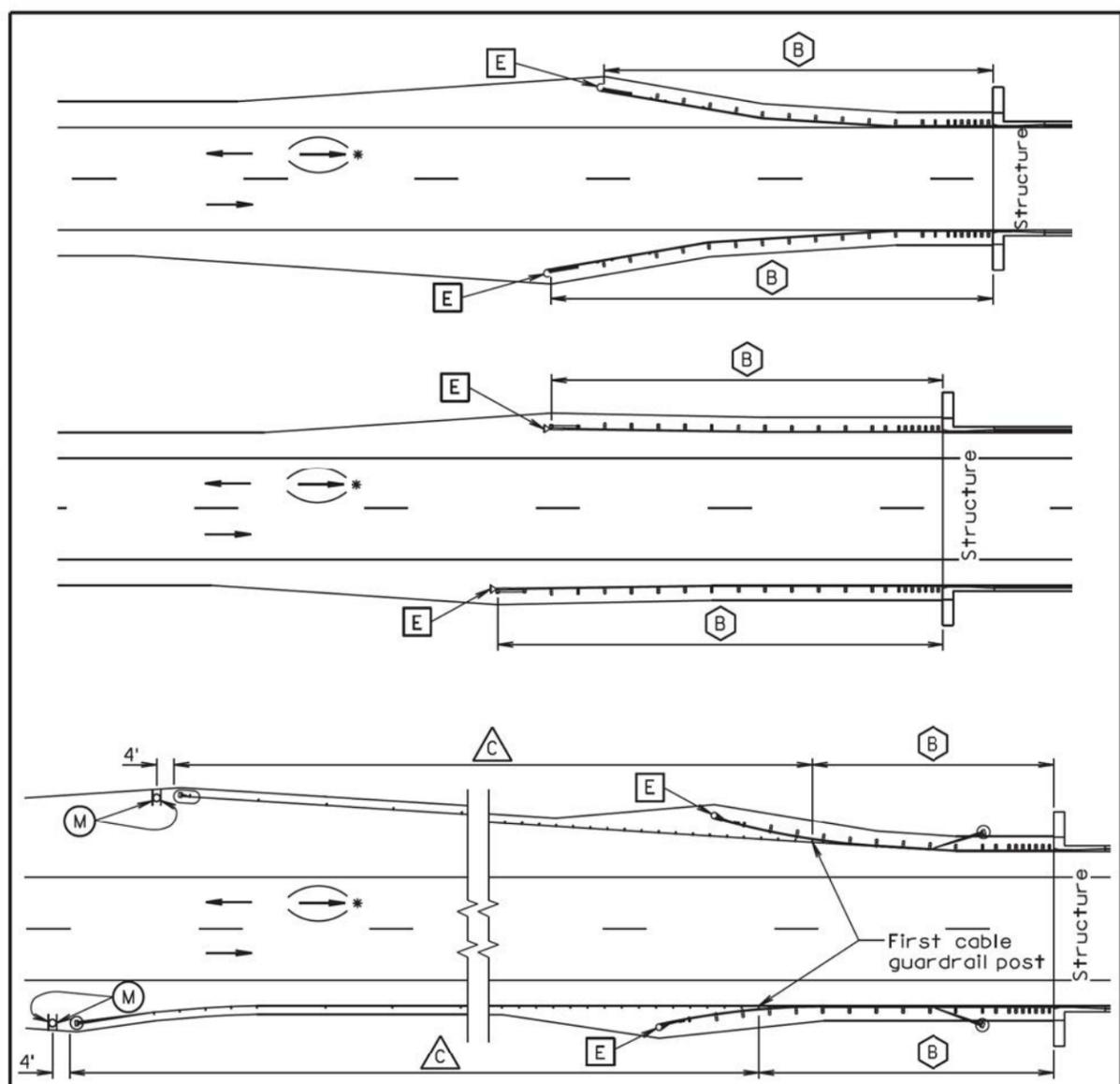
**FURNISHING AND APPLYING PAVEMENT MARKING PAINT**

1. The approximate paint application rates shall be as follows:

|   |   |
|---|---|
| Undivided Roadway   | Divided Roadway   |
| Yellow Centerline<br>12± Gallons/Pass-Mile<br>(Includes No-passing lines) | White Centerline<br>4.60 Gallons/Pass-Mile                          |
| White Edgeline<br>16.90 Gallons/Pass-Mile<br>(Solid Line)                 | Yellow or White Edgeline<br>16.90 Gallons/Pass-Mile<br>(Solid Line) |

- The typical pavement markings as shown on this sheet shall be applied throughout the entire length of the project.
- Exact location of the NO PASSING ZONE lines will be determined in the field by the Engineer. A dash of white paint will mark the beginning and end of all no passing zones. NO PASSING ZONE signs and the ending post in fence lines, if present, shall not be used as the beginning and ending NO PASSING ZONE lines.
- Traffic Control shall be incidental to the cost of application. The striper and advance or trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel.

