

DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2010	Pass: 550	Trucks: 135	Total: 685	75
Forecast 2030	Pass: 675	Trucks: 165	Total: 840	100
Clear Zone Distance: 24'		Design Speed: 65 mph		
Minimum Sight Dist. for Stopping: 645'		Bridges: N/A		
Minimum Sight Dist. for Safe Passing: 2285'				
Sight Dist. for No Passing Zone: 1100'				
Pavement Design Life 20 (years)				

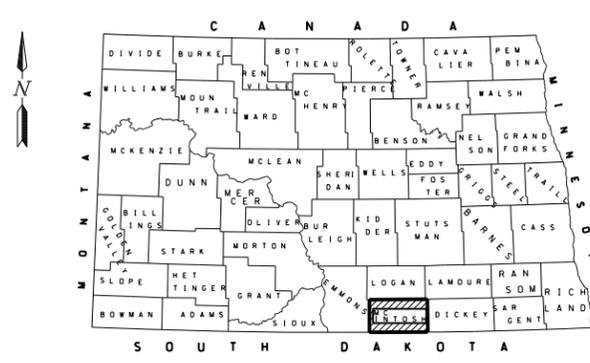
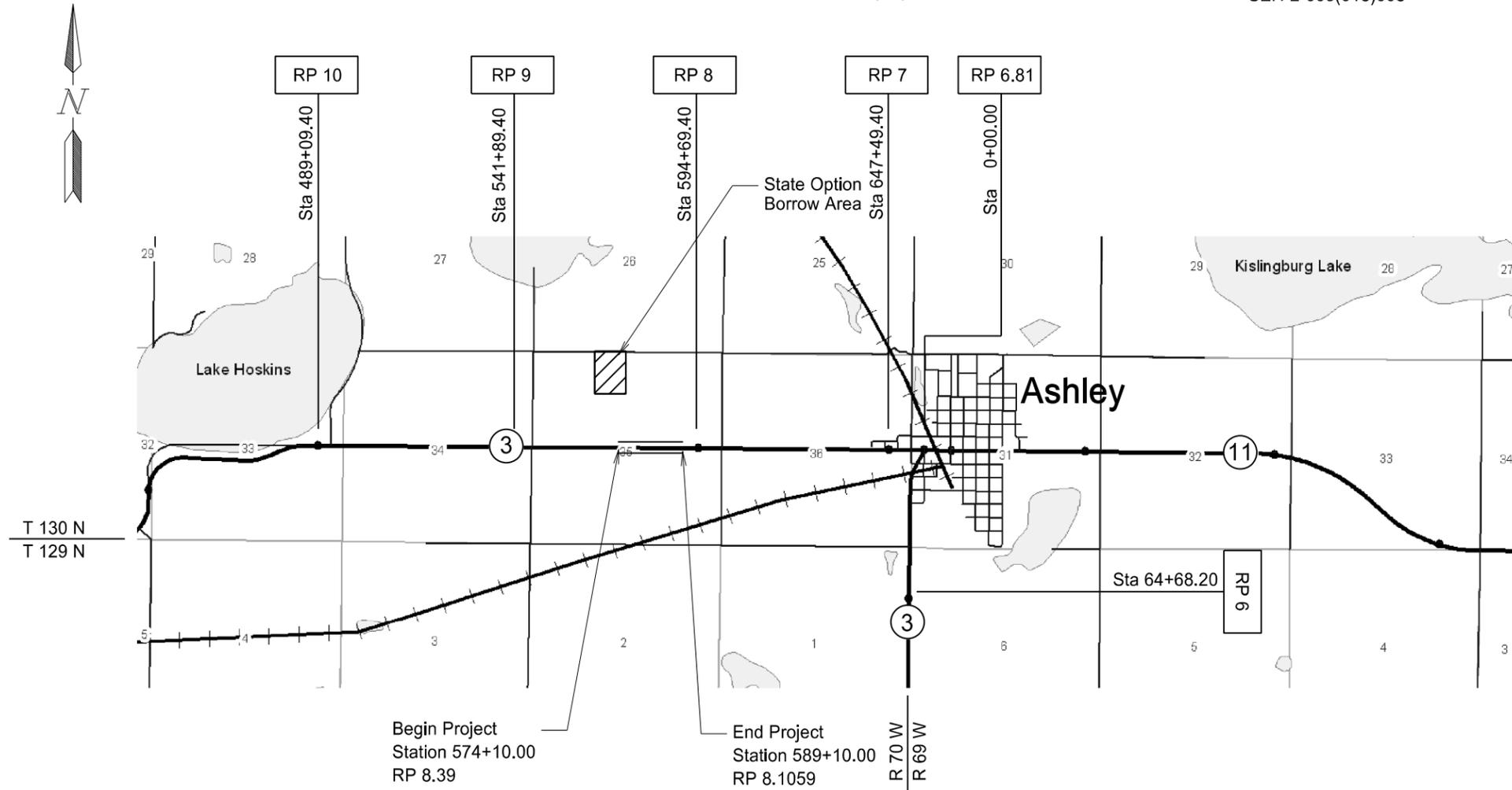
JOB# 12
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SER-2-003(018)008	18945	1	1

