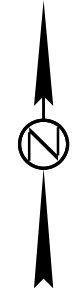
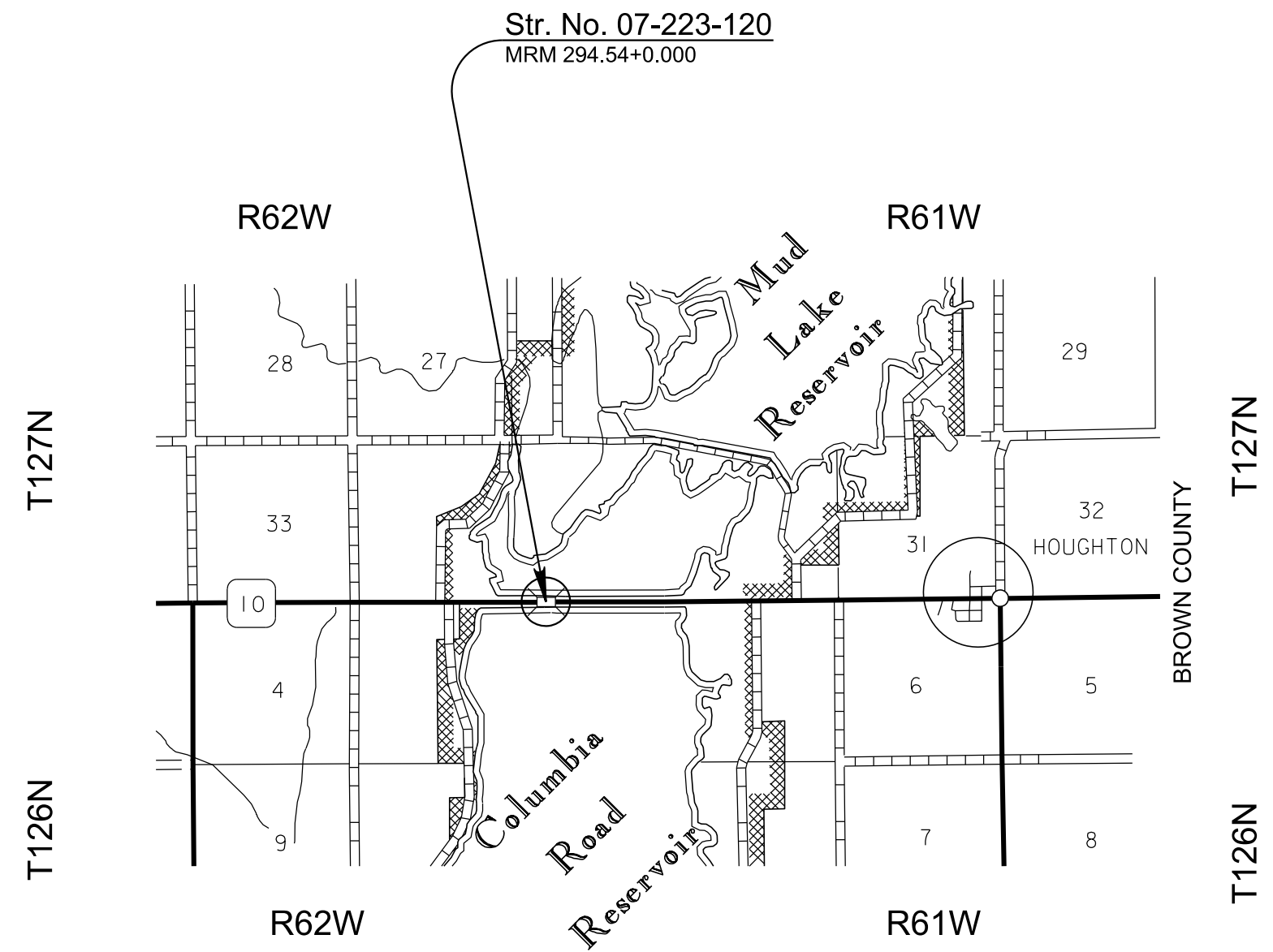
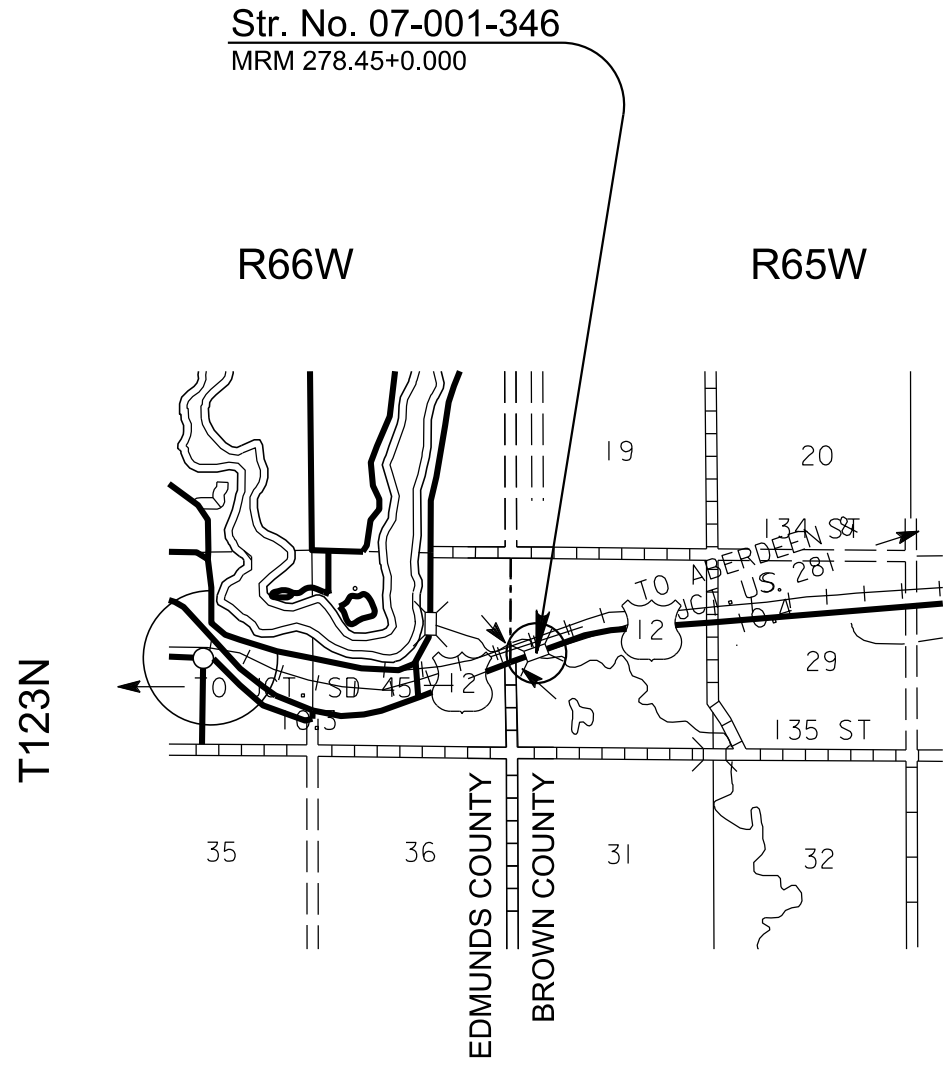


# SECTION C: TRAFFIC CONTROL PLAN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	C1	C17
Plotting Date: 03/01/2024			

## INDEX OF SHEETS

- C1 General Layout with Index
- C2-C4 Estimate with General Notes
- C5-C6 Sign Tables
- C7-C8 Fixed Location Sign Layouts & Special Sign Detail
- C9 Detour Layout
- C10 Road Closed with Off-Site Detour Sign Location
- C11-C17 Standard Plates



Plot Scale - 1:200

Plotted From - TRAB13309

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## SECTION C ESTIMATE OF QUANTITIES

### 05V1

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E7150	Remove Sign for Reset	4	Each
632E2220	Guardrail Delineator	16	Each
632E2510	Type 2 Object Marker Back to Back	1	Each
632E3500	Reset Sign	4	Each
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	12	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	2	Gal
633E5100	Grooving for Durable Pavement Marking, 4"	2,082	Ft
634E0010	Flagging	20.0	Hour
634E0110	Traffic Control Signs	287.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E0330	Temporary Raised Pavement Markers	922	Ft

### 03AL

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0130	Remove Traffic Sign	2	Each
110E7150	Remove Sign for Reset	2	Each
632E2220	Guardrail Delineator	16	Each
632E2510	Type 2 Object Marker Back to Back	2	Each
632E3500	Reset Sign	2	Each
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	19	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	3	Gal
633E5100	Grooving for Durable Pavement Marking, 4"	3,548	Ft
634E0110	Traffic Control Signs	287.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	20	Each
634E1002	Detour and Restriction Signing	756.8	SqFt

## SEQUENCE OF OPERATIONS

The following Sequence of Operations will be followed at each structure unless an alternate sequence is submitted in writing and approved a minimum of one week prior to its implementation.

### 05V1

1. Install fixed location signing.
2. Install erosion control measures.
3. Build and surface diversion.
4. Install traffic control measures.
5. Remove and construct bridge.
6. Complete grading.
7. Surface and install guardrail.
8. Complete permanent pavement markings and permanent signing.
9. Open bridge to traffic.
10. Remove diversion.
11. Complete final erosion control measures and project cleanup.

### 03AL

1. Install fixed location signing.
2. Install erosion control measures.
3. Install detour signing and traffic control measures.
4. Remove and construct bridge.
5. Complete grading.
6. Surface and install guardrail.
7. Complete permanent pavement markings and permanent signing.
8. Open bridge to traffic.
9. Complete final erosion control measures and project cleanup.

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

## GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

All construction operations will be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

## DIVERSIONS FOR PRESTRESSED GIRDER BRIDGE ON US 12

Diversion 757 = 922' surface length

Surface Diversion.

Base course=637 tons= 4" depth x 28' wide x 922' length

Asphalt Concrete Composite= 444 tons=3" (2-1.5" lifts) depth x 26' wide x 922' Quantities are included in section F.

The diversions will use drums or 42" cones spaced at 25' as shown on Standard Plate No. 634.28. The 4"x4" White Delineator Back to Back delineators spaced at 50' on remaining sections of the detour on both sides will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

### TEMPORARY RAISED PAVEMENT MARKERS

Temporary raised pavement markers will be used for marking edge lines, lane lines, and centerlines. Temporary raised pavement markers will be used on all new permanent surfacing sections of roadway and on existing surfacing where temporary marking locations are different than existing marking locations, unless noted or as directed by the Engineer.

Temporary raised pavement markers will be attached to the roadway surface with a flexible non-permanent bituminous adhesive capable of being removed from the roadway surface or with an adhesive approved by the Engineer.

All costs to furnish, install, replace if necessary, and remove the markers will be incidental to the contract unit price per foot for "Temporary Raised Pavement Markers".

### DETOUR SIGNING

The Contractor will furnish and install the detour signs as shown in these plans. Prior to installing the signs, the Contractor will mark the sign locations and review them with the Engineer. Detour signs will be installed on fixed location, ground mounted, breakaway supports. It will be the responsibility of the Contractor to maintain and reinstall these signs during the project as required by the construction progress. Upon completion of the project, the Contractor will remove the detour signs.

All costs for furnishing the signs, posts, and mounting hardware, and for installing, maintaining, covering, and removing the detour signs will be incidental to the contract unit price per square foot for "Detour and Restriction Signing".

### GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

### REMOVE TRAFFIC SIGN

Existing signs that are to be removed:

MRM 292.00+.25(R) Weight limit tons single unit 30/ Ahead 2.1 MI  
MRM 296.00+.23(L) Weight limit tons single unit 30/ Ahead 1.7 MI

Permanent Signing will become the property of the Contractor. Existing signposts and bases will be removed in their entirety. All existing signs, posts, and/or hardware removed will not be reused. Holes remaining from the removal of wood posts will be backfilled and compacted with material placed in layers not to exceed 6 inches in depth.