PLOT SCALE - 1:200



TYPICAL GUARDRAIL LAYOUTS

- Steel Beam Guardrail Delineation
- Guardrail Terminal End Object Marker
- 3 Cable Guardrail Delineation
- Type 2 Object Marker

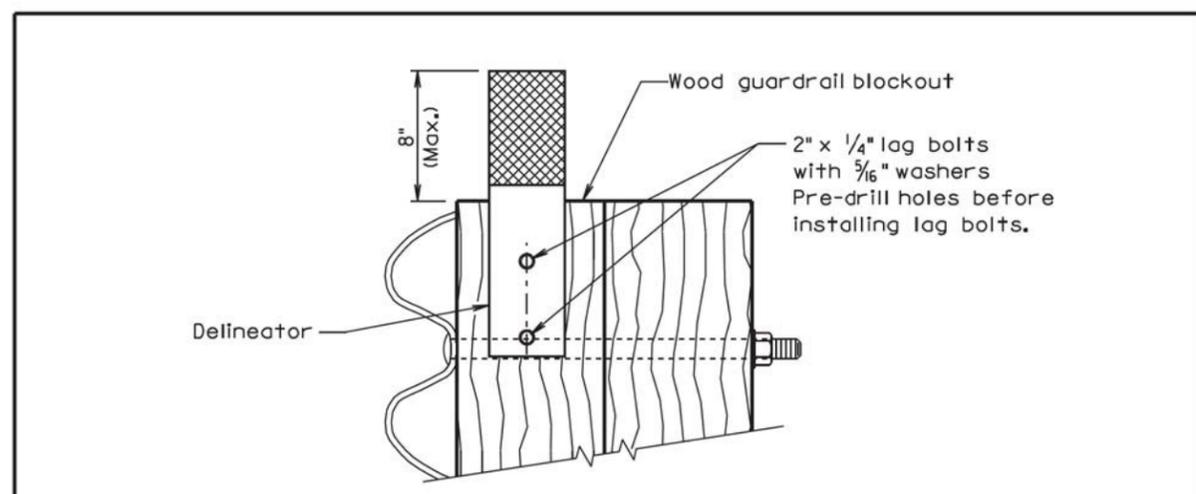
\*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

June 26, 2011

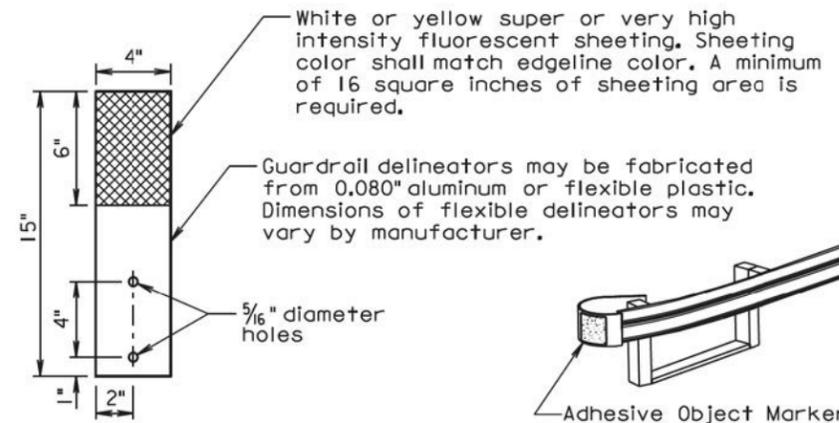
|                                  |  |                               |
|----------------------------------|--|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>DELINEATION OF GUARDRAIL AT BRIDGES</b> | PLATE NUMBER<br><b>632.40</b> |
|                                  | Published Date: 3rd Qtr. 2015              | Sheet 1 of 4                  |

PLOT NAME - 5

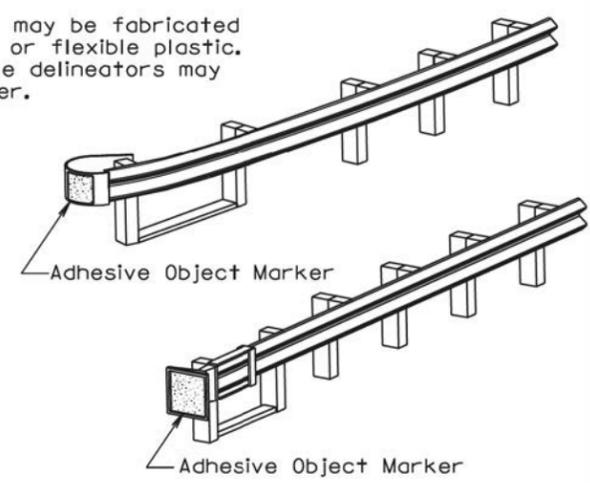
FILE - ... \SECTION\63240-1-&63240-2.DGN



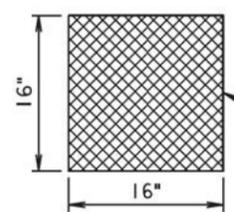
STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR  
(For Steel Beam Guardrail)



