

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0022(00)4	1	14

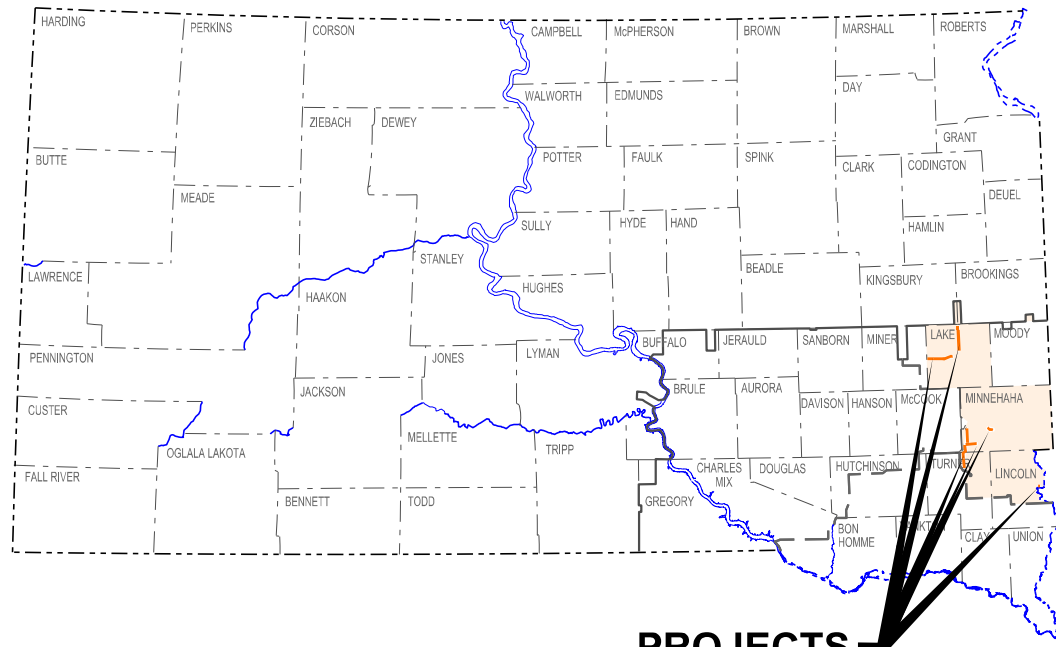
Plotting Date: 09/08/2017

PLANS FOR PROPOSED  
**PROJECT NH-P 0022(00)4**  
US HIGHWAYS 18 & 81  
SD HIGHWAYS 19, 38 & 42  
SIOUX FALLS AREA  
LAKE, LINCOLN, MINNEHAHA & TURNER COUNTIES  
PIPE WORK, CULVERT & DITCH CLEANOUT  
PCN 06JJ

INDEX OF SHEETS

Sheet 1	Title Sheet
Sheet 2 & 3	Estimate of Quantities & Environmental Commitments
Sheets 4 & 5	Plan Notes
Sheets 6 & 7	Culvert Cleanout Tables
Sheet 8	Typical Culvert Location & Erosion Control Details
Sheet 9	Special Type 2 Object Marker Installation Details
Sheets 10 - 14	Standard Plates

PLOT SCALE - 1"=56000'



PROJECTS

**US81**  
MRM 84.000 + 0.497  
to 91.000 + 0.449  
MRM 97.000 + 0.699  
to 104.000 + 0.689

**STORM WATER PERMIT**  
(None required)

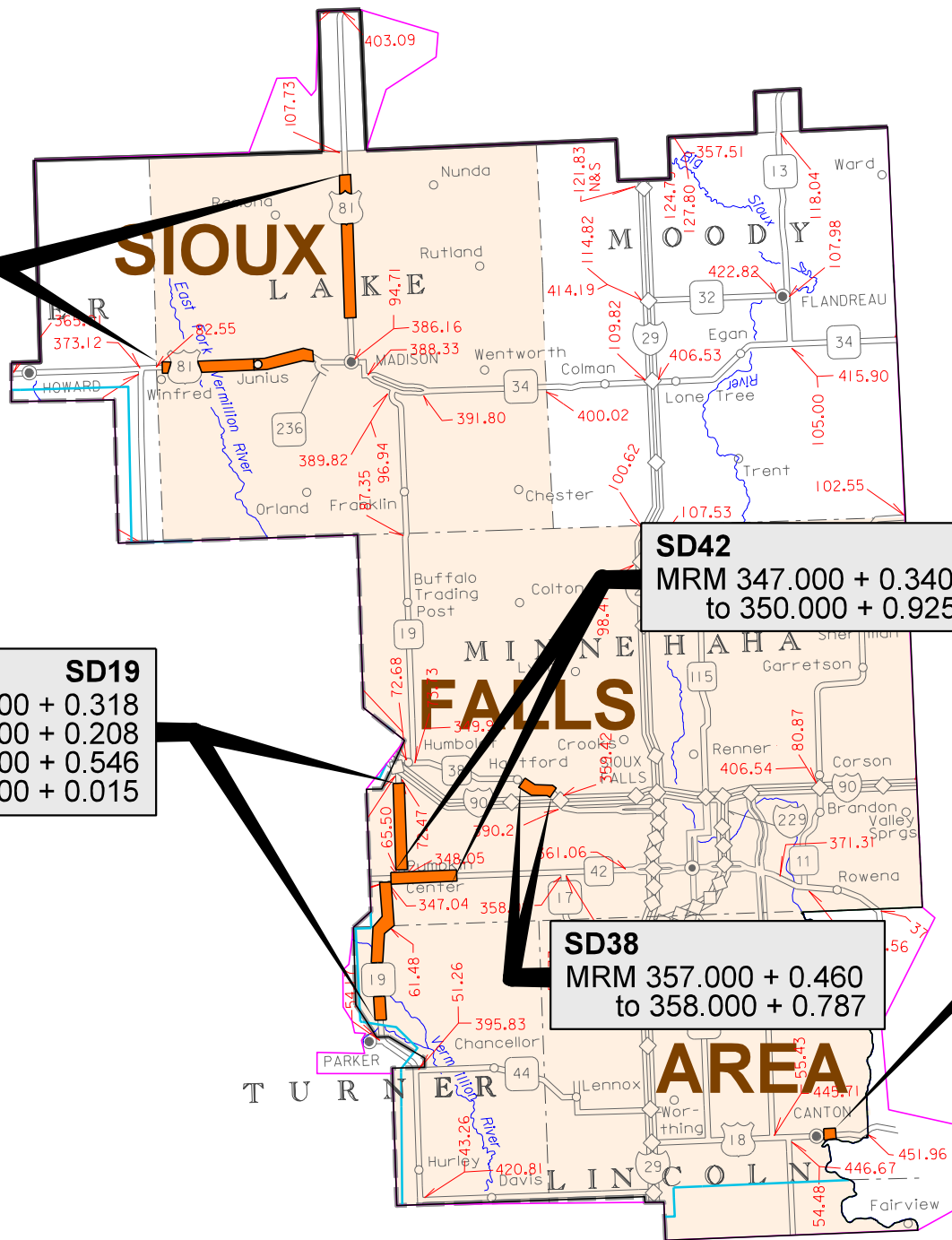
**SD19**  
MRM 56.000 + 0.318  
to 64.000 + 0.208  
MRM 65.000 + 0.546  
to 71.000 + 0.015

**SD42**  
MRM 347.000 + 0.340  
to 350.000 + 0.925

**SD38**  
MRM 357.000 + 0.460  
to 358.000 + 0.787

**US18**  
MRM 450.000 + 0.050  
to 450.000 + 0.516

HWY	POSTED MRM	DISP	MRM + DISP	to	POSTED MRM	DISP	MRM + DISP	SEGMENT LENGTH	ADT (2016)
SD 19	56.000	0.318	56.318	to	64.000	0.208	64.208	7.890	1,744
		0.546	65.546	to	71.000	0.015	71.015	5.469	506
SD 38	357.000	0.460	357.460	to	358.000	0.787	358.787	1.327	2,489
SD 42	347.000	0.340	347.340	to	350.000	0.925	350.925	3.585	2,999
US 18	450.000	0.050	450.050	to	450.000	0.516	450.516	0.466	6,831
		0.699	97.699	to	104.000	0.689	104.689	6.990	1,647
<b>TOTAL PROJECT LENGTH =</b>								<b>32.679</b>	



PLOTTED FROM - TRMLINT15

FILE - ... \REG\06JUN06JJ.TITLE.DGN

**ESTIMATE OF QUANTITIES**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0135	Remove Delineator	3	Each
110E0510	Remove Pipe End Section	1	Each
110E7500	Remove Pipe for Reset	14	Ft
110E7510	Remove Pipe End Section for Reset	4	Each
120E0010	Unclassified Excavation	430	CuYd
120E0600	Contractor Furnished Borrow Excavation	47	CuYd
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
450E8900	Cleanout Pipe Culvert	24	Each
450E9000	Reset Pipe	14	Ft
450E9001	Reset Pipe End Section	4	Each
632E2510	Type 2 Object Marker Back to Back	2	Each
632E2520	Type 2 Object Marker	2	Each
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	338.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0210	Class B Riprap	28.0	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	254	SqYd
734E0103	Type 3 Erosion Control Blanket	1,643	SqYd
734E0510	Shaping for Erosion Control Blanket	644	Ft
831E0110	Type B Drainage Fabric	56	SqYd

**SPECIFICATIONS**

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

**ENVIRONMENTAL COMMITMENTS**

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

**COMMITMENT C: WATER SOURCE**

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

**Action Taken/Required:**

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

**COMMITMENT E: STORM WATER**

Construction activities constitute less than 1 acre of disturbance.