All costs associated with the removal of existing signs, posts, hardware, and backfilled holes will be incidental to the contract unit price per each for "Remove Traffic Sign". Quantities will be per assembly at the contract unit price per each.

### REMOVE SIGN FOR RESET AND RESET SIGN

Existing signs that are to be removed and reset:

#### **05V1**

MRM 278.00+.34(R) Brown County  
MRM 278.00+.42(R) Snake Creek  
MRM 278.00+.45(L) Snake Creek  
MRM 278.00+.45(R) MRM

#### **03AL**

MRM 294.00+.49(L) No Fishing from Bridge  
MRM 294.00+.54(R) No Fishing from Bridge

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care. The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

All costs for removing, dismantling, and disposing of any existing posts will be incidental to the contract unit price per each for "Remove Sign for Reset". All costs for resetting the existing signs will be incidental to the contract unit price per each for "Reset Sign". All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

### HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads.

High Build Waterborne Pavement Marking Paint applied after October 15 must be formulated as cold-weather waterborne paint. Cold weather waterborne paint will meet the requirements of Section 980.1 C.

### RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 27.8 Gals/Mile  
Dashed 4" line = 7.6 Gal/Mile  
Glass Beads = 8 Lbs/Gal.  
Composite Reflective Elements = 2.1 Lbs/Gal.

All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

### RETROREFLECTIVITY FOR PAVEMENT MARKING PAINT

The Department may take retroreflectivity readings on the pavement marking lines after 2 days and within 30 days of the line application using either a portable or mobile retroreflectometer that conforms to 30-meter geometry. If the Department chooses to take retroreflectivity readings, three retroreflectivity readings will be taken on each line at each test location. The three readings will be averaged and become the reading for that test location.

If the Department chooses to take retroreflectivity readings, three readings will be taken on the edge lines and lane lines in the direction of application. For combination solid yellow and skip yellow lines for turn lanes and for centerline markings on two-way roadways, three readings will be taken in one direction, the reflectometer will be turned 180 degrees and three more readings will be taken. The six readings for the centerline markings will be averaged and become the test reading for that test location.

If the Department chooses to take readings, the minimum retroreflectivity values will be 275 mc/m<sup>2</sup>/lux for white and 170 mc/m<sup>2</sup>/lux for yellow.

### GROOVING FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

The Contractor will establish a positive means for the removal of the grinding and/or grooving residue. Residue from dry grooving will be vacuumed. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners. Residue from wet grooving will not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state. All costs for removal of grinding and/or grooving residue will be included in the contract unit price per foot for "Grooving for Durable Pavement Marking" contract items.

Unless otherwise specified in the plans, the Contractor will groove the surface for High Build Waterborne Pavement Marking Paint as specified in these plans and as per the manufacturer's instructions.

The grooving will be completed within the following tolerances:

Description	Specification	Tolerance
Depth of Groove	Marking Thickness <sup>1</sup> + 15 mils	+ 5 mils
Width of Groove	5 to 6 inches	
Length of Skip Lines <sup>2</sup>	10 foot 6 inches	± 3 inch
Tapers at ends of lines	6 to 9 inches	
Between Double Lines	4 inches	± 1/2 inch

- <sup>1</sup> Marking thickness will include the thickness of marking material and reflective media.
- <sup>2</sup> Additional length may be required as specified in the plans.

The equipment will be capable of the following:

- Grooving the total width of the groove in one pass or uniform depths with multiple passes.
- Grooving without causing damage to the pavement joints or joint sealant material.
- Provide uniform alignment and depth.
- Moving continuously to permit a mobile traffic work operation.

If damage occurs, including, but not limited to, joints, joint sealant material, and backer rod, the grooving operation will be stopped and modifications will be made to the grooving operation to prevent further damage. The Contractor will be required to use specially prepared circular diamond blade cutting heads to prevent damage at the joints. Damage caused will be repaired or replaced by the Contractor, as directed by the Engineer. No additional payment will be made for the repair work or any reapplication of the pavement marking in the area of the repair.

Grooving on bridge decks will start and stop a sufficient distance from the expansion joints so no damage occurs in these areas. Markings on bridge decks will be surface applied.

### PRESS RELEASE ANNOUNCEMENTS

The Contractor will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The Contractor will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

### INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous materials spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the Brown and Edmunds County Sheriff and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered and additional portable signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

# 05V1 SIGN TABLES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	C5	C17

Plotting Date: 03/01/2024

## ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W1-4R	REVERSE CURVE (R)	2	48" x 48"	16.0	32.0
W1-4L	REVERSE CURVE (L)	2	48" x 48"	16.0	32.0
W1-6	LARGE ARROW (one direction)	6	48" x 24"	8.0	48.0
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6.3	25.2
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-1	ROAD WORK NEXT 1 MILES	2	36" x 18"	4.5	9.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
-	TYPE 2 OBJECT MARKER BACK TO BACK	4	6" x 12"	1.0	4.0
		<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>			<b>287.2</b>

Plot Scale - 1:200

Plotted From - TRAB13309

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# 03AL SIGN TABLES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294		
Plotting Date: 03/01/2024		C6	C17

## 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"	10.0	20.0
R11-3a	ROAD CLOSED 1 MILES AHEAD LOCAL TRAFFIC ONLY	2	60" x 30"	12.5	25.0
R11-3a	ROAD CLOSED 2 MILES AHEAD LOCAL TRAFFIC ONLY	2	60" x 30"	12.5	25.0
R11-3a	ROAD CLOSED 7 MILES AHEAD LOCAL TRAFFIC ONLY	1	60" x 30"	12.5	12.5
R11-3a	ROAD CLOSED 11 MILES AHEAD LOCAL TRAFFIC ONLY	1	60" x 30"	12.5	12.5
W20-2	DETOUR AHEAD	8	48" x 48"	16.0	128.0
W20-3	ROAD CLOSED 1000 FT	2	48" x 48"	16.0	32.0
W20-3	ROAD CLOSED 500 FT	2	48" x 48"	16.0	32.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>287.0</b>

## ITEMIZED LIST FOR DETOUR AND RESTRICTION SIGNING

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
M1-5	SD ROUTE MARKER (1 or 2 digits)	32	24" x 24"	4.0	128.0
M3-2	DIRECTION MARKER - EAST	15	24" x 12"	2.0	30.0
M3-4	DIRECTION MARKER - WEST	17	24" x 12"	2.0	34.0
M4-8	DETOUR	30	24" x 12"	2.0	60.0
M4-8a	END DETOUR	2	24" x 18"	3.0	6.0
M4-10R	DETOUR ARROW ( R )	1	48" x 18"	6.0	6.0
M5-1	ADVANCE TURN ARROW 90° (R)	5	21" x 15"	2.2	11.0
M5-2	ADVANCE TURN ARROW 90° (R)	5	21" x 15"	2.2	11.0
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	10	21" x 15"	2.2	22.0
M6-3	DIRECTION ARROW - Vertical Single Head	4	21" x 15"	2.2	8.8
SPECIAL	(1)10 CLOSED 11 MI EAST OF 281 USE ALT ROUTE	1	96" x 72"	48.0	48.0
SPECIAL	(2)10 CLOSED 1 MI WEST OF HOUGHTON USE ALT ROUTE	1	96" x 60"	40.0	40.0
SPECIAL	(3)10 CLOSED 11 MI EAST OF 281 FOLLOW DETOUR	4	96" x 72"	48.0	192.0
SPECIAL	(4)10 CLOSED 1 MI WEST OF HOUGHTON FOLLOW DETOUR	4	96" x 60"	40.0	160.0
<b>CONVENTIONAL ROAD DETOUR AND RESTRICTION SIGNING SQFT</b>					<b>756.8</b>

Plot Scale - 1:200

Plotted From - TRAB13309

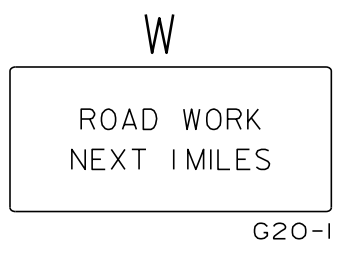
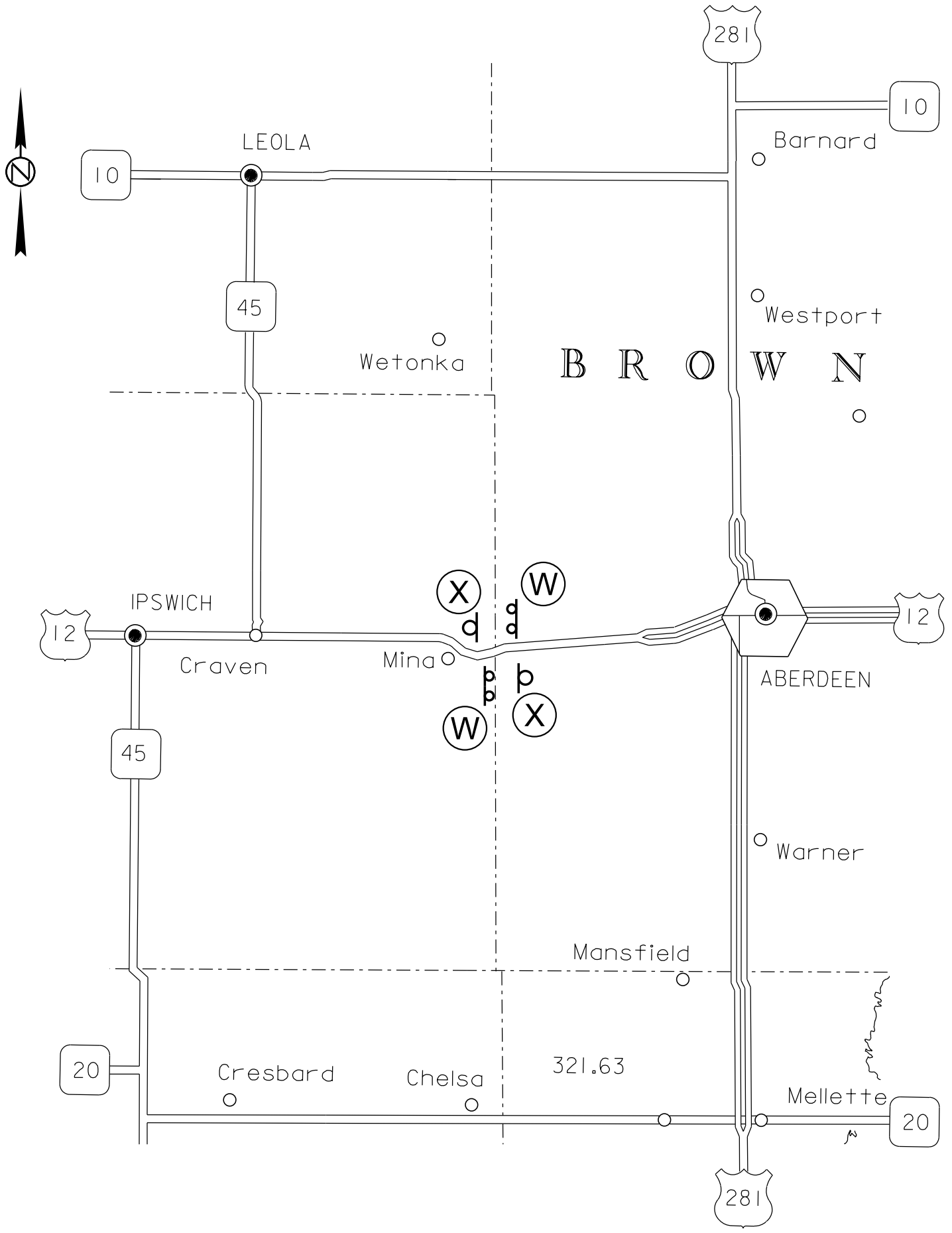
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# 05V1 FIXED LOCATION SIGN LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	C7	C17
Plotting Date: 03/01/2024			

PLOT SCALE - 1:112500

PLOT NAME - 4



W20-1 ROAD WORK AHEAD signs will be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs will be moved as necessary to keep current with the work activities.