GUARDRAIL TERMINAL END OBJECT MARKER



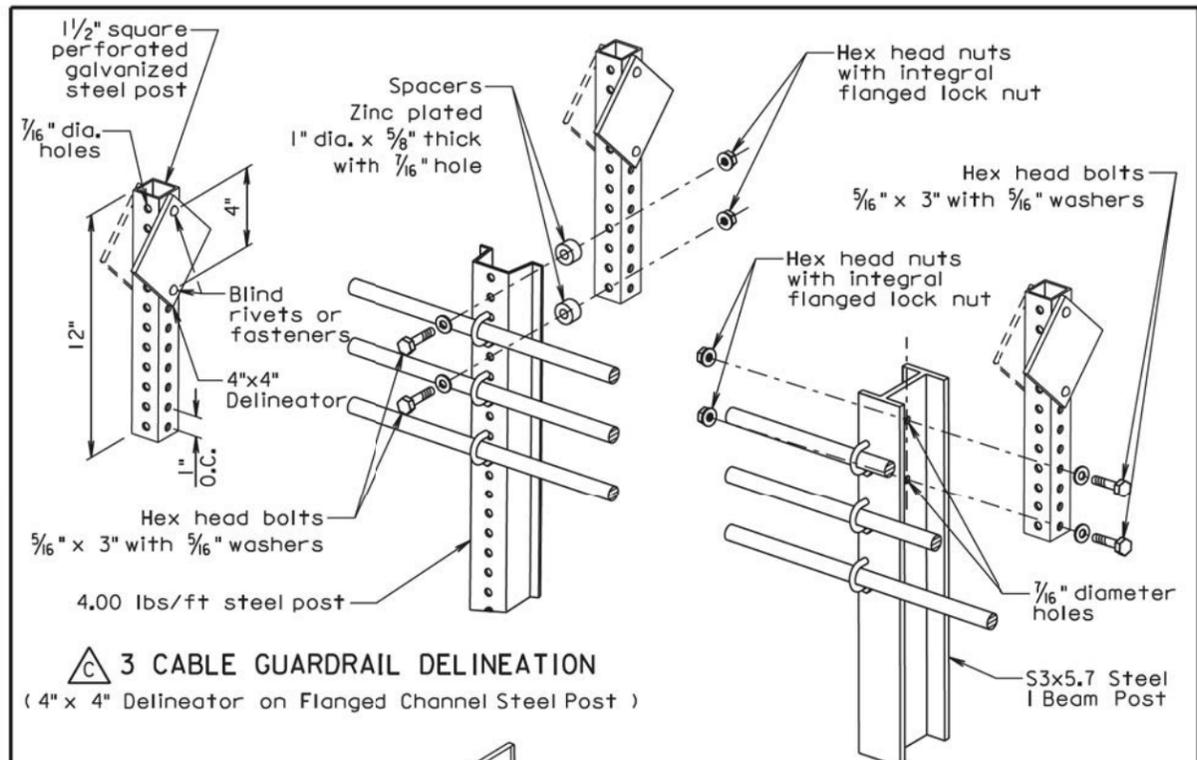
ADHESIVE OBJECT MARKER

Adhesive object marker dimensions may vary due to shape of terminal end. A minimum of 256 square inches of object marker sheeting area is required. The sheeting shall be fluorescent yellow super or very high intensity.

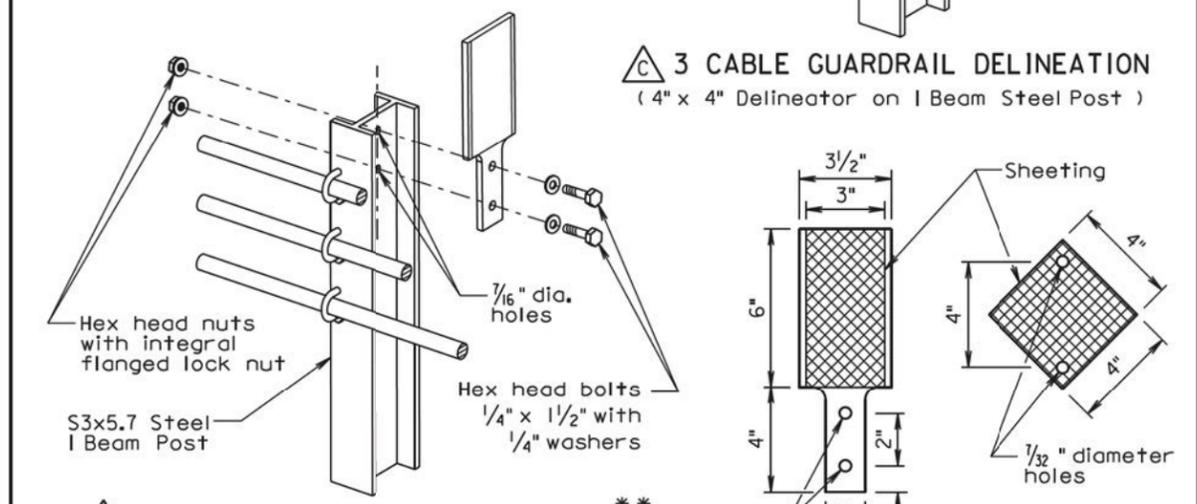
June 26, 2011

|                                  |  |                               |
|----------------------------------|--|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>DELINEATION OF GUARDRAIL AT BRIDGES</b> | PLATE NUMBER<br><b>632.40</b> |
|                                  | Published Date: 3rd Qtr. 2015              | Sheet 2 of 4                  |

