

PLOT SCALE - 1:2000

PLOTTED FROM - FRR020608

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECTS
018-492 & 385-492
US HIGHWAYS 18 & 385
FALL RIVER COUNTY

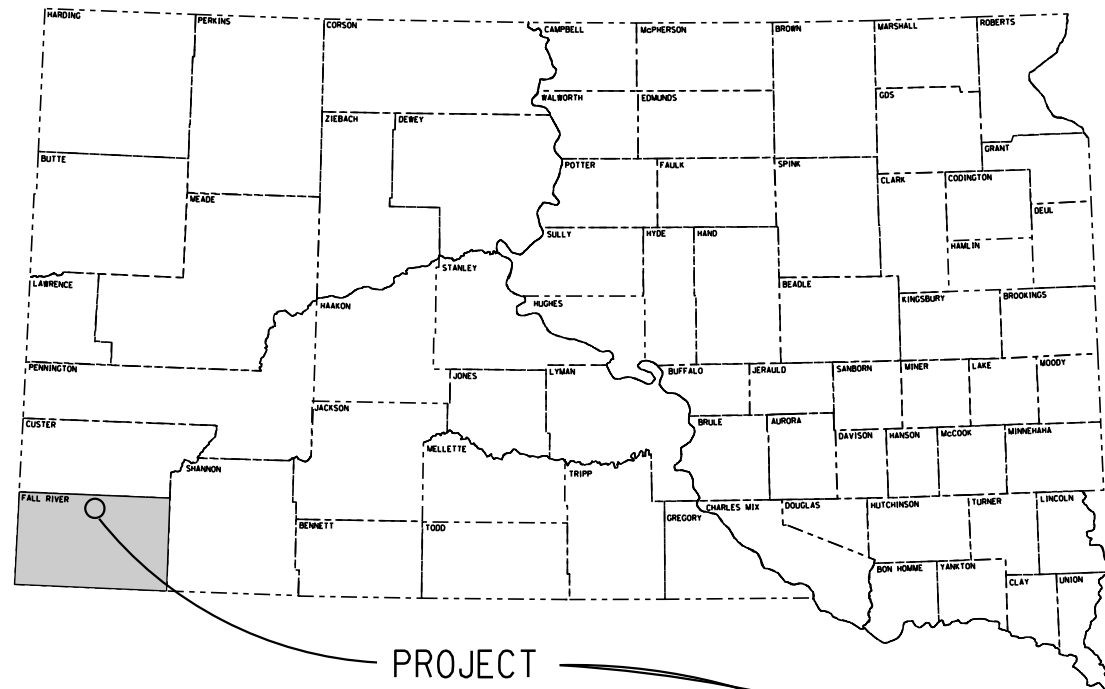
EROSION CONTROL
PCN i2je & i2jn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492 & 385-492	1	16

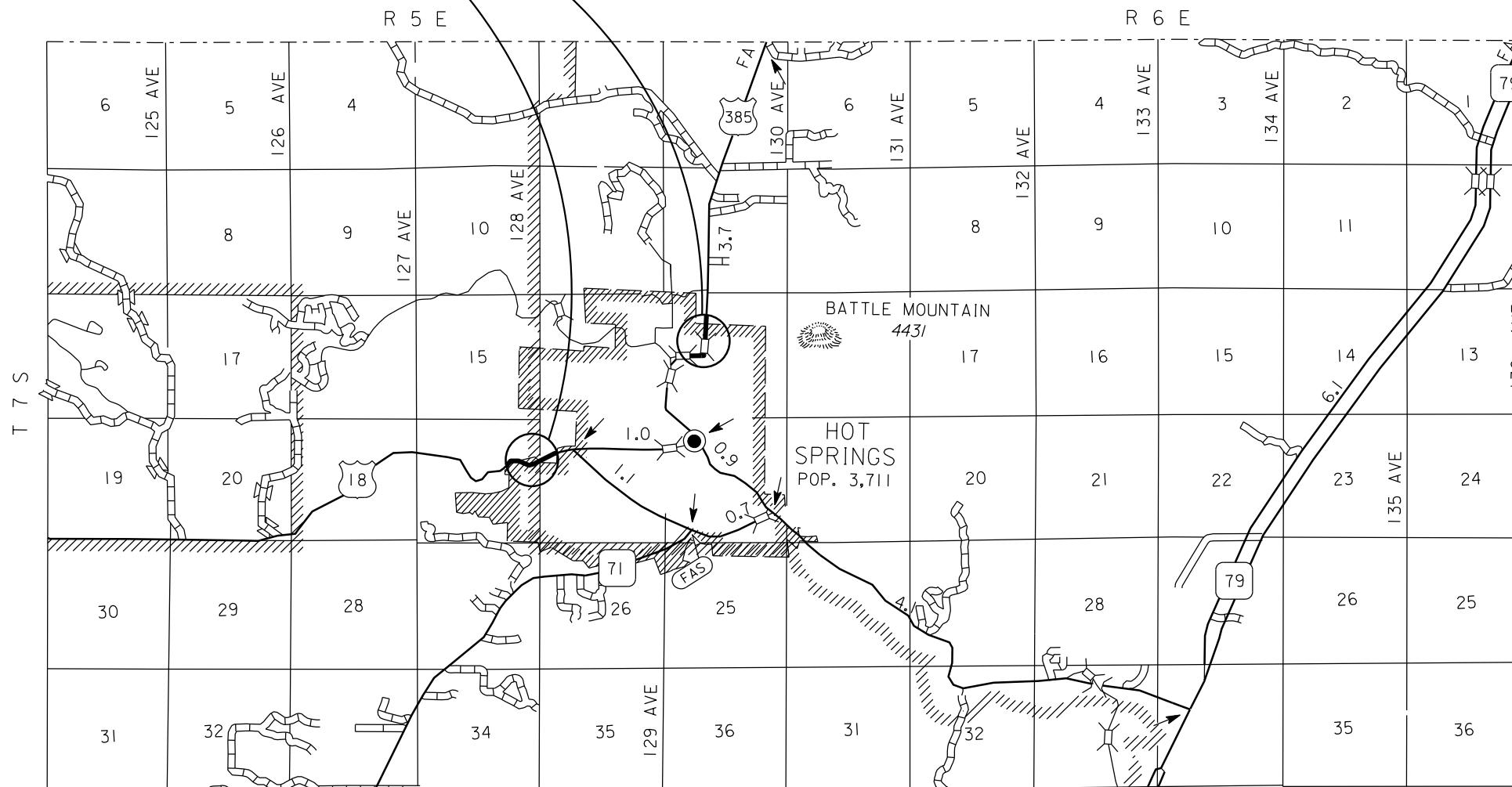
Plotting Date: 05/03/2012

INDEX OF SECTIONS

Sheet No.	1:	Title and Index
Sheets No.	2 - 4:	Estimate, Notes, and Tables
Sheet No.	5 - 6:	Plan Sheets
Sheet No.	7:	Gabion Basket Installation Details
Sheet No.	8:	Class C Riprap Installation Details
Sheets No.	9 - 16:	Standard Plates



PROJECT
US 18 - MRM 33.6
US 385 - MRM 37.075



DESIGN DESIGNATION

ADT (2011)	1757
ADT (2031)	2030
DHV	424
D	50%
T DHV	10.7
T ADT	23.6%
V	65 mph

STORM WATER PERMIT

No Storm Water Permit Required

PLOT NAME - 1

FILE - ..\\thead\\E.DGN

ESTIMATE OF QUANTITIES

PCN i2je

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E6220	Remove Double W Beam Guardrail for Reset	25.0	Ft
450E9001	Reset Pipe End Section	1	Each
630E5150	Reset Double W Beam Guardrail with Wood Posts	25.0	Ft
634E0010	Flagging	10	Hour
634E0100	Traffic Control	204	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each
700E0310	Class C Riprap	190.0	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	50	Ft
831E0110	Type B Drainage Fabric	128	SqYd

PCN i2jn

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	20	Hour
634E0100	Traffic Control	272	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
720E1015	Bank and Channel Protection Gabion	4.0	CuYd
734E0154	12" Diameter Erosion Control Wattle	10	Ft

SPECIFICATIONS

Standard Specifications for Roads & Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

NOTE

PCN i2je

This project location involves steep embankment working conditions. The Contractor shall visit the site prior to preparing and submitting a bid.

UTILITIES

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the contractor shall contact the project engineer to determine modifications that will be necessary to avoid utility impacts

SEQUENCE OF OPERATIONS - GENERAL

- The intent of the plan sequence of operations is to have the least amount of impact on the traveling public and adjacent landowners. Requests to deviate from the sequence of operations shall 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 shall be submitted for review a minimum of two week prior to potential implementation.

SEQUENCE OF OPERATIONS

PCN i2je, US 18

- Set up traffic control.
- Remove double w-beam guardrail for reset.
- Place drainage fabric and riprap.
- Reset CMP end terminal
- Reset double w-beam guardrail with wood posts
- Remove traffic control.

PCN i2jn, US 385

- Set up traffic control.
- Place bank and channel protection gabions.
- Place erosion control.
- Remove traffic control.

A. WATER QUALITY

Storm Water

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.

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC 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 no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway 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 Engineer.

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

- Construction/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/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State 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 State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
- 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.

CLEARING

Before clearing activities begin, the Contractor shall contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor's expense.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492 & 385-492	2	16

RESET CMP PIPE END TERMINAL

PCN i2je

The in-place CMP end terminal has detached from the CMP culvert. Following the placement of Class C Riprap the end section shall be reset.

REMOVE AND RESET DOUBLE W-BEAM GUARDRAIL

PCN i2je

To facilitate the placement of fabric and Class C Riprap, 25' of double w-beam guardrail and the associated posts shall be removed and reset. Additional double w-beam guardrail and posts may be reset at the discretion of the Engineer.

GENERAL MAINTENANCE OF TRAFFIC

- The Contractor shall at all times, keep the portion of the project being used by the traveling public in a condition that will adequately and safely accommodate traffic.
- Storage of vehicles, materials, and equipment shall be not closer than 30' from the edge of the driving lane. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. 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.
- The Contractor shall coordinate his operations such that during non-working hours the roadway shall be open to normal flow of traffic.
- Work activities shall only be during daylight hours. Daylight hours are considered to be ½ hour before sunrise until ½ hour after sunset.