EXACT LOCATION OF SIGNS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

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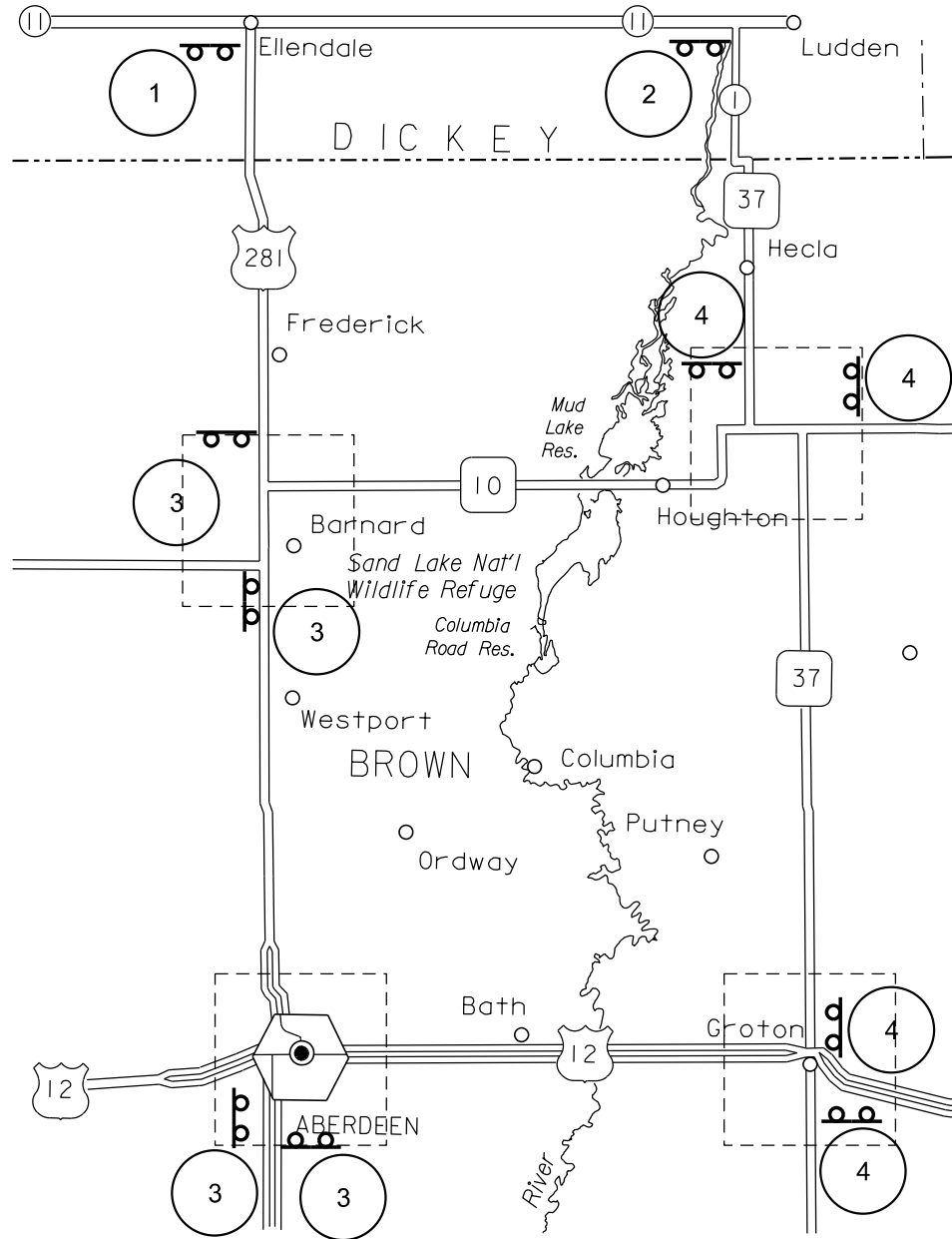
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# 03AL FIXED LOCATION SIGN LAYOUT & SPECIAL SIGN DETAIL

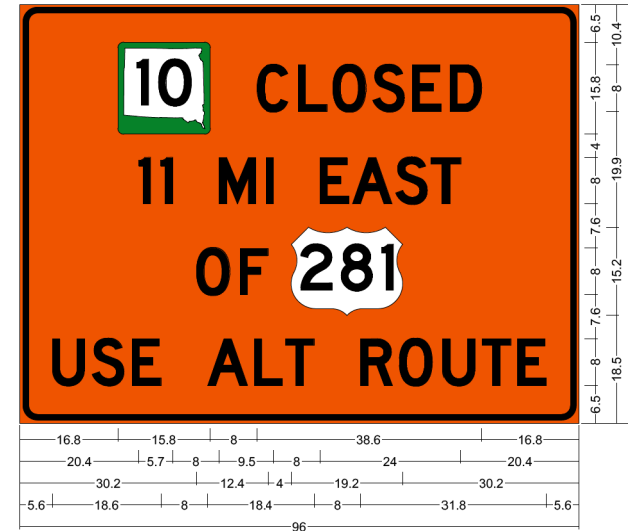
STATE OF SOUTH DAKOTA	PROJECT		SHEET NO.	TOTAL SHEETS
		NH 0012(221)278	P 0010(135)294	C8

Plotting Date: 03/01/2024

PLOT SCALE - 1:112500

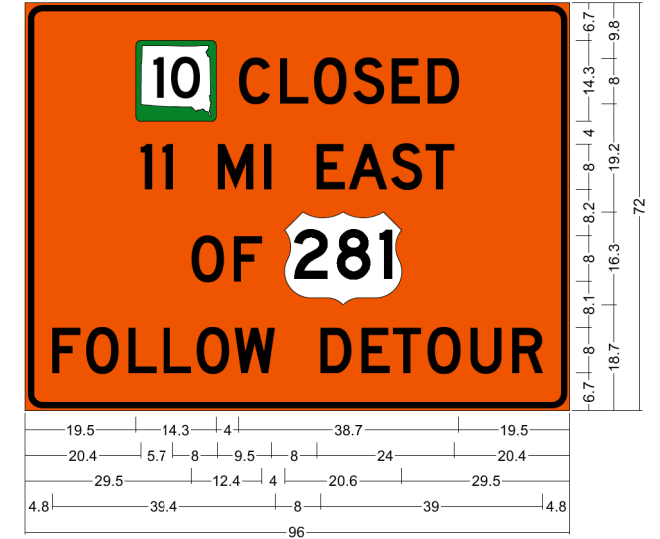


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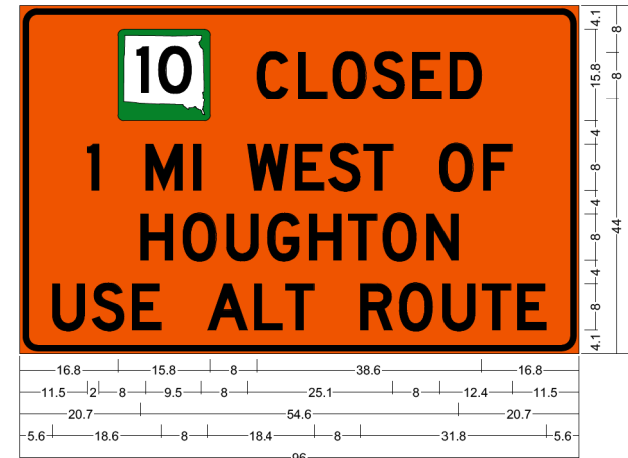
3.0" Radius, 1.0" Border, 0.5" Indent, Black on Orange;  
 "CLOSED", D 2K; "11 MI EAST", D 2K; "OF", D 2K; "USE ALT ROUTE", D 2K;

3



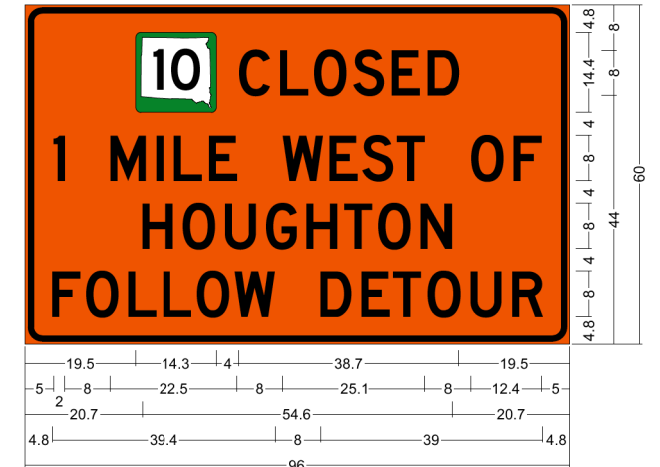
3.0" Radius, 1.0" Border, 0.5" Indent, Black on Orange;  
 "CLOSED", D 2K; "11 MI EAST", D 2K; "OF", D 2K;  
 "FOLLOW DETOUR", D 2K;

2



3.0" Radius, 1.0" Border, 0.5" Indent, Black on Orange;  
 "CLOSED", D 2K; "1 MI WEST OF", D 2K; "HOUGHTON", D 2K;  
 "USE ALT ROUTE", D 2K;

4



3.0" Radius, 1.0" Border, 0.5" Indent, Black on Orange;  
 "CLOSED", D 2K; "1 MILE WEST OF", D 2K; "HOUGHTON", D 2K;  
 "FOLLOW DETOUR", D 2K;