Plotting Date: 08/24/2015

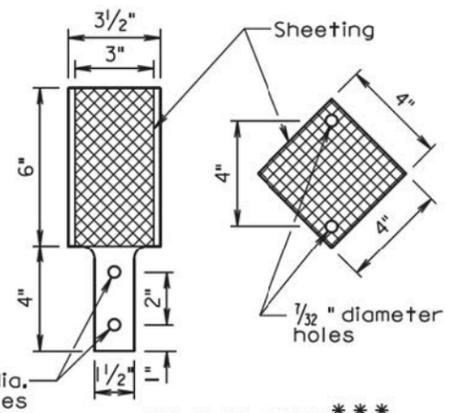


**C 3 CABLE GUARDRAIL DELINEATION**  
( 4" x 4" Delineator on Flanged Channel Steel Post )



**C 3 CABLE GUARDRAIL DELINEATION**  
( 4" x 4" Delineator on I Beam Steel Post )

**C 3 CABLE GUARDRAIL DELINEATION\*\***  
( Flexible 3" x 6" Delineator on I Beam Post )



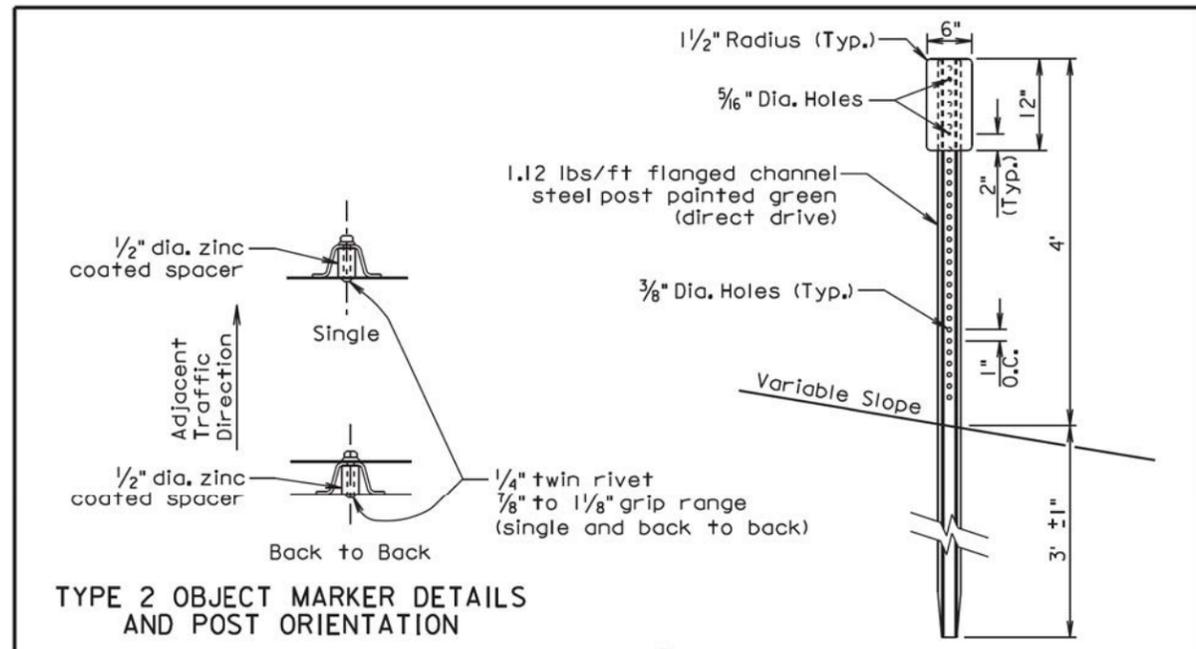
**DELINEATORS\*\*\***  
( For 3 Cable Guardrail )

\*\* Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.  
\*\*\* Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

June 26, 2011

|                                  |  |                               |
|----------------------------------|--|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>DELINEATION OF GUARDRAIL AT BRIDGES</b> | PLATE NUMBER<br><b>632.40</b> |
|                                  |  | Sheet 3 of 4                  |

Published Date: 3rd Qtr. 2015



**M TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION**

**M TYPE 2 OBJECT MARKER**  
( For Marking 3 Cable Guardrail Anchor )

**GENERAL NOTES:**

The delineators shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be of either very high intensity or super high intensity material. For bridges along two-way roadways the sheeting shall be on both sides of the delineator and shall be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

The first delineator shall be attached to the post nearest the bridge with additional delineators spaced in advance of the bridge at approximately 50 foot intervals. At bridges with short lengths of guardrail, less than 200 feet, a minimum of 4 delineators shall be placed in addition to the yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail. This will provide for a shorter spacing. At bridges with longer lengths of guardrail, greater than 200 feet, including bridges that have cable guardrail transitioning into the steel beam guardrail, the delineators will be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation shall be included in the contract unit price per each for "Guardrail Delineator".

