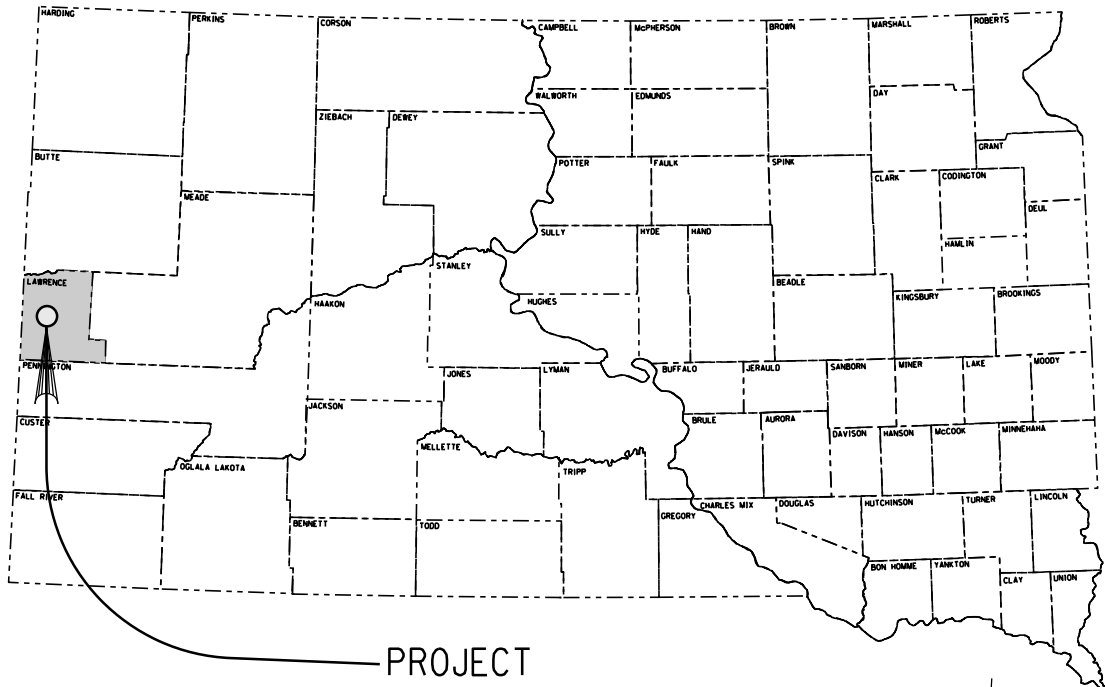


PLOT SCALE - 1"=200'

PLOTTED FROM - TRRC11951



PROJECT

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECT 473-451
SD HWY 473
LAWRENCE COUNTY
EROSION REPAIR & GUARDRAIL
PCN IOXG

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	473-451	1	19

Plotting Date: 04/13/2015

INDEX OF SHEETS

- 1 General Layout W/Index
- 2 - 6 Estimate Quantities and Plan Notes
- 7 Typical Section
- 8 W Beam Post Installation
- 9 Curb Opening Detail
- 10 - 18 Standard Plates

SD 473 DESIGN DESIGNATION

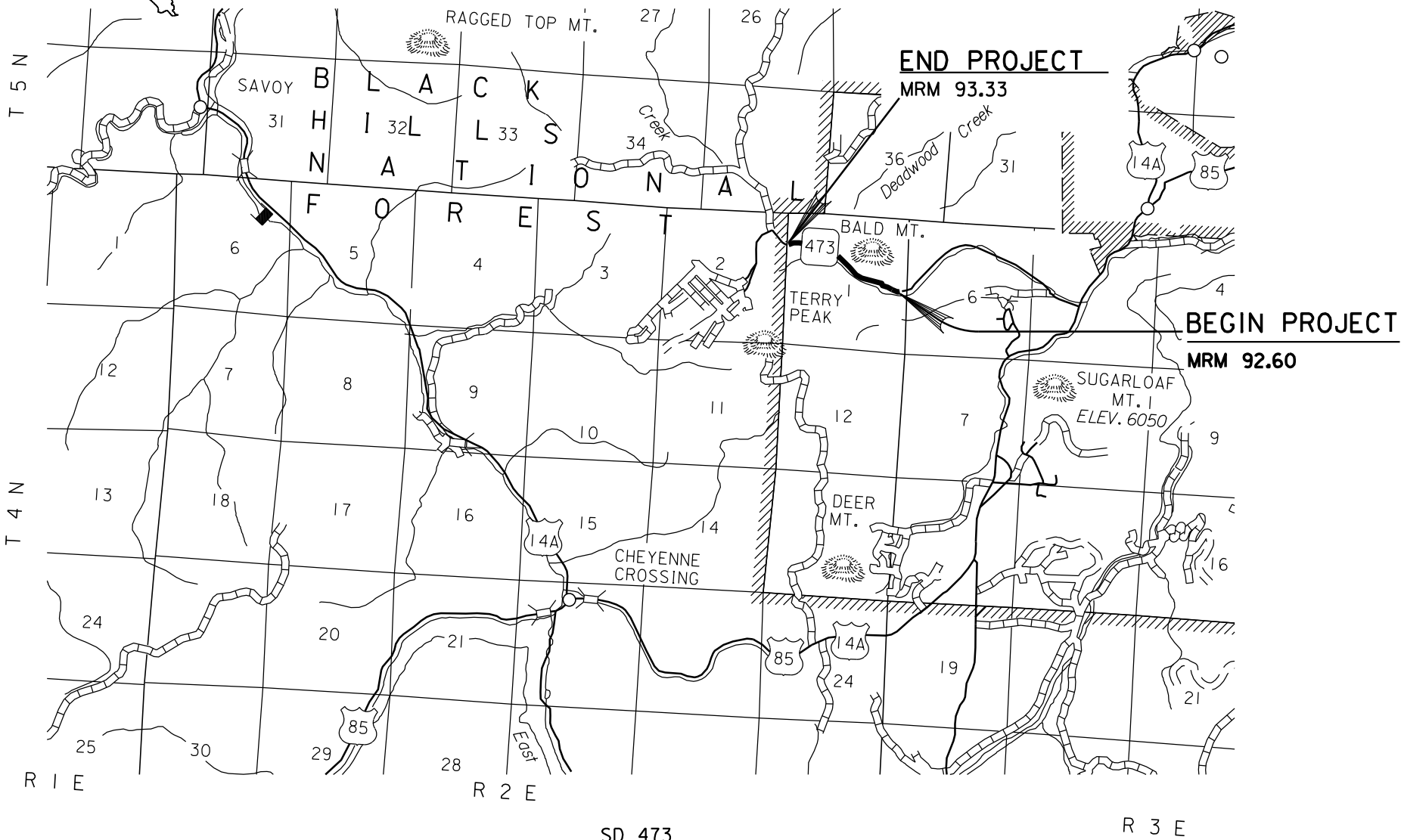
ADT (2014)	905
ADT (2034)	1224
DHV	186
D	51 %
T DHV	4.5%
T ADT	9.8%
V	35 MPH

STORM WATER PERMIT

None Required

SCALES

	RURAL	SUBURBAN	URBAN
PLAN	1"=200'	1"=100'	1"=40'
PROFILE,	HORIZONTAL: 1"=200'	1"=100'	1"=40'
	VERTICAL: 1"=20'	1"=20'	1"=10'
CROSS SECTIONS	HORIZONTAL: 1"=40'	1"=20'	1"=20'
	VERTICAL: 1"=20'	1"=10'	1"=10'



	SD 473	
GROSS LENGTH	3854.4 FEET	0.73 MILES
LENGTH OF EXCEPTIONS	0 FEET	0 MILES
NET LENGTH	3854.4 FEET	0.73 MILES

PLOT NAME - 1

FILE - ... \PLANS\SD473 EROSION\TITLE.DGN

ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0135	Remove Delineator	18	Each
110E0730	Remove Beam Guardrail	25.0	Ft
110E6230	Remove W Beam Guardrail for Reset	400.0	Ft
120E0010	Unclassified Excavation	213	CuYd
120E0600	Contractor Furnished Borrow	180	CuYd
230E0050	Soil Amendment	1,321	Lb
260E1010	Base Course	153.8	Ton
380E1000	6" Miscellaneous PCC Pavement	13.2	SqYd
630E1200	Straight Class A W Beam Rail	25.0	Ft
630E2110	Beam Guardrail Post and Block	68	Each
630E5160	Reset W Beam Rail	400.0	Ft
630E5530	Remove and Reset Beam Guardrail Post and Block	68	Each
634E0010	Flagging	300	Hour
634E0020	Pilot Car	150	Hour
634E0100	Traffic Control	306	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
650E1090	Type F69 Concrete Curb and Gutter	2,207	Ft
650E4689	Modified Type P9 Concrete Gutter	38	Ft
700E0310	Class C Riprap	50.0	Ton
730E1200	Hydroseeding	1,826	SqYd
731E0100	Fertilizing	564	Lb
732E0250	Fiber Mulching	309	Lb
734E0133	Type 3 Turf Reinforcement Mat	1,078.0	SqYd
734E0154	12" Diameter Erosion Control Wattle	10	Ft
831E0110	Type B Drainage Fabric	60	SqYd

SPECIFICATIONS

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

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 designated option borrow 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: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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 staging areas, borrow sites, waste disposal sites, or material processing sites 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.

UTILITIES

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

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.

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 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 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 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”.

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.

UNCLASSIFIED EXCAVATION

Unclassified Excavation is provided on the project for removing excess material adjacent to the asphalt surfacing, so that new curb and gutter can be installed in accordance with the typical sections. This excess material shall be used as backfill material for the curb and gutter. Additional material needed for backfill of the curb and gutter shall be Contractor Furnished Borrow.

Plans quantity shall be the basis of payment for the Unclassified Excavation quantity. If changes are made in the field during construction, measurements shall be taken and the quantity shall be adjusted accordingly.

CONTRACTOR FURNISHED BORROW

Contractor Furnished Borrow material is provided on the project to fill and level erosion areas on steep slopes and to provide additional material to backfill the curb and gutter. This borrow material shall also be placed 4” deep on disturbed areas and amended prior to seeding. The Contractor shall visit the project prior to preparing the bid to determine the cost for repairing the erosion on the steep slopes behind the guardrail.

The Contractor shall provide a suitable site for Contractor furnished borrow material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site, prior to disturbance of the area. The borrow material shall be approved by the Engineer.

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

SAWING EXISTING ASPHALT CONCRETE

The existing asphalt concrete shall be sawed full depth to a true line with a vertical face and the new curb and gutter shall be placed directly against the existing asphalt concrete.

No separate payment shall be made for sawing and shall be incidental to the various bid items on the project.

RATES OF MATERIALS

SD 473 – CURB & GUTTER
MRM 92.874 to MRM 93.300

The Estimate of Quantities is based on the following quantities of materials per mile.

The exact proportions of these materials will be determined on construction.

Base Course 362 tons

Water for Granular Material shall be applied at the rate of 12 gallons per ton. The cost for watering shall be incidental to contract unit price per ton for Base Course.

6” MISCELLANEOUS PCC PAVEMENT

The Contractor shall place steel bars in the joints between the 6” Miscellaneous PCC Pavement and the back of the Modified Type P9 Concrete Gutter. The bars shall be installed in accordance with Standard Plate 380.11. All costs to furnish and place the steel bars shall be incidental to the contract unit price per square yard for 6” Miscellaneous PCC Pavement. The purpose of placing the steel bars is to prevent any settlement that may occur at the joint.

GUARDRAIL

The guardrail posts shall be 7’ long as noted in the Table of Guardrail Quantities. The guardrail post shall be placed at the break point of the inslope.

New beam guardrail furnished shall be AASHTO M180-00 Type 4 Weathering Steel.

GUARDRAIL DELINEATORS

Guardrail delineators currently exist on the guardrail. The Contractor shall remove and reset these delineators. All costs associated with the removal and resetting of guardrail delineators shall be incidental to the various bid items on the project.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	473-451	3	19

TABLE OF CURB AND GUTTER QUANTITIES

MRM to	MRM		Length	Unclassified Excavation	Base Course	Type F69 Concrete Curb and Gutter	Modified Type P9 Concrete Gutter	6" Misc. PCC Pavement	Soil Amend- ment	Fertilizing	Hydro- seeding	Fiber Mulching
			(Ft)	(CuYd)	(Ton)	(Ft)	(Ft)	(SqYd)	(Lb)	(Lb)	(SqYd)	(Lb)
92.874	92.947	R	385	37	26.4	385			93	40	128	53
92.947	92.951	R	19	2	1.3		19	6.6	5	2	6	3
92.951	93.190	R	1262	120	86.5	1,262			304	130	421	174
93.190	93.194	R	19	2	1.3		19	6.6	5	2	6	3
93.194	93.300	R	560	53	38.3	560			135	58	187	77
			2,245.0	213	153.8	2,207	38	13.2	541	232	748	309

TABLE OF GUARDRAIL & SLOPE REPAIR

MRM	L/R	Remove Beam Guardrail	Remove W Beam Guardrail for Reset	Remove and Reset Beam Guardrail Post and Block	Beam Guardrail Post and Block	Reset W Beam Rail	Straight Class A W Beam Rail	L	W	D	Contractor Furnished Borrow	Soil Amendment	Fertilizing	Hydro- seeding	Type 3 Turf Reinf. Mat	Comment
		(Ft)	(Ft)	(Each)	(Each)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(CuYd)	(Lb)	(Lb)	(SqYd)	(SqYd)	
92.781	L		37.5	6	6	37.5		40	20	0.5	15	64	28	89	89	7' long post, 3'-1 1/2" post spacing
92.854	L		12.5	2	2	12.5		15	20	0.5	6	24	10	33	33	7' long post, 3'-1 1/2" post spacing
92.865	R							100	8	0.5	15	64	28	89	89	Restore ditch flow to toe of backslope
92.987	L		25	4	4	25		30	20	0.5	11	48	21	67	67	7' long post, 3'-1 1/2" post spacing
93.075	L		50	8	8	50		50	20	0.5	19	80	34	111	111	7' long post, 3'-1 1/2" post spacing
93.111	L		37.5	6	6	37.5		40	20	0.5	15	64	28	89	89	7' long post, 3'-1 1/2" post spacing
93.164	L							5	20	0.5	2	8	3	11	11	Add 10' - 12" Wattle to divert flow onto gabions
93.204	L		75	12	12	75		75	20	0.5	28	121	52	167	167	7' long post, 3'-1 1/2" post spacing
93.283	L		37.5	6	6	37.5		40	20	0.5	15	64	28	89	89	7' long post, 3'-1 1/2" post spacing
93.315	L	25	125	24	24	125	25	150	20	0.5	56	241	103	333	333	Type IV, 7' long post, 3'-1 1/2" post spacing
Totals:		25	400	68	68	400	25				180	779	334	1078	1078	

TABLE OF EROSION CONTROL ITEMS

Description	Soil Amend- ment	Fertilizing	Hydro- seeding	Fiber Mulching	Type 3 Turf Reinf. Mat
	(Lb)	(Lb)	(SqYd)	(Lb)	(SqYd)
Curb and Gutter	541	232	748	309	
Guardrail and Slope Repair	779	334	1078		1078
TOTAL	1321	564	1826	309	1078

TOPSOIL AMENDMENT

Topsoil amendment shall be applied at the rate of 3500 pounds per acre.

Topsoil amendment shall be done at the areas noted in the Table of Topsoil Amendment.

All costs for furnishing and applying the topsoil amendment including hauling, materials, equipment, labor, and incidentals necessary shall be paid for at the contract unit price per pound for "Soil Amendment".

The topsoil amendment shall be from the list below or an approved equal:

Product	Manufacturer
Biotic Earth BFM, FRM & HGM, Biotic Earth Black HGM, or Biotic Earth HGM	Verdyol Riverton, Manitoba Canada Phone: 1-866-280-7327 http://www.bioticearth.com
FibraPost HGM	Fibramulch Concord, Ontario Canada Phone: 1-905-761-7959 http://www.fibramulch.com/

FERTILIZING

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer shall have a minimum guaranteed analysis of 4-6-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 3.2%, a minimum of 6% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer shall be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer shall have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer shall also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The all-natural slow release fertilizer shall be applied according to the manufacturer's application recommendations.

The application rate is 1,500 pounds per acre.

The all-natural slow release fertilizer shall be as shown below or an approved equal:

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 http://www.sustane.com/

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:

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

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

TURF REINFORCEMENT MAT

Turf Reinforcement Mat shall be installed at locations shown in the table at the widths specified, and at locations determined by the Engineer during construction. The Contractor shall use a turf reinforcement mat from the approved products list. The approved product list for turf reinforcement mat may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

Installation of the Turf Reinforcement Mat shall be according to the manufacturer's installation instructions and standard plate 734.01.

HYDROSEEDING

The areas to be hydroseeded with Type F Permanent Seed Mixture shall comprise of all newly graded areas steeper than a 3:1 or too narrow for a press drill to operate within the project limits.

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

Hydroseeding shall be done by applying a mixture of water and seed at locations determined by the Engineer during construction.

The equipment used for hydroseeding shall be a mechanical agitation hydroseeding machine.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	473-451	5	19

All costs for hydroseeding including equipment, labor, and materials which include the water and seed shall be incidental to the contract unit price per square yard for "Hydroseeding"

FIBER MULCHING

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 approved product list. 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 2000 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 unit price per pound for "Fiber Mulching".

The fiber mulch provided shall be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

EROSION CONTROL WATTLE

Erosion control wattles shall be installed to divert flow onto the gabion basket and protect the new fill from erosion at MRM 93.164. Refer to Standard Plate 734.06 for details.

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

Erosion control wattles shall remain on the project to decompose.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

CLASS C RIPRAP

A quantity of 50 ton of Class C Riprap is provided for outlet protection at the pipe located at MRM 92.781. The riprap shall be placed under the pipe to prevent any further undermining. A quantity of 60 square yards of Type B Drainage Fabric is provided to be placed prior to riprap installation. The riprap shall be placed to form a channel, so that pipe outlet flows are contained within the riprap.

GENERAL MAINTENANCE OF TRAFFIC

1. Unless otherwise stated in these plans, no work will be allowed during hours of darkness. Hours of darkness are defined as ½ hour after sunset until ½ hour before sunrise.
2. Storage of vehicles and equipment shall be as near the right-of-way as possible. 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 of 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.
3. Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.
4. All non-applicable existing signing and temporary traffic control devices shall be covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 48 hours. The cost of removing or covering non-applicable signs and temporary traffic control devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.
5. Construction signing mounted on portable supports shall not be used for a duration of more than 3 days, unless approved by the Engineer. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted, breakaway supports.

6. The quantity of traffic control units paid for will be for the greatest number of installations per sign in place at any one time regardless of the number of set-ups on the project.
7. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.
8. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.
9. 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.
10. 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.
11. The Contractor or designated traffic control subcontractor shall make night 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 contract lump sum price for Traffic Control, Miscellaneous.
12. Vehicles working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions. The amber light shall be mounted on the uppermost part of the Contractor's vehicle. Lights must have peak intensity within the range of 40 to 400 candelas and must flash at 75 ± 15 flashes per minute. Vehicle flasher/hazard lights are not acceptable. All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.
13. All construction operations shall be conducted in the general direction of traffic movement.
14. If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD – whichever is more stringent shall be used, as determined by the Engineer.
15. Temporary Road Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.
16. The Contractor shall coordinate his operations such that during non-working hours the roadway shall be open to two-way traffic on a uniform driving surface for the entire width of the roadway.
17. The maximum delay to the traveling public for the pilot car shall be 10 minutes.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	473-451	6	19

TABLE OF TRAFFIC CONTROL

SIGN CODE	DESCRIPTION	NUMBER	SIGN SIZE	UNITS PER SIGN	UNITS
W3-4	BE PREPARED TO STOP	2	48" x 48"	34	68
W20-1	ROAD WORK AHEAD	2	48" x 48"	34	68
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	34	68
W20-7	FLAGGER (symbol)	2	48" x 48"	34	68
G20-2	END ROAD WORK	2	36" x 18"	17	34
TOTAL UNITS					306

PLOT SCALE - 1:40

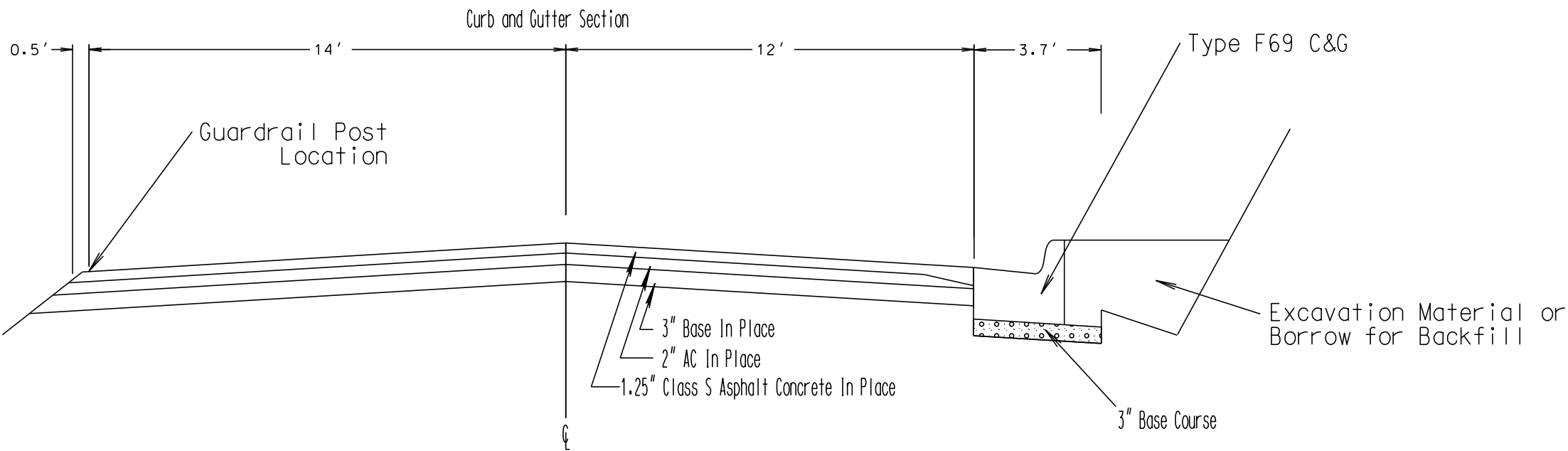
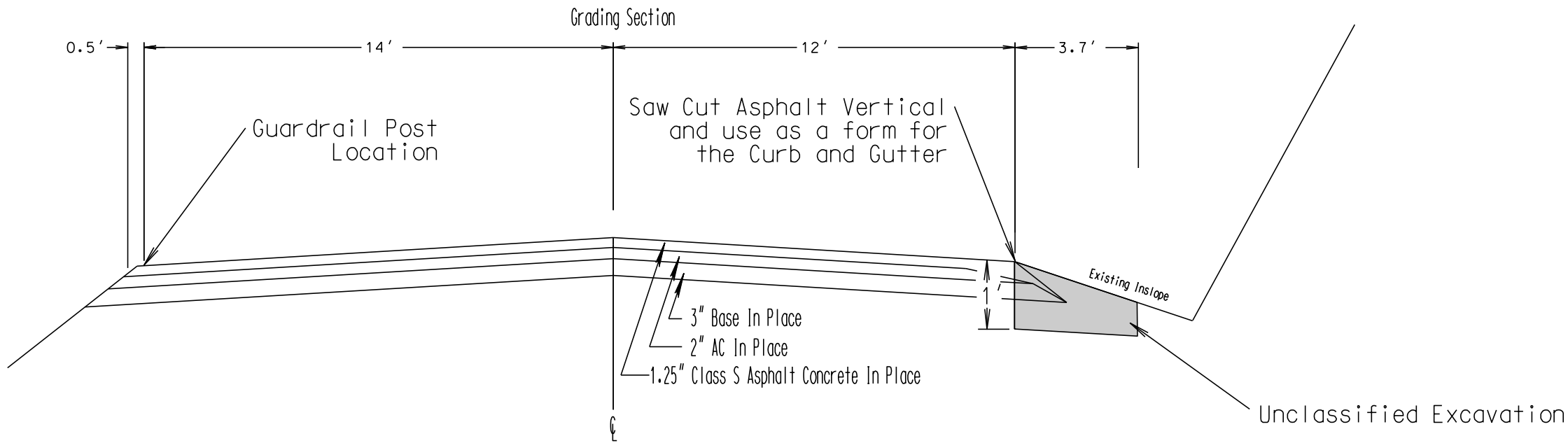
PLOTTED FROM - TRRC11951

TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	473-451	7	19

Plotting Date: 04/07/2015

SD473
MRM 92.874 to MRM 93.300



PLOT NAME - 2

FILE - ... \PLANS\SD473 EROSION\TYP.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	473-451	8	19

Plotting Date: 04/30/2015

Plot Scale - 1:200

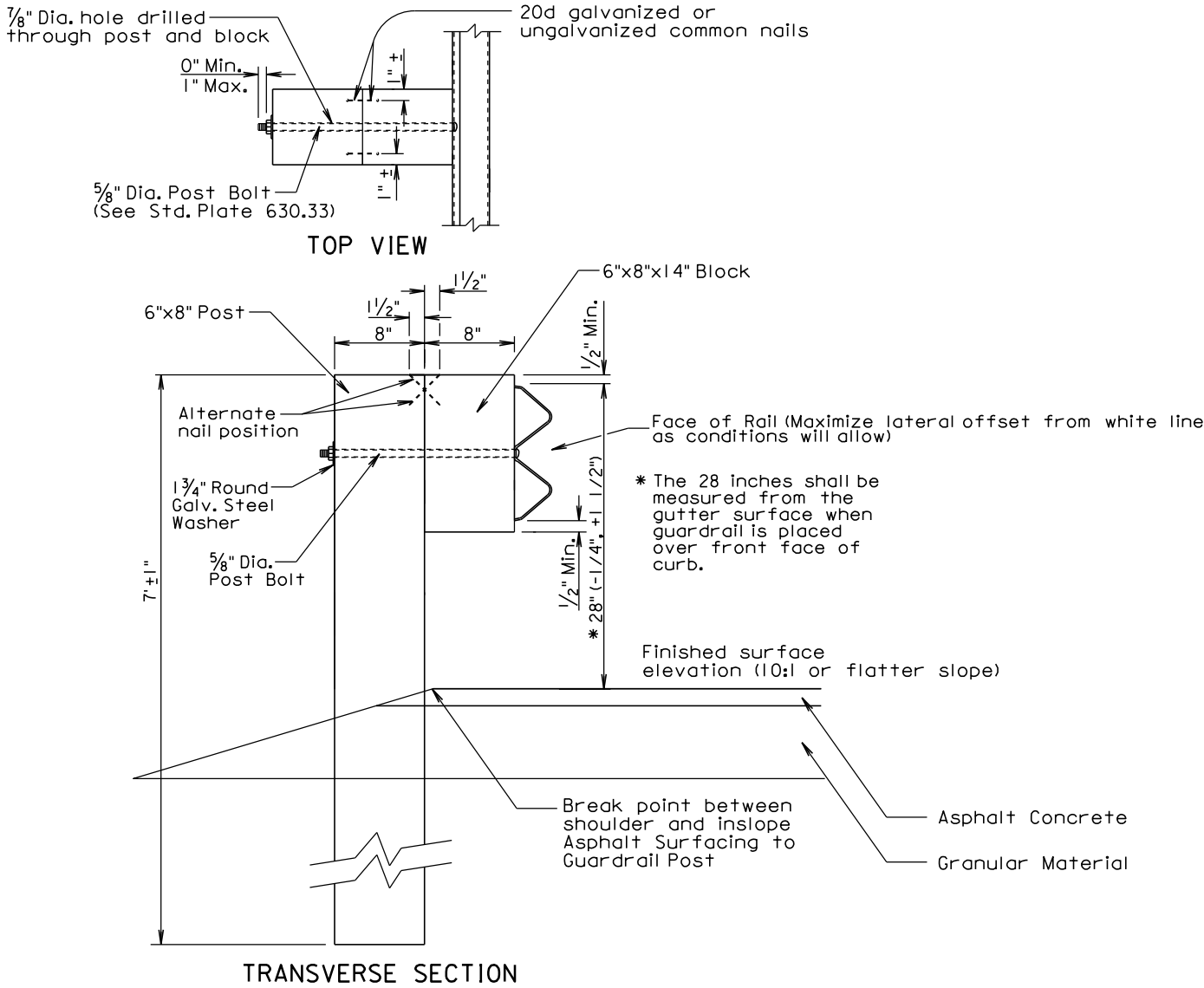
Plotted From - Irrc11951



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	473-451	9	19

Plotting Date: 04/03/2015

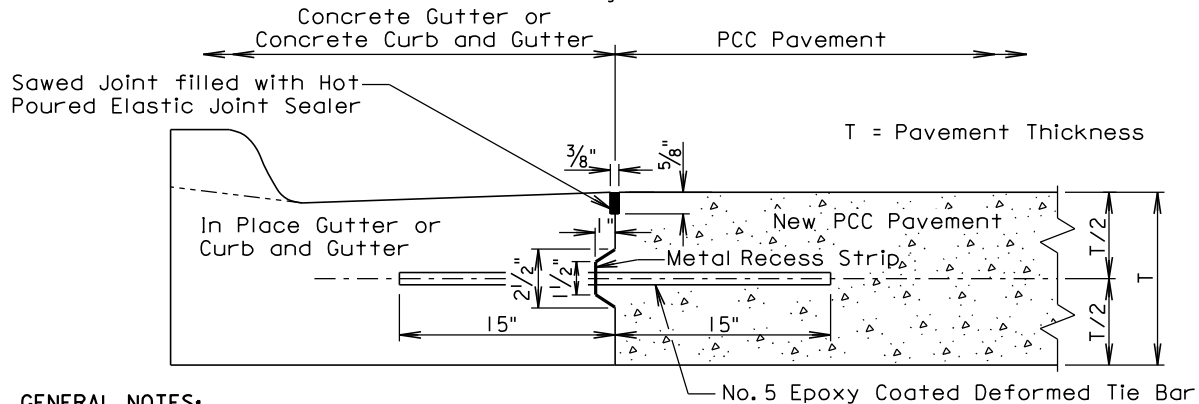
W BEAM GUARDRAIL POST INSTALLATION



GENERAL NOTES:

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.

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Individually Formed)



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars shall be spaced 48 inches center to center. The keyway shown above is a female keyway.

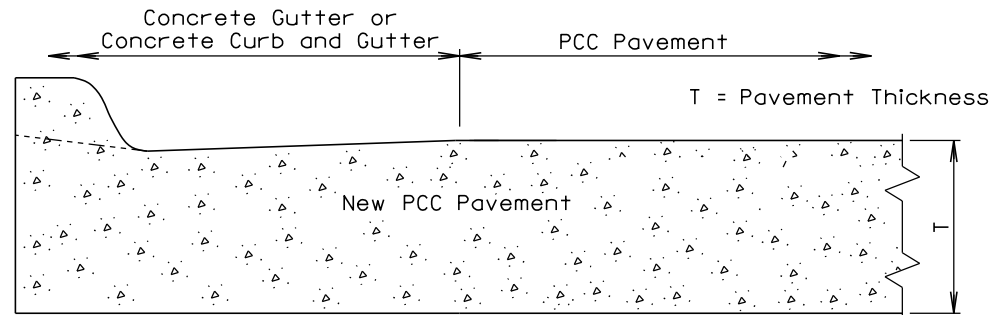
The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

The transverse contraction joints in the concrete gutter or concrete curb and gutter shall be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter shall be 1 1/2 inches deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint shall be at least 1/4 the thickness of the concrete gutter or concrete curb and gutter.

The term "In Place Gutter or Curb and Gutter" in the above drawing indicates that the in place concrete gutter and concrete curb and gutter was placed on the current project.

POURED MONOLITHICALLY



GENERAL NOTES:

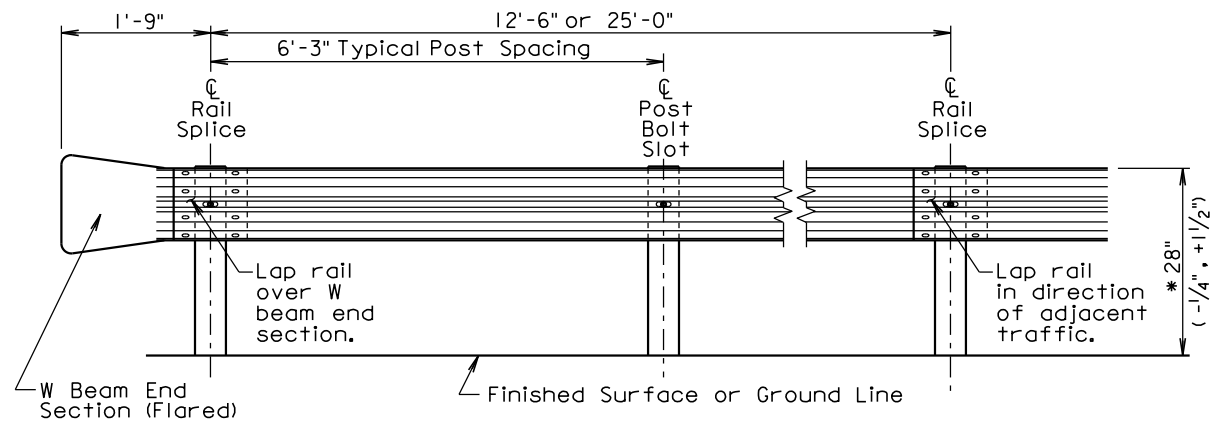
The mainline curb and gutter may be placed monolithically with the PCC pavement if the mainline lane width is less than or equal to 12 feet. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement shall be eliminated.

The gutter or curb and gutter shall be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter shall be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter shall be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter shall be constructed at the same slope as the mainline concrete pavement.

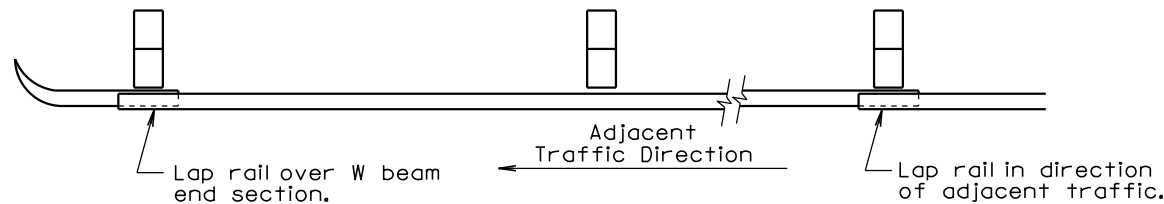
June 26, 2013

Published Date: 2nd Qtr. 2015	S D D O T	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.11
			Sheet 1 of 1



ELEVATION

*See Standard Plate 630.98



PLAN

W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	5'-0"
3'-1 1/2"	3'-9"

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.

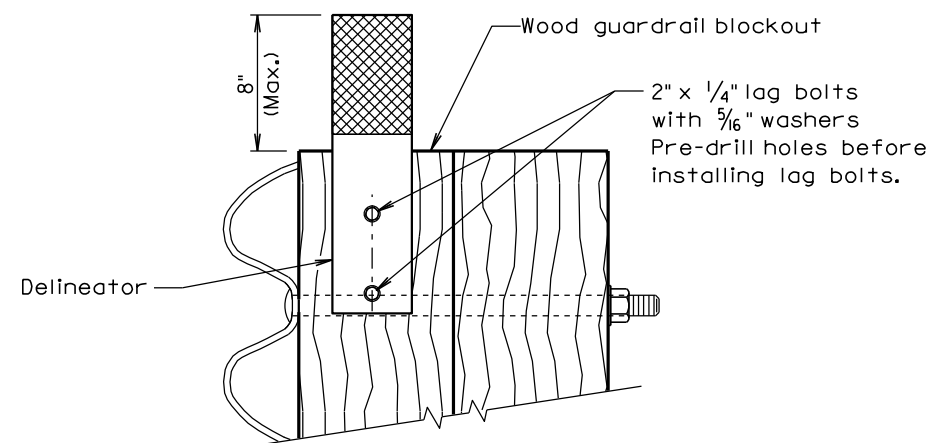
W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

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.

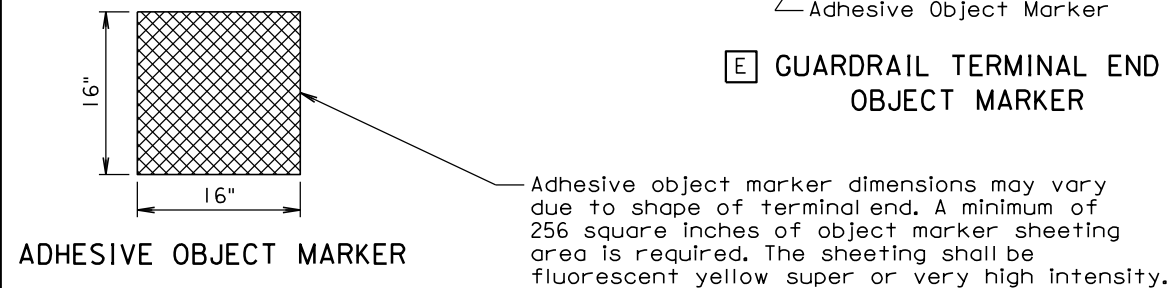
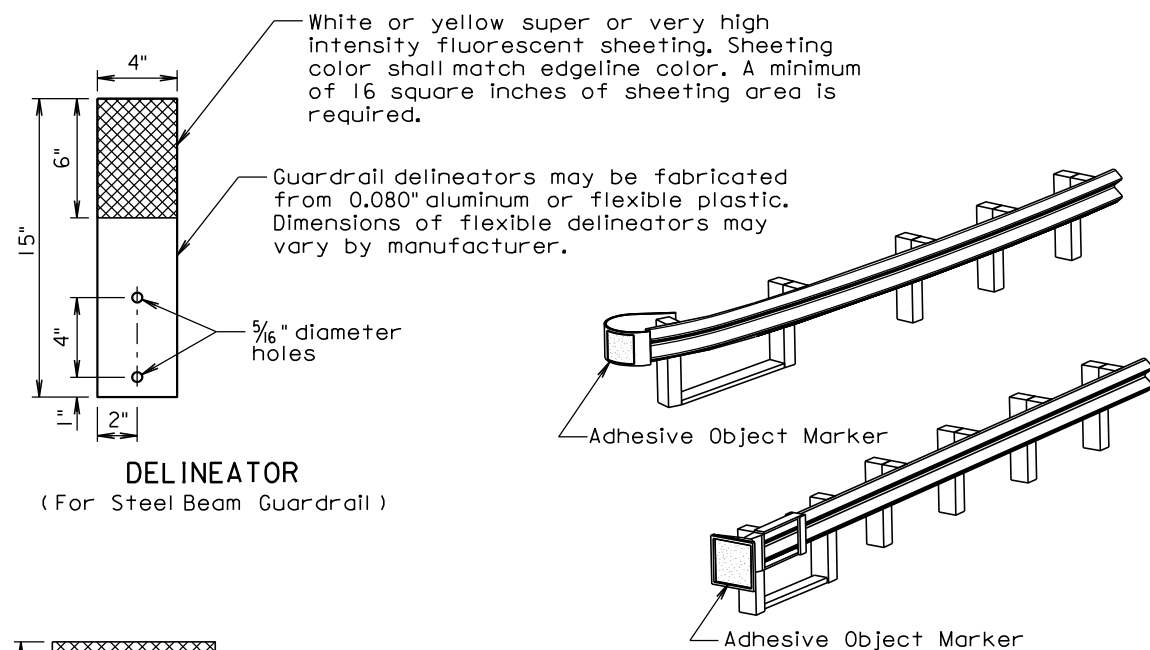
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

December 16, 2014

Published Date: 2nd Qtr. 2015	S D D O T	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
			Sheet 1 of 1

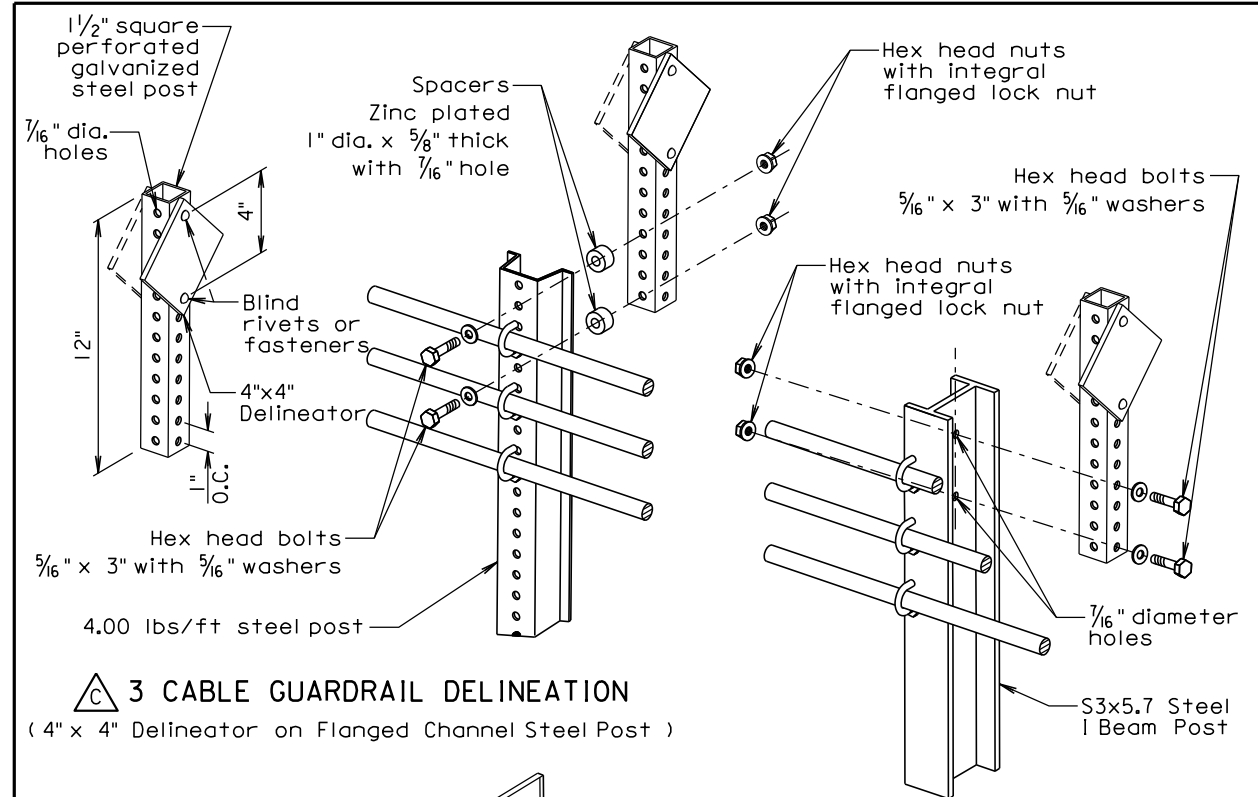


B STEEL BEAM GUARDRAIL DELINEATION

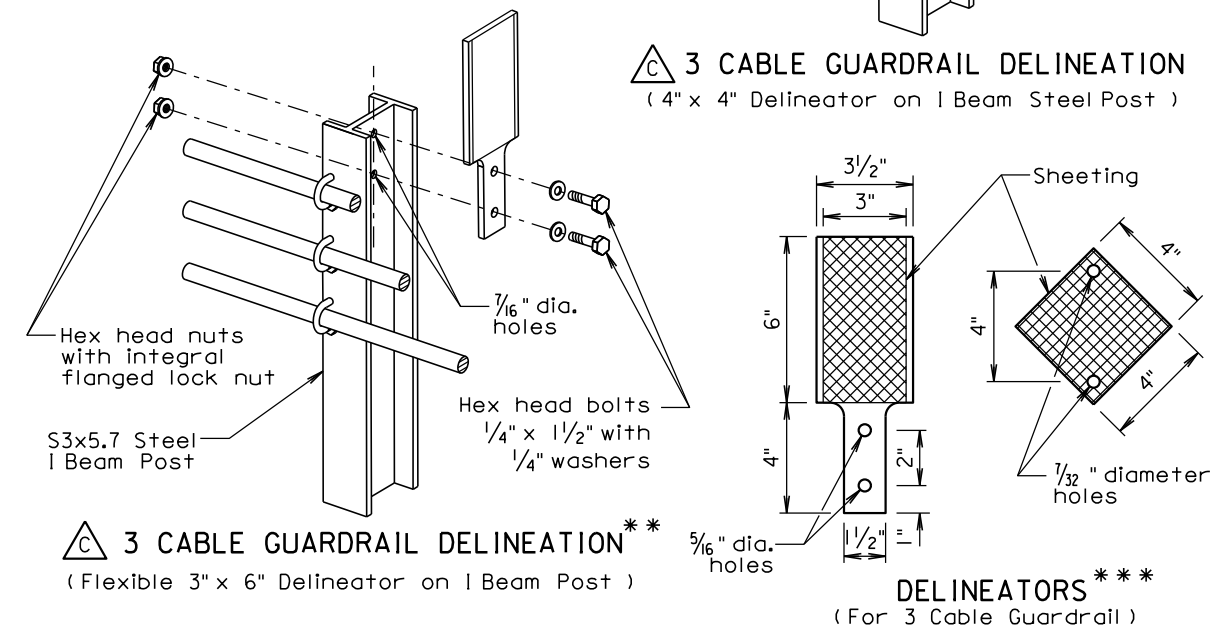


June 26, 2011

Published Date: 2nd Qtr. 2015	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER
			632.40
			Sheet 2 of 4



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



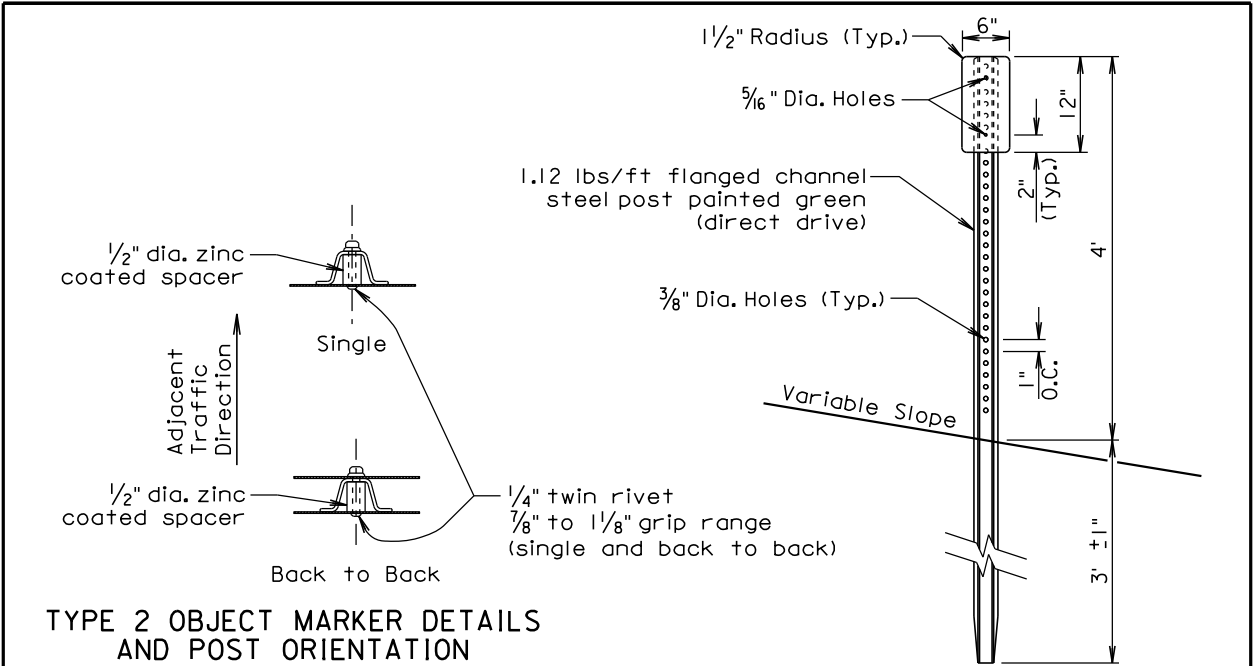
C 3 CABLE GUARDRAIL DELINEATION**
(Flexible 3" x 6" Delineator on I Beam Post)

** Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.

*** Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

June 26, 2011

Published Date: 2nd Qtr. 2015	S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER
			632.40
			Sheet 3 of 4



TYPE 2 OBJECT MARKER DETAILS
AND POST ORIENTATION

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

GENERAL NOTES:

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

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

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

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

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

June 26, 2011

Published Date: 2nd Qtr. 2015

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DELINEATION OF GUARDRAIL AT BRIDGES

PLATE NUMBER
632.40

Sheet 4 of 4

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 - 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.

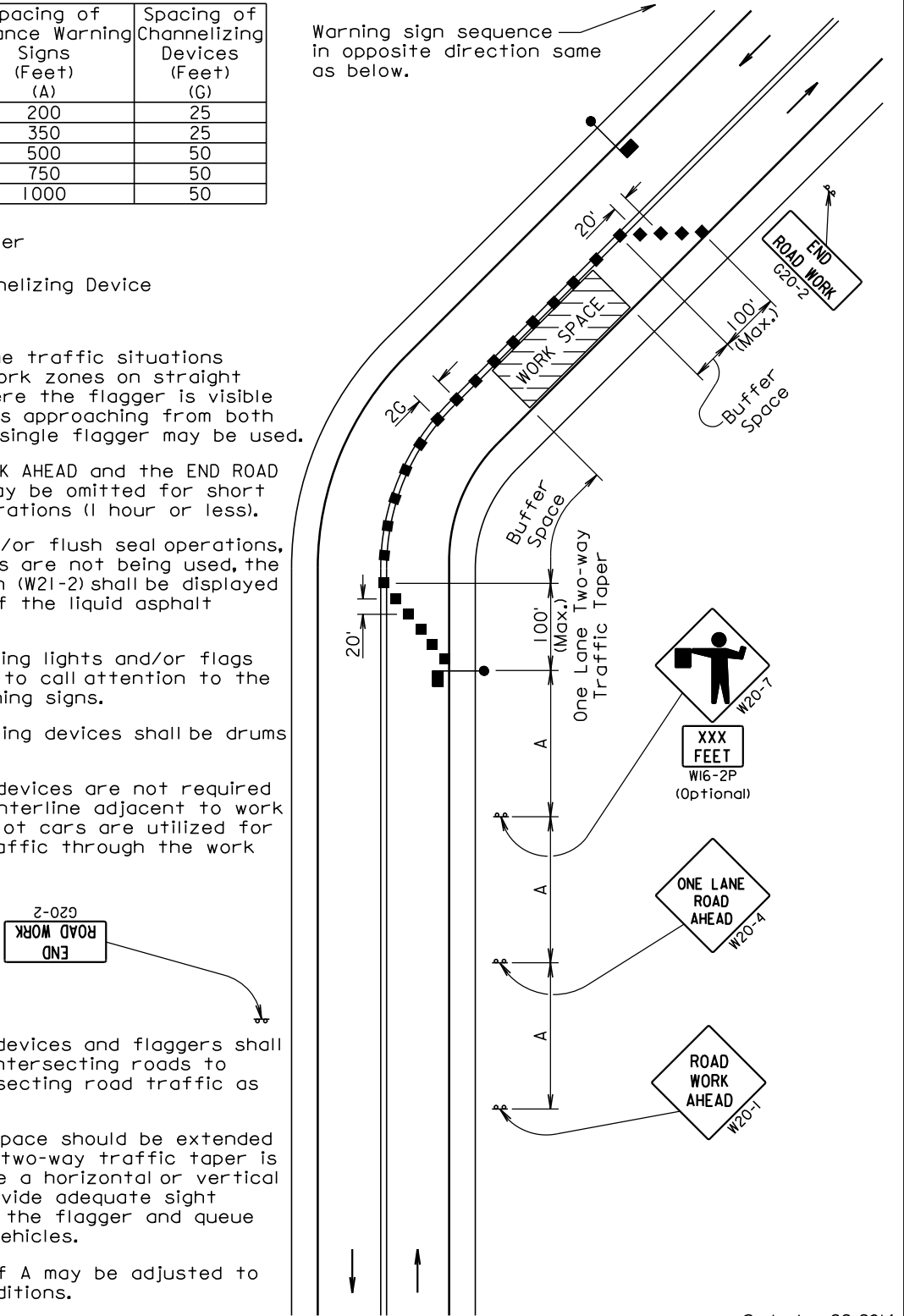
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

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.