**Action Taken/Required:**

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

**COMMITMENT H: WASTE DISPOSAL SITE**

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

**Action Taken/Required:**

Construction and/or demolition debris may be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

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**COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES**

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

**Action Taken/Required:**

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

**COMMITMENT N: SECTION 404 PERMIT**

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

**Action Taken/Required:**

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

### **SCOPE OF WORK**

The work required within this project includes, but is not limited to, the following items, not listed in order of execution.

1. Culvert Cleanout and Repair
2. Sediment and Debris control and removal
3. Ditch Reshaping
4. Erosion Control Blanket installation
5. Riprap placement
6. Repair and reseeding, as necessary

The Contractor is encouraged to inspect the project site prior to bidding to evaluate the extent of work that will be required for culvert cleanout.

### **SEQUENCE OF OPERATIONS**

The Contractor shall submit his/her proposed sequence of operations for the Engineer's approval at least two weeks prior to the preconstruction meeting.

### **GENERAL MAINTENANCE OF TRAFFIC**

Traffic shall be maintained at all times at each work site.

Traffic shall be returned to normal travel lanes and no work shall be undertaken during the hours of darkness.

Sufficient traffic control devices have been included in these plans to sign two workspaces. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

### **TYPE 2 OBJECT MARKERS**

The Contractor shall remove existing Type 2 Object Markers and supports, as indicated in the plans. Costs for removal of existing Type 2 Object Markers and supports shall be incidental to the contract unit price per each for Remove Delineator. The Contractor is responsible for disposal of Type 2 Object Markers and supports that have been removed.

### **REINFORCED CONCRETE PIPE (RCP) and END SECTIONS**

The Contractor shall not order pipe or end sections without prior approval of the Engineer. The Contractor is responsible for verifying the size of each pipe or end section prior to ordering.

All pipe or end sections that are shown as being removed on the project shall become the property of the Contractor. The Contractor is responsible for disposal of removed pipe material.

### **CULVERT CLEANOUT**

The Contractor shall inspect the culvert locations and determine the necessary method for cleaning out the culverts. Cleaning should be accomplished with high pressure water jet, vacuum trucks, reaming, push buckets, pull buckets, or brushing. If the culvert is large enough, personnel or equipment such as skid steer loaders can remove debris. The cleaning method must be approved by the Engineer.

Cleaning shall be conducted in the direction of drainage, as indicated in the plans. Each culvert shall be cleaned so the bottom of the pipe is visible throughout its length to re-establish the flow line. The culvert shall be cleaned to the satisfaction of the Engineer.

When culvert cleanout methods are used that produce downstream discharge, the Contractor shall implement appropriate temporary erosion control measures prior to culvert cleaning to prevent discharges beyond the project boundaries. Temporary erosion control methods shall be approved by the Engineer.

The Engineer will identify areas in the vicinity of culvert ends where ditch re-profiling/reshaping is needed to restore ditch flow. The Contractor shall shape and reseed the ditch areas identified by the Engineer.

All sediment and debris removed from the culvert shall be disposed of or reused for erosion repair by the Contractor, as approved by the Engineer.

Costs associated with cleanout of the existing culvert, temporary erosion control measures, and the removal of sediment and debris, shall be incidental to the contract unit price per each for Cleanout Pipe Culvert.

### **DITCH RESHAPING**

The Contractor shall reshape the ditch to restore the drainage profile into and out of the mainline pipe, as indicated in the plans. This work will require removal of sedimentation and placement of material to restore the ditch channel. Actual areas and amounts of ditch reshaping may vary from the estimated locations and quantities in the plans due to further erosion or sedimentation that have taken place since the time of the survey. Work shall be contained within the Right-of-Way. Culvert cleanout material may be used as borrow material for filling in erosion. Placement or disposal of cleanout material shall be approved by the Engineer.

Four inches of topsoil shall be removed from affected areas prior to ditch reshaping. The Contractor shall stockpile the topsoil material at a site approved by the Engineer, or windrow the material near the disturbed areas to control potential sediment runoff as determined by the Engineer. Topsoil shall be spread evenly throughout all disturbed areas upon completion of the work. Soil clumps larger than three inches shall be broken up prior to seeding the areas.

Costs associated with clearing and reshaping the existing ditch, including topsoil removal/replacement, labor, excavation, placing material, equipment, and incidentals shall be incidental to the contract unit price per cubic yard for Unclassified Excavation.

### **TIE BOLTS AND DRAINAGE FABRIC FOR RCP/RCP ARCH**

Tie bolt connections are required for new or reset pipe and end sections at the inlet and outlet sides of culverts. Existing tie bolts that are removed with pipe or end sections shall be replaced with new prior to reset or replacement of the pipe or end sections.

Prior to new installation or reset, field drilling is required to install tie bolts on pipe or end sections that are not previously drilled.

The pipe joints for each new or reset pipe or end section shall be effectively protected against infiltration of backfill soil by a full circumferential wrap with a 1 foot wide strip of drainage fabric around the perimeter of the pipe. The drainage fabric shall be centered over the joint.

Restoration of the Contractor furnished borrow excavation site shall be the responsibility of the Contractor.

Cost to furnish and install tie bolt and joint drainage fabric, and for drilling tie bolt holes, shall be incidental to the various contract unit prices per foot or each for new or reset RCP pipe and end sections.

### **CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor shall provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer.

Restoration of the Contractor furnished borrow excavation site shall be the responsibility of the Contractor.

The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item. Cost for Contractor furnished borrow excavation shall be included in the contract unit price per cubic yard for Contractor Furnished Borrow Excavation.

**MYCORRHIZAL INOCULUM**

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

- Glomus intraradices* 25%
- Glomus aggregatu* 25%
- Glomus mosseae* 25%
- Glomus etunicatum* 25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. Cost for inoculating the seed shall be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

**EROSION CONTROL**

The areas to be seeded shall be all disturbed areas at the pipe ends and areas where excavated material may have been wasted.

Type C Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
Total:		18

The total areas to be seeded are estimated at 0.40 acre.

The limits of erosion control work will be determined by the Engineer during construction.

Cost associated with furnishing and placing the seed, including labor, equipment and incidentals shall be included in the contract Lump Sum price for Erosion Control.