An adhesive object marker shall be placed on the end of the W beam guardrail end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have a fluorescent yellow very high or super high intensity reflective sheeting. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

June 26, 2011

|                                  |  |                               |
|----------------------------------|--|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>DELINEATION OF GUARDRAIL AT BRIDGES</b> | PLATE NUMBER<br><b>632.40</b> |
|                                  |  | Sheet 4 of 4                  |

Published Date: 3rd Qtr. 2015

PLOT SCALE - 1:200

-PLOTTED FROM - TRAB17882

PLOT NAME - 6

FILE - ... \SECTION\63240-3-&-63240-4.DGN

Plotting Date: 08/24/2015

PLOT SCALE - 1:200

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

| Posted Speed Prior to Work (M.P.H.) | Spacing of Advance Warning Signs (Feet) (A) |
|-------------------------------------|---|
| 0 - 30                              | 200   |
| 35 - 40                             | 350   |
| 45 - 50                             | 500   |
| 55                                  | 750   |
| 60 - 80                             | 1000  |

April 15, 2015

|                                  |  |                               |
|----------------------------------|--|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>GUIDES FOR TRAFFIC CONTROL DEVICES<br/>WORK BEYOND THE SHOULDER</b> | PLATE NUMBER<br><b>634.01</b> |
|                                  | Published Date: 3rd Qtr. 2015  | Sheet 1 of 1                  |

| Posted Speed Prior to Work (M.P.H.) | Spacing of Advance Warning Signs (Feet) (A) | Taper Length (Feet) (L) | Spacing of Channelizing Devices (Feet) (G) |
|-------------------------------------|---|-------------------------|--|
| 0 - 30                              | 200   | 180                     | 25   |
| 35 - 40                             | 350   | 320                     | 25   |
| 45 - 50                             | 500   | 600                     | 50   |
| 55                                  | 750   | 660                     | 50   |
| 60 - 65                             | 1000  | 780                     | 50   |

■ Channelizing Device

The channelizing devices shall be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

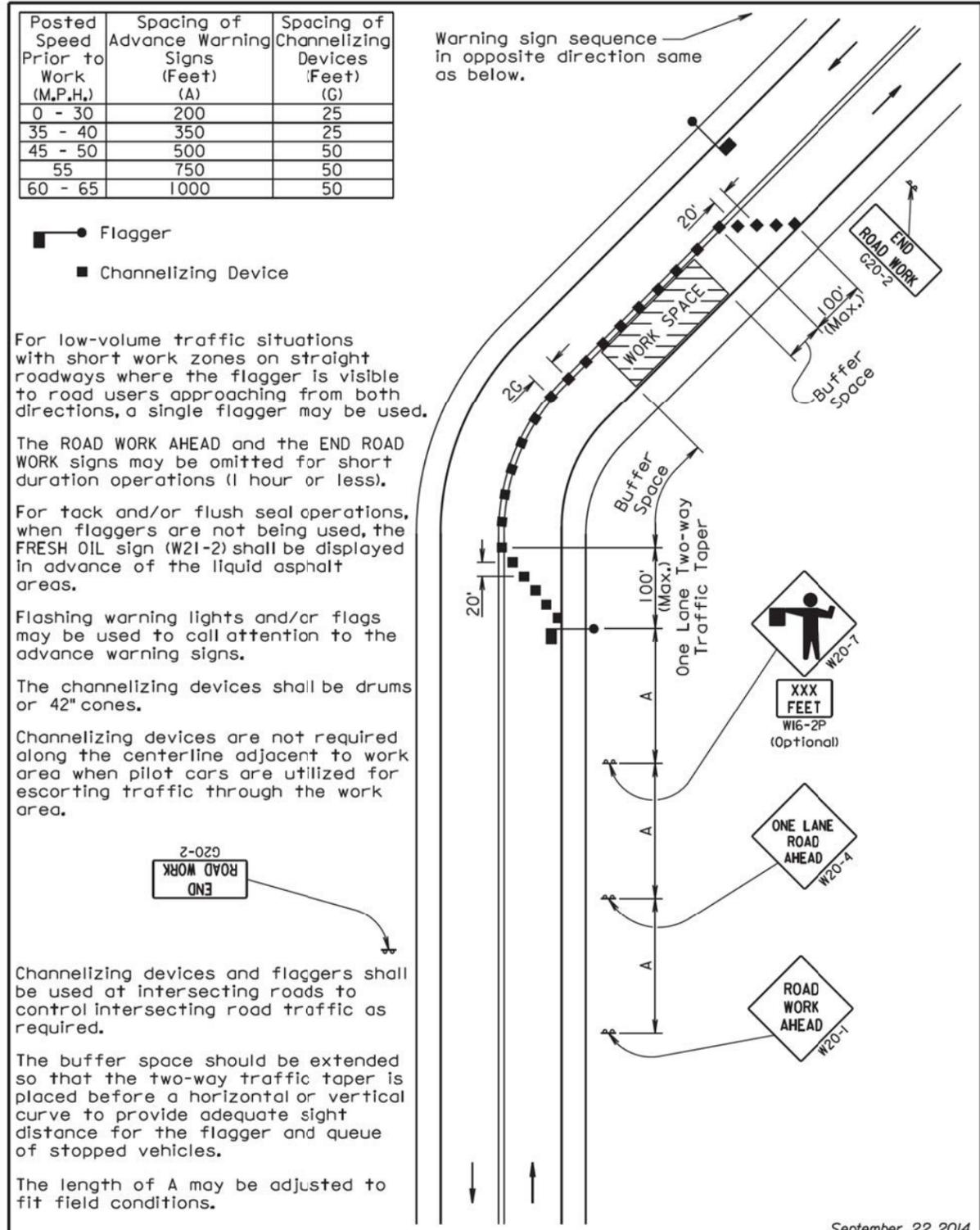
The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