SER-2-003(018)008
 McIntosh County
 1½ Miles West of Ashley
 Grade Raise, Aggregate Base,
 Hot Bituminous Pavement & Riprap

GOVERNING SPECIFICATIONS:
 Standard Specifications adopted by the North Dakota
 Department of Transportation October 2008; Standard Drawings
 currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SER-2-003(018)008	0.2841	0.2841



DESIGNERS
 Conni Schafer

APPROVED DATE 2/15/2011
 for Roger Weigel
 OFFICE OF PROJECT DEVELOPMENT
 ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.
 APPROVED DATE 2/15/2011
 James Douglas Rath
 NDDOT DESIGN DIVISION

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STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	2	1

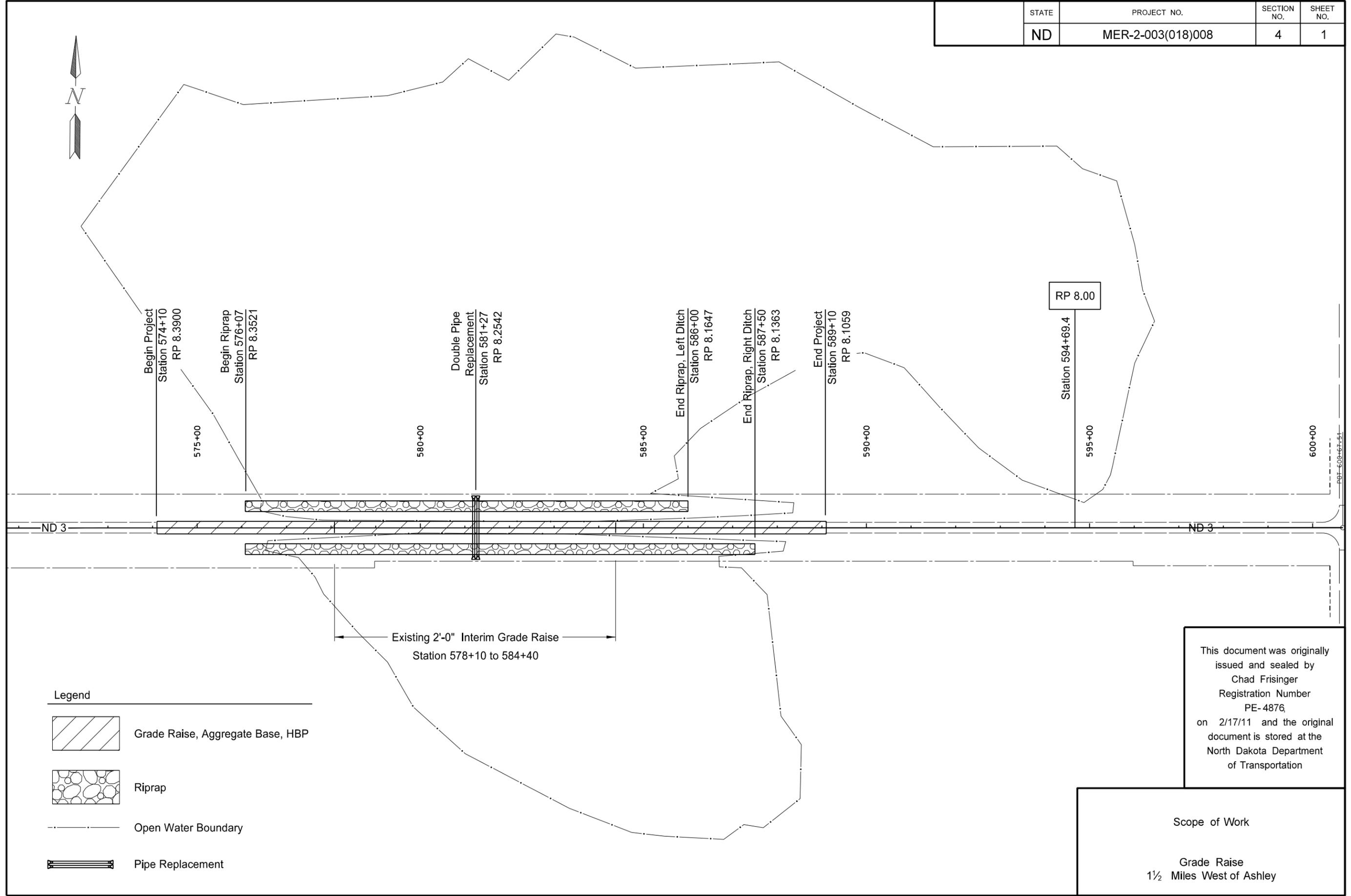
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D-714-22	Concrete Pipe Ties
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D-762-4	Pavement Marking
D-762-6	Short Term Pavement Marking

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Scope of Work

Grade Raise
 1½ Miles West of Ashley

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NOTES

- 100-P01 **CLEANING:** The contractor shall be responsible for removing all debris from the existing roadway adjacent to the construction area at the end of each construction day before traffic is returned to normal.
- 200-010 **SHRINKAGE:** 30 percent additional volume is included for shrinkage in earth embankment above the water.
- 200-P01 **MATERIAL LOSS:** 50 percent additional volume is included for shrinkage and losses in earth embankment below the water.
- 202-P01 **SAW BITUMINOUS SURFACING – FULL DEPTH:** Where the new pavement will abut existing pavement, a full-depth vertical saw cut shall be made along the entire length of the butt joint. The material to be removed shall then be removed without disturbing the material that is designated to remain. The new pavement shall be placed so as to match the existing pavement and so as to provide a satisfactory surface profile.
- The areas to be sawed are shown on the removal sheets. Sawing shall be paid as "Saw Bituminous Surfacing-Full Depth."