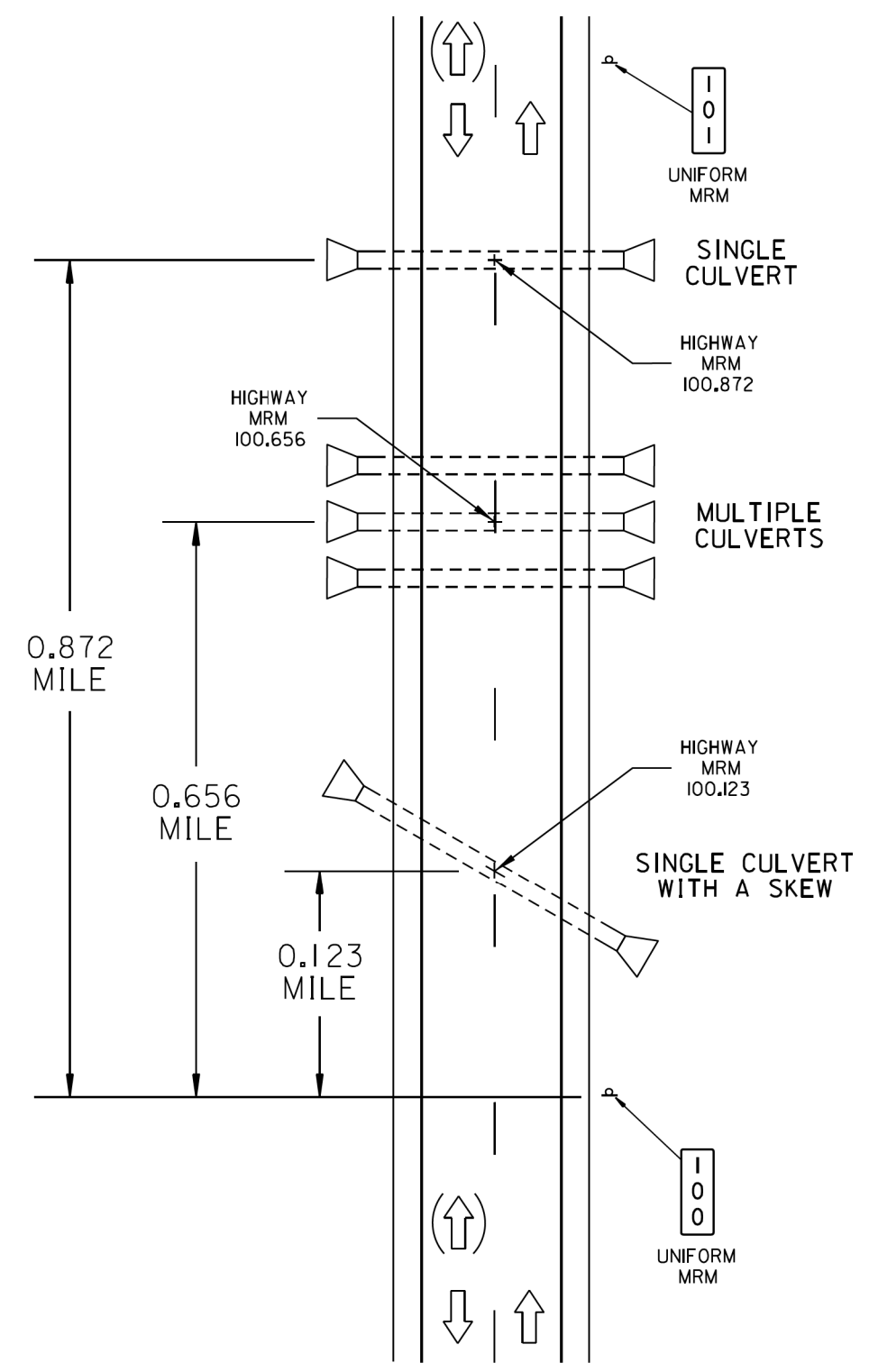
**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS</b>					<b>338.0</b>
SQFT					