September 22, 2014

|                                  |   |                               |
|----------------------------------|---|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>GUIDES FOR TRAFFIC CONTROL DEVICES<br/>WORK ON SHOULDERS</b> | PLATE NUMBER<br><b>634.03</b> |
|                                  | Published Date: 3rd Qtr. 2015                                   | Sheet 1 of 1                  |

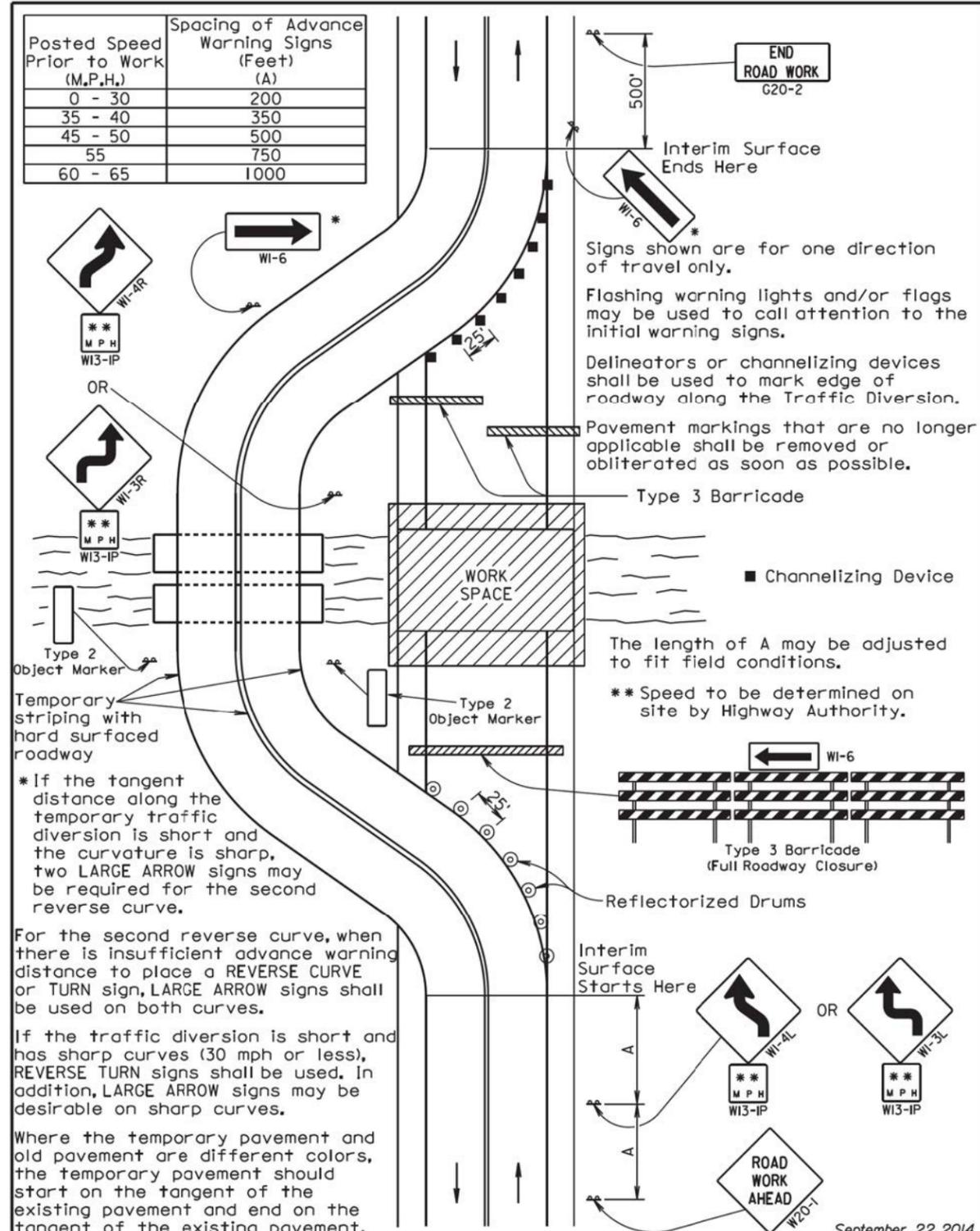
PLOT NAME - FILE - ... \SECTION\63401 & 63403.DGN

PLOT SCALE - 1:200



September 22, 2014

|                                  |  |                               |
|----------------------------------|--|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>GUIDES FOR TRAFFIC CONTROL DEVICES<br/>LANE CLOSURE WITH FLAGGER PROVIDED</b> | PLATE NUMBER<br><b>634.23</b> |
|                                  | Published Date: 3rd Qtr. 2015  | Sheet 1 of 1                  |



