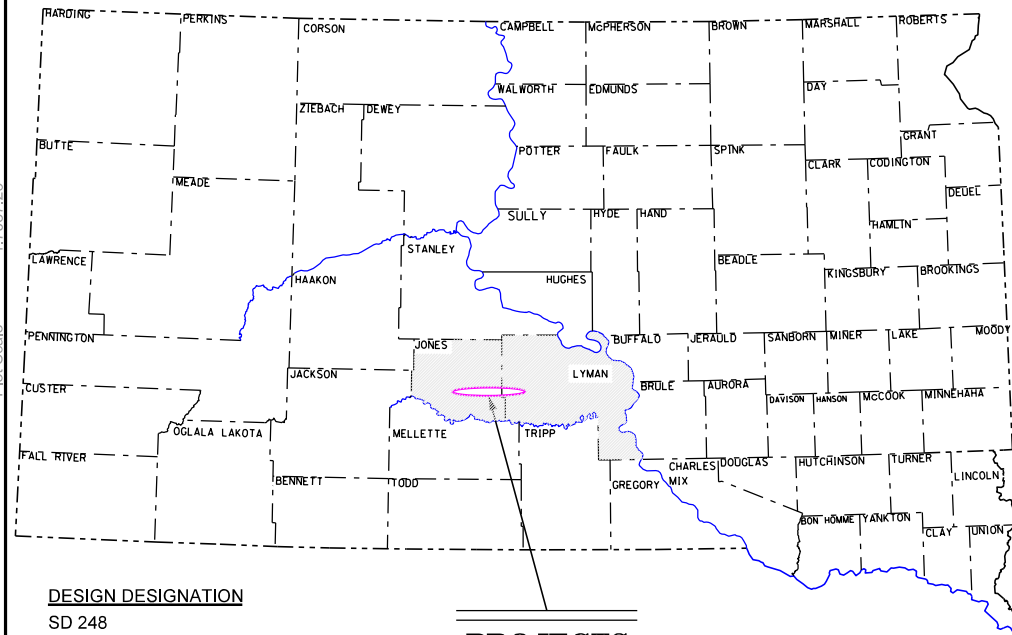


Plot Scale - 1:7087.29

Imp25289

Plotted From -



DESIGN DESIGNATION

SD 248	
ADT (2023)	235
ADT (2045)	346
DHV	55
D	50%
T DHV	7.9%
T ADT	8%
V	65 MPH

PROJECTS

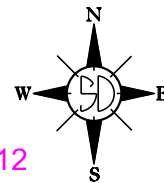
STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
PROJECT IM-P-B 0905(00)212 &  
IM 0905(125)212  
SD HIGHWAY 248, INTERSTATE 90 EW,  
286 AVE (I90 WF) &  
INTERSTATE 90 (EBL)  
JONES & LYMAN COUNTIES  
DETOUR SURFACE MAINTENANCE  
and CRC PAVEMENT REPAIR  
PCN 097Q & 09YP

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212 & IM 0905(125)212	1	93

Plotting Date: 09/11/2024

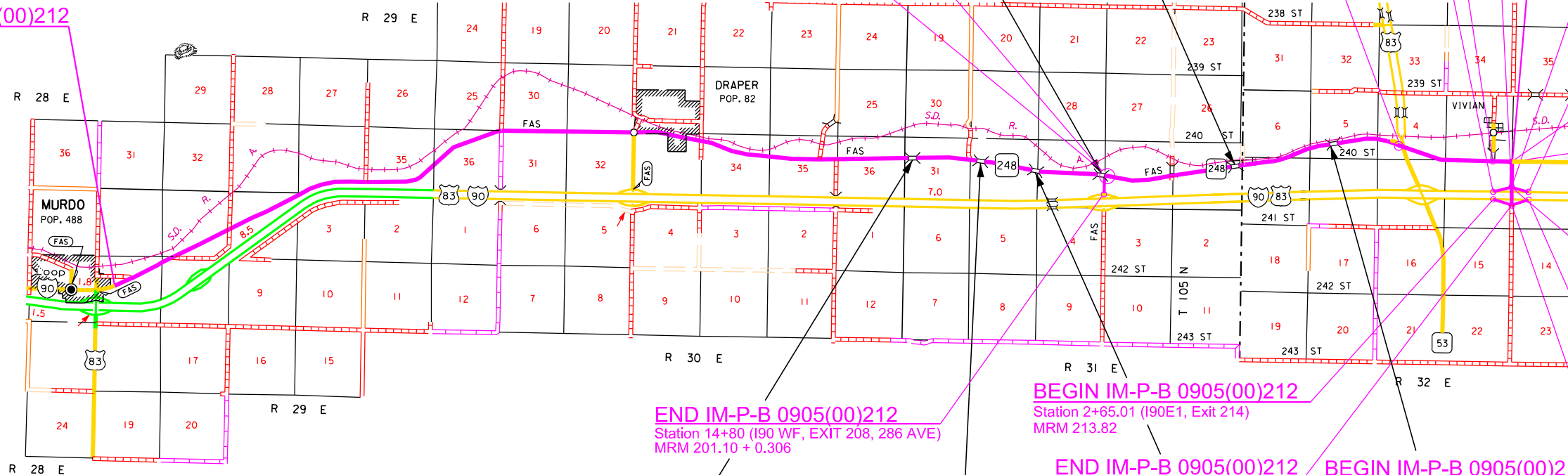
INDEX of SHEETS

Sheet 1-2	Project Layouts with Index
Sheets 3	Estimate of Quantities
Sheets 4-59	Plans PCN 097Q
Sheets 60-93	Plans PCN 09YP



BEGIN IM-P-B 0905(00)212

Station a0+00 (SD 248)  
MRM 205.50+0.023  
Mileage 60.195



I-90 WF (286 AVE)

GROSS LENGTH	1,615.00 FEET	0.306 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	1,615.00 FEET	0.306 MILES

I-90 WF (293 AVE)

GROSS LENGTH	3,005.00 FEET	0.569 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	3,005.00 FEET	0.569 MILES

SD HIGHWAY 248

GROSS LENGTH	113,353.52 FEET	21.468 MILES
LENGTH OF EXCEPTIONS	876.00 FEET	0.167 MILES
NET LENGTH	112,477.52 FEET	21.303 MILES

I-90E EXIT 214 East Ramps

GROSS LENGTH	2,686.00 FEET	0.509 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	2,686.00 FEET	0.509 MILES

I-90W EXIT 214 West Ramps

GROSS LENGTH	2,685.08 FEET	0.509 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	2,685.08 FEET	0.509 MILES

STORM WATER PERMIT  
(None Required)

BEGIN IM-P-B 0905(00)212

Station 2+50.74 (I90W2, Exit 214)  
MRM 213.51

END IM-P-B 0905(00)212

Station 13+50 (SD 248)  
MRM 226.70+0.290  
Mileage 81.654

BEGIN IM-P-B 0905(00)212

(I90W1, Exit 214)  
MRM 214.77

END IM-P-B 0905(00)212

(I90W1, Exit 214)  
MRM 214.45

BEGIN IM-P-B 0905(00)212

Station 10+00 (I90 WF, 293 AVE)  
MRM 214.45

END IM-P-B 0905(00)212

Station 13+76.36 (I90E2, Exit 214)  
MRM 214.51

BEGIN IM-P-B 0905(00)212

Station 2+65.01 (I90E1, Exit 214)  
MRM 213.82

END IM-P-B 0905(00)212

Station 17+06.40 (I90E1, Exit 214)  
MRM 214.12

BEGIN IM-P-B 0905(00)212

Station 0+12.00 (I90E2, Exit 214)  
MRM 214.17

Exception:  
Str. No. 38-302-173  
I-Beam Bridge  
158.0 feet = 0.030 Miles  
Sta 757+01 to Sta 759+99  
MRM 218.00

Exception:  
Str. No. 38-312-173  
I-Beam Bridge  
140.0 feet = 0.027 Miles  
Sta 809+60 to Sta 812+40  
MRM 219.00

Exception:  
Str. No. 38-319-174  
I-Beam Bridge  
158.0 feet = 0.030 Miles  
Sta 853+51 to Sta 856+49  
MRM 219.83

Exception:  
Str. No. 43-014-188  
I-Beam Bridge  
122.0 feet = 0.023 Miles  
Sta 72+74 to Sta 75+36  
MRM 224.32

7

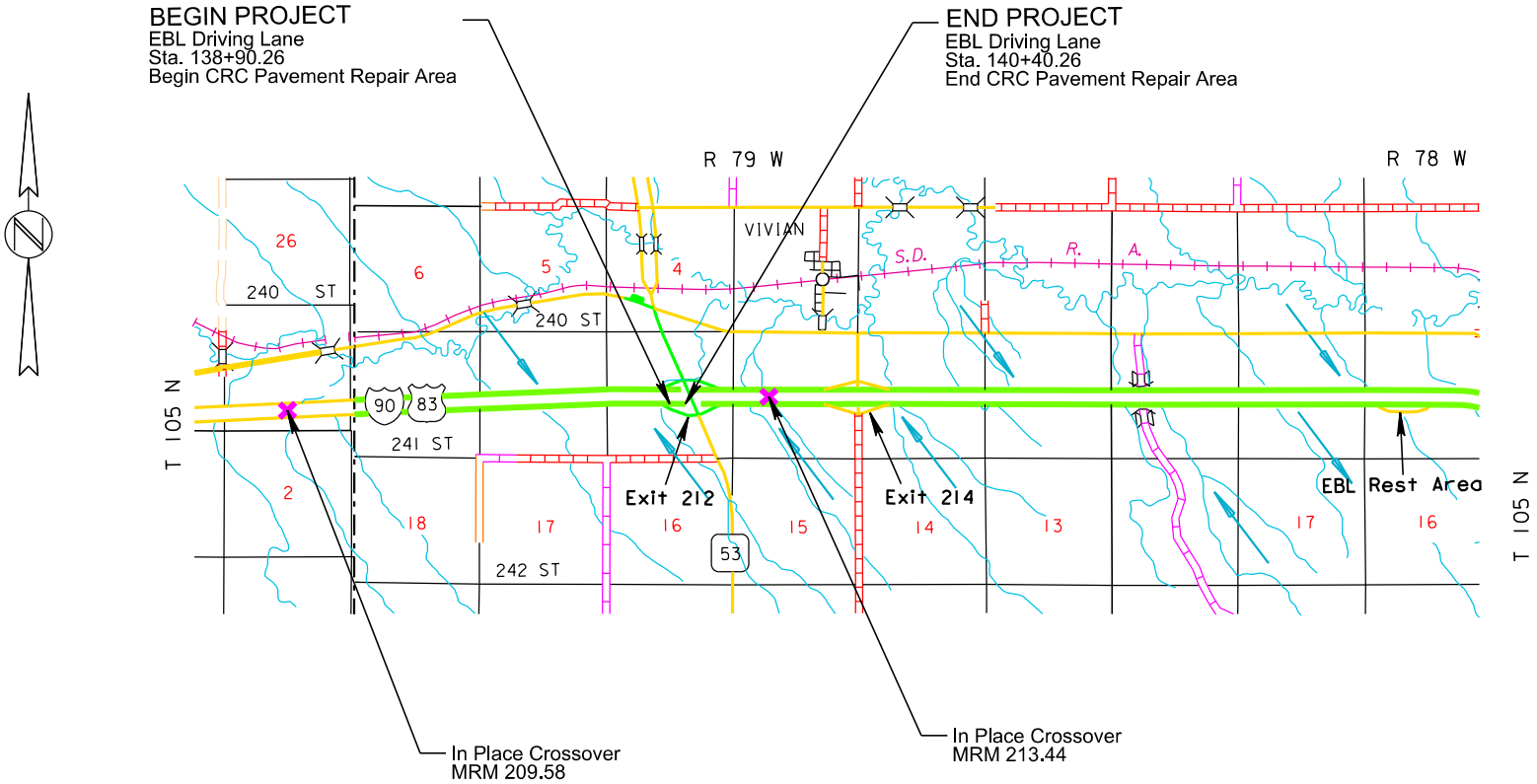
December 11, 2024

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212 & IM 0905(125)212	2	93

Plotting Date: 09/11/2024

CRC PAVEMENT REPAIR  
PCN 09YP



DESIGN DESIGNATION 190 EBL

ADT (2023)	3728
ADT (2043)	5278
DHV	934
D	5 1/2
T DHV	13.2%
T ADT	29.1%
V	80 MPH

STORM WATER PERMIT  
NONE

	EASTBOUND LANES	
GROSS LENGTH	150.00 FEET	0.028 MILES
LENGTH OF BRIDGES	0.00 FEET	0.000 MILES
NET LENGTH	150.00 FEET	0.028 MILES

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(00)212 & IM 0905(125)212	3	93

## IM-P-B 0905(00)212 PCN 097Q:

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	9,291.4	SqYd
110E7150	Remove Sign for Reset	1	Each
110E7510	Remove Pipe End Section for Reset	1	Each
120E0010	Unclassified Excavation	6,346	CuYd
120E0100	Unclassified Excavation, Digouts	150	CuYd
120E0600	Contractor Furnished Borrow Excavation	918	CuYd
120E6200	Water for Granular Material	235.6	MGal
210E1005	Surface Preparation	0.280	Mile
210E2000	Shoulder Shaping	0.100	Mile
210E3500	Heavy Roadway Shaping	0.569	Mile
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1030	Base Course, Salvaged	8,807.2	Ton
260E1080	Base Course, Salvaged, State Furnished	1,948.2	Ton
270E0110	Salvage and Stockpile Granular Material	8,807.2	Ton
320E1200	Asphalt Concrete Composite	8,398.3	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	0.4	Mile
332E0010	Cold Milling Asphalt Concrete	40,148	SqYd
380E5030	Nonreinforced PCC Pavement Repair	84.5	SqYd
380E6310	Seal Random Cracks in PCC Pavement	200	Ft
450E3012	24" RCP Arch Class 2, Furnish	4	Ft
450E3020	24" RCP Arch, Install	4	Ft
450E9001	Reset Pipe End Section	1	Each
600E0300	Type III Field Laboratory	1	Each
632E3500	Reset Sign	1	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	19	Ft
633E1200	High Build Waterborne Pavement Marking Paint, White	1,013	Gal
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	49	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	483	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	29	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	19	Ft
633E5100	Grooving for Durable Pavement Marking, 4"	14,630	Ft
633E6005	Pavement Marking Masking, 5"	610	Ft
633E6015	Pavement Marking Masking, 13"	2,491	Ft
634E0010	Flagging	492.0	Hour
634E0020	Pilot Car	228.0	Hour
634E0110	Traffic Control Signs	917.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	8	Each
634E0630	Temporary Pavement Marking	57.6	Mile
734E0010	Erosion Control	Lump Sum	LS
734E0151	9" Diameter Erosion Control Wattle	240	Ft

## IM 0905(125)212 PCN 09YP:

### Section C - Traffic Control:

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	2	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	1	Gal
633E5100	Grooving for Durable Pavement Marking, 4"	450	Ft
634E0110	Traffic Control Signs	375.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E0330	Temporary Raised Pavement Markers	2,850	Ft
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

### Section D - Erosion and Sediment Control:

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
230E0100	Remove and Replace Topsoil	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS

### Section F – Surfacing:

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	633.0	SqYd
110E1100	Remove Concrete Pavement	433.0	SqYd
110E6006	Remove High Tension 4 Cable Guardrail for Reset	600	Ft
120E0010	Unclassified Excavation	144	CuYd
120E2000	Undercutting	367	CuYd
120E6200	Water for Granular Material	5.4	MGal
260E2010	Gravel Cushion	451.5	Ton
380E0540	10" Continuously Reinforced PCC Pavement	433.3	SqYd
380E0800	PCC Shoulder Pavement	200.0	SqYd
380E6110	Insert Steel Bar in PCC Pavement	48	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	177	Ft
451E3104	4" Pipe Cap	2	Each
629E0211	Reset High Tension 4 Cable Guardrail	600	Ft
680E0204	4" Perforated PVC Drain Pipe with Sleeve	110	Ft
680E0224	4" PVC Outlet Pipe	50	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	62.0	Ton

### SPECIFICATIONS

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

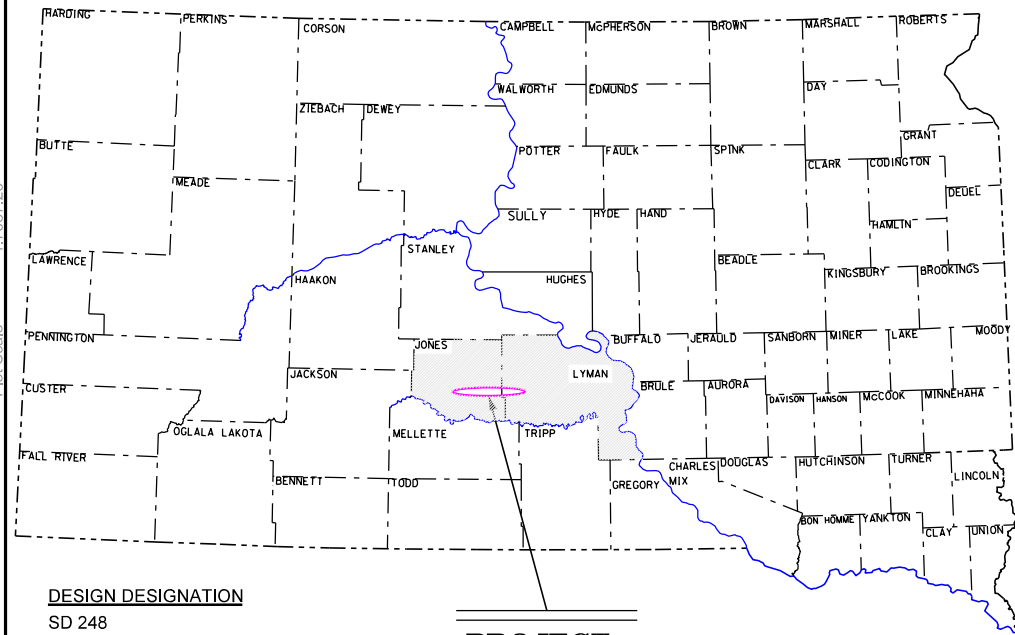




Plot Scale - 1:7087.29

TRPR25584

Plotted From -



DESIGN DESIGNATION

SD 248	
ADT (2023)	235
ADT (2045)	346
DHV	55
D	50%
T DHV	7.9%
T ADT	8%
V	65 MPH

PROJECT

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
PROJECT IM-P-B 0905(00)212  
SD HIGHWAY 248, INTERSTATE 90 E/W,  
286 AVE (I90 WF)  
JONES & LYMAN COUNTIES  
DETOUR SURFACE MAINTENANCE

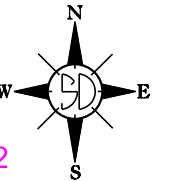
PCN 097Q

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	1	56

Plotting Date: 09/06/2024

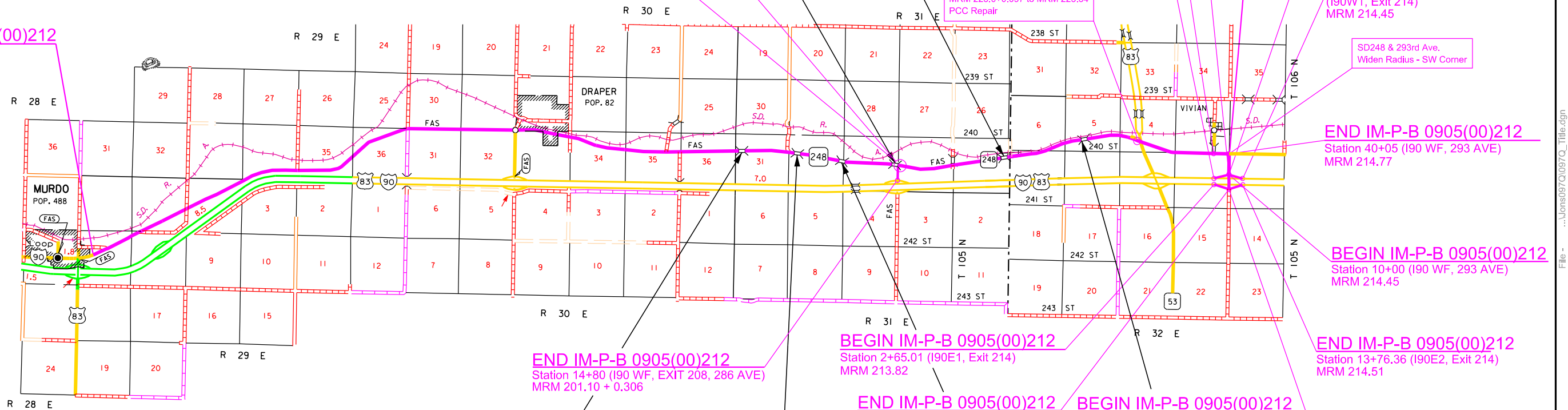
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Sheet 10	Rates of Materials
Sheet 11	Table of Additional Quantities and Summary of Asphalt Concrete
Sheet 12	Table of Approaches
Sheet 13	Table of Project Stationing
Sheet 14	Traffic Control Signs
Sheet 15	Control Data
Sheets 16-20	Typical Sections
Sheets 21-26	End Project Taper Details
Sheet 27	PCC Repair Details
Sheets 28-29	Intersection Modification Details
Sheets 30-31	Fixed Location Signs
Sheets 32-43	Cross Sections
Sheets 44-56	Standard Plates



BEGIN IM-P-B 0905(00)212

Station a0+00 (SD 248)  
MRM 205.50+0.023  
Mileage 60.195



I-90 WF (286 AVE)

GROSS LENGTH	1,615.00 FEET	0.306 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	1,615.00 FEET	0.306 MILES

I-90 WF (293 AVE)

GROSS LENGTH	3,005.00 FEET	0.569 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	3,005.00 FEET	0.569 MILES

SD HIGHWAY 248

GROSS LENGTH	113,353.52 FEET	21.468 MILES
LENGTH OF EXCEPTIONS	876.00 FEET	0.167 MILES
NET LENGTH	112,477.52 FEET	21.303 MILES

I-90E EXIT 214 East Ramps

GROSS LENGTH	2,686.00 FEET	0.509 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	2,686.00 FEET	0.509 MILES

I-90W EXIT 214 West Ramps

GROSS LENGTH	2,685.08 FEET	0.509 MILES
LENGTH OF EXCEPTIONS	0.00 FEET	0.000 MILES
NET LENGTH	2,685.08 FEET	0.509 MILES

STORM WATER PERMIT  
(None Required)



ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	9,291.4	SqYd
110E7150	Remove Sign for Reset	1	Each
110E7510	Remove Pipe End Section for Reset	1	Each
120E0010	Unclassified Excavation	6,346	CuYd
120E0100	Unclassified Excavation, Digouts	150	CuYd
120E0600	Contractor Furnished Borrow Excavation	918	CuYd
120E6200	Water for Granular Material	235.6	MGal
210E1005	Surface Preparation	0.280	Mile
210E2000	Shoulder Shaping	0.100	Mile
210E3500	Heavy Roadway Shaping	0.569	Mile
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1030	Base Course, Salvaged	8,807.2	Ton
260E1080	Base Course, Salvaged, State Furnished	1,948.2	Ton
270E0110	Salvage and Stockpile Granular Material	8,807.2	Ton
320E1200	Asphalt Concrete Composite	8,398.3	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	0.4	Mile
332E0010	Cold Milling Asphalt Concrete	40,148	SqYd
380E5030	Nonreinforced PCC Pavement Repair	84.5	SqYd
380E6310	Seal Random Cracks in PCC Pavement	200	Ft
450E3012	24" RCP Arch Class 2, Furnish	4	Ft
450E3020	24" RCP Arch, Install	4	Ft
450E9001	Reset Pipe End Section	1	Each
600E0300	Type III Field Laboratory	1	Each
632E3500	Reset Sign	1	Each
633E0030	Cold Applied Plastic Pavement Marking, 24"	19	Ft
633E1200	High Build Waterborne Pavement Marking Paint, White	1,013	Gal
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	49	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	483	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	29	Gal
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	19	Ft
633E5100	Grooving for Durable Pavement Marking, 4"	14,630	Ft
633E6005	Pavement Marking Masking, 5"	610	Ft
633E6015	Pavement Marking Masking, 13"	2,491	Ft
634E0010	Flagging	492.0	Hour
634E0020	Pilot Car	228.0	Hour
634E0110	Traffic Control Signs	917.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	8	Each
634E0630	Temporary Pavement Marking	57.6	Mile
734E0010	Erosion Control	Lump Sum	LS
734E0151	9" Diameter Erosion Control Wattle	240	Ft
734E0604	High Flow Silt Fence	644	Ft

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <<https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf> >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

Revised 09/06/2024 JDC

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	2	56

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will 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 Public ROW.

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

The waste disposal site(s) will 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 Environmental Office and the Project Engineer.

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

- Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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 not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

COMMITMENT H: WASTE DISPOSAL SITE (CONT.)

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) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

**Action Taken/Required:**

All earth disturbing activities require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

UTILITIES

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

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 will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

SCOPE OF WORK

1. Install fixed location signing prior to any construction activities
2. Strip topsoil for grading on radii
3. Remove asphalt pavement and/or granular material (base course)
4. Unclassified excavation for dигouts and backfill operations
5. Surface preparation for new base course, base course placement, shoulder shaping, surface preparation for paving
6. Place asphalt concrete composite
7. Flush seal
8. Replace topsoil and seed new borrow excavation
9. Remove and replace PCC pavement
10. Permanent pavement markings
11. Remove temporary fixed location signing
12. Miscellaneous project cleanup

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the 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.

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil and salvaged surfacing items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

Topsoil quantities are not included in the Table of Unclassified Excavation. Refer to “Remove and Replace Topsoil”.

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing and granular material that will be removed and/or salvaged.

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The volume of in place Concrete Pavement and Asphalt Pavement removed will NOT be paid for as Unclassified Excavation. Refer to the Rates of Materials, Table of Additional Quantities and the “PCC Pavement Repair” sheet for pavement removal breakdowns.

The Excavation quantities from individual balances and the table below have been reduced by the volume of in place concrete pavement and asphalt pavement that will be removed.

TABLE OF UNCLASSIFIED EXCAVATION

	(CuYd)
286 Ave. Radius Widening	412
Shoulder Extension, SD248 @ 286 Ave.	333
293 Ave. Radius Widening	941
Salvaged Granular Base Material (from surfacing work)	4660
Total	6346

REMOVE AND REPLACE TOPSOIL

Prior to beginning radius widening, a 4” depth of topsoil will be removed or bladed down the respective inslope and left in a windrow a maximum of 10’ from the edge of the existing shoulder. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

Topsoil will also be salvaged and stockpiled prior to the culvert extension. Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 193.3 CuYd.

All costs associated with removing and replacing the topsoil along areas to be resurfaced will be incidental to the contract lump sum price for “Remove and Replace Topsoil”.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for “Contractor Furnished Borrow Excavation” as shown in the Estimate of Quantities will be the basis of payment for this item.

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



EROSION CONTROL

The estimated area requiring erosion control is 12,573 square feet. This area includes all areas affected by radius widening operations. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching will be incidental to the contract lump sum price for "Erosion Control".

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

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas.

Type C Permanent Seed Mixture will consist of the following:

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

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will 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 will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre.

The mycorrhizal inoculum will be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 <a href="http://www.mycorrhizae.com">www.mycorrhizae.com</a>
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 <a href="http://www.reforest.com">www.reforest.com</a>
LALRISE Prime and Max WP	Lallemand Specialties Inc. Milwaukee, WI Phone: 1-844-590-7781 <a href="http://www.lallemandplantcare.com">www.lallemandplantcare.com</a>

FERTILIZING

Application of fertilizer will not be required on this project.

MULCHING (GRASS HAY OR STRAW)

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

COVER CROP SEEDING

Cover crop seeding may be used on this project as a temporary erosion control measure. The actual limits and use of cover crop seeding will be determined by the Engineer during construction. All costs for furnishing and applying cover crop seeding will be incidental to the contract lump sum price for "Erosion Control".

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details. It is recommended that these wattles be installed along the grading limits at the outlet end of the pipe culvert at the 286 Ave./SD248 intersection. Refer to the "Intersection Modification" sheets for details.

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

Erosion control wattles will remain on the project until vegetation has been established and then they will be removed in accordance with the Engineer.

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

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided will be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

High flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

An additional quantity of 50 ft of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE\*

Station	Location	Quantity (Ft)
-0+15 to 02+59 R	286 Ave./SD248 Intersection Radius Widening Inlet Side	274
-0+15 to 03+05 R	293 Ave./SD248 Intersection Radius Widening	320
Quantity from Interim Sediment Control at Inlets:		50
Total:		644

*\*Refer to "Intersection Modifications at Interstate Crossroads" for information about alignments shown in the Table of High Flow Silt Fence.*

GENERAL TRAFFIC CONTROL

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

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

All temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

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

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

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

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

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

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.



GENERAL TRAFFIC CONTROL (CONT.)

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for "Traffic Control Signs".

GROOVED PAVEMENT (W8-15) signs with MOTORCYCLE (W8-15P) plaques are required in advance of areas that have been cold milled and are not resurfaced the same day, should the Contractor elect to use cold milling. The GROOVED PAVEMENT sign assemblies will be installed a minimum of 1000 feet in advance of cold milled sections and remain in place until the sections have been resurfaced.

The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access to make appropriate arrangements.

A mobile work operation will be allowed provided the rumble strip or rumble stripe grooving, flush sealing, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer.

Type 3 Barricades will be installed at the entrance of all on and off ramps at exit closures.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.



It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 13.891 miles.

It is estimated that 72 DO NOT PASS (R4-1) and 69 PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course or after application of the flush seal.

Temporary pavement marking paint will not be allowed on the final lift of asphalt surfacing. Temporary pavement marking paint will not be allowed on the chip seal, fog seal, or flush seal. Temporary flexible vertical markers (tabs) must be used on the final lift of asphalt surfacing. The Contractor may use tabs with covers, uncovering them for the chip seal, fog seal, or flush seal. As an alternative, the Contractor may install new tabs for the fog seal or flush seal.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs after each installation as detailed below at no additional cost to the State.

(SD248) Quantities of Temporary Pavement Markings consist of:

- One pass on top of the existing surface
- One pass on top of the final lift of asphalt concrete composite (if applicable)
- One pass prior to the flush seal, length as determined by the Engineer (if applicable)
- One pass after the flush seal (if applicable)

(286 & 293 AVE) Quantities of Temporary Pavement Markings consist of:

- One pass on top of the prepared surface
- One pass on the first lift of asphalt concrete (if applicable)
- One pass on top of the final lift of asphalt concrete
- One pass prior to the flush seal, length as determined by the Engineer
- One pass after the flush seal

No temporary pavement marking is required for work on the Interstate 90 Exit 214 Ramps.

If the Engineer determines that an additional pass prior to the flush seal is not required, this application of the temporary pavement marking will be eliminated. If the flush seal is eliminated for the project, the application of the temporary pavement marking on top of the flush seal as well as the additional pass prior to the flush seal will be eliminated.

No adjustment in the contract unit price for "Temporary Pavement Marking" will be made because of a variation in quantities.

In the absence of a signed lane closure or pilot car operation, FLAGGER (W20-7) symbol signs and flaggers, or a shadow vehicle with rotating yellow lights or

strobe lights will be positioned on the shoulder in advance of workers for both directions of traffic during the installation and removal of the temporary flexible vertical markers (tabs). The traffic control device used will be moved intermittently to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1) sign, a WORKER (W21-1) symbol sign or a BE PREPARED TO STOP (W3-4) sign will be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work must be approved by the Engineer.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

TRAFFIC CONTROL FOR ASPHALT CONCRETE RESURFACING

The Contractor will need to install LOOSE GRAVEL (W8-7) signs with advisory speed plaques (W13-1P) in areas where loose sand is present during the flush seal operation. LOOSE GRAVEL signs have been included in these plans for this.

TRAFFIC CONTROL FOR PCCP REPAIR

Concrete replacement at the intersection of SD248/US83 will be completed in thirds, with traffic control applied per Standard Plates 634.52 and 634.53. Panel 1 will be completed during the closure of the north lane, Panel 2 will be completed during the closure of the center lane, and Panel 3 will be completed during the closure of the south lane. Refer to the "PCC Pavement Repair" sheet for panel layout.

INCIDENTS

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

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

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

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

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

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

PRESS RELEASE ANNOUNCEMENTS

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

TYPE III FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will submit the wireless router’s technical data to the Area Office to check for compatibility with the state’s computer equipment. The internet connection is intended for state personnel usage only. The Contractor’s personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items will be incidental to the contract unit price per each for “Type III Field Laboratory”.

INTERSECTION MODIFICATIONS AT INTERSTATE CROSSROADS

In order to facilitate wider turning movements, the in-place turning radii in the SE corner of the intersection of 286 Ave. and SD248 and in the SW corner of the intersection of 293 Ave. and SD248 will be extended. The shoulder on the NE side of the intersection of 286 Ave. and SD248 will be extended.

The radius in the SE corner of 286 Ave. and SD248 will be updated from an existing 85’ simple curve to a 3-point compound curve. The stop sign at the intersection will be removed and reset further south, and a stop bar will be ground into the new surfacing. The existing pipe culvert under SD248 at MRM 220.84+0.020 will be lengthened on the south side to accommodate the extended inslopes.

The shoulder on the NE side of 286 Ave. and SD248 will be extended to facilitate wider turning movements. This extension will provide up to 3’ of additional width to trucks on approach.

The radius in the SW corner of 293 Ave. and SD248 will be updated from an existing 85’ simple curve to a 165’ simple curve.

Refer to the “Intersection Modification Detail” sheets for more information.

Alignments for the cross sections showing the radius extensions run along the edge of existing radius surfacing and will be provided to the Contractor in .xml format.

PIPE EXTENSION

For pipe extensions that are outside the new surfaced shoulder as shown in the typical sections, acceptance tests in the lower one-half and upper one-half of pipe 48” or less in diameter may be performed by visual inspection to the satisfaction of the Engineer. All other MSTR pipe density testing requirements will apply.

REMOVE ASPHALT CONCRETE PAVEMENT

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was unknown.

An estimated 9291.4 Square Yards of the in-place asphalt concrete surfacing will be removed from the existing highways according to the in-place surfacing typical sections and intersection modification cross-sections and wasted as directed by the Engineer. Care will be taken not to waste the in-place granular material. The remaining in-place granular material will be salvaged and stockpiled.

The quantity of removed asphalt material is estimated from the in-place surfacing typical sections and includes digout and radius widening work. This estimated quantity is not included in the unclassified excavation quantities.

SALVAGE AND STOCKPILE GRANULAR MATERIAL

Salvage and Stockpile Granular Material is estimated to produce 8807.2 tons (4659.9 Cubic Yards) of granular material. All salvaged granular material produced is estimated to be re-used on this project.

An estimated 653.4 tons (345.7 Cubic Yards) of granular material will be salvaged between Exit 208 and SD248 according to the in-place surfacing typical sections and stockpiled on-site at an area satisfactory to the Engineer prior to re-use.

An estimated 7622.8 tons (4033.2 Cubic Yards) of granular material will be salvaged from 293<sup>rd</sup> Ave according to the in-place surfacing typical sections and stockpiled on-site at an area satisfactory to the Engineer prior to re-use.

An estimated 531.0 tons (281.0 CuYd) of granular material will be salvaged from other areas on the project, including SD248 shoulders and radius widening on 286<sup>th</sup> Ave. and 293<sup>rd</sup> Ave, and stockpiled on-site at an area satisfactory to the Engineer prior to re-use.

Salvaged material will be processed to meet the requirements of Section 884.2 D.8 prior to its re-use. The Contractor will ensure that no vegetation, topsoil, subgrade, or other foreign material is incorporated into the salvaged granular material.

The quantity of salvaged granular material may vary from the plans.

The quantity of salvageable material is estimated from the in-place surfacing typical sections. This estimated quantity was included in the unclassified excavation quantities.

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite will include MC-70 Asphalt for Prime placed at the rate of 0.30 gallons per square yard. The Asphalt for Prime will be applied to the Base Course, Salvaged or Base Course, Salvaged, State Furnished for the full width of the bottom layer of Asphalt Concrete Composite plus one foot additional on the outside shoulder.

Asphalt for tack SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for tack will be applied at a rate of 0.09 gallons per square yard on existing pavement or milled asphalt concrete surfaces and at a rate of 0.06 gallons per square yard on primed base course or new asphalt concrete pavement. The Asphalt for tack will be applied for the full width of the

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bottom layer of Asphalt Concrete Composite plus one-half foot additional on the outside shoulder.

Asphalt for flush seal SS-1h or CSS-1h will be applied for the full width of the bottom layer of Asphalt Concrete Composite.

Sand for flush seal will be applied at a width of 11 ft per lane.

The binder used in the Asphalt Concrete Composite mix will be PG 58-34 Asphalt Binder.

Included in the Estimate of Quantities are 3,155 tons of Asphalt Concrete Composite for patching and spot repair on SD248 from Station a0+00 to Station a1120+03.52. The locations and extent of patching will be determined in the field by the Engineer.

UNCLASSIFIED EXCAVATION, DIGOUTS

The locations and extent of digout areas will be determined in the field by the Engineer. The backfilling material for the digouts will be Asphalt Concrete Composite and Base Course, Salvaged or Base Course, Salvaged, State Furnished. The depth of asphalt will match the in-place thickness.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts and 75 square yards of Remove Asphalt Concrete Pavement for the removal of asphalt and unstable material for Sections 1, 10, 11, and 12.

Included in the Estimate of Quantities are 100 tons of Base Course, Salvaged or Base Course, Salvaged, State Furnished and 25 tons of Asphalt Concrete Composite for backfill of Unclassified Excavation, Digouts for Sections 1, 10, 11, and 12.

Included in the Estimate of Quantities are 50 cubic yards of Unclassified Excavation, Digouts for the removal of unstable material for Sections 2, and 4.

Included in the Estimate of Quantities are 100 tons of Base Course, Salvaged or Base Course, Salvaged, State Furnished for backfill of Unclassified Excavation, Digouts for Sections 2 and 4.

The digouts will be extended through the shoulder and backfilled with granular material that will daylight to the inslope to allow water to escape the subsurface.

BASE COURSE, SALVAGED, STATE FURNISHED

Base Course, Salvaged, State Furnished estimated at 1948.2 tons (for informational purposes only) of granular material will be obtained from stockpile site 3952 in the Southeast ¼ of Section 22, Township 105 North, Range 77 West of the 5<sup>th</sup> P.M., Lyman County, South Dakota on the west side of US183 south Presho.

No gradation testing will be required for the Base Course, Salvaged, State Furnished material.

The Base Course, Salvaged, State Furnished is royalty free to the Contractor.

All other requirements for Base Course, Salvaged will apply.

BASE COURSE, SALVAGED

Base Course, Salvaged will be obtained from the salvaged material produced on this project and may be used without further gradation testing.

All other requirements for Base Course, Salvaged will apply.

SHOULDER SHAPING

Prior to placement of the asphalt shoulder surfacing, the shoulders just west of 293<sup>rd</sup> Ave. on SD248 will be reshaped including removal of 1.5 inches of granular material from the shoulder, scarifying, reworking, shaping, and compacting the granular material in accordance with Section 260.3.D. The material removed during the shaping process will be stockpiled as directed by the Engineer.

Asphalt shoulders on SD248 will be placed on:

Sta. b11+03 to Sta. b14+49 on the WB lane  
Sta. b11+03 to Sta. b12+58 on the EB lane

Included in the Estimate of Quantities is a total length of 0.1 miles of Shoulder Shaping for the left and right shoulders on SD248 just west of 293<sup>rd</sup> Ave.

Water needed for compaction will be incidental to the contract unit price per mile for Shoulder Shaping.

Shoulder Shaping will be paid for at the contract unit price per mile. Payment will be full compensation for removing, hauling, & stockpiling the granular material, scarifying, rework, shaping, compacting, reprocessing if required, equipment, labor, and incidentals necessary to satisfactorily complete the work.

SHOULDER GRANULAR SURFACING

Additional granular surfacing will be placed on the shoulders of SD248 just east of Main Ave. at Vivian to prevent a drop-off. Additional granular surfacing will be placed on:

Sta. b03+12 to Sta. b11+03 on the WB lane  
Sta. b00+27 to Sta. b11+03 on the EB lane

Included in the Estimate of Quantities is an additional 50 tons of Base Course, Salvaged, State Furnished for the left and right shoulders on SD248 just east of Main Ave.

HEAVY ROADWAY SHAPING

Heavy Roadway Shaping shall be performed on 293<sup>rd</sup> Ave. (Typ. Sections 6 and 8) in accordance with the Standard Specifications.

Included in the Estimate of Quantities are 0.569 miles of Heavy Roadway Shaping and 193.0 MGal of Water for Granular Material per mile for use on 293<sup>rd</sup> Ave and in areas designated by the Engineer.

GRIND RUMBLE STRIPS IN ASPHALT CONCRETE

Asphalt concrete rumble strips will be constructed at 12'-2" from centerline on the shoulders of SD248 east of Vivian. Rumble strips will be paid for at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete". It is estimated that 0.4 miles of asphalt concrete rumble strips will be required.

Rumble strip installation will be completed prior to application of the flush seal and permanent pavement markings. In the event the flush seal is eliminated from the contract, the Contractor will still be required to apply a flush seal to the newly installed 8" rumble strips at a width of 12" and at the same rate as specified in this plan set. No adjustment in payment will be made, and SS-1h or CSS-1h Asphalt for Flush Seal will be incidental to "Grind 8" Rumble Strip or Stripe in Asphalt Concrete".

EDGE LINE RUMBLE STRIPS

The Engineer will provide the exact start and stop locations for the rumble strip installation. Rumble strips will not be installed on bridge decks or through intersecting roads. They also will not be placed within 50 feet of any railroad crossing.

Rumble strip installation gaps at intersecting roads, as shown in the standard installation details, have been included in the measurement for the estimate of quantities.

The Contractor is responsible for inspecting project locations prior to letting to identify potential problems for installing the rumble strips. Any damage to the new roadway during the construction of rumble strips will be repaired by the Contractor at no cost to the State of South Dakota.

The Contractor will construct rumble strips in a uniform position according to the dimensions and at locations shown in the plans. Indentations must comply with the specified dimensions in the plans within +/- 0.06 inches in depth and 10 percent in length and width. The depressions must have well-defined edges and not snag or tear the existing pavement. The Contractor will not construct rumble strips on structures or approach slabs.

All costs associated with grinding rumble strips will be incidental to the contract unit price per mile for "Grind 8" Rumble Strip in Asphalt Concrete".

RUMBLE STRIP ROADWAY CLEANING

The Contractor will be required to remove loose material from the driving surface and/or asphalt shoulders of the roadway. It will be the Contractor's responsibility to ensure that loose material does not enter any vegetated areas.

All costs associated with cleaning work will be incidental to the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete".

TABLE OF RUMBLE STRIPS

BEG. STATION	END STATION	L/R	QUANTITY (MI)
b0+42	b12+46	R	0.228
b0+54	b1+69	L	0.022
b3+24	b13+50	L	0.194

TOTAL: 0.444 MI

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EXISTING PCC PAVEMENT

Refer to "PCC Pavement Repair" sheet for existing PCC layout.

Existing PCC panels are 8" nonreinforced. The aggregate in the existing pavement is crushed ledge rock. The joints on these panels are perpendicular and spaced at 20 feet.

NONREINFORCED PCC PAVEMENT REPAIR

Concrete will meet the requirements stated in Section 380 of the Specifications, except as modified by the following notes:

The fine aggregate will be screened over a one-inch square-opening screen just prior to introduction into the concrete paving mix if required by the Engineer.

The slump requirement will be limited to 3" maximum after water reducer is added and the concrete will contain 4.5% to 7.0% entrained air. The concrete will contain a minimum of 50% coarse aggregate by weight. Coarse aggregate will be crushed ledge rock, Size No. 1 unless an alternative gradation is approved by the Concrete Engineer as part of the mix design submittal. The mix design will contain at least 650 lbs of Type I or II cement or 600 lbs of Type III cement per cubic yard. The minimum 28-day compressive strength will be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor will submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

The use of a water reducer at manufacturer's recommended dosage will be required.

Concrete will be cured with white pigmented curing compound (ASTM C309, Type 2) applied as soon as practical at a rate of 125 square feet per gallon. Concrete will be cured for a minimum of 48 hours before opening to traffic. The 48 hours is based upon a concrete surface temperature of 60°F or higher throughout the cure period. If the concrete surface temperature falls below 60°F, the cure time will be extended, or other measures taken, at no additional cost to the State. A strength of 3,500 psi must be attained prior to opening to traffic.

Upon placement of the concrete, repair areas will be straight edged to ensure a smooth riding surface and will be textured longitudinally with the pavement by finishing with a stiff broom. Repair areas will then be checked with a 10' foot straight edge. The permissible longitudinal and transverse surface deviation will be 1/8" in 10'.

Concrete will be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. Insulation blanket will have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket will be left in place, except for joint sawing operations, until the 3,500 psi is attained. Insulation blanket will be overlapped on to the existing concrete by 4'. This requirement for covering repair areas with insulation blankets may be waived during periods of hot weather upon approval of the Engineer.

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing concrete, sawing and sealing joints, repairing asphalt concrete shoulders, labor, tools and equipment will be included in the contract unit price per square yard for "Nonreinforced PCC Pavement Repair".



SEAL RANDOM CRACKS IN PCC PAVEMENT

Random cracks that exhibit minor spalling in the vicinity of scheduled concrete repair will be routed and sealed in accordance with the detail for Sealing Random Cracks. Reservoir dimensions may vary slightly from the details, due to the nature of this operation. However, any variance due to Contractor negligence will be repaired at the Contractor's expense.

Only those random cracks in the existing concrete pavement that are open and accept water and incompressible materials as selected by the Engineer will be prepared and sealed with Hot Poured Elastic Joint Sealer. Typically, patterned cracks associated with the underlying steel reinforcement should not be routed and sealed.

Prior to sealing, each random crack will be routed and thoroughly cleaned with compressed air or by other methods satisfactory to the Engineer. Routing will be performed with a saw designed for that purpose.