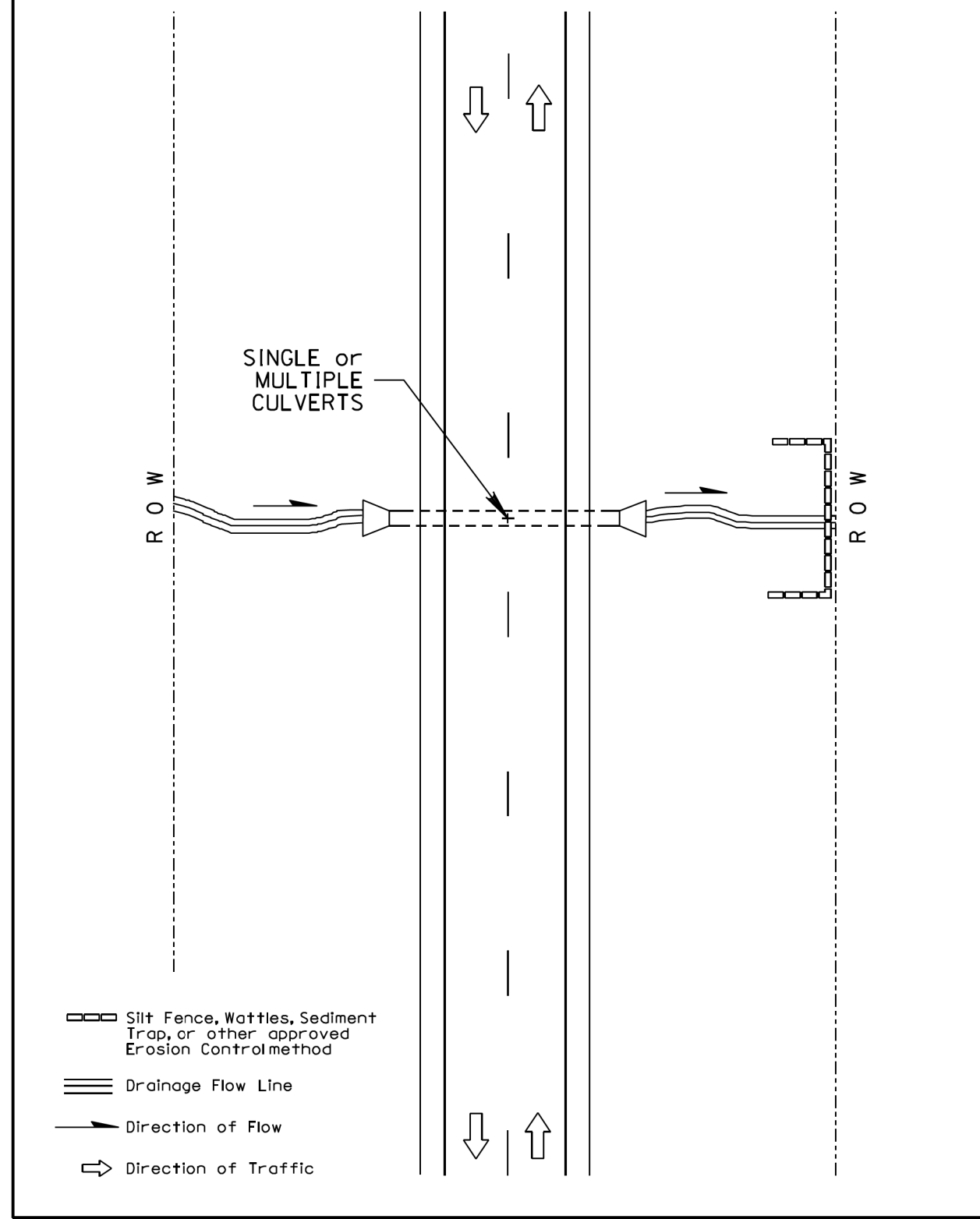




**CULVERT LOCATIONS BY MILEAGE REFERENCE MARKER (MRM) + DISPLACEMENT  
(Typical)**

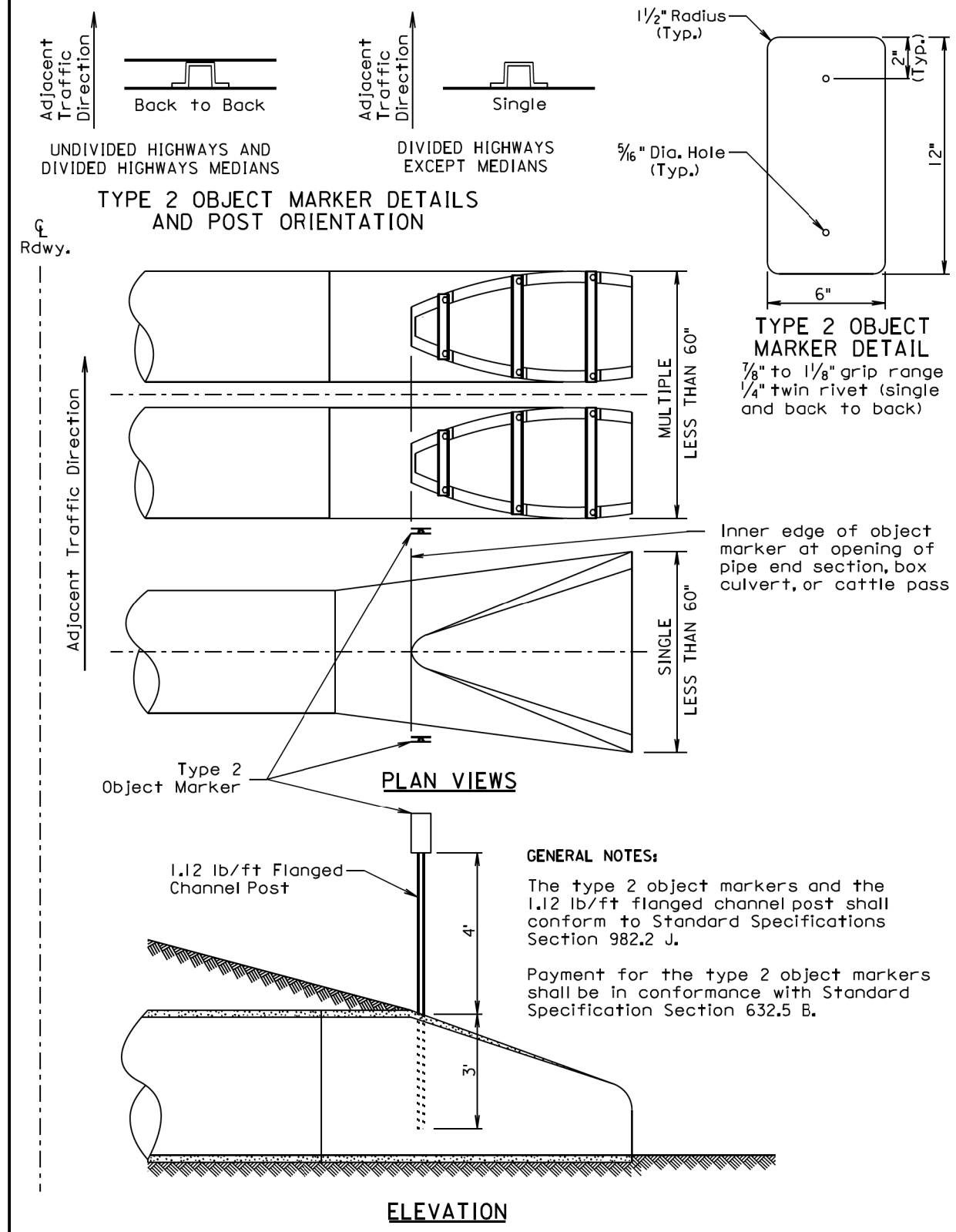


**CULVERT CLEANOUT TEMPORARY EROSION CONTROL  
(Typical)**

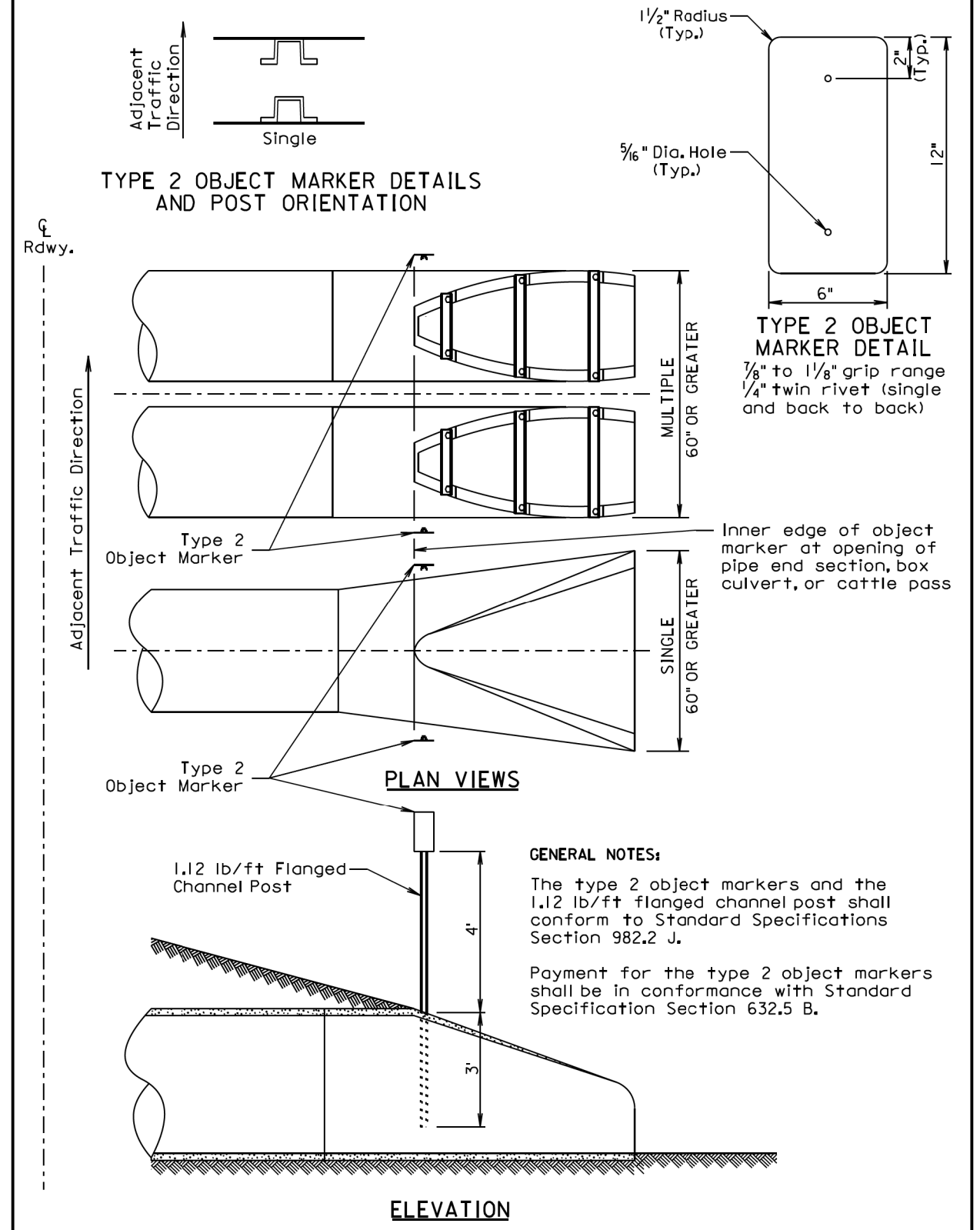


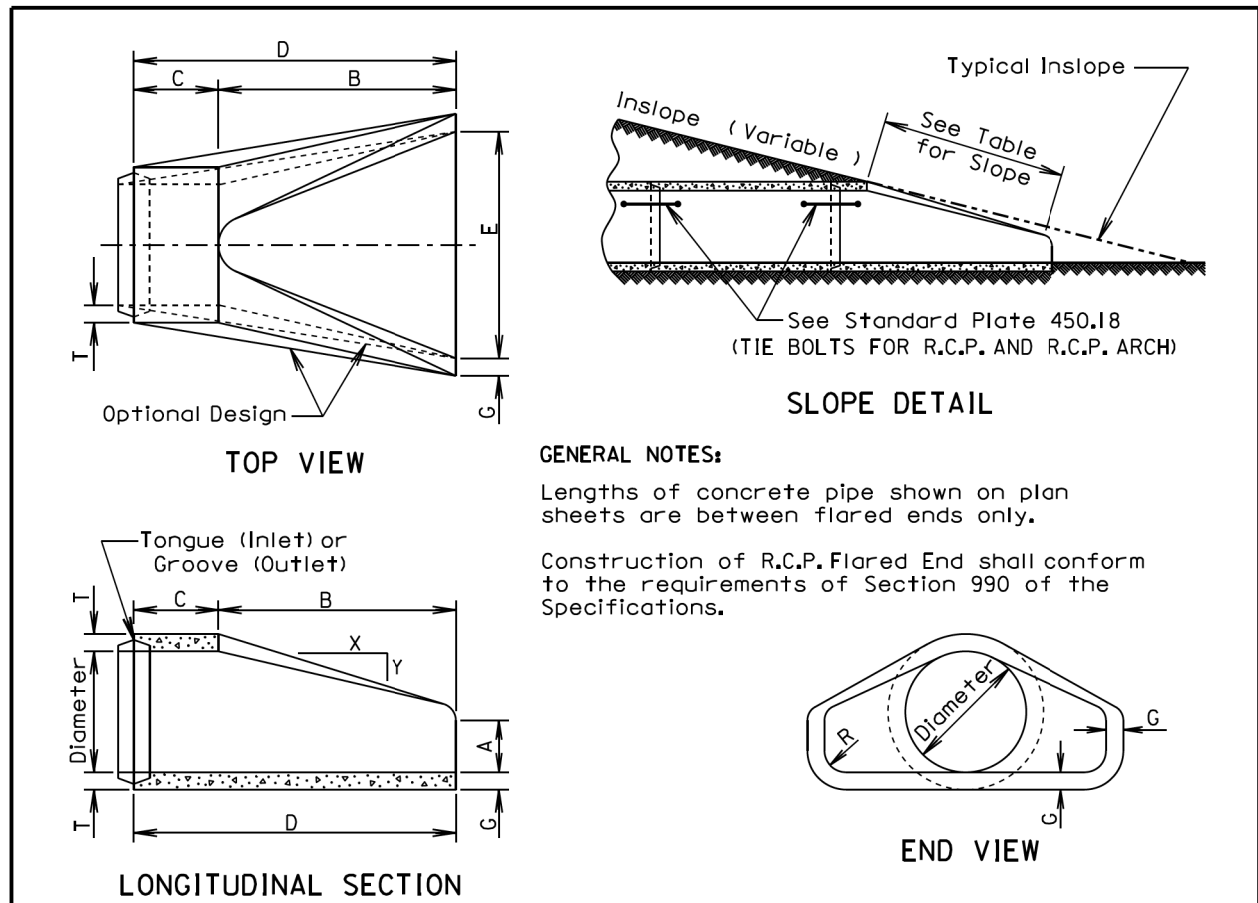


**TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, & CATTLE PASSES - LESS THAN 60" WIDTH**



**TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, & CATTLE PASSES - 60" OR GREATER WIDTH**



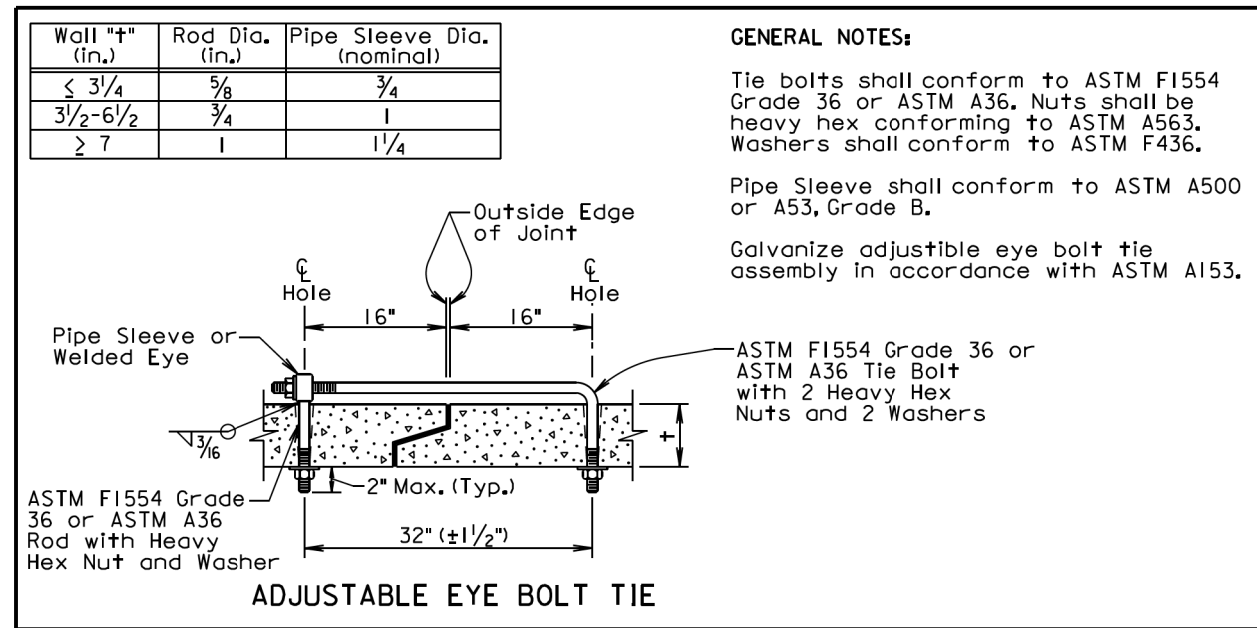


**GENERAL NOTES:**  
Lengths of concrete pipe shown on plan sheets are between flared ends only.  
Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.

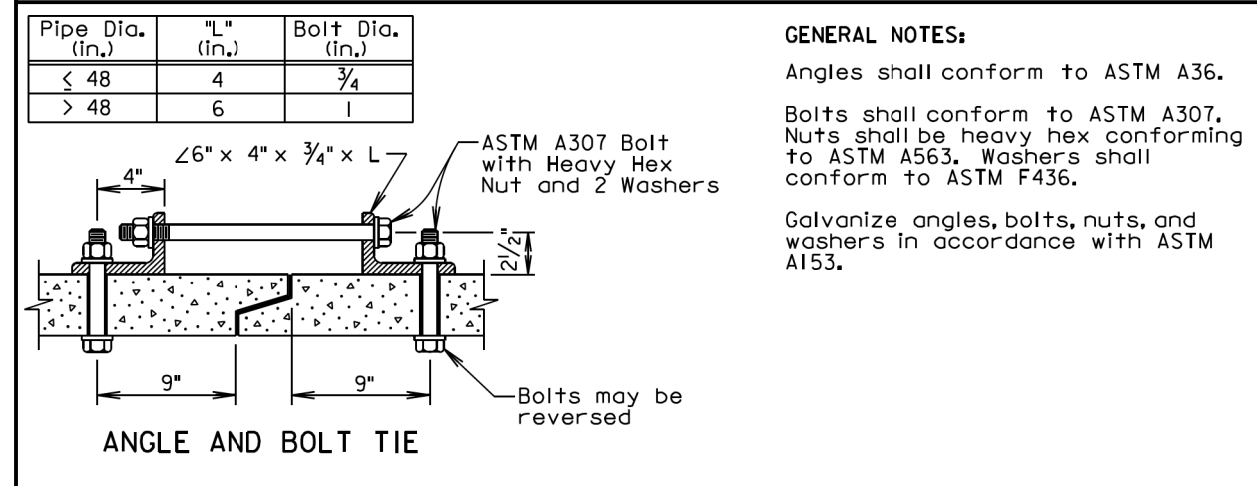
Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 1/8	72 7/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5:1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5:1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5:1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5:1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5:1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5:1	5	24	72	26	98	84	5	1 1/2