SEE SHEET C9

PLOTTED FROM - TRAB13309

PLOT NAME - 5

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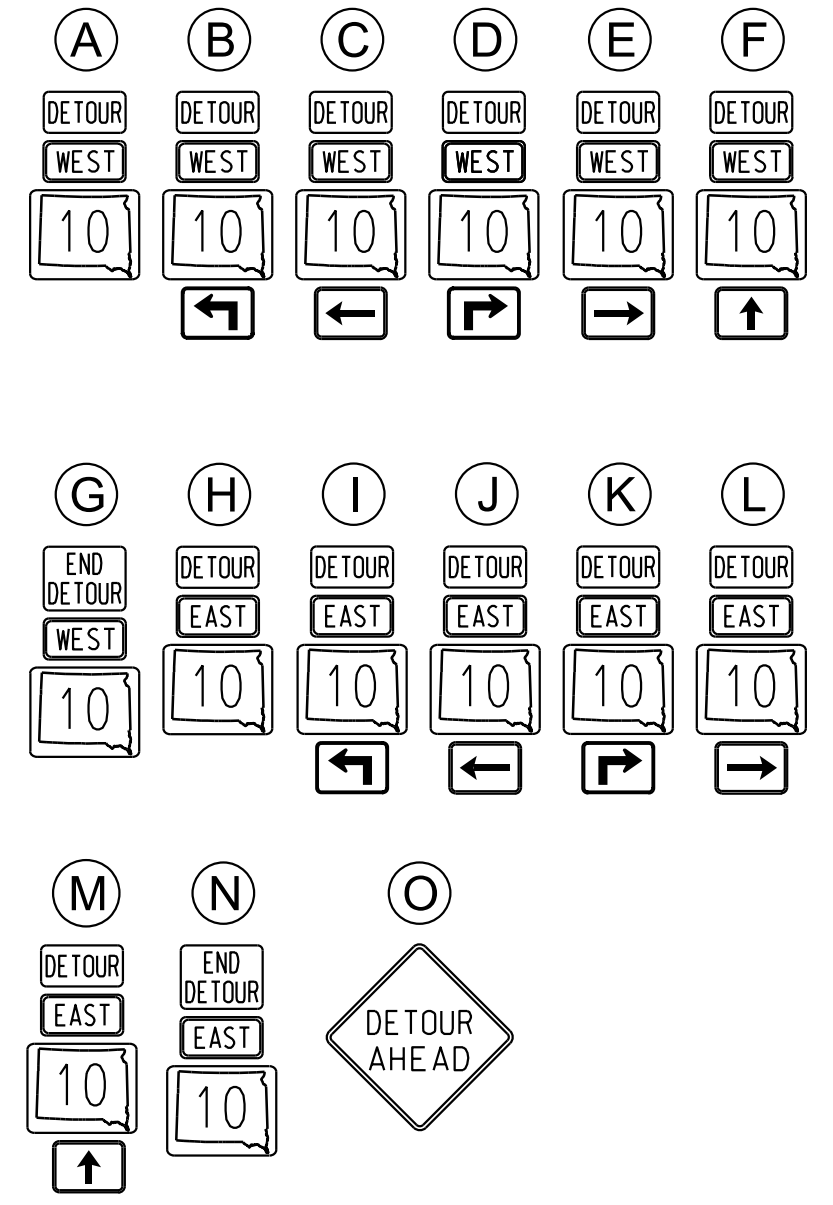
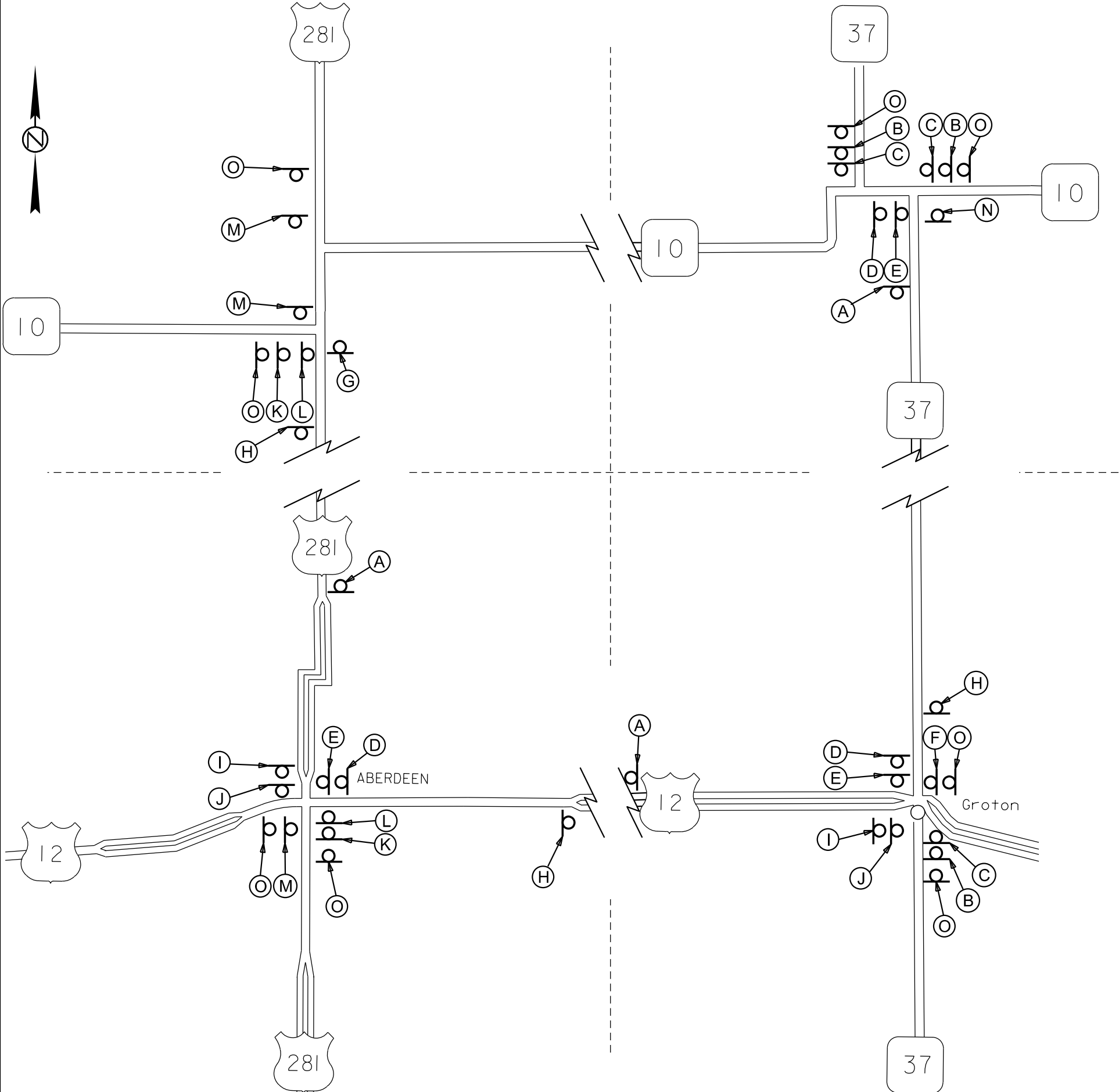


# 03AL DETOUR LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(221)278 P 0010(135)294	C9	C17
Plotting Date: 03/01/2024			

PLOT SCALE - 1:112500

PLOTTED FROM - TRAB13309

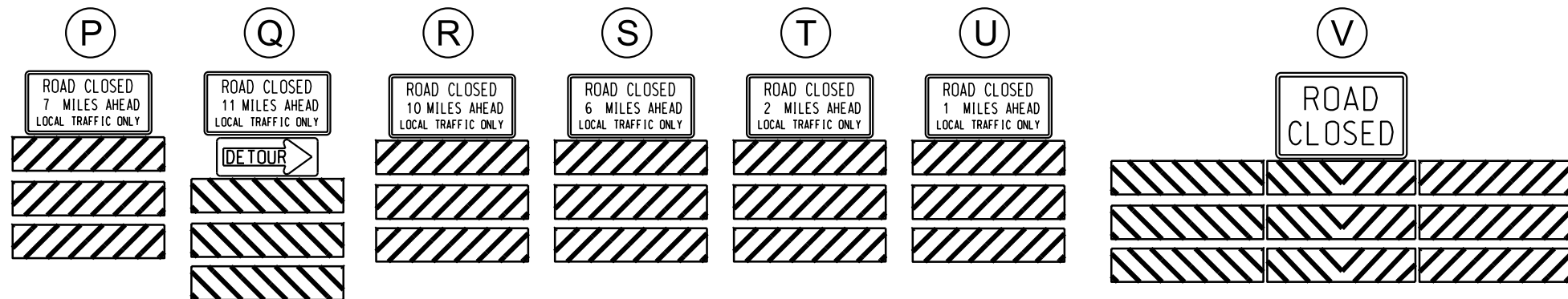
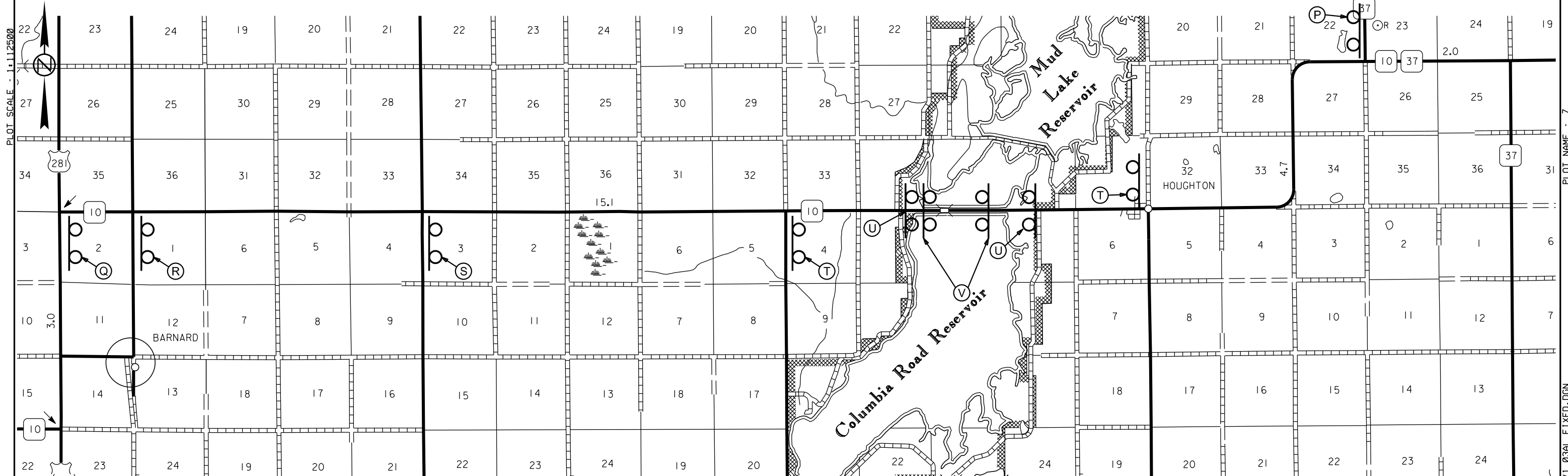


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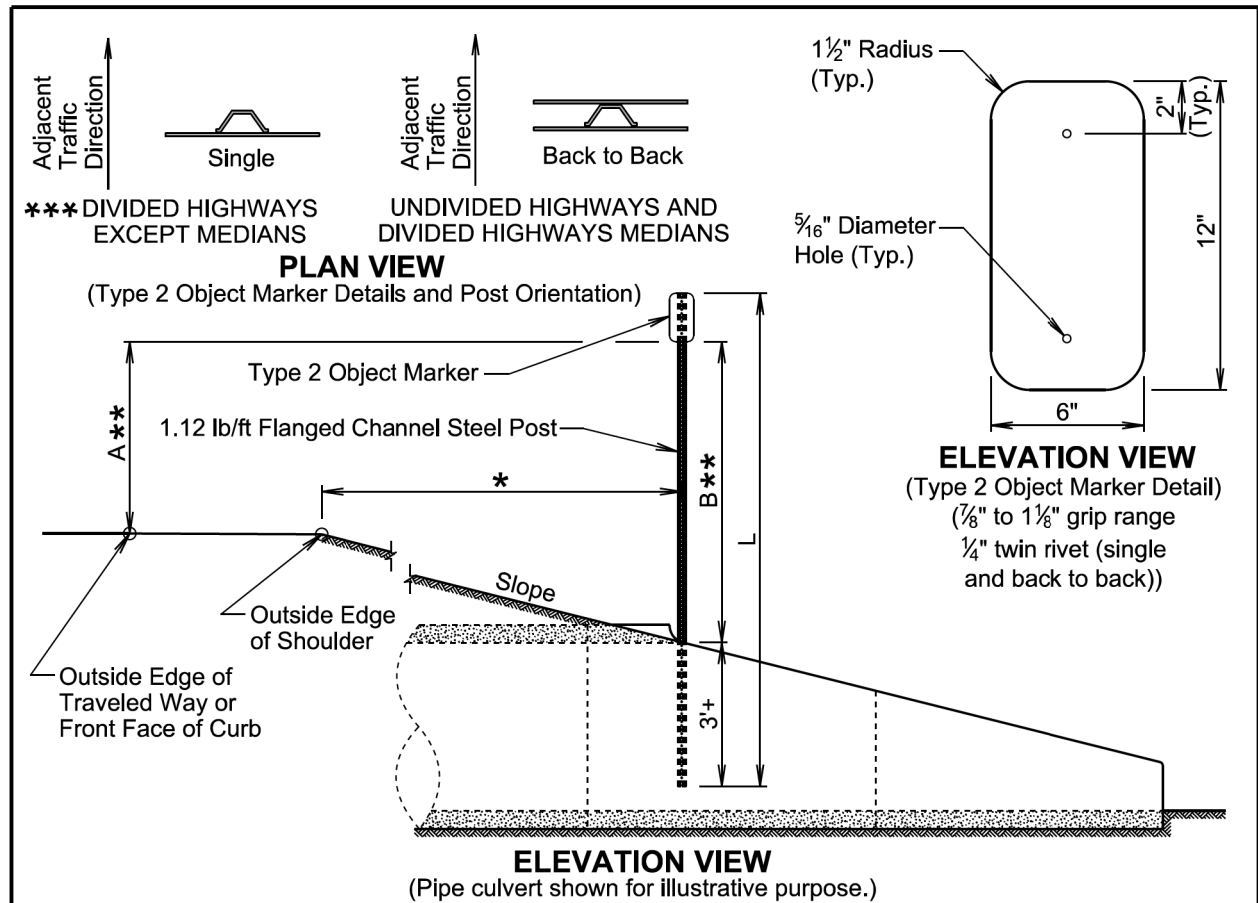
# 03AL ROAD CLOSED WITH OFF-SITE DETOUR

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH 0012(221)278	C10	C17
	P 0010(135)294	Plotting Date: 03/01/2024	



PLOTTED FROM - TRAB13309

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**ELEVATION VIEW**  
(Type 2 Object Marker Detail)  
( $\frac{7}{8}$ " to  $1\frac{1}{8}$ " grip range  
 $\frac{1}{4}$ " twin rivet (single  
and back to back))

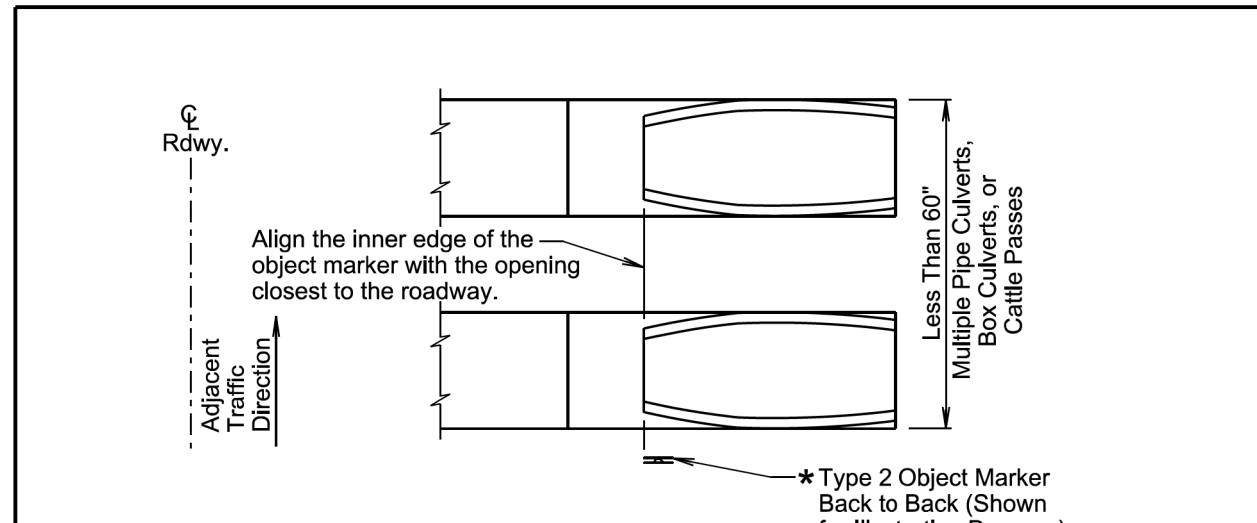
TYPE 2 OBJECT MARKER POST LENGTHS										
OFFSET (*)	1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'	
<b>POST LENGTH (L)</b>										
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

**GENERAL NOTES:**

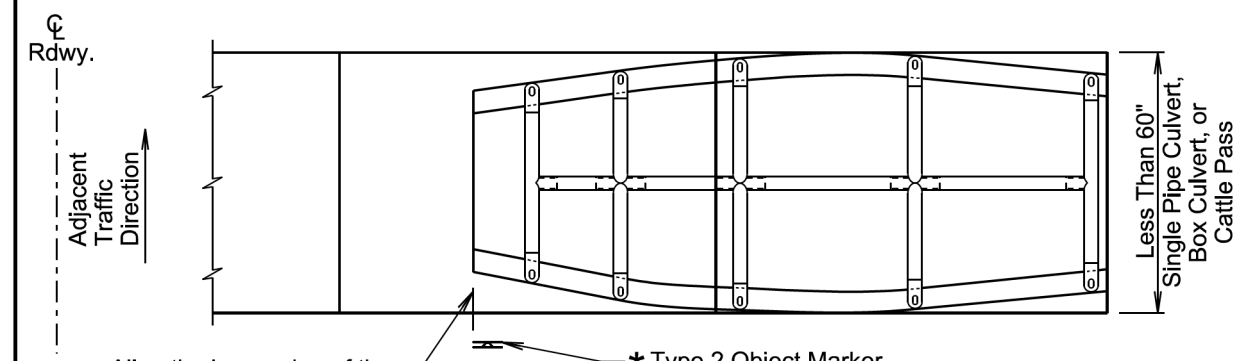
- \*\*\* The type 2 object marker may be installed back to back when specified in the plans.  
Post Length L was calculated based on a shoulder width of 6 feet at a crosslope of 4 percent and L was rounded up to the nearest 3 inches.
- \*\* Dimension A is 4 feet when the Offset \* is 8 feet and less. Dimension B is 4 feet when Offset \* is greater than 8 feet.  
The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.  
Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

<i>Published Date: 2024</i>	<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER (DIRECT DRIVE)</b>	PLATE NUMBER <b>632.01</b>
			Sheet 1 of 1



**PLAN VIEW**  
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)  
(Pipe culverts shown for illustrative purpose.)  
(Embankment is not shown.)



**PLAN VIEW**  
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)  
(Pipe culvert shown for illustrative purpose.)  
(Embankment is not shown.)

**GENERAL NOTES:**

- This standard plate will be used in conjunction with standard plate 632.01.
- \* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

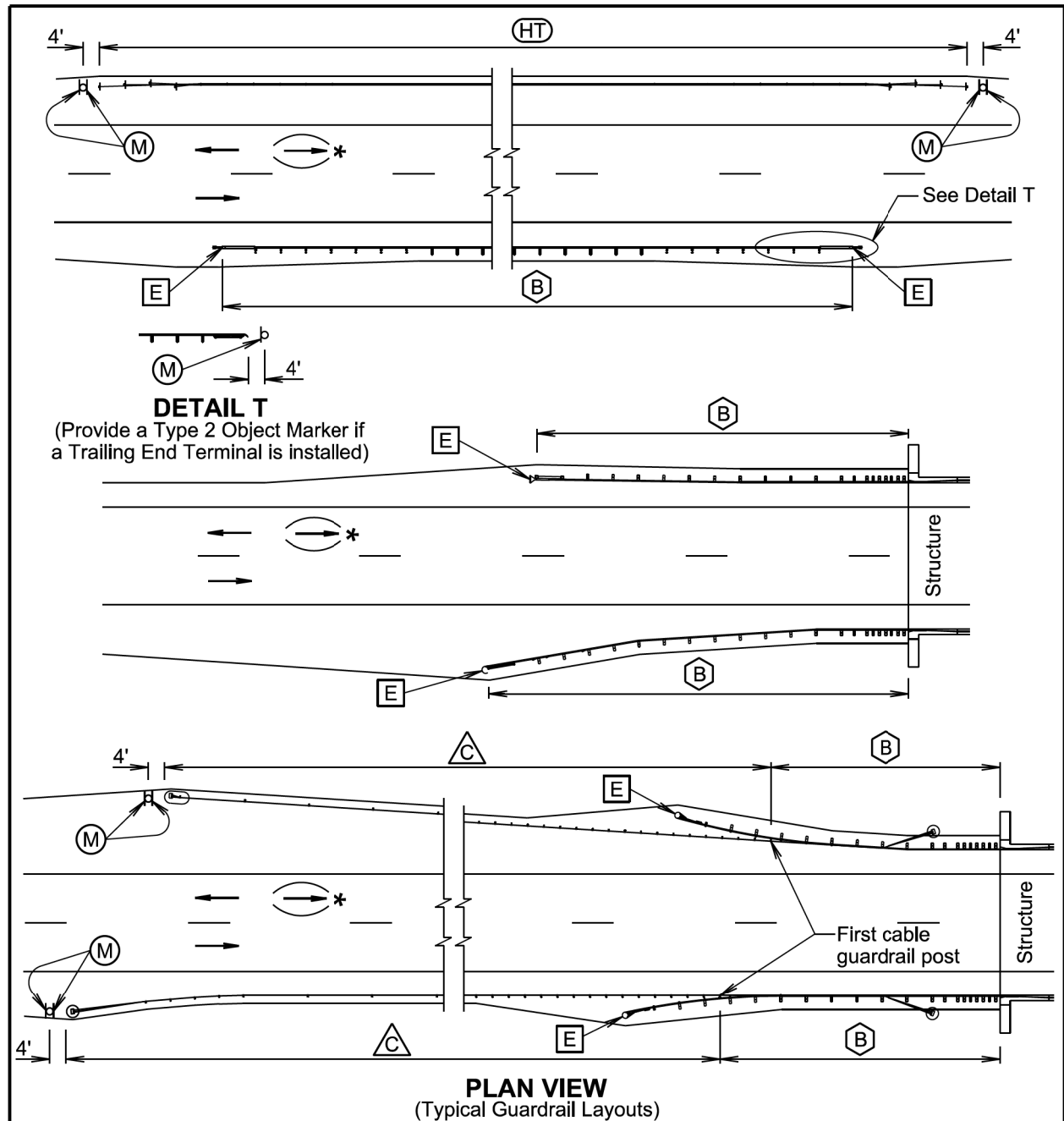
<i>Published Date: 2024</i>	<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)</b>	PLATE NUMBER <b>632.03</b>
			Sheet 1 of 1

PLOT SCALE - 1:200

-PLOTTED FROM - TRAB13309

PLOT NAME - 8

FILE - ... \SECTION\632\_01\632\_03.DGN



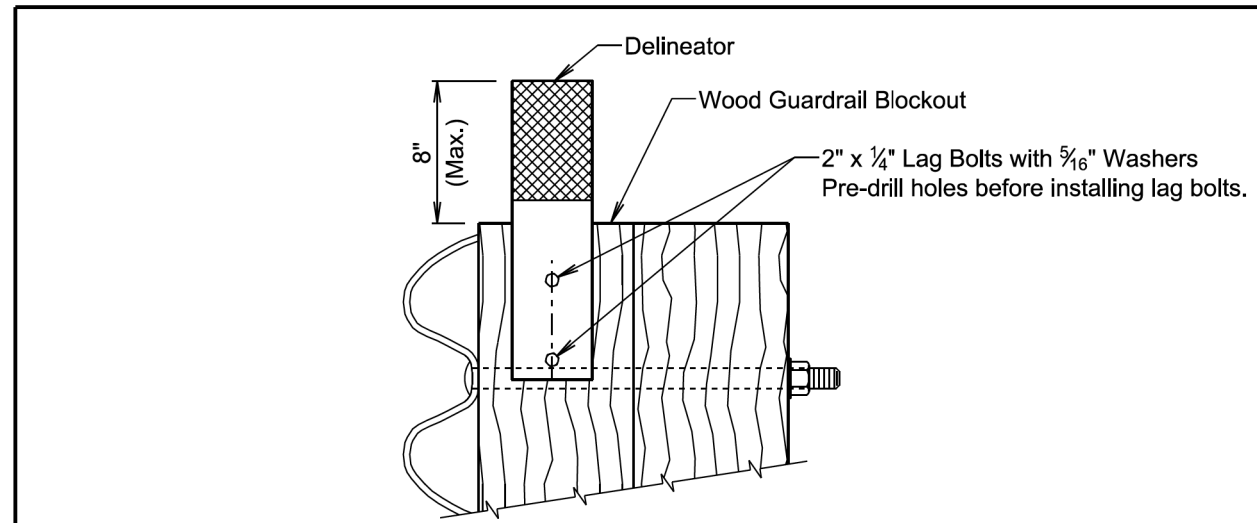
**PLAN VIEW**  
(Typical Guardrail Layouts)

(B) Steel Beam Guardrail Delineation      (HT) High Tension Cable Guardrail Delineation  
 (E) Guardrail End Terminal Object Marker      (M) Type 2 Object Marker  
 (C) 3 Cable Guardrail (Low Tension) Delineation

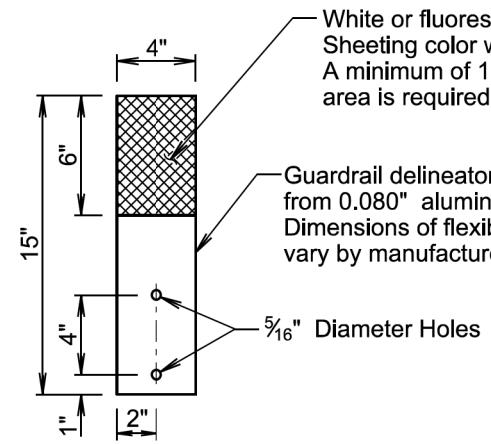
\*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

December 23, 2019

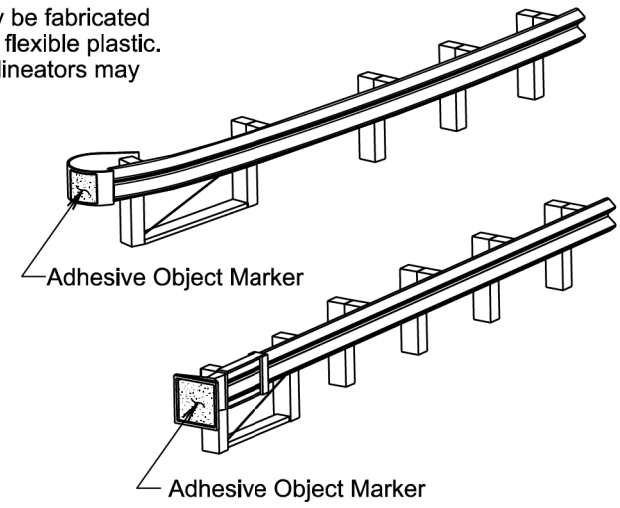
Published Date: 2024	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



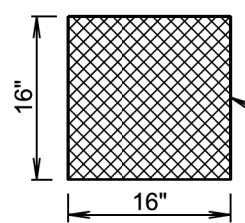
**(B) STEEL BEAM GUARDRAIL DELINEATION**



**DELINEATOR**  
(For Steel Beam Guardrail)



**(E) GUARDRAIL END TERMINAL 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 will be fluorescent yellow.

December 23, 2019

Published Date: 2024	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4

PLOT SCALE - 1:200

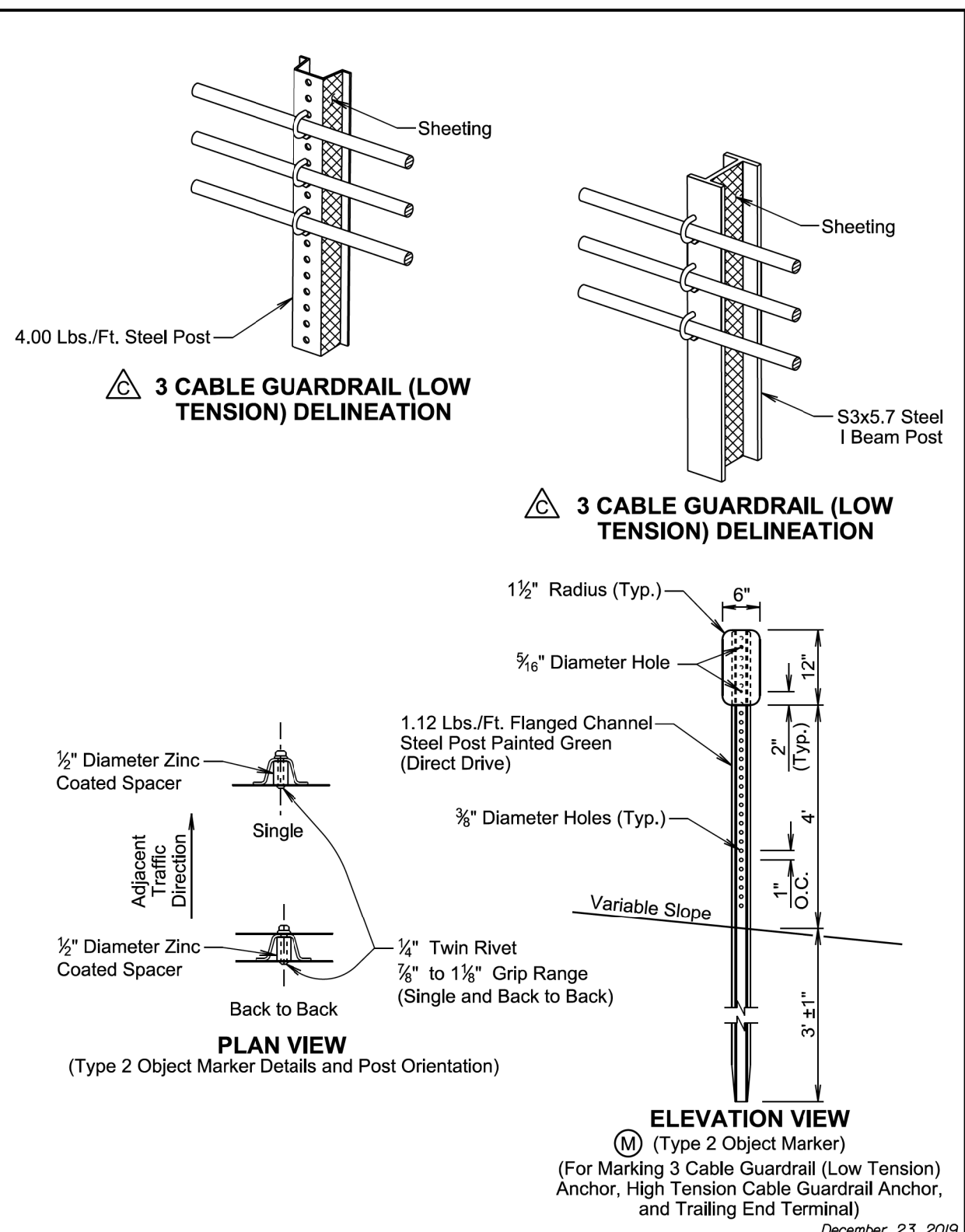
-PLOTTED FROM - TRAB13309

PLOT NAME - 9

FILE - ... \632\_40\632\_40(1&2).DGN

PLOT SCALE - 1:200

PLOT NAME - 10



December 23, 2019

Published Date: 2024	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

**GENERAL NOTES:**

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every other post cap or cable spacer. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting shall be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will 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.

When steel beam guardrail is attached to a bridge the first delineator will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail will be included in the contract unit price per each for "Guardrail Delineator".

All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

An adhesive object marker will be placed on the end of the W beam guardrail or MGS 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 will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

A type 2 object marker will be placed adjacent to the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, and trailing end terminal at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware will 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.

December 23, 2019

Published Date: 2024	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4

-PLOTTED FROM - TRAB13309

FILE - ... \632-408632-40(3&4).DGN

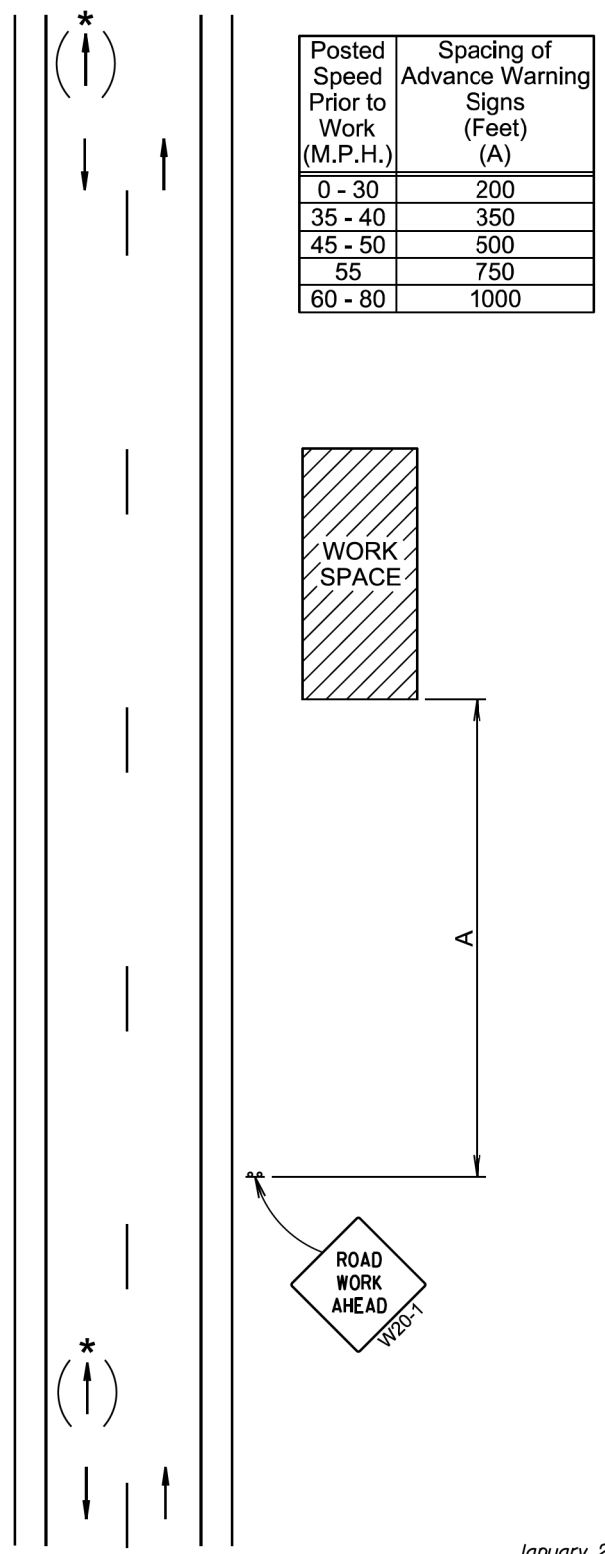
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated will 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.