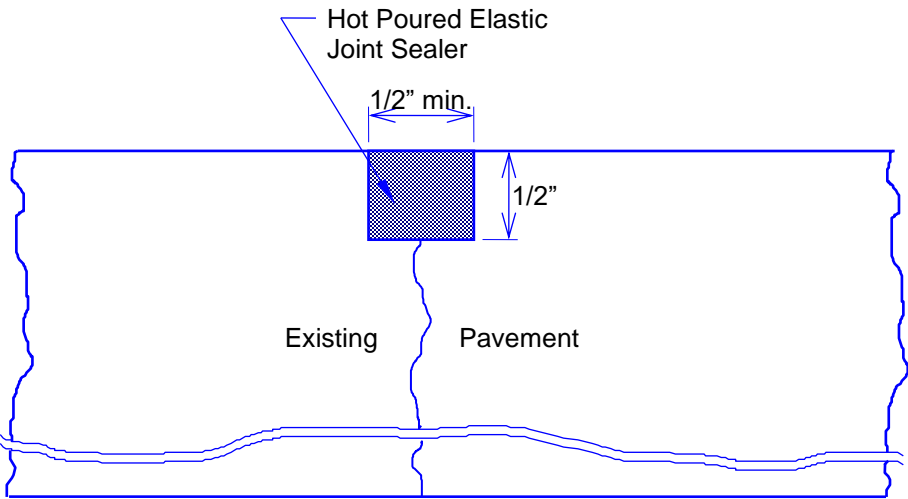
Random cracks narrower than 1/2 inch will be routed and sealed 1/2 inch wide by 1/2 inch deep.

Random cracks wider than 1/2 inch may require the placement of a backer rod prior to sealing. Use of backer rod should be limited to locations where, once placed, the top of the backer rod will be 2 inches below the top surface of the pavement, resulting in a maximum hot pour depth of 2 inches.

Sealer will be placed in the routed reservoir with equipment and by methods that insure complete and uniform filling.

Acceptance of the sealer will be based on visual inspection by the Engineer.

Seal Random Cracks in PCC Pavement will be measured by the foot to the nearest 0.1 foot of random cracks sealed and accepted and will be paid for at the contract unit price per foot measured for payment. Payment will be full compensation for labor, equipment, material and incidentals required for crack routing, cleaning, furnishing and installing backer rod when necessary, furnishing and placing sealant, and removing routed and foreign material from the roadway.



PERMANENT PAVEMENT MARKING

The Contractor will be required to repaint all existing pavement markings including centerline, edge line, and lane lines. All pavement markings will be replaced on SD248 regardless of work done. This list is approximate.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

(FOR SD248, 286 AVE, & 293 AVE): Reflective media will consist of glass beads. Reflective media will require a Certificate of Compliance for Certification for each source and lot. Acceptance sampling will not be required.

(FOR INTERSTATE 90 EXIT 214 RAMPS): Reflective media consisting of glass beads as well as bonded core reflective elements will be adhered to the paint.

The bonded core reflective elements will contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. The bonded core reflective elements will provide a 50/50 blend of dry to wet ratio of reflective element. All microcrystalline ceramic beads bonded to reflective elements will have a minimum index of refraction of 1.8 for dry retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

Reflective media will require a Certificate of Compliance for Certification for each type, source, and lot. Acceptance sampling will not be required.

The Department will take retroreflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retroreflectometer conforming to 30-meter geometry. Retroreflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

Pavement markings not conforming to the retroreflectivity requirements will be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor will schedule subject work to be completed no later than June 15<sup>th</sup> in the following year. Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edge line including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retroreflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial readings:

Pavement Marking Color	Minimum Value
White	350 mc/m <sup>2</sup> /lux
Yellow	275 mc/m <sup>2</sup> /lux

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and will be removed and replaced. Additional retroreflectivity readings will be taken by the Department to determine the limits of removal. The removal will be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal

process will remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width will be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings will be at the Contractor's expense, with no cost incurred by the State.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

INTERSTATE 90 EXIT 214 RAMPS:

Solid 4" line = 27.8 Gals/Mile  
Dashed 4" line = 7.6 Gal/Mile  
Glass Beads = 5.3 Lbs/Gal.  
Composite Reflective Elements = 2.1 Lbs/Gal.

SD248, 286 AVE, & 293 AVE:

Solid 4" line = 22.5 Gals/Mile  
Dashed 4" line = 6.2 Gal/Mile  
Glass Beads = 8 Lbs/Gal.

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

GROOVING FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

The grooving will be completed within the following tolerances:

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

<sup>1</sup> Marking thickness will include the thickness of marking material and reflective media.

<sup>2</sup> Additional length may be required as specified in the plans.

GROOVING FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT (CONT.)

The equipment will be capable of the following:

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

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

TABLE OF PAVEMENT MARKING GROOVING (EXIT 214 RAMPS)

OUTSIDE EDGE (WHITE)	9248 FT
INSIDE EDGE (YELLOW)	5382 FT

TABLE OF PAVEMENT MARKING MASKING

AREA	DESCRIPTION	QUANTITY
Exit 214 WB Off-Ramp (I90W1)	4" white dashed exit lane markings	120 ft 5" masking
Exit 214 WB Off-Ramp (I90W1)	12" white solid gore markings	639 ft 13" masking
Exit 214 WB On-Ramp (I90W2)	4" white dashed exit lane markings	188 ft 5" masking
Exit 214 WB On-Ramp (I90W2)	12" white solid gore markings	618 ft 13" masking
Exit 214 EB Off-Ramp (I90E1)	4" white dashed exit lane markings	121 ft 5" masking
Exit 214 EB Off-Ramp (I90E1)	12" white solid gore markings	587 ft 13" masking
Exit 214 EB On-Ramp (I90E2)	4" white dashed exit lane markings	181 ft 5" masking
Exit 214 EB On-Ramp (I90E2)	12" white solid gore markings	647 ft 13' masking

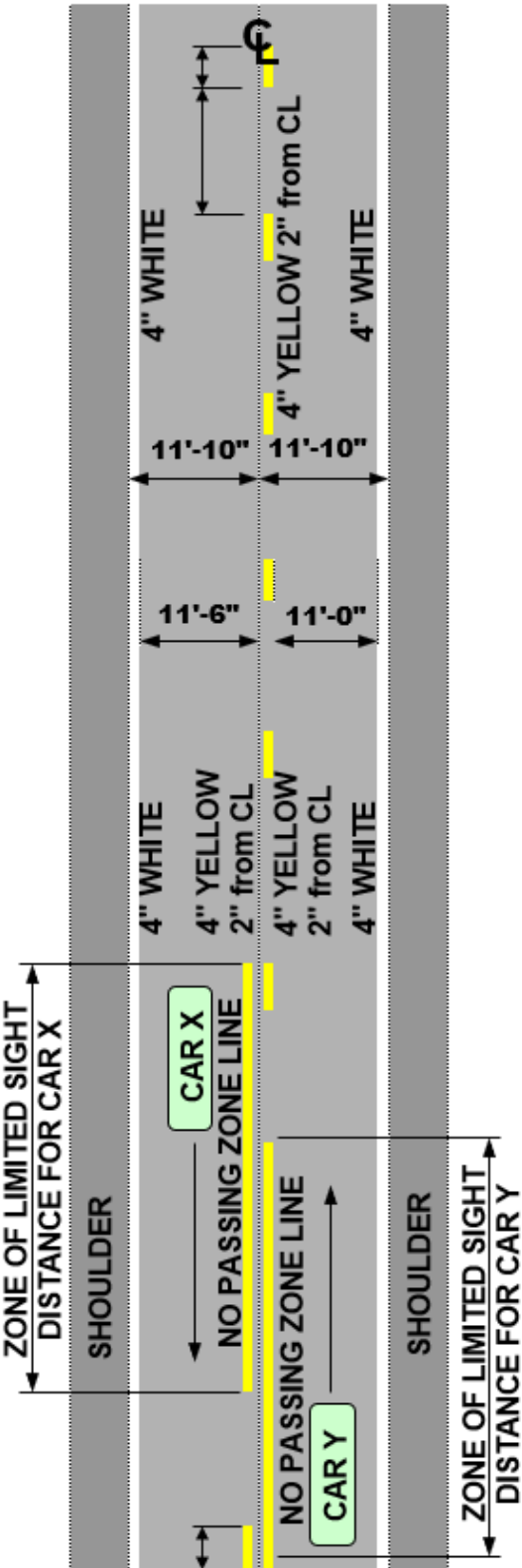
PAVEMENT MARKING PAINT BREAKDOWN

ESTIMATE OF QUANTITIES			
ROUTE	HIGH GRADE POLYMER PAINT		
	WHITE		YELLOW
SD248 (NO ELEMENTS)	968	Gals.	438 Gals.
EXIT 14 RAMPS (ELEMENTS)	49	Gals.	29 Gals.
286 AVE (I90 WF) (NO ELEMENTS)	14	Gals.	14 Gals.
293 AVE (NO ELEMENTS)	31	Gals.	31 Gals.
TOTAL (ELEMENTS)	49	Gals.	29 Gals.
TOTAL (NO ELEMENTS)	1,013	Gals.	483 Gals.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	9	56

PAVEMENT MARKING DETAIL

TWO LANE ROADWAY





RATES OF MATERIALS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	10	56

TYPICAL SECTION 5 (286 AVE)

Sta. 2+65.00 to Sta. 14+80.00

LENGTH: 1215 FT = 12.15 STA = 0.230 MI

- Salvage and Stockpile 3" of Granular Material = 291.7 CuYd = **551.3 TON**
- Surface Preparation = **0.230 MI**
- MC-70 Asphalt for Prime applied at 0.30 gal/SqYd and 32' wide = **5.1 TON (N.A.B.I.)**
- Blotting Sand for Prime applied at 10 lbs/SqYd and 32' wide = **21.6 TON (N.A.B.I.)**
- Asphalt Concrete Composite, 2" bottom lift: 30' bottom width, 28' top width, applied at 33.72 Ton/Sta = **409.7 TON**
- Asphalt Concrete Composite, 2" top lift: 28' bottom width, 26' top width, applied at 33.33 Ton/Sta = **405.0 TON**
- SS-1h/CSS-1h Asphalt for Tack (prior to bottom lift) applied at 0.06 gal/SqYd and 31' wide = **1.1 TON (N.A.B.I.)**
- SS-1h/CSS-1h Asphalt for Tack (prior to top lift) applied at 0.06 gal/SqYd and 31' wide = **1.1 TON (N.A.B.I.)**
- SS-1h/CSS-1h Asphalt for Flush Seal applied at 0.05 gal/SqYd and 30' wide = **0.9 TON (N.A.B.I.)**
- Sand for Flush Seal applied at 8 lbs/SqYd and 22' wide = **11.9 TON (N.A.B.I.)**

TYPICAL SECTION 7 (293 AVE)

Sta. 10+00.00 to Sta. 12+65.00  
Sta. 15+25.00 to Sta. 40+05.00

LENGTH: 2745 FT = 27.45 STA = 0.520 MI

- Remove ~6.3" Asphalt Concrete Pavement = **7930.0 SqYd**
- Salvage and Stockpile 10.5" of Granular Material = 3745.1 CuYd = **7078.2 TON**
- Heavy Roadway Shaping = **0.520 MI**
- 12" Base Course = 4519.0 CuYd = **8540.9 TON**
- Water for Granular Material applied at 0.012 MGal/Ton of Base Course = **102.5 MGal**
- MC-70 Asphalt for Prime applied at 0.30 gal/SqYd and 39' wide = **14.1 TON (N.A.B.I.)**
- 

- Blotting Sand for Prime applied at 10 lbs/SqYd and 39' wide = **59.5 TON (N.A.B.I.)**
- Asphalt Concrete Composite, 2" bottom lift: 37' bottom width, 32' top width, applied at 42.59 Ton/Sta = **1169.1 TON**
- Asphalt Concrete Composite, 2" top lift: 37' bottom width, 32' top width, applied at 42.59 Ton/Sta = **1169.1 TON**
- SS-1h/CSS-1h Asphalt for Tack (prior to bottom lift) applied at 0.06 gal/SqYd and 38' wide = **3.0 TON (N.A.B.I.)**
- SS-1h/CSS-1h Asphalt for Tack (prior to bottom lift) applied at 0.06 gal/SqYd and 38' wide = **3.0 TON (N.A.B.I.)**
- SS-1h/CSS-1h Asphalt for Flush Seal applied at 0.05 gal/SqYd and 37' wide = **2.4 TON (N.A.B.I.)**
- Sand for Flush Seal applied at 8 lbs/SqYd and 22' wide = **26.8 TON (N.A.B.I.)**

TYPICAL SECTION 10 (EXIT 214 RAMPS)

RAMP A (I90W2) – Sta. 2+50.74 to Sta. 3+40.74  
RAMP B (I90W1) – Sta. 12+63.44 to Sta. 13+53.44  
RAMP C (I90E2) – Sta. 12+86.36 to Sta. 13+76.36  
RAMP D (I90E1) – Sta. 2+65.02 to Sta. 3+55.02

LENGTH: 360 FT = 3.60 STA = 0.068 MI

- Asphalt Concrete Composite, 1.5" lift: 22' bottom width, 18' top width, applied at 18.52 Ton/Sta = **66.7 TON**
- SS-1h/CSS-1h Asphalt for Tack (prior to lift) applied at 0.09 gal/SqYd and 23' wide = **0.4 TON (N.A.B.I.)**
- SS-1h/CSS-1h Asphalt for Flush Seal applied at 0.05 gal/SqYd and 22' wide = **0.2 TON (N.A.B.I.)**
- Sand for Flush Seal applied at 8 lbs/SqYd and 11' wide = **1.8 TON (N.A.B.I.)**

TYPICAL SECTION 11 (EXIT 214 RAMPS)

RAMP A (I90W2) – Sta. 3+40.74 to Sta. 16+54.18  
RAMP B (I90W1) – Sta. 0+71.80 to Sta. 12+63.44  
RAMP C (I90E2) – Sta. 0+71.74 to Sta. 12+86.36  
RAMP D (I90E1) – Sta. 3+55.02 to Sta. 16+46.40

LENGTH: 5011.08 FT = 50.11 STA = 0.949 MI

- Asphalt Concrete Composite, 1.5" lift: 22' bottom width, 18' top width, applied at 18.52 Ton/Sta = **928.0 TON**
- SS-1h/CSS-1h Asphalt for Tack (prior to lift) applied at 0.09 gal/SqYd and 23' wide = **4.9 TON (N.A.B.I.)**

- SS-1h/CSS-1h Asphalt for Flush Seal applied at 0.05 gal/SqYd and 22' wide = **2.6 TON (N.A.B.I.)**
- Sand for Flush Seal applied at 8 lbs/SqYd and 11' wide = **24.5 TON (N.A.B.I.)**

TYPICAL SECTION 12 (SD248)

Sta. b0+00.00 to Sta. b13+50.00

LENGTH: 1350 FT = 13.50 STA = 0.256 MI

- Shoulder Shaping = **0.1 MILE**
- Asphalt Concrete Composite, 1.5" lift: 28' bottom width, 26' top width, applied at 25.02 Ton/Sta = **337.8 TON**
- SS-1h/CSS-1h Asphalt for Tack (prior to lift) applied at 0.09 gal/SqYd and 29' wide = **1.7 TON (N.A.B.I.)**
- SS-1h/CSS-1h Asphalt for Flush Seal applied at 0.05 gal/SqYd and 28' wide = **0.9 TON (N.A.B.I.)**
- Sand for Flush Seal applied at 8 lbs/SqYd and 22' wide = **13.2 TON (N.A.B.I.)**

TABLE OF ADDITIONAL QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	11	56

Description / Location																	
	Surface Preparation	Water For Granular Material	Cold Milling Asphalt Concrete	Remove Asphalt Concrete Pavement	Contractor Furnished Borrow Excavation	Unclassified Excavation	Unclassified Excavation, Digouts	Base Course, Salvaged, State Furnished	Salvage and Stockpile Granular Material	Base Course, Salvaged	MC-70 Asphalt for Prime (N.A.B.I.)	Blotting Sand for Prime (N.A.B.I.)	Asphalt Concrete Composite	SS-1h or CSS-1h Asphalt For Tack (N.A.B.I.)	SS-1h or CSS-1h Asphalt For Flush Seal (N.A.B.I.)	Sand For Flush Seal (N.A.B.I.)	Heavy Roadway Shaping
	(Mi)	(MGal)	(SqYd)	(SqYd)	(CuYd)	(CuYd)	(CuYd)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Ton)	(Mi)
Granular Material to R.O.W.																	
3 ~ Farm & Field Entrances	-	0.4	-	-	-	-	-	45.0		-	-	-	-	-	-	-	-
1 ~ Private Entrances	-	0.1	-	-	-	-	-	15.0		-	-	-	-	-	-	-	-
9 ~ Intersecting Road	-	1.3	-	-	-	-	-	135.0		-	-	-	-	-	-	-	-
Asphalt Shoulder (~11') w/Granular Material to R.O.W.																	
2 ~ Private Entrances	-	0.2	-	-	-	-	-	22.0		-	-	-	12.4	-	0.1	0.5	-
* Asphalt to R.O.W.																	
1 ~ Intersecting Roads	-	-	-	-	-	-	-	-		-	-	-	43.7		0.1	2.1	-
End of Project Taper Areas	-	-	2,288	-	-	-	-	-		-	-	-	9.5	-	0.1	0.3	-
SD248 Shoulder Repair (Gravel + Asphalt, refer to limits in notes)	-	0.6	-	-			-	50.0	26.3	26.3	0.4	1.7	46.3	0.1	0.1	1.1	-
SD248 Spot Repair (Sta. a0+00 to a1120+03.52)	-	-	37,860	-	-	-	-	-		-	-	-	3,155.0	16.4	8.7	105.2	-
286 Ave. (Exit 208 Crossroad) Sta. -1+35 to Sta. 2+65 (Typ. Sections 1, 2 & 3)	0.050	-	-	-	-	-	50	-	102.1	-	1.3	5.3	261.0	0.8	0.3	3.9	-
293 Ave. (Exit 214 Crossroad) Curb+Gutter Area, Sta. 12+65 to Sta. 15+25 (Typ. Section 8 & 9)	-	7.3	-	982.2	-	-	-	63.9	544.6	544.6	1.2	4.9	218.2	0.6	0.2	2.5	0.049
Digouts (Surfacing / Subgrade Repair Areas)	-	-	-	75.0	-	-	100	200.0	-	-	-	-	25.0	5.6	-	-	-
286 Ave. Radius Widening	-	4.1	-	26.1	109.5	412	-	192.7	144.1	144.1	0.2	0.6	27.7	0.1	0.1	0.5	-
SD248 Shoulder Extension @ 286 Ave.	-	2.0	-	101.7	112.2	333	-	50.1	114.2	114.2	0.1	0.3	12.6	0.1	0.1	0.2	-
293 Ave. Radius Widening	-	7.3	-	176.4	696	941	-	365.2	246.4	246.4	0.7	2.3	101.5	0.1	0.1	1.8	-
Project Totals	0.050	23.3	40,148	1,361.4	918	1,685	150	1,138.9	1,177.7	1,075.6	3.9	15.1	3,912.9	23.8	10.1	118.1	0.049

SUMMARY OF ASPHALT CONCRETE

Description / Location	Asphalt Concrete Composite (Ton)
<b>Typ. Section 5</b>	
26' Finished Roadway Surface	814.7
<b>Typ. Section 7</b>	
32' Finished Roadway Surface	2,338.2
<b>Typ. Section 10</b>	
18' Finished Roadway Surface	66.7
<b>Typ. Section 11</b>	
18' Finished Roadway Surface	928.0
<b>Typ. Section 12</b>	
26' Finished Roadway Surface	337.8
<b>Table of Additional Quantities</b>	3,912.9
<b>Totals =</b>	<b>8,398.3</b>

TABLE OF APPROACHES\*

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	12	56

ROUTE	M.R.M./STATION	L/R	TYPE
286 Ave.	6+04	R	Farm/Field Entrance, Gravel to R.O.W.
286 Ave.	9+19	L	Farm/Field Entrance, Gravel to R.O.W.
293 Ave.	34+54	L	Private Entrance, Gravel to R.O.W.
293 Ave.	34+54	R	Farm/Field Entrance, Gravel to R.O.W.
SD248	205.50 + 0.319	L	Intersecting Road (2 <sup>nd</sup> St.), Gravel to R.O.W.
SD248	206.00 + 0.510	R	Intersecting Road (273 Ave.), Gravel to R.O.W.
SD248	207.67 + 0.000	L	Intersecting Road (273 Ave.), Gravel to R.O.W.
SD248	207.67 + 0.000	R	Intersecting Road (273 Ave.), Gravel to R.O.W.
SD248	211.00 + 0.797	L	Intersecting Road (Lincoln Ave.), Gravel to R.O.W.
SD248	211.00 + 0.797	R	Intersecting Road (Lincoln Ave.), Gravel to R.O.W.
SD248	213.78 + 0.000	R	Intersecting Road (279 Ave.), Asphalt to R.O.W.
SD248	214.30 + 0.000	L	Intersecting Road (Maple Ave.), Gravel to R.O.W.
SD248	214.77 + 0.000	L	Intersecting Road (280 Ave.), Gravel to R.O.W.
SD248	216.80 + 0.000	R	Intersecting Road (282 Ave.), Gravel to R.O.W.
SD248	b2+15	L	Private Entrance, Asphalt to Radius and Gravel to R.O.W.
SD248	b3+00	L	Private Entrance, Asphalt to Radius and Gravel to R.O.W.

\*Approaches listed for treatment on Highway SD248 outside of the limits of Typical Section 12 are limited to higher-volume intersecting roads only.

TABLE OF PROJECT STATIONING

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	13	56

ROUTE AND TYP. SECTION	STATION	TO	STATION	EXISTING DESCRIPTION	SEGMENT GROSS LENGTH	EXCEPTION LENGTH	SEGMENT NET LENGTH
SD248 - No Typ. Section	Begin Route	a 0+00.00	to a 1120+03.52	Rural 2-Lane, Asphalt	112,003.52'	876.00'	111,127.52'
Equation	Equation: $1120+03.52 Bk = 0+00 Ah$				-	-	-
SD248- Typ. Section 12		b 0+00.00	to b 13+50.00	Rural 2-Lane, Asphalt	1,350.00'	00.00'	1,350.00'
286 Ave. - Typ. Section 1	Begin Route	-1+35.00	to 0+00.00	Rural 2-Lane, Asphalt	135.00'	00.00'	135.00'
286 Ave. - Typ. Section 3		0+00.00	to 2+65.00	Rural 2-Lane, Gravel	265.00'	00.00'	265.00'
286 Ave. - Typ. Section 5		2+65.00	to 14+80.00	Rural 2-Lane, Gravel	1,215.00'	00.00'	1,215.00'
293 Ave. - Typ. Section 7	Begin Route	10+00.00	to 12+65.00	Rural 2-Lane, Asphalt	265.00'	00.00'	265.00'
293 Ave. Typ. Section 9		12+65.00	to 15+25.00	Rural 2-Lane, Asphalt w/Curb+Gutter	260.00'	00.00'	260.00'
293 Ave. - Typ. Section 7		15+25.00	to 40+05.00	Rural 2-Lane, Asphalt	2,480.00'	00.00'	2,480.00'
Exit 214 WB Off (W1) - Typ. Section 11	Begin Route	0+71.80	to 12+63.44	Exit Ramp, Asphalt	1,191.64'	00.00'	1,191.64'
Exit 214 WB Off (W1) - Typ. Section 10		12+63.44	to 13+53.44	Exit Ramp, Asphalt	90.00'	00.00'	90.00'
Exit 214 WB On (W2) - Typ. Section 10	Begin Route	2+50.74	to 3+40.74	Exit Ramp, Asphalt	90.00'	00.00'	90.00'
Exit 214 WB On (W2) - Typ. Section 11		3+40.74	to 16+54.18	Exit Ramp, Asphalt	1,313.44'	00.00'	1,313.44'
Exit 214 EB Off (E1) - Typ. Section 10	Begin Route	2+65.02	to 3+55.02	Exit Ramp, Asphalt	90.00'	00.00'	90.00'
Exit 214 EB Off (E1) - Typ. Section 11		3+55.02	to 16+46.40	Exit Ramp, Asphalt	1,291.38'	00.00'	1,291.38'
Exit 214 EB On (E2) - Typ. Section 11	Begin Route	0+71.74	to 12+86.36	Exit Ramp, Asphalt	1,214.62'	00.00'	1,214.62'
Exit 214 EB On (E2) - Typ. Section 10		12+86.36	to 13+76.36	Exit Ramp, Asphalt	90.00'	00.00'	90.00'
TOTALS					123,344.60'	876.00'	122,468.60'
					23.361 Miles	0.166 Miles	23.195 Miles

# ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD				EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W1-3	REVERSE TURN (L or R)	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W8-15	GROOVED PAVEMENT	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W8-15P	MOTORCYCLE (plaque)	2	24" x 18"	3.0	6.0		30" x 24"	5.0	
W9-3	CENTER LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W13-4P	ON RAMP (plaque)	3	36" x 36"	9.0	27.0		36" x 36"	9.0	
W20-1	ROAD WORK AHEAD	21	48" x 48"	16.0	336.0	4	48" x 48"	16.0	64.0
W20-3	ROAD CLOSED AHEAD	3	48" x 48"	16.0	48.0		48" x 48"	16.0	
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W20-5	CENTER LANE CLOSED 1000 FEET	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
E5-2a	EXIT CLOSED					5	48" x 36"	12.0	60.0
SPECIAL	WAIT FOLLOW PILOT CAR	2	30" x 18"	3.8	7.6				
G20-1	ROAD WORK NEXT 21 MILES	2	36" x 18"	4.5	9.0		48" x 24"	8.0	
G20-1	ROAD WORK NEXT 19 MILES	1	36" x 18"	4.5	4.5		48" x 24"	8.0	
G20-1	ROAD WORK NEXT 15 MILES	2	36" x 18"	4.5	9.0		48" x 24"	8.0	
G20-1	ROAD WORK NEXT 13 MILES	1	36" x 18"	4.5	4.5		48" x 24"	8.0	
G20-1	ROAD WORK NEXT 10 MILES	2	36" x 18"	4.5	9.0		48" x 24"	8.0	
G20-1	ROAD WORK NEXT 8 MILES	1	36" x 18"	4.5	4.5		36" x 24"	6.0	
G20-1	ROAD WORK NEXT 6 MILES	1	36" x 18"	4.5	4.5		36" x 36"	9.0	
G20-1	ROAD WORK NEXT 5 MILES	2	36" x 18"	4.5	9.0		45" x 36"	11.3	
G20-1	ROAD WORK NEXT 2 MILES	1	36" x 18"	4.5	4.5		36" x 36"	9.0	
G20-2	END ROAD WORK	5	36" x 18"	4.5	22.5		45" x 36"	11.3	
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 793.6				EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT 124.0			



CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	15	56

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 4	-0 + 78.09 on 286 Ave.	67.01' R	REBAR/GRDS	576510.043	1949021.617	1994.32
CP TEMP LS NAIL	9+00.81 on 286 Ave.	47.97' L	EXIT 208 LANDSCAPE NAIL	575519.812	1949090.473	2042.50
CP TEMP PK NAIL	14+99.93 on 286 Ave. (beyond project limits)	0.52' R	EXIT 208 PK NAIL	574919.976	1949047.408	2061.26
CP FENCE	18+64.67 on 293 Ave.	202.23' R	WB OFF RAMP NORTH SIDE ROW FENCE	575999.565	1981081.247	1943.64

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD83/4002); Epoch 2010.00; Geoid 18; SF = 0.9998306956. The elevations shown on this sheet are based on NAVD 88.

# TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	16	56

Plotting Date: 09/06/2024

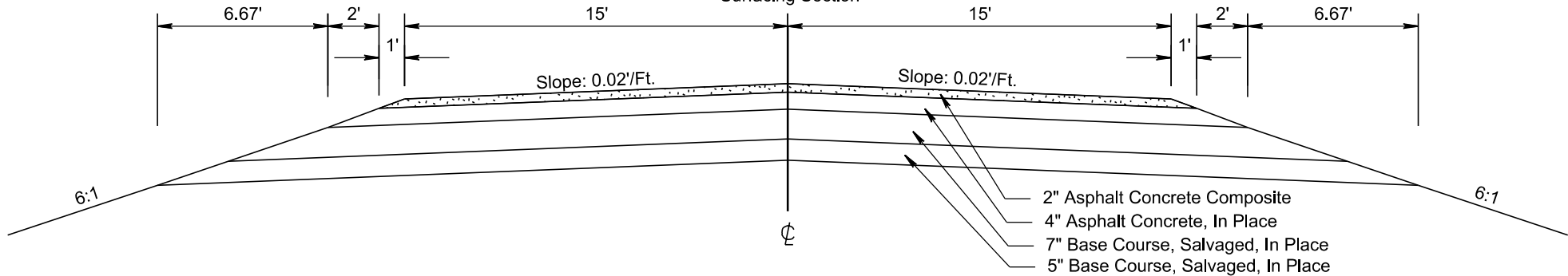
PLOT SCALE - 1+6.00001

PLOT NAME - 5

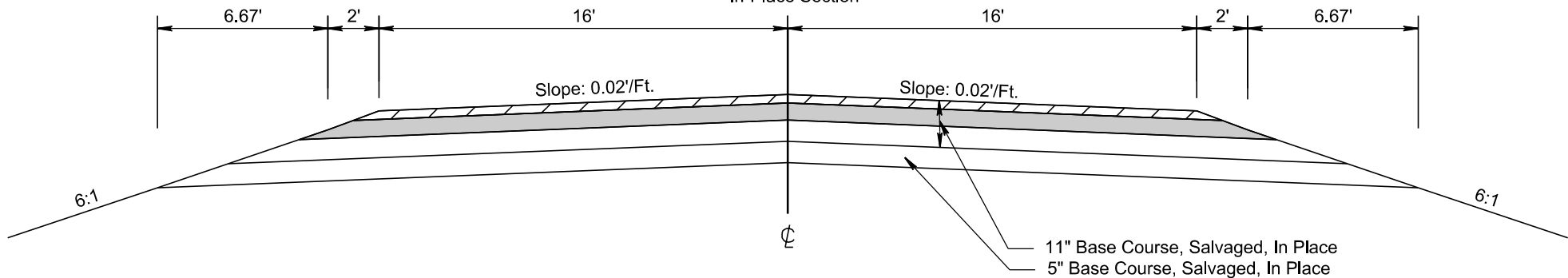
FILE - ... \0970\_TYPSECT\_I.JD1.DGN

PLOTTED FROM - TRPR25584

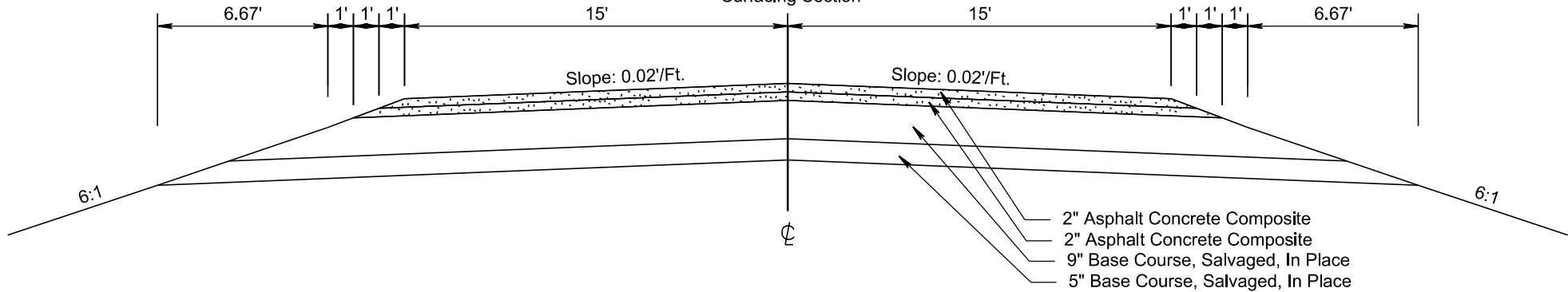
Section 1  
Sta. -1+35 to Sta. 0+00  
Exit 208 Crossroad - 286 Ave.  
Surfacing Section



Section 2  
Sta. 0+00 to Sta. 2+65  
Exit 208 Crossroad - 286 Ave.  
In-Place Section



Section 3  
Sta. 0+00 to Sta. 2+65  
Exit 208 Crossroad - 286 Ave.  
Surfacing Section



- 2" Salvage & Stockpile Granular Material
- 4" Surface Preparation

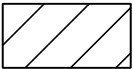
PLOT SCALE - 1+6.00001

PLOTTED FROM - TRPR25584

# TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	17	56

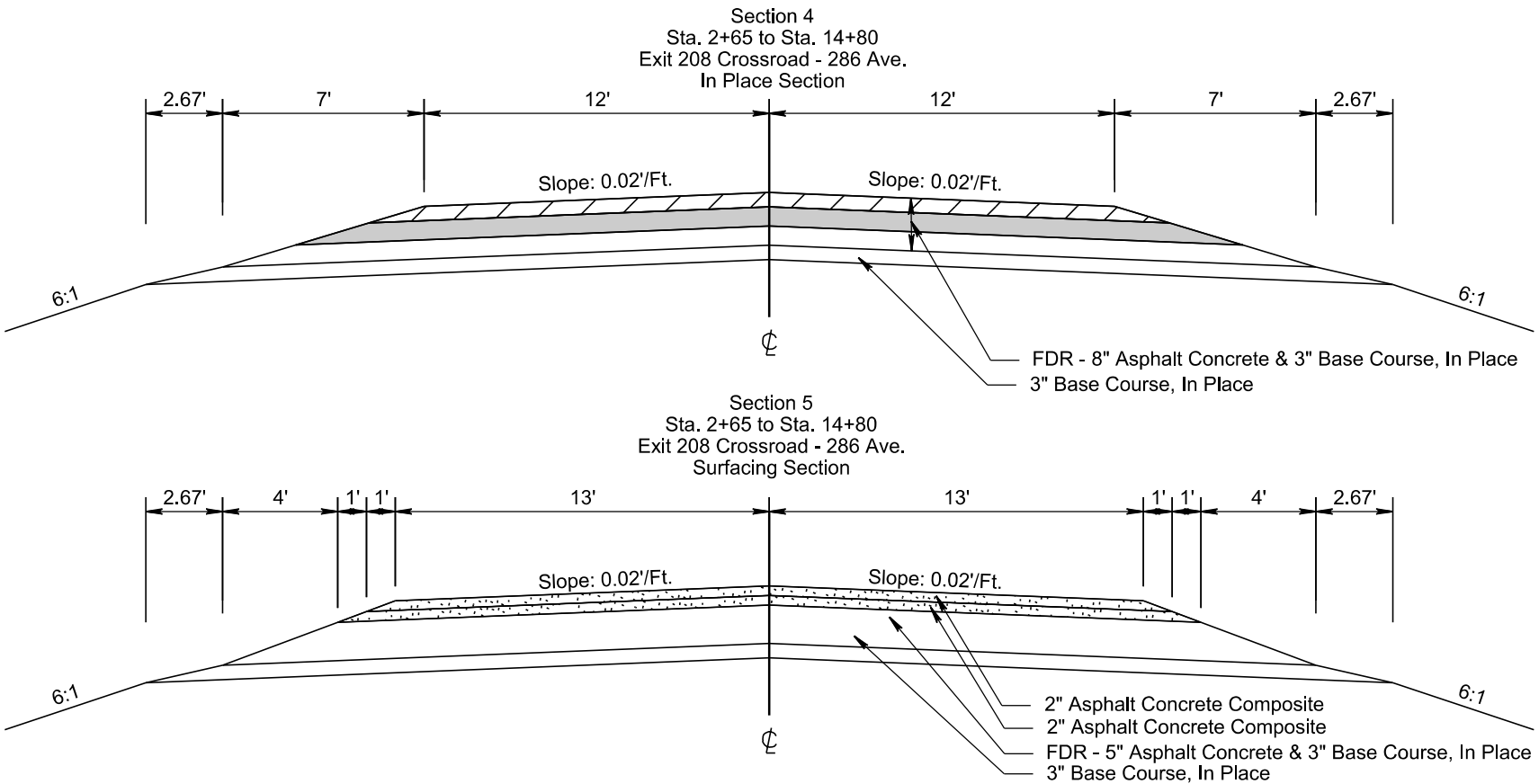
Plotting Date: 09/06/2024



3" Salvage & Stockpile Granular Material



4" Surface Preparation




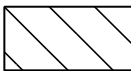
PLOT NAME - 4

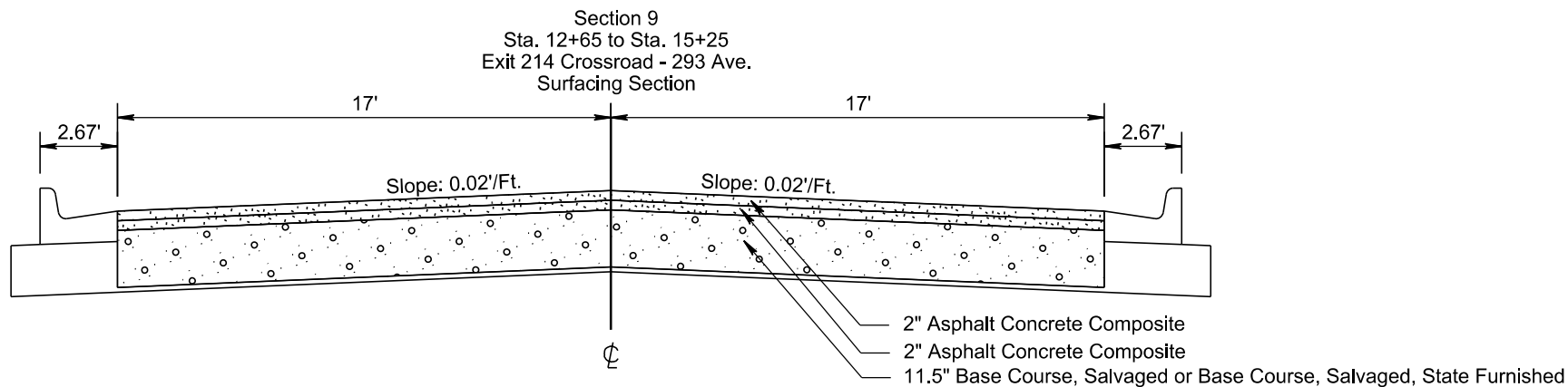
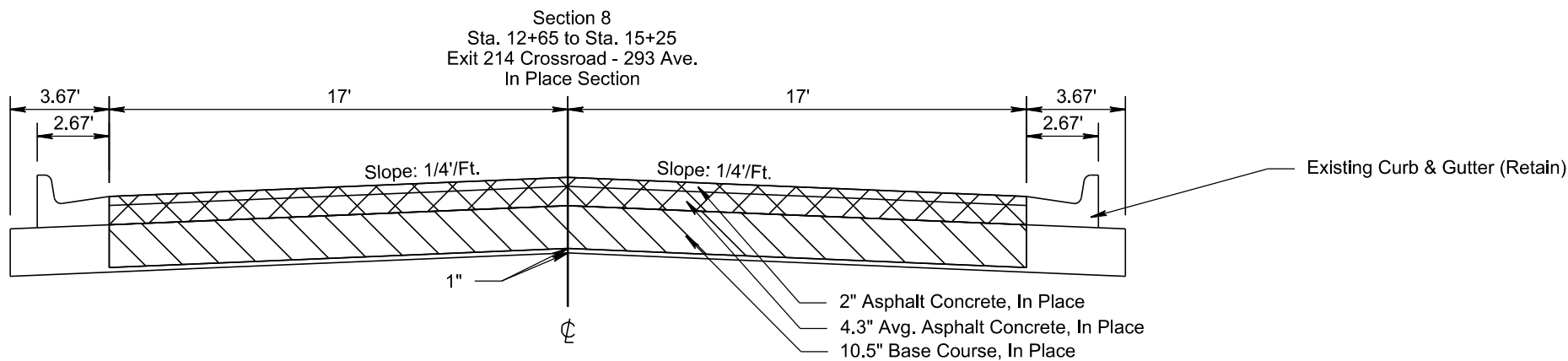
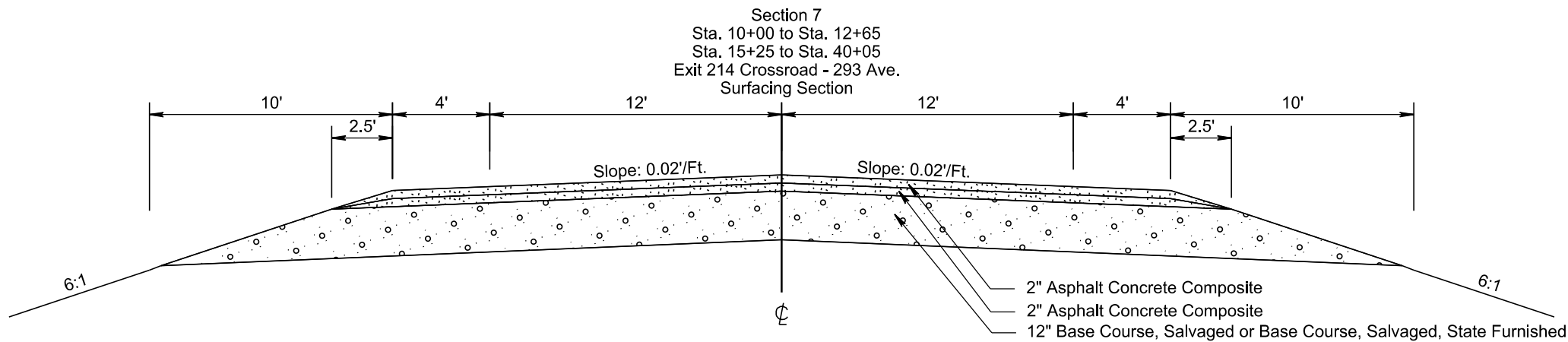
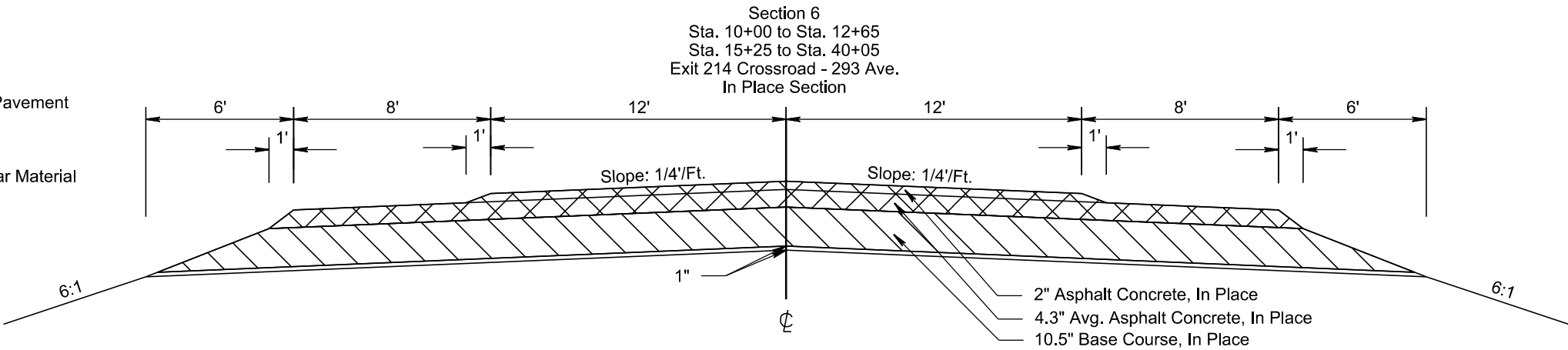
FILE - ... \0970\_TYPSCT\_IJD1.DGN

# TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	18	56

Plotting Date: 09/06/2024

-  Remove Asphalt Concrete Pavement
-  Salvage & Stockpile Granular Material



PLOT SCALE - 1+6.00001

PLOTTED FROM - TRPR25584

# TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	19	56

Plotting Date: 09/06/2024

PLOT NAME - 2

FILE - ... \0970\_TYPSCT\_IJD1.DGN

## Section 10 EXIT 214 RAMPS

### Ramp A (I90W2)

Sta. 2+50.74 to Sta. 3+40.74 - # 3.75" to 1.5"

### Ramp B (I90W1)

Sta. 12+63.44 to Sta. 13+53.44 - # 1.5" to 3.75"

### Ramp C (I90E2) (Reversed)

Sta. 12+86.36 to Sta. 13+76.36 - # 1.5" to 3.75"

### Ramp D (I90E1) (Reversed)

Sta. 2+65.02 to Sta. 3+55.02 - # 3.75" to 1.5"

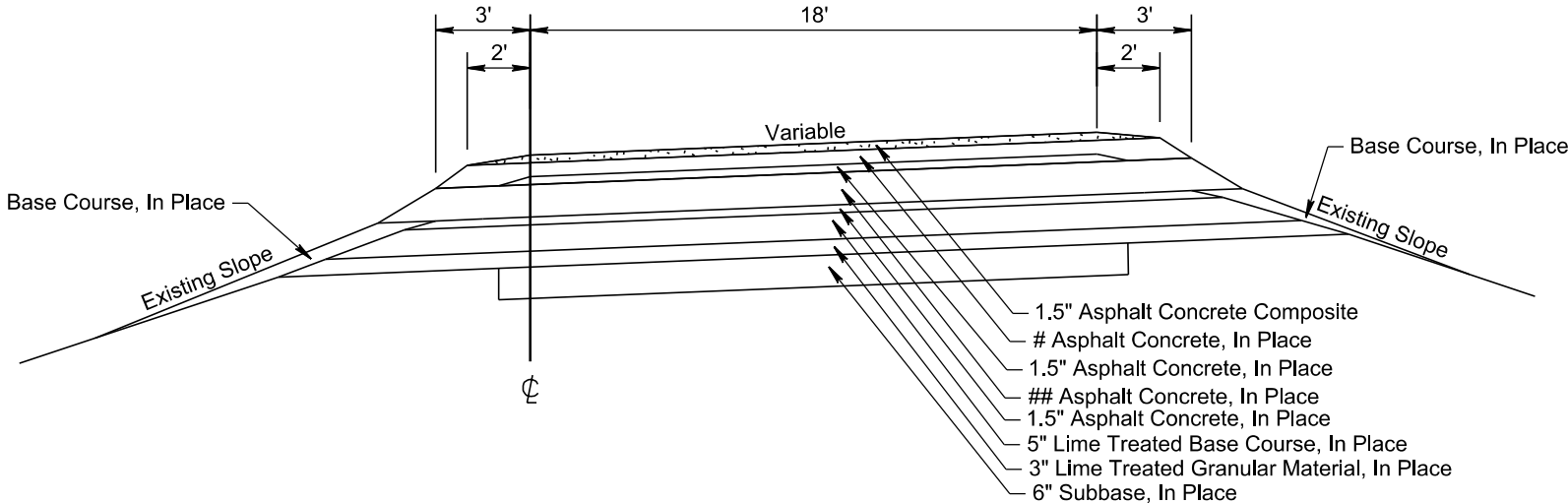
### ## Asphalt Concrete, In Place

Ramp A - Sta. 2+50.74 to Sta. 3+50.74 - ## 12.4" to 0"

Ramp B - Sta. 12+53.44 to Sta. 13+53.44 - ## 0" to 12.4"

Ramp C - Sta. 12+76.36 to Sta. 13+76.36 - ## 0" to 12.4"

Ramp D - Sta. 2+65.02 to Sta. 3+65.02 - ## 12.4" to 0"



## Section 11 EXIT 214 RAMPS

### Ramp A (I90W2)

Sta. 3+40.74 to Sta. 16+54.18

### Ramp B (I90W1)

Sta. 0+71.80 to Sta. 12+63.44

### Ramp C (I90E2) (Reversed)

Sta. 0+71.74 to Sta. 12+86.36

### Ramp D (I90E1) (Reversed)

Sta. 3+55.02 to Sta. 16+46.40

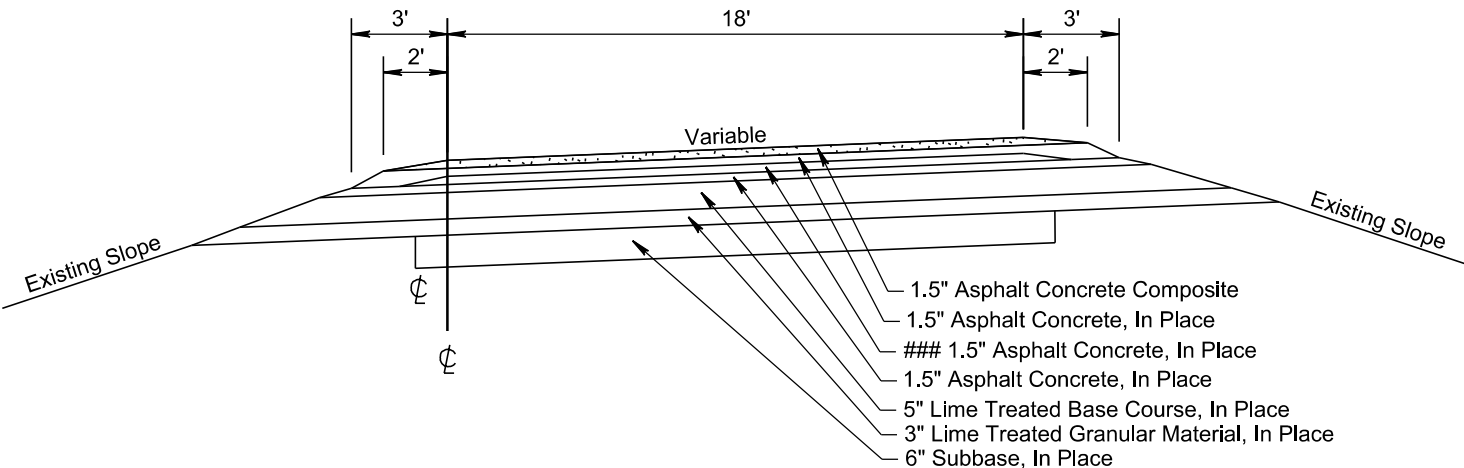
### ### Asphalt Concrete, In Place

Ramp A - Sta. 15+94.18 to Sta. 16+54.74 - ### 1.5" to 0"

Ramp B - Sta. 0+71.80 to Sta. 1+31.80 - ## 0" to 1.5"

Ramp C - Sta. 0+71.74 to Sta. 1+31.74 - ## 0" to 1.5"

Ramp D - Sta. 15+86.40 to Sta. 16+46.40 - ## 1.5" to 0"





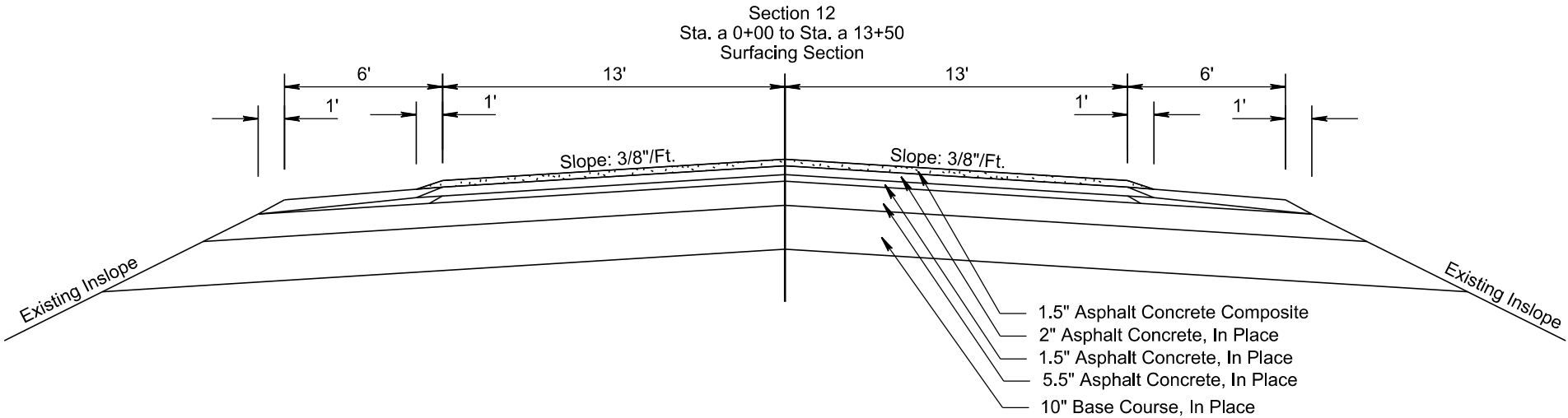
PLOT SCALE - 1+6.00001

PLOTTED FROM - TRPR25584

# TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	20	56

Plotting Date: 09/06/2024



PLOT NAME - 1

FILE - ... \0970\_TYPSCT\_I JDI.DGN

1:3.80743  
Plot Scale -  
Plotted From -

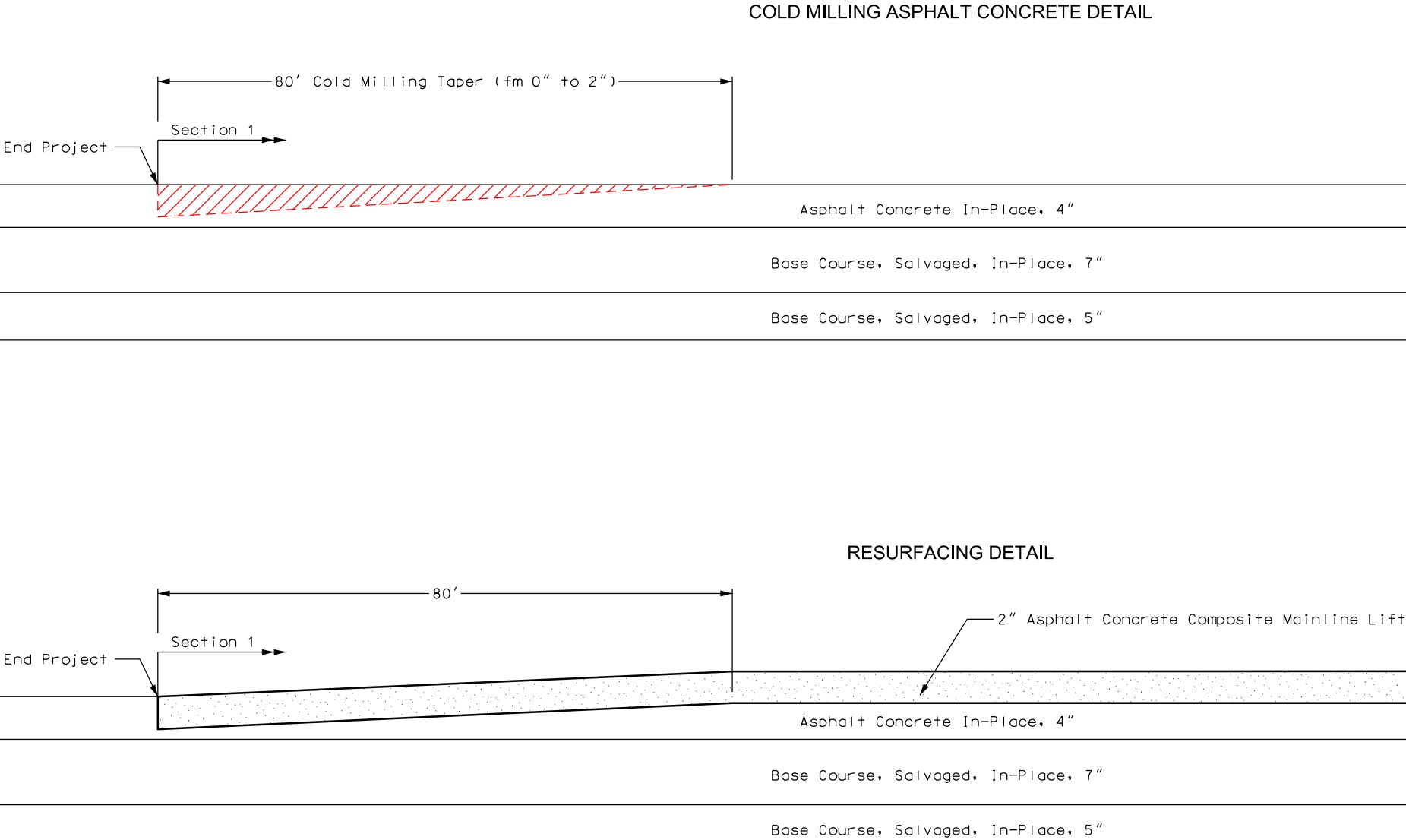
- Cold Milling Asphalt Concrete
- New 2" Asphalt Concrete Composite

END PROJECT TAPER DETAIL

SECTION 1 - 286 AVE. TIE-IN TO SD248

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	21	56


Plotting Date: 09/06/2024



DRAWING NOT TO SCALE

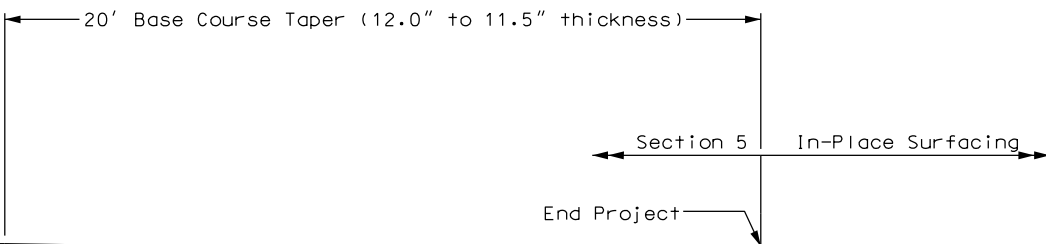
# END PROJECT TAPER DETAIL

## SECTION 5 - 286 AVE. TIE-IN TO EXISTING 286 AVE. NEAR RAMPS

 New 2" Asphalt Concrete Composite

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	22	56

Plotting Date: 09/06/2024



New Asphalt Concrete Composite, 2"

New Asphalt Concrete Composite, 2"

New Base Course, Salvaged, 12"

Asphalt Concrete In-Place  
Base Course In-Place  
Unknown Dimensions

DRAWING NOT TO SCALE

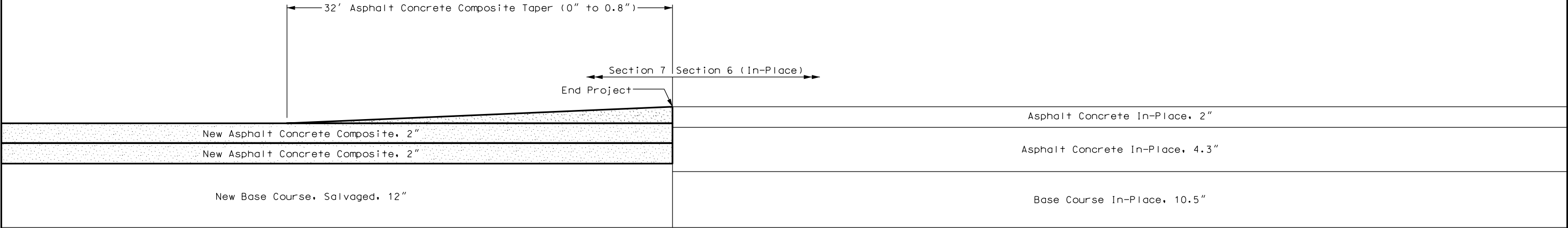
# END PROJECT TAPER DETAIL

## SECTION 7 - 293 AVE. TIE-IN TO 293 AVE. & SD248

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	23	56

Plotting Date: 09/06/2024

### ADDITIONAL SURFACING DETAIL



DRAWING NOT TO SCALE

Plot Scale-4:3.80743

Plot Scale-4:3.80743

TRPR2584

Plotted From-

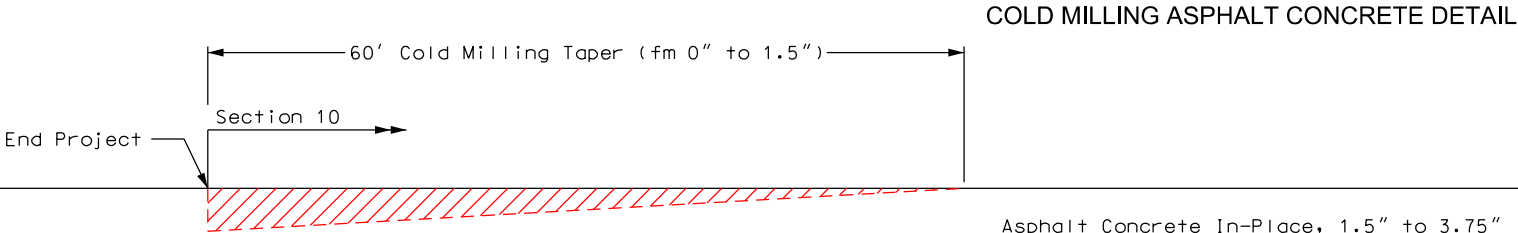
- Cold Milling Asphalt Concrete
- New 1.5" Asphalt Concrete Composite

END PROJECT TAPER DETAIL

SECTION 10 - I-90 RAMPS TIE-IN AT 293 AVE CROSSROAD

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	24	56

Plotting Date: 09/06/2024



Asphalt Concrete In-Place, 1.5" to 3.75"

Asphalt Concrete In-Place, 1.5"

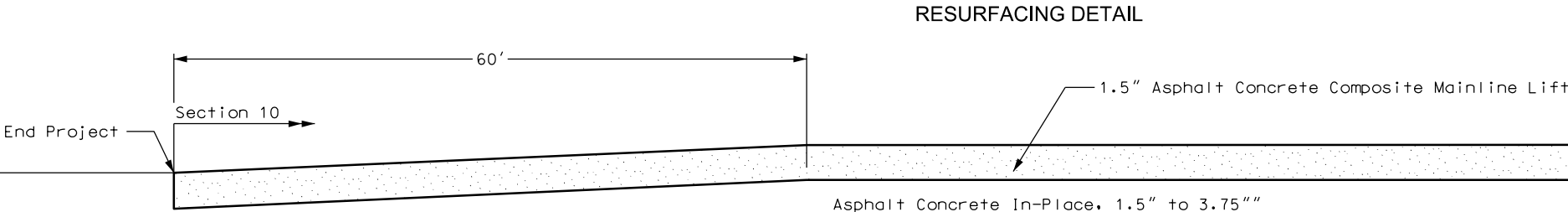
Asphalt Concrete In-Place, 0" to 12.4"

Asphalt Concrete In-Place, 1.5"

Lime Treated Base Course In-Place, 5"

Lime Treated Base Course In-Place, 3"

Subbase In-Place, 6"



Asphalt Concrete In-Place, 1.5" to 3.75"

Asphalt Concrete In-Place, 1.5"

Asphalt Concrete In-Place, 0" to 12.4"

Asphalt Concrete In-Place, 1.5"

Lime Treated Base Course In-Place, 5"

Lime Treated Base Course In-Place, 3"

Subbase In-Place, 6"

DRAWING NOT TO SCALE

File - ...097Q\_SurfaceTransitions.dgn

Plot Scale 4:3.80743

Plot Scale 4:3.80743

Plotted From: TRP25584

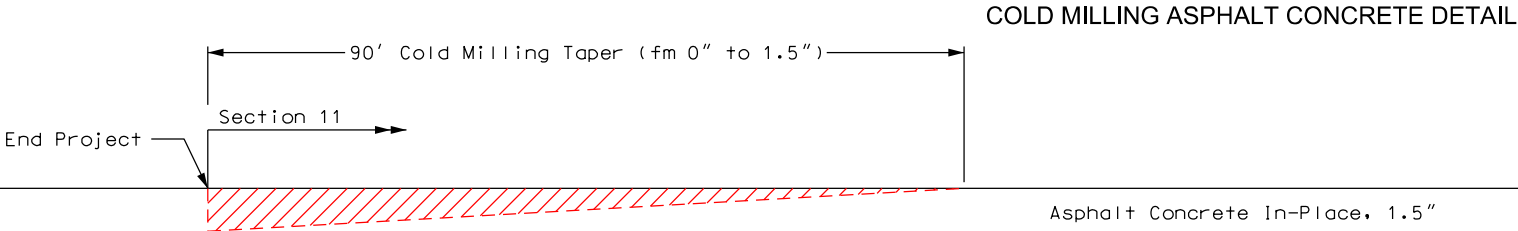
- Cold Milling Asphalt Concrete
- New 1.5" Asphalt Concrete Composite

END PROJECT TAPER DETAIL

SECTION 11 - I-90 RAMPS TIE-IN AT INTERSTATE MAINLINE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	25	56

Plotting Date: 09/06/2024



Asphalt Concrete In-Place, 1.5"

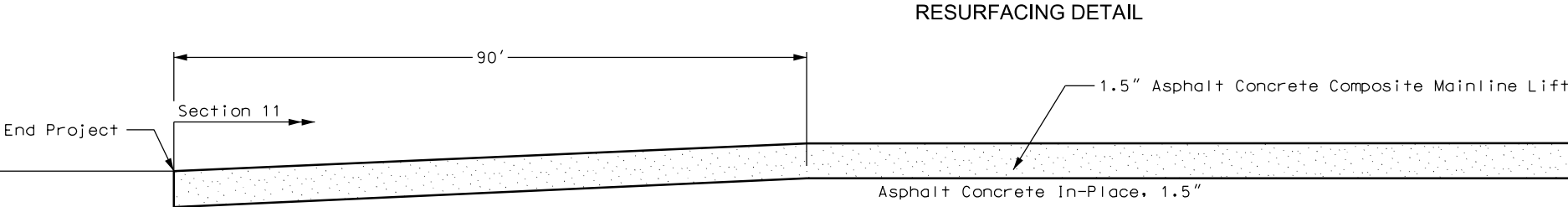
Asphalt Concrete In-Place, 0" to 1.5"

Asphalt Concrete In-Place, 1.5"

Lime Treated Base Course In-Place, 5"

Lime Treated Base Course In-Place, 3"

Subbase In-Place, 6"



Asphalt Concrete In-Place, 1.5"

Asphalt Concrete In-Place, 0" to 1.5"

Asphalt Concrete In-Place, 1.5"

Lime Treated Base Course In-Place, 5"

Lime Treated Base Course In-Place, 3"

Subbase In-Place, 6"

DRAWING NOT TO SCALE



1:3.80743  
Plot Scale -  
TRPR25584  
Plotted From -

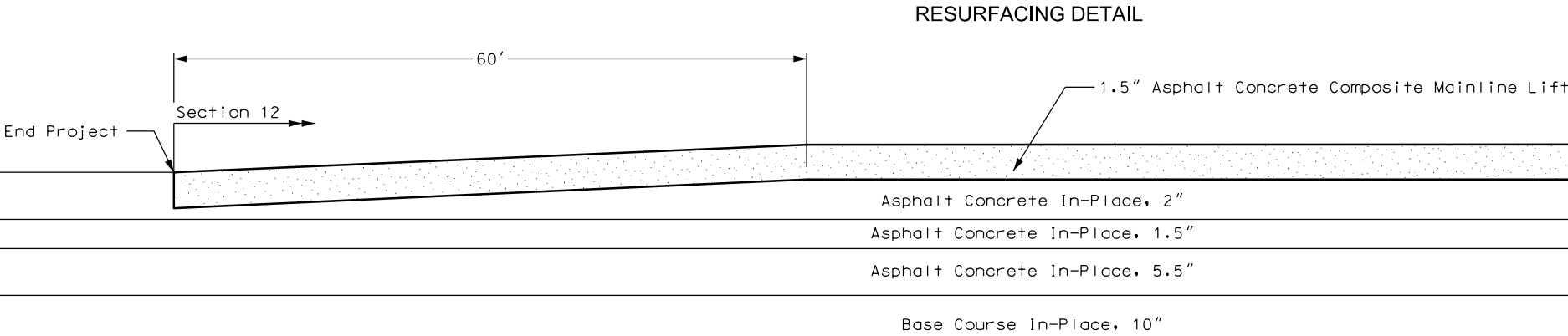
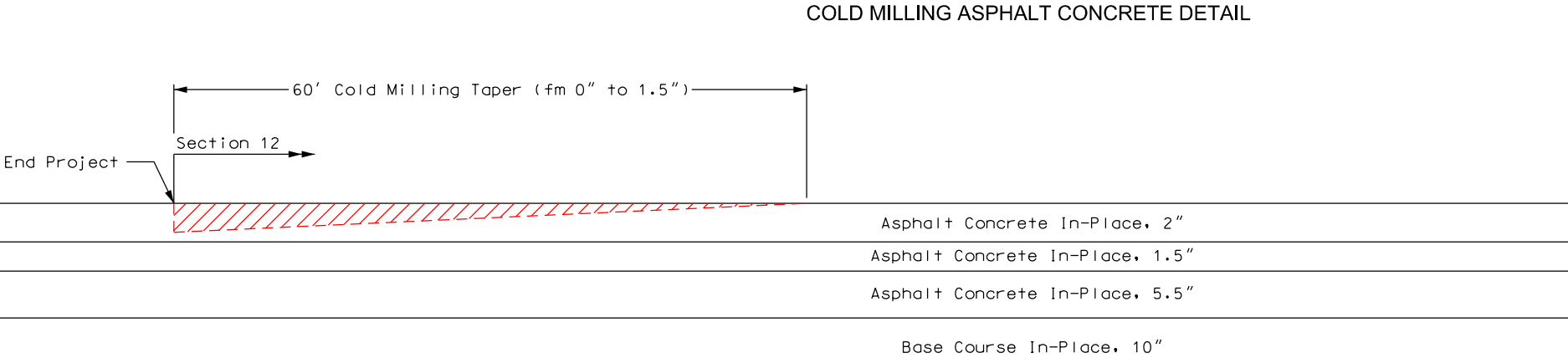
- Cold Milling Asphalt Concrete
- New 1.5" Asphalt Concrete Composite

END PROJECT TAPER DETAIL

SECTION 12 - SD248 TIE-IN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	26	56

Plotting Date: 09/06/2024



DRAWING NOT TO SCALE

# PCC PAVEMENT REPAIR SD248/US83 INTERSECTION

NOT TO SCALE

Revised 09/05/2024 JDC

STATE OF  
SOUTH  
DAKOTA

PROJECT

IM-P-B 0905(00)212

SHEET

27

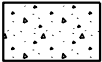
TOTAL  
SHEETS

56

Plotting Date: 09/06/2024

## KEY

PCC Repair Area

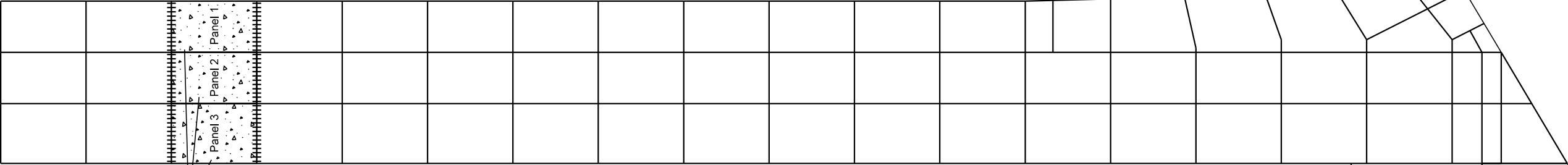


Dowel Bars



U.S. HWY 83

← Joints Spaced →  
at 20'



8" Nonreinforced PCC Pavement Repair  
Panels 1-3  
Panel 1 - 26.7 SqYd  
Panel 2 - 26.7 SqYd  
Panel 3 - 31.1 SqYd  
Total: 84.5 SqYd

PLOT SCALE - 1"=200'

PLOTTED FROM - TRPR25584

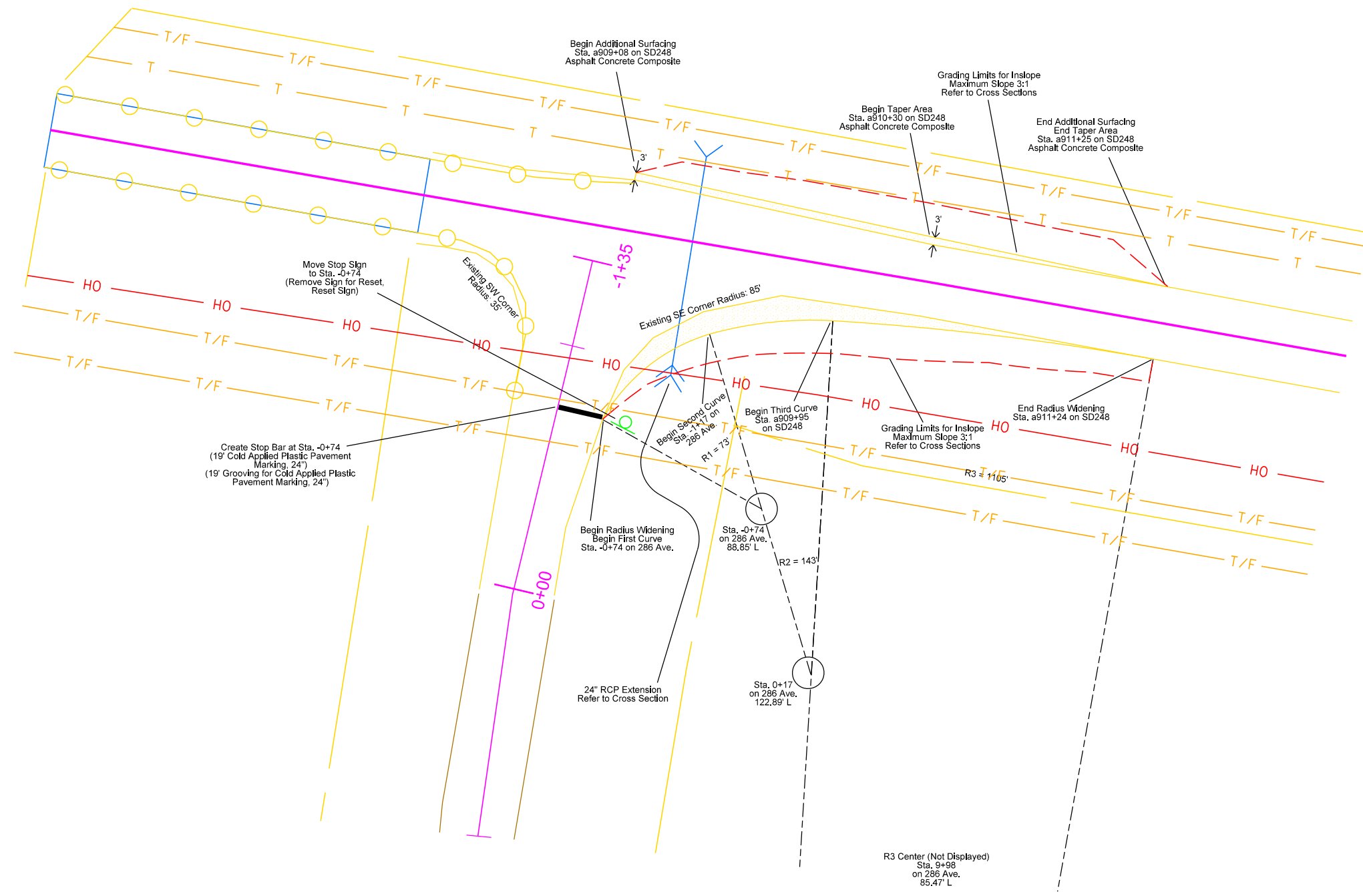
PLOT NAME - 6

FILE - ... \MATERIALS\0970\_PCC\_REPAIR.DGN

# 286 AVE./SD248 INTERSECTION MODIFICATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	28	56

Plotting Date: 09/06/2024



PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

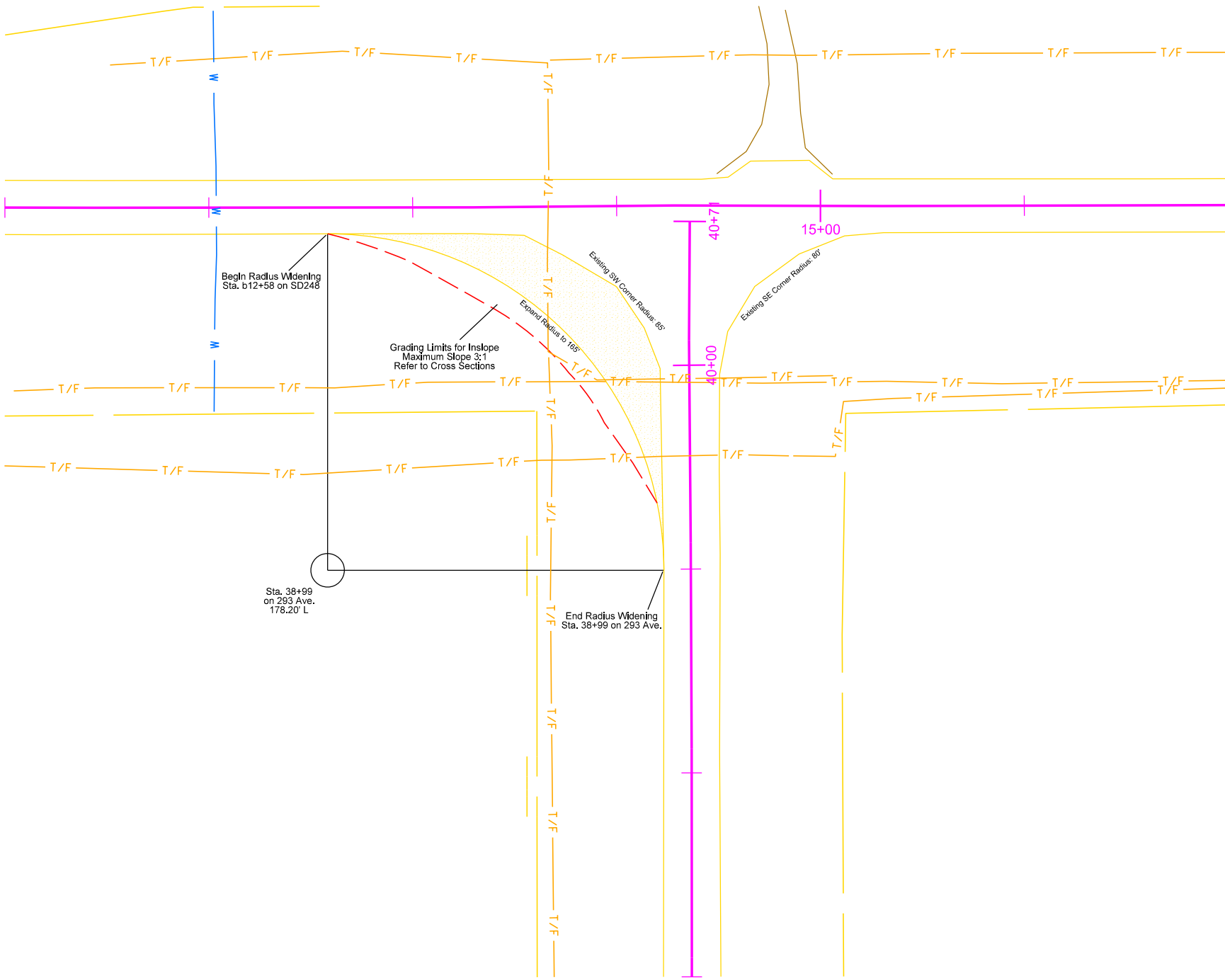
PLOT NAME - 8

FILE - ... \PRJ2025\JONS0905\09070\_20.DGN

# 293 AVE./SD248 INTERSECTION MODIFICATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	29	56

Plotting Date: 09/06/2024



PLOT SCALE - 1"=200'

PLOTTED FROM - TRPR25584

PLOT NAME - 9

FILE - ... \PRJ2025\JONS0905\09070\_20.DGN

PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

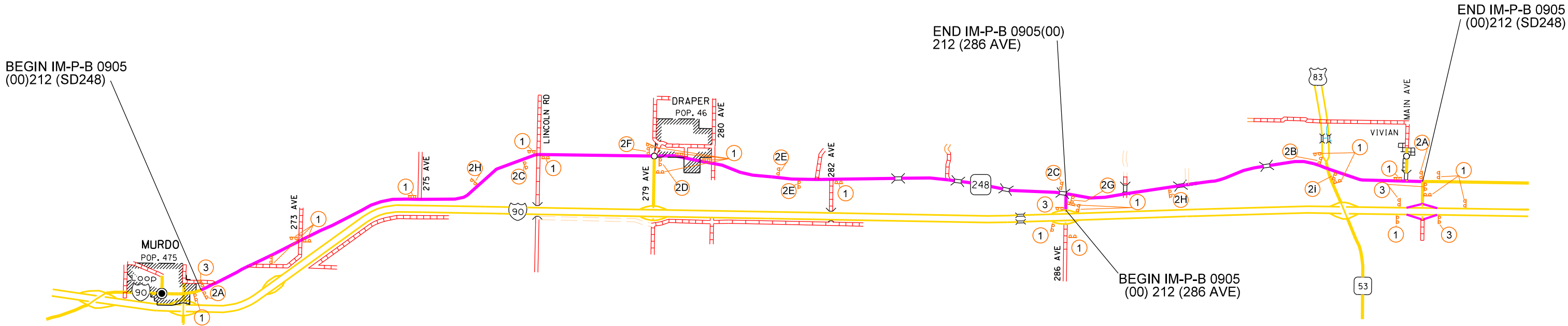
— = PROJECT WORK LIMITS

# FIXED LOCATION SIGN LAYOUT

NOT TO SCALE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	30	56

Plotting Date: 09/06/2024



All fixed location signing will remain in place until permanent pavement marking is completed.

Exact location and spacing of signs shown will be determined by the Engineer in the field.

Fixed location signing will not obscure existing signs and will be installed 200-200' from any intersection or 200' from any existing sign.

PLOT NAME - 22

FILE - ... \0970\_FIXEDSIGN.DGN

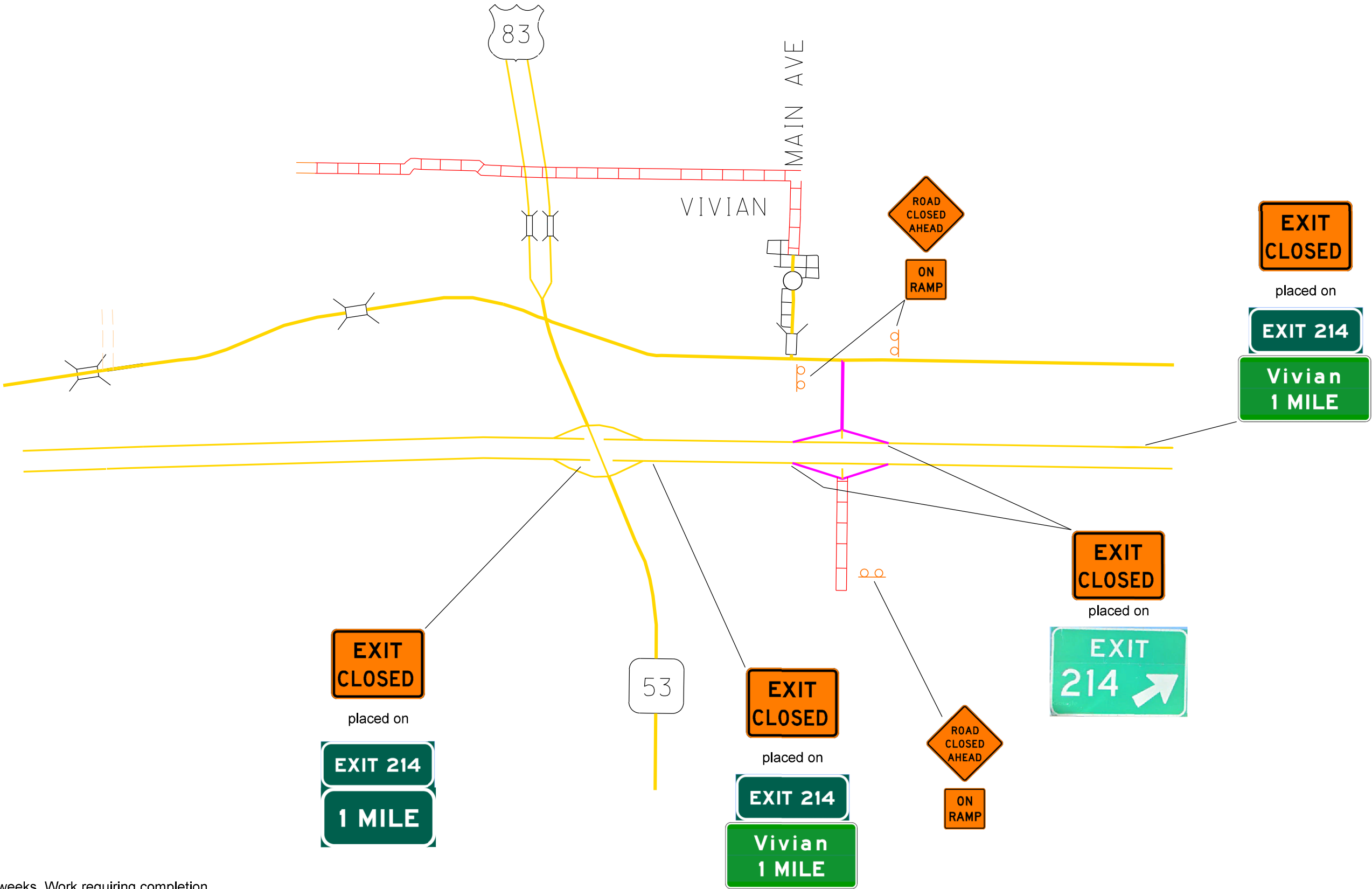


# EXIT 214 CLOSURE

NOT TO SCALE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	31	56

Plotting Date: 09/06/2024



Exit closure will be limited to 4 weeks. Work requiring completion outside this time frame will be done according to Standard Plate 634.23.

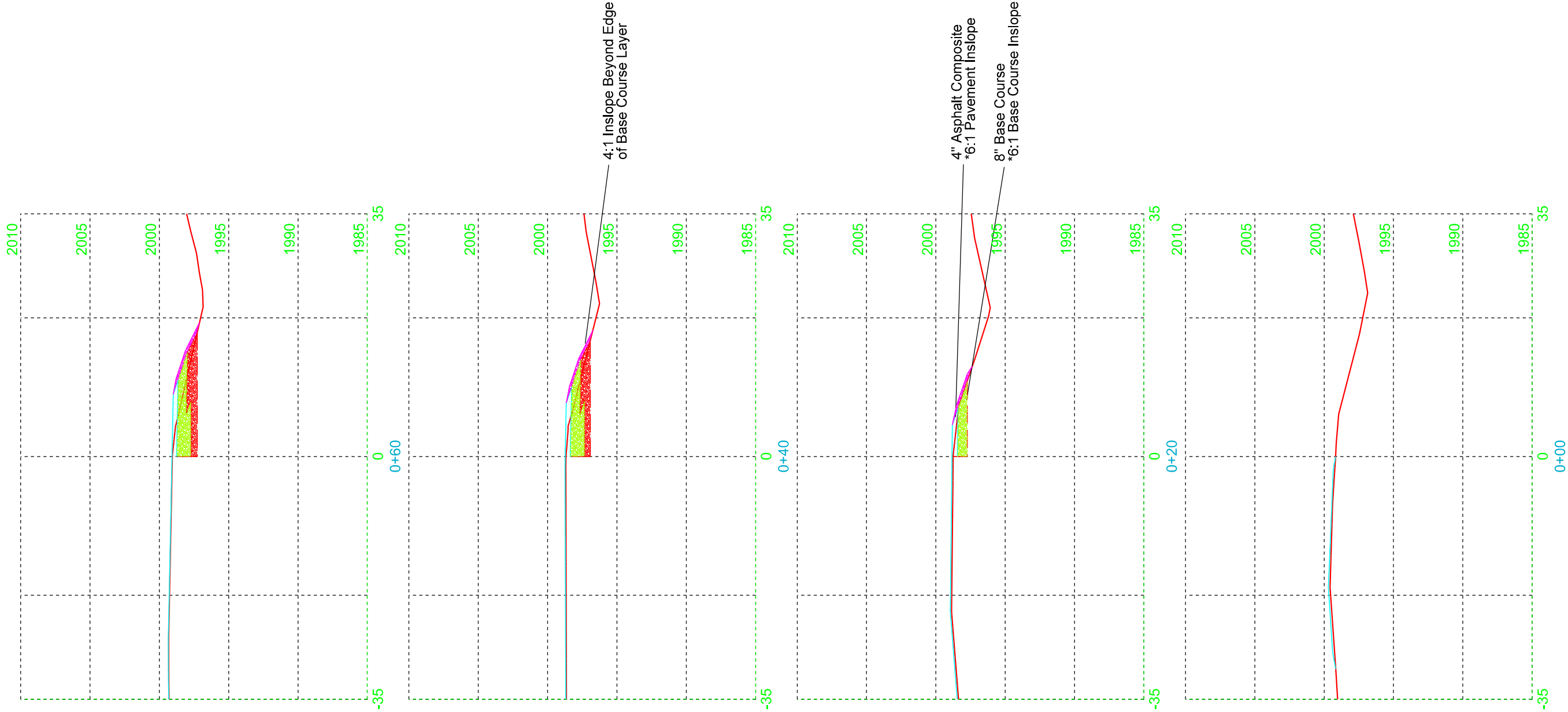
PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

PLOT NAME - 23

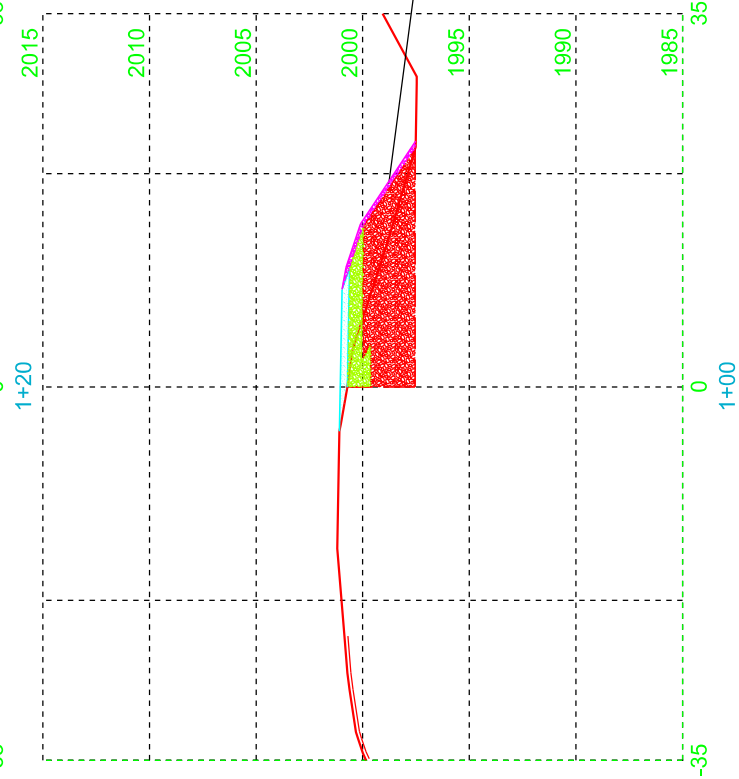
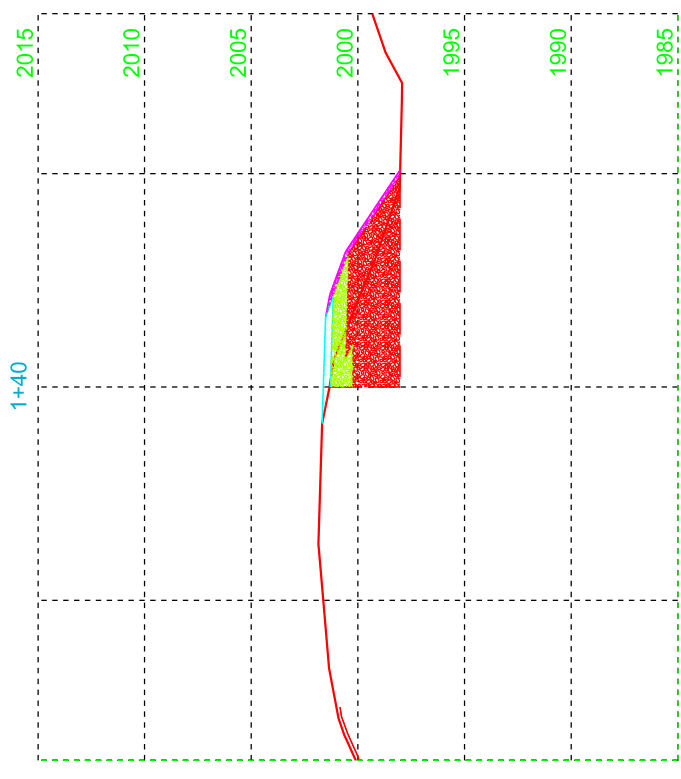
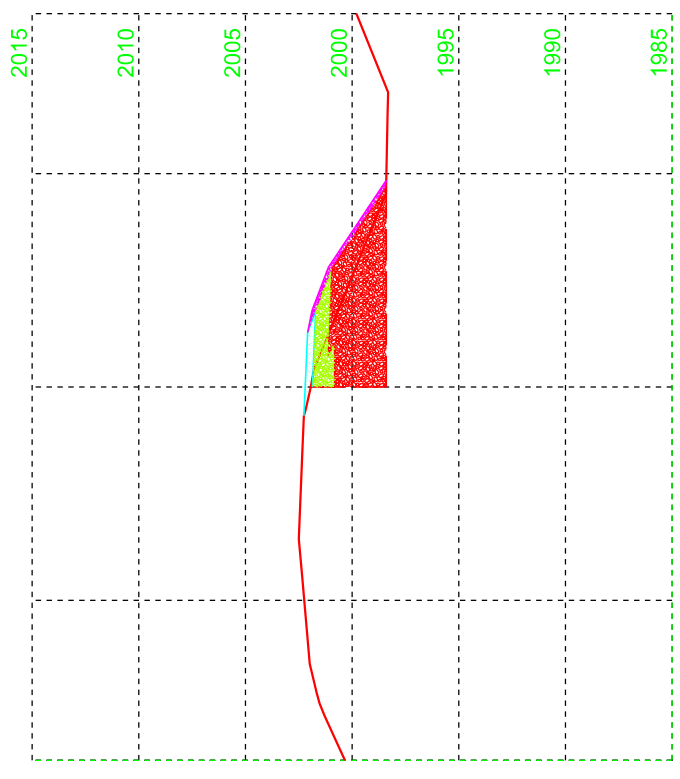
FILE - ... \0970\_FIXESIGN.DGN

286 AVE. RADIUS WIDENING

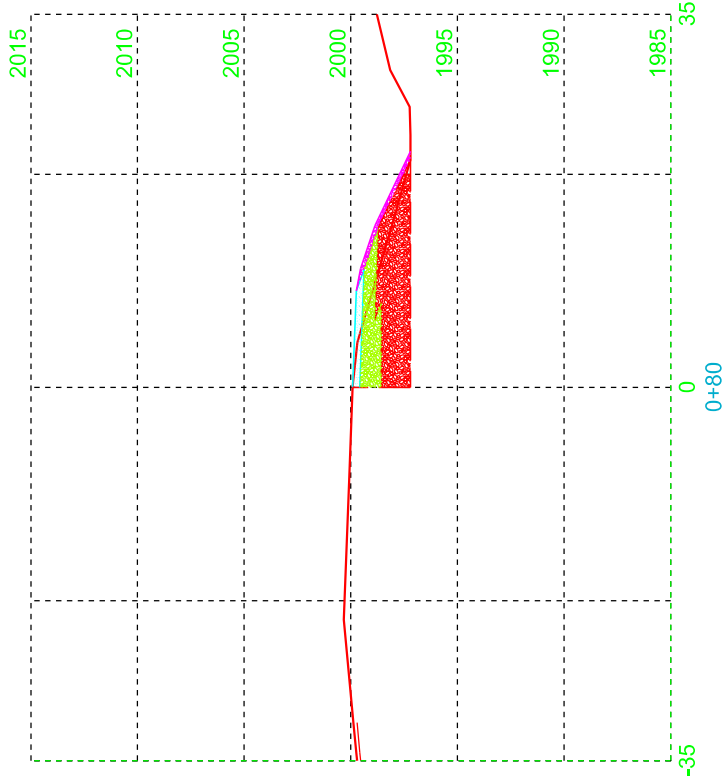


\* Consistent inslopes through entire work area

286 AVE. RADIUS WIDENING



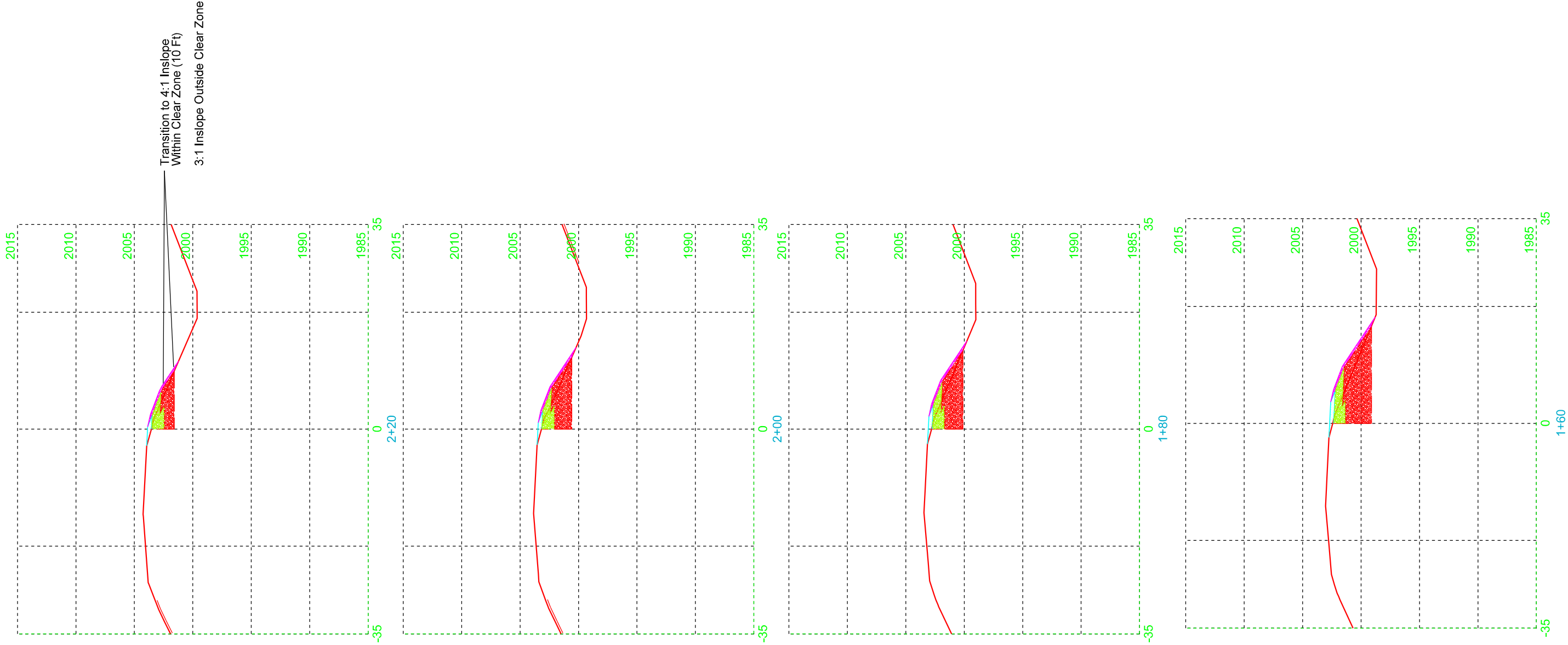
Transition to 3:1 Inslope  
Beyond Edge of Base Course Layer  
Preserve Existing Ditch



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		33	56

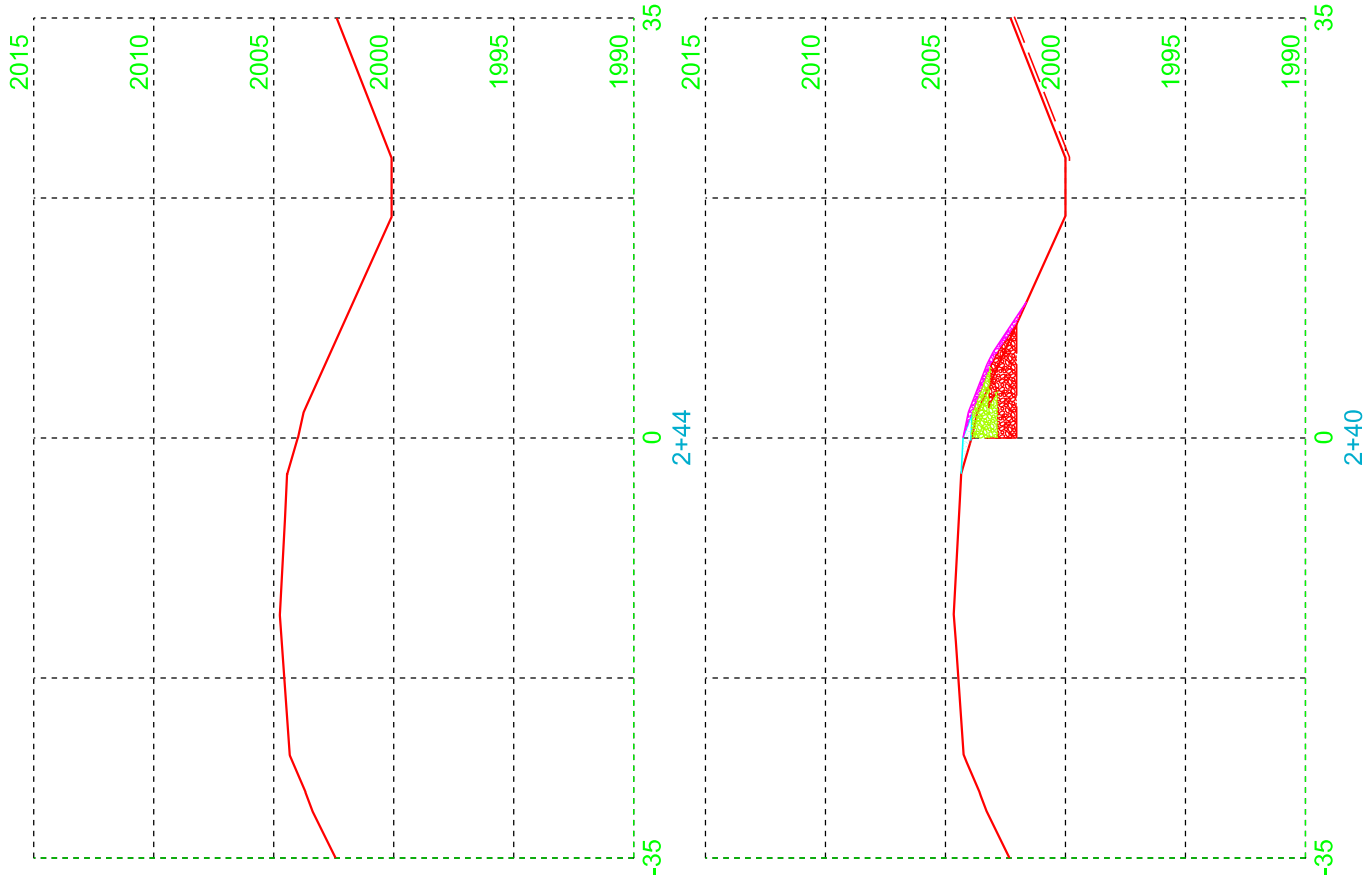
Plotting Date: 09/06/2024

286 AVE. RADIUS WIDENING



STATE OF SOUTH DAKOTA	PROJECT IM-P-B 0905(00)212	SHEET NO.	TOTAL SHEETS
		34	56

286 AVE. RADIUS WIDENING



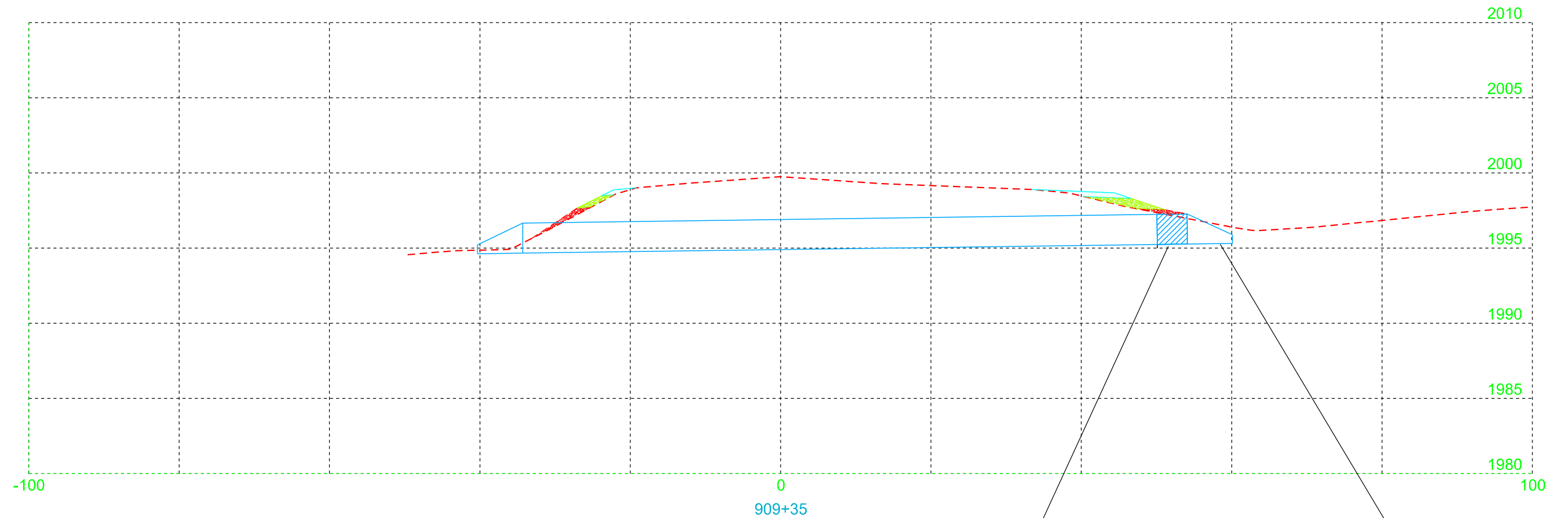
STATE OF SOUTH DAKOTA	PROJECT		SHEET NO.	TOTAL SHEETS
	IM-P-B 0905(00)212		35	56

Plotting Date: 09/06/2024



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-P-B 0905(00)212	36	56

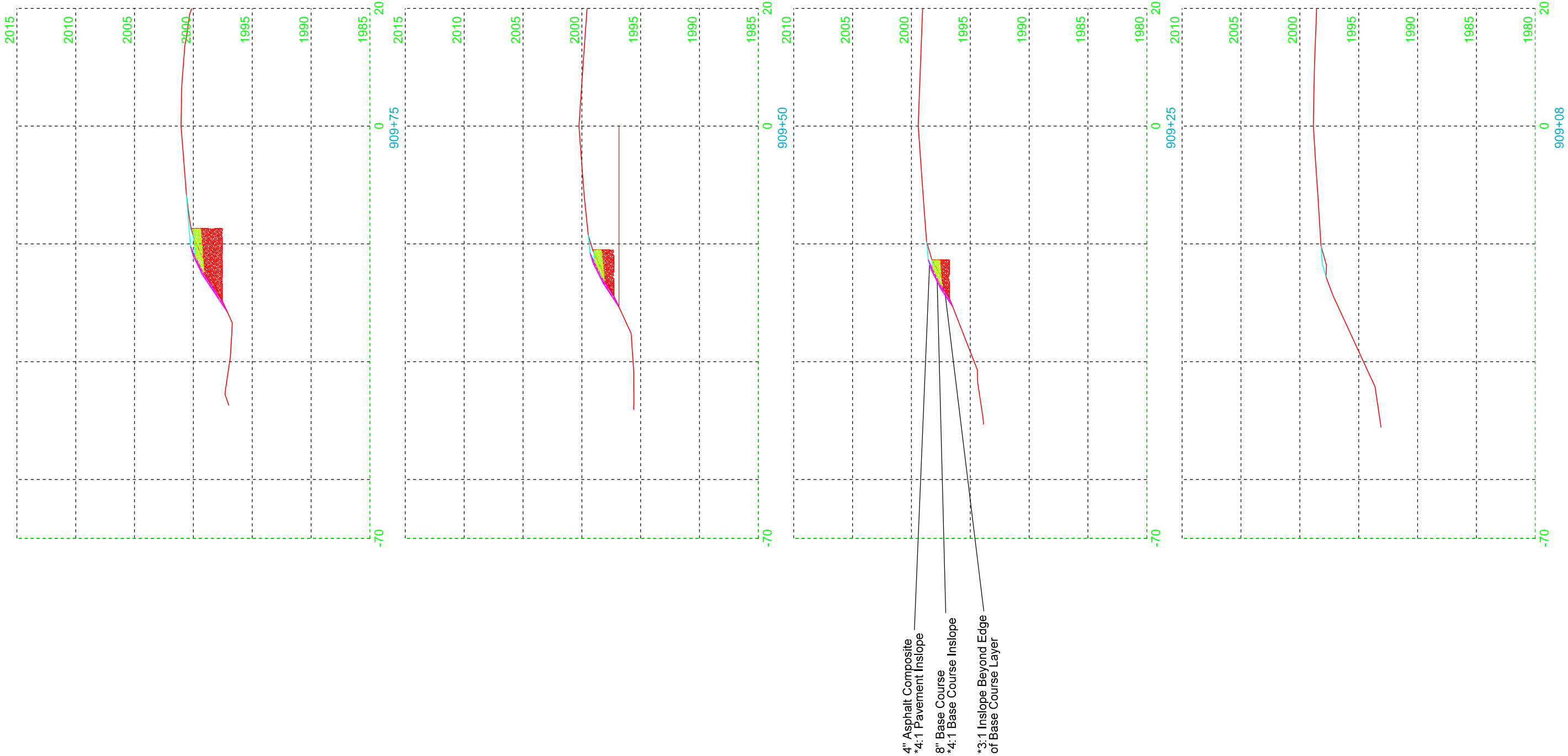
# 286 AVE. RADIUS WIDENING CULVERT EXTENSION



Insert 4' Segment of 24" RCP Arch on Right (South) End  
(Furnish + Install 4' 24" RCP Arch)

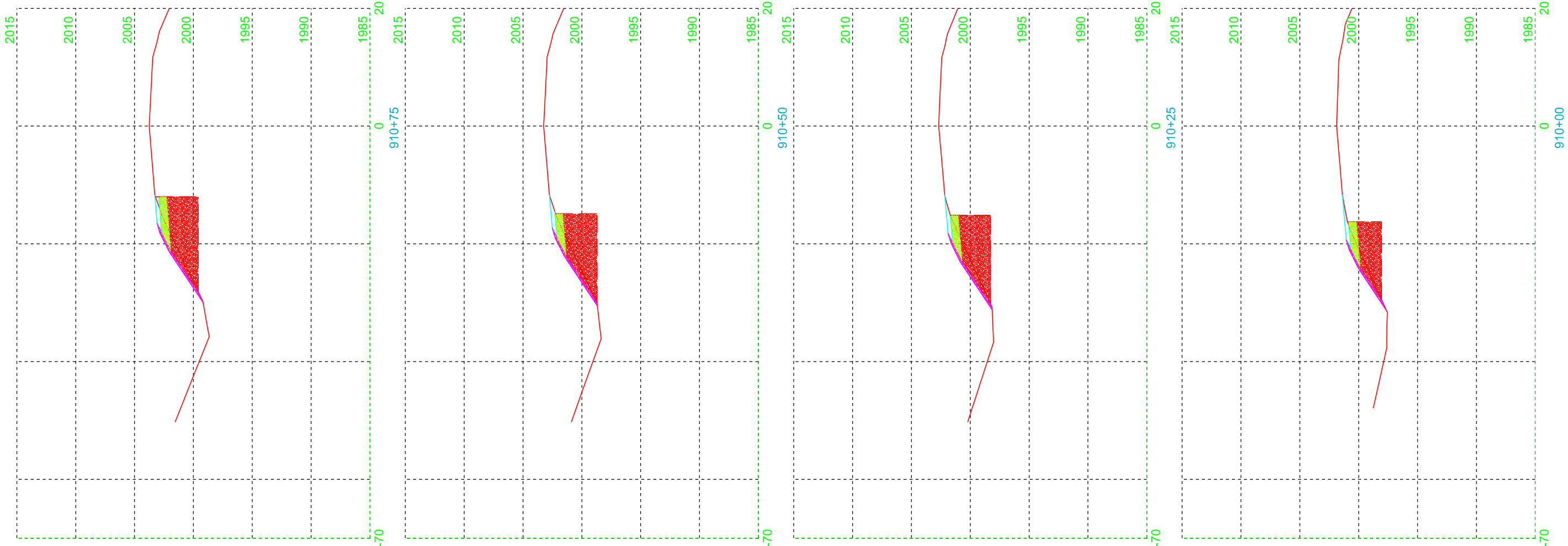
Remove and Reset  
30" x 24" RCP Flared Arch End

SD248 SHOULDER EXTENSION  
AT INTERSECTION W/286 AVE.

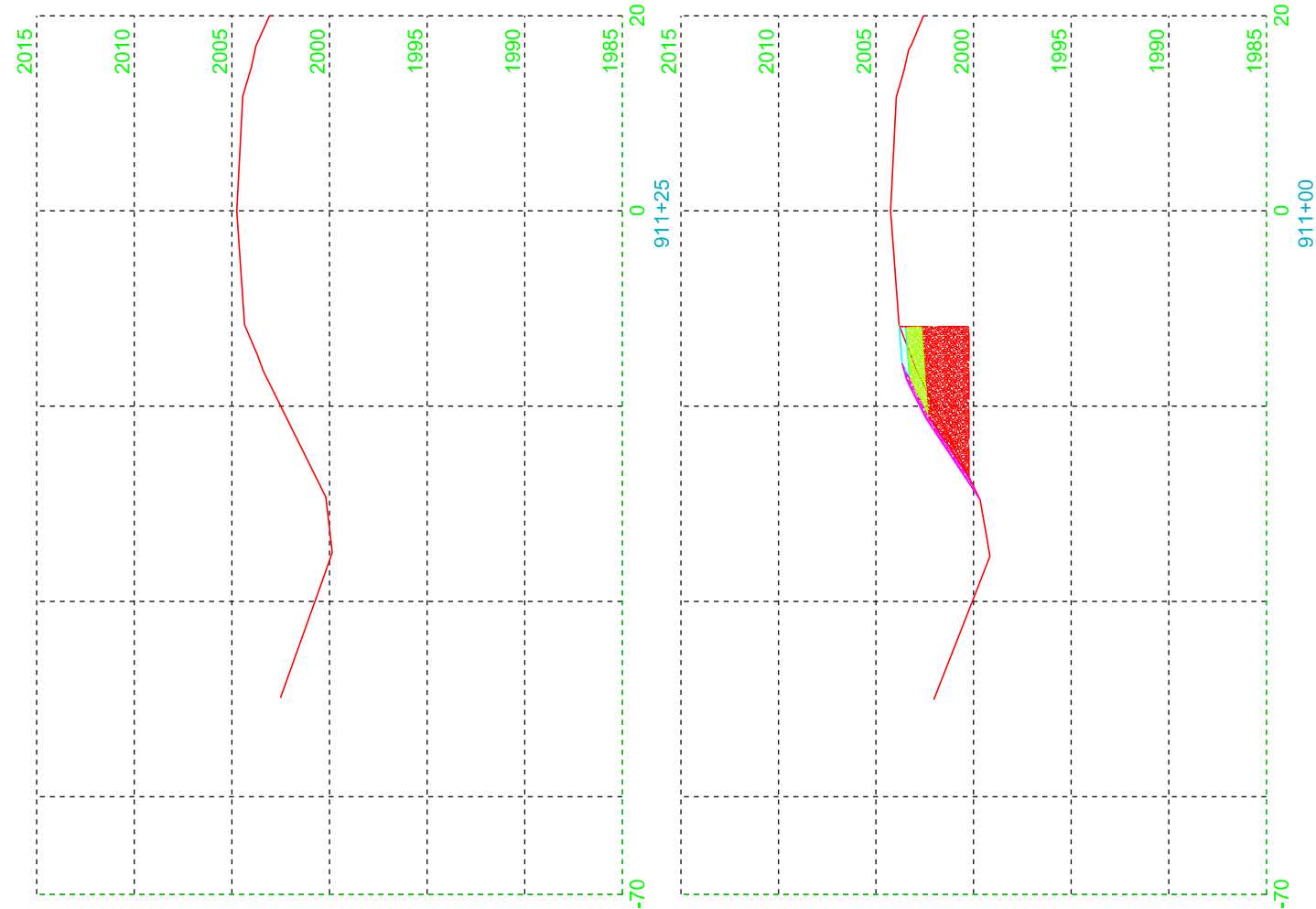


\*Consistent inslopes through entire work area

SD248 SHOULDER EXTENSION  
AT INTERSECTION W/286 AVE.



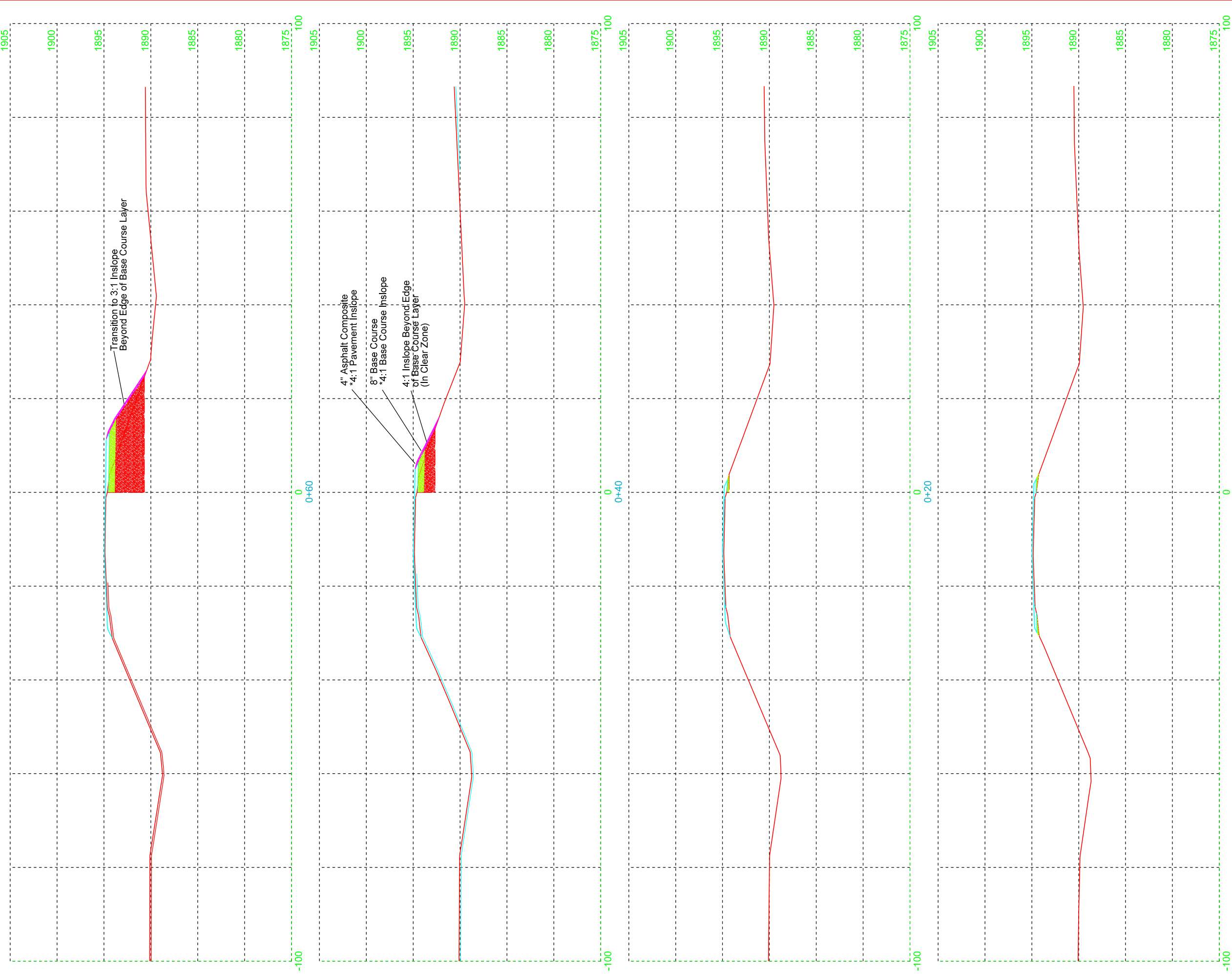
SD248 SHOULDER EXTENSION  
AT INTERSECTION W/286 AVE.



STATE OF SOUTH DAKOTA	PROJECT		SHEET NO.	TOTAL SHEETS
	IM-P-B 0905(00)212			
			39	56

Plotting Date: 09/06/2024

293 AVE. RADIUS WIDENING

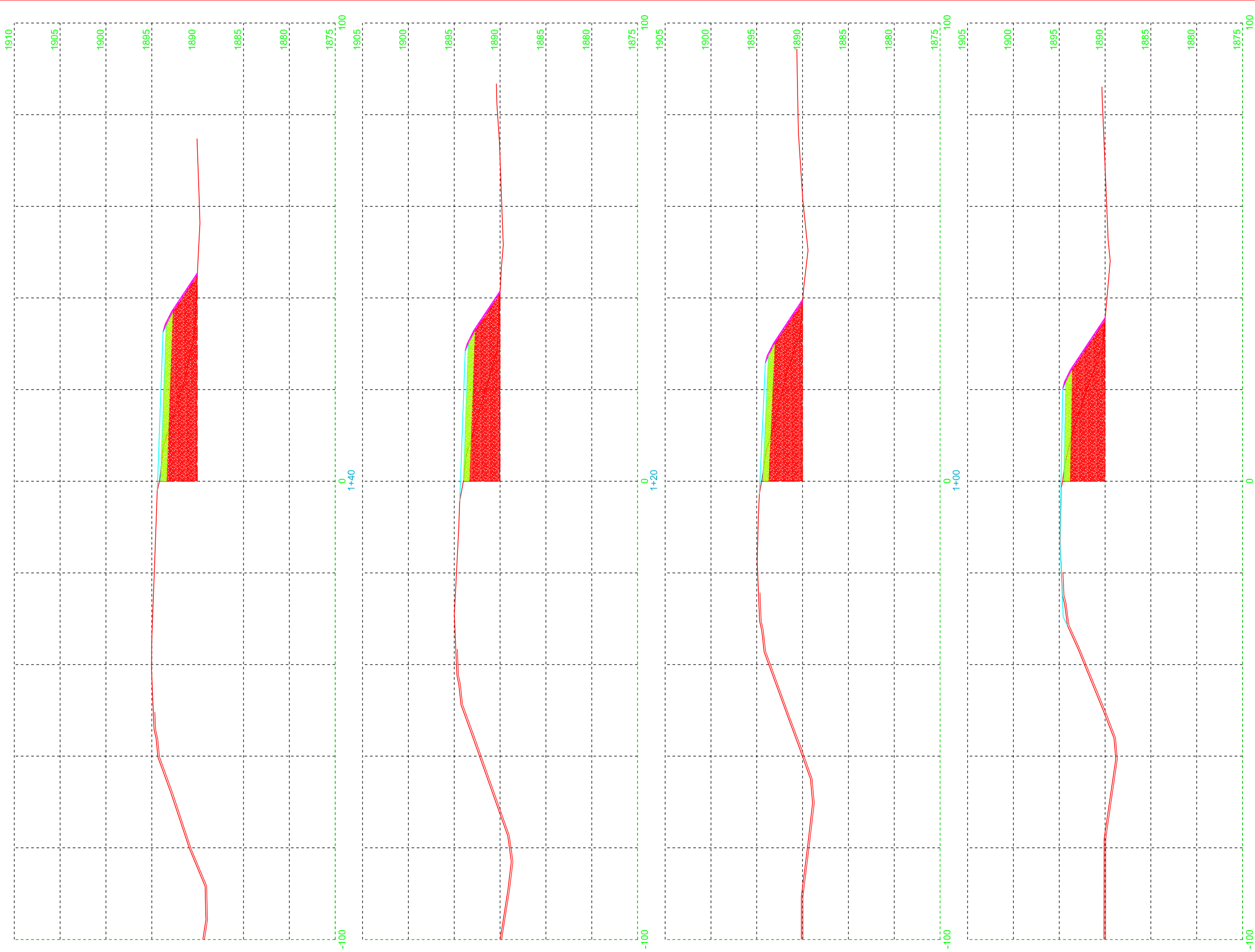


\*Consistent inslopes through entire work area

STATE OF SOUTH DAKOTA	PROJECT		TOTAL SHEET NO.	TOTAL SHEETS
	IM-P-B 0905(00)212			
			40	56



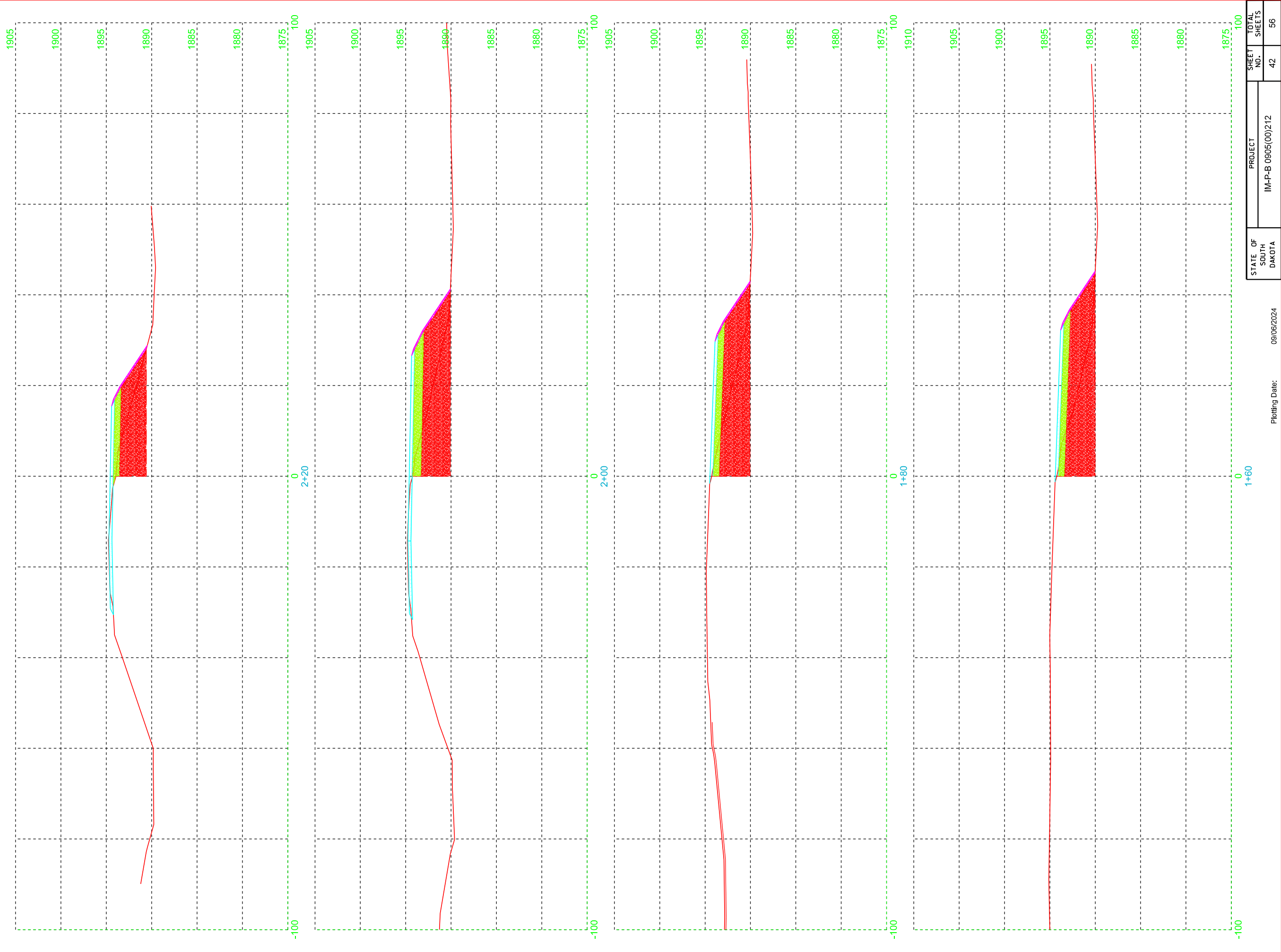
293 AVE. RADIUS WIDENING



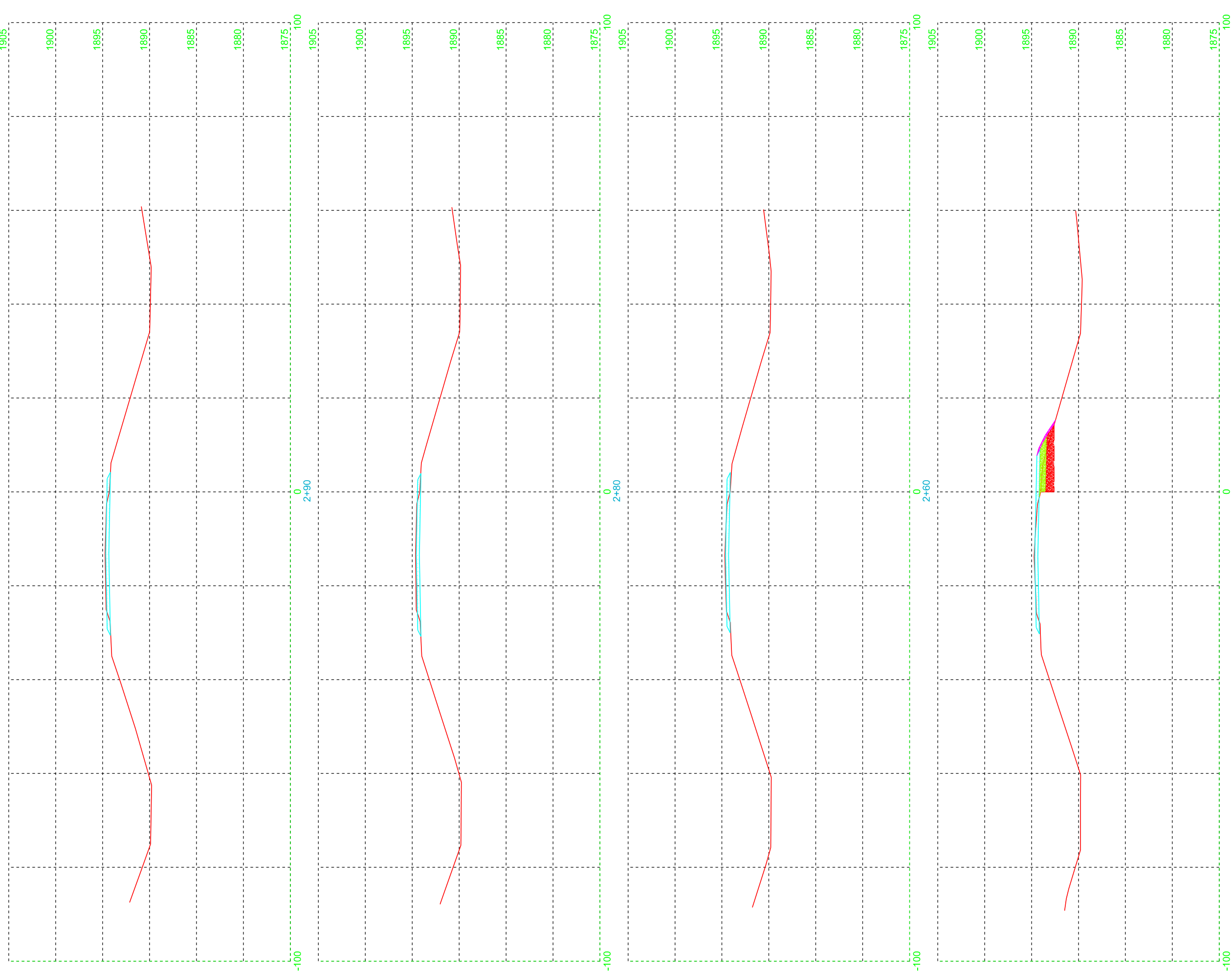
STATE OF SOUTH DAKOTA	PROJECT		SHEET NO.	TOTAL SHEETS
	IM-P-B 0905(00)212			
			41	56

Plotting Date: 09/06/2024

293 AVE. RADIUS WIDENING



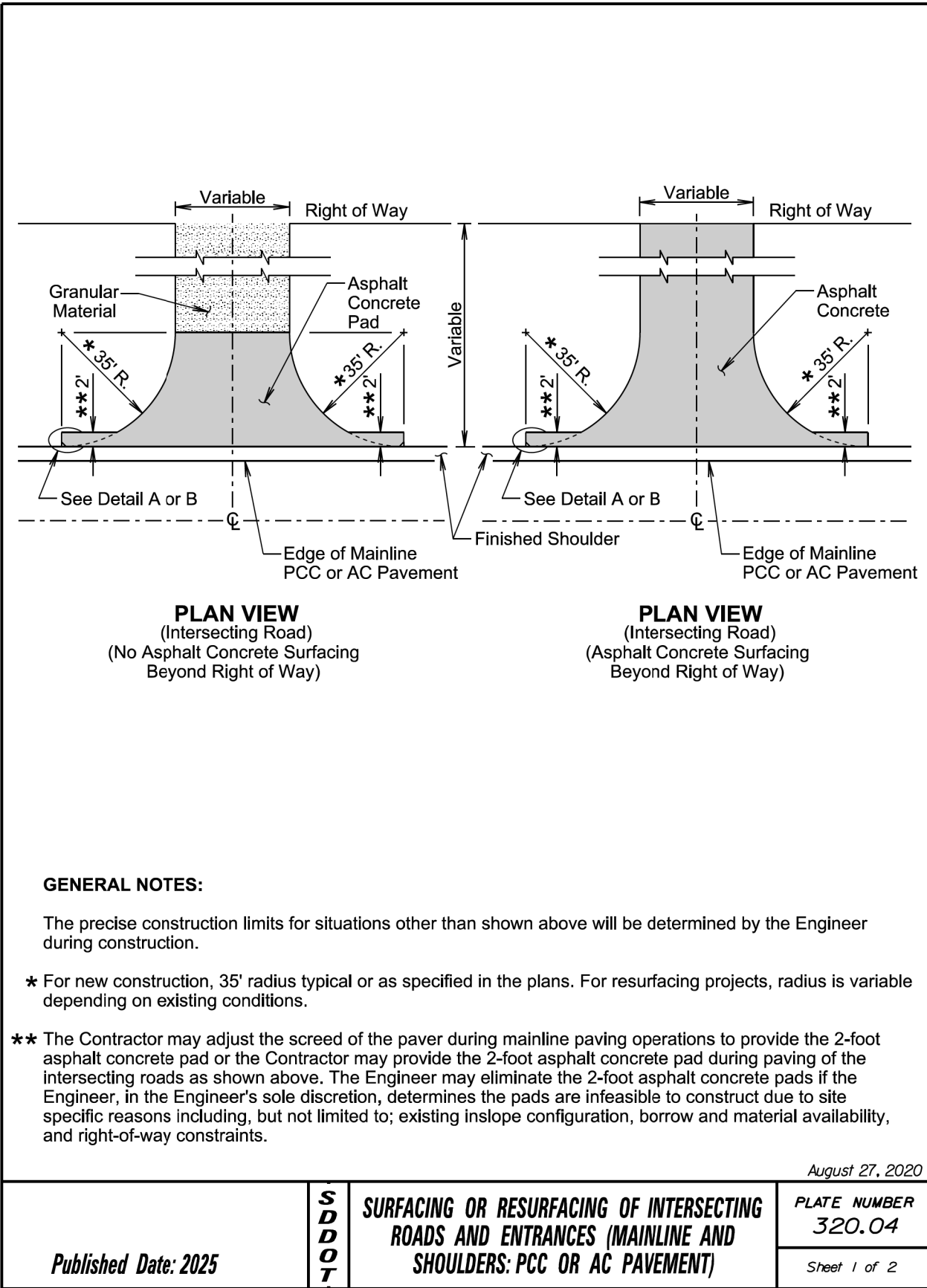
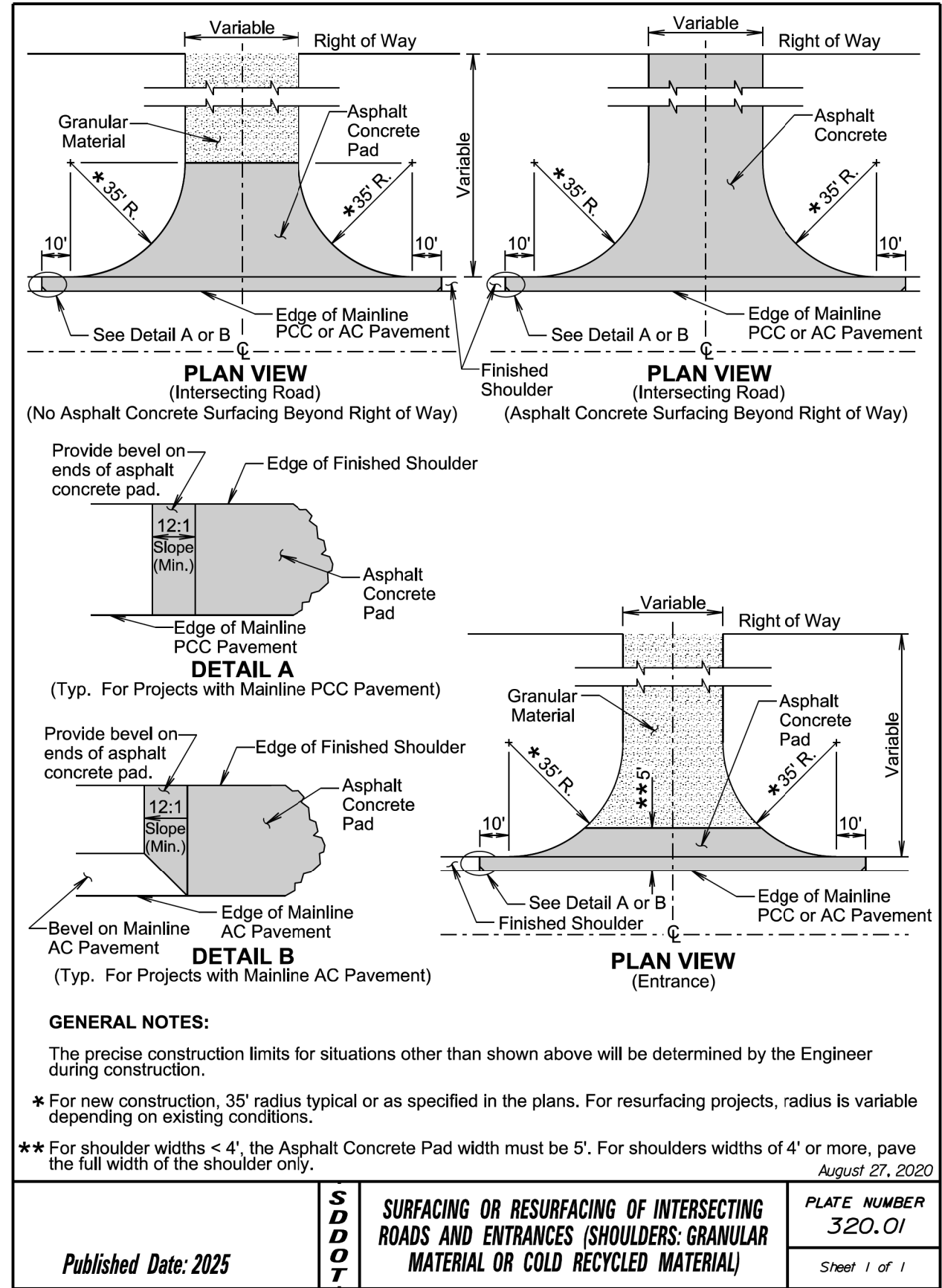
293 AVE. RADIUS WIDENING

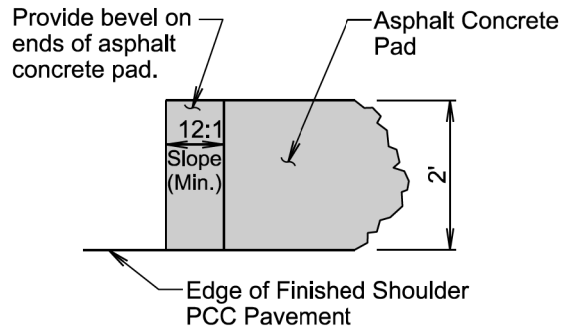


STATE OF SOUTH DAKOTA	PROJECT		SHEET NO.	TOTAL SHEETS
	IM-P-B 0905(00)212			
			43	56

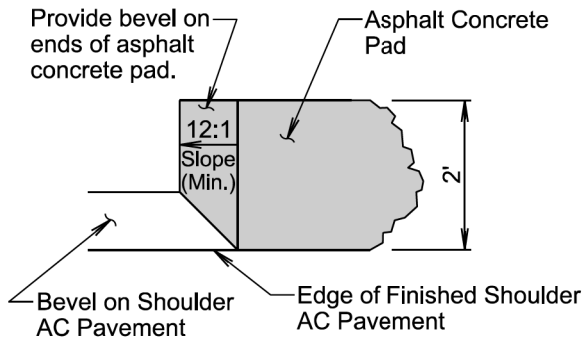
Plotting Date: 09/06/2024

43	56
----	----

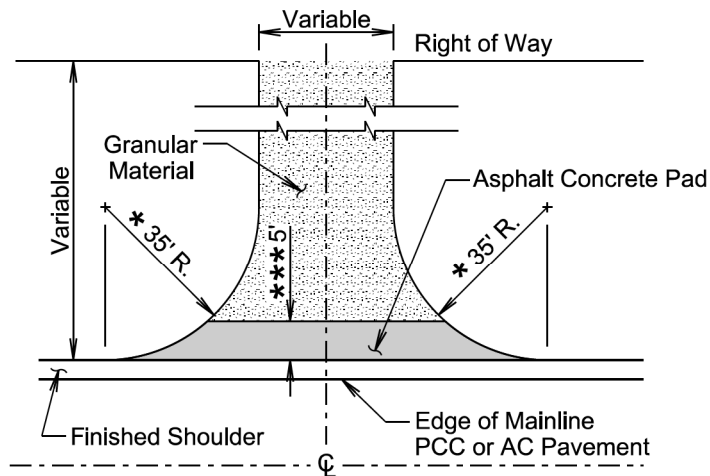




**DETAIL A**  
(Typ. for Projects with PCC Pavement on Shoulder)



**DETAIL B**  
(Typ. for Projects with AC Pavement on Shoulder)

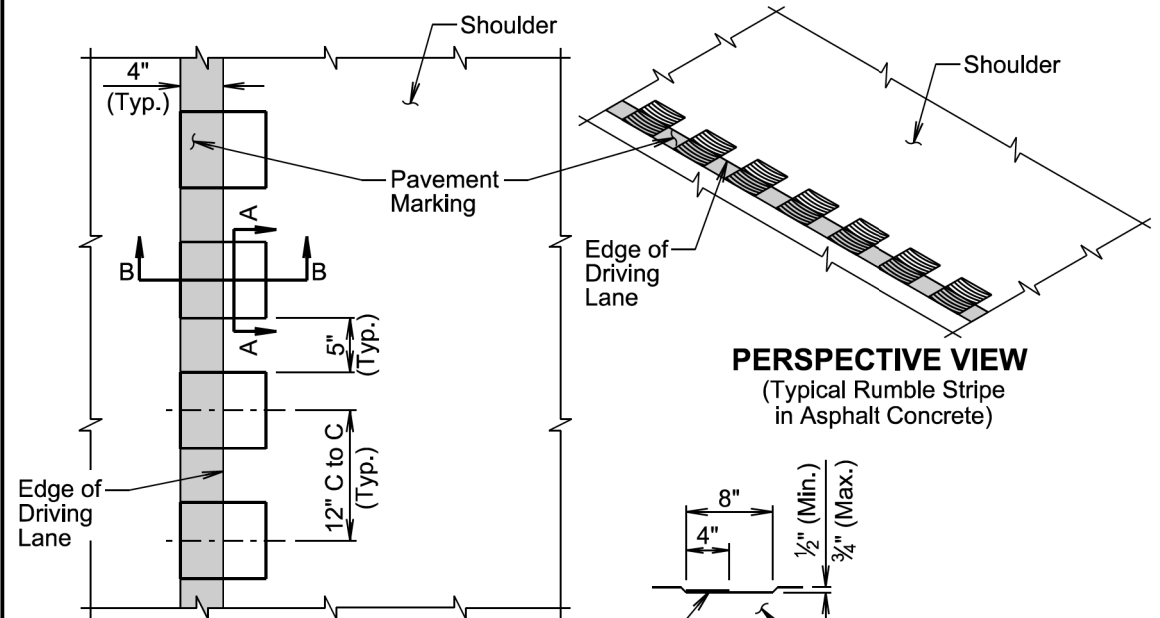


**PLAN VIEW**  
(Entrance)

\*\*\* Not required if finished shoulder width is 4' or greater.

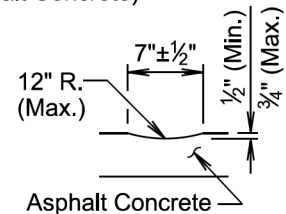
August 27, 2020

Published Date: 2025	S D D O T	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04
			Sheet 2 of 2



**PLAN VIEW**  
(Typical Rumble Stripe  
in Asphalt Concrete)

**PERSPECTIVE VIEW**  
(Typical Rumble Stripe  
in Asphalt Concrete)



**SECTION A-A**

**GENERAL NOTES:**

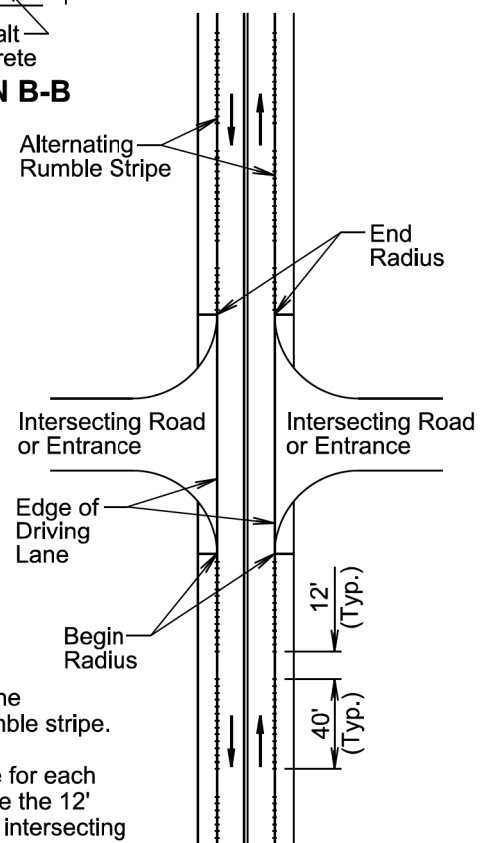
A rumble stripe will be constructed on all of the asphalt concrete shoulders by grinding alternating patterns of 40' continuous indentations in the asphalt concrete. The rumble stripe will receive a flush seal or asphalt surface treatment as specified in the plans.

A rumble stripe will not be constructed through intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings. The lengths of the 40' segments with continuous indentations and the 12' segments without a rumble stripe adjacent to the intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings will be adjusted as approved by the Engineer.

Prior to constructing the rumble stripe the Contractor will submit to the Engineer, for approval, the proposed method of constructing the rumble stripe.

Measurement of the rumble stripe will be to the nearest 0.1 of a mile for each shoulder. Measurement and payment of the rumble stripe will include the 12' long segments without rumble stripes and the segments adjacent to intersecting roads, entrances, turnouts, bridge decks, bridge approach slabs, and railroad crossings without rumble stripes. Payment for constructing the rumble stripe will be at the contract unit price per mile for "Grind 8" Rumble Strip or Stripe in Asphalt Concrete".

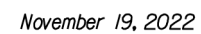
**SECTION B-B**



**PLAN VIEW**

September 14, 2019

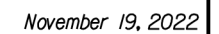
Published Date: 2025	S D D O T	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1



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**Published Date: 2025**

Sheet 1 of 1

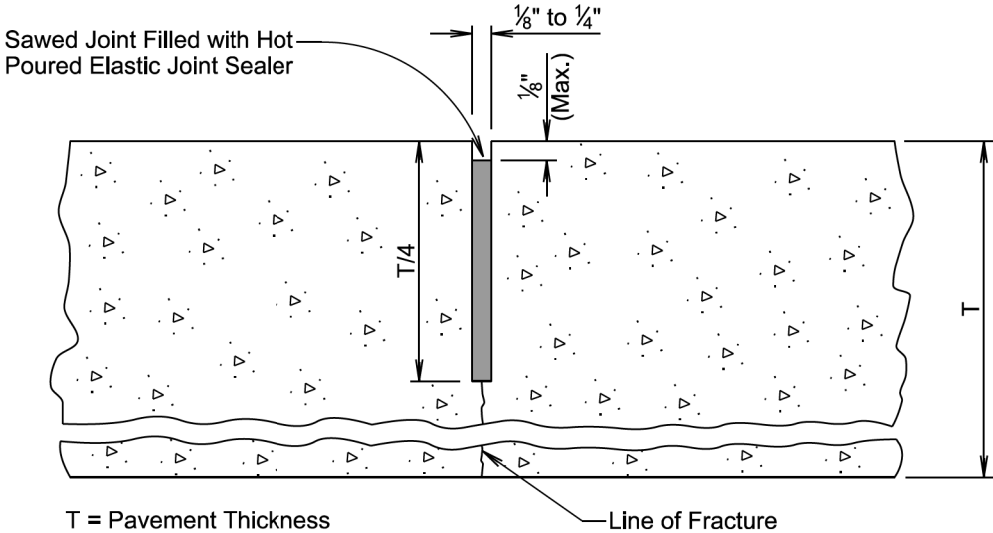


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***Published Date: 2025***

Sheet 1 of 1





**GENERAL NOTES:**

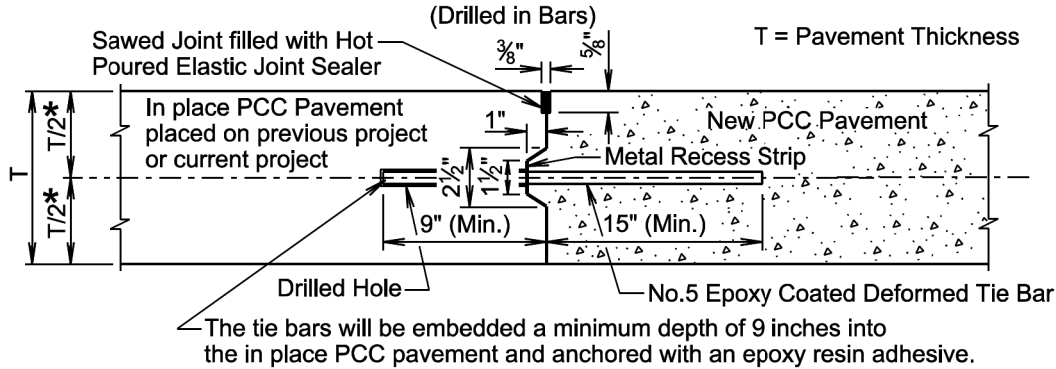
If an early entrance saw cut does not develop the full transverse crack, then the saw cut to control cracking will be a minimum 1/4 of the thickness of the pavement.

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

November 19, 2022

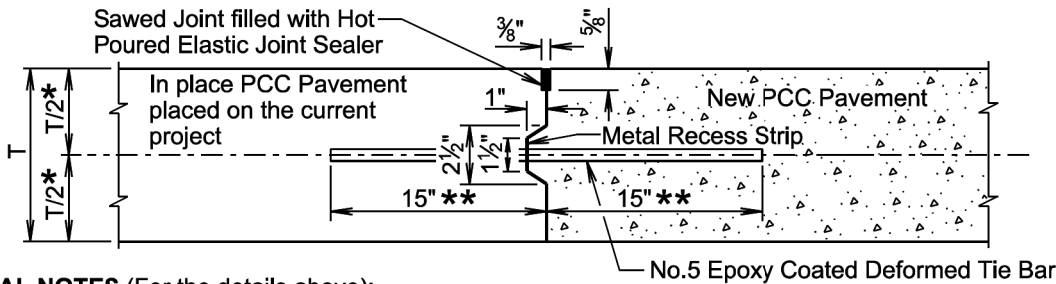
<i>Published Date: 2025</i>	<b>S D D O T</b>	<b>PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY</b>	PLATE NUMBER 380.12
			Sheet 1 of 1

**LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS**



**LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS**

(Inserted or Formed in Bars)



**GENERAL NOTES** (For the details above):

The epoxy coated deformed tie bars will 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 will be placed a minimum of 15 inches from transverse contraction joints.

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

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

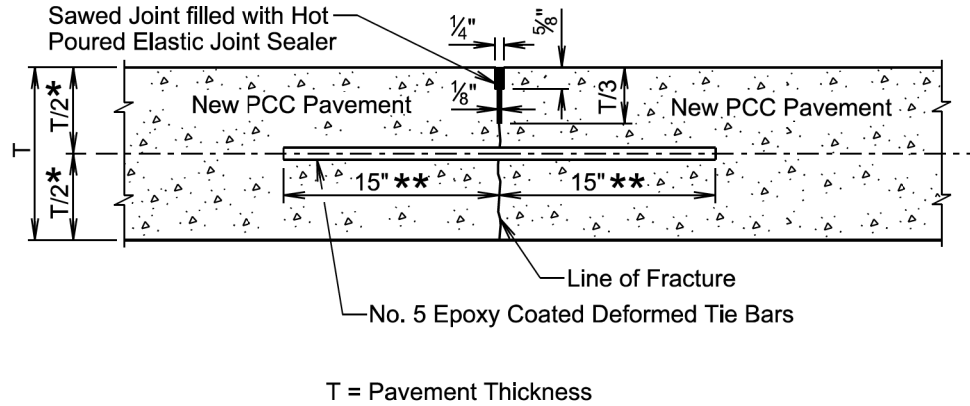
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

- \* The vertical placement tolerance for any part of the tie bar will be  $\pm T/6$ .
- \*\* The transverse placement (side shift) tolerance will be  $\pm 3$  inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

<i>Published Date: 2025</i>	<b>S D D O T</b>	<b>PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS</b>	PLATE NUMBER 380.20
			Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS  
(Poured Monolithically)



GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars will 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 will be placed a minimum of 15 inches from the transverse contraction joints.

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

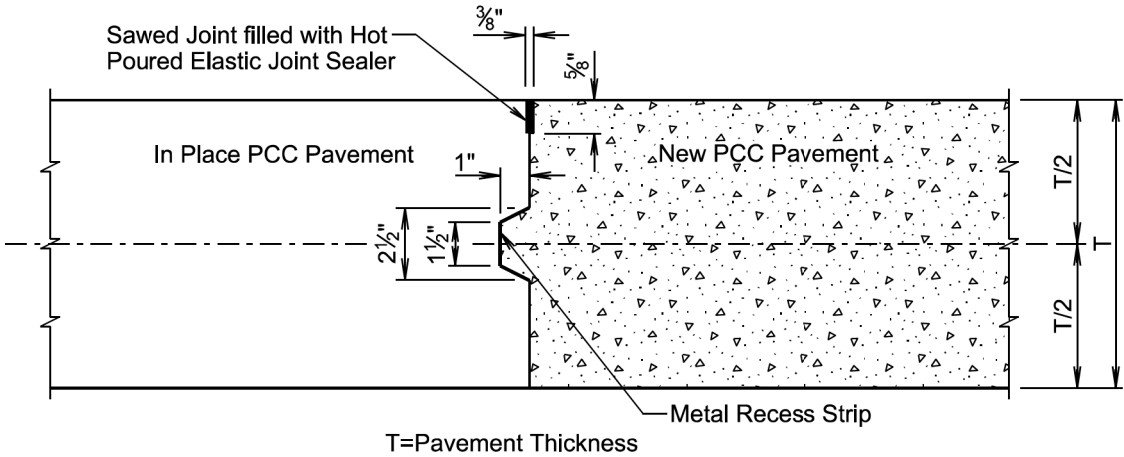
The first saw cut to control cracking will be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer is necessary.

- \* The vertical placement tolerance for any part of the tie bar will be  $\pm T/6$ .
- \*\* The transverse placement (side shift) tolerance will be  $\pm 3$  inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

Published Date: 2025	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.20
			Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS

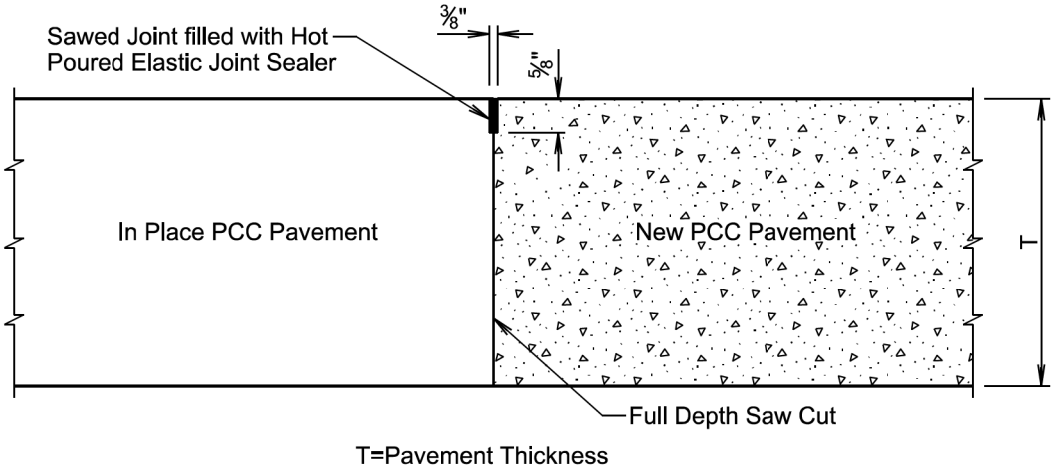


GENERAL NOTES:

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

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

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS



GENERAL NOTE:

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

November 19, 2022

Published Date: 2025	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.22
			Sheet 1 of 2

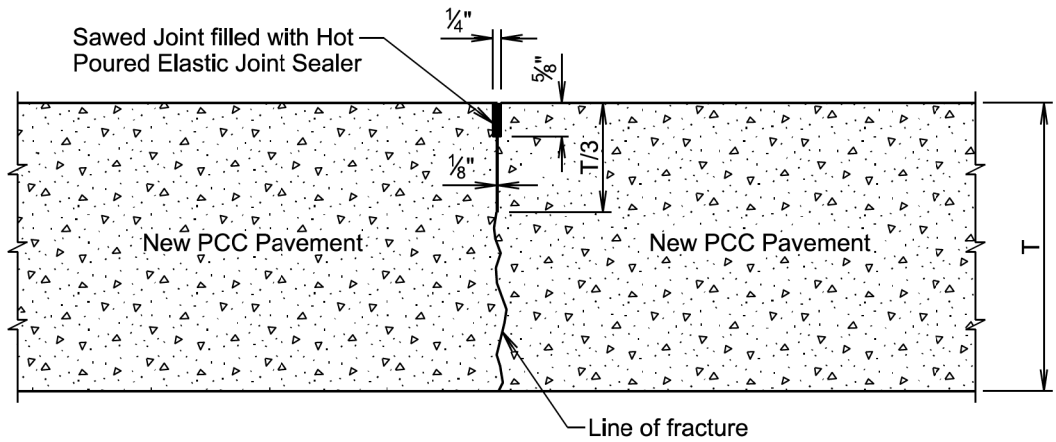
PLOT SCALE - 1:200

PLOTTED FROM - TRPR25584

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	49	56

Plotting Date: 09/06/2024

SAWED LONGITUDINAL JOINT WITHOUT TIE BARS



T=Pavement Thickness

GENERAL NOTE:

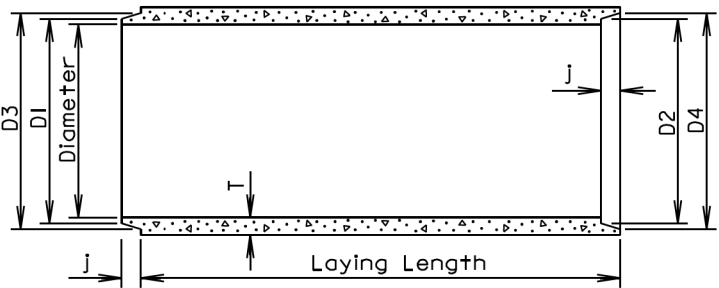
The first saw cut to control cracking will be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer will be necessary.

November 19, 2022

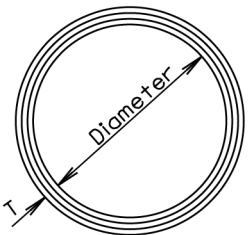
Published Date: 2025	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.22
			Sheet 2 of 2

TOLERANCES IN DIMENSIONS

Diameter: ±1.5% for 24" Dia. or less and ±1% or 3/8" whichever is more for 27" Dia. or greater.  
Diameters at joints: ± 3/16" for 30" Dia. or less and ± 1/4" for 36" or greater.  
Length of joint (J): ± 1/4".  
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.  
Laying length: shall not underrun by more than 1/2".



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

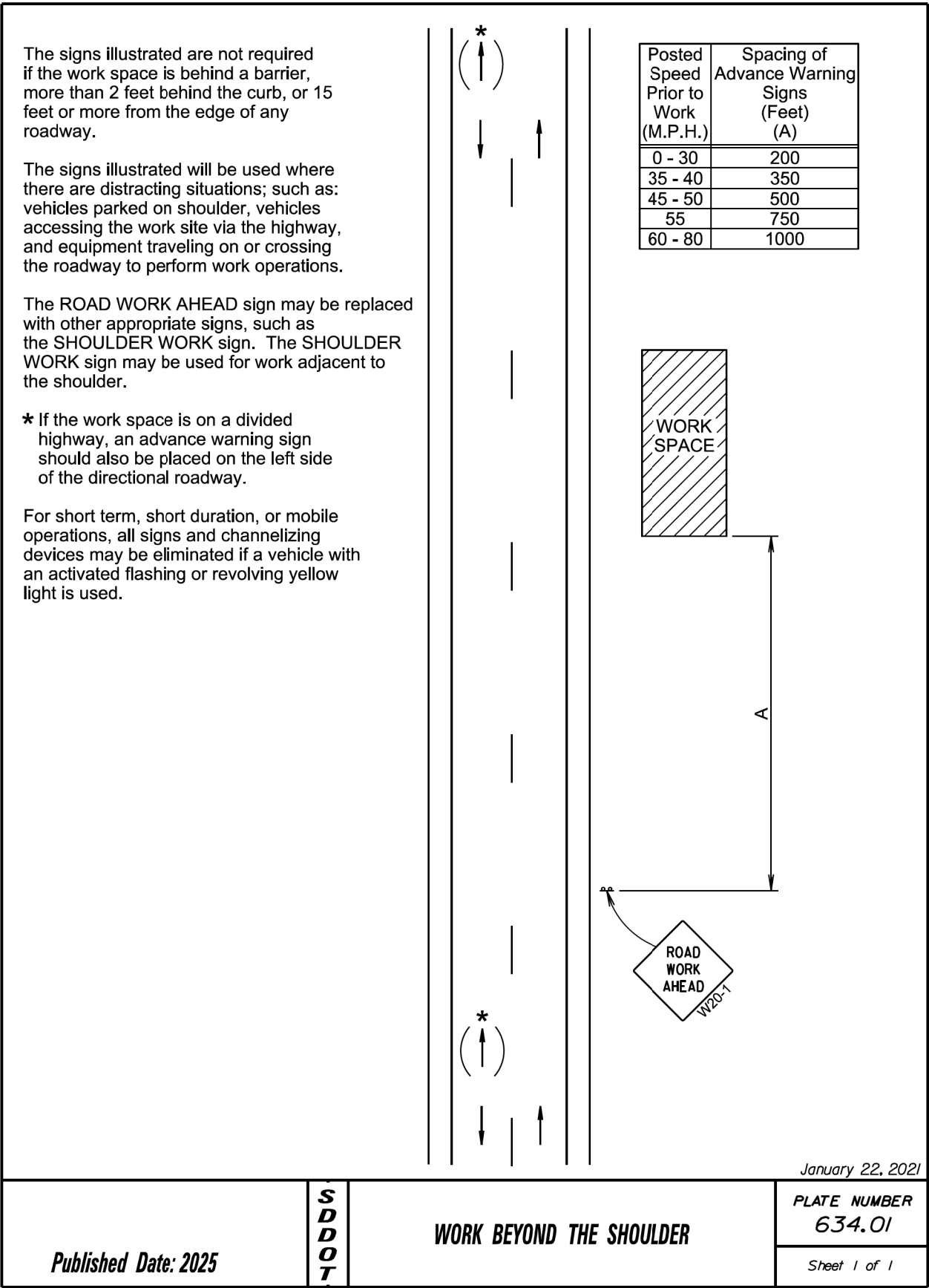
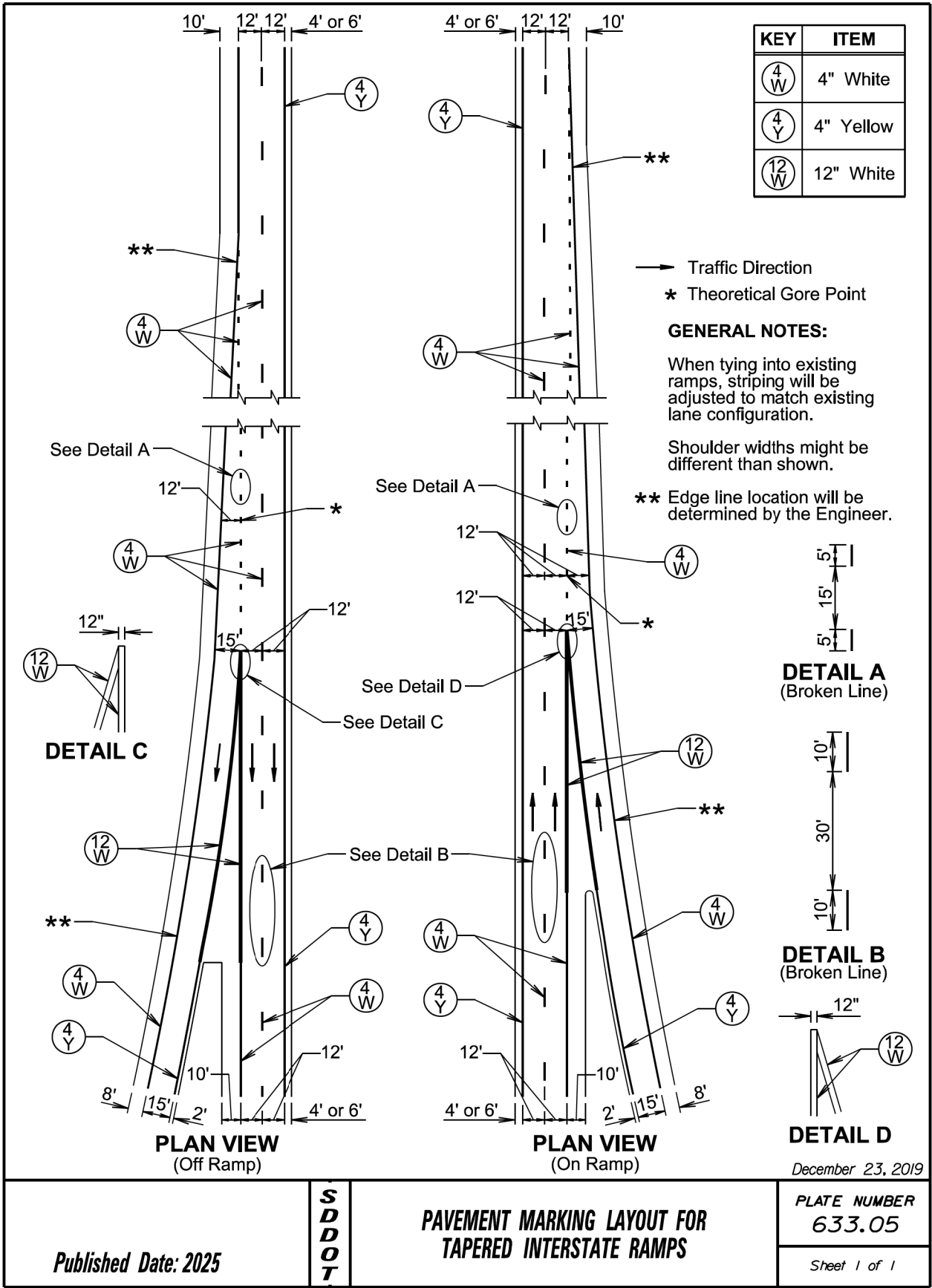
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 3/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 7/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 7/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 7/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

June 26, 2015

Published Date: 2025	S D D O T	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1

PLOT NAME - 19

FILE - ... \0970.STDPLATES.DGN



\* Messages on signs will vary depending on the operation being conducted.

Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress.

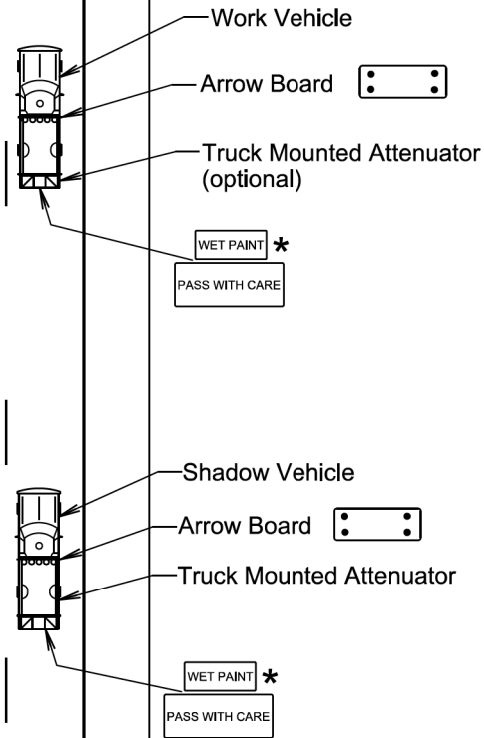
Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards.

Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights.

When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable.

Arrow boards will, as a minimum, be Type B, with a size of 60" x 30".

All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".



January 22, 2021

Published Date: 2025

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MOBILE OPERATIONS ON 2-LANE ROAD

PLATE NUMBER  
634.06

Sheet 1 of 1

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

- Flagger
- Channelizing Device

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

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

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

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

The channelizing devices will be drums or 42" cones.

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

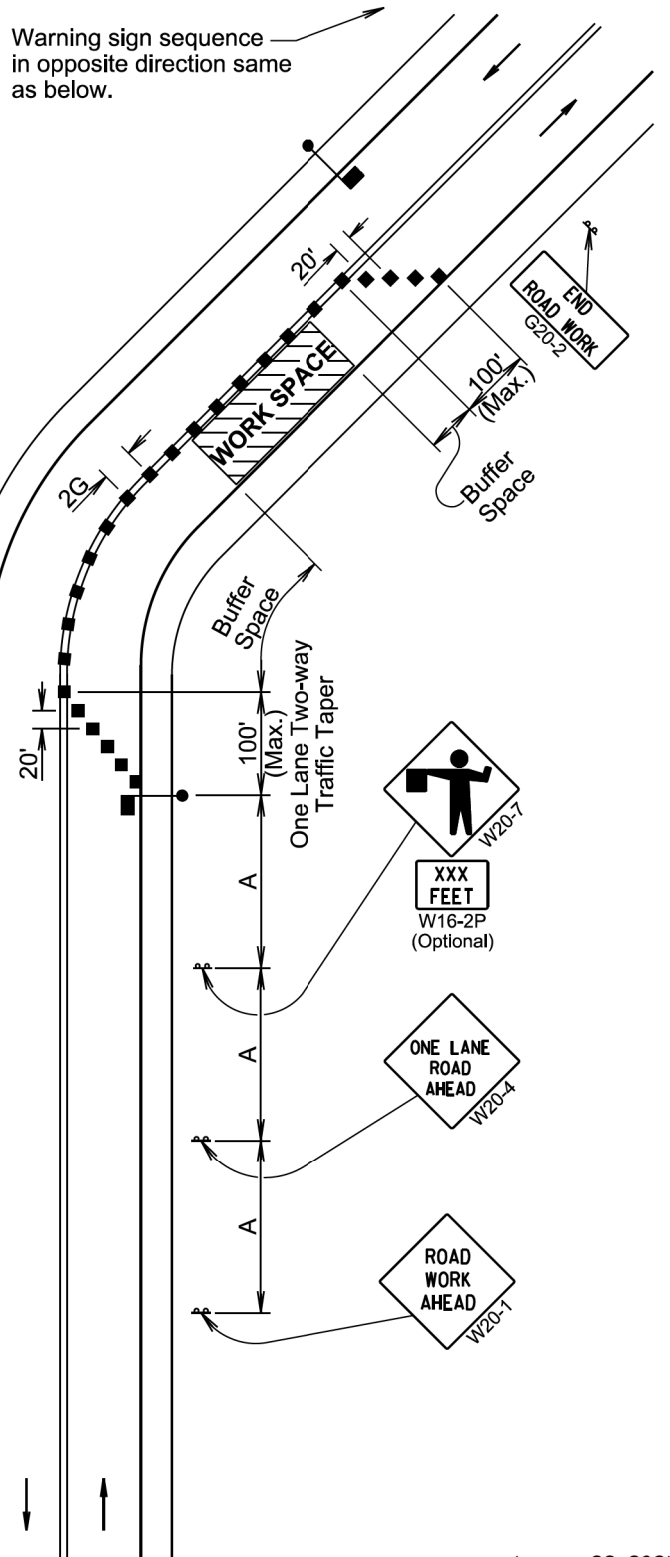
END ROAD WORK  
G20-2

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

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

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

Warning sign sequence in opposite direction same as below.



January 22, 2021

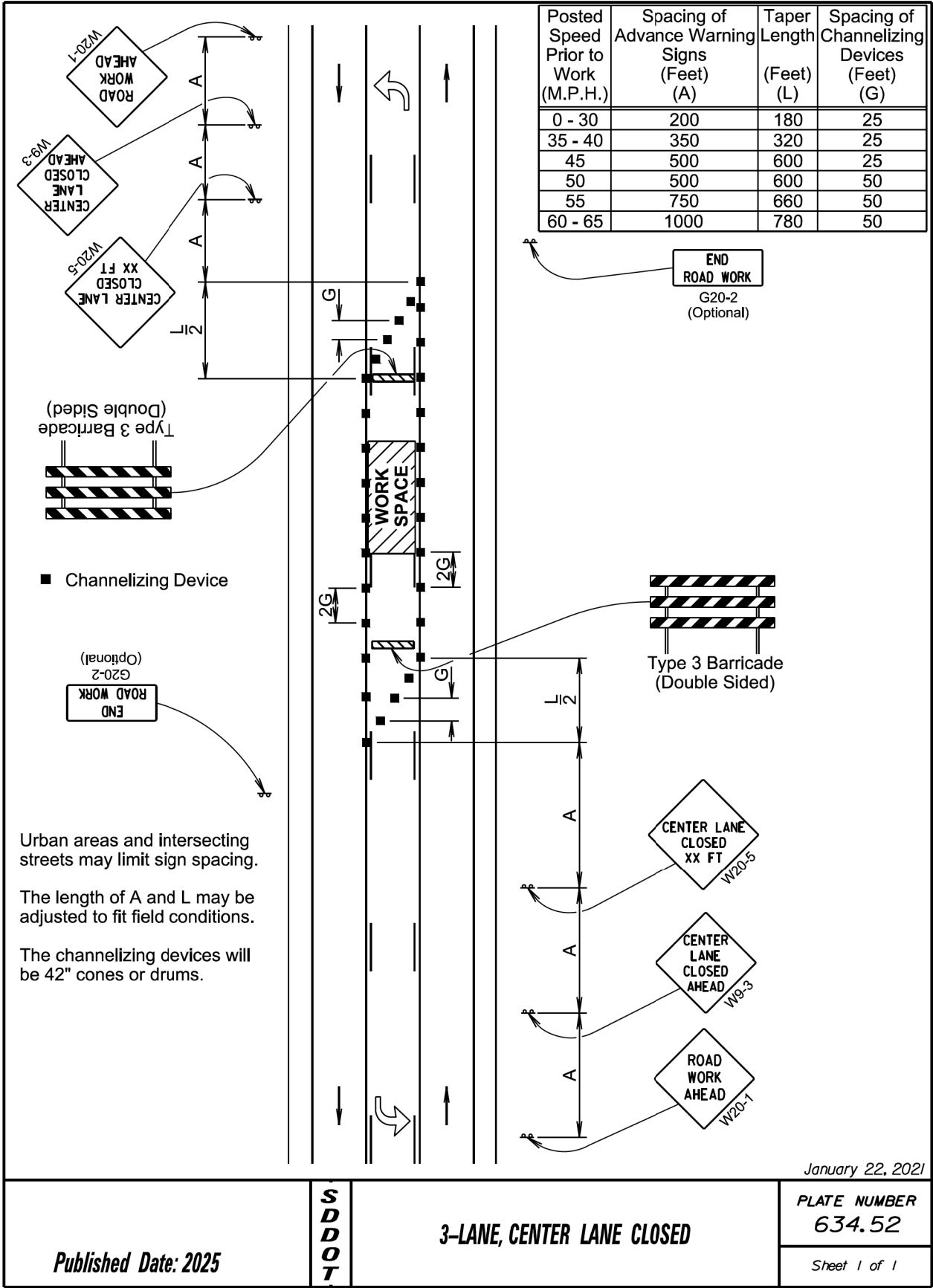
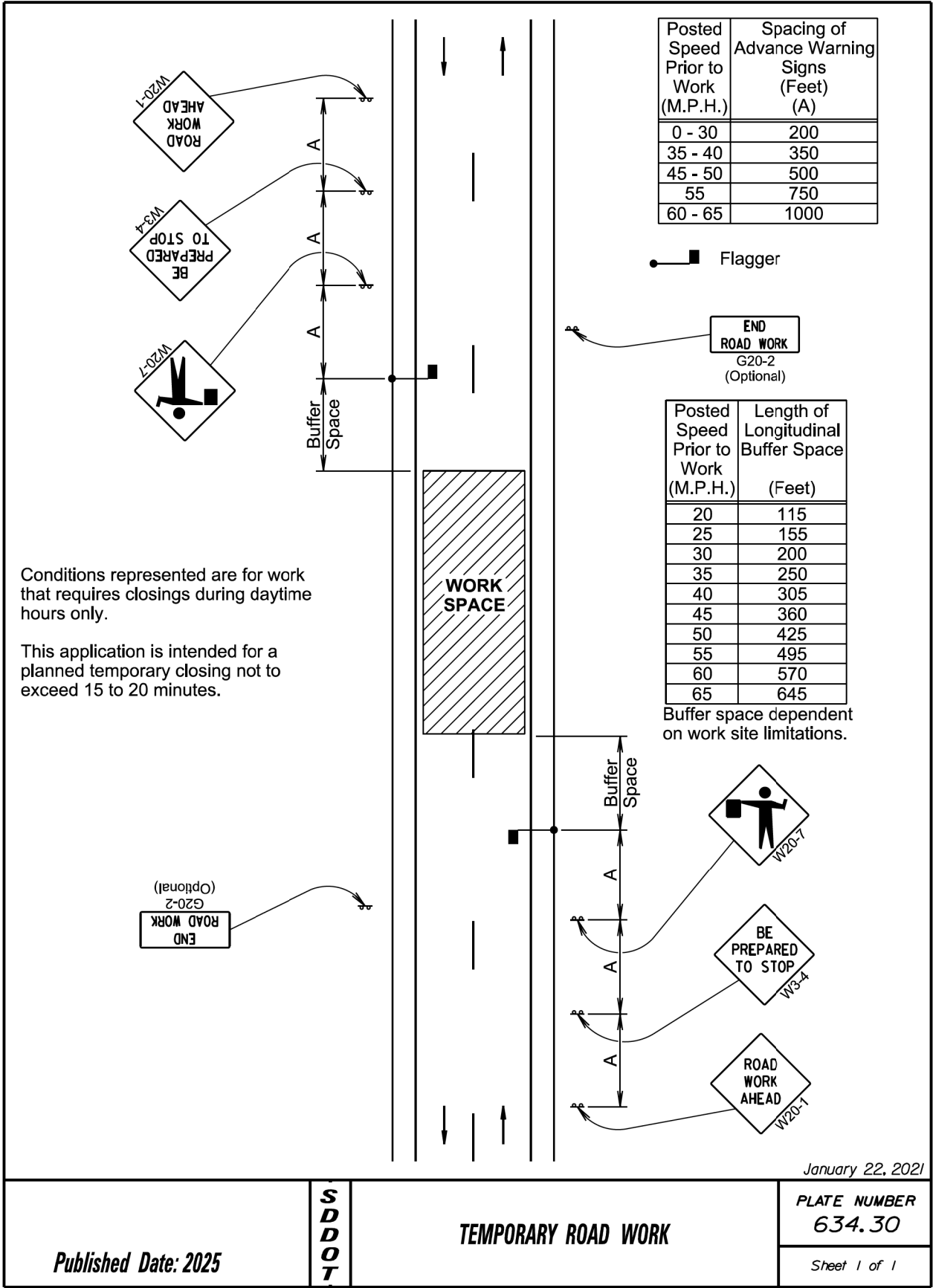
Published Date: 2025

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LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER  
634.23

Sheet 1 of 1







Plotting Date: 09/06/2024

January 22, 2021

Published Date: 2025	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

A diagram of a rectangular plate with dimensions 4 inches by 4 inches. The plate is shown in a perspective view, with the top surface and one side visible. The top surface is labeled with a dimension of 4" along its length. The side of the plate is labeled with a dimension of 4" along its width. The plate is supported by a base, and the base is labeled with a dimension of 4" along its length. The plate is shown in a perspective view, with the top surface and one side visible. The top surface is labeled with a dimension of 4" along its length. The side of the plate is labeled with a dimension of 4" along its width. The plate is supported by a base, and the base is labeled with a dimension of 4" along its length.

Fabric for silt fence will be 36" (Min.) width.

Attach the silt fence fabric with a total of 4 plastic or wire ties per post. Three ties will be used at the top and 1 tie will be approximately at mid-point of the post.

See Detail B

Steel T Fence Posts

Wheel Compact Soil

Flow

### DETAIL B

Silt Fence Fabric

8" staples will be placed at each post to secure the silt fence fabric to the bottom of the trench.

Steel T Fence Post

Plastic or Wire Ties

**SECTION A-A**

The elevation at these locations will be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.

Flow

The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

Post spacing will be the same for all types of applications. All other components will be the same.

February 14, 2020

<p><i>Published Date: 2025</i></p>	<p><b>S D D O T</b></p>	<p><b>HIGH FLOW SILT FENCE</b></p>	<p>PLATE NUMBER</p> <p>734.05</p>
			<p>Sheet 1 of 2</p>



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM-P-B 0905(00)212	56	56

Plotting Date: 09/06/2024

GENERAL NOTES:

At cut or fill slope installations, wattles will 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 will 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 will 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 will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

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

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will 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 will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

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

February 14, 2020

<i>Published Date: 2025</i>	<i>S D D O T</i>	<i>EROSION CONTROL WATTLE</i>	<i>PLATE NUMBER</i> <i>734.06</i>
			<i>Sheet 2 of 2</i>



PLOT SCALE - 1"=7920'

PLOTTED FROM - TRP25289

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

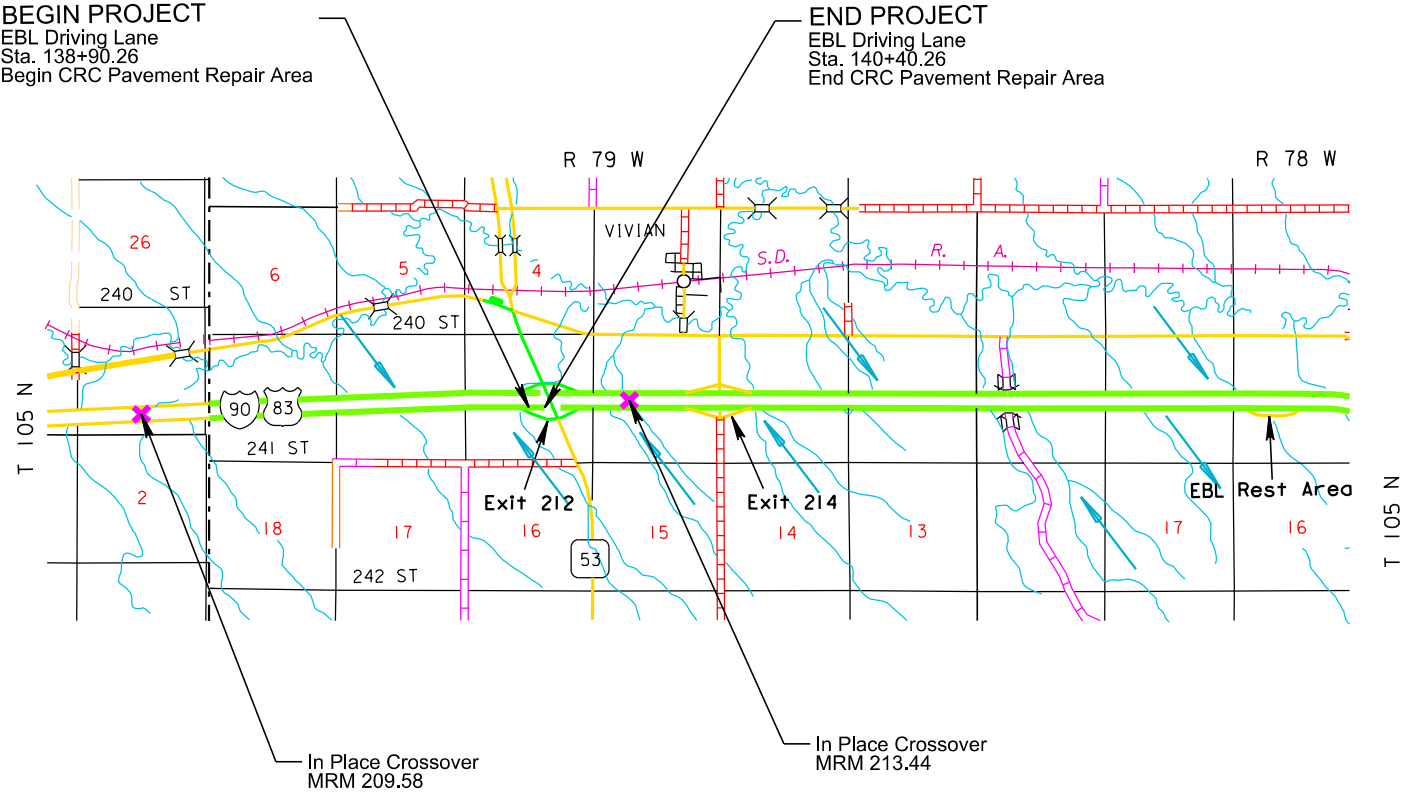
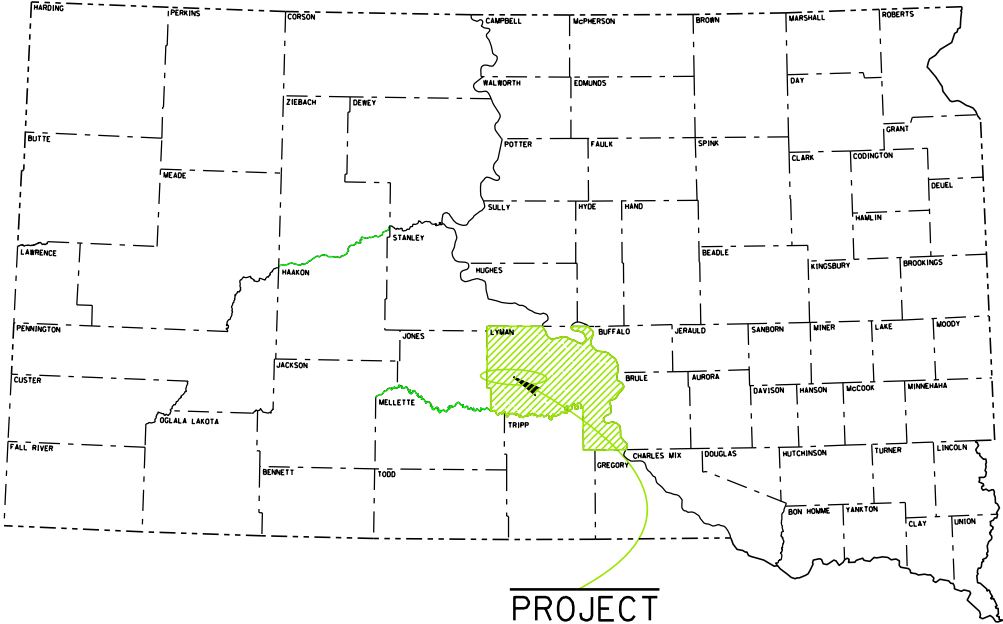
IM 0905(125)212  
INTERSTATE 90 EBL  
LYMAN COUNTY  
CRC PAVEMENT REPAIR  
PCN 09YP

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	1	34

Plotting Date: 09/11/2024

INDEX OF SECTIONS

- Section A: Estimate of Quantities and Environmental Commitments  
Section C: Traffic Control Plans  
Section D: Erosion Control Plans  
Section F: Surfacing Plans



DESIGN DESIGNATION 190 EBL

ADT (2023)	3728
ADT (2043)	5278
DHV	934
D	51%
T DHV	13.2%
T ADT	29.1%
V	80 MPH

STORM WATER PERMIT  
NONE

EASTBOUND LANES		
GROSS LENGTH	150.00 FEET	0.028 MILES
LENGTH OF BRIDGES	0.00 FEET	0.000 MILES
NET LENGTH	150.00 FEET	0.028 MILES



# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	A1	A2

## Section C - Traffic Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	2	Gal
633E1206	High Build Waterborne Pavement Marking Paint with Reflective Elements, Yellow	1	Gal
633E5100	Grooving for Durable Pavement Marking, 4"	450	Ft
634E0110	Traffic Control Signs	375.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E0330	Temporary Raised Pavement Markers	2,850	Ft
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

### SPECIFICATIONS

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

### INDEX OF SHEETS

A1 Estimate of Quantities for Sections C, D, and F  
A2 to A3 Environmental Commitments

## Section D - Erosion and Sediment Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
230E0100	Remove and Replace Topsoil	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS

## Section F – Surfacing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	633.0	SqYd
110E1100	Remove Concrete Pavement	433.0	SqYd
110E6006	Remove High Tension 4 Cable Guardrail for Reset	600	Ft
120E0010	Unclassified Excavation	144	CuYd
120E2000	Undercutting	367	CuYd
120E6200	Water for Granular Material	5.4	MGal
260E2010	Gravel Cushion	451.5	Ton
380E0540	10" Continuously Reinforced PCC Pavement	433.3	SqYd
380E0800	PCC Shoulder Pavement	200.0	SqYd
380E6110	Insert Steel Bar in PCC Pavement	48	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	177	Ft
451E3104	4" Pipe Cap	2	Each
629E0211	Reset High Tension 4 Cable Guardrail	600	Ft
680E0204	4" Perforated PVC Drain Pipe with Sleeve	110	Ft
680E0224	4" PVC Outlet Pipe	50	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	62.0	Ton

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor’s primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT’s Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <<https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf> >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

Construction activities constitute 1 acre or more of earth disturbance and/or work in a waterway.

Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the “Special Provision Regarding Storm Water Discharges to Waters of the State.”

The Contractor will complete the DANR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at: <[https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR\\_CGPA\\_ppendixCCA2018Fillable.pdf](https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPA_ppendixCCA2018Fillable.pdf) >

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will 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 Public ROW.

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

The waste disposal site(s) will 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 Environmental Office and the Project Engineer.

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

- Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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 not to exceed the duration of the project. Prior to project completion, the waste will 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) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.



PLOT SCALE - 1:7920.03

PLOTTED FROM - TRPR25289

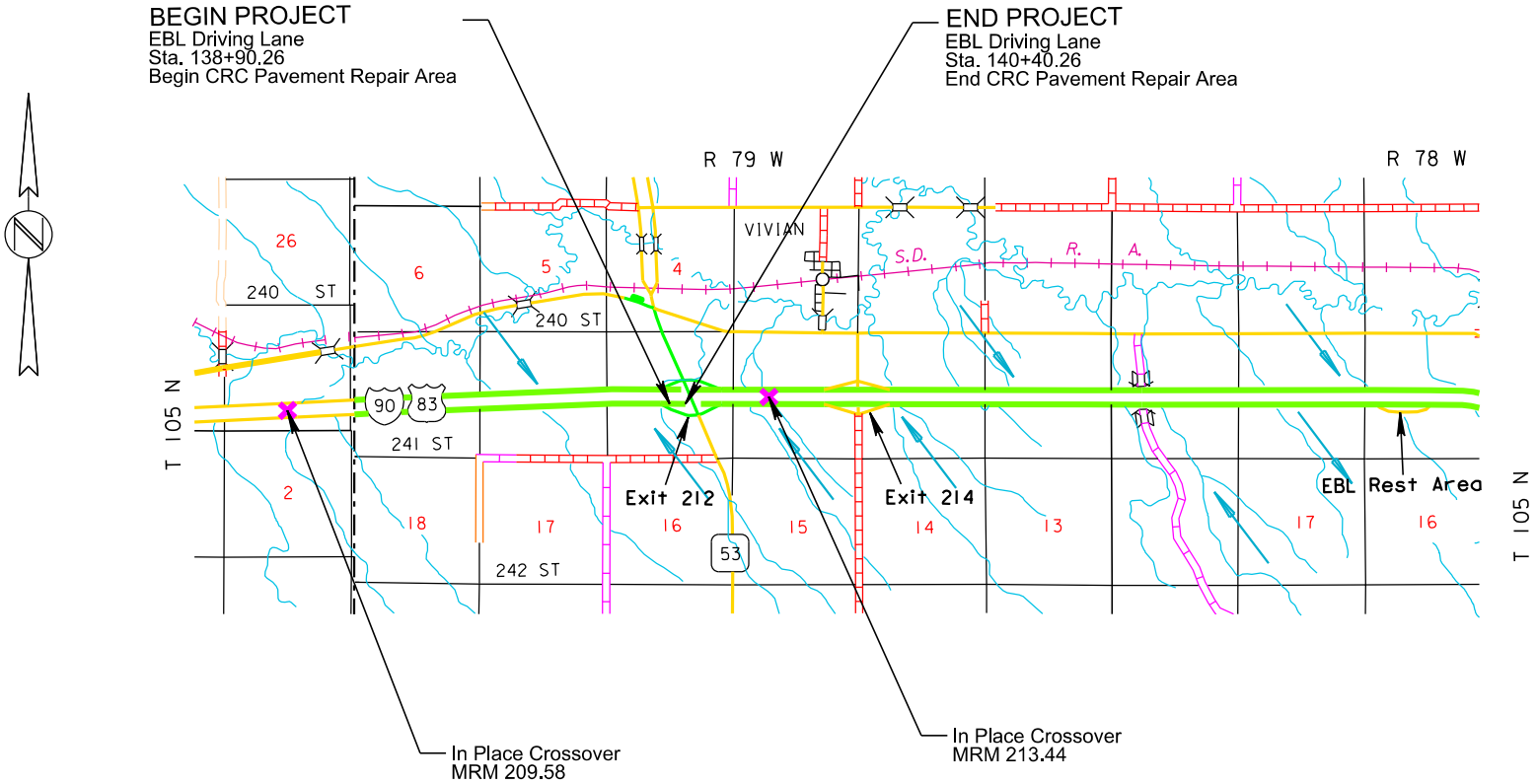
# Section C: Traffic Control Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	C1	C6

Plotting Date: 09/06/2024

## INDEX OF SHEETS

- C1 Title Sheet
- C2-C3 Estimate of Quantities & Notes
- C4 Traffic Control Layout
- C5-C6 Standard Plates



PLOT NAME - 1

FILE - ... \LYMN09YP\09PY\_TITLEA.DGN



ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1201	High Build Waterborne Pavement Marking Paint with Reflective Elements, White	2	Gal
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634E0420	Type C Advance Warning Arrow Board	1	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the 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.

SCOPE OF WORK

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

- 1. Install Exit 212 EB Ramp Detour Signing
- 2. Switch Traffic to Ramp Detour
- 3. Perform CRC Repair work
- 4. Remove Ramp Detour

GENERAL TRAFFIC CONTROL

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

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

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

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

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

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

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

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans.

Construction vehicles will exit or enter the construction work zone at locations identified by the Engineer. At no time will construction vehicles utilize the maintenance crossovers or the Interstate median to exit or enter Interstate traffic.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. 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.

All breakaway sign supports shall comply with FHWA NCHRP 350 crash-worthy requirements. The Contractor shall provide post installation details at the preconstruction meeting for all steel post breakaway sign support assemblies.

WORK ZONE SPEED REDUCTION

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63. To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

TEMPORARY PAVEMENT MARKING TAPE, TYPE I

Temporary pavement marking for stop lines will consist of 4" Temporary Pavement Marking Tape Type I. Placement of each 24" white stop line will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop lines which is an equivalent of approximately 144' of 4" tape (1 workspace at 144' = 144').

TEMPORARY RAISED PAVEMENT MARKERS

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

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

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

PERMANENT PAVEMENT MARKING

Application of permanent pavement marking will be completed within 14 calendar days following completion of the final surfacing.

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

Reflective media consisting of glass beads as well as bonded core reflective elements will be adhered to the paint.

The bonded core reflective elements will contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. The bonded core reflective elements will provide a 50/50 blend of dry to wet ratio of reflective element. All microcrystalline ceramic beads bonded to reflective elements will have a minimum index of refraction of 1.8 for dry retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

Reflective media will require a Certificate of Compliance for Certification for each type, source, and lot. Acceptance sampling will not be required.

The Department will take retroreflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retroreflectometer conforming to 30-meter geometry. Retroreflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

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Revised 9/11/24 SML

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT (CONTINUED)

Pavement markings not conforming to the retroreflectivity requirements will be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor will schedule subject work to be completed no later than June 15<sup>th</sup> in the following year. Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edge line including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retroreflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial readings:

Pavement Marking Color	Minimum Value
White	350 mc/m²/lux
Yellow	275 mc/m²/lux

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and will be removed and replaced. Additional retroreflectivity readings will be taken by the Department to determine the limits of removal. The removal will be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process will remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width will be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings will be at the Contractor's expense, with no cost incurred by the State.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4” line = 27.8 Gals/Mile  
Dashed 4” line = 7.6 Gal/Mile  
Glass Beads = 5.3 Lbs/Gal.  
Composite Reflective Elements = 2.1 Lbs/Gal.

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

GROOVING FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

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

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

The grooving will be completed within the following tolerances:

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

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

The equipment will be capable of the following:

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

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

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations detailed in the plans to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK  
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages as follows:

LANE CLOSED AHEAD  
MERGING RAMP TRAFFIC

OR

LANE CLOSED AHEAD  
REDUCE SPEED

The Engineer shall approve alternate messages to fit project plans.

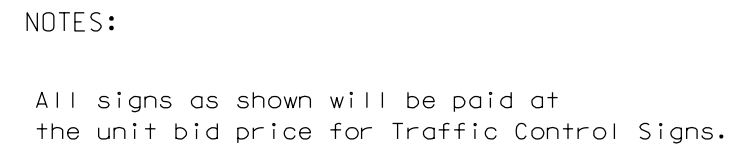
PRESS RELEASE ANNOUNCEMENTS


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

SIGN TABULATION

SIGN CODE		INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	36" x 36"	7.5	15.0
R2-1	SPEED LIMIT 65	2	36" x 48"	12.0	24.0
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
W1-6	LARGE ARROW (one direction)	1	60" x 30"	12.5	12.5
W1-8	CHEVRON	3	30" x 36"	7.5	22.5
W2-2	INTERSECTION WARNING (symbol)	2	48" x 48"	16.0	32.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	3	30" x 30"	6.3	18.9
W13-2	EXIT 45 M.P.H.	1	36" x 48"	12.0	12.0
W13-2	RAMP 25 M.P.H.	1	36" x 48"	12.0	12.0
W20-2	DETOUR AHEAD	2	48" x 48"	16.0	32.0
W20-5L	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
M1-1	INTERSTATE ROUTE MARKER (2 digits)	2	24" x 24"	4.0	8.0
M1-1	INTERSTATE ROUTE MARKER (2 digits)	1	36" x 36"	9.0	9.0
M3-4	DIRECTION MARKER - WEST	2	24" x 12"	2.0	4.0
M5-2L	ADVANCE TURN ARROW 45° (L or R)	2	21" x 15"	2.2	4.4
M6-2L	DIRECTION ARROW - 45° Single Head (L or R)	1	30" x 24"	5.0	5.0
SPECIAL	CROSS TRAFFIC DOES NOT STOP	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			375.3


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KEY:  Channelizing Devices

The spacing between channelizing devices in tangent sections shall be 2 to 4 times the numerical value of the posted speed limit prior to work.

The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit.

 Advance Warning Arrow Panel

 or  4" Temporary Pavement Marking Tape, Type I, (Yellow on left, White on right) or Temporary Road Markers at 5' spacings shall be installed if lane is closed overnight or longer.

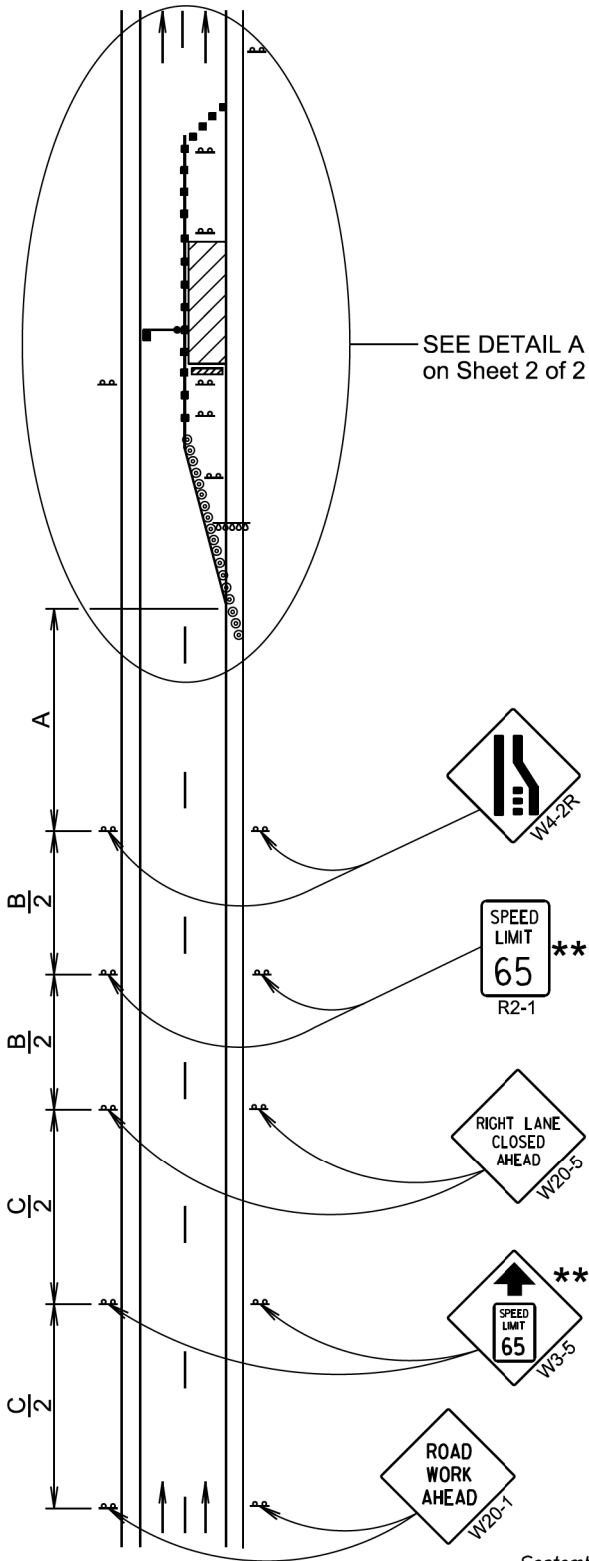
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)		
	(A)	(B)	(C)
0 - 30	200		
35 - 40	350		
45 - 50	500		
55	750		
60 - 65	1000		
	(A)	(B)	(C)
70 - 80	1000	1500	2640

\*\* Speed appropriate for location.

- ◉ Reflectorized Drum
- Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



September 22, 2021

Published Date: 2025	S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 - 30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

\* Spacing is 40' for 42" cones.

\*\* Speed appropriate for location.

\*\*\* Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.

Flagger (As Necessary)

◉ Reflectorized Drum

■ Channelizing Device

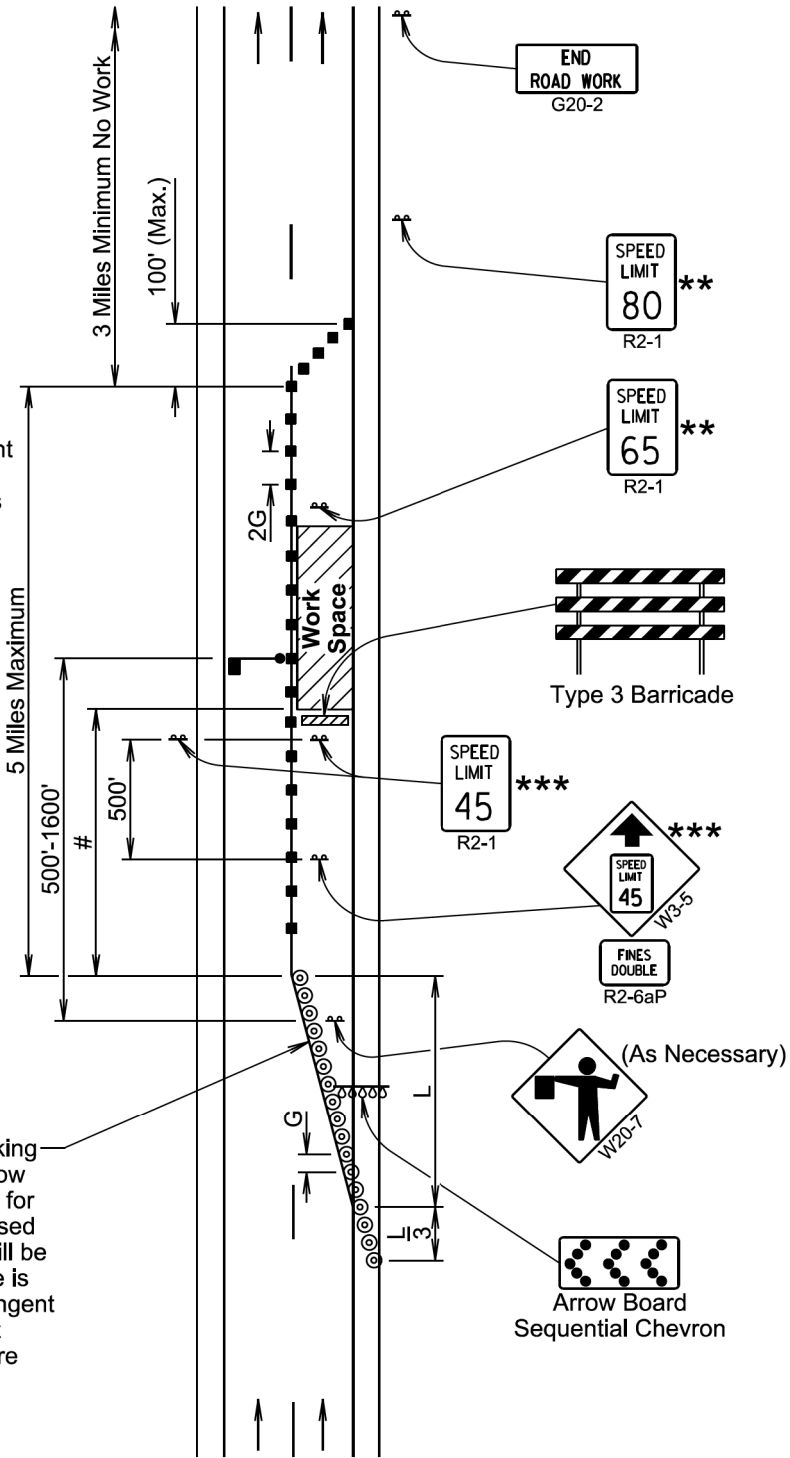
# The Work Space will be a minimum of 500' from the end of the taper.

The FLAGGER sign will be used whenever there is a Flagger present.

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



DETAIL A

September 22, 2021

Published Date: 2025	S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2



PLOT SCALE - 1:200

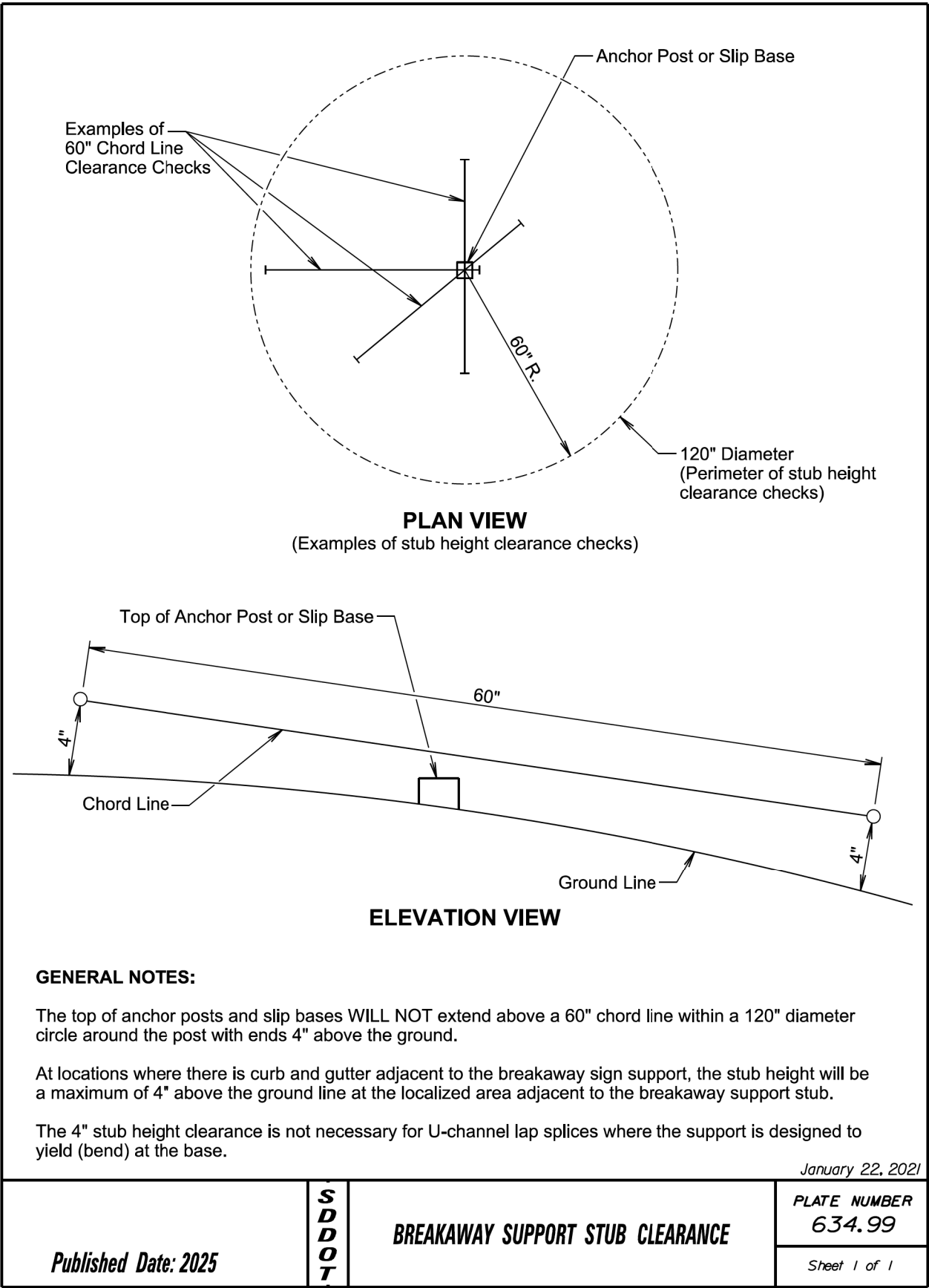
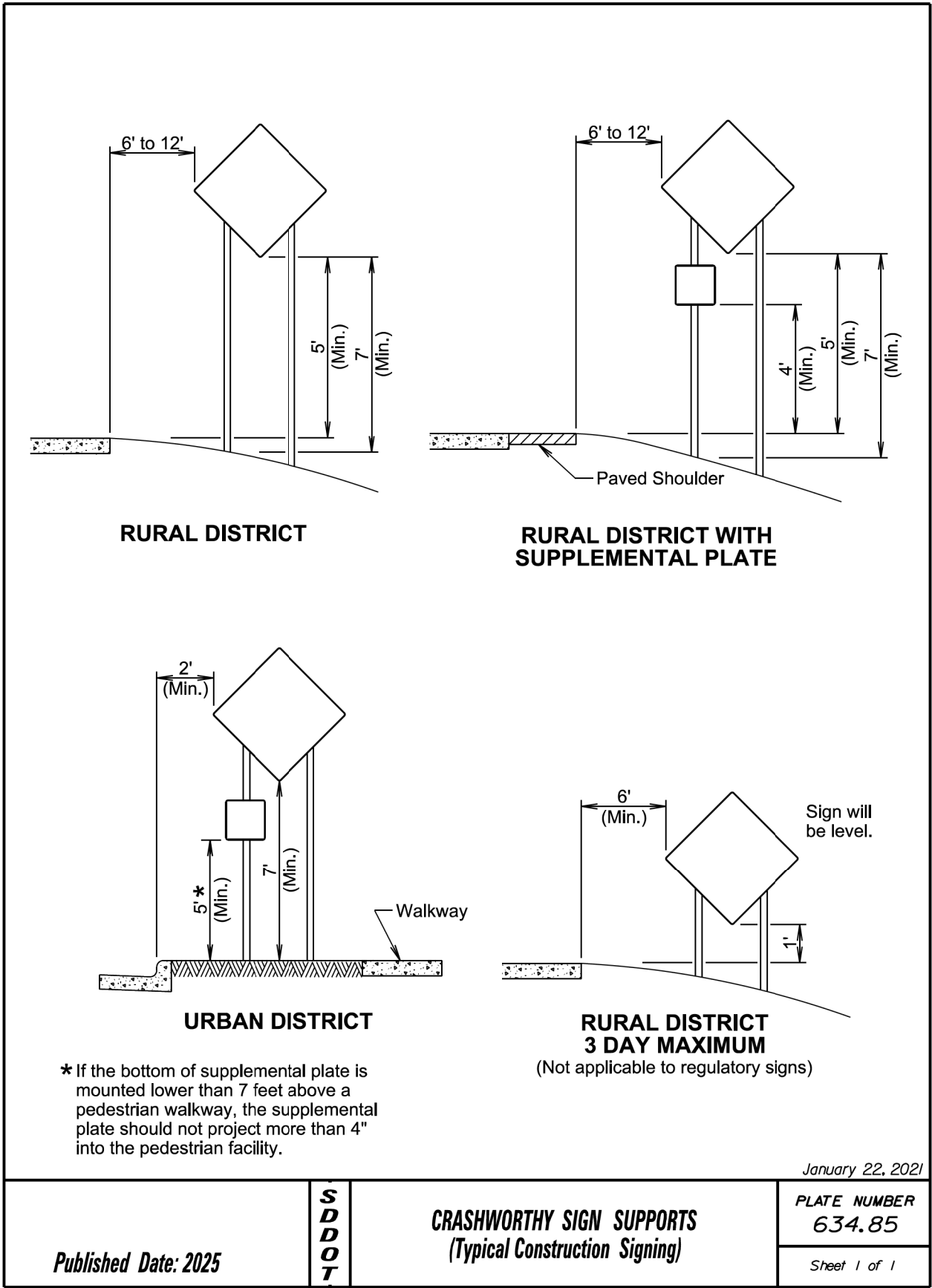
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	C6	C6

Plotting Date: 07/30/2024

PLOT NAME - 1

FILE - ... \STANDARD PLATES.DGN







PLOT SCALE - 1+7920.03

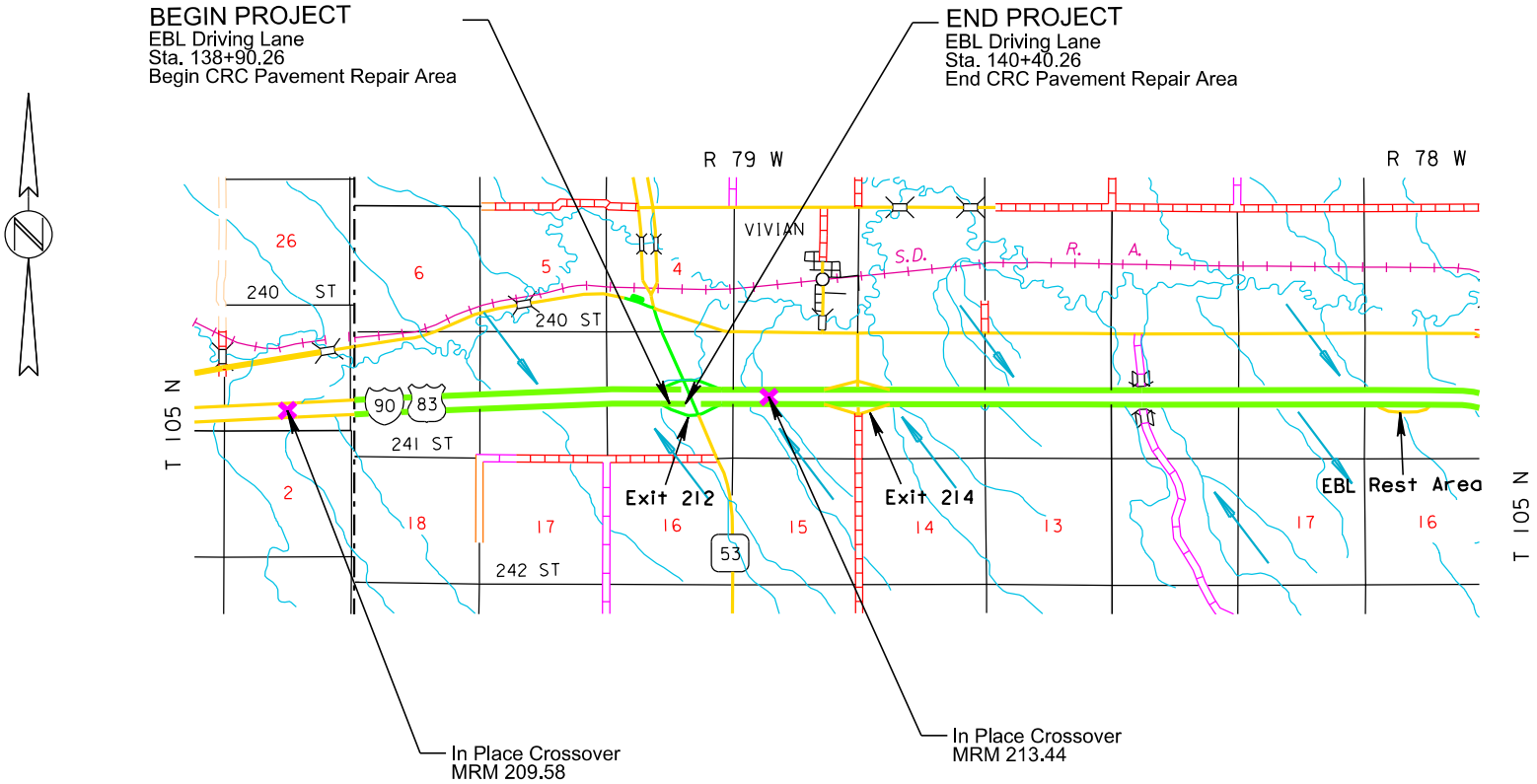
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# Section D: Erosion Control Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	D1	D2

Plotting Date: 09/10/2024

INDEX OF SHEETS	
D1	Title Sheet
D2	Estimate of Quantities & Notes





SECTION D ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
230E0100	Remove and Replace Topsoil	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS

REMOVE AND REPLACE TOPSOIL

Prior to beginning resurfacing operations, guardrail installation, and edge drain installation, a 4” depth of topsoil will be removed or bladed down the respective inslope and left in a windrow a maximum of 10’ from the edge of the existing shoulder.

Following completion of construction, topsoil will be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 50 CuYd.

All costs associated with removing and replacing the topsoil along areas to be resurfaced will be incidental to the contract lump sum price for “Remove and Replace Topsoil”.

EROSION CONTROL

The estimated area requiring erosion control is 4000 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, inoculum, and fiber mulching will be incidental to the contract lump sum price for “Erosion Control”.

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

Mycorrhizal Inoculum

Mycorrhizal inoculum will 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 will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All seed will 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 will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum will be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 <a href="http://www.mycorrhizae.com">www.mycorrhizae.com</a>
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 <a href="http://www.reforest.com">www.reforest.com</a>

LALRISE Prime and Max WP

Lallemand Specialties Inc.  
Milwaukee, WI  
Phone: 1-844-590-7781  
[www.lallemandplantcare.com](http://www.lallemandplantcare.com)

Permanent Seeding

Type C Permanent Seed Mixture will consist of the following:

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

Fiber Mulching

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

The Contractor will 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.

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

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>



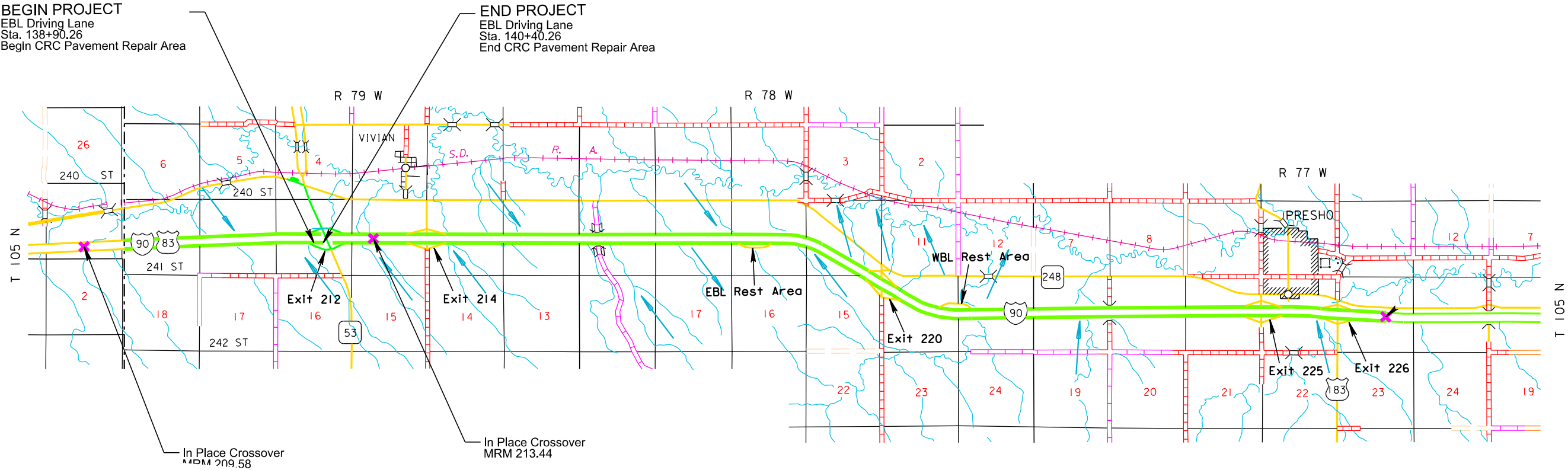
# Section F: Surfacing Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F1	F23

Plotting Date: 09/10/2024

## INDEX OF SHEETS

F1	General Layout with Index
F2 - F5	Estimate of Quantities, Notes, Rates, and Tables
F6	Typical Surfacing Sections
F7	Pavement Layout
F8	Guardrail Layout
F9 - F14	CRC Details
F15 - F16	Underdrain Details
F17 - F23	Standard Plates





ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	633.0	SqYd
110E1100	Remove Concrete Pavement	433.0	SqYd
110E6006	Remove High Tension 4 Cable Guardrail for Reset	600	Ft
120E0010	Unclassified Excavation	144	CuYd
120E2000	Undercutting	367	CuYd
120E6200	Water for Granular Material	5.4	MGal
260E2010	Gravel Cushion	451.5	Ton
380E0540	10" Continuously Reinforced PCC Pavement	433.3	SqYd
380E0800	PCC Shoulder Pavement	200.0	SqYd
380E6110	Insert Steel Bar in PCC Pavement	48	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	177	Ft
451E3104	4" Pipe Cap	2	Each
629E0211	Reset High Tension 4 Cable Guardrail	600	Ft
680E0204	4" Perforated PVC Drain Pipe with Sleeve	110	Ft
680E0224	4" PVC Outlet Pipe	50	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	62.0	Ton

EXISTING PCC PAVEMENT

10" Continuously Reinforced PCC Pavement (CRC):

The existing concrete is continuously reinforced with No. 6 deformed steel bars placed longitudinally spaced at 6.5 inch centers and with No. 4 deformed steel bars placed perpendicular and are spaced at 48 inch center to center.

PCC Pavement removed from this project shall be disposed of by the Contractor at a site approved by the Engineer.

SURFACING THICKNESS DIMENSIONS

The plans shown spread rates will be applied even though the thickness may vary from that shown in the plans.

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

13.25" to 10" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

Care will be taken not to cut, bend or otherwise damage the in place reinforcing steel. Damage to in place reinforcing steel or to in place concrete beyond the removal area will be replaced at the Contractor's expense, to the satisfaction of the Engineer.

The fine aggregate will be screened over a 1-inch square opening screen just prior to introduction into the concrete paving mix. The Contractor will screen all of the aggregate to prevent the incorporation of foreign materials (i.e. mud balls) into the concrete mix.

The concrete mix used in the PCC Pavement will conform to Section 380.

A strength of 3,000 psi must be attained prior to opening to traffic. The minimum 28 day compressive strength will be 4,000 psi.

In lieu of an automatic subgrader operating from a preset line, a motor grader or other suitable equipment may be used to trim the gravel cushion to final grade prior to placement of concrete. There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement.

The continuously reinforced concrete pavement shall be paved 26 feet wide. The concrete shall be placed with equipment operating from a preset grade line. All costs for reinforcing steel will be incidental to the contract unit price per square yard for 10" Continuously Reinforced Concrete Pavement.

All driving surfaces of the mainline paving will be longitudinally tined from 6" each side of centerline pavement markings to 6" inside the outside pavement markings. All other areas will be textured as directed by the Engineer.

Leave-Outs, Block-Outs or Temporary gaps in the continuously reinforced concrete pavement will not be allowed.

The following mainline pavement will be tested for smoothness with a Contractor furnished and operated 25-foot California style profilograph in accordance with Section 380.3.O.2 of the Specifications.

I-90 EBL – Sta. 138+90.26 to Sta. 140+40.26 (Driving & Passing Lanes)

MEDIAN & OUTSIDE PCC SHOULDER PAVEMENT

In lieu of an automatic subgrader operating from a preset grade line, a motor grader or other suitable equipment may be used to bring the gravel cushion to final grade prior to placement of the concrete.

Transverse contraction joints will be spaced at 10' intervals.

Provide a heavy carpet drag finish, a metal-tine finish will not be required on the shoulders. A metal-tine finish may be applied to the shoulders poured monolithic with the mainline.

If the shoulders are poured monolithic with the mainline pavement, a sawed joint with tie bars will be constructed between the mainline pavement and the shoulders. Longitudinal and transverse joints will be sealed with Hot Poured Elastic Joint Sealer.

Rumble Strips will be placed 15 inches wide 6 inches from the outside edge of the driving and passing lanes, according to Standard Plate 380.53. Payment for forming rumble strips including labor, materials and incidentals shall be incidental to the contract unit price per square yard for "PCC Shoulder Pavement". For informational purpose only, it is estimated that 300 feet of PCC Pavement rumble strip is required for outside and median shoulders.

SAW AND SEAL LONGITUDINAL AND TRANSVERSE JOINTS (CRCP)

At Sta. 138+90.26 the existing asphalt will be sawed full depth and the existing CRC Pavement will be sawed partial depth for pavement removal as required by the CRC repair details. The sawed edge of asphalt must be protected to maintain a solid and sound vertical face. The CRC pavement will be placed against the existing asphalt. Any damage to the asphalt will be repaired at no cost to the State with means and methods approved by the Engineer.

Longitudinal joints (in line with existing longitudinal joints) in concrete repair areas will be sawed and sealed.

Transverse joints at the beginning and end of the CRC Repair Section will be sawed and sealed. At Sta. 138+90.26 the asphalt will be sawed or routed to create the reservoir for the sealant material as shown in the detail.

Joint sealing will conform to Section 380.3 P.

Longitudinal and transverse joints will 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 longitudinal and transverse joints will be incidental to the contract unit price per square yard for "10" Continuously Reinforced PCC Pavement".(Between Sta. 138+90.26 and Sta. 140+40.26)

Cost for sealing of the longitudinal centerline joint will be incidental to the contract unit price per foot for " Reseal PCC Pavement Joint – Hot Pour". (Sta. 140+40.26 to Sta. 142+17)

STEEL BAR INSERTION

The Contractor will insert the Steel Bars (No. 6 x 72" Epoxy coated Deformed Tie Bar) into drilled holes in the existing concrete pavement. Anchoring of the steel bars in the drilled holes will conform to the Specifications.

The steel bars will be cut to the specified length by sawing or shearing and will be free from burring or other deformations.

Epoxy coated deformed steel bars will be inserted between every other longitudinal bar in the transverse joint, see detail sheet for New CRC Pavement Placement Detail.

TABLE OF STEEL BAR INSERTION

LOCATION	QUANTITY OF BARS
I-90	No. 6 x 72"
Sta. 138+90.26 EBL	24
Sta. 140+40.26 EBL	24
Totals =	48

ALKALI SILICA REACTIVITY

Fine aggregate will conform to Section 800.2 D Alkali Silica Reactivity (ASR) Requirements.

Below is a list of known fine aggregate sources and the average corresponding 14-day expansion values (as of 8-30-2023):

Source	Location	Expansion Value
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.146
Concrete Materials - Vellek Pit	Yankton, SD	0.411**
Croell	Hot Springs, SD	0.089
Croell	Wasta, SD	0.212
Emme Sand & Gravel	Oneil, NE	0.217
Fisher S&G – Blair Pit	W of Vale, SD	0.171
Fisher S&G - Mickelson Pit	E of Nisland, SD	0.129
Fisher S&G - Vallery Pit	Nisland, SD	0.110
Fisher S&G	Rapid City, SD	0.092
Fisher S&G	Spearfish, SD	0.053
Fisher S&G	Wasta, SD	0.159
Fuchs	Pickstown, SD	0.275*
Henning – Tilstra Pit	Ash Creek, MN	0.199
Higman	Hudson, SD	0.187
Jensen	Herried, SD	0.276*
L.G. Everist	Akron, IA	0.257*
L.G. Everist	Brookings, SD	0.297*
L.G. Everist – Ode Pit	E Sioux Falls, SD	0.215
L.G. Everist – Nelson Pit	NE Sioux Falls, SD	0.156
L.G. Everist	Hawarden, IA	0.176
L.G. Everist	Summit, SD	0.184
Mark’s S&G – Moerke Pit	Underwood, MN	0.165
Morris – Birdsall	Blunt, SD	0.229
Morris - Leesman	Blunt, SD	0.231
Morris - Richards Pit	Onida, SD	0.188
Morris - Shawn’s Pit	E of Sturgis, SD	0.186
Northern Concrete Agg.	Rauville, SD	0.113
Northern Concrete Agg.	Luverne, MN	0.133
Opperman - Gunvordahl Pit	Burke, SD	0.363*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.230
Pete Lien & Sons	Creston, SD	0.158
Pete Lien & Sons	Oral, SD	0.157
Pete Lien & Sons	Wasta, SD	0.226
Simon Materials - Beltline Pit	Scottsbluff, NE	0.277*
Thorpe Pit	Britton, SD	0.098
Wagner Building Supplies	Pickstown (Wagner), SD	0.251*
Winter Brothers- Whitehead Pit	Brookings, SD	0.197

\* These sources will require Type II cement with a fly ash content of 25% in the concrete mix.

\*\* These sources will not be used.

The Department will use the running average of the last three or fewer known expansion test results for determining acceptability of the source. These expansion results are reported in the preceding table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with a test value less than 0.250 is discovered after letting to be 0.250 or greater, then the Department will accept financial responsibility if higher costs are incurred due to higher percent of fly ash requirement.

POLY-ALPHA METHYLSTYRENE (AMS) MEMBRANE CURING COMPOUND

Provide poly-alpha methylstyrene liquid membrane curing compounds for spray application on Portland cement concrete surfaces exposed to the air.

The AMS membrane curing compound will conform to section 821 of the Specifications and the following requirements:

- The AMS membrane curing compound will be successfully reviewed by the Department before use.
- Meets the requirements of ASTM C 309 for white pigmented Type 2, Class B.
- The Engineer will not allow the use of curing compound that is over 1 year from the manufacture date.
- Resin is 100 percent poly-alpha methylstyrene and formulated to maintain the specified properties of the following Table.

REQUIREMENTS FOR AMS MEMBRANE CURING COMPOUND	
Properties	Range
Total solids, % by weight of compound	≥ 42
% reflectance in 72 h (ASTM E 1247)	≥ 65
Loss of Water, kg/sq. m in 24 h (AASHTO T 155)	≤ 0.15
Loss of Water, kg/sq. m in 72 h (AASHTO T 155)	≤ 0.40
Settling Test, ml/100 ml in 72 h *	≤ 2
V.O.C. Content, g/L	≤ 350
Infrared Spectrum, vehicle	100% α methylstyrene
*Test in accordance with MNDOT method.	

The application will be in accordance with section 380.3 M plus the following:

Before application, agitate the curing compound as received in the shipping container to obtain a homogenous mixture. Protect membrane curing compounds from freezing before application. Handle and apply the membrane curing compound in accordance with the manufacturer's recommendations.

- Apply curing compound homogeneously to provide a uniform, solid, white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper) at the time of application.
- If the Engineer determines that the initial or corrective spraying result in unsatisfactory curing, the Engineer may require the Contractor to use the blanket curing method, at no additional cost to the Department.

Use the fully-automatic, self-propelled mechanical power sprayer to apply the curing compound:

- Operate the equipment to direct the curing compound to the surface from two different lateral directions.
- If puddling, dripping, or non-uniform application occurs, suspend the operation to perform corrections as approved by the Engineer.
- A re-circulating bypass system that provides for continuous agitation of the reservoir material.
- Separate filters for the hose and nozzle.
- Check valve nozzles.
- Multiple or adjustable nozzle system that provides for variable spray patterns.
- A spray-bar drive system that operates independently of the wheels or track drive system.



Equipment for hand spraying of odd width or shapes and surfaces exposed by form removal will be:

1. Used from two directions to ensure coverage equal to a white sheet of typing paper as visible from any direction immediately after spraying.
2. A re-circulating bypass system that provides for continuous agitation of the reservoir material.
3. Separate filters for the hose and nozzle.
4. Multiple or adjustable nozzle system that provides for variable spray patterns.

A recommended practice for using AMS membrane curing compound is to clean out the sprayer including tank and nozzles each day after use.

Payment for AMS membrane curing compound, including labor, materials and incidentals will be incidental to the contract unit price per square yard for “10” Continuously Reinforced PCC Pavement” and “PCC Shoulder Pavement”.

**Underdrains**

The existing surfacing will be removed from Station 138+90± to Station 140+40±. Underdrains will be installed in conjunction with the proposed resurfacing. After the existing surfacing has been removed, underdrains will be installed perpendicular to centerline across all lanes at Station 138+96± and Station 140+34±.

The underdrains will be installed prior to the placement of the gravel cushion and concrete surfacing. The underdrains will be installed in a trench 2 feet wide by 4 feet deep. The trench will be graded to maintain a minimum of .01ft/ft. or 1% drop from the median shoulder to the outlet headwall. Place 4-inch Perforated PVC Drainpipe with a filter fabric drain sleeve in the center of the trench bottom. Cap the inlet end of the perforated PVC Pipe with a 4” PVC End Cap. Using a SDR solvent weld PVC coupling, connect 4-inch PVC Outlet Pipe to the outlet end of the Perforated PVC Drainpipe and place in the center of the outlet trench. The outlet pipe will daylight at a headwall placed above the ditch bottom to provide positive drainage from the outlet and blend into the inslope. The depth of the trench may be adjusted to maintain the minimum grade needed to maintain positive drainage and proper placement of the headwalls. Backfill the trench containing the 4-inch Perforated PVC Drainpipe with Porous Backfill. The remainder of the trench containing the solid 4-inch PVC Outlet Pipe will be backfilled with compacted soil.

**Underdrain Construction**

The Perforated PVC Drainpipe will be PS 46 Solvent Weld PVC pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The 4” Schedule 40 End Caps will conform to ASTM D1784. The Drain Sleeve will conform to ASTM D6707. All labor, tools, equipment, and incidentals necessary for the installation of the PVC Pipe will be incidental to the contract unit price per foot for each pipe type.

Care will be taken to ensure that the underdrain and outlet pipes are not damaged during construction. Sufficient cover material is to be placed over the pipes before compaction equipment is allowed over the underdrain system. Damaged pipe will be replaced by the Contractor at no additional cost to the Department.

The underdrain locations given are based on the best information available to the Geotechnical Engineering Activity. Actual field conditions may require that adjustments be made by the Engineer during construction to provide for sufficient drainage. The Geotechnical Engineering Activity will be available for onsite assistance if necessary.

Underdrain trenches will be graded to maintain a minimum of .01ft/ft. or 1% drop from beginning to outlet. The Contractor will ensure all segments of outlet pipe are positively connected and remain soil tight during installation of the underdrain system. The Outlet Headwall shall be placed to blend in with the surrounding topography with the outlet pipe placed above the bottom of the drainage to permit proper flow from the outlet.

Underdrain headwalls will be cleared of topsoil, straw, or other debris after seeding operations have been completed. The as built headwall location will be recorded and submitted to the Engineer. Each headwall location will be identified by GPS coordinates and Station and Offset. The headwall locations will be cataloged in the Mitchell Area office for reference in post construction maintenance.

TABLE OF CONTINUOUSLY REINFORCED PCC PAVEMENT

Mainline Location			10" CONTINUOUSLY REINFORCED PCC PAVEMENT
Sta	to	Sta.	(SqYd)
Mainline			
138+90.26	to	140+40.26	433.3
Total:			433.3

TABLES OF PCC SHOULDER PAVEMENT

Mainline Location				PCC SHOULDER PAVEMENT
Sta	to	Sta.	length(ft)	(SqYd)
Outside PCC Shoulder				
138+90.26	to	140+40.26	150	133.3
Total:				133.3

Mainline Location				PCC SHOULDER PAVEMENT
Sta	to	Sta.	length(ft)	(SqYd)
Median PCC Shoulder				
138+90.26	to	140+40.26	150	66.7
Total:				66.7

TABLE OF MATERIAL QUANTITIES

Beginning Station	Ending Station	Length(Ft)	Volume(Ton)	Water for Granular Material
Mainline and Shoulders				
138+90.26	140+40.26	150	451.5	5.4
		Totals:	451.5	5.4

# TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F6	F23

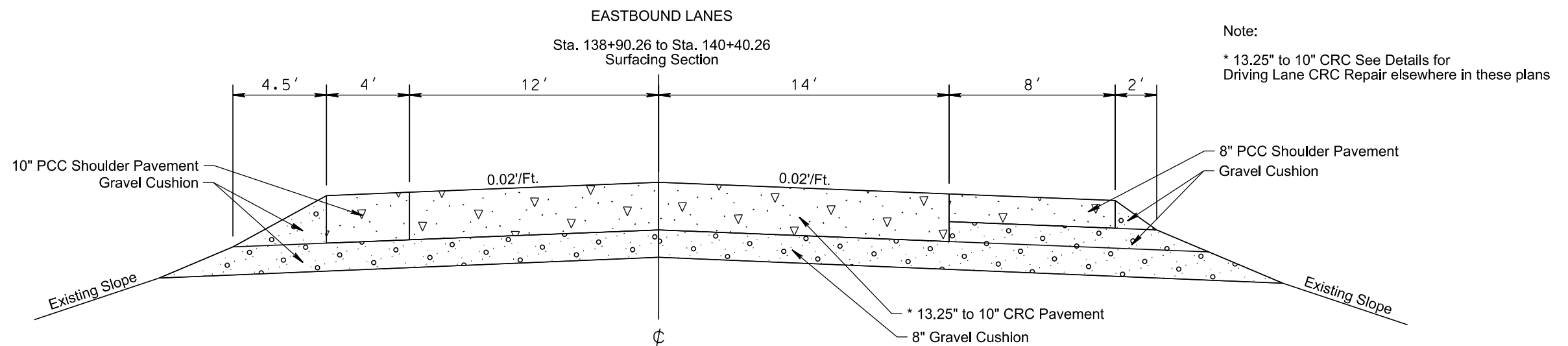
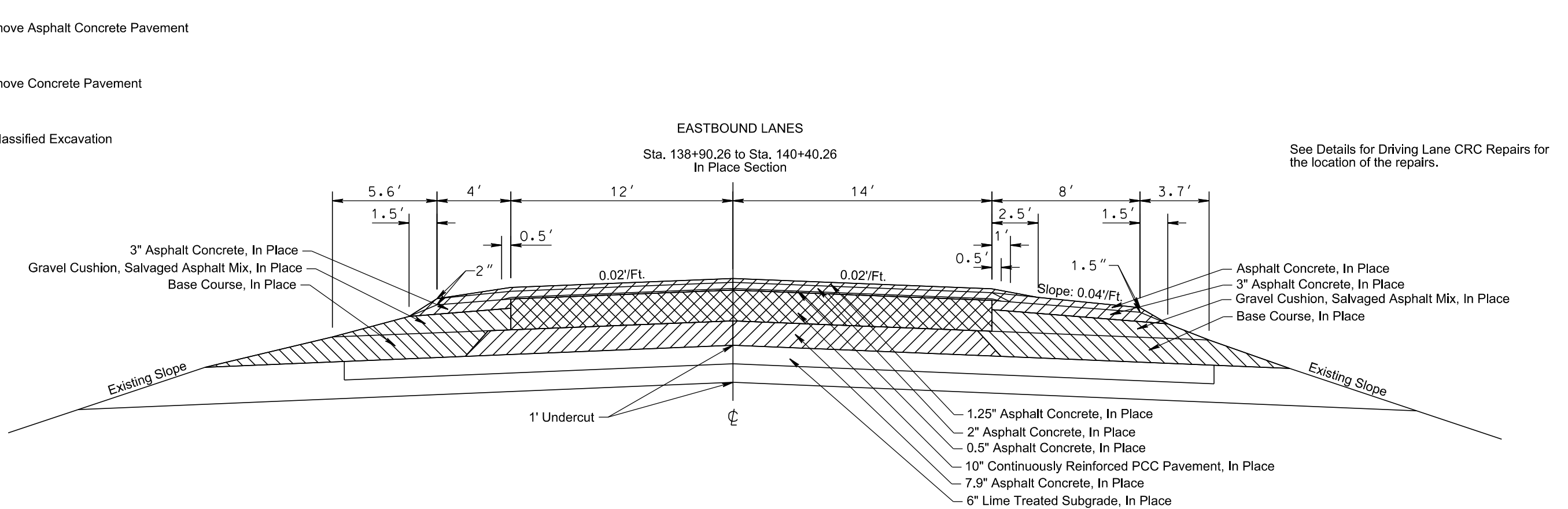
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PLOT SCALE - 1:6,00001

PLOTTED FROM - TRPR13462

PLOT NAME - 7

FILE - ... \067N\_TYPICAL SECTIONS.DGN



PAVEMENT LAYOUT

Scale 1 Inch = 40 Feet  
Sheet 1 of 1 Sheets

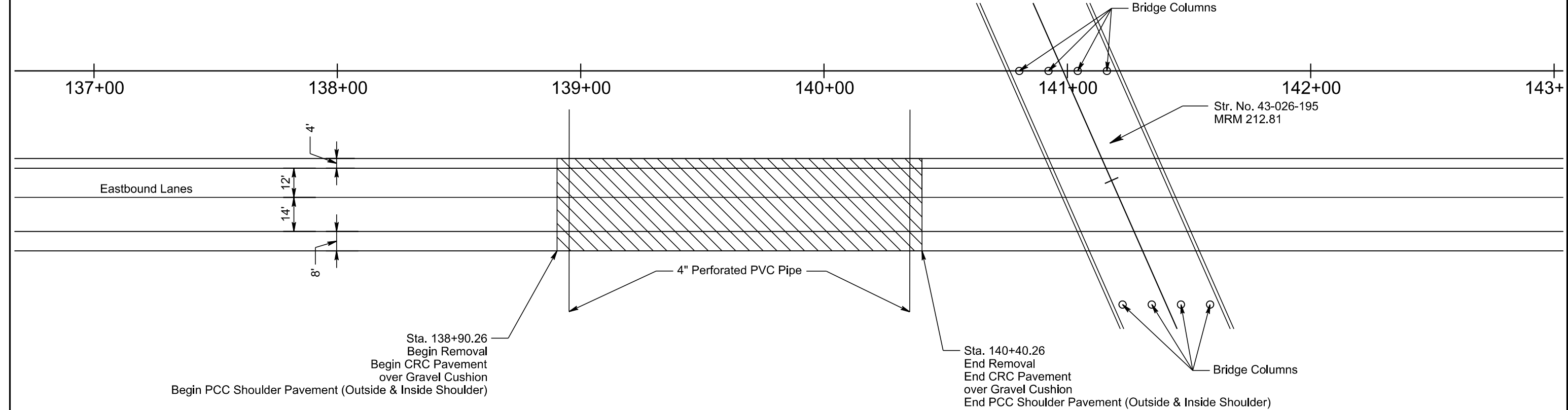
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F7	F23

Plotting Date: 07/30/2024



Plot Scale - 1:40

Plotted From - TRPR13462



Note:  
See Details for Driving Lane CRC Repair  
and Typical Sections  
elsewhere in these plans

File - ...1067N Pavement Layouts.dgn

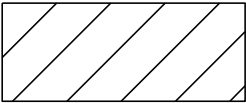
GUARDRAIL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F8	F23

Plotting Date: 07/30/2024

Scale 1 Inch = 40 Feet  
Sheet 1 of 1 Sheets

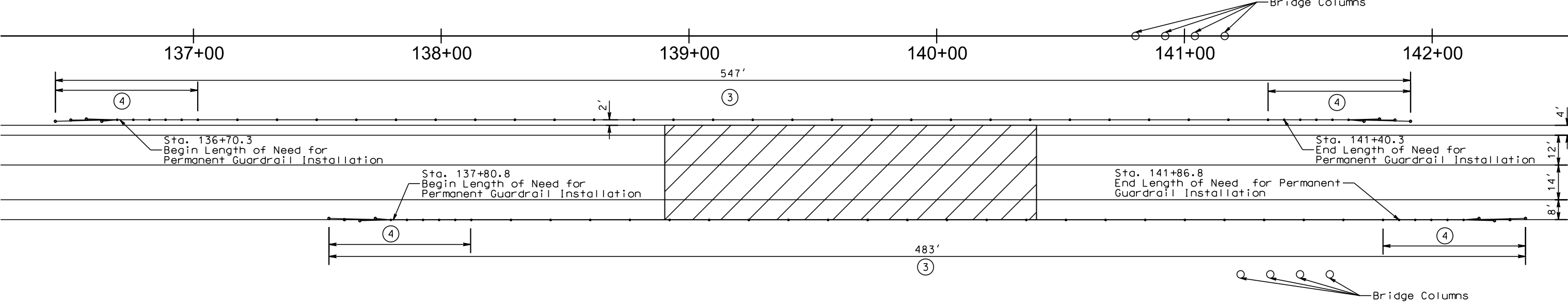
- ③ Remove and Reset NCHRP 350 test level 3 High Tension Cable Guardrail
- ④ NCHRP 350 Test Level 3 High Tension Cable Anchor Assembly to be removed for reset (Concrete Anchor will remain in place, only hardware will be removed and reset



CRC Pavement Repair  
Sta. 138+90.26 to Sta. 140+40.26



Remove & Reset Permanent Guardrail Eastbound Lane



PLOT SCALE - 1:40

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PLOT NAME - 9

FILE - ... \067N.GUARDRAIL LAYOUT.DGN

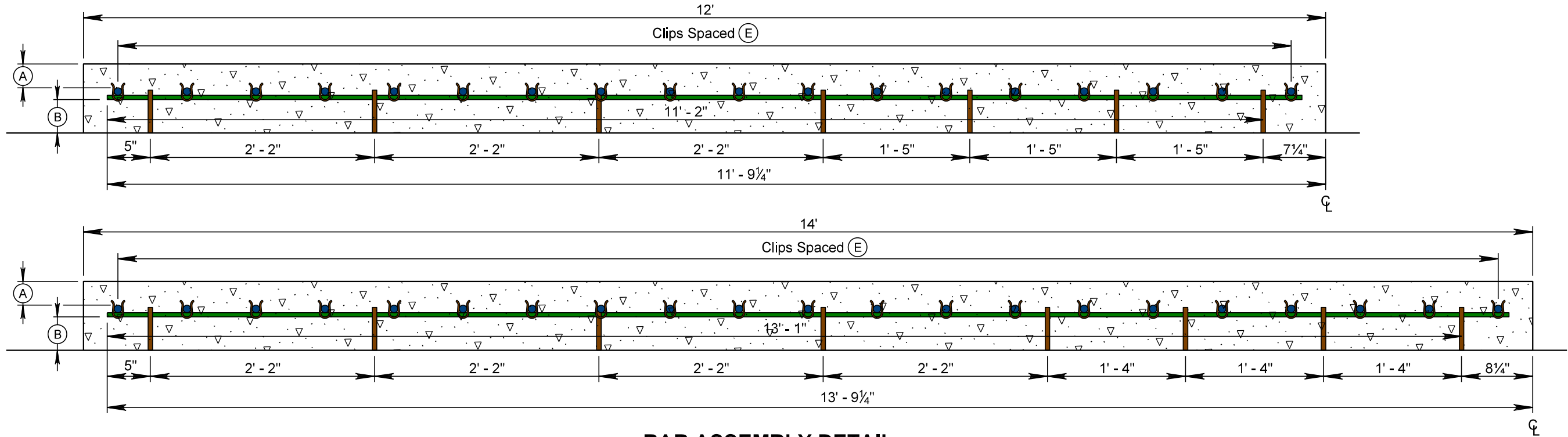
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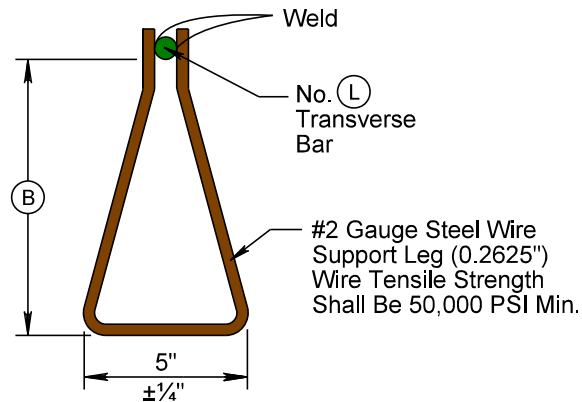
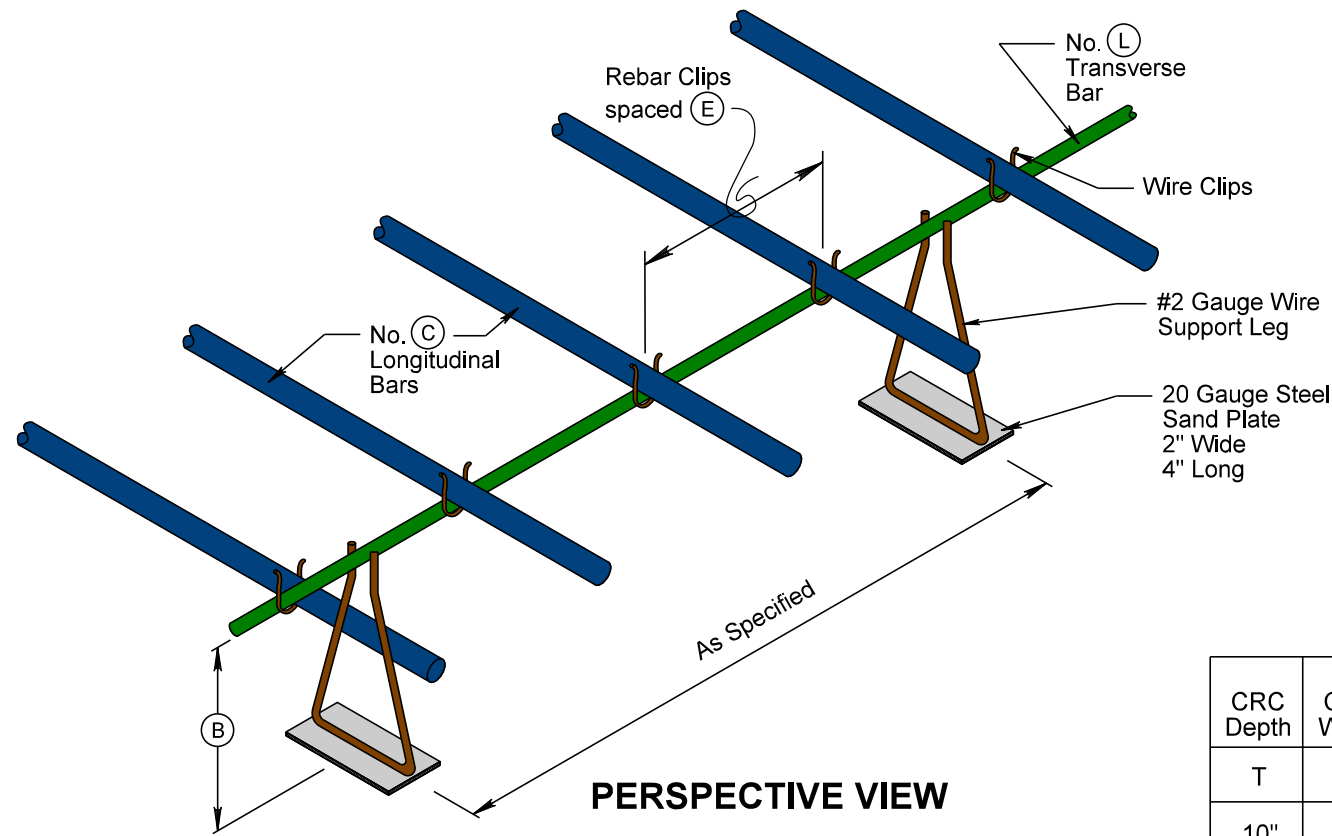
# CRC PAVEMENT CHAIR DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F9	F23

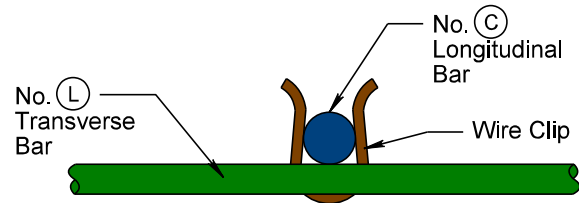
Plotting Date: 07/30/2024



## BAR ASSEMBLY DETAIL



## CHAIR DETAIL



## CLIP DETAIL

I-90 EBL

CRC Depth	CRC Width	Longitudinal Steel		Transverse Steel		Clearance	
		Size	Spacing	Size	Spacing	Top	Bottom
T	W	(C)	(E)	(L)	(F)	(A)	(B)
10"	26'	6	6 1/2"	4	42"	3 1/2"	5 1/4"

PLOT NAME - 10

FILE - ... \CRC CHAIR DETAILS 067N.DGN

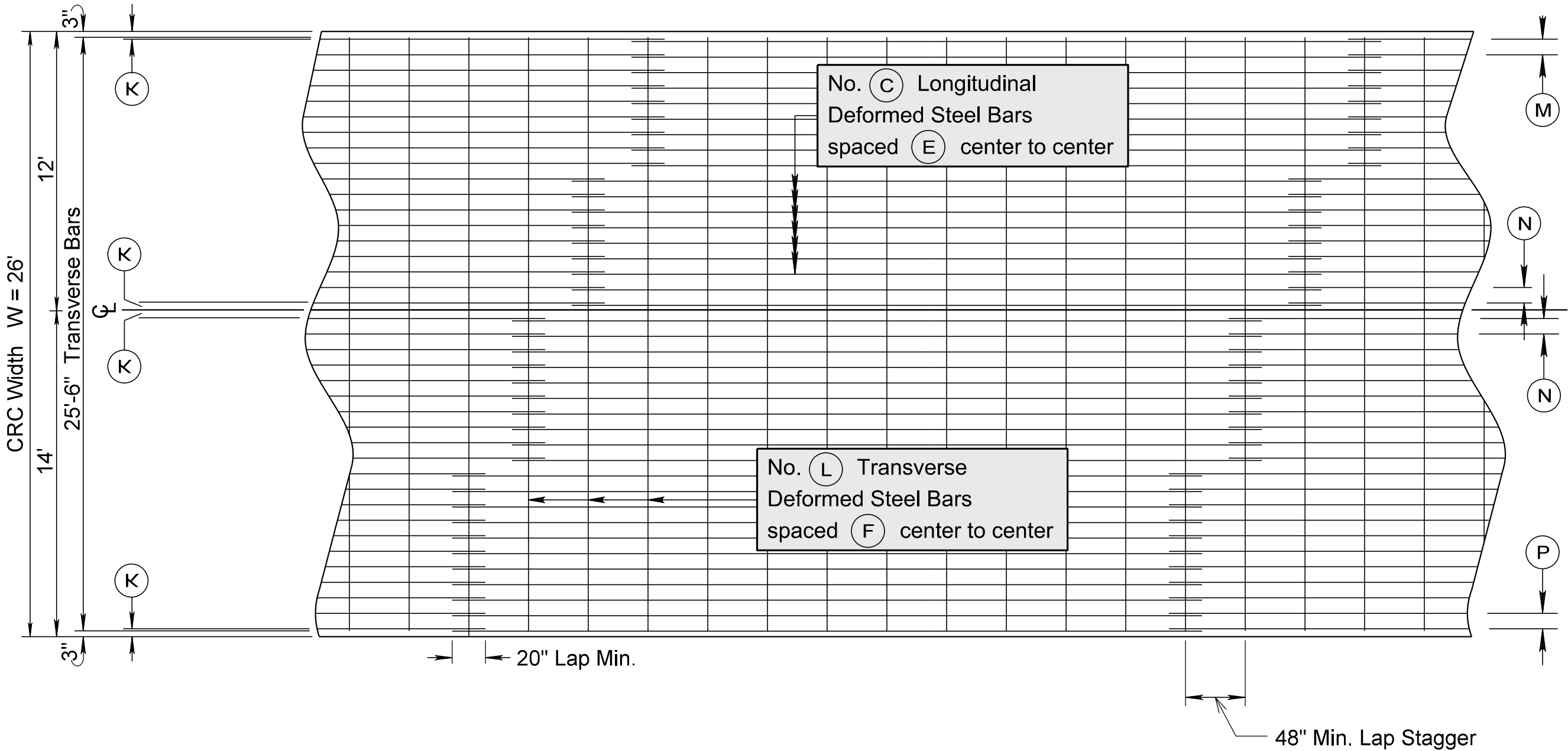
PLOT SCALE - 1:1502.49

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I-90 EBL  
26' CRC PAVEMENT - IN PLACE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F10	F23

Plotting Date: 07/30/2024



PLOT NAME - 11

FILE - ... \CRC EXISTING 067N.DGN

INTERSTATE CRC PAVEMENT KEY & DIMENSIONS	Underlying Plans	CRC Depth	CRC Width	Longitudinal Steel		Transverse Steel		Perimeter Bar			
				Size	Spacing	Size	Spacing	Spacing			
Location	PCN	T	W	Ⓒ	Ⓔ	Ⓕ	Ⓕ	Ⓚ	Ⓜ	Ⓝ	Ⓟ
I-90 EBL MRM 212.49 +0.274	4774	10"	26'	6	6½"	4	48"	3¾"	6½"	6½"	4½"

# NEW CRC PAVEMENT PLACEMENT DETAIL

STATE OF SOUTH DAKOTA	PROJECT IM 0905(125)212	SHEET F11	TOTAL SHEETS F23
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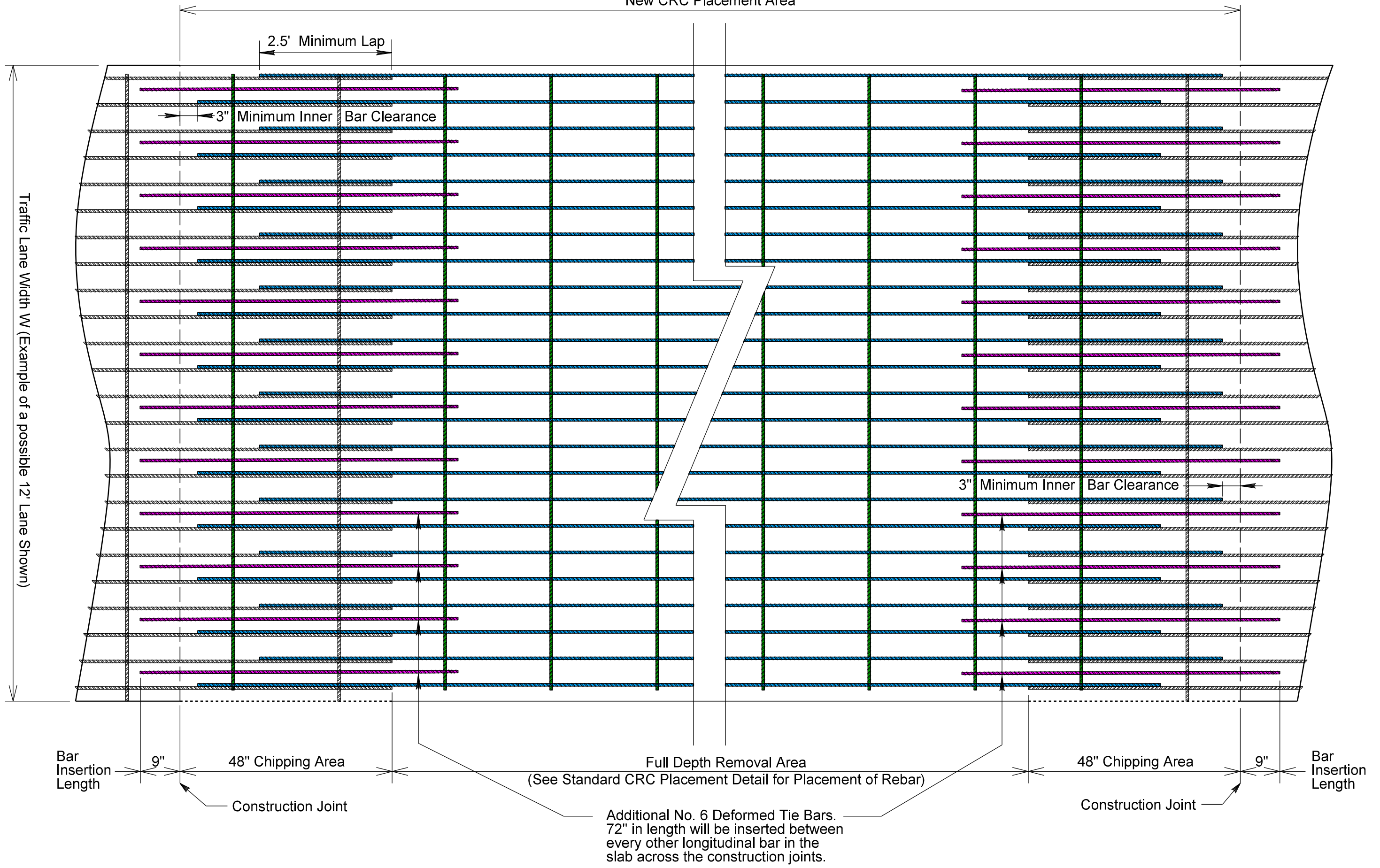
Plotting Date: 07/30/2024

New CRC Placement Area

PLOT SCALE - 1"=1.7'

PLOT NAME - 12

FILE - ... \CRC REMOVAL DETAILS 067N.DGN



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# CRC PAVEMENT REMOVAL DETAIL

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F12	F23

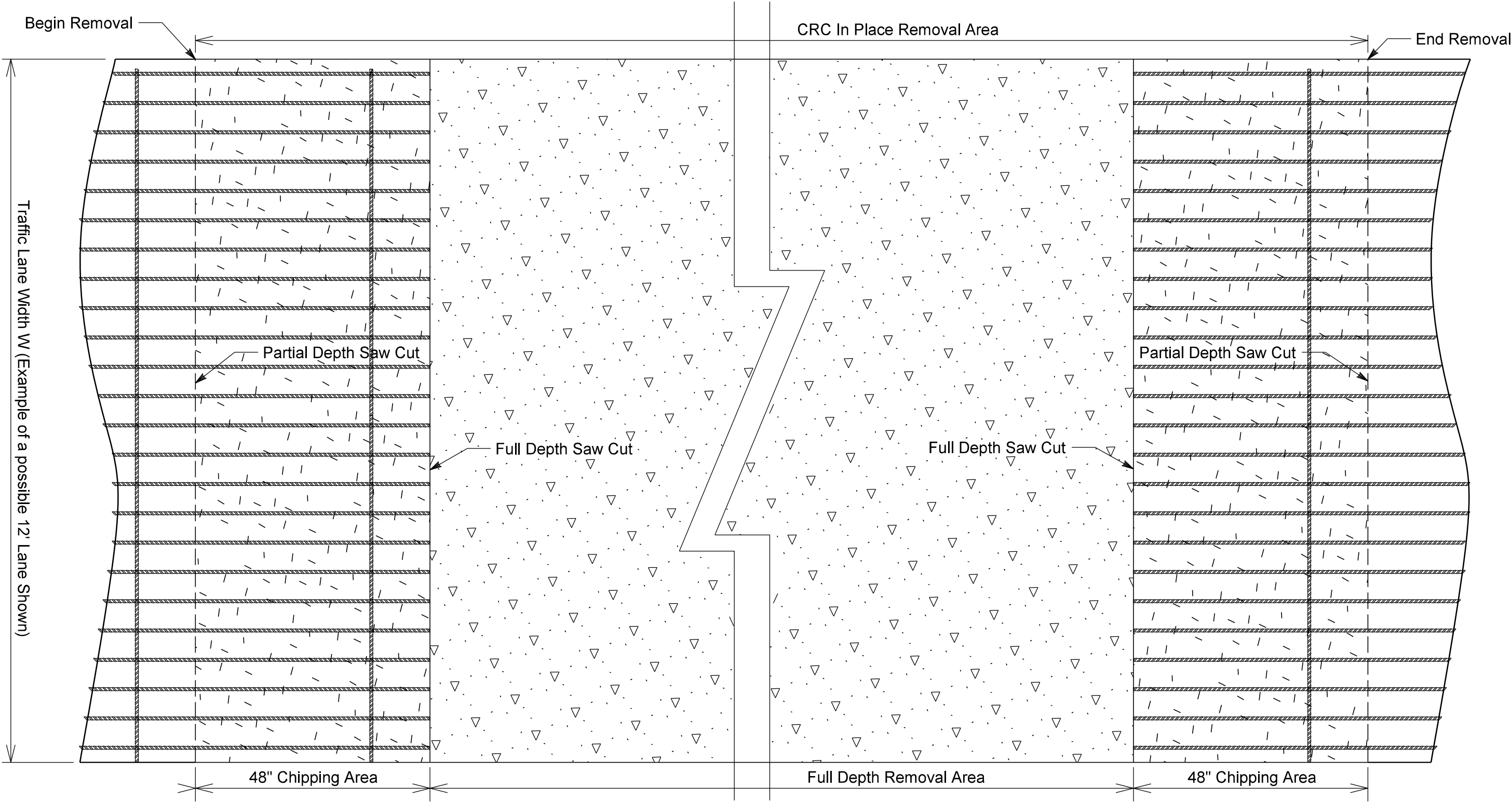
Plotting Date: 07/30/2024

PLOT SCALE - 1:1.7

PLOT NAME - 13

FILE - ... \CRC REMOVAL DETAILS 067N.DGN

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## CRC REMOVAL AREA KEY

- Remove Concrete Retain Reinforcing Steel
- Remove Concrete Remove Reinforcing Steel

PLOT SCALE - 1"=7.65'

PLOTTED FROM - TRPR13462

# STANDARD CRC PLACEMENT DETAIL

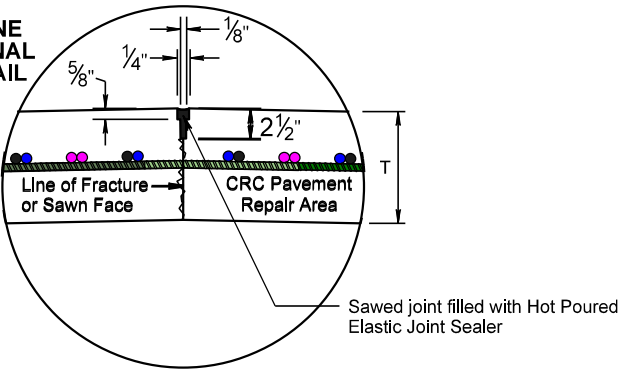
STATE OF SOUTH DAKOTA	PROJECT IM 0905(125)212	SHEET F13	TOTAL SHEETS F23
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Plotting Date: 07/30/2024

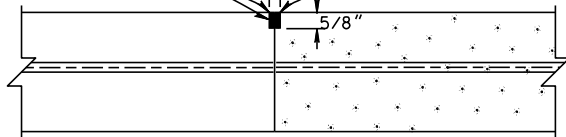
I-90 EBL

CRC Depth	CRC Width	Longitudinal Steel Size	Longitudinal Steel Spacing	Transverse Steel Size	Transverse Steel Spacing	Perimeter Bar Spacing			
T	W	(C)	(E)	(L)	(F)	(K)	(M)	(N)	(P)
10"	26'	6	6 1/2"	4	42"	3 3/4"	6 1/2"	6 1/2"	4 1/2"

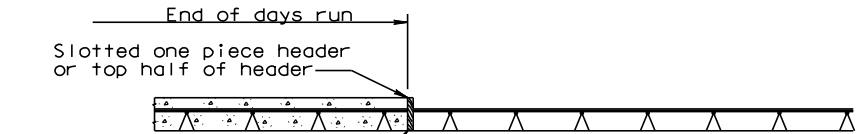
## CENTERLINE LONGITUDINAL JOINT DETAIL



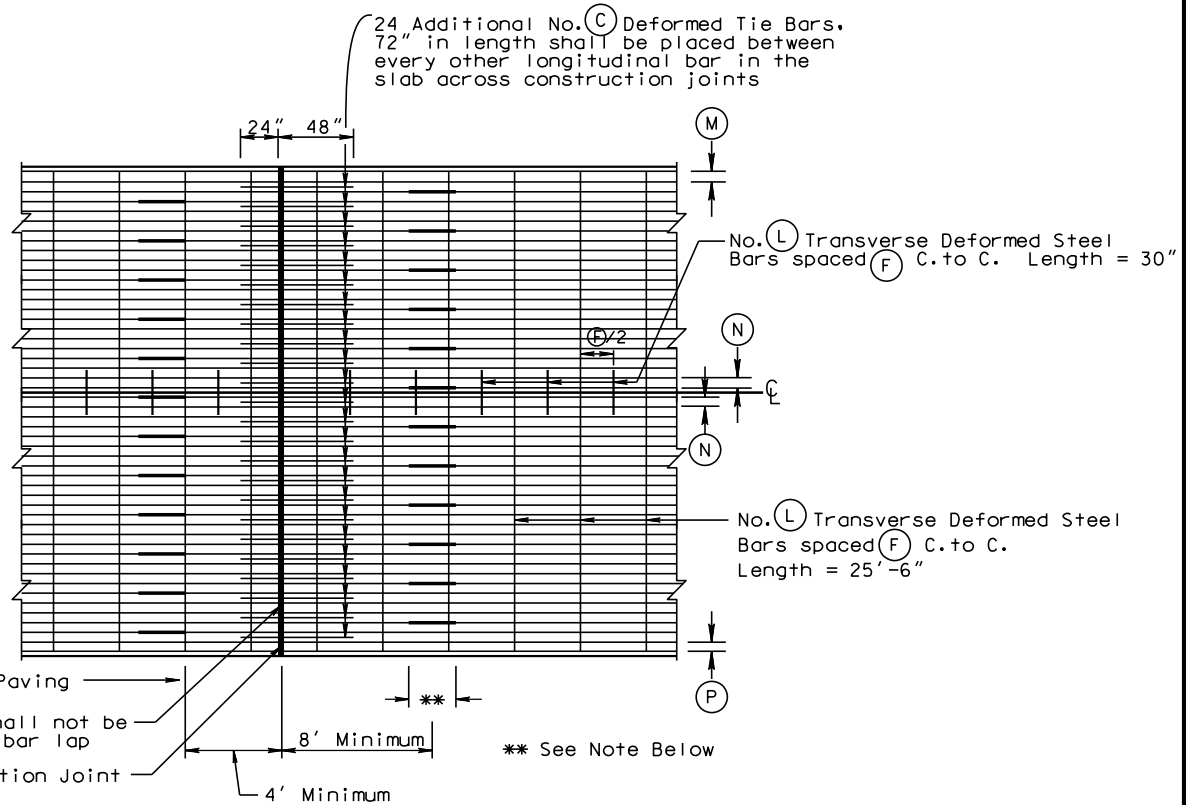
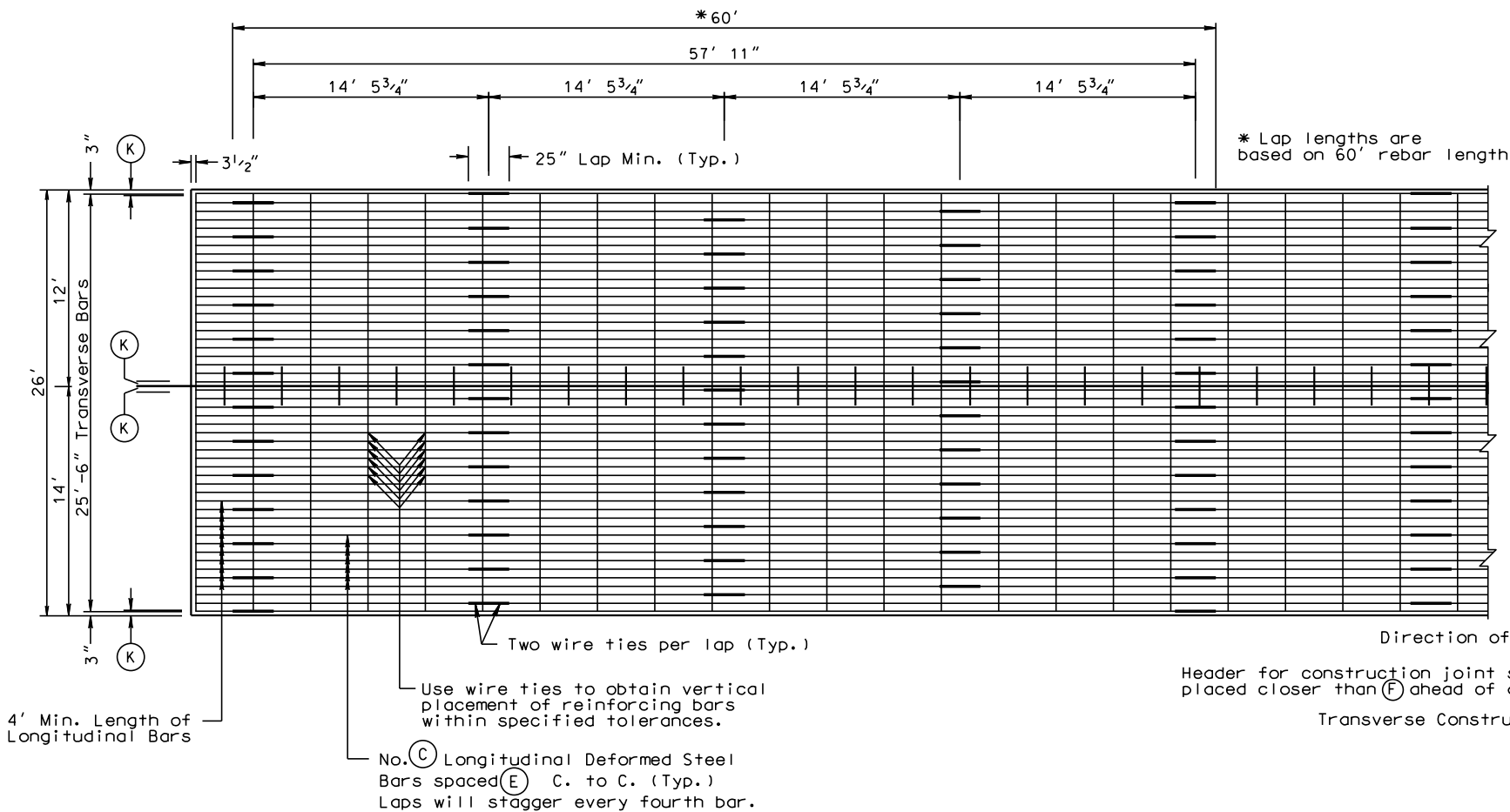
Edged to 1/8" Radius  
Sawed Joint filled with Hot-Poured Elastic Joint Sealer



JOINT DETAIL FOR TRANSVERSE CONSTRUCTION JOINT



LONGITUDINAL SECTION FOR TRANSVERSE CONSTRUCTION JOINT



### Note:

The center of the first lapping of longitudinal steel bars beyond a transverse construction joint will be at least eight (8) feet ahead of such joint.

The first lap pattern for the full width of the driving lanes beyond a transverse construction joint must be lapped a minimum distance of 36 inches. In lieu of this a bar lapping with a minimum distance of 25 inches will be permitted provided that additional No. (C) steel bars, each six (6) feet long, are placed adjacent to and centered longitudinally at each longitudinally lapped bar for full width of the driving lanes and tied with a minimum of two wire ties per bar. This will require the use of additional No. (C) x 6' deformed steel bars.

When a transverse construction joint is made, no paving will be done in this area for twelve (12) hours.

The length of the transverse deformed steel bars may vary +/- 2 inches.

The Contractor has the option of extending one side of the transverse bar a minimum of 15" beyond centerline or splicing the transverse steel bars, at centerline only, with No. 4 x 30" deformed steel tie bars.

PLOT NAME - 14

FILE - ... \CRC STANDARD DETAILS 067N.DGN

PLOT SCALE - 1:24

PLOTTED FROM - TRPR13462

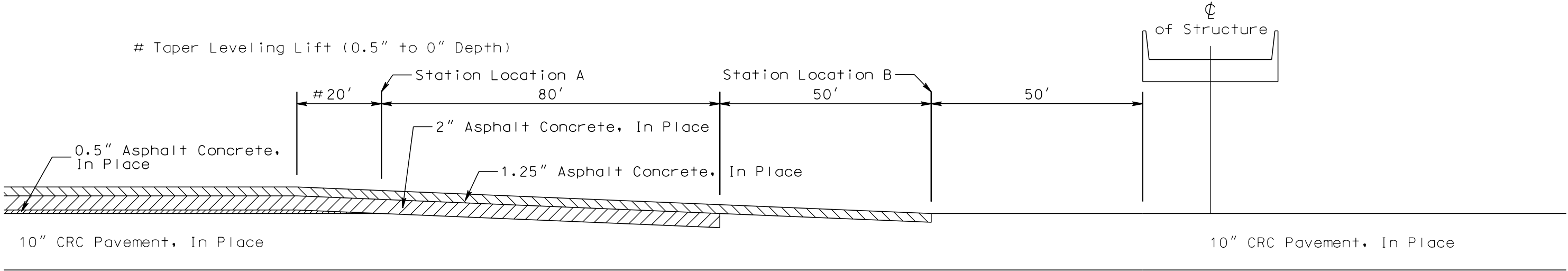
# DETAILS FOR DRIVING LANE CRC REPAIR

NOT TO SCALE  
SHEET 1 OF 1 SHEETS

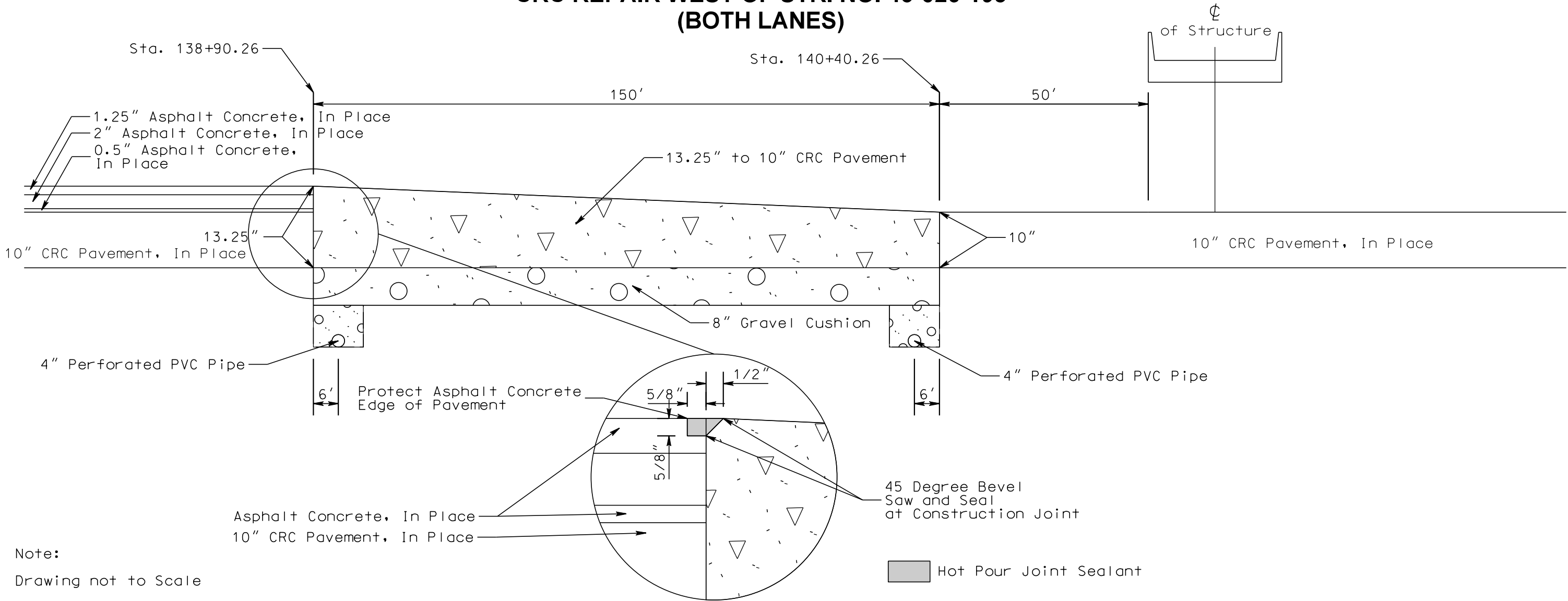
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F14	F23

Plotting Date: 07/30/2024

## EXISTING PCC PAVEMENT WEST OF STR. NO. 43-026-195



## CRC REPAIR WEST OF STR. NO. 43-026-195 (BOTH LANES)

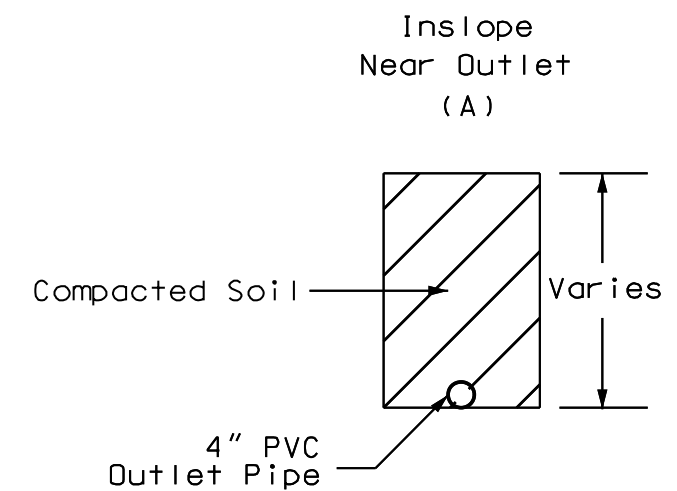
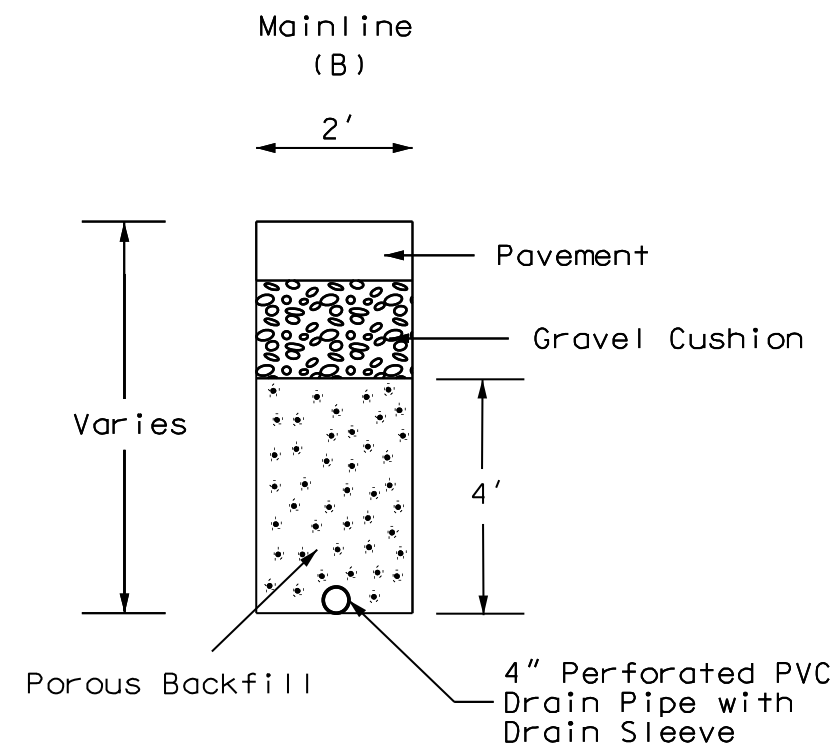
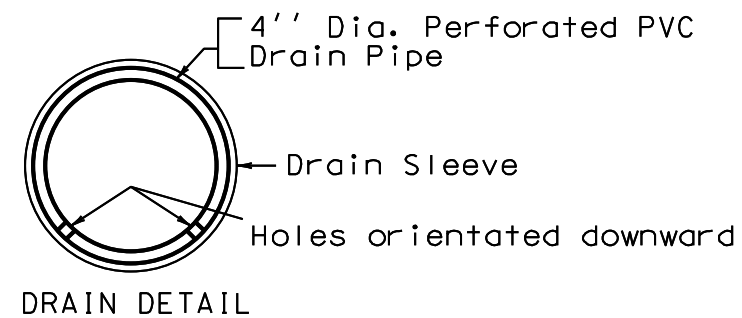
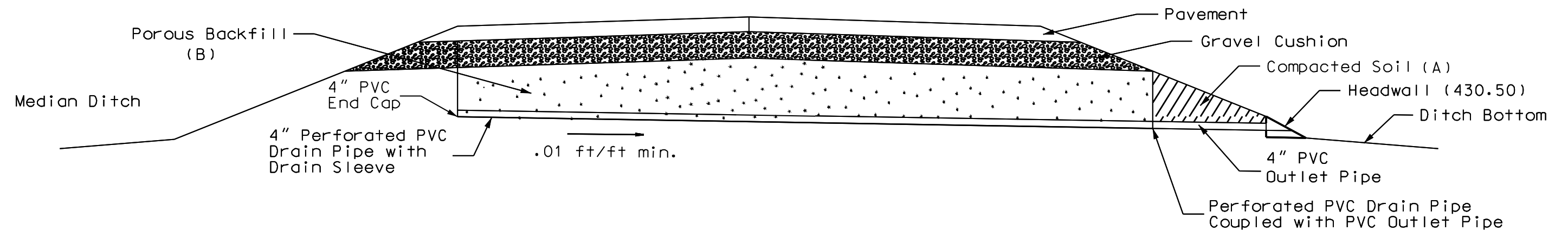


PLOT NAME - 15

FILE - ... \CRCREPAIRDETAILS.DGN

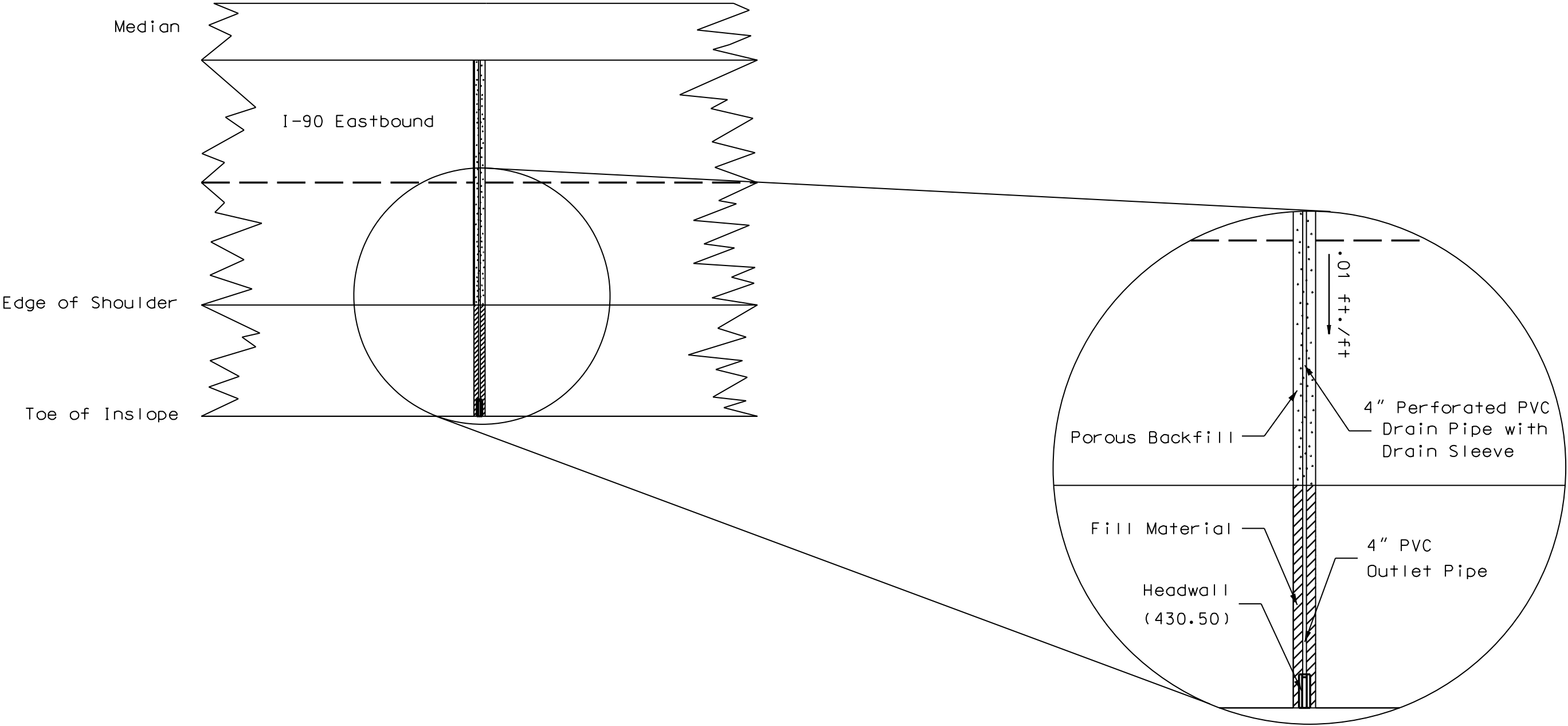
# Typical Underdrain Installation

I 90 Eastbound Lane - Pavement Removal Area



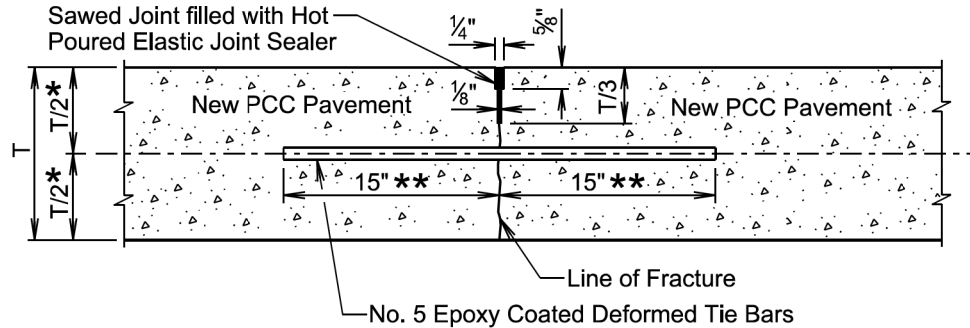
# Typical Underdrain Installation

I 90 Eastbound Lanes





**SAWED LONGITUDINAL JOINT WITH TIE BARS**  
(Poured Monolithically)



T = Pavement Thickness

**GENERAL NOTES** (For the detail above):

The epoxy coated deformed tie bars will 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 will be placed a minimum of 15 inches from the transverse contraction joints.

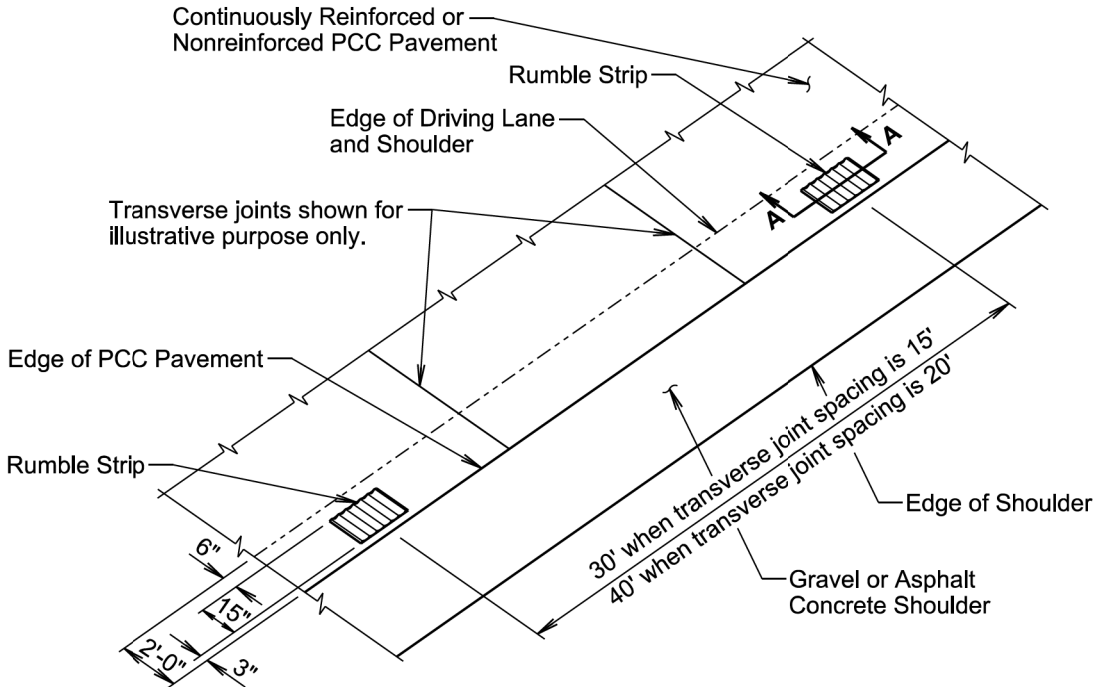
The required number of tie bars as shown in the table will be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing will apply to tie bars within each panel.

The first saw cut to control cracking will 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.

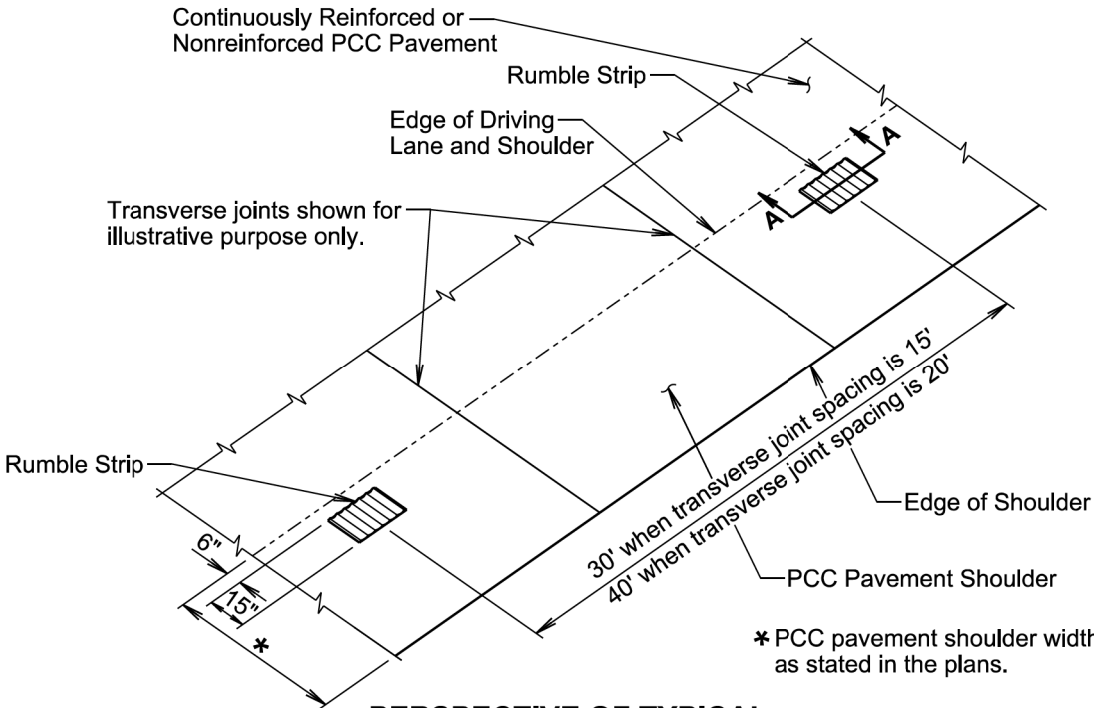
- \* The vertical placement tolerance for any part of the tie bar will be  $\pm T/6$ .
- \*\* The transverse placement (side shift) tolerance will be  $\pm 3$  inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

Published Date: 2025	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.20
			Sheet 2 of 2



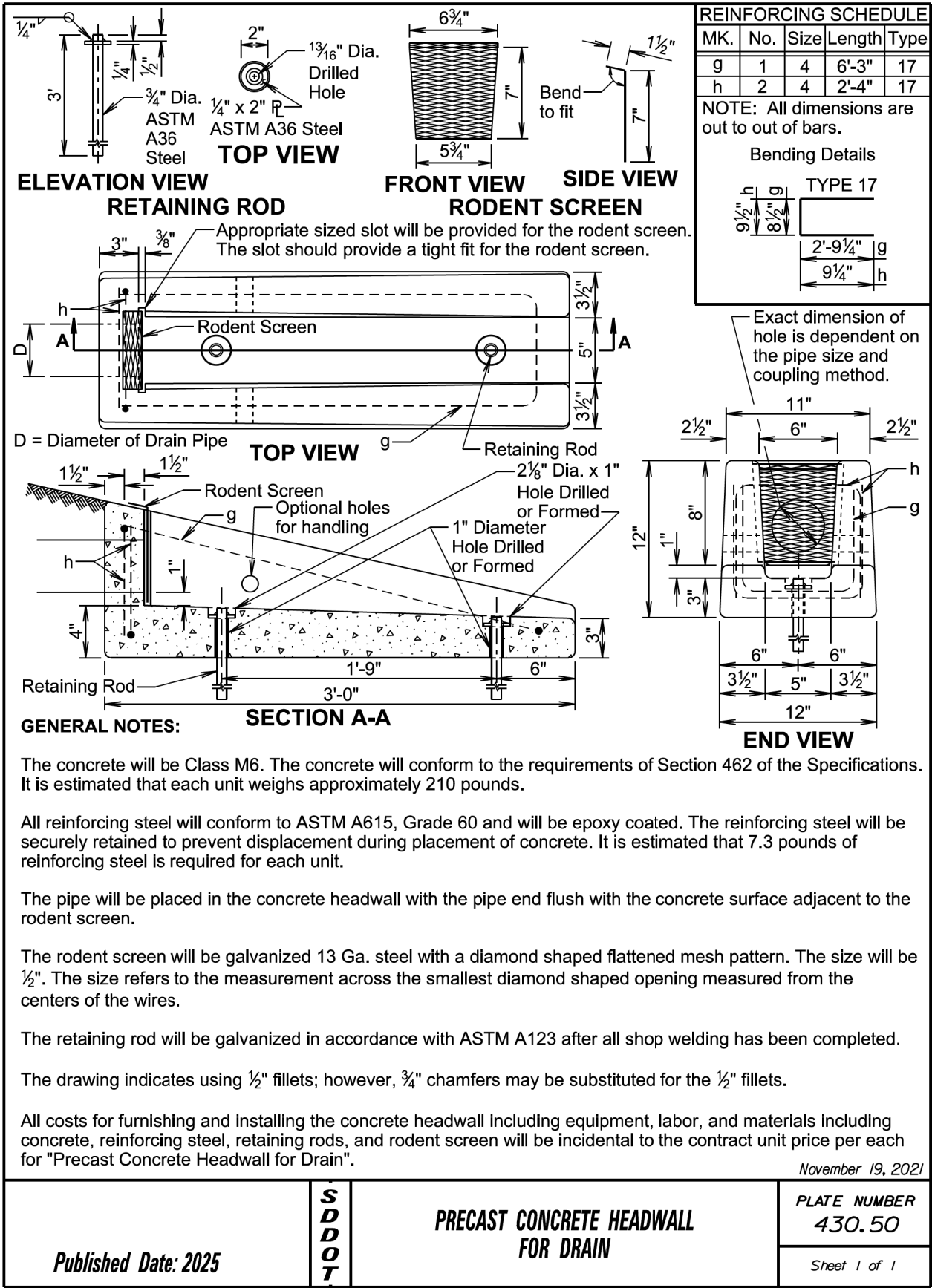
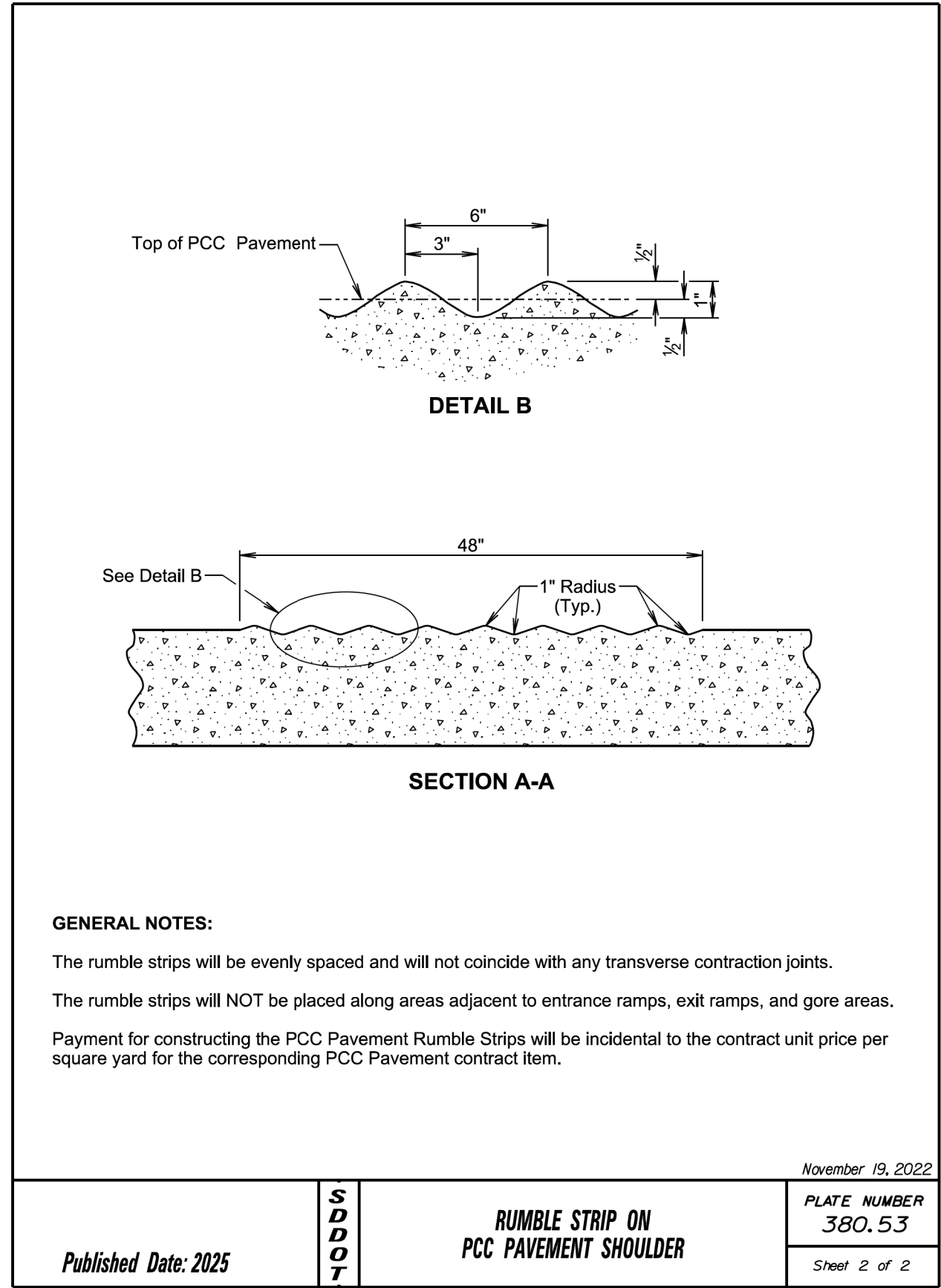
**PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER ADJACENT TO GRAVEL OR ASPHALT CONCRETE SHOULDER**



**PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER**

November 19, 2022

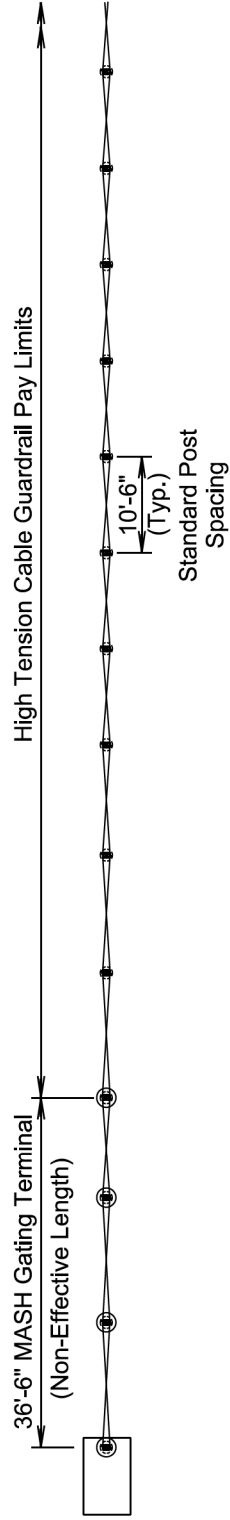
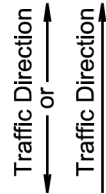
Published Date: 2025	S D D O T	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.53
			Sheet 1 of 2





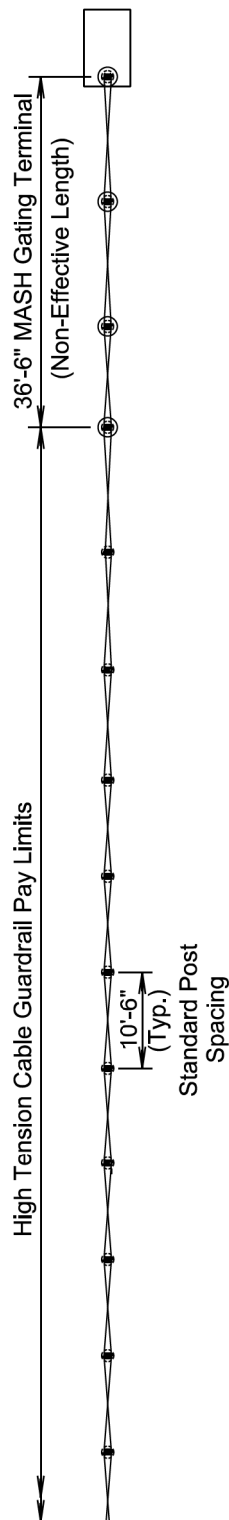
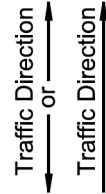


Pay Limits for One-Way and Two-Way Traffic Roadway  
Brifen System



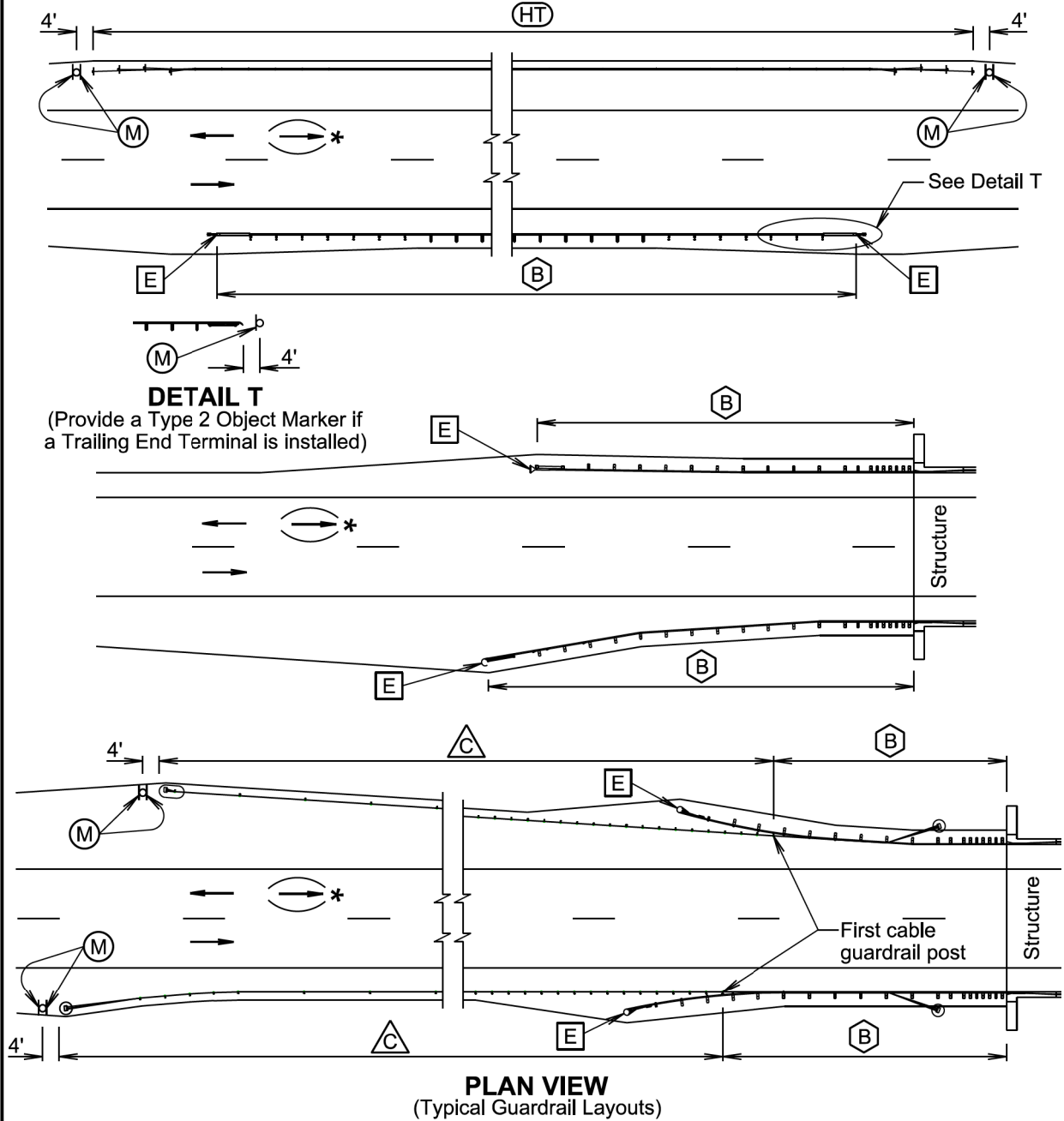
GENERAL NOTES:

The Brifen MASH Gating Terminal has a total length of 36'-6" and is non-effective.  
The High Tension Cable Guardrail pay limits will be the length of need (LON) or the effective length.  
The High Tension Cable Guardrail Anchor Assembly pay limits will be the non-effective length of the terminal.



January 22, 2023

Published Date: 2025	S D D O T	HIGH TENSION CABLE GUARDRAIL	PLATE NUMBER 629.50
			Sheet 3 of 3

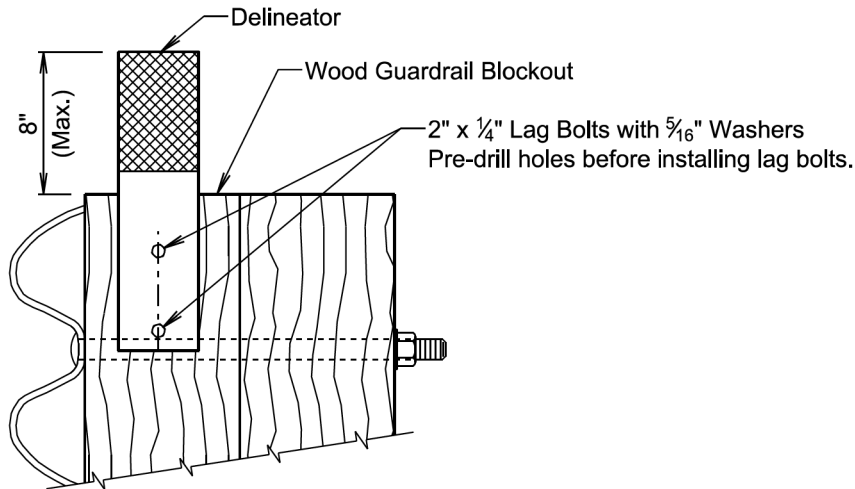


- (B) Steel Beam Guardrail Delineation
- (E) Guardrail End Terminal Object Marker
- (C) 3 Cable Guardrail (Low Tension) Delineation
- (HT) High Tension Cable Guardrail Delineation
- (M) Type 2 Object Marker

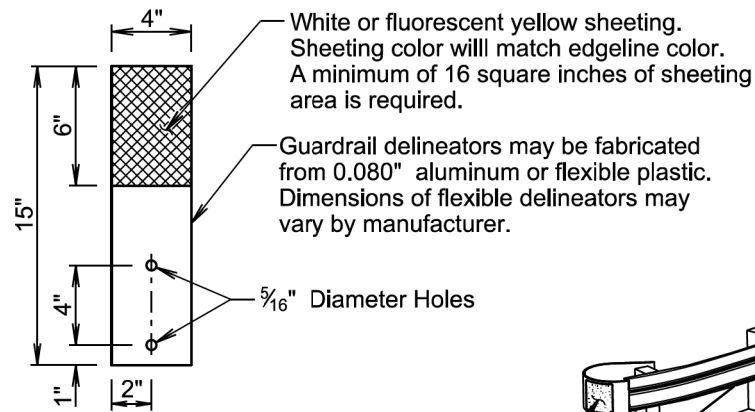
\*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

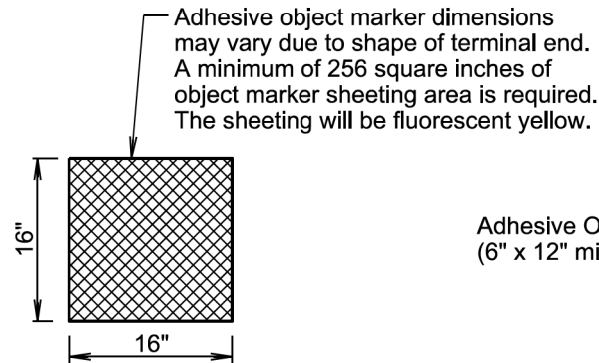
Published Date: 2025	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



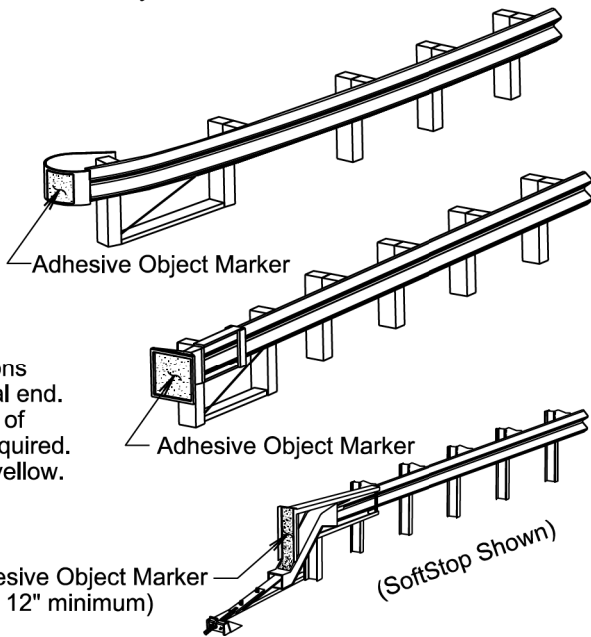
**B STEEL BEAM GUARDRAIL DELINEATION**



**DELINEATOR**  
(For Steel Beam Guardrail)



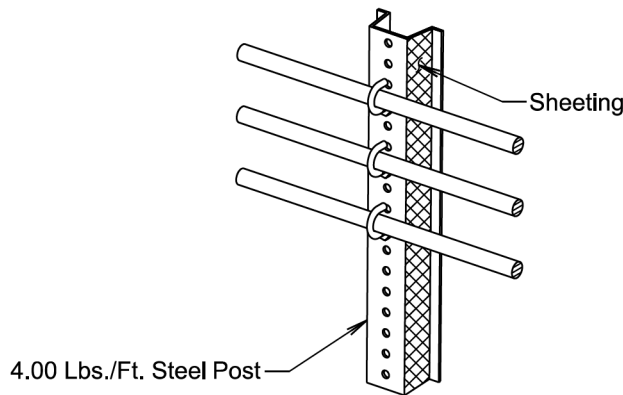
**ADHESIVE OBJECT MARKER**



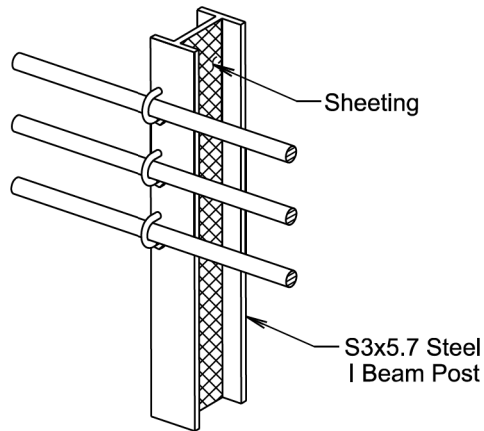
**E GUARDRAIL END TERMINAL OBJECT MARKER**

March 31, 2024

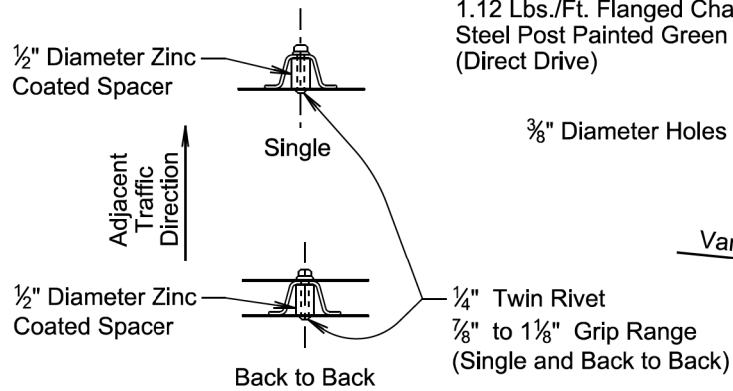
Published Date: 2025	S D D O T	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4



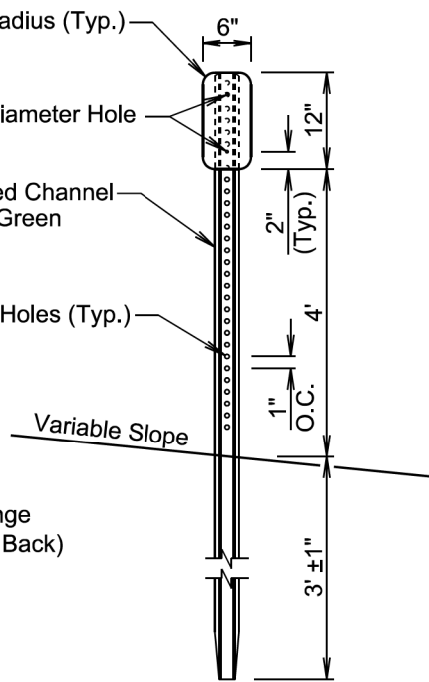
**C 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



**C 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION**



**PLAN VIEW**  
(Type 2 Object Marker Details and Post Orientation)



**ELEVATION VIEW**  
(Type 2 Object Marker)  
(For Marking 3 Cable Guardrail (Low Tension) Anchor, High Tension Cable Guardrail Anchor, and Trailing End Terminal)

March 31, 2024

Published Date: 2025	S D D O T	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(125)212	F23	F23

Plotting Date: 07/30/2024

**GENERAL NOTES:**

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every third post cap or cable spacer. Maximum spacing of delineation will not exceed 35 feet. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting will be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

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

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

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

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

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

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

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

An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required on end terminals with sufficient surface area. Other end terminals (SoftStop) will require an adhesive object marker with a minimum size of 6" x 12". The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

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

March 31, 2024

<i>Published Date: 2025</i>	<b>S D D O T</b>	<b>DELINEATION OF GUARDRAIL</b>	<i>PLATE NUMBER</i> <b>632.40</b>
			<i>Sheet 4 of 4</i>