September 22, 2014

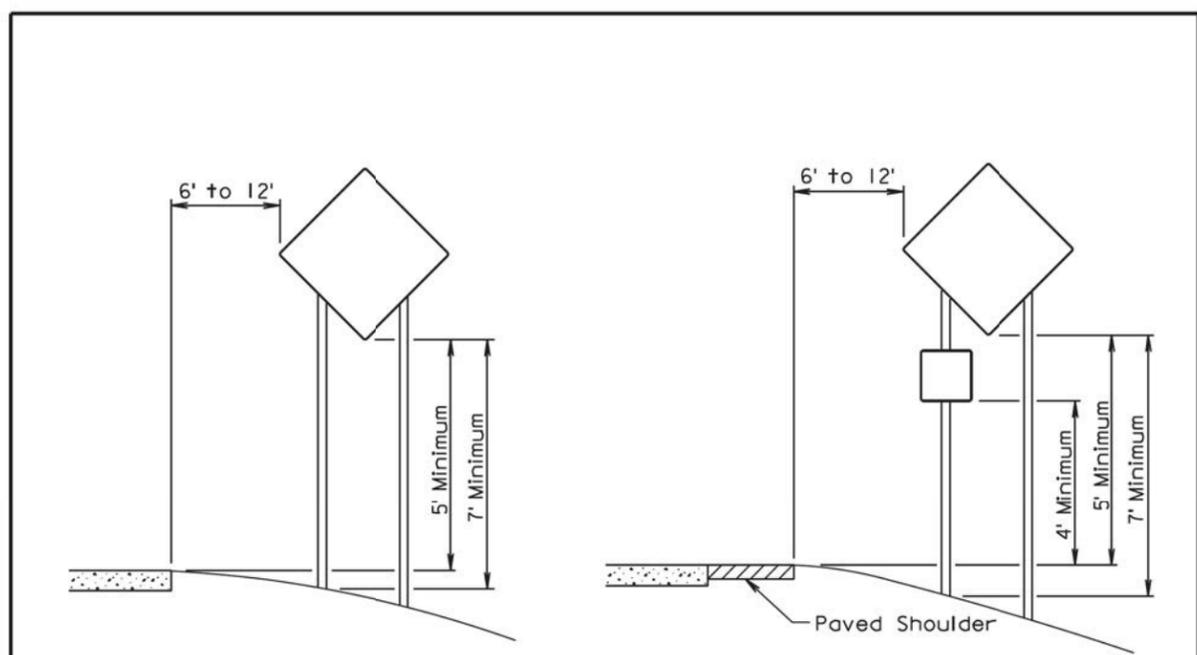
|                                  |   |                               |
|----------------------------------|---|-------------------------------|
| <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>GUIDES FOR TRAFFIC CONTROL DEVICES<br/>ROAD CLOSED WITH TRAFFIC DIVERTED</b> | PLATE NUMBER<br><b>634.28</b> |
|                                  | Published Date: 3rd Qtr. 2015   | Sheet 1 of 1                  |