54	8240	2:1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9:1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7:1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8:1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8:1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6:1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5:1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

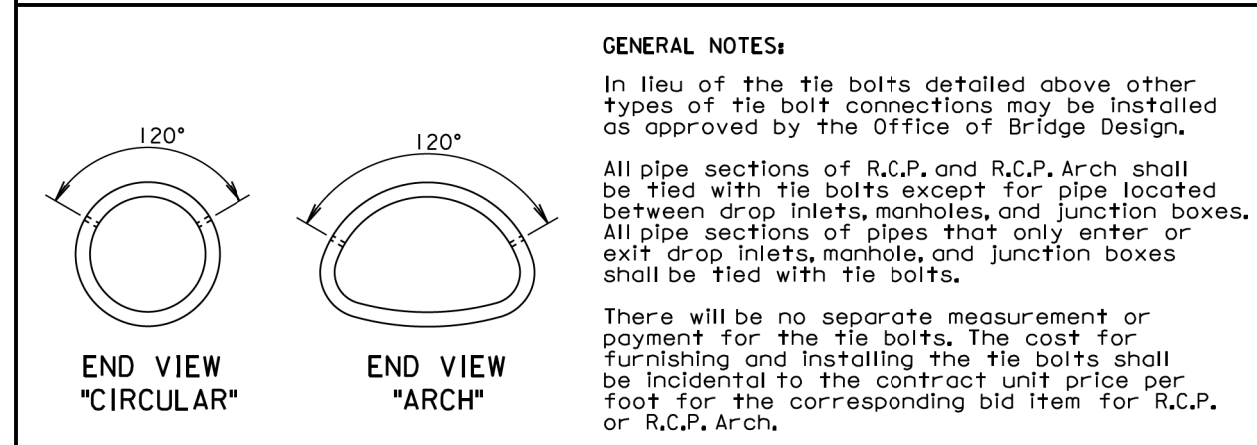
<b>S D D O T</b>	<b>R. C. P. FLARED ENDS</b>	PLATE NUMBER <b>450.10</b>
	Published Date: 3rd Qtr. 2017	Sheet 1 of 1



**GENERAL NOTES:**  
Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.  
Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.  
Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.



**GENERAL NOTES:**  
Angles shall conform to ASTM A36.  
Bolts shall conform to ASTM A307. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.  
Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



February 28, 2013

<b>S D D O T</b>	<b>TIE BOLTS FOR R.C.P. AND R.C.P. ARCH</b>	PLATE NUMBER <b>450.18</b>
	Published Date: 3rd Qtr. 2017	Sheet 1 of 1