September 22, 2014

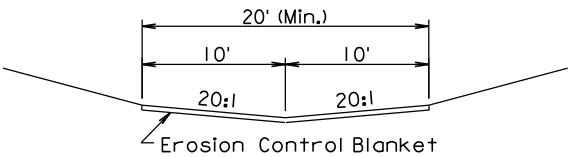
Published Date: 2nd Qtr. 2015

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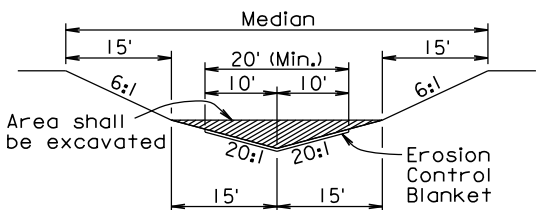
GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER
634.23

Sheet 1 of 1

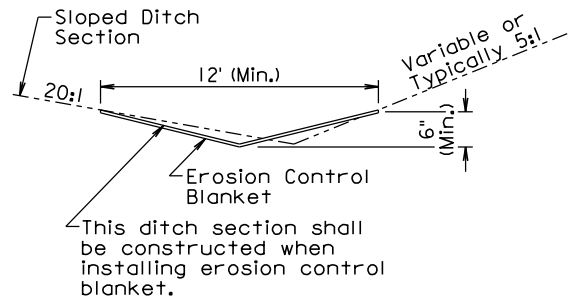


STANDARD DITCH SECTION

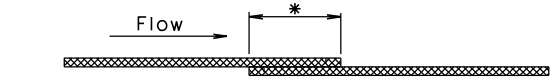


The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION

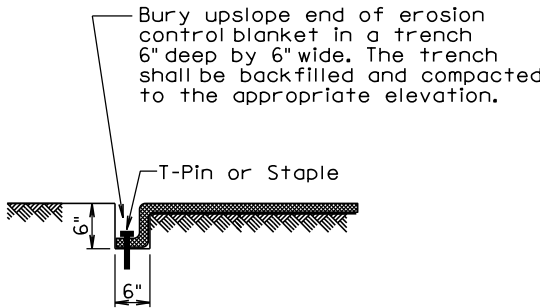


SLOPED DITCH SECTION

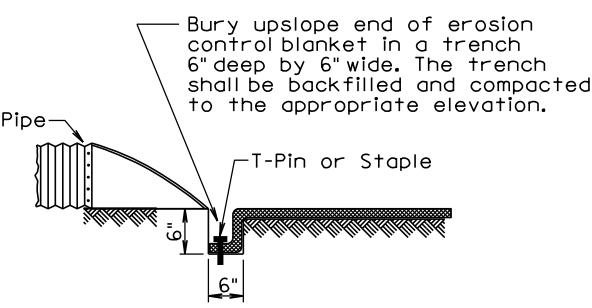


- * Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.
- * Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



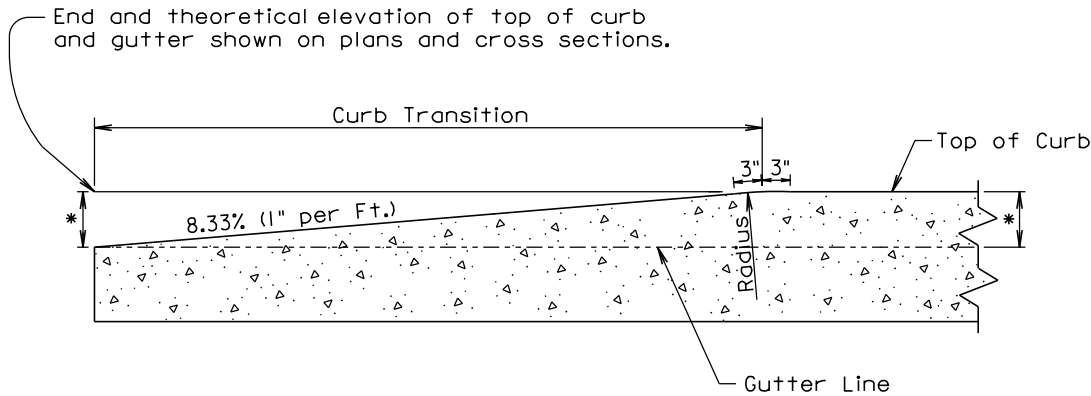
PIPE END DETAIL

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

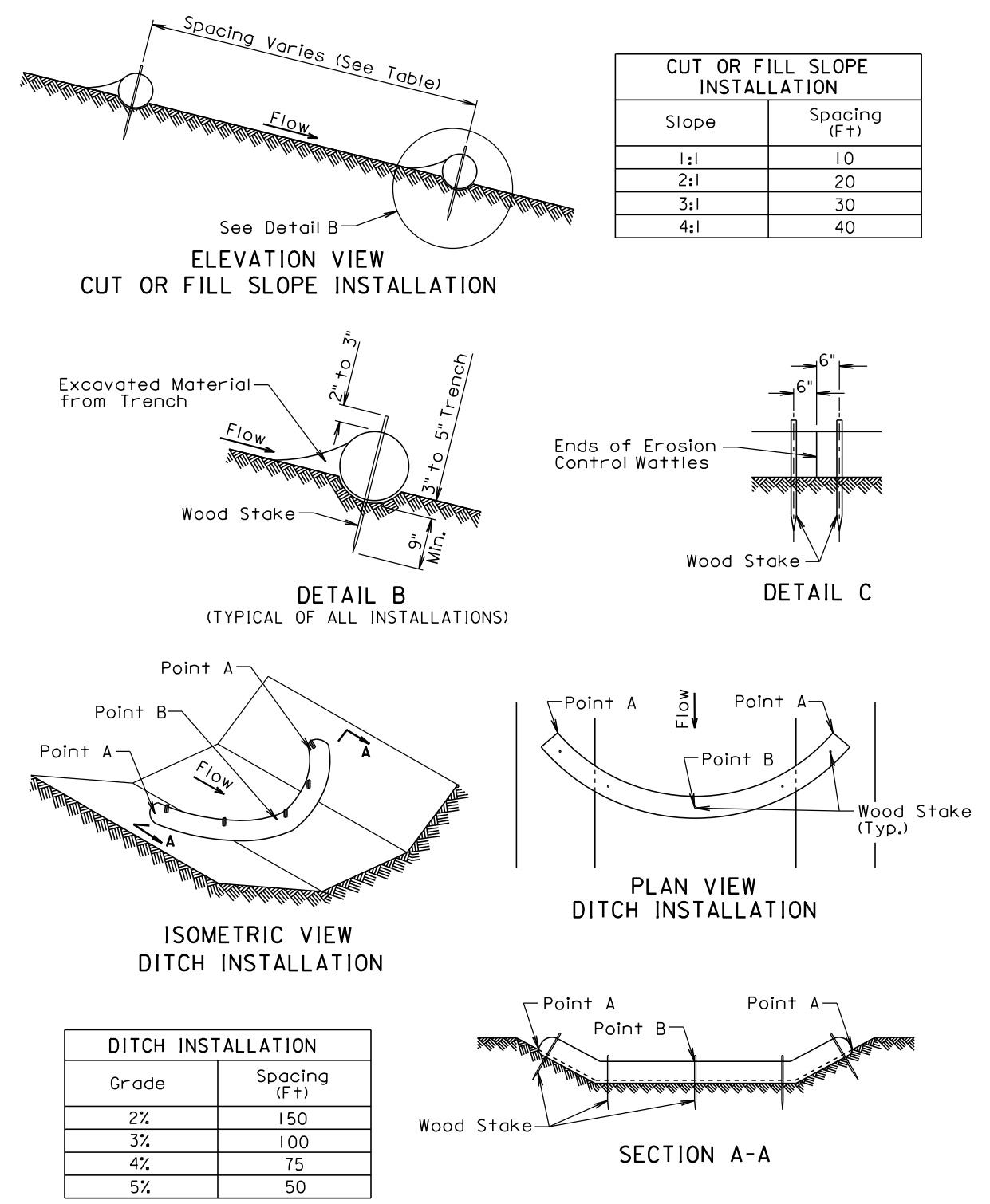
Published Date: 2nd Qtr. 2015	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1



LONGITUDINAL SECTION OF CONCRETE CURB TAPER

September 14, 2005

Published Date: 2nd Qtr. 2015	S D D O T	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



December 23, 2004

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