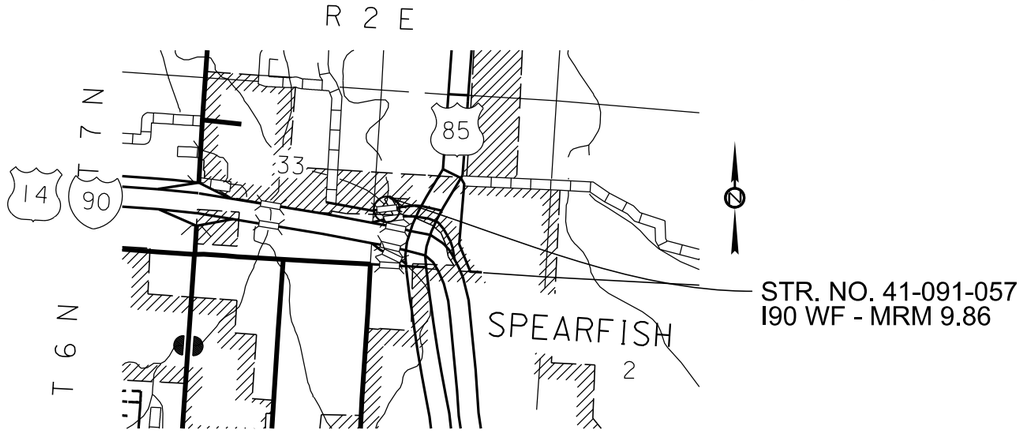
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F1	F17

Plotting Date: 07/02/2014

Section F: Surfacing Plans

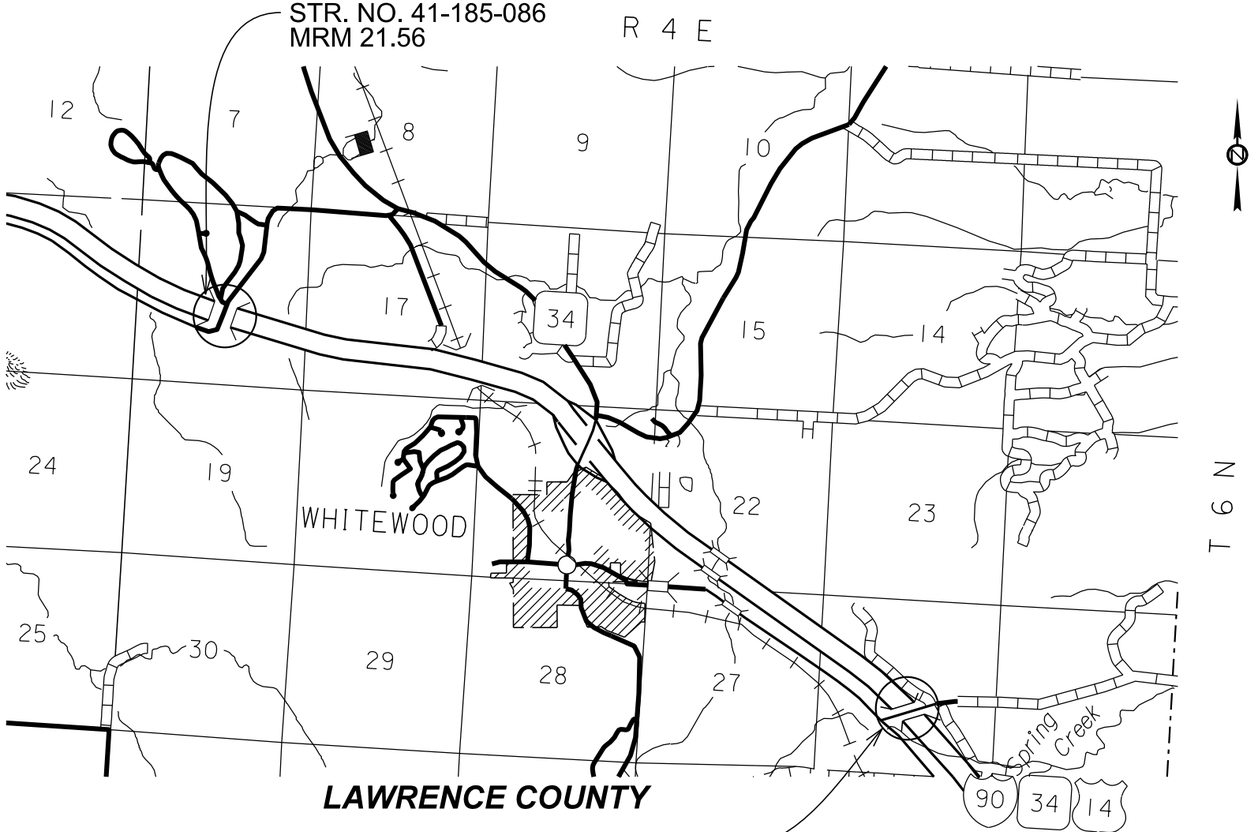
INDEX OF SHEETS



STR. NO. 41-091-057
I90 WF - MRM 9.86

LAWRENCE COUNTY

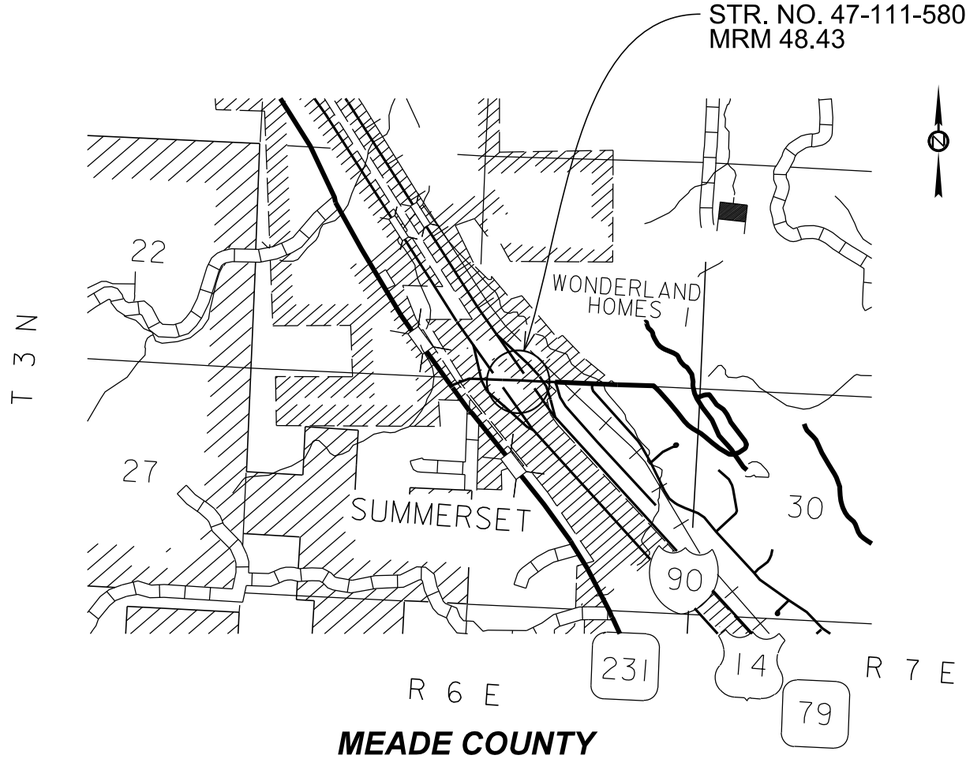
STR. NO. 41-185-086
MRM 21.56



LAWRENCE COUNTY

STR. NO. 41-226-107
MRM 26.14

STR. NO. 47-111-580
MRM 48.43



MEADE COUNTY

Plot Scale - 1:200

Plotted From - trrc11610

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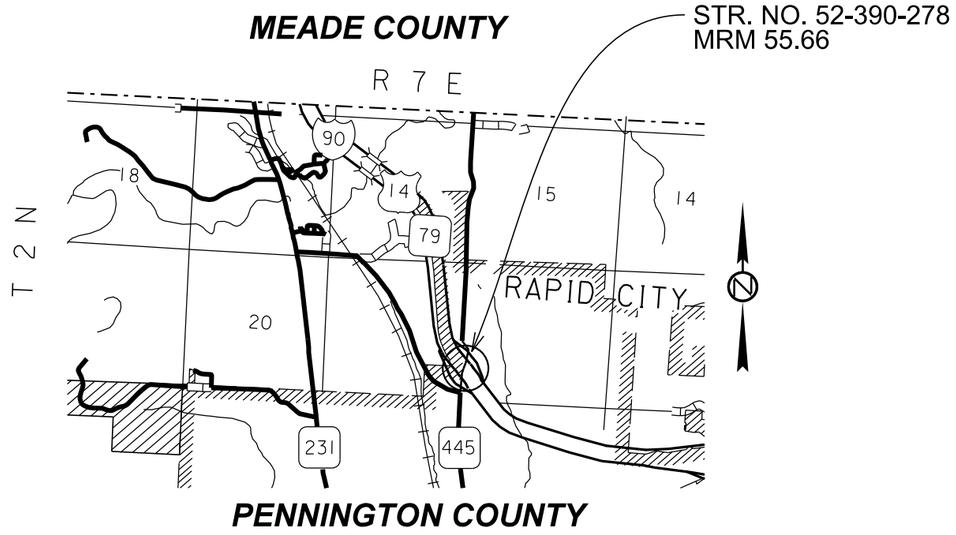
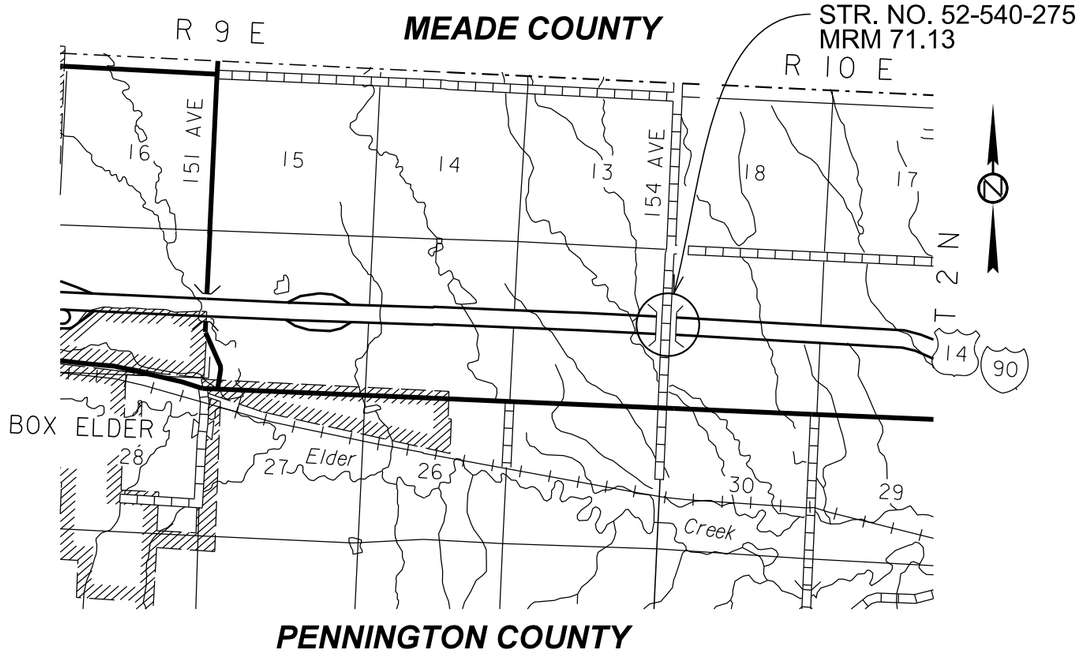
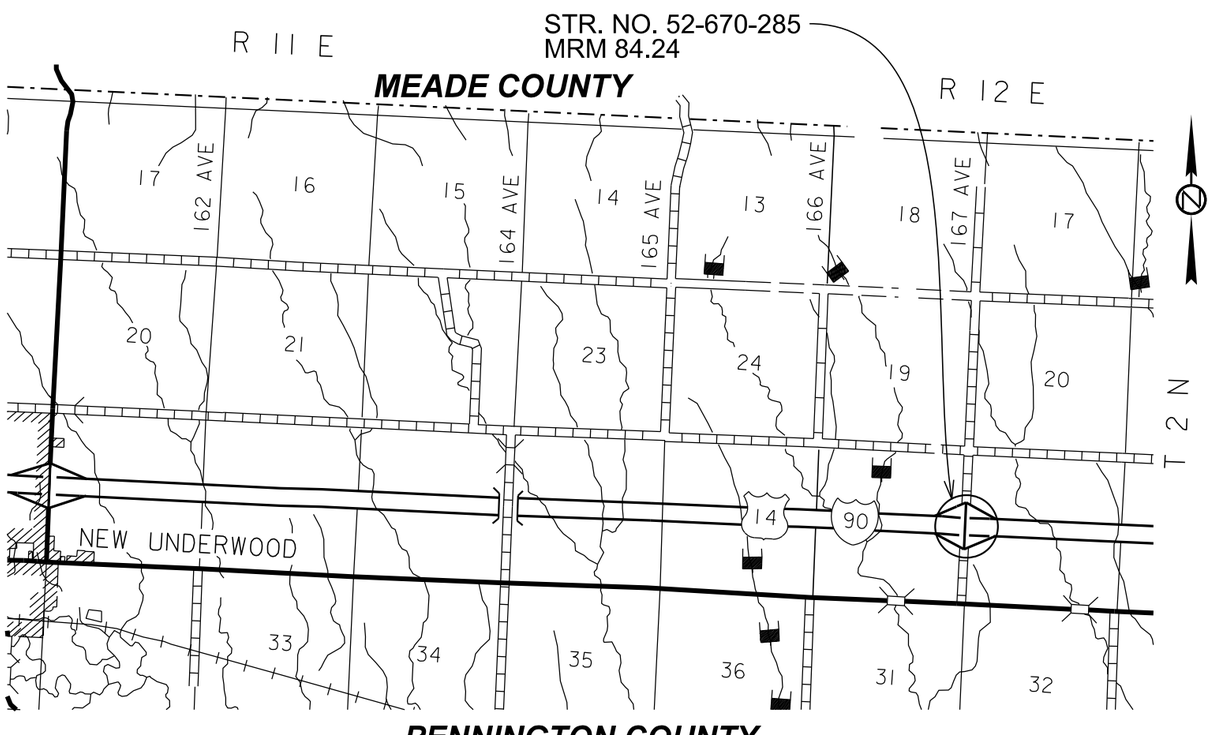
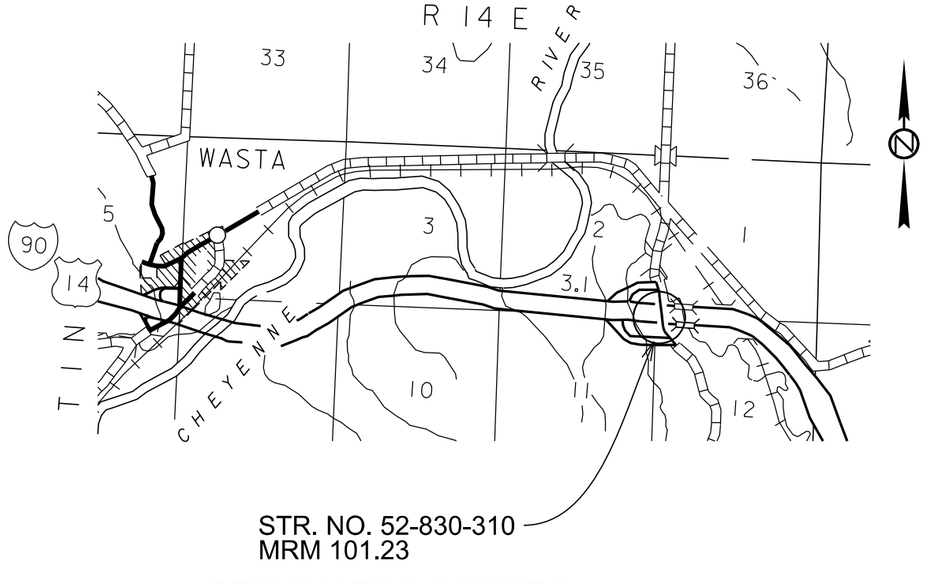
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F2	F17

Plotting Date: 07/02/2014









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SECTION F ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and Gutter	192	Ft
110E1010	Remove Asphalt Concrete Pavement	101.5	SqYd
110E1100	Remove Concrete Pavement	94.1	SqYd
110E6220	Remove Double W Beam Guardrail for Reset	50.0	Ft
110E6230	Remove W Beam Guardrail for Reset	225.0	Ft
110E6300	Remove Rubrail for Reset	48.0	Ft
110E7700	Remove Drop Inlet Frame and Grate Assembly for Reset	2	Each
320E1200	Asphalt Concrete Composite	34.3	Ton
380E5030	Nonreinforced PCC Pavement Repair	101.7	SqYd
380E6000	Dowel Bar	14	Each
380E6110	Insert Steel Bar in PCC Pavement	74	Each
410E2600	Membrane Sealant Expansion Joint	80.0	Ft
630E2110	Beam Guardrail Post and Block	56	Each
630E5160	Reset W Beam Rail	225.0	Ft
630E5170	Reset Double W Beam Rail	50.0	Ft
630E5220	Reset Rubrail	48.0	Ft
635E5540	Sawed-In Detector Loop	1	Each
670E7000	Reset Drop Inlet Frame and Grate Assembly	2	Each

SCOPE OF WORK

Work on this project will proceed in accordance with the Sequence of Operations. Work will consist of the following:

1. Structure Repair.
2. P.C.C. Pavement Repair.

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.

SAWING IN EXISTING SURFACING

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

ASPHALT CONCRETE REMOVAL

Included in the Estimate of Quantities is the removal of 2’ width of Asphalt Concrete at locations where paving notches are being repaired and curb & gutter is being replaced.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements of the Specifications for Class E, Type 1

All other requirements in the Specifications for Asphalt Concrete Composite shall apply.

The asphalt binder used in the mixture shall be PG 64-22, PG 64-28 or PG 64-34 Asphalt Binder.

Final asphalt concrete approach pavement shall match the finished surface of the structure or the approach/sleeper slab along with the existing approach pavement surface at the other end of the approach pavement work limit. The asphalt concrete shall be Asphalt Concrete Composite furnished and placed 6” depth (in 2 – 3” lifts) by the contractor as detailed in the plans.

TABLE OF ASPHALT CONCRETE

STRUCTURE NO.	ASPHALT CONCRETE REMOVAL	ASPHALT CONCRETE COMPOSITE
	SqYd	Ton
41-091-057	14.0	4.7
41-226-107	59.8	20.2
52-670-285	13.3	4.5
52-830-310	14.4	4.9
Totals:	**101.5**	**34.3**

TABLE OF CONCRETE CURB AND GUTTER REMOVAL - STR. NO. 41-226-107

Location	Quantity (Ft)
NE corner	51.5
SE corner	50.2
NW corner	48.0
SW corner	41.8
Total:	191.5

TABLE OF DROP INLET FRAME & GRATE – STR. NO. 41-226-107

Locaton	Remove Drop Inlet Frame & Grate Assembly for Reset Each	Reset Drop Inlet Frame & Grate Assembley (Each)
NW corner	1	1
SW corner	1	1
Total:	2	2

REMOVAL OF EXISTING CONCRETE PAVEMENT STR. NO. 52-390-278

The Contractor shall dispose of the concrete pavement at a site approved by the Engineer in accordance with the Environmental Commitment notes.

The existing P.C.C. Pavement is typically 40 feet wide and is 8” inch nonreinforced.

The existing contraction joints are spaced at approximately 14 feet.

If there is foam jacking material under the concrete slab, the Contractor shall dispose of the foam jacking material at a site approved by the Engineer. All cost for removing and disposal of concrete and foam jacking material shall be incidental to the contract unit price per square yard for “Remove Concrete Pavement”.

TABLE OF CONCRETE PAVEMENT REMOVAL - STR. NO. 52-390-278

Station	to	Station	Description	Quantity (SqYd)
13+62		13+68	8” Nonreinforced PCCP	23.2
17+06		17+37	8” Nonreinforced PCCP	70.9
			Total:	94.1

RESTORATION OF GRAVEL CUSHION - STR. NO. 52-390-278

An inspection of the gravel cushion subgrade shall be made after removing concrete from each pavement replacement area. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose and excess material shall be removed. Each replacement area shall be leveled and compacted to the satisfaction of the Engineer.

If additional gravel cushion material is required, the Contractor shall furnish, place and compact gravel cushion to the satisfaction of the Engineer.

Cost for this work shall be incidental to the contract unit price per square yard for “Nonreinforced PCC Pavement Repair”.

TABLE OF NONREINFORCED PAVEMENT REPAIR - STR. NO. 52-390-278

Location	No. 5 Deformed Tie Bar (Each)	No. 9 Deformed Tie Bar (Each)	1 1/4” Plain Round Dowel Bar (Each)	8” Nonreinforced PCC Pavement Repair (SqYd)
13+62 to 13+68	2	26	0	26.7
17+06 to 17+37	14	6	26	75.0
Totals:	16	32	26	101.7

NONREINFORCED PCC PAVEMENT REPAIR - STR. NO. 52-390-278

New pavement thickness shall be as indicated in the table of nonreinforced pavement repair.

The concrete mix shall be Class A45 in accordance with Section 460 of the Standard Specifications.

Cost for performing the aforementioned work including furnishing and placing concrete, curing, sawing and sealing joints, labor, tools and equipment shall be included in the contract unit price per square yard for “Nonreinforced PCC Pavement Repair”.

STEEL BAR INSERTION - STR. NO. 52-390-278

Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor shall insert the steel bars (1¼” x 18” epoxy coated plain round dowel bars and No. 9 x 18” epoxy coated deformed dowel bars for transverse joints and No. 5 x 24” epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

Steel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing will not be permitted.

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3).

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement shall be located at mid-depth of the slab and true and normal. The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer’s designated rate and be equipped with an automatic shut-off. The pump shall shut off when any of the components are not being metered at the designated rate.

Fill the drilled holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion by the dipping method will not be allowed.

Cost for the epoxy resin adhesive, steel bars, drilling of holes, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be included in the contract unit price per each for “Insert Steel Bar In PCC Pavement”.

SAW AND SEAL JOINTS - STR. NO. 52-390-278

All longitudinal and transverse joints at concrete repair areas shall be sawed and sealed.

Joints shall not be sealed until they are thoroughly clean and dry. Cleaning shall be accomplished by sand blasting and other tools as necessary. Just prior to sealing, each joint shall be blown out using a jet of compressed air to remove all traces of dust.

Joints shall be sealed with Hot Poured Elastic Joint Sealer.

Acceptance of the Hot Poured Elastic Joint Sealer will be based on visual inspection by the Engineer.

Cost for sawing and sealing of the joints shall be incidental to the contract unit price per square yard for “Nonreinforced PCC Pavement Repair”.

REMOVE POLYMER MODIFIED ASPHALT GROWTH JOINT – STR. NO. 52-390-278

All costs to remove the polymer modified asphalt growth joints shall be incidental to the contract unit price per square yard for “Remove Concrete Pavement”.

MEMBRANE SEALANT EXPANSION JOINT- STR. NO. 52-390-278

1. Install all membrane sealant expansion joints at the plan shown locations in conformance to the following notes.
2. The Membrane Sealant shall be one of the membrane sealant types from the approved product list for Membrane Sealant Expansion Joints.
3. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self-expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
4. The membrane sealant shall be supplied in pieces 5 feet in length or longer. The foam sealant shall be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.
6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
7. If Styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.
8. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor’s expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
9. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.
10. A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.
11. The joint opening shall be constant width and shall have smooth vertical sides. Surfaces of material adjacent to the joint shall be at the correct grade and crown as approved by the Engineer.
12. Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.
13. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
14. Individual spliced sections shall be installed as per the manufacturers’ recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
15. Traffic shall not be allowed on the joint for a minimum 3 hours unless otherwise directed by the Engineer.
16. Forms for the joint shall be left in place for a minimum of 7 days. No construction equipment or traffic shall be allowed on the joint until the concrete has reached design strength. The joint edges shall be protected from damage by equipment and traffic.
17. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.

TABLE OF GUARDRAIL

Location	Remove Double W Beam Guardrail for Reset	Remove W Beam Guardrail for Reset	Remove Rubrail for Reset	Beam Guardrail Post and Block	Reset W Beam Rail	Reset Double W Beam Rail	Reset Rubrail	Comment
	Ft	Ft	Ft	Each	Ft	Ft	Ft	
Structure No. 41-226-107								
Begin Bridge Lt.	12.5	37.5	12	14	37.5	12.5	12	
Begin Bridge Rt.	12.5	37.5	12	14	37.5	12.5	12	
End Bridge Lt.	12.5	37.5	12	14	37.5	12.5	12	
End Bridge Rt.	12.5	37.5	12	14	37.5	12.5	12	
Structure No. 52-390-278								
End Bridge Lt.		50			50			Post and block to remain in place
End Bridge Rt.		25			25			Post and block to remain in place
Totals	**50**	**225**	**48**	**56**	**225**	**50**	**48**	

REMOVE AND RESET GUARDRAIL - STR. NO. 52-390-278

Included in the Estimate of Quantities is 75’ Remove W Beam Guardrail for Reset for removal of the rail only to accommodate the Nonreinforced PCC Pavement Repair on the south end of the structure and 75’ of Reset W Beam Rail to reset the rail.

REMOVE AND RESET GUARDRAIL - STR. NO. 41-226-107

Included in the Estimate of Quantities is 200’ Remove W Beam Guardrail for Reset to accommodate the placement of the new Curb & Gutter.

GUARDRAIL DELINEATORS – STR. NO. 41-226-107

The Contractor shall remove guardrail delineators on portions of guardrail being removed for reset and reset the delineators on the new post and block. Removing and placing these reflectors shall be per standard plate 632.40. All cost to remove and place the reflectors on the new post and block shall be incidental the various guardrail remove and reset items.

GUARDRAIL POST AND BLOCK – STR. NO. 41-226-107

The existing post and block adjacent to the Curb & Gutter shall become the property of the Contractor.

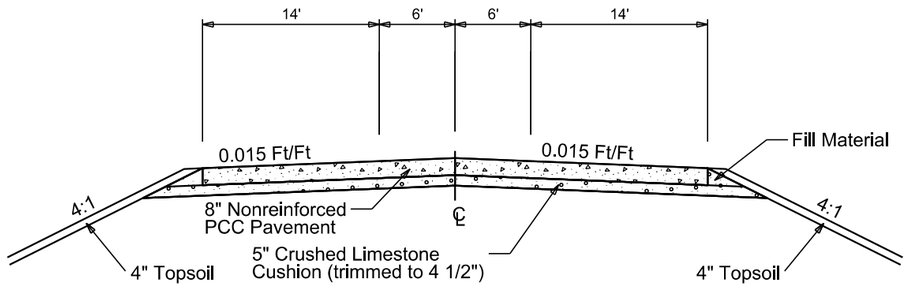
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F6	F17

Plotting Date: 07/02/2014

TYPICAL SURFACING SECTION

Str. No. 52-390-278

Inplace Section



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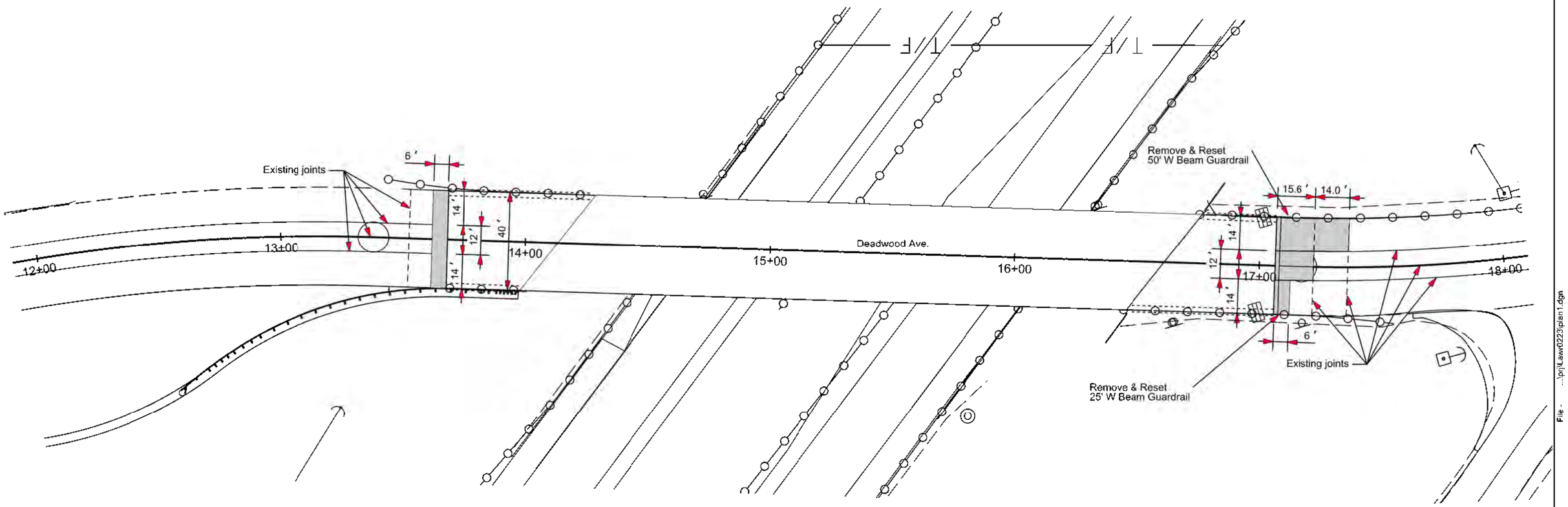
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F7	F17

Plotting Date: 07/02/2014

SURFACING LAYOUT

Str. No. 52-390-278



LEGEND:

- Nonreinforced PCC Pavement Repair
- Sawed in Detector Loop

Plot Scale - 1.40

Plotted From - trrc11610

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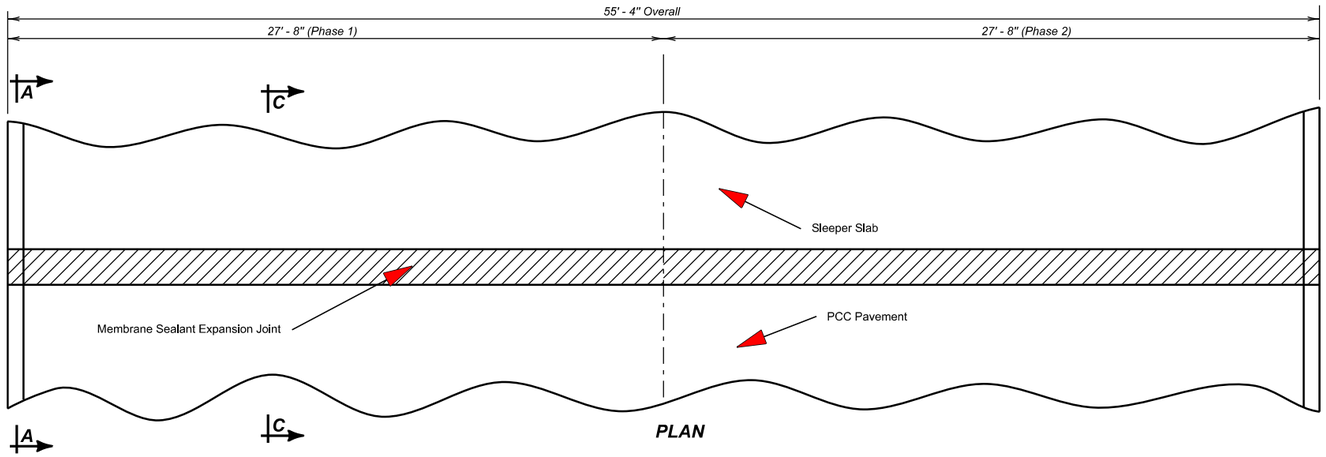
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F8	F17

Plotting Date: 07/02/2014

MEMBRANE SEALANT EXPANSION JOINT

DETAILS FOR JOINT BETWEEN SLEEPER SLAB AND PCC PAVEMENT



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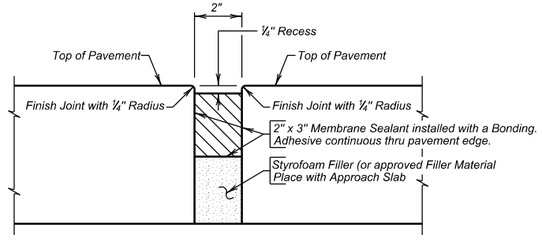
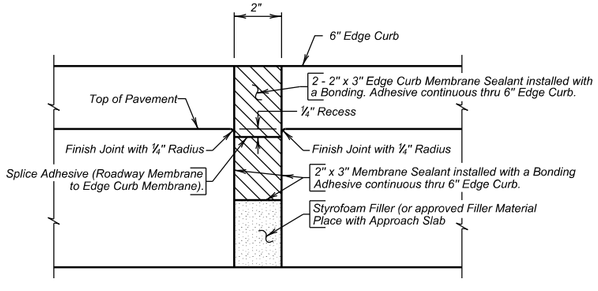


SECTION C - C



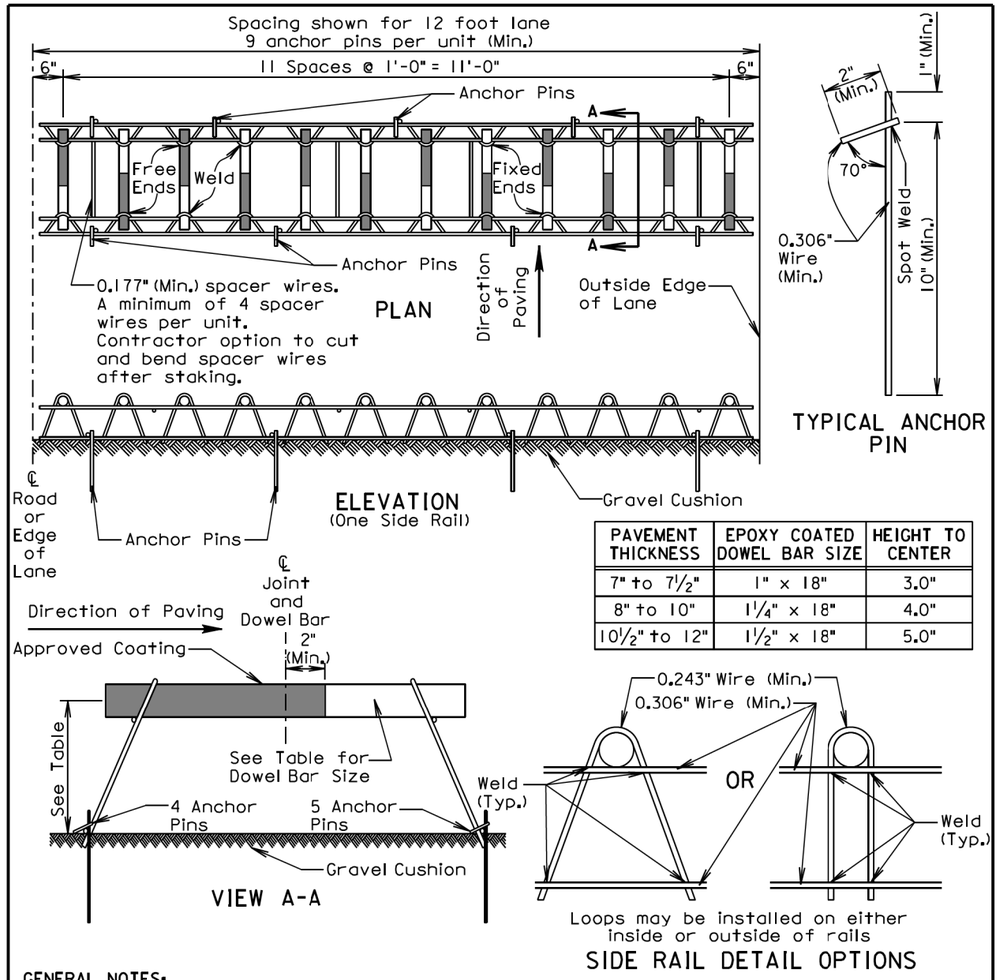
SECTION A - A

ESTIMATED QUANTITIES			
ITEM	UNIT	NORTH END	SOUTH END
Membrane Sealant Expansion Joint	Ft	40.0	40.0

Plot Scale - 1:0.2

Plotted From - trrc11610

File - ...\0233 Membrane Sealant Joint Details.dgn



PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 12"	1½" x 18"	5.0"

GENERAL NOTES:

Longitudinal joint tie bars shall be placed a minimum of 15 inches from the transverse contraction joint.

Centerline of individual dowel bars shall be parallel to top of subgrade ±1/8 inch in 18 inches and to all other dowel bars in the assembly ±1/16 inch in 18 inches.

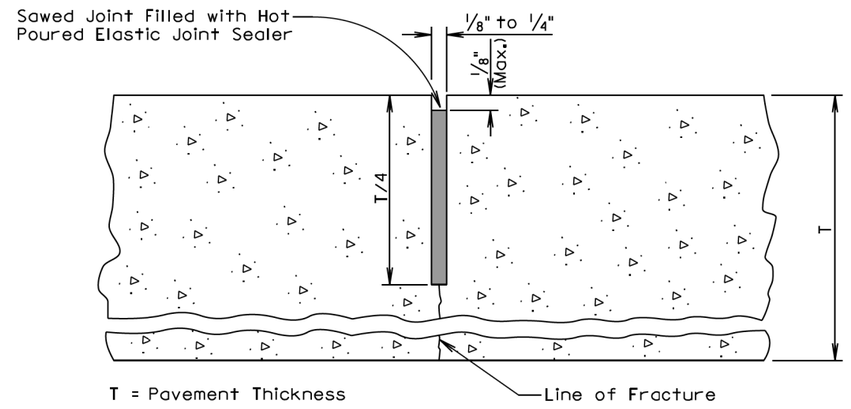
Centerline of individual dowel bars shall be parallel to the centerline of the roadway ±1/2 inch in 18 inches.

The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ±1 inch.

Supporting devices as shown on this sheet, or equivalent as approved by the Engineer, shall be used to maintain proper horizontal and vertical alignment of the dowel bars.

August 30, 2013

Published Date: 2nd Qtr. 2014	SDDOT	***PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material***	*PLATE NUMBER* 380.01 *Sheet 1 of 1*



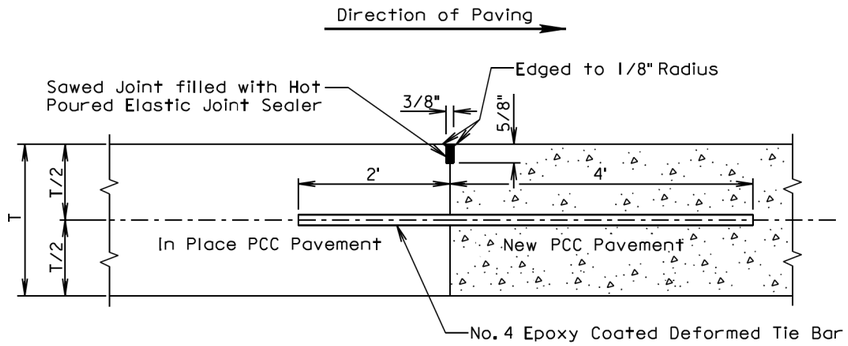
GENERAL NOTES:

The saw cut to control cracking shall be a minimum of ¼ the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement shall be removed as soon as the material has cooled. The extent of removal of material shall be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material shall be borne by the Contractor.

June 26, 2013

Published Date: 2nd Qtr. 2014	SDDOT	***PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY***	*PLATE NUMBER* 380.05 *Sheet 1 of 1*



T = Pavement Thickness

GENERAL NOTES:

No. 4 epoxy coated deformed tie bars shall be spaced 12 inches center to center and shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The minimum distance between a transverse construction joint with tie bars and an adjacent transverse contraction joint shall be 5 feet.

When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

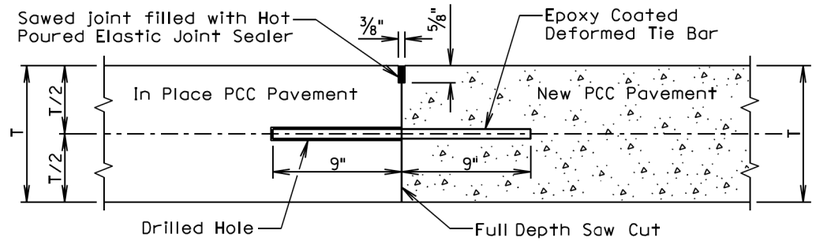
A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on the current project.

June 26, 2013

Published Date: 2nd Qtr. 2014	SDDOT	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.07
			Sheet 1 of 1

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

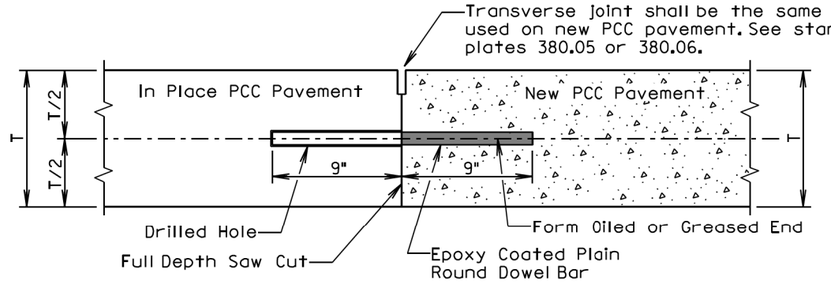
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

See sheet 2 of 2 of this standard plate to determine if Detail A shall be used.

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars shall be used in 10 inch thickness and less PCC Pavement and No. 11 epoxy coated deformed tie bars shall be used in 10.5 inch thickness and greater PCC Pavement. The tie bar spacing shall be 18 inches center to center and shall be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

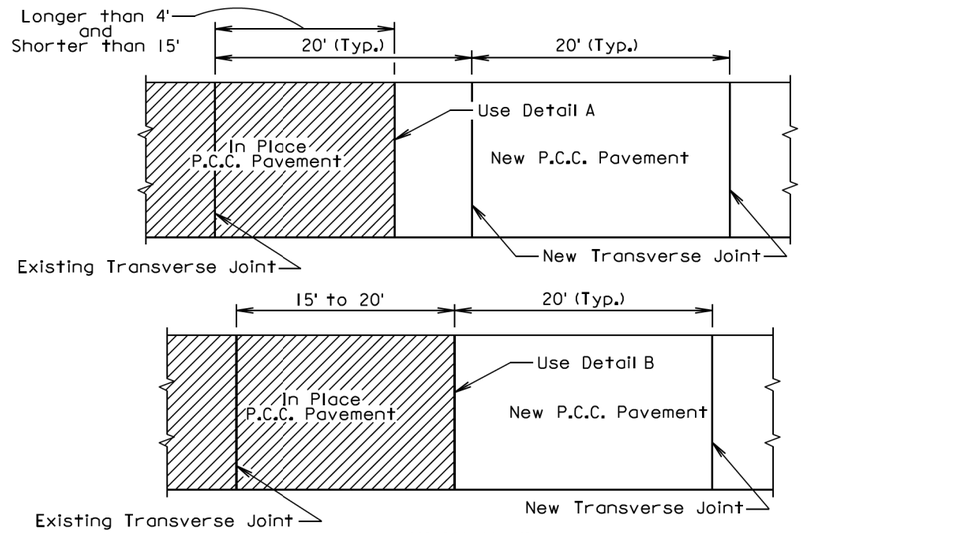
See sheet 2 of 2 of this standard plate to determine if Detail B shall be used.

The plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

The epoxy coated plain round dowel bar size, number, and spacing shall be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

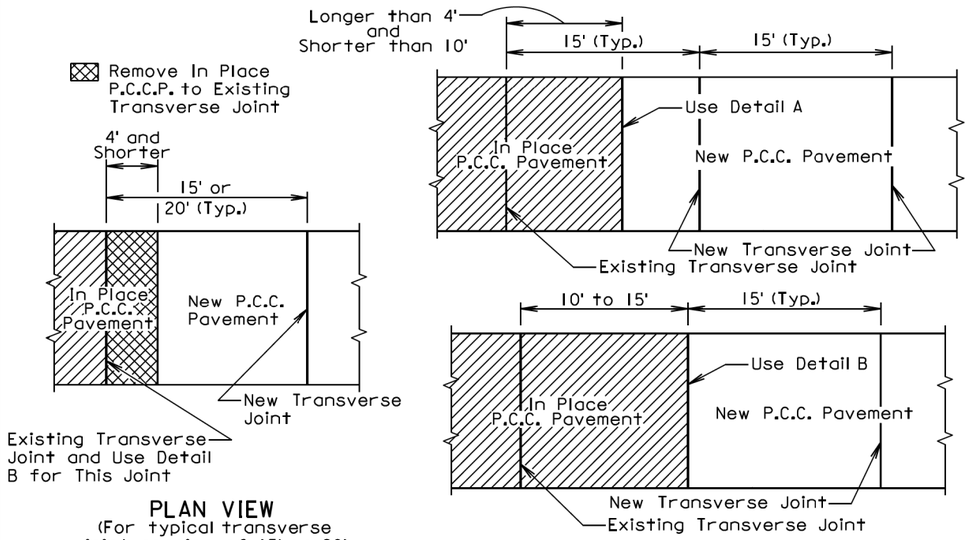
September 6, 2013

Published Date: 2nd Qtr. 2014	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
			Sheet 1 of 2



PLAN VIEW

(For typical transverse joint spacing of 20' on the current project)



PLAN VIEW

(For typical transverse joint spacing of 15' or 20' on the current project)

PLAN VIEW

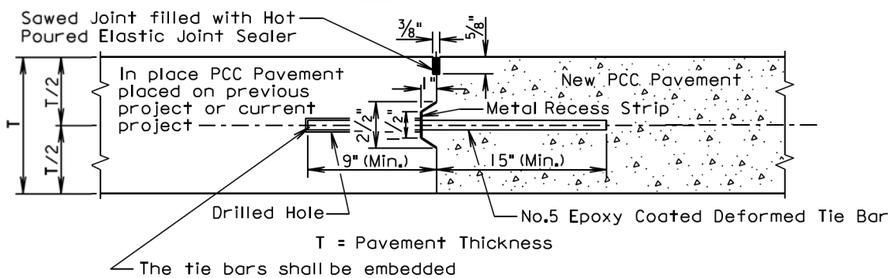
(For typical transverse joint spacing of 15' on the current project)

September 6, 2013

Published Date: 2nd Qtr. 2014	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
			Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(DRILLED IN BARS)

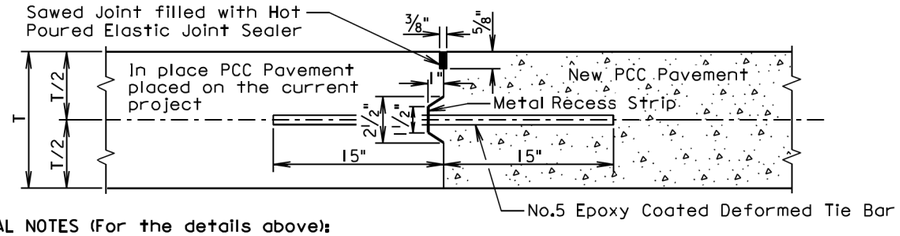


T = Pavement Thickness

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(INSERTED OR FORMED IN BARS)



GENERAL NOTES (For the details above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following tables:

Tie Bar Spacing 48" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

Tie Bar Spacing 30" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
5' to 7'	2
7.5' to 9.5'	3
10' to 12'	4
12.5' to 14.5'	5
15' to 17'	6
17.5' to 19.5'	7
20' to 22'	8

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

The required number of tie bars as shown in the table shall be uniformly spaced within each panel. The uniformly spaced tie bars shall be spaced a maximum of 48 inches center to center for a female keyway and shall be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing shall apply to tie bars within each panel.

The keyway illustrated in the above details depict a female keyway.

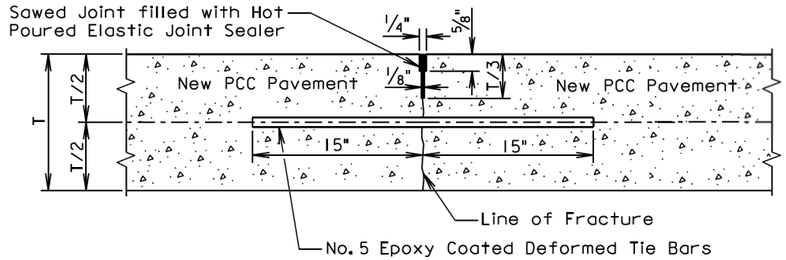
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

August 31, 2013

Published Date: 2nd Qtr. 2014	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
			Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS

(POURED MONOLITHICALLY)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following table:

Tie Bar Spacing 48" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

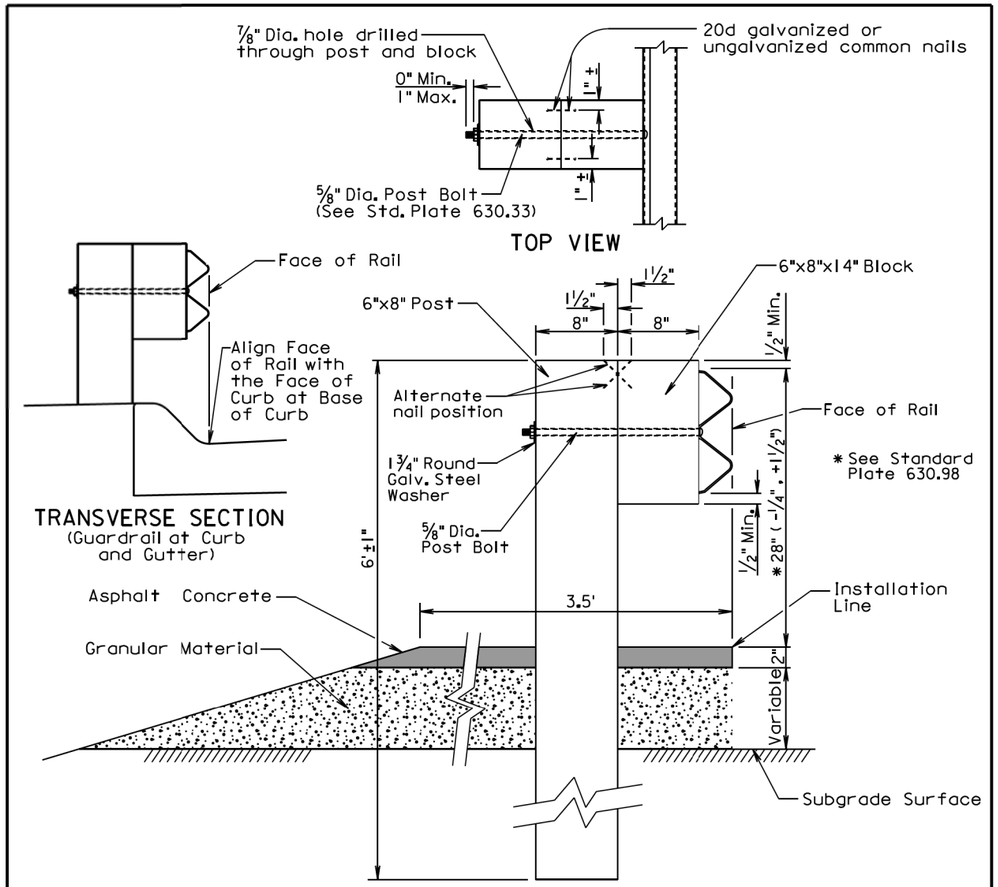
The tie bars shall be placed a minimum of 15 inches from the transverse contraction joints.

The required number of tie bars as shown in the table shall be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing shall apply to tie bars within each panel.

The first saw cut to control cracking shall be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer is necessary.

August 31, 2013

Published Date: 2nd Qtr. 2014	SDDOT	**PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS**	PLATE NUMBER 380.10 Sheet 2 of 2



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.

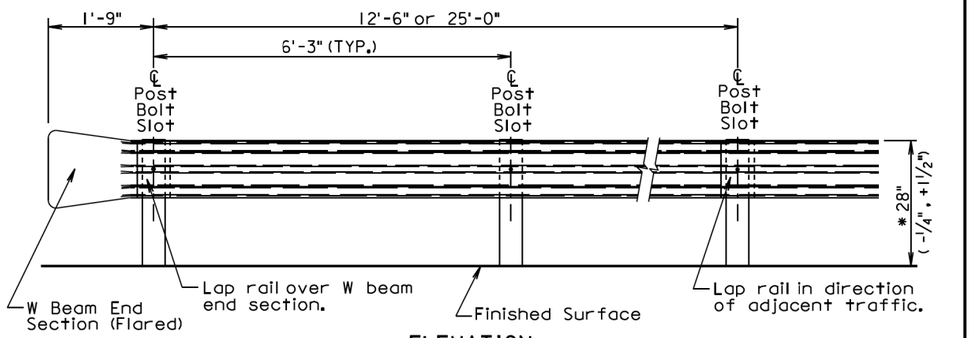
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

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.

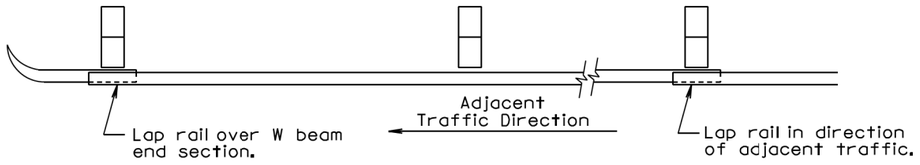
December 23, 2010

Published Date: 2nd Qtr. 2014	SDDOT	**W BEAM GUARDRAIL POST INSTALLATION**	PLATE NUMBER 630.31 Sheet 1 of 1



ELEVATION

*See Standard Plate 630.98



PLAN

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 1.

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.

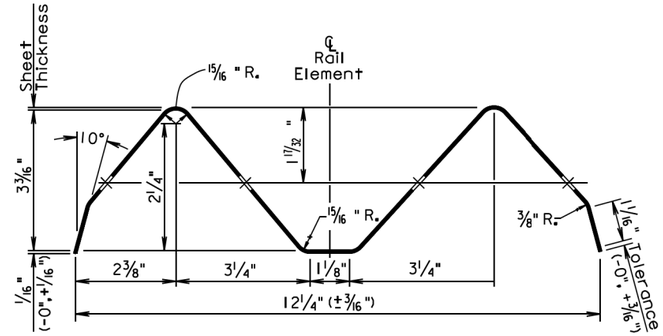
W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

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.

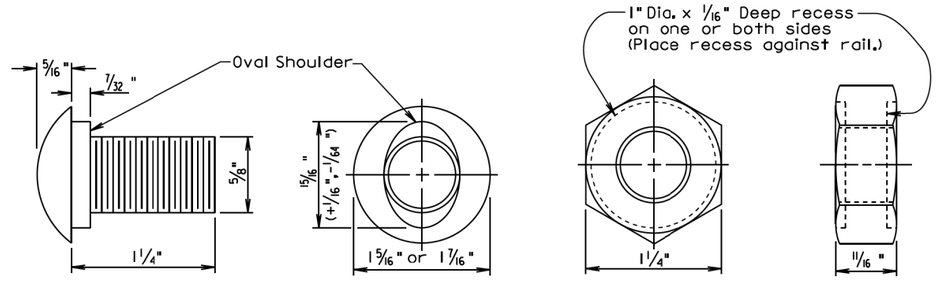
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

December 23, 2010

Published Date: 2nd Qtr. 2014	SDDOT	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
			Sheet 1 of 1

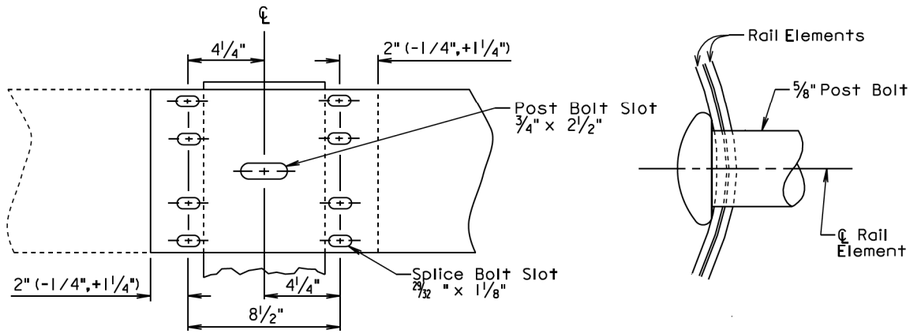


SECTION THROUGH W BEAM RAIL ELEMENT



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.

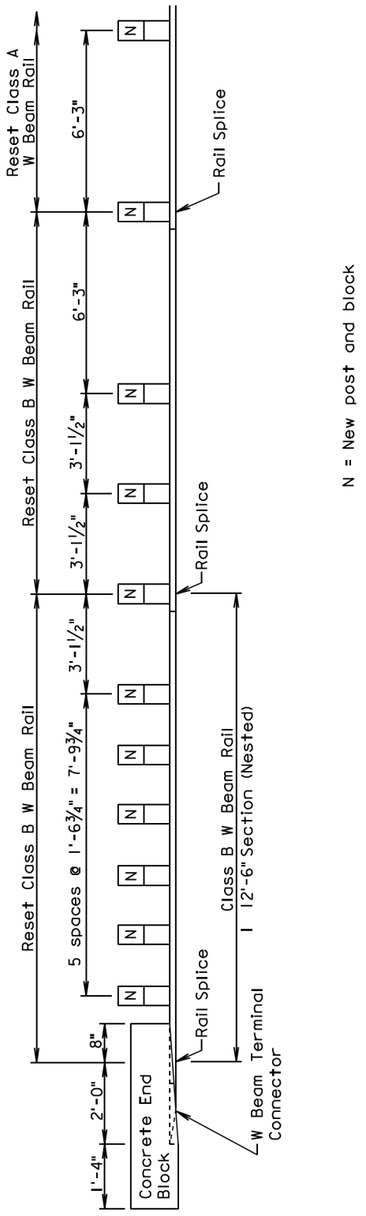
RAIL SPLICE

December 23, 2004

Published Date: 2nd Qtr. 2014	SDDOT	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F14	F17

Plotting Date: 07/02/2014

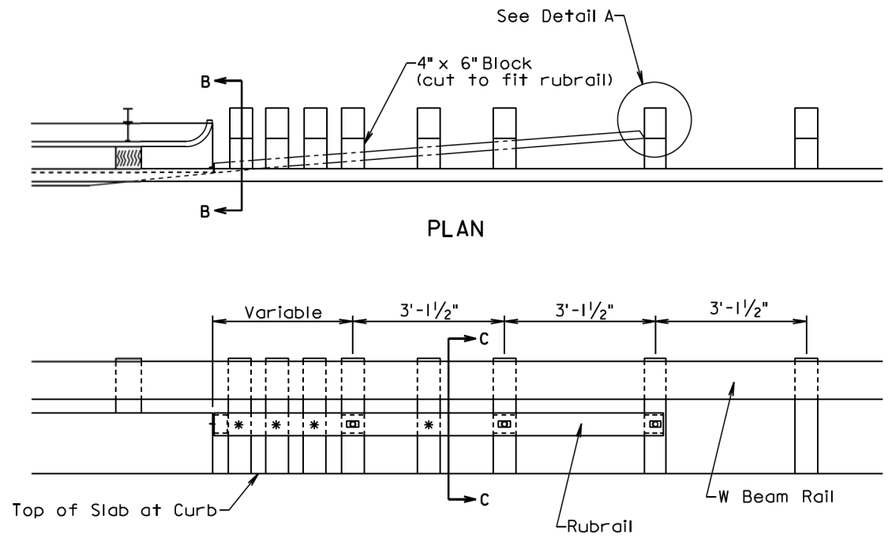


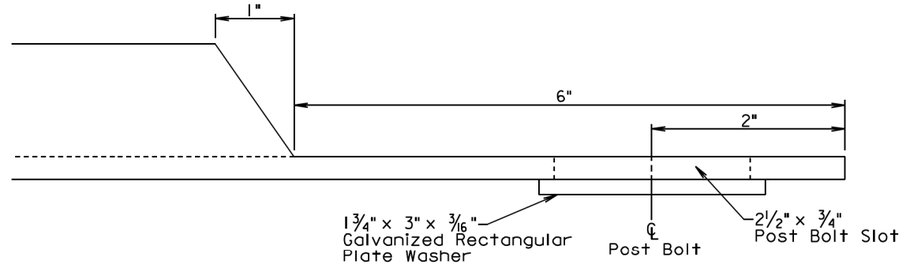
N = New post and block

POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END
(W BEAM RESET AND RETROFIT)

March 31, 2000

Published Date: 2nd Qtr. 2014	SDDOT	POST SPACING ARRANGEMENT FOR W BEAM GUARDRAIL AT BRIDGE END (W BEAM RESET AND RETROFIT)	PLATE NUMBER 630.59
			Sheet 1 of 1





DETAIL A
(Post, Block, and Post Bolt not shown)

GENERAL NOTES:

The steel shall be in conformance with ASTM A 36 and shall be galvanized after fabrication in conformance with ASTM A 123. If pre-galvanized steel members are used, all cuts and welds shall be coated with an approved galvanizing paint.

Offset blocks shall be in conformance with section 630 of the Standard Specifications.

All hardware shall be in conformance with the requirements of AASHTO M 180.

March 31, 2000

Published Date: 2nd Qtr. 2014	SDDOT	RUBRAIL AT BRIDGE END (W BEAM RETROFIT AND DRILLED IN ANCHOR)	PLATE NUMBER 630.78
			Sheet 1 of 2

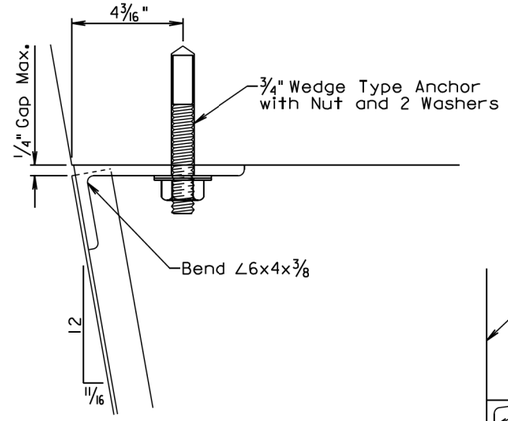
Plot Scale - 1:200

- Plotted From - trc11610

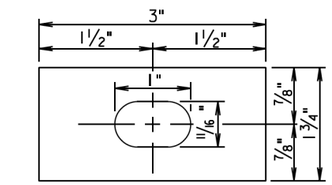
File - ...\prj\Lawn0223\StdplateFpg6.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F15	F17

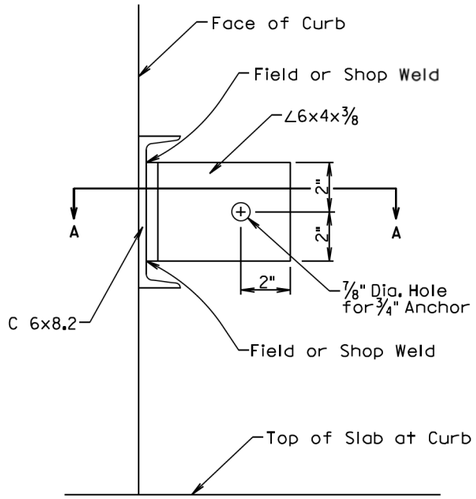
Plotting Date: 07/02/2014



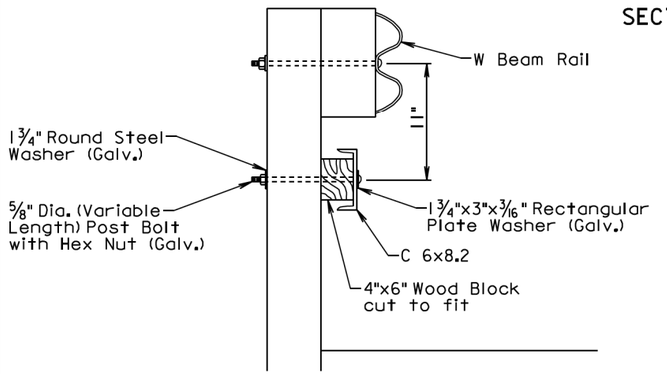
SECTION A-A



RECTANGULAR PLATE WASHER



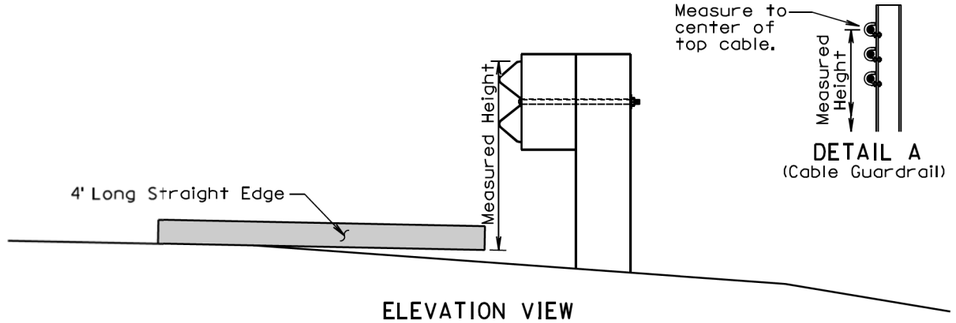
SECTION B-B



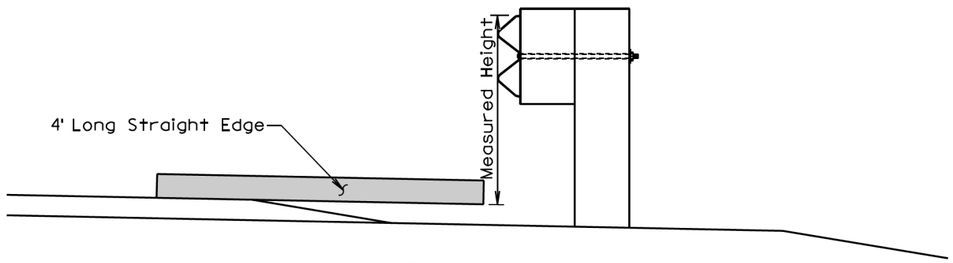
SECTION C-C

March 31, 2000

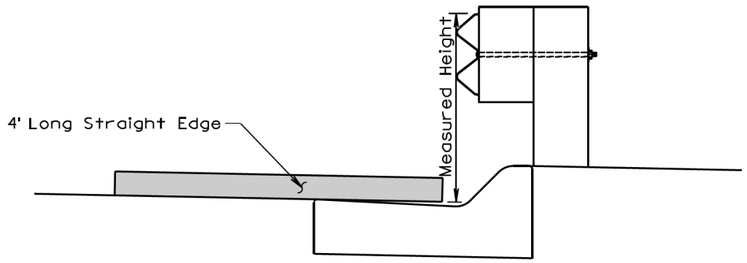
Published Date: 2nd Qtr. 2014	SDDOT	RUBRAIL AT BRIDGE END (W BEAM RETROFIT AND DRILLED IN ANCHOR)	PLATE NUMBER 630.78
			Sheet 2 of 2



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: 2nd Qtr. 2014	SDDOT	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
			Sheet 1 of 1

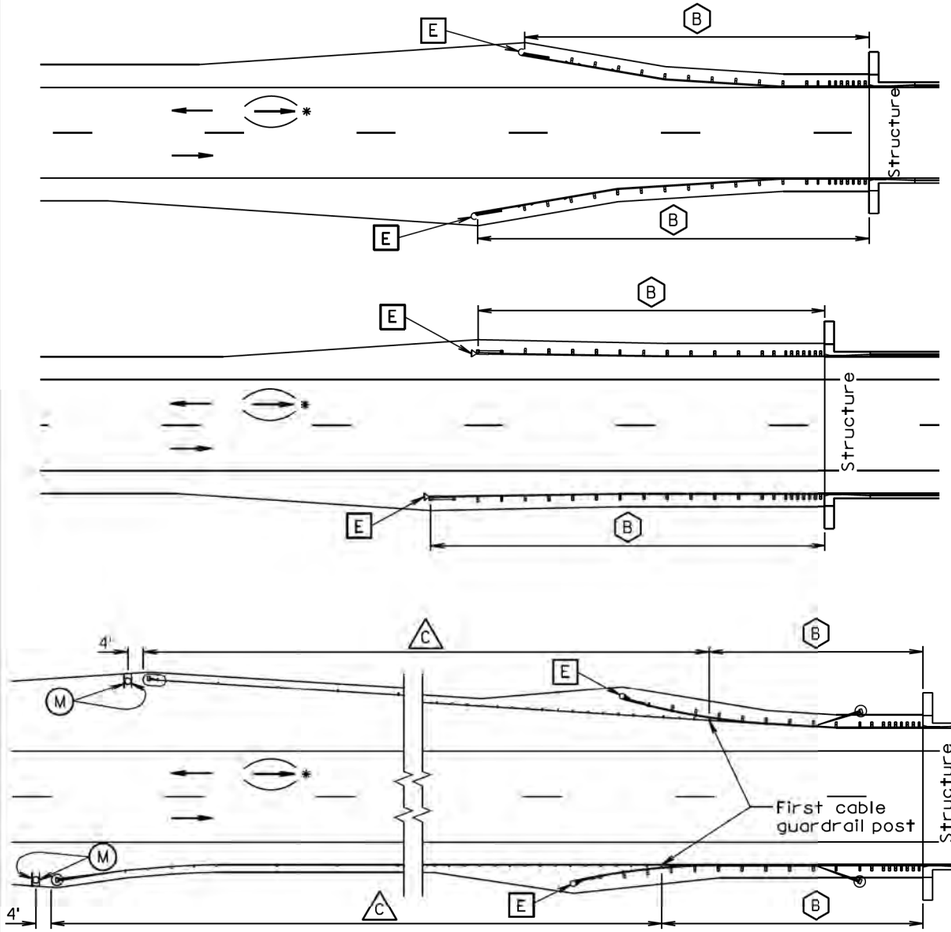
Plot Scale - 1:200

- Plotted From - trrc11610

File - ...\prj\Lawr0223\StdplateFpg7.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0901(163)9	F16	F17

Plotting Date: 07/02/2014



TYPICAL GUARDRAIL LAYOUTS

(B) Steel Beam Guardrail Delineation

[E] Guardrail Terminal End Object Marker

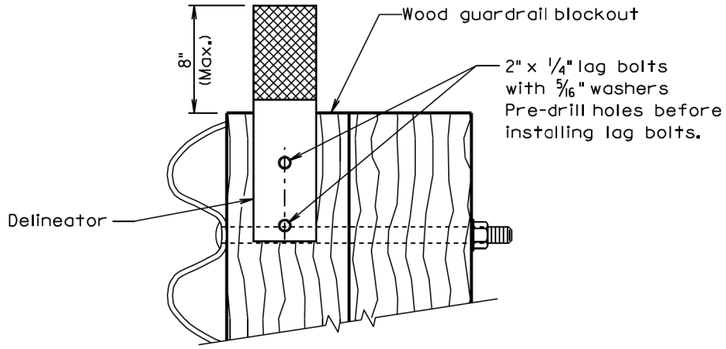
(C) 3 Cable Guardrail Delineation

(M) Type 2 Object Marker

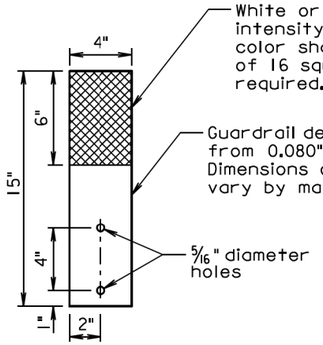
* For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

June 26, 2011

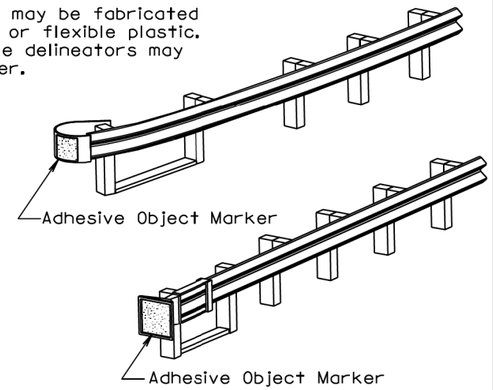
Published Date: 2nd Qtr. 2014	SDDOT	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 1 of 4



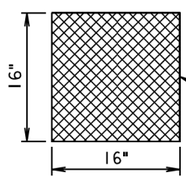
(B) STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



[E] GUARDRAIL TERMINAL END OBJECT MARKER



ADHESIVE OBJECT MARKER

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

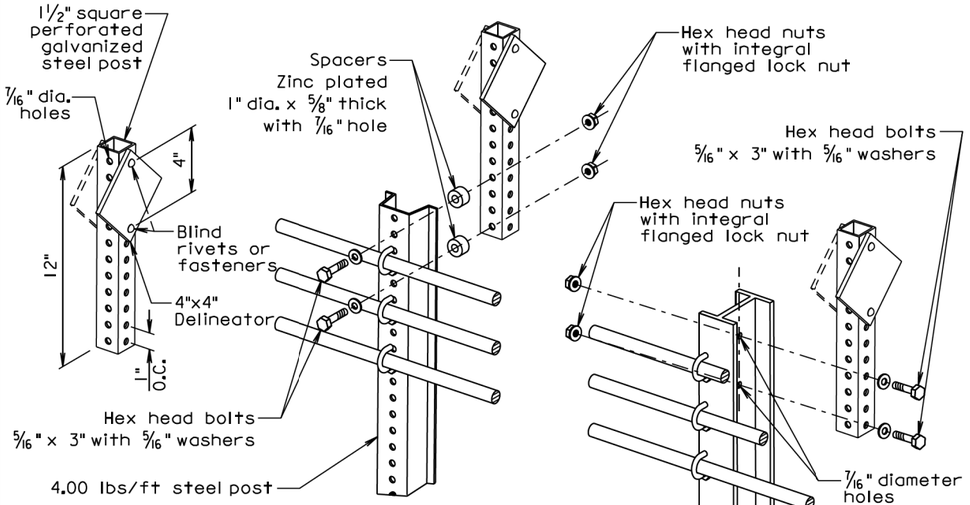
June 26, 2011

Published Date: 2nd Qtr. 2014	SDDOT	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 2 of 4

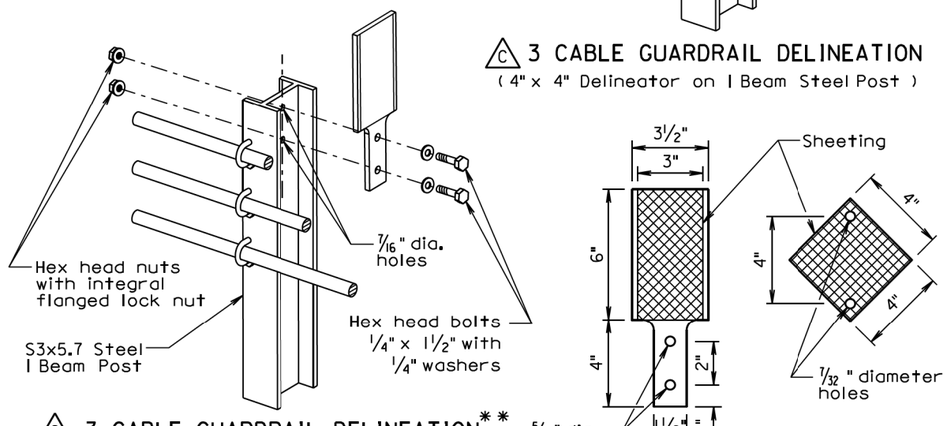
Plot Scale - 1:200

- Plotted From - trrc11610

File - ...\prj\Lawr0223\StdplateFpg8.dgn



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



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

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

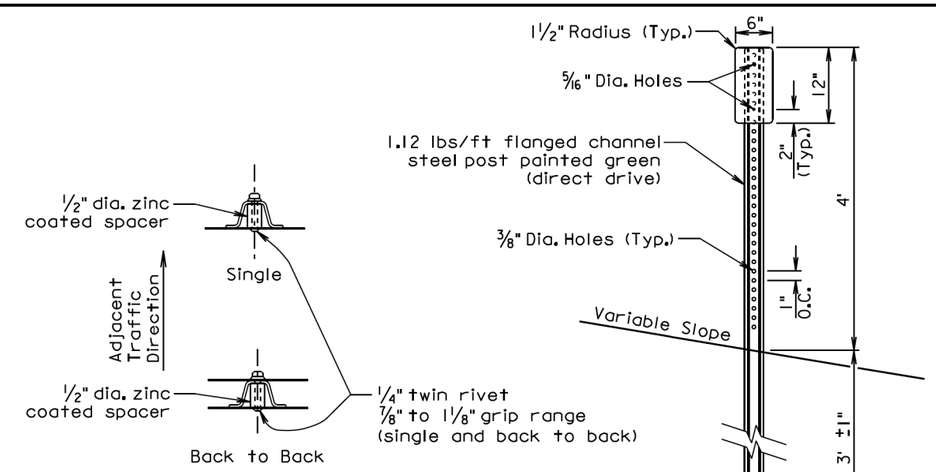
DELINEATORS***
(For 3 Cable Guardrail)

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

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

June 26, 2011

Published Date: 2nd Qtr. 2014	SDDOT	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 3 of 4



TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

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

GENERAL NOTES:

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

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

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

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

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

June 26, 2011

Published Date: 2nd Qtr. 2014	SDDOT	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
			Sheet 4 of 4