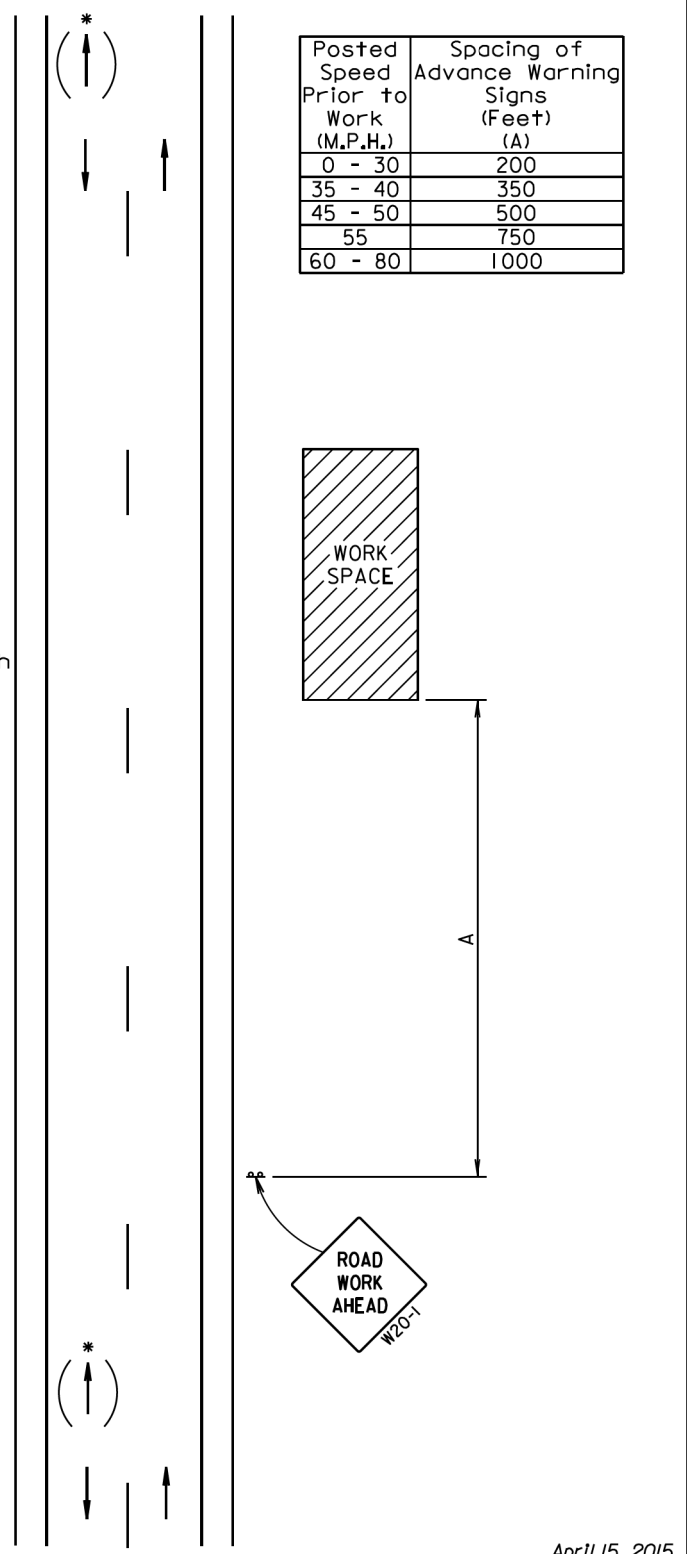
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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.

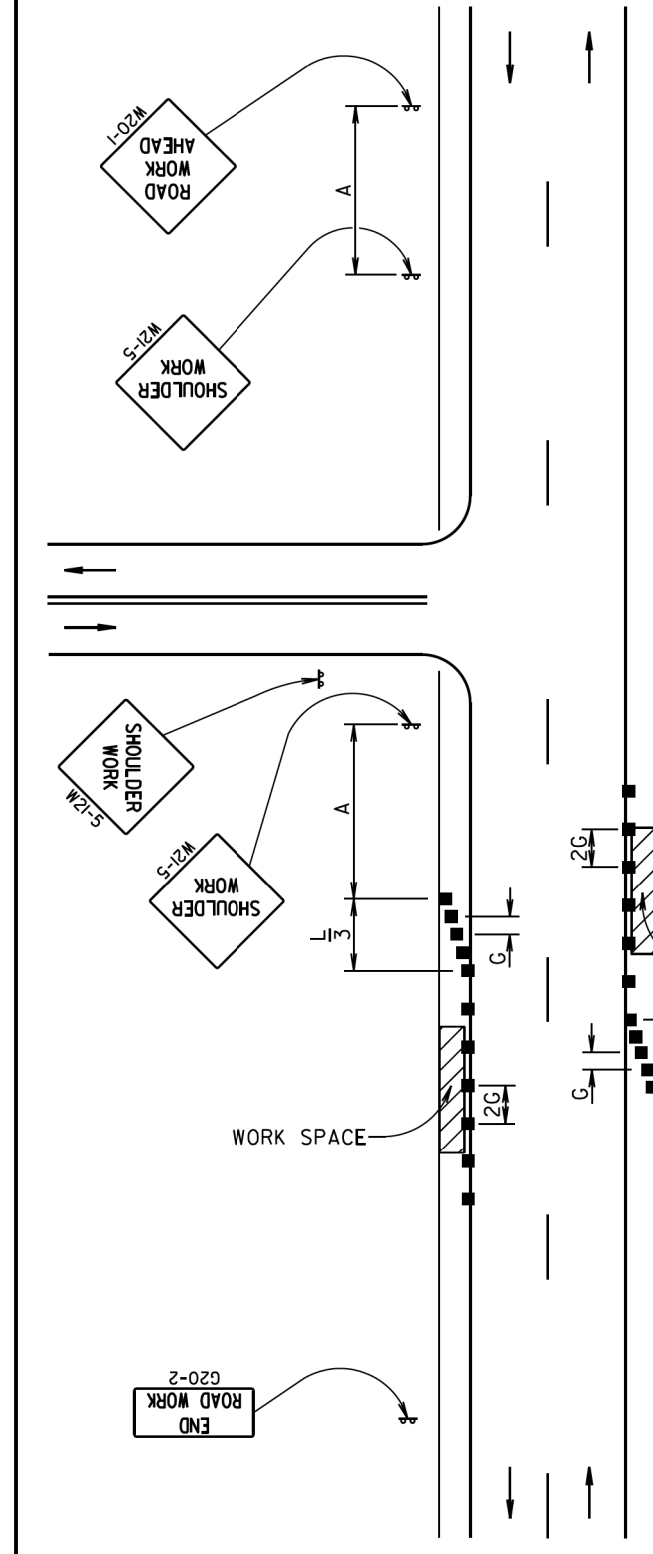
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

\* 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.



April 15, 2015



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	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

Channelizing Device

END ROAD WORK G20-2

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.

June 3, 2016

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.

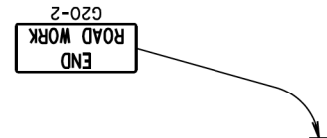
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall 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 shall 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.

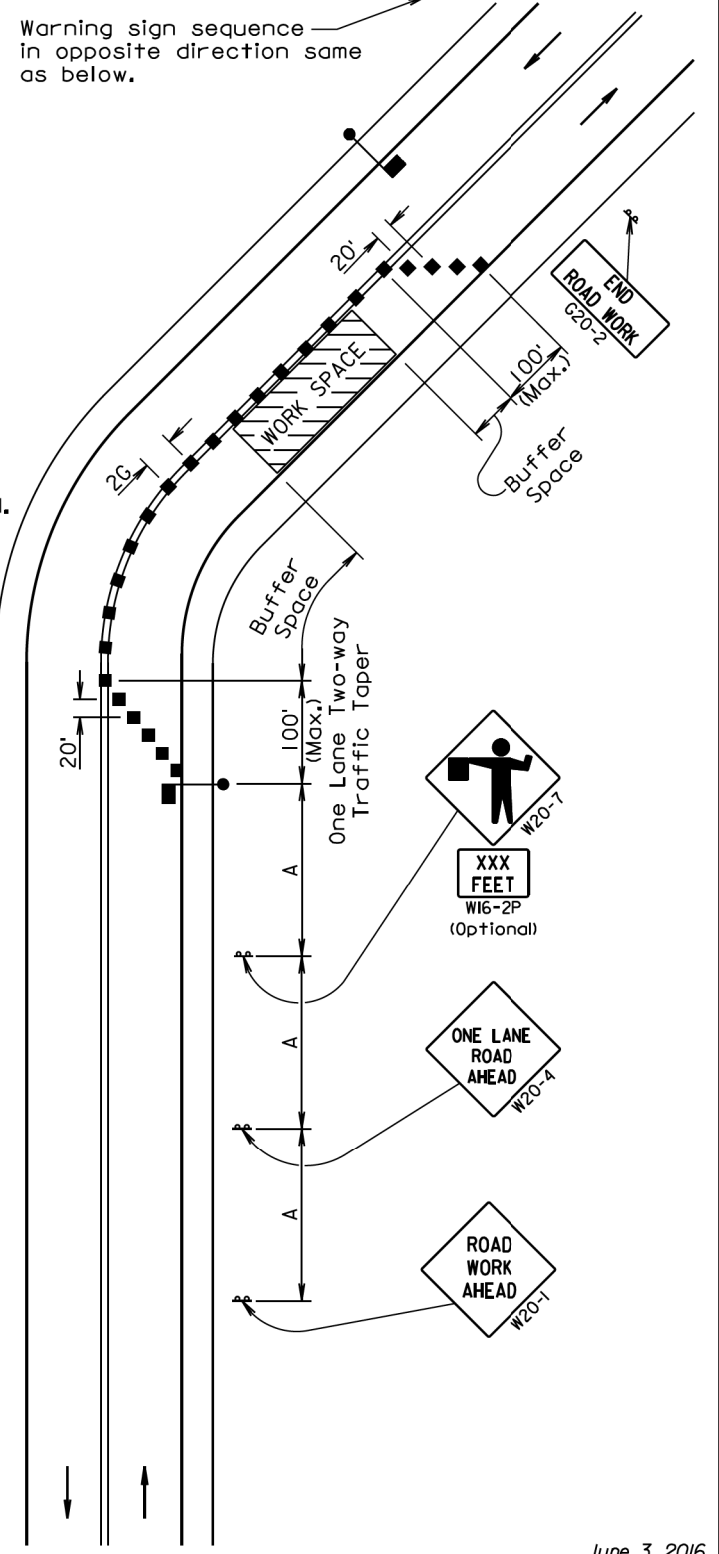


Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

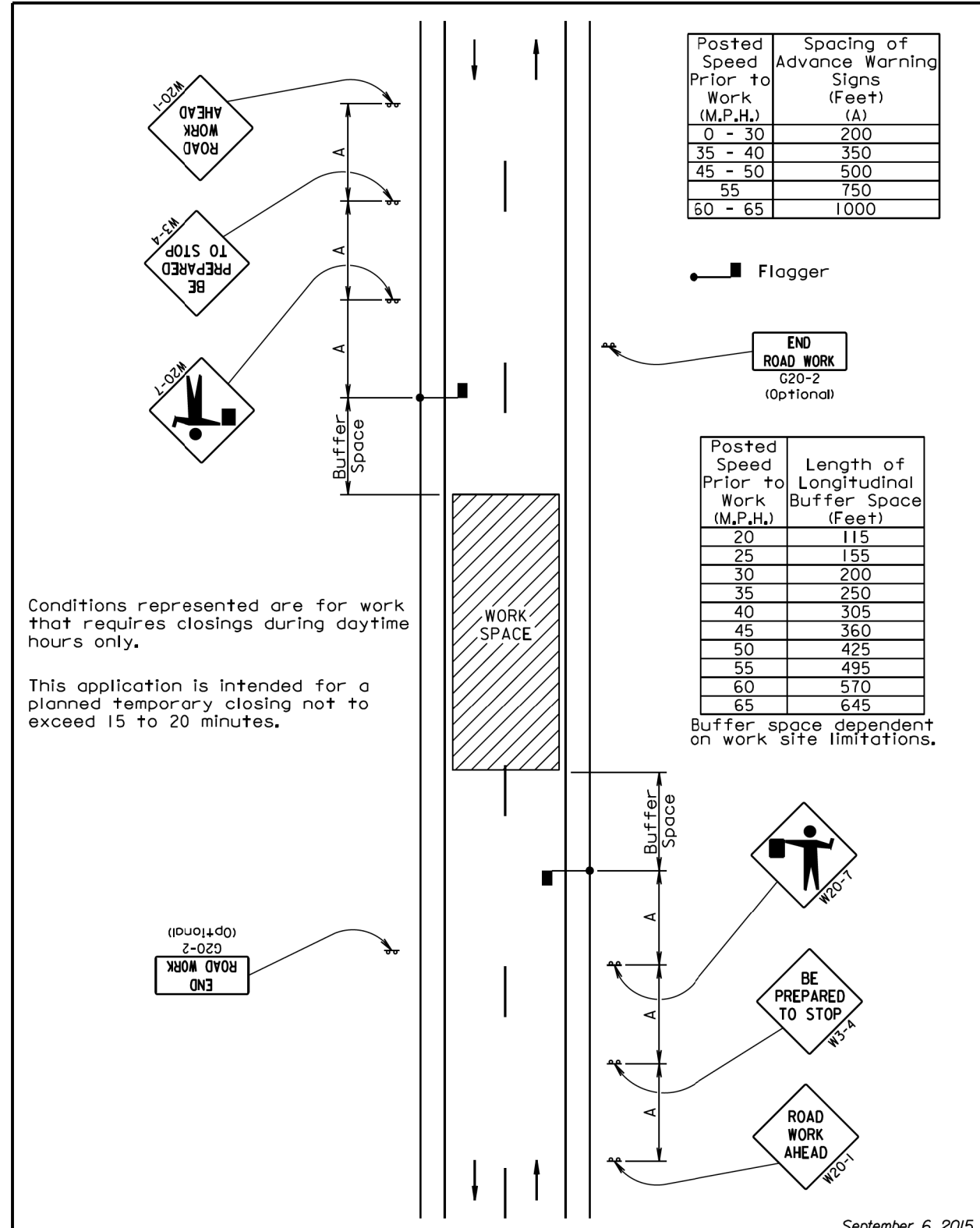
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

Warning sign sequence in opposite direction same as below.



June 3, 2016



Conditions represented are for work that requires closings during daytime hours only.

This application is intended for a planned temporary closing not to exceed 15 to 20 minutes.

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

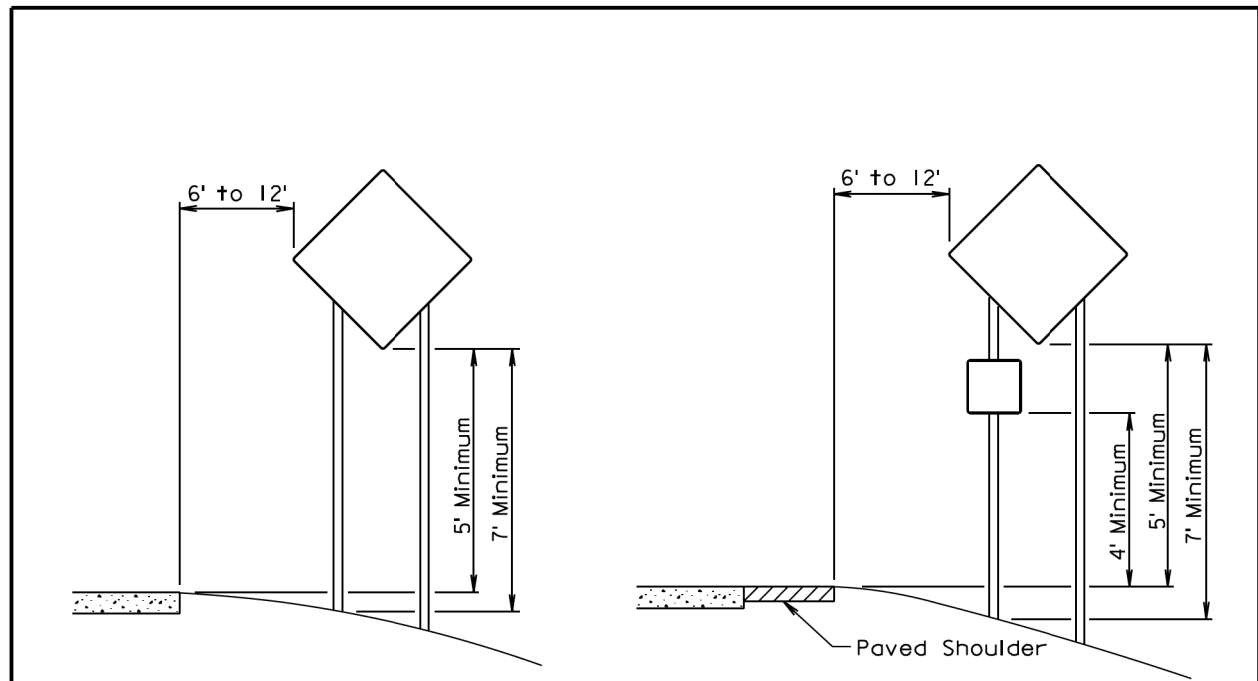
 Flagger

END ROAD WORK G20-2 (Optional)

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

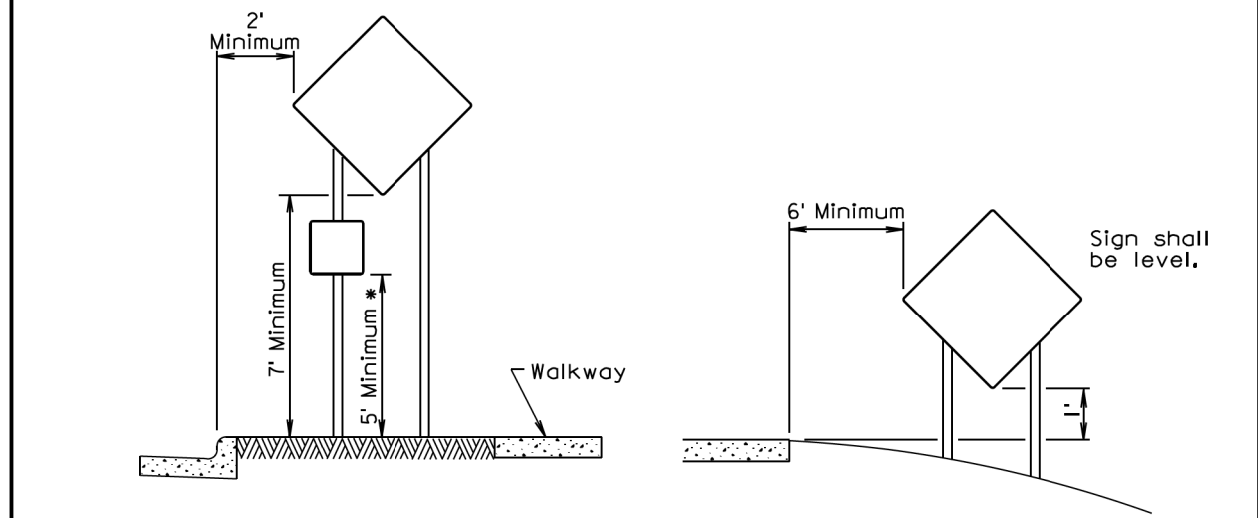
Buffer space dependent on work site limitations.