TRAFFIC CONTROL

- Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. The cost of this work shall be incidental to the various contract bid items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.
- Traffic control shall be in accordance with the MUTCD 2009 Edition, the Standard Specifications and the layouts contained in these plans.
- The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
- Non-applicable signing will be covered or removed and reset during periods of in-activity. All costs to do this work shall be incidental to Traffic Control, Miscellaneous.

TRAFFIC CONTROL (CONTINUED)

- Construction signing that remains in the same location for more than 3 days shall be mounted on fixed supports, unless approved by the Engineer.
- All Contractors' vehicles or equipment entering or leaving a closed work area shall display a flashing amber light visible in all directions at a minimum distance of ¼ mile.
- The Contractor or designated traffic control subcontractor shall make night (after dark) inspections at the initial set up of traffic control and every week thereafter to ensure the adequacy, legibility and reflectivity of each sign and device. A written summary of each inspection shall be given to the Engineer within 24 hours after completion of the inspection. The cost for the nighttime inspection work shall be incidental to the related contract items.
- The Contractor shall be required to have a person available 24 hour/day, 7 days/week to maintain traffic control devices. The name and cellular telephone number of this individual shall be given to the Engineer at the preconstruction meeting.

INVENTORY OF TRAFFIC CONTROL DEVICES

PCN i2je

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	1	34	34
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	2	34	68
W20-5	48" x 48"	LT. OR RT. LANE CLOSED ##### FT. OR AHEAD	1	34	34
W21-5	48" x 48"	SHOULDER WORK	1	34	34
TOTAL UNITS			204		

PCN i2jn

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD ##### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W21-5	48" x 48"	SHOULDER WORK	1	34	34
TOTAL UNITS			272		

CLASS C RIPRAP

PCN i2je, US 18

The erosional site to be filled is on the left side of the road at MRM 33.6.

Dirt from shaping for the Class C Riprap shall be used to fill the bottom of the erosional area as shown in the details. Placement of this dirt shall be incidental to the contract unit price per CuYd of Class C Riprap. Any excess dirt generated by shaping for the placement of the Class C Riprap shall be considered waste material.

The erosional area below the CMP culvert shall be lined with Type B Drainage Fabric and the filled with Type C Riprap as shown on the Riprap Installation Details sheet.

The fabric shall conform to Section 831 of the Standard Specifications.

It is estimated that 190 tons of Class C Riprap and 128 SqYd of Type B Drainage Fabric will be required to fill in the erosional area.

A factor of 1.4 Tons/CuYd was used to convert CuYds of Class C Riprap to Tons.

BANK AND CHANNEL PROTECTION GABIONS

PCN i2jn, US 385

The erosional site to be filled is on the left side of the road at MRM 37.075.

Bank and channel gabions shall be placed adjacent to the retaining wall as shown on the plan sheet and the Gabion Basket Installation Details.

Four Size D Bank and Channel Protection Gabions will be required.

Type B Drainage Fabric shall be placed under and around the edges of the Bank and Channel Protection Gabions. Bank and Channel Protection Gabion installation will require approximately 7.5 SqYd of Type B Drainage Fabric

The fabric shall conform to Section 831 of the Standard Specifications.

All costs for installation of gabions including Type B Drainage Fabric shall be incidental to the contract unit price per CuYd for Bank and Channel Protection Gabion

EROSION CONTROL

PCN i2je

The locations to be seeded, fertilized and mulched are comprised of any areas damaged during construction.

All permanent seed shall be planted in the topsoil at a depth of ¼” to ½”.

All seed broadcast must be raked or dragged in (incorporated) within the top ¼” to ½” of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 SqFt)
Western Wheatgrass	Flintlock, Rodan, Rosana	1.3
Green Needlegrass	Lodorm	0.8
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	0.6
Blue Grama	Bad River, Willis	0.4
Oats or Spring Wheat: April through July; Winter Wheat: August through November		1.9
Total:		5.0

A commercial fertilizer with a minimum guaranteed analysis of 13-13-13, 18-46-0, 11-52-0, or an approved alternate fertilizer sold for use as a lawn starter fertilizer shall be applied to all areas designated for permanent seeding. The application rate of fertilizer shall be 3 pounds per 1000 SqFt.

Fiber mulch shall be applied in a separate operation following permanent seeding.

An additional 2% by weight of tackifier shall be added to the fiber mulch product selected from the list below. If the product selected has guar gum tackifier included, then the additional 2% of tackifier shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier shall be synthetic.

Fiber mulch shall be applied at the rate of 2500 pounds per acre.

The Contractor shall allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials shall be incidental to the contract lump sum price for Erosion Control.

EROSION CONTROL (CONTINUED)

The fiber mulch used on this project shall be one from the list below:

Product	Manufacturer
Mat-Fiber Plus	Mat, Inc. Floodwood, MN Phone: 1-888-477-3028 www.matinc.biz
Conwed Hydro Mulch 2000	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 www.conwedfibers.com
EcoFibre Plus Tackifier	Profile Products LLC Buffalo Grove, IL Phone: 1-800-366-1180 www.profile-eco.com
Terra Wood with Tacking Agent 3	Profile Products LLC Buffalo Grove, IL Phone: 1-800-726-6371 www.terra-mulch.com
Bindex Wood WT	American Excelsior Co. Arlington, TX Phone: 1-800-777-7645 www.curlex.com
Second Nature Wood Fiber Mulch Plus	Central Fiber LLC Canton, OH Phone: 1-888-452-2630 www.centalfiber.com

Approximately 2500 SqFt will require permanent seeding. All costs associated with permanent seeding, fertilizing, and fiber mulching shall be incidental to the contract lump sum for price for Erosion Control.

It is the Contractor’s responsibility to verify estimated acreage. No adjustment in quantity will be allowed unless additional work is ordered by the Engineer.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations determined by the Engineer during construction. Refer to Std. Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

PCN i2je

A quantity of 50 feet of 12” Diameter Erosion Control Wattles has been placed in the Estimate of Quantities for temporary erosion and sediment control on the inslope to be placed as directed by the Engineer.

PCN i2jn

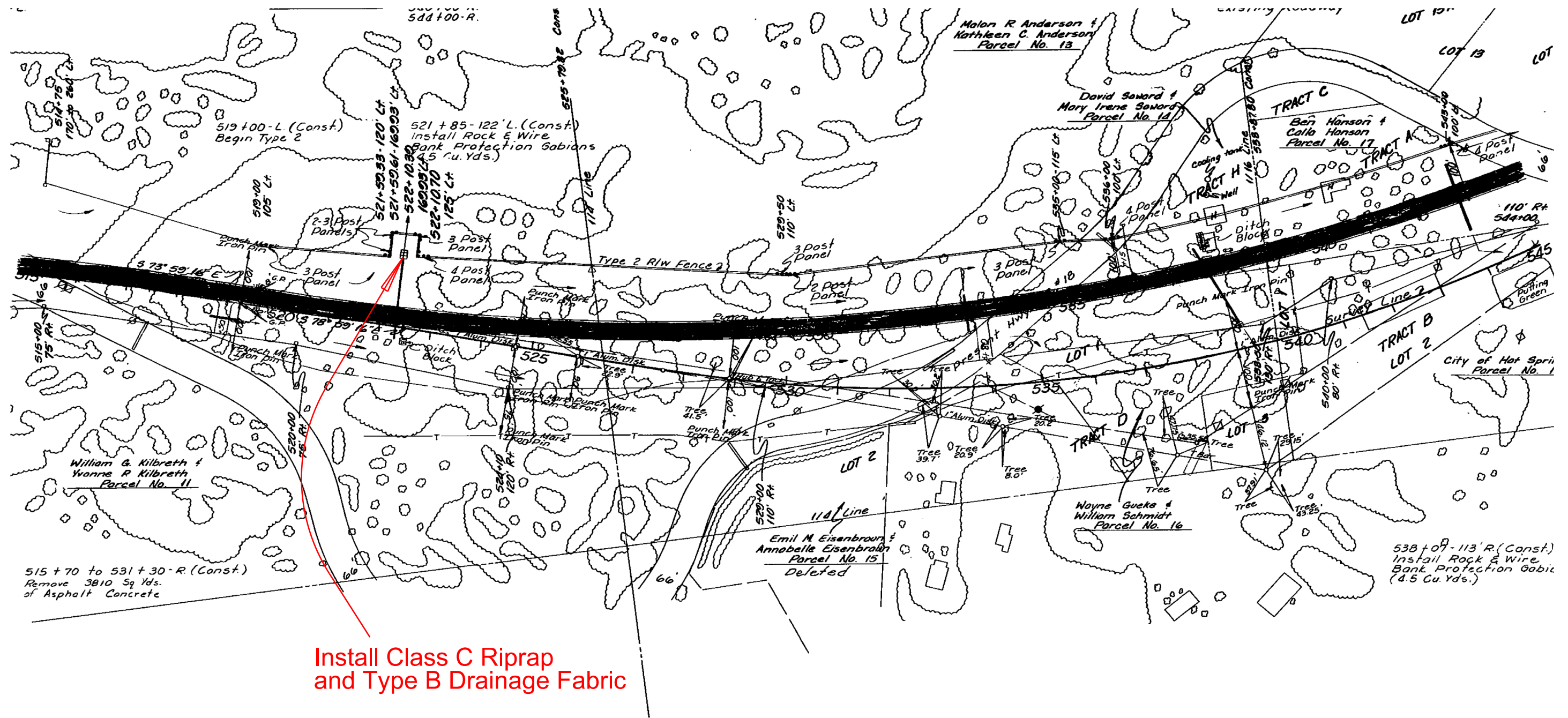
A quantity of 10 feet of 12” Diameter Erosion Control Wattles has been placed in the Estimate of Quantities for temporary erosion and sediment control at the base of the Bank and Channel Protection Gabions.

The erosion control wattle provided shall be from the list shown below:

Product	Manufacturer
Curlex Sediment Log	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 www.amerexcel.com
Aspen Excelsior Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 www.westernexcelsior.com
Amber Waves Straw Wattles	Limpert Environmental Litchfield, MN Phone: 1-320-693-2565 www.limpertenvironmental.com
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexcelsior.com
Patriot Wood Fiber Logs and Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-480-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492 & 385-492	4	16

Plotted From - trrc12608

Plotting Date: 04/26/2012

GABION BASKET INSTALLATION PLAN SHEET

PCN i2jn - US HIGHWAY 385 - MRM 37.075 L

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492 & 385-492	6	16

Plotting Date: 04/26/2012



SCALE: 1"=20'

L = 459.92'
R = 2,864.789'

CONSTRUCTION LINE
PC 6+56.57
PI 9+73.75
PT 12+90.85
 $\Delta = 6^\circ 20' 12.6" \text{ L}$
D = 1000'
T = 317.16'
L = 632.48'
R = 571.115'

5+75.45 LT TO 6+75.45 LT
INSTALL TYPE 'D' CURB INLET
(CENTER OF BOX)
5+70.00 LT TO 6+75.45 LT
INSTALL 18" X 24" R.C. PIPE (CL 2)
(BETWEEN TYPE 'D' CURB INLETS)

1+00.00 LT TO 1+00.00 LT
INSTALL TYPE 'D' CURB INLET
(CENTER OF BOX)

8+75.45 LT TO 10+140.21 LT
INSTALL 18" X 24" R.C. PIPE (CL 2)
(BETWEEN TYPE 'D' CURB INLETS)

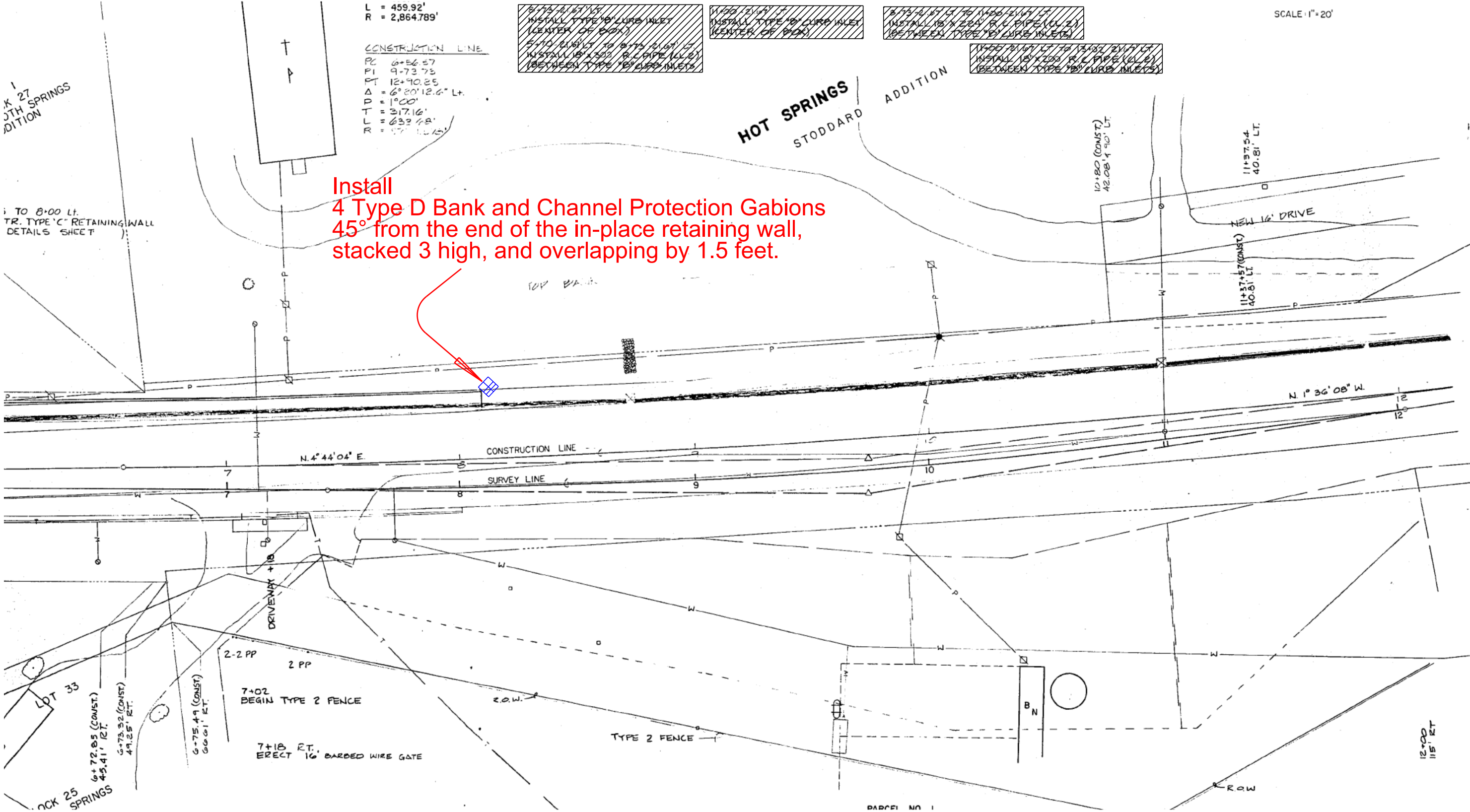
11+00.00 LT TO 12+140.21 LT
INSTALL 18" X 24" R.C. PIPE (CL 2)
(BETWEEN TYPE 'D' CURB INLETS)

HOT SPRINGS
STODDARD ADDITION

Install
4 Type D Bank and Channel Protection Gabions
45° from the end of the in-place retaining wall,
stacked 3 high, and overlapping by 1.5 feet.

LOT 27
HOT SPRINGS
ADDITION

TO 8+00 LT.
TR. TYPE 'C' RETAINING WALL
DETAILS SHEET



Plot Scale: 1"=20.00'

Plotted From: Irc:12608

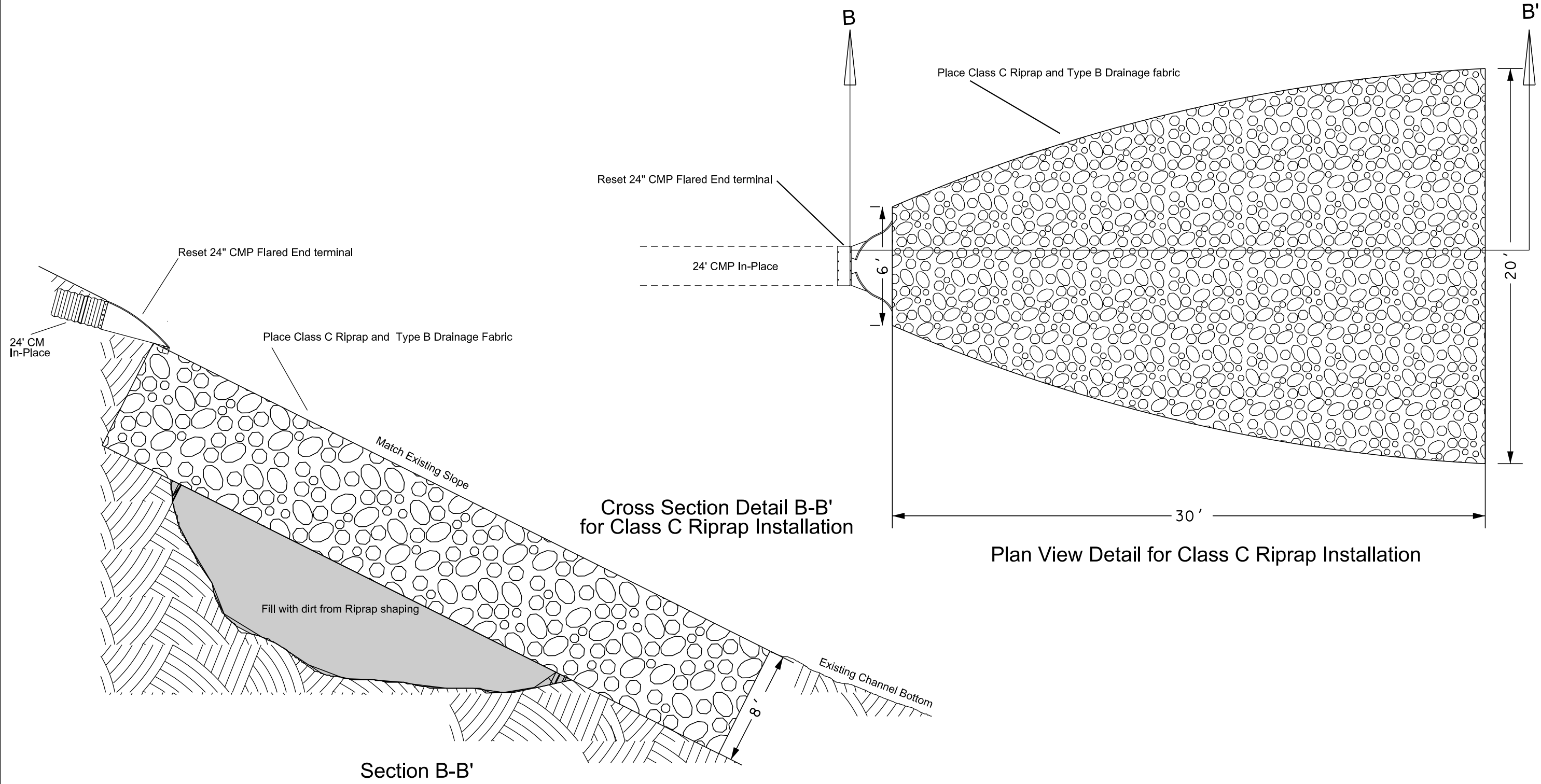
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RIPRAP INSTALLATION DETAILS

PCN i2j e - US HIGHWAY 18 - MRM 33.6 L

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492 & 385-492	7	16

Plotting Date: 04/26/2012



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trrc12608

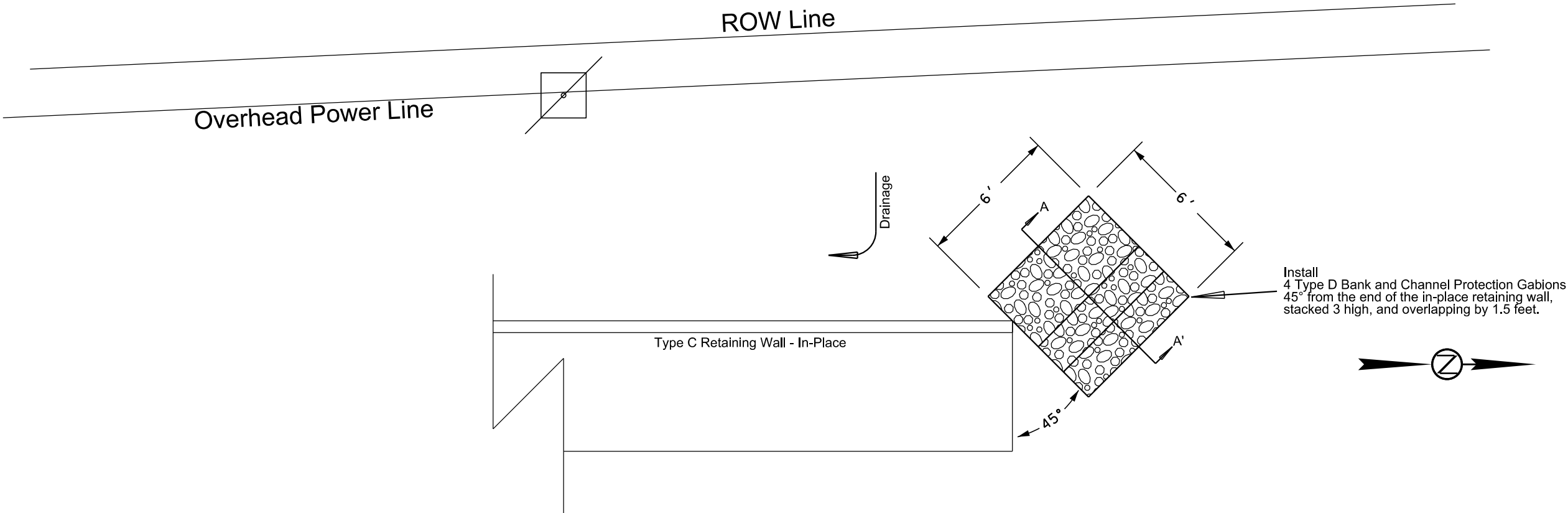
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GABION BASKET INSTALLATION DETAILS

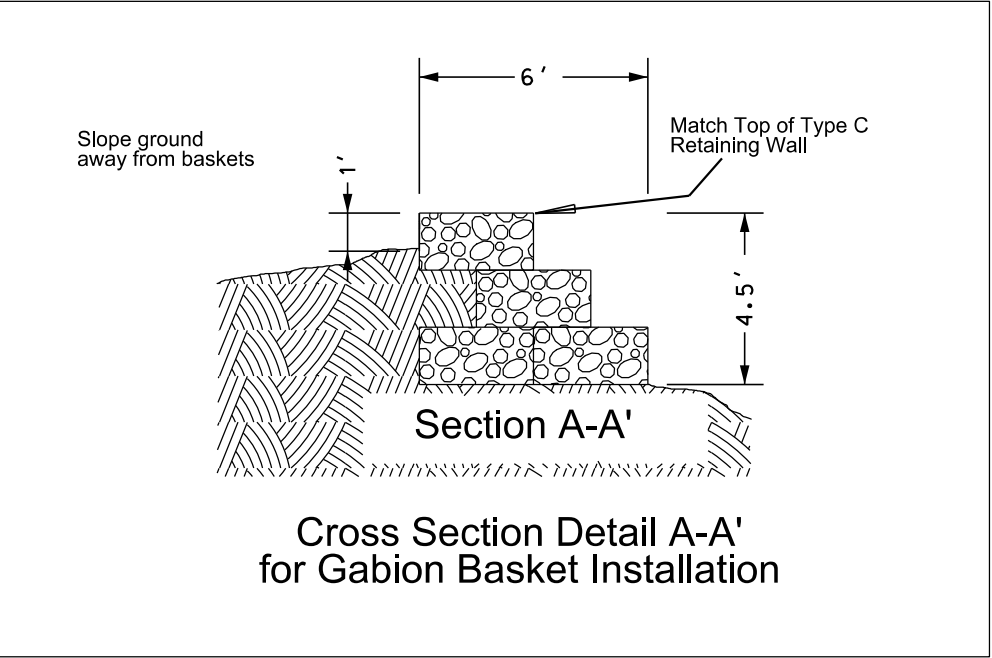
PCN i2j n - US HIGHWAY 385 - MRM 37.075 L

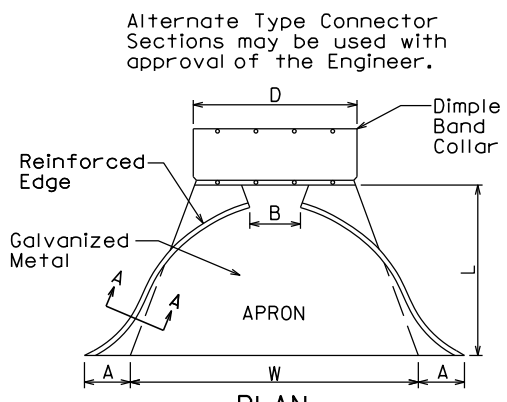
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492 & 385-492	8	16

Plotting Date: 04/26/2012

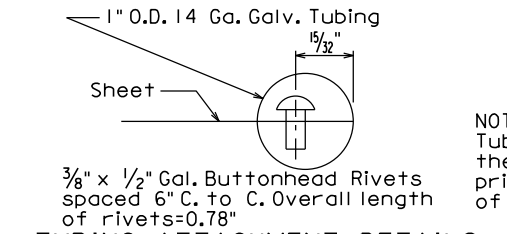
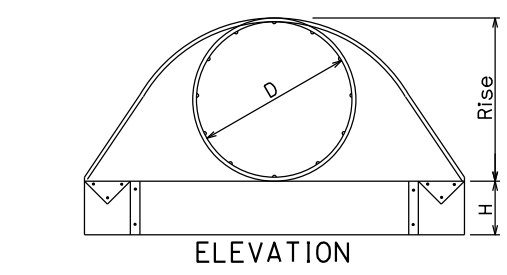


Plan View Detail for Gabion Basket Installation

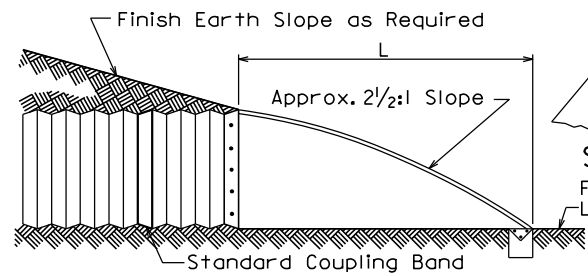




Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2 1/2:1	1 Pc.
15	16	7	8	6	26	30	2 1/2:1	1 Pc.
18	16	8	10	6	31	36	2 1/2:1	1 Pc.
21	16	9	12	6	36	42	2 1/2:1	1 Pc.
24	16	10	13	6	41	48	2 1/2:1	1 Pc.
30	14	12	16	8	46	60	2 1/2:1	1 Pc.
36	14	14	19	9	51	72	2 1/2:1	2 Pc.
42	12	16	22	11	60	84	2 1/2:1	2 Pc.
48	12	18	27	12	69	90	2 1/4:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1 3/4:1	3 Pc.
66	12	18	36	12	87	120	1 1/2:1	3 Pc.
72	12	18	39	12	87	126	1 1/3:1	3 Pc.
78	12	18	42	12	87	132	1 1/4:1	3 Pc.
84	12	18	45	12	87	138	1 1/6:1	3 Pc.



TUBING ATTACHMENT DETAILS
SECTION A-A



TYPICAL CROSS-SECTION

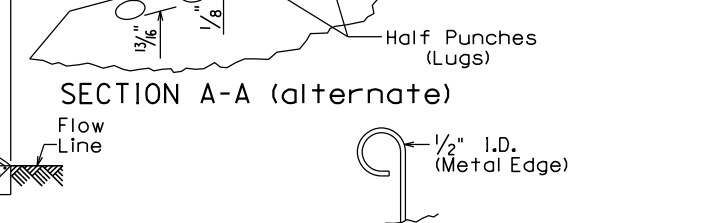
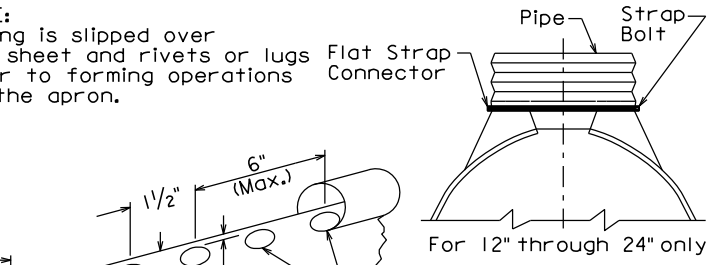
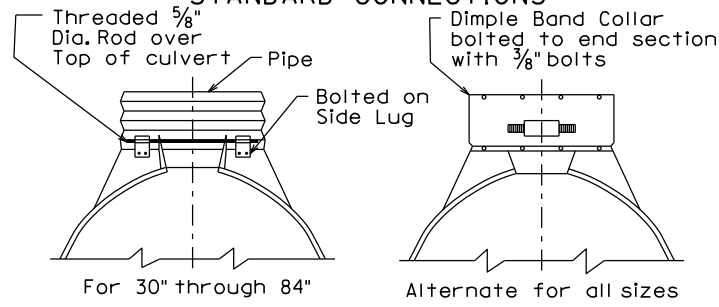
GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

STANDARD CONNECTIONS



SECTION A-A (alternate)

SECTION A-A (alternate)

Published Date: 1st Qtr. 2012

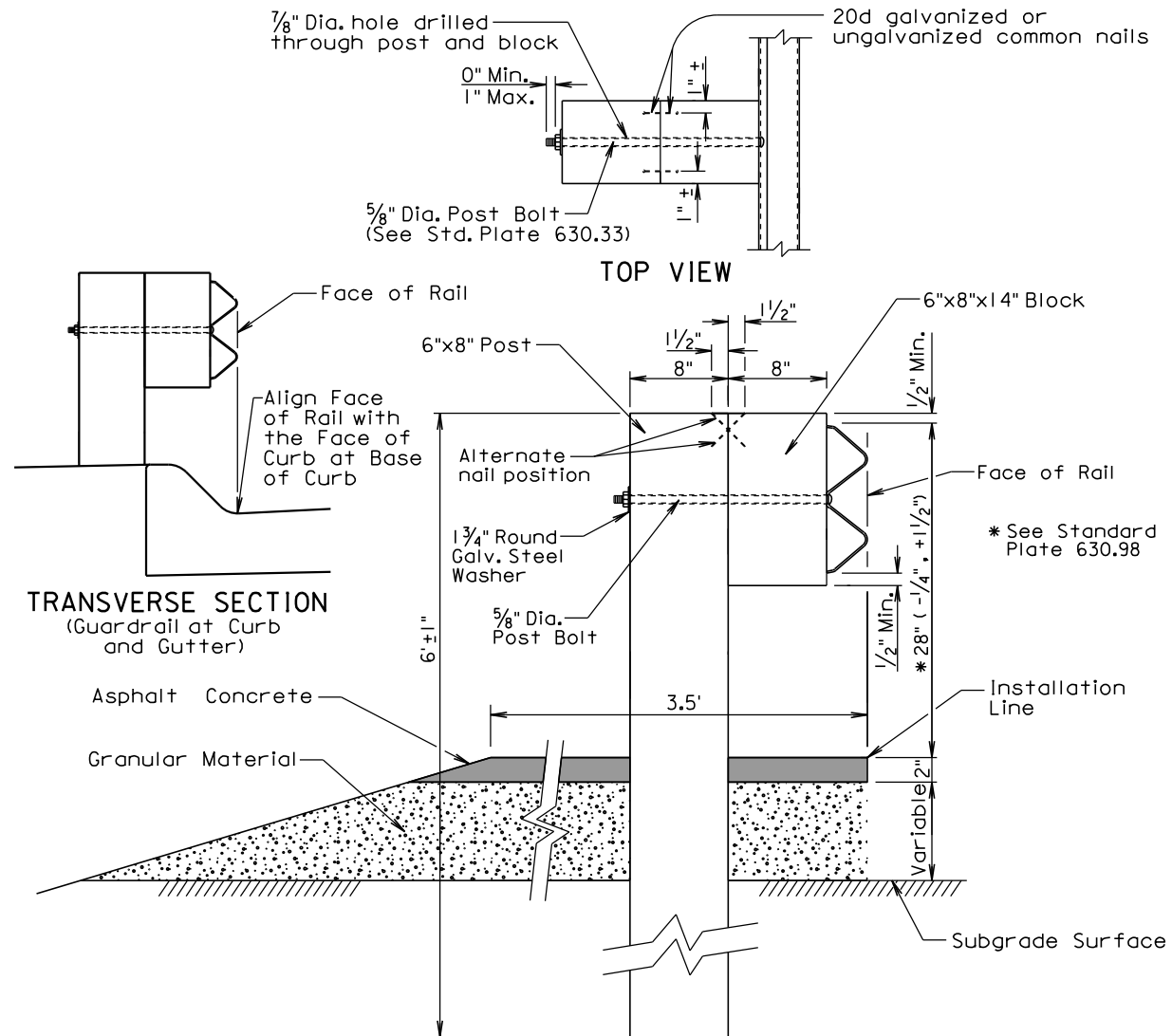
S
D
D
O
T

C.M.P. FLARED ENDS

PLATE NUMBER
450.35

Sheet 1 of 1

March 31, 2000



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

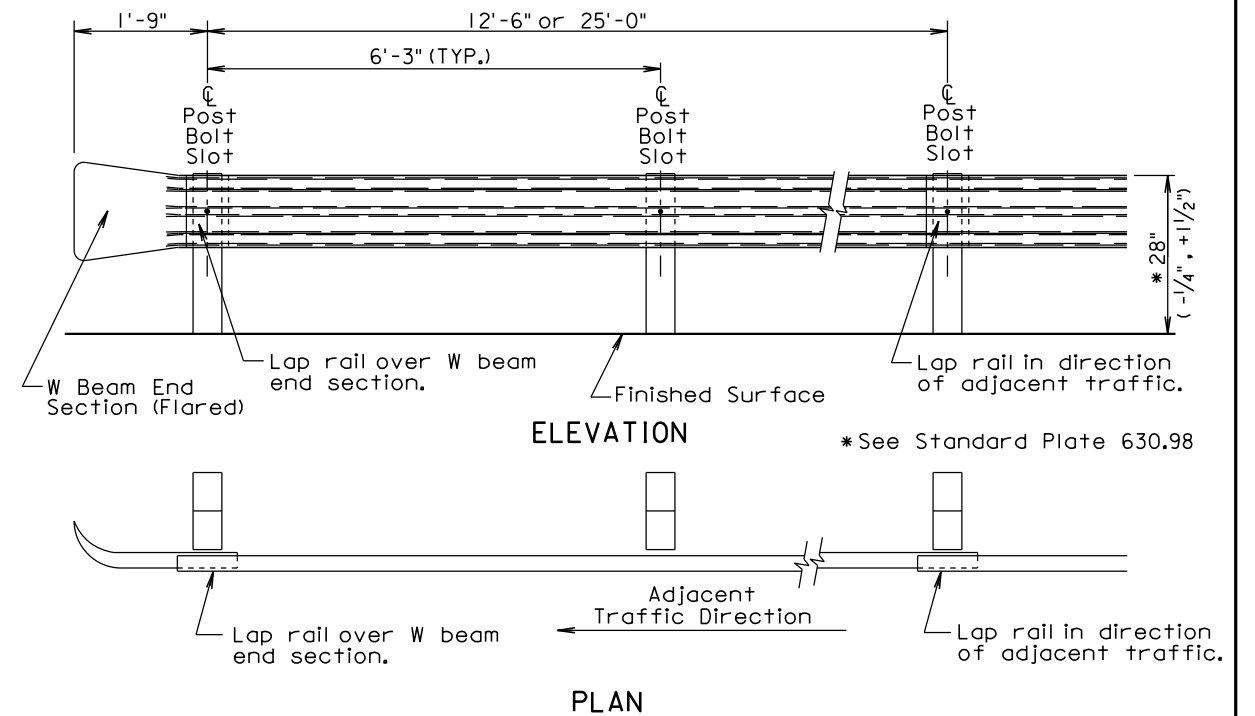
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

December 23, 2010

Published Date: 1st Qtr. 2012	S D D O T	W BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.31
			Sheet 1 of 1



W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	3'-3"
3'-1 1/2"	2'-0"

For Informational Purposes Only

GENERAL NOTES:

All W beam rail shall be Type I.

There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

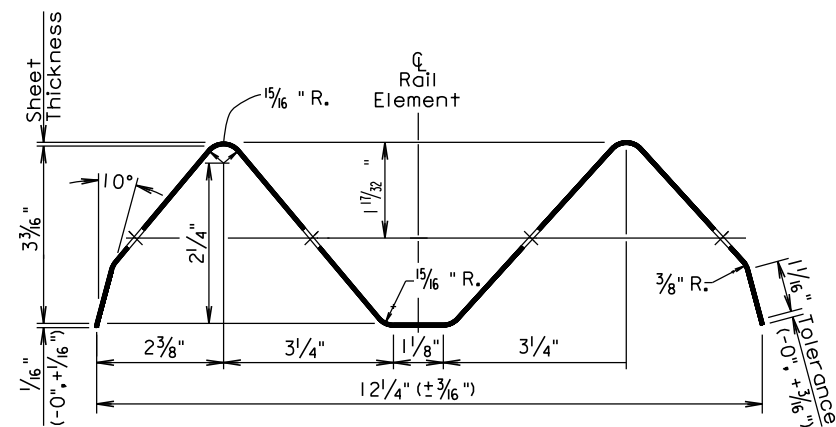
W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

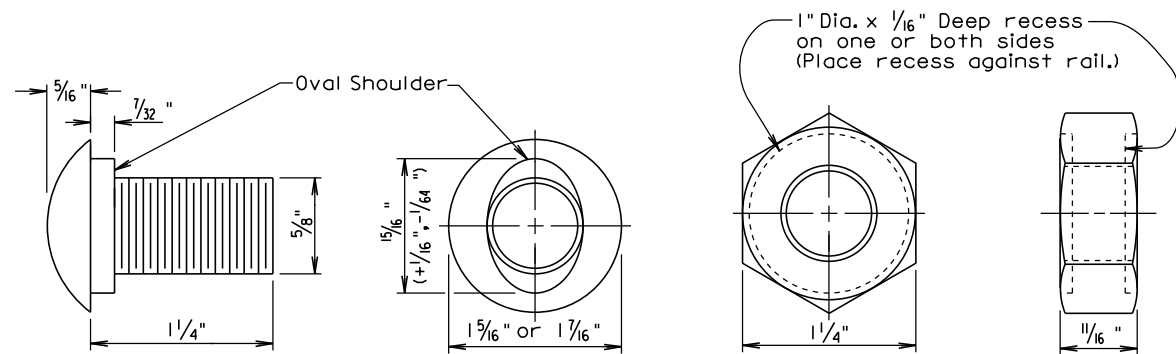
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

December 23, 2010

Published Date: 1st Qtr. 2012	S D D O T	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
			Sheet 1 of 1

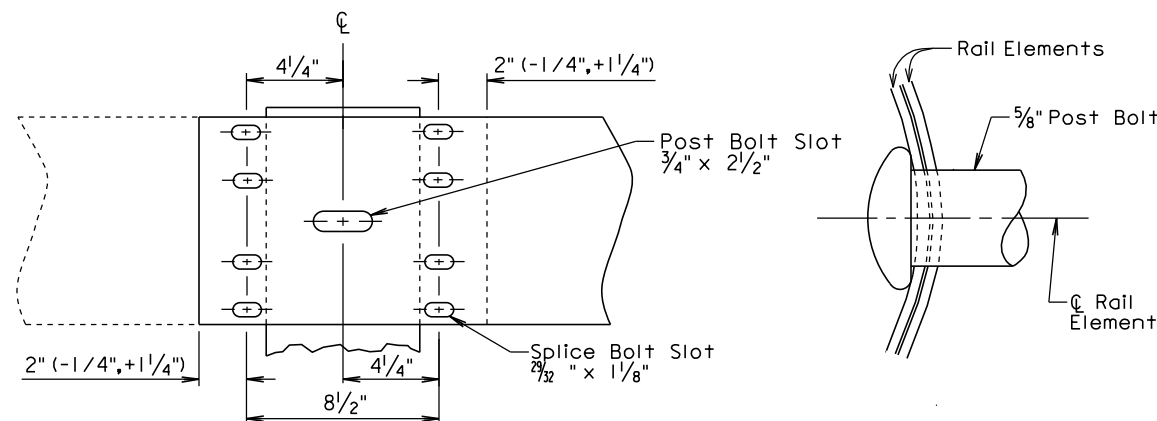


SECTION THROUGH W BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

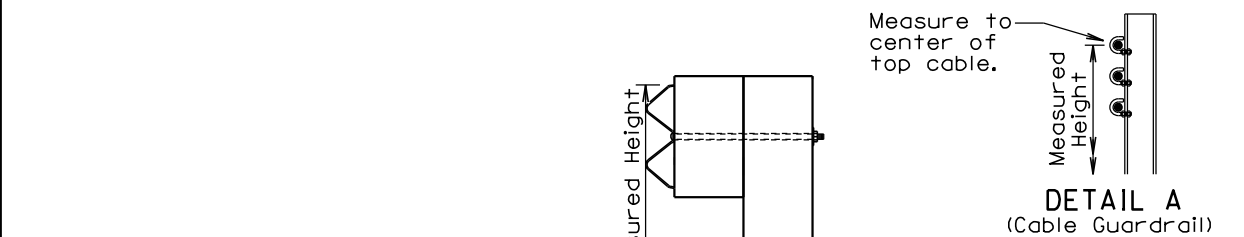
SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)



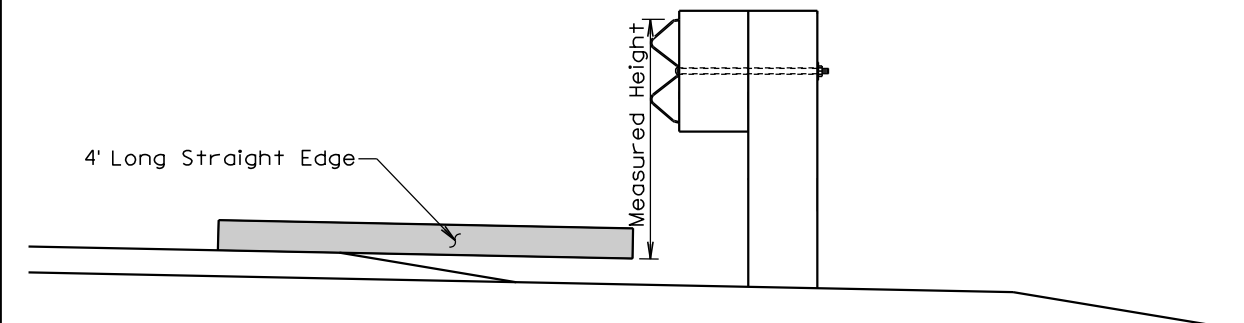
Lap in direction of traffic.
RAIL SPLICE

December 23, 2004

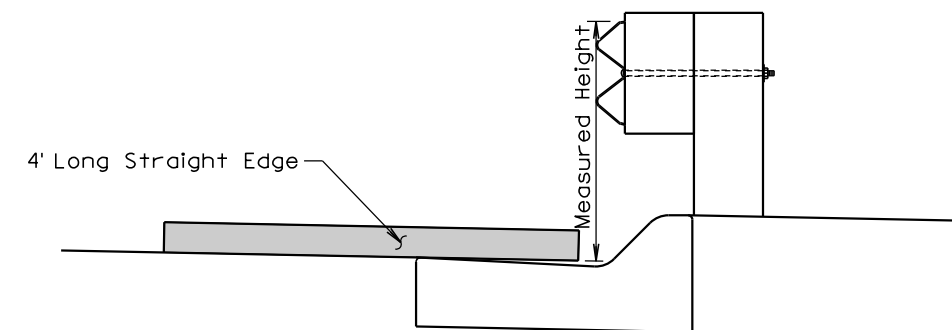
Published Date: 1st Qtr. 2012	S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
			Sheet 1 of 1



ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)



ELEVATION VIEW
(Guardrail Adjacent to Differential Surfacing Elevations)



ELEVATION VIEW
(Guardrail at Curb and Gutter)

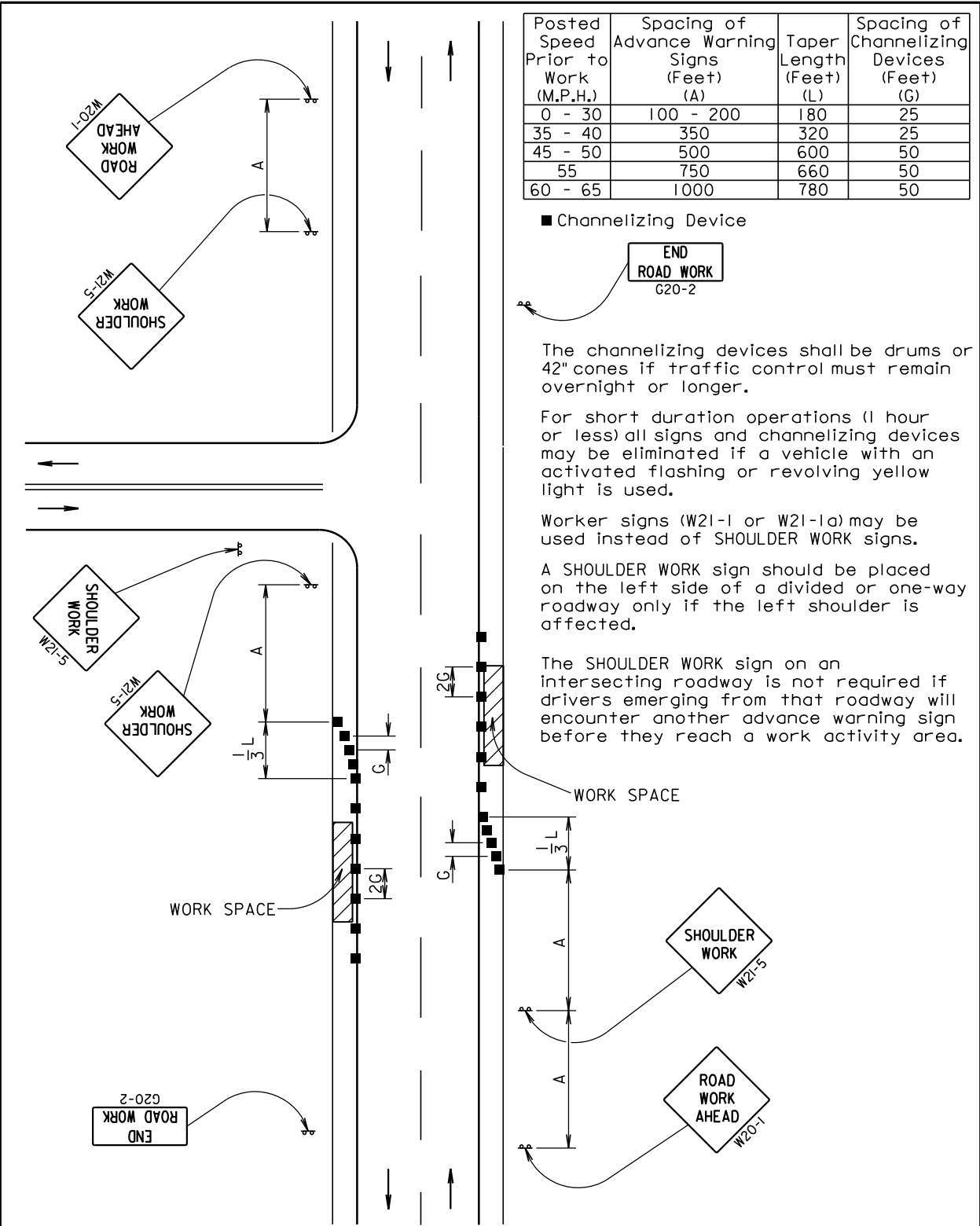
GENERAL NOTES:

The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.

When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

June 26, 2010

Published Date: 1st Qtr. 2012	S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
			Sheet 1 of 1



February 14, 2011

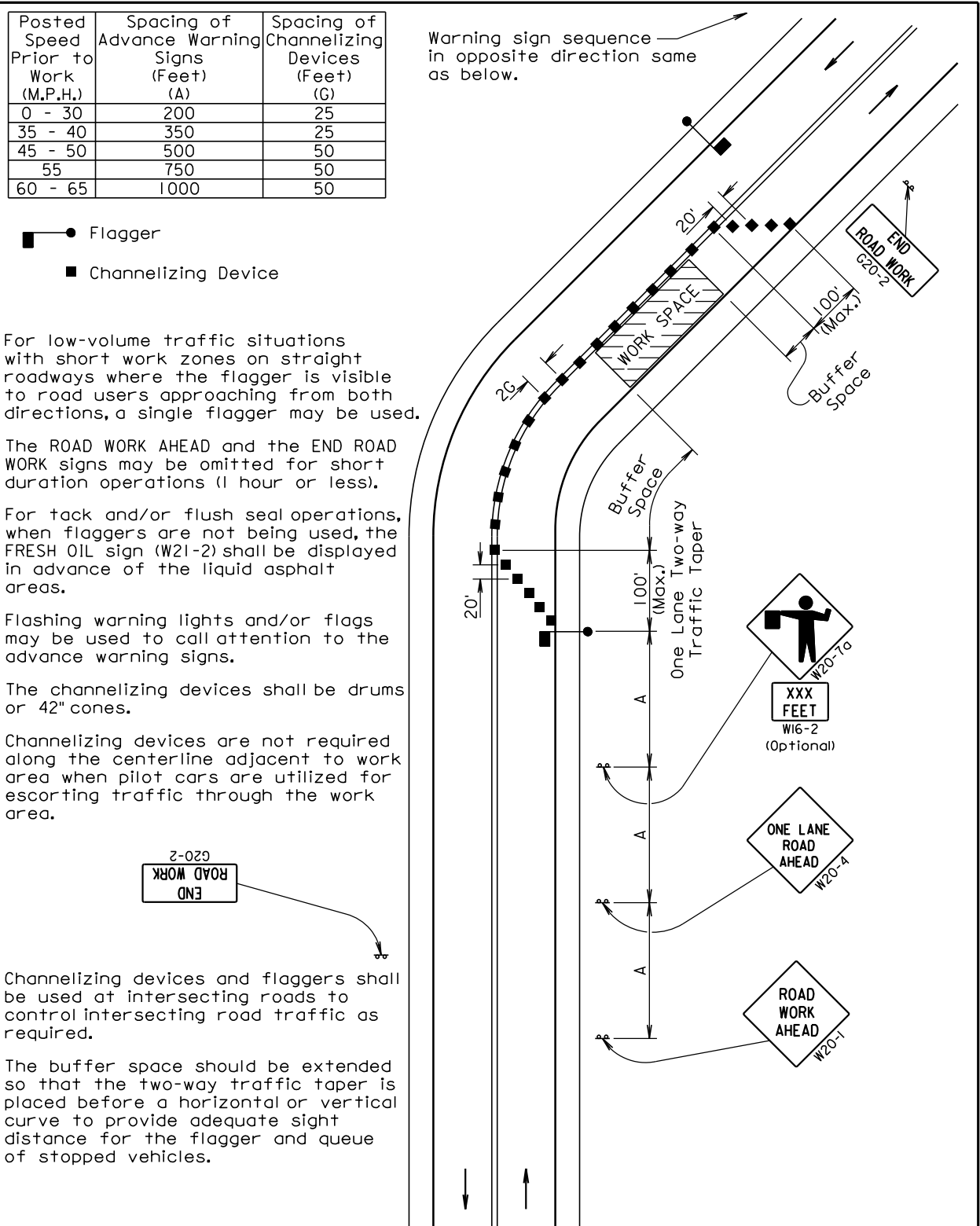
Published Date: 1st Qtr. 2012

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER
634.03

Sheet 1 of 1



February 14, 2011

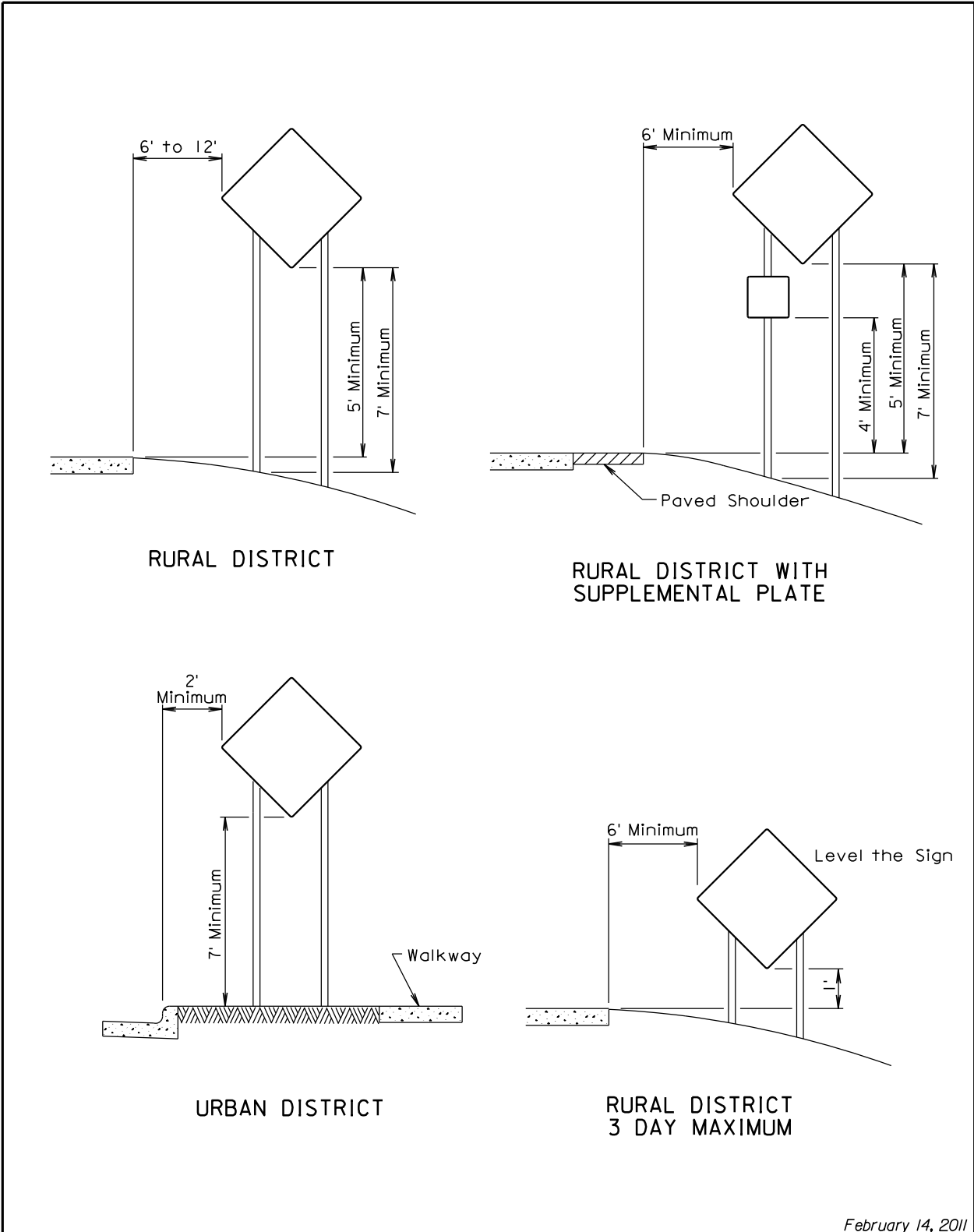
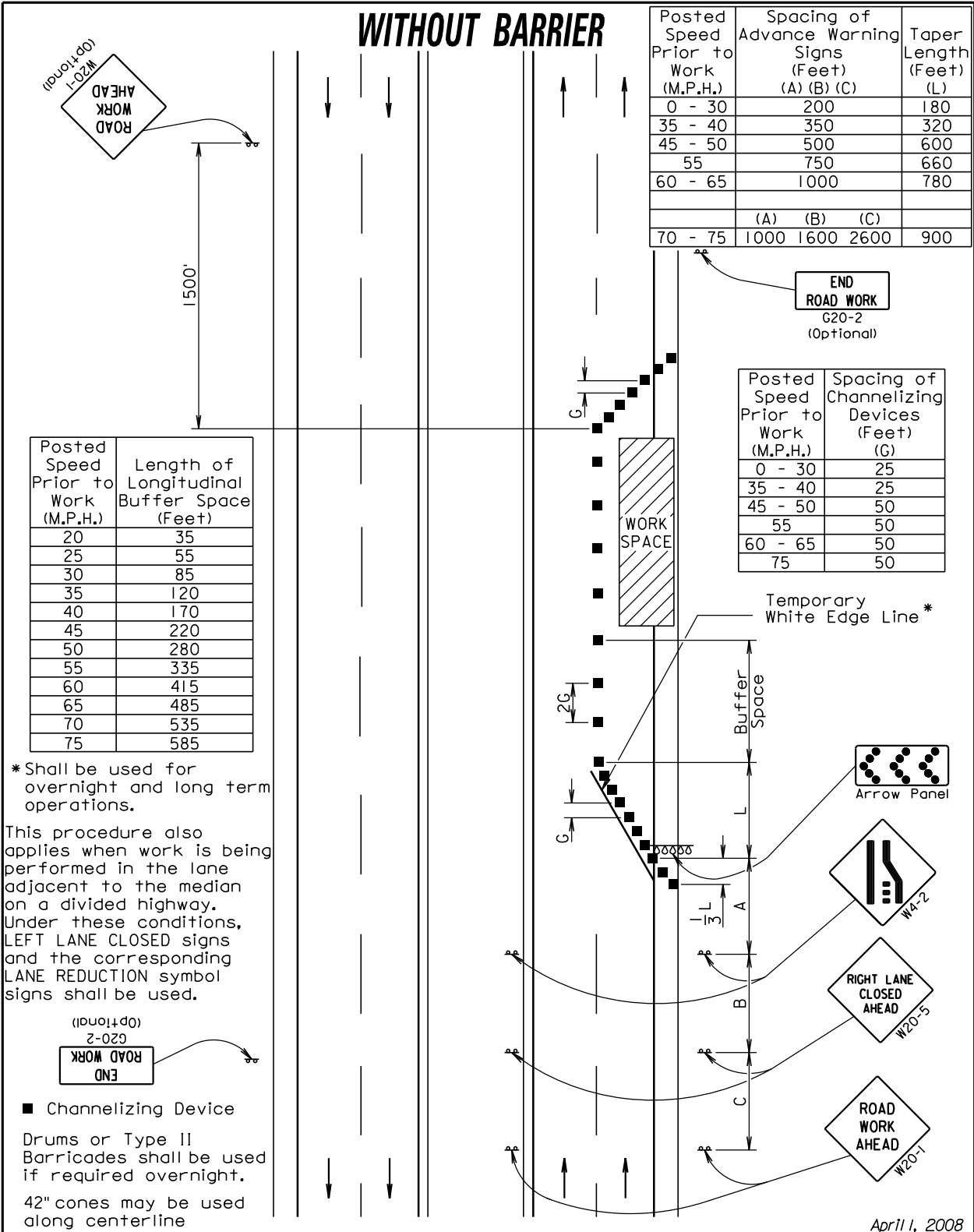
Published Date: 1st Qtr. 2012

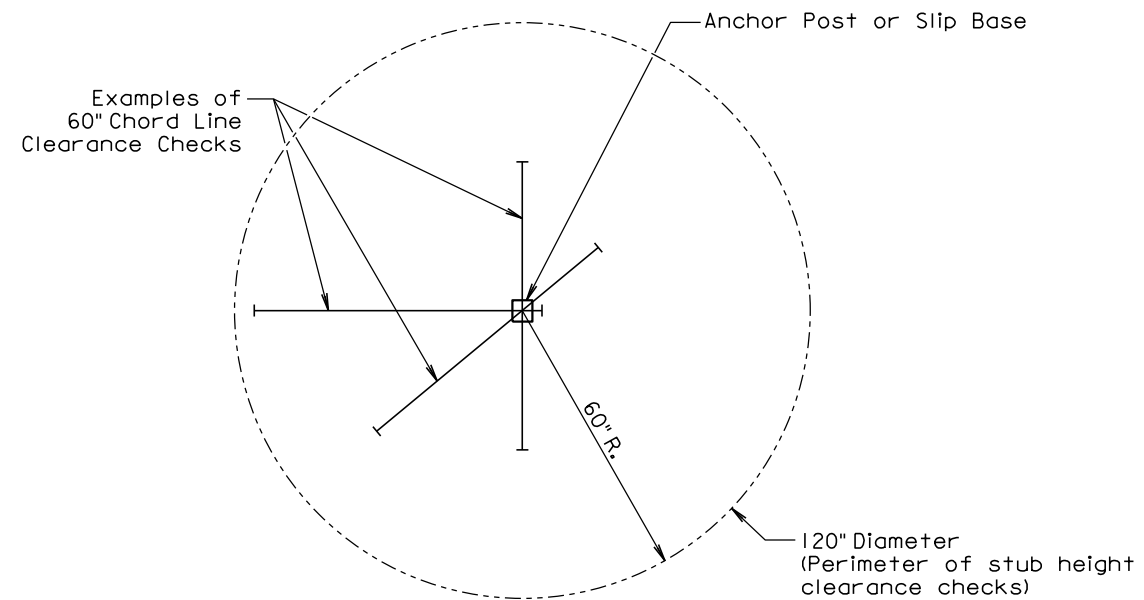
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GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

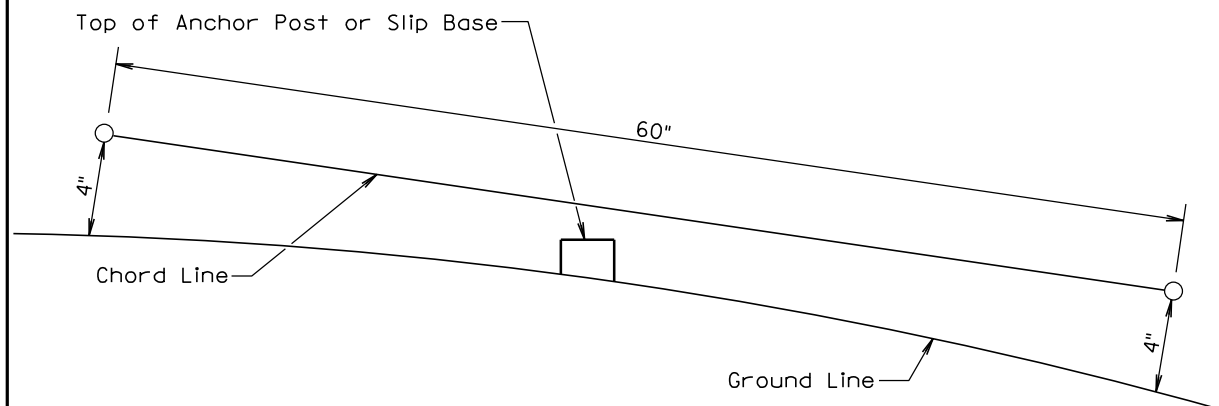
PLATE NUMBER
634.23

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

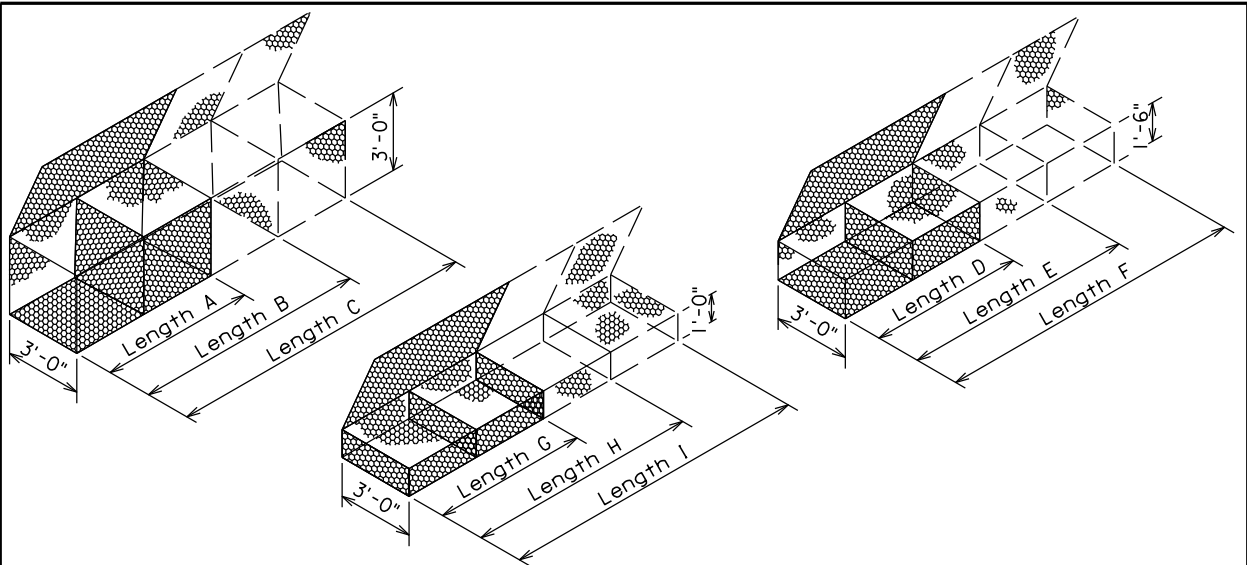
Published Date: 1st Qtr. 2012

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BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER
634.99

Sheet 1 of 1



GABION DETAILS
STANDARD SIZES

SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY, Cu. Yd.
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

Above Dimensions subject to mill tolerances.

GENERAL NOTES:

Lacing and internal connecting wire shall be 0.0866 inch diameter steel wire ASTM A641 Class 3 soft temper measured after galvanizing and for PVC coated gabions shall be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

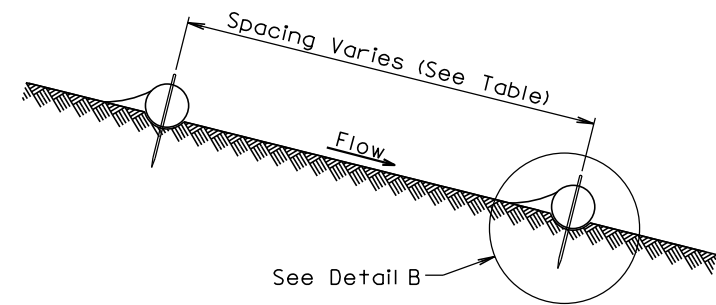
1. Cut a length of lacing wire approximately 1 1/2 times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

Wire lacing or interlocking type fasteners shall be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions shall be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing shall conform to ASTM A641-92 Class 3 coating. Fasteners shall also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions shall be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class I. The spacing of the interlocking fasteners during all phases of assembly and construction shall not exceed 6 inches. All fasteners shall be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

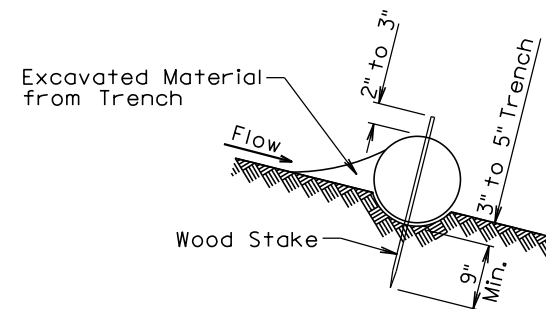
June 26, 2001

Published Date: 1st Qtr. 2012	S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
			Sheet 1 of 1

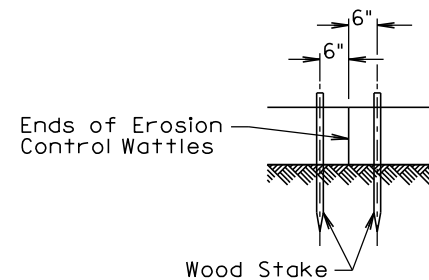


CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40

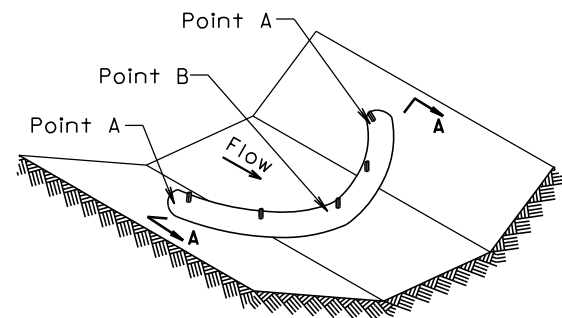
ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION



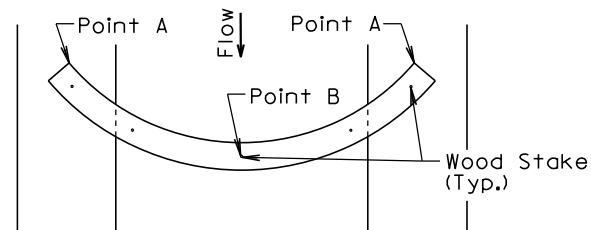
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



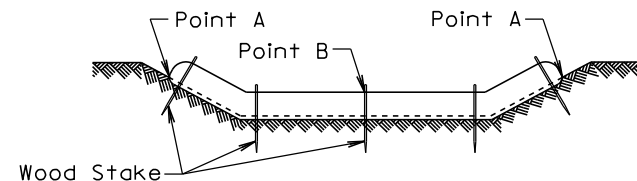
DETAIL C



ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION



SECTION A-A

DITCH INSTALLATION	
Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50

December 23, 2004

Published Date: 1st Qtr. 2012

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EROSION CONTROL WATTLE

PLATE NUMBER
734.06

Sheet 1 of 2

GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004

Published Date: 1st Qtr. 2012

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EROSION CONTROL WATTLE

PLATE NUMBER
734.06

Sheet 2 of 2