- 202-P02 **REMOVAL OF END SECTIONS:** All labor and materials associated with the removal of CSP end sections shall not be paid for separately, but shall be included in the price bid for "Removal of Pipe All types and Sizes" items.
- 203-P01 **HAUL:** No average haul has been computed for this project.
- 203-P02 **BORROW-EXCAVATION:** The contractor shall take measures to minimize the loss of borrow placed on foreslopes.
- 203-P03 **KEYWAY/BERM:** A keyway/berm shall be constructed in areas where the foreslope extends into the water at locations as shown on the plans. The keyway/berm shall be constructed as shown in the typical sections in the plans.
- The keyway/berm shall be removed in its entirety at pipe locations after the new pipes have been installed. In addition, the keyway/berm shall be removed to one foot below the existing water elevation after the riprap is placed. The contractor is required to remove this described embankment and will not be allowed to push the embankment into the water so it is below the water elevation. The removed embankment shall then become property of the contractor and shall be disposed of outside the highway right of way in accordance with Section 107.04.
- If the contractor elects to dispose of the removed keyway/berm embankment at the borrow site, the contractor shall work with the engineer allowing the engineer to cross-section the borrow site prior to the placing the waste embankment at the borrow site.
- If the contractor elects to incorporate the removed keyway/berm embankment within other areas on the project, the contractor will not be paid for this material a second time. The contractor will only be paid for borrow material removed from the borrow site.
- All costs of material, dewatering, construction, removal, and disposal of the keyway/berm shall be included in the price bid for "Borrow-Excavation". The quantity of borrow needed to construct the keyway/berm is included in the quantities for "Borrow-Excavation."