FILE ... \SECTION\63423\_ & 63428.DGN

PLOT SCALE - 1:200

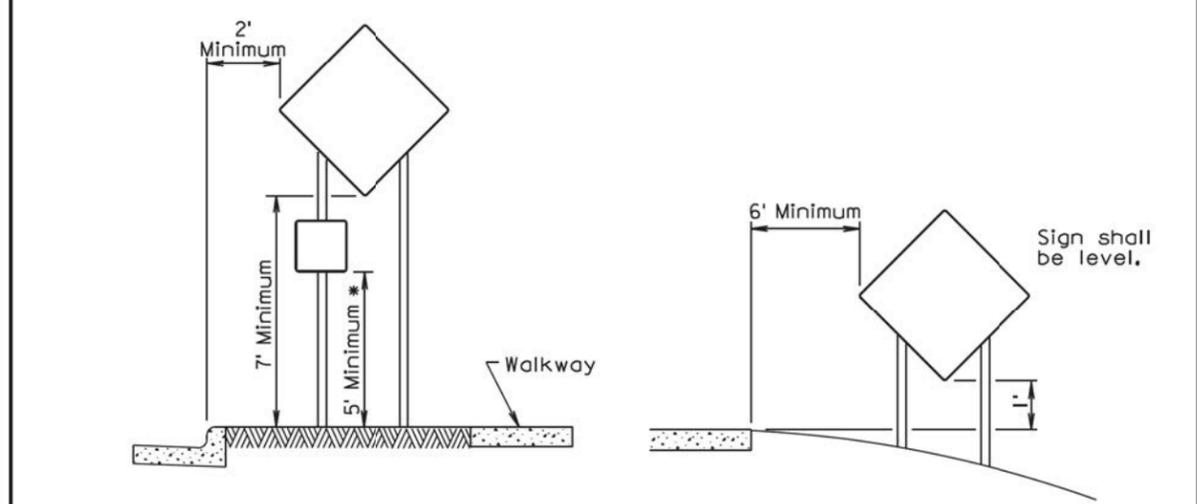
PLOT NAME - 9

FILE - ... \SECTION\63485\_ & 63499.DGN



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

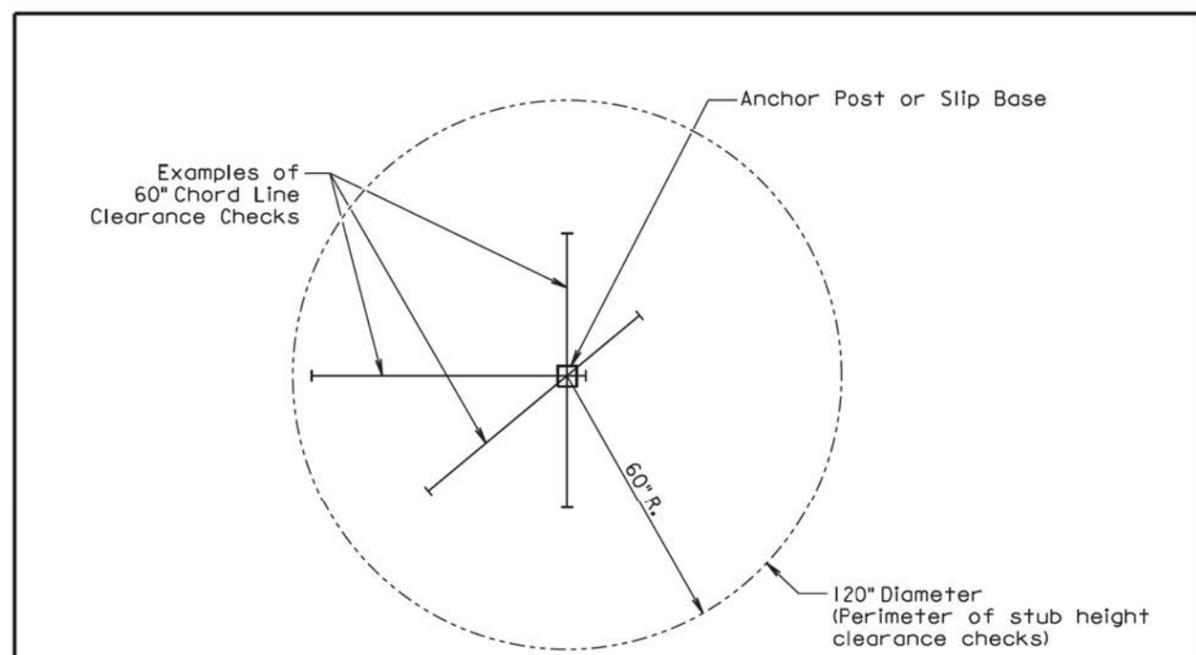
RURAL DISTRICT 3 DAY MAXIMUM

\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

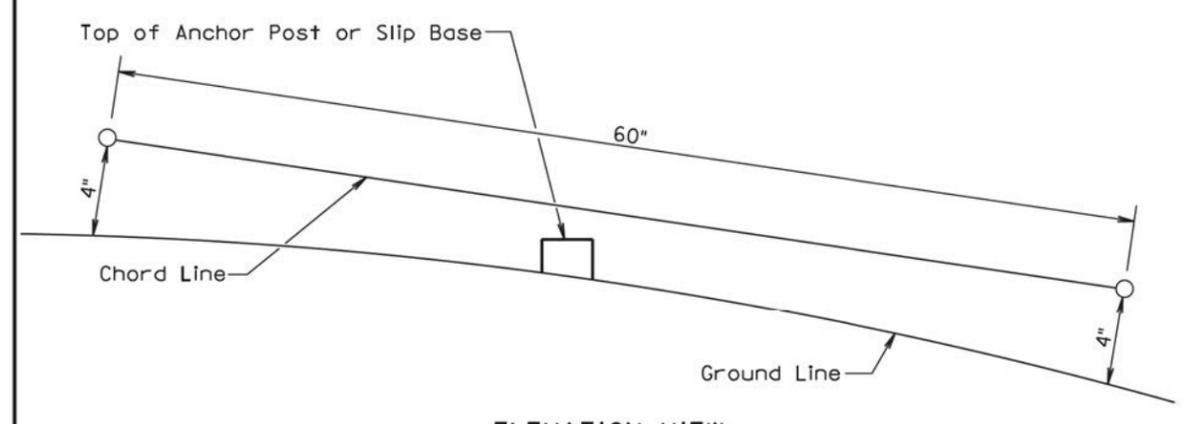
(Not applicable to regulatory signs)

September 22, 2014

|                               |                       |   |                        |
|-------------------------------|-----------------------|---|------------------------|
| Published Date: 3rd Qtr. 2015 | S<br>D<br>D<br>O<br>T | CRASHWORTHY SIGN SUPPORTS<br>(Typical Construction Signing) | PLATE NUMBER<br>634.85 |
|                               |                       |   | Sheet 1 of 1           |



PLAN VIEW  
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.  
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.  
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

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|-------------------------------|-----------------------|----------------------------------|------------------------|
| Published Date: 3rd Qtr. 2015 | S<br>D<br>D<br>O<br>T | BREAKAWAY SUPPORT STUB CLEARANCE | PLATE NUMBER<br>634.99 |
|                               |                       |                                  | Sheet 1 of 1           |

-PLOTTED FROM - TRAB17882