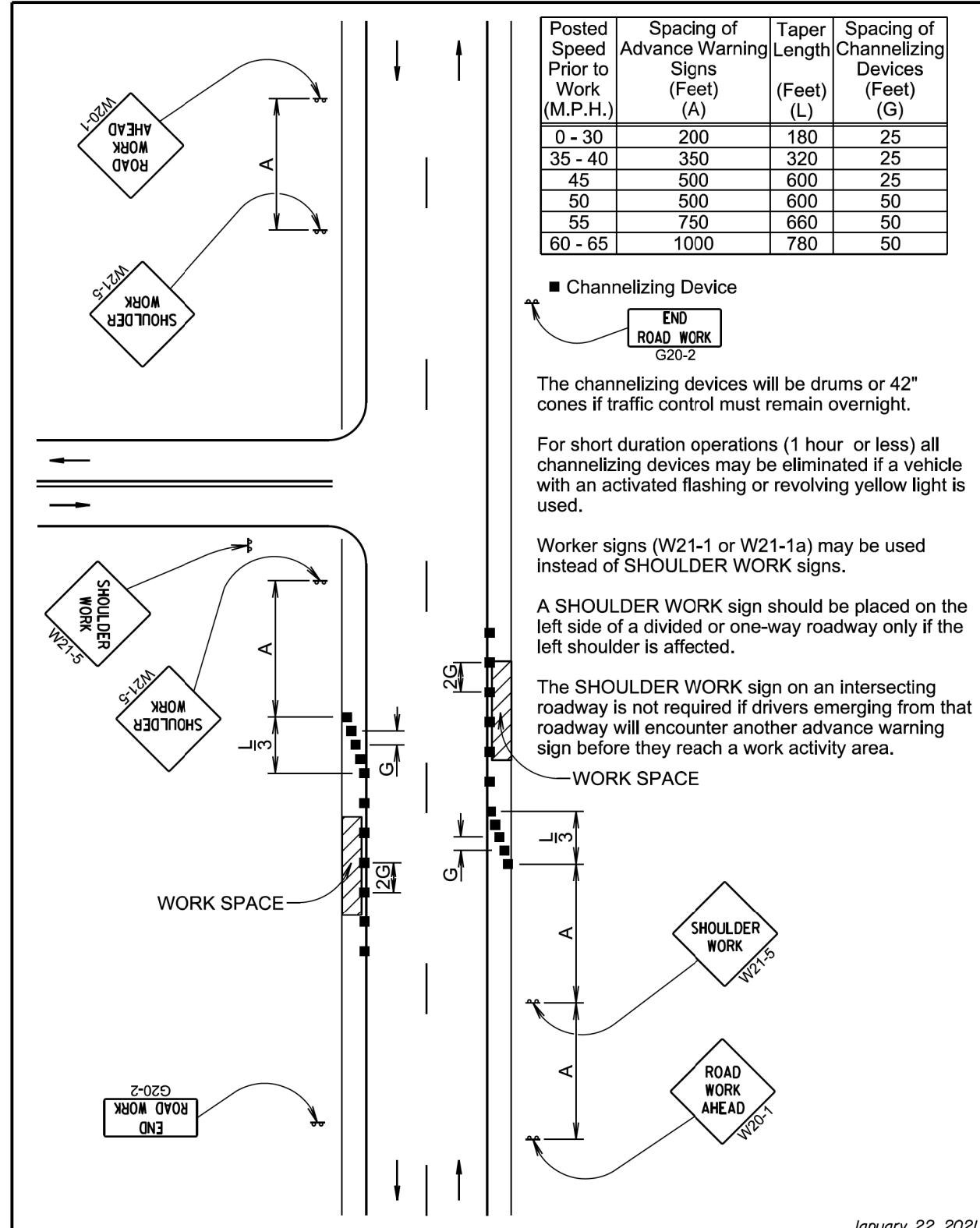
\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

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.



January 22, 2021

<b>S D D O T</b>	<b>WORK BEYOND THE SHOULDER</b>	PLATE NUMBER 634.01
	Published Date: 2024	Sheet 1 of 1



January 22, 2021

<b>S D D O T</b>	<b>WORK ON SHOULDERS</b>	PLATE NUMBER 634.03
	Published Date: 2024	Sheet 1 of 1

PLOT SCALE - 1:200

-PLOTTED FROM - TRAB13309

PLOT NAME - 11

FILE - ... \SECTION\634\_01&634\_03.DGN

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

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

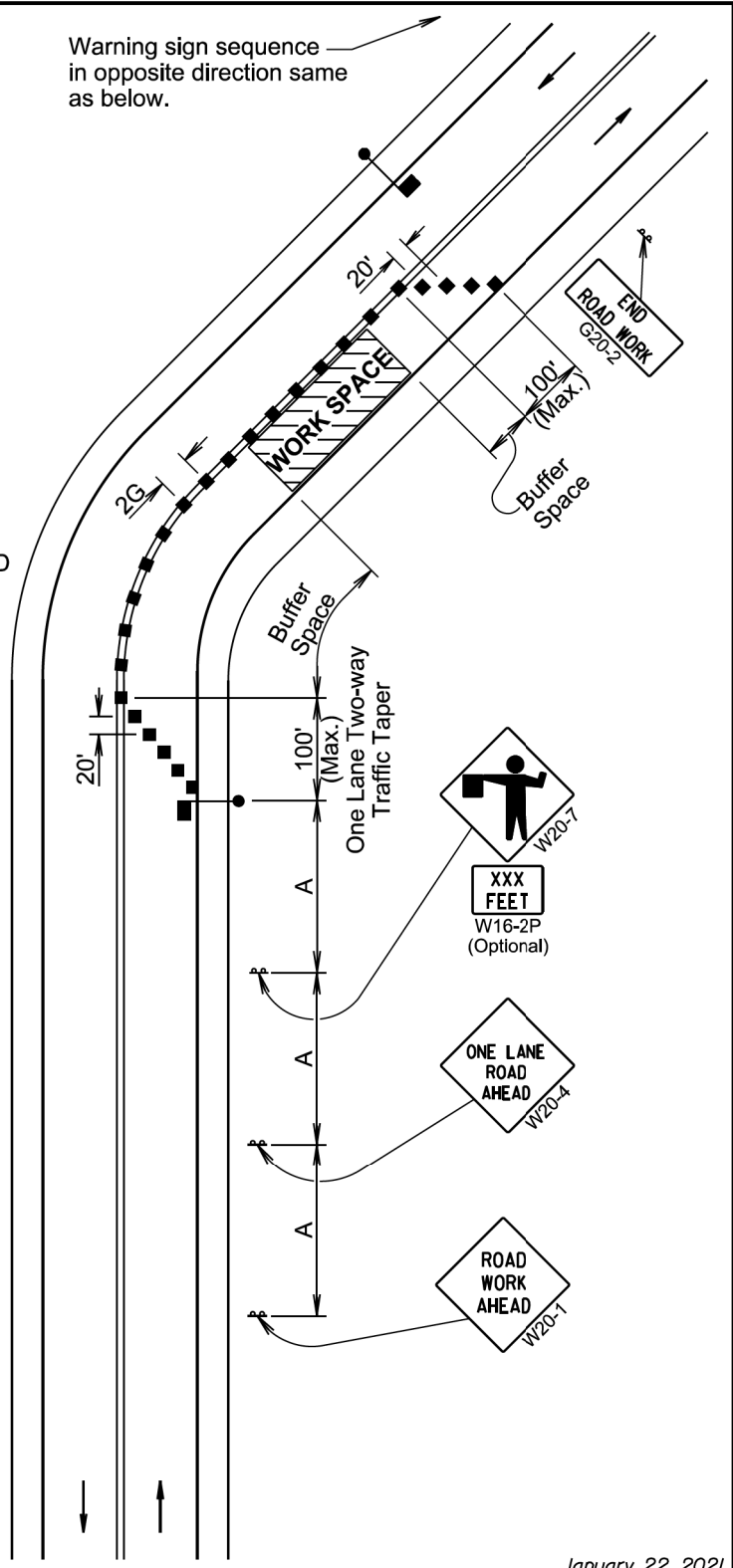
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

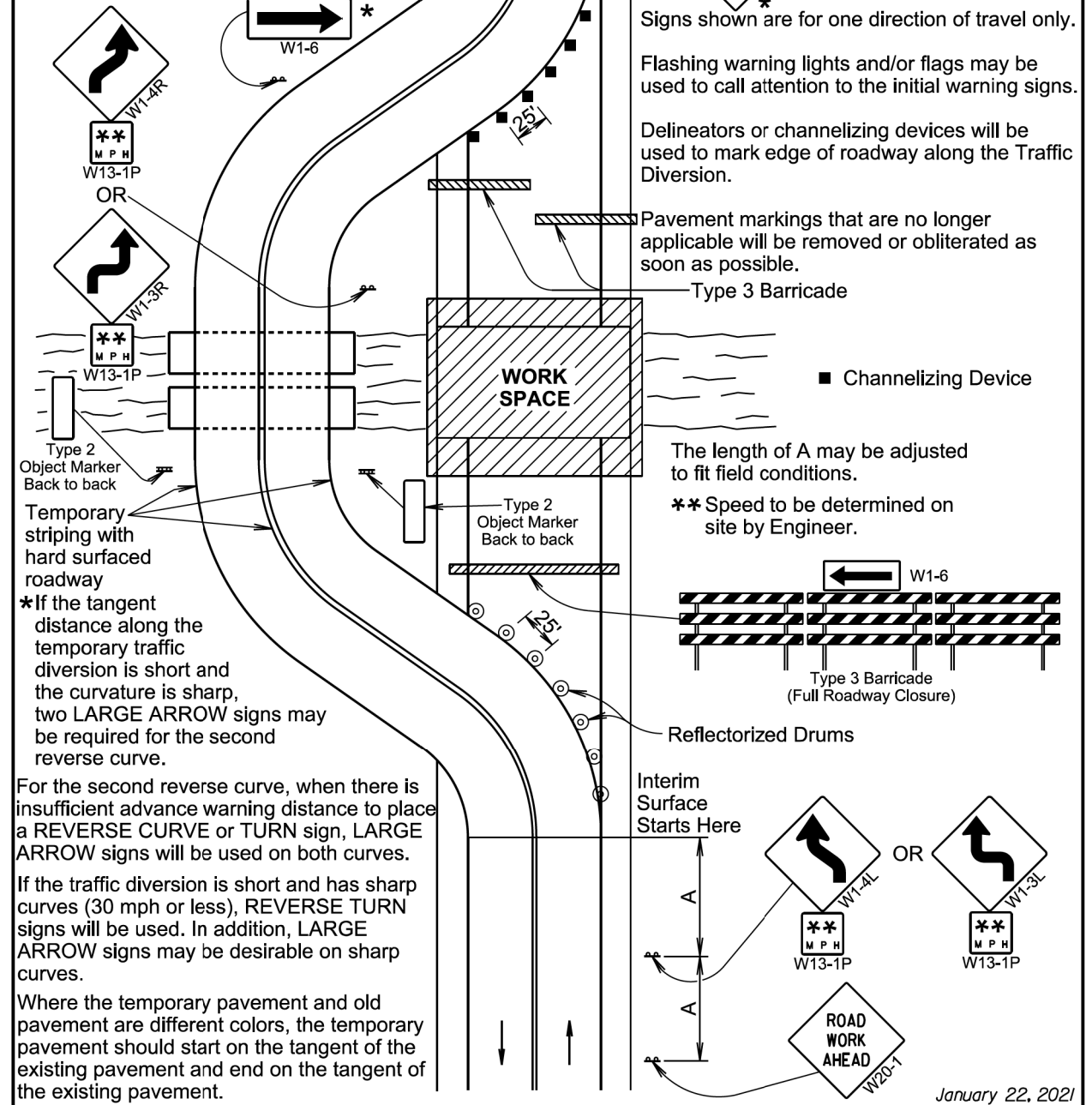
Warning sign sequence in opposite direction same as below.



January 22, 2021

<b>SDOT</b>	<b>LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER <b>634.23</b>
	<i>Published Date: 2024</i>	Sheet 1 of 1

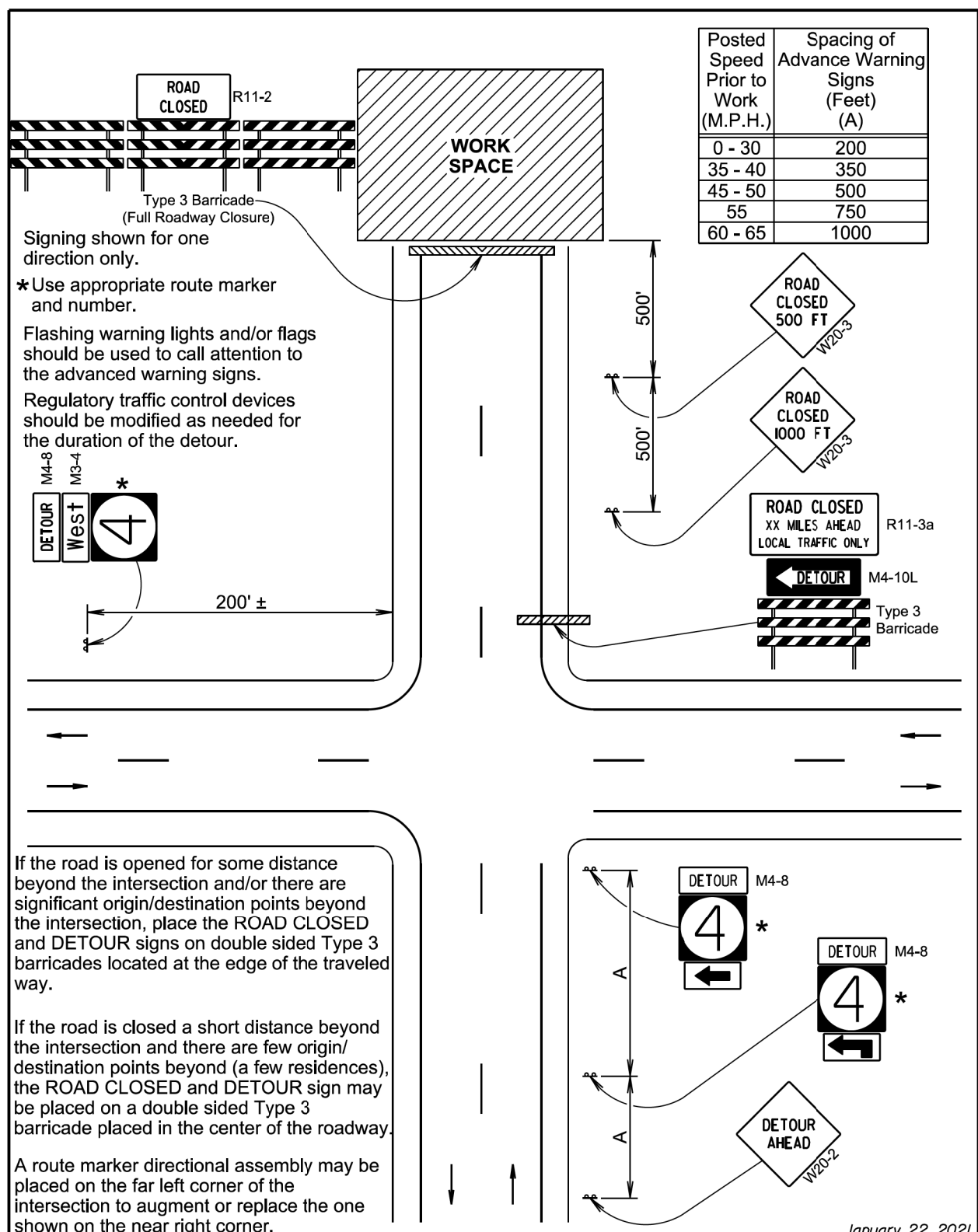
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000



January 22, 2021

<b>SDOT</b>	<b>ROAD CLOSED WITH TRAFFIC DIVERTED</b>	PLATE NUMBER <b>634.28</b>
	<i>Published Date: 2024</i>	Sheet 1 of 1

PLOT SCALE - 1:200



Signing shown for one direction only.

\*Use appropriate route marker and number.

Flashing warning lights and/or flags should be used to call attention to the advanced warning signs.

Regulatory traffic control devices should be modified as needed for the duration of the detour.

If the road is opened for some distance beyond the intersection and/or there are significant origin/destination points beyond the intersection, place the ROAD CLOSED and DETOUR signs on double sided Type 3 barricades located at the edge of the traveled way.

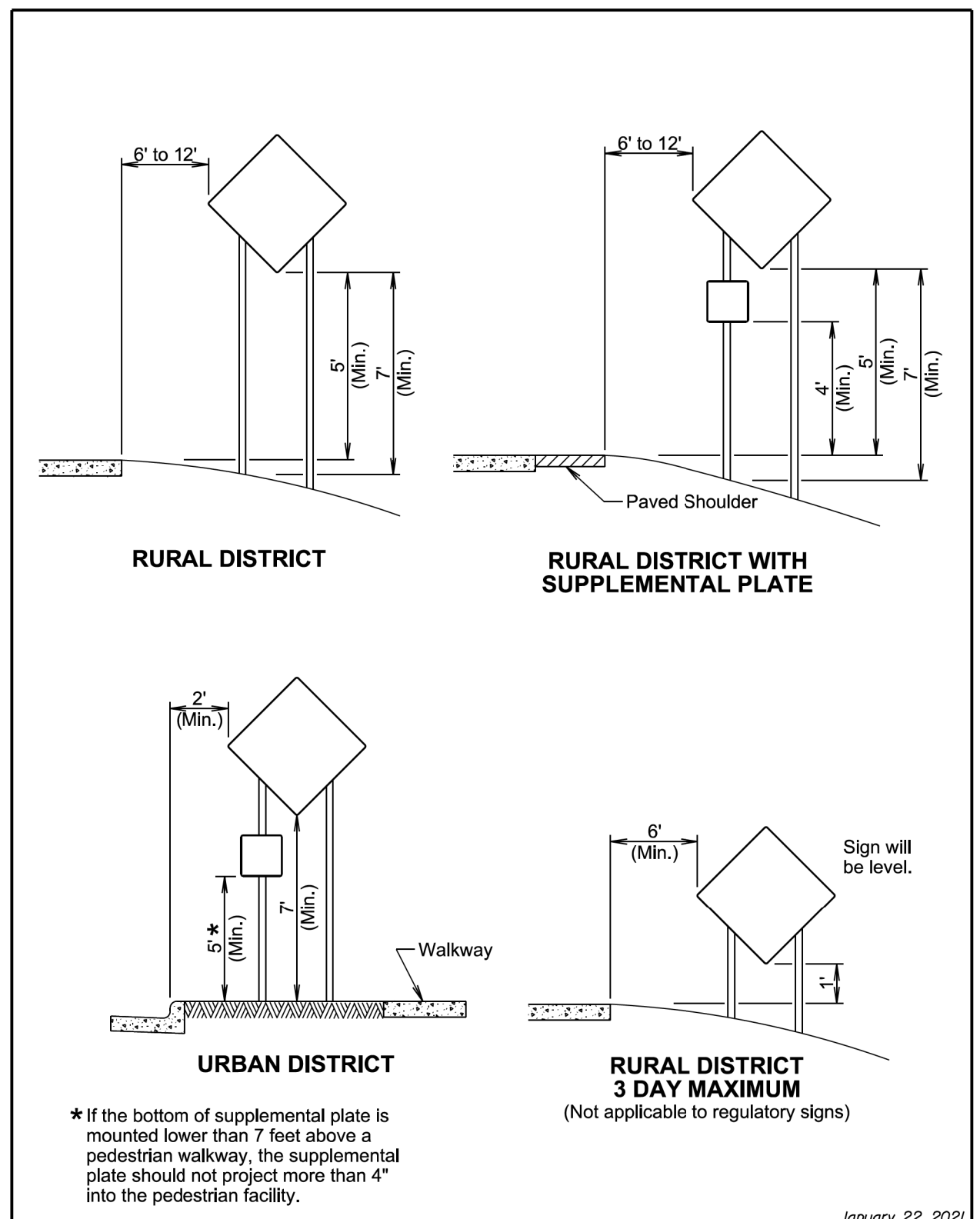
If the road is closed a short distance beyond the intersection and there are few origin/destination points beyond (a few residences), the ROAD CLOSED and DETOUR sign may be placed on a double sided Type 3 barricade placed in the center of the roadway.

A route marker directional assembly may be placed on the far left corner of the intersection to augment or replace the one shown on the near right corner.

January 22, 2021

<b>S D D O T</b>	<b>ROAD CLOSED WITH OFF-SITE DETOUR</b>	PLATE NUMBER <b>634.29</b>
	Published Date: 2024	Sheet 1 of 1

PLOT NAME - 13



\* 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.

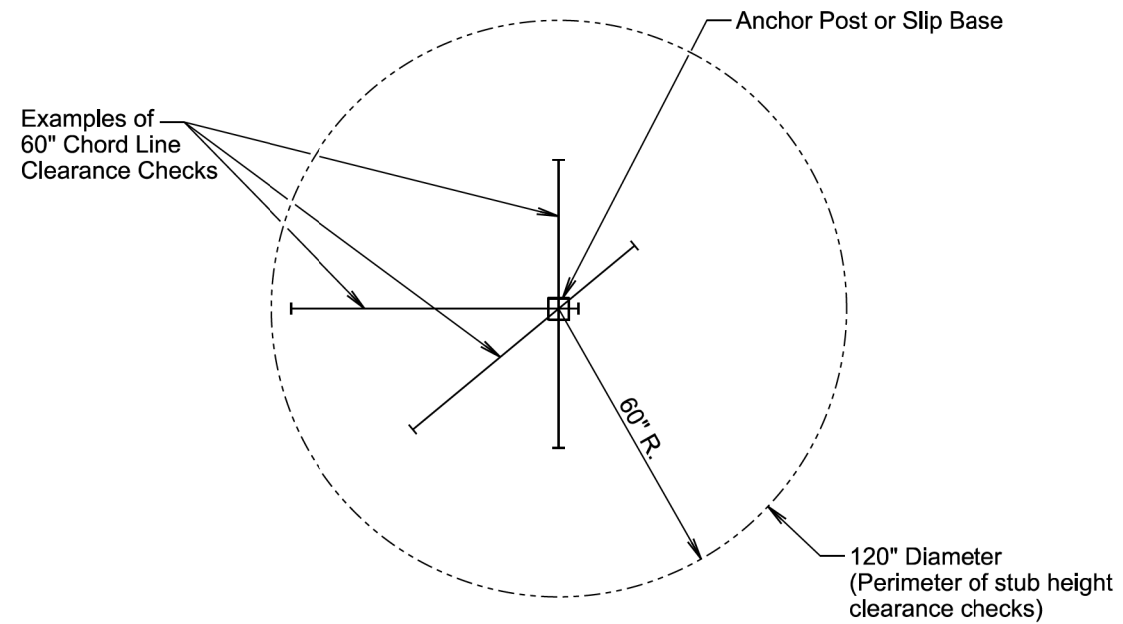
January 22, 2021

<b>S D D O T</b>	<b>CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)</b>	PLATE NUMBER <b>634.85</b>
	Published Date: 2024	Sheet 1 of 1

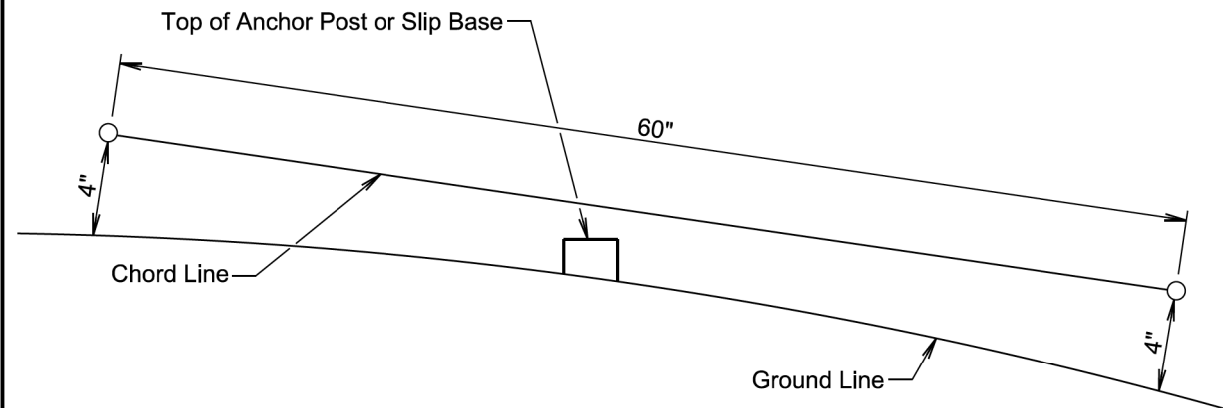
-PLOTTED FROM - TRAB13309

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**PLAN VIEW**  
(Examples of stub height clearance checks)



**ELEVATION VIEW**

**GENERAL NOTES:**

The top of anchor posts and slip bases WILL 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 will 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.

January 22, 2021

<i>Published Date: 2024</i>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER <b>634.99</b>
			Sheet 1 of 1