- 203-P04 **TOPSOIL:** Topsoil that is located above the water elevation shall be stripped, stockpiled and replaced. Topsoil that is located below the water elevation is not required to be salvaged. The contractor will be required to use imported topsoil where the topsoil was not salvaged. It will be the contractor's responsibility to obtain and furnish imported topsoil where required. All work associated with obtaining, hauling and placing the imported topsoil shall be included in the price bid for "Topsoil – Imported." All other topsoil work shall be included in the price bid for "Topsoil".
- 302-P01 **SALVAGED BASE COURSE:** An additional 900 Tons of Salvaged Base Course has been provided in the quantities to maintain traffic. This is sufficient quantity for a single lift, 24' wide and 4" thick for the entire length of the project. The aggregate shall be used as directed by the Engineer in the field.
- 401-P01 **BLOTTER MATERIAL CL 44:** Approximately 35 tons of blotter material will be required for the project. The blotter material is based on 15 LBS/SY and will not be measured for payment, but shall be included in the price bid for "MC70 or 250 Liquid Asphalt."
- 408-P01 **HOT BITUMINOUS PAVEMENT:** The 4 ½ inch hot bituminous pavement shall be paver laid in two approximate equal lifts with the maximum lift not to exceed approximately 2 ½ inches.
- 408-P02 **CONTRACTOR MIX DESIGN:** The mix design will be a laboratory mix design determined by the contractor and approved by the NDDOT. The aggregate and mix design properties will meet the requirements outlined in Section 410 Superpave Volumetric Mix Design. The mix design will be developed using the aggregate source and asphalt cement that is to be used on the project.

The following aggregate and mix design properties are required.

Test	Criteria	Reference
Coarse Aggregate Angularity	75% min	NDDOT Field Sampling/Testing Manual
Fine Aggregate Angularity	40% min	AASHTO T 304
Gyratory Effort, # Gyration	N _{ini} =7, N _{des} =75, N _{max} =115	AASHTO R 35
Voids Filled with Asphalt	65-78%	AASHTO M 323, T 166
%G _{mm} @ N _{ini}	90.5% max	AASHTO M 323, T 166

- 704-P01 **TRAFFIC CONTROL:** The NDDOT will remove temporary traffic control devices and speed reduction signs prior to the beginning of the project. The contractor and the project engineer shall coordinate together when to remove devices. After the project starts the contractor shall maintain traffic at all times. The Traffic Control Devices List has been developed using the following layouts on the Standard Drawings and plan sheets for traffic control:

- D-704-2 For coring operations
- D-704-5 Contractor sign is applicable
- D-704-7, 8, 9, 10, 11, 12, 12A, 13, and 14 are applicable
- D-704-15 Layout Type A: with a pilot car for a one lane closure for grade raise, pipe work, pavement and base removal, and paving operations
- D-704-20 Layout Type G: the basis for the Construction Signing Sheet
- D-704-22 Layouts K and L: for construction trucks hauling material

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NOTES

- D-704-26 Layouts BB, CC, and FF: where the conditions exist
- D-704-27 For pavement marking operations
- D-704-30 Windrow Marking
- D-704-50 Portable Sign Support Assembly

The embankment through the grade raise area in which traffic will be maintained on at all times shall be made traversable with 4:1 slopes or flatter the same day it is placed/removed, or the contractor shall provide 24 hour flagging at the contractor's expense.