September 6, 2015



RURAL DISTRICT

RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



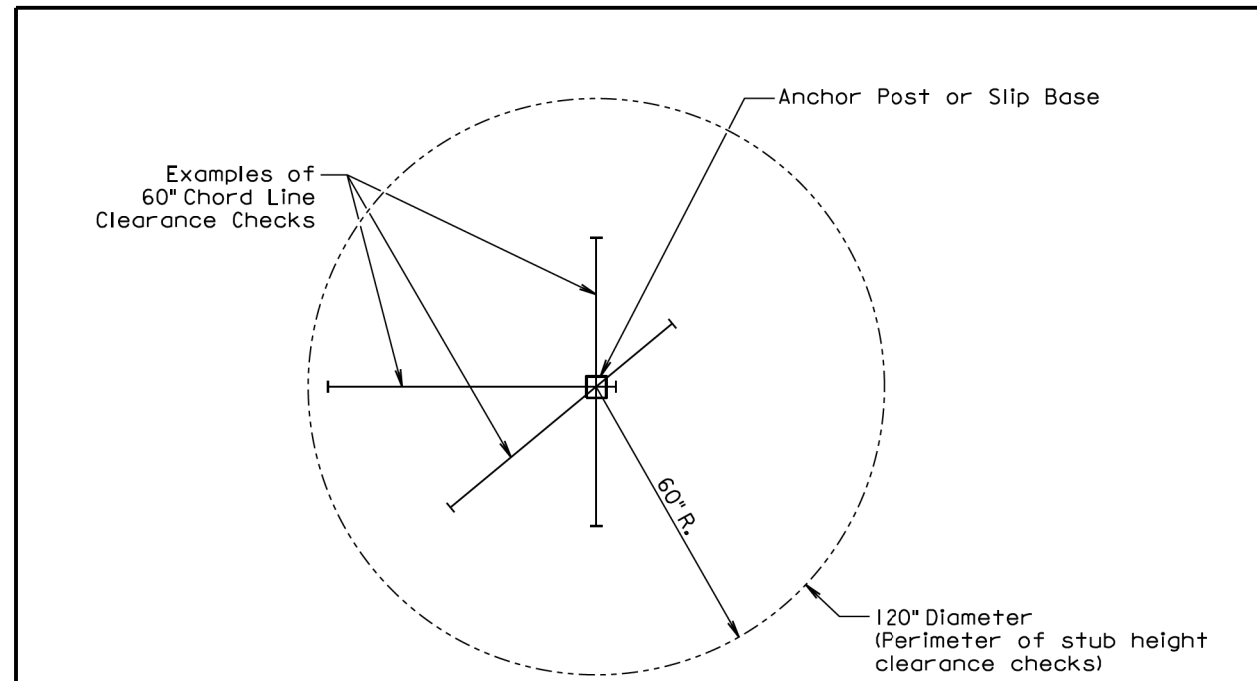
URBAN DISTRICT

RURAL DISTRICT  
3 DAY MAXIMUM

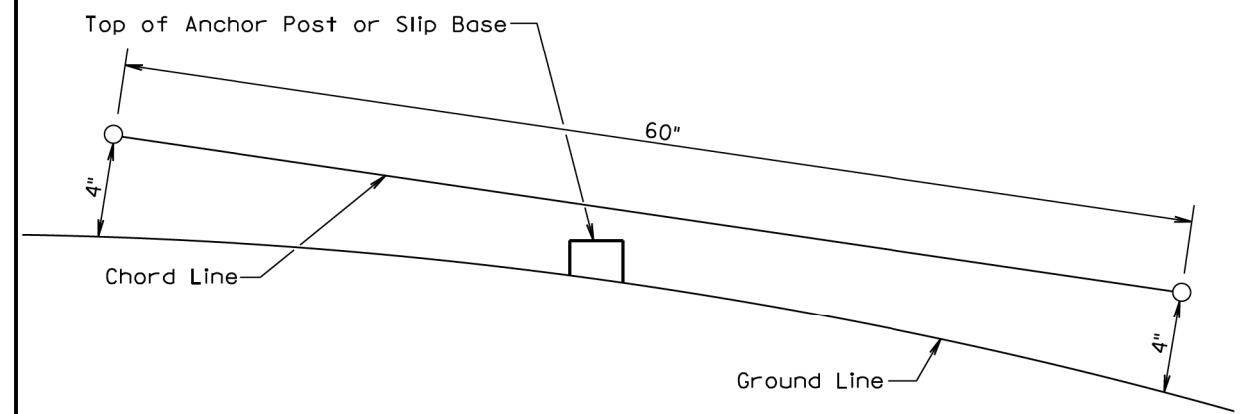
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

(Not applicable to regulatory signs)

September 22, 2014



PLAN VIEW  
(Examples of stub height clearance checks)



ELEVATION VIEW

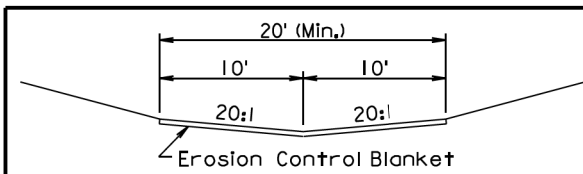
GENERAL NOTES:

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.

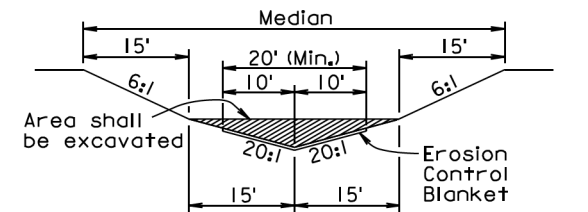
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

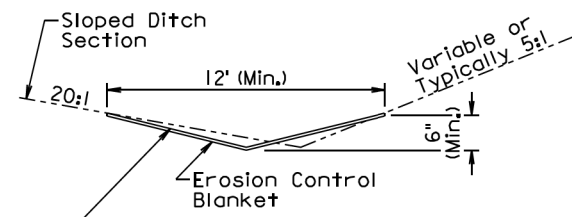


STANDARD DITCH SECTION



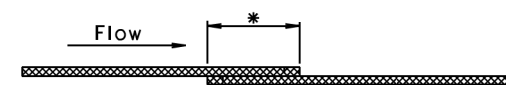
MEDIAN SECTION

The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.



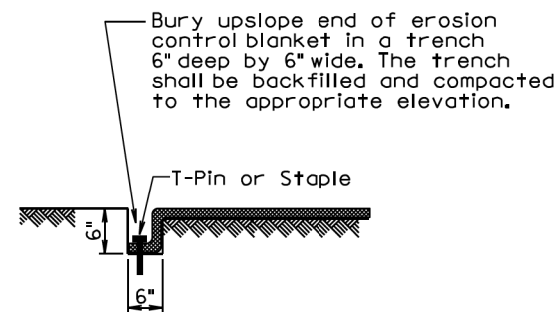
SLOPED DITCH SECTION

This ditch section shall be constructed when installing erosion control blanket.

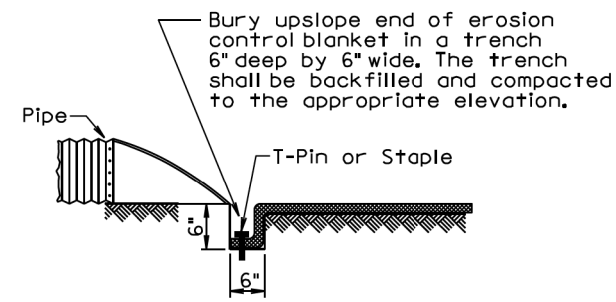


OVERLAP DETAIL

- \* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.
- \* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.



TRENCH DETAIL



PIPE END DETAIL

**GENERAL NOTES:**

Prior to placement of the erosion control blanket, the areas shall be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" wide by 6" deep. There shall be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

December 23, 2004

Published Date: 3rd Qtr. 2017	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1