The required traffic control signs and devices are included in the "Traffic Control Devices List" and will be measured and paid at the Contract Unit Price for each device. Additional devices required to accommodate the contractor's operation shall be the contractor's responsibility.

704-P02 **STACKABLE VERTICAL PANEL:** The stackable vertical panel made of hollow low density polyethylene orange plastic panel which is held in an upright position by a molded rubber base shall be provided.

The panel shall be a minimum 43 inches high with a minimum bottom dimension 15 inches x 9 inches. The panel shall be held down with a molded rubber base. The minimum weight of the panel shall be 4 pounds. The minimum weight of the molded rubber base shall be 30 pounds.

The reflective sheeting shall have a minimum width of 8 inches and 36 inches long. The reflective sheeting shall be as specified for vertical panel and shall have 6" wide stripes sloping downward at an angle of 45 degrees in the direction vehicular traffic is to pass. The reflective sheeting shall be on both sides of the Stackable Vertical Panels. The Stackable

Vertical Panel shall meet the requirements of NCHRP Report 350 as a Category II Traffic Control Device.

The item "Stackable Vertical Panel" shall be measured by the number of each installed. All materials, equipment, and labor for installation, relocation, and removal shall be included in the price bid for "Stackable Vertical Panel."

704-251 **TRAFFIC CONTROL FOR UNEVEN PAVEMENT:** The contractor has the option of making the paving lanes even at the end of each day's paving operation or signing for the uneven pavement and providing the following devices: Install "Uneven Lanes" signs (Sign No. W8-11-48) and a supplemental plate (Sign No. W20-52-54), identifying the distance, on the right shoulder (both directions) in advance of the beginning of the uneven pavement and at major intersections. A major intersection shall be defined as a CMC, state, U.S. highway, or Interstate ramp. Install "Do Not Pass" signs (Sign No. R4-1-48) on the right shoulder (both directions) between the uneven pavement sign and the beginning of the uneven pavement and at major intersections. If uneven pavement exists at any location longer than one night, tubular markers shall be installed. Tubular markers shall be spaced at two times the posted speed limit on the centerline where uneven pavement exists.

These traffic control devices shall be left in place until the lanes are even. These signs and tubular markers are included in the "Traffic Control Devices List" and will be measured and paid for at the contract unit price for each device. No extra compensation will be allowed for relocation due to work progression.

708-P01 **RIPRAP – LOOSE ROCK:** The contractor shall place riprap around the pipe conduit in such a manner that the pipe is not damaged and the flow is not obstructed. All costs to place riprap around the pipe shall be included in the price bid for "Riprap – Loose Rock."

708-P02 **DESIGNATED BORROW SITE AREA EROSION CONTROL:** The contractor shall place fiber rolls around the borrow area. An additional quantity of 1000 LF of 12" fiber rolls has been provided to prevent silt from leaving the borrow area. All costs for materials, equipment, and labor required to perform this work shall be included in the price bid for "Fiber Rolls 12 In."

714-P01 **PIPE CONDUIT:** The proposed pipes that are to be placed are currently below the elevation of the adjacent water body. Any earthen dam or coffer dam that is placed by the contractor to aid in the installation of the pipe placement shall not be paid for separately. If a dam is placed in the adjacent water body, it shall be removed to the original contours. All costs for the above described work shall be included in the price bid for "Pipe Conduit 36 In".

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ENVIRONMENTAL COMMITMENTS

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	6	3

ENVIRONMENTAL COMMITMENTS: The North Dakota Department of Transportation and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

COMMITMENT NO. 1: Unavoidable impacts to wetlands will result from the installation of fill material and riprap. The impacted wetlands will be mitigated at the Trego mitigation site. Approximately 2.83 acres of non jurisdictional wetlands will be impacted permanently, and 0.22 acres of wetlands will be impacted temporarily.

ACTION TAKEN/REQUIRED: The NDDOT will mitigate 2.83 acres of impacted wetlands at the Trego mitigation site in Sheridan County.

Wetland Impact Table

Wetland Number	Location	LONG / LAT (Dec. Deg.)	Cowardin Classification	Wetland Type	Wetland Size (acres)	Wetland Feature	USACE Jurisdictional Wetlands	Wetland Impacts	
								Temp.	Perm.
1A	Sec.35,T130N, R70W	-99.406747 W 46.034740 N	PEMC	Basin	2.11	Natural	NA	0.11	1.41
1B	Sec.35,T130N, R70W	-99.408159 W 46.034383 N	PEMF	Basin	2.01	Natural	NA	0.11	1.42
TOTAL					4.12		TOTAL	0.22	2.83

COMMITMENT NO. 2: No construction activities are to take place unless methods to minimize impacts to the adjacent wetlands are incorporated.

ACTION TAKEN/REQUIRED: The contractor will install Flotation Silt Curtains around the work areas in accordance with Section 20, Sheet 1 of the plan, prior to performing any work within the existing wetlands.

COMMITMENT NO. 3: PERMITS REQUIRED: There are no permits required for this project.

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SER-2-003(018)008	8	1

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
-----	-----	-----	-----	-----
103	0100 CONTRACT BOND	L SUM	1	1
202	0132 REMOVAL OF BITUMINOUS SURFACING	SY	1,400	1,400
202	0153 SAW BITUMINOUS SURFACING-FULL DEPTH	LF	96	96
202	0174 REMOVAL OF PIPE ALL TYPES AND SIZES	LF	112	112
203	0101 COMMON EXCAVATION-TYPE A	CY	334	334
203	0108 TOPSOIL-BORROW AREA	CY	4,167	4,167
203	0109 TOPSOIL	CY	271	271
203	0119 TOPSOIL-IMPORTED	CY	534	534
203	0140 BORROW-EXCAVATION	CY	34,641	34,641
216	0100 WATER	M GAL	470	470
302	0100 SALVAGED BASE COURSE	TON	6,975	6,975
401	0100 MC70 OR 250 LIQUID ASPHALT	GAL	1,225	1,225
401	0150 SS1H OR CSS1H OR MS1 EMULSIFIED ASPHALT	GAL	238	238
408	0445 PG 58-28 ASPHALT CEMENT	TON	71	71
408	0800 SUPERPAVE FAA 40	TON	1,194	1,194
408	9605 CORED SAMPLE-BITUMINOUS PAVEMENT	EA	9	9
702	0100 MOBILIZATION	L SUM	1	1
704	0100 FLAGGING	MHR	700	700
704	1000 TRAFFIC CONTROL SIGNS	UNIT	1,114	1,114
704	1067 TUBULAR MARKERS	EA	60	60
704	1080 STACKABLE VERTICAL PANELS	EA	120	120
704	1185 PILOT CAR	HR	300	300
706	0300 FIELD LABORATORY-TYPE C	EA	1	1
708	1030 RIPRAP-LOOSE ROCK	TON	4,196	4,196
708	1375 FLOTATION SILT CURTAIN	LF	2,150	2,150
708	1430 FIBER ROLLS 12IN	LF	3,136	3,136
708	2240 SEEDING-TYPE B-CL II	ACRE	1.4	1.4
708	2260 SEEDING-TYPE B-CL IV	ACRE	1.4	1.4
708	5500 MULCHING	ACRE	1.4	1.4
709	0600 GEOTEXTILE FABRIC-TYPE RR	SY	9,256	9,256
709	0701 GEOTEXTILE FABRIC-TYPE R1	SY	1,904	1,904
714	4115 PIPE CONDUIT 36IN	LF	276	276
762	0430 SHORT TERM 4IN LINE-TYPE NR	LF	1,320	1,320

ESTIMATE OF QUANTITIES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SER-2-003(018)008	8	2

SPEC CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
-----	-----	-----	-----	-----
762 1104	PVMT MK PAINTED 4IN LINE	LF	6,615	6,615

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BASIS OF ESTIMATE

Material

Borrow-Excavation

- 14,980 CY x 1.50(Shrinkage below water line) = 22,470 CY
- 9,619 CY x 1.30(Shrinkage above water line) = 12,505 CY
- Total **34,975 CY**

Salvaged Base Course @ 1.875 Ton/CY

- 1500 LF (length of project)
- 1500 LF x 55.92 SF/ 27 x 1.875 = **5825 Ton (Base)**
- 2143 LF x 1.68 SF/27 x 1.875 = **250 Ton (Shoulder)**
- **Total 6075 Ton**

SS1H or CSS1H or MS1 Emulsified Asphalt @ 0.05 Gal/SY

- 1500 LF x 28.6 / 9 x 0.05 = **238 Gal**

Hot Bituminous Pavement Superpave @ 2 Ton/CY

- 1500 LF x 10.75 SF / 27 x 2 = **1194 Ton**

PG 58-28 Asphalt Cement @ 6.0%

- 1194 x 6.0% = **71 Ton**

MC-70 or 250 Liquid Asphalt @ 0.25 Gal/SY

- 1500 LF x 29.4 / 9 x 0.25 = **1225 Gal**

Riprap @ 1.7 Ton/CY

- Left ditch 993 LF x 31.2 SF/27 x 1.7 = 1950.7 Ton
- Right ditch 1143 LF x 31.2 SF/27 x 1.7 = 2245.3 Ton
- **Total 4196 Ton**

Removals

Removal of Bituminous Surfacing SY
 Saw Bituminous Surfacing-Full Depth LF

Water

Water for Compaction:

10 Gal/Ton of Salvaged Base Course

- 6975 Ton x 10 Gal/Ton = 69,750 Gal/1000 = 70 MGal

Water for Embankment Material:

- 34,975 CY x 10 Gal/CY = 376,910/1000 = 350 MGal

Water for Dust Palliative @ 25 MGal/Mile

- 2 miles x 25 MGal/Mile = 50 MGal
- **Total 470 MGal**

Coring

Sta 574+10.00 (RP 8.39) to Sta 589+10.00 (RP 8.1059) = 1500 LF

Density Cores

- 1500 LF / (2000 LF/sublot) = 1 sublot
- 1 sublots * 2 Lifts * 2 Lanes * 2 cores/sublot = **8 Cores**

District Materials Coordinator Cores

- One full depth cores per mile
- 0.2841 mile * 1 cores/mile = **1 Core**
- Total **9 Cores**

Topsoil, Seeding & Mulching:

Topsoil: Section 203.03 G of the standard specifications. Removal of topsoil is based on 4" depth. Removal of topsoil at the borrow area will be based at 6" depth. Imported topsoil shall be placed at a 4" depth from the proposed edge of pavement to the proposed riprap.

Seeding: The entire area outside the paved roadways disturbed by construction of this project shall be seeded and mulched. The exact limits for mulching and seeding shall be determined by the engineer in the field.

Topsoil Borrow area

- Area = 500' x 600'
- ¾ topsoil removal, ¼ topsoil piled
- 6" depth
- 500' x 600' x .75 x .5/27 = **4167 CY**

Short Term 4 In line – Type NR

0.5 miles (10' Line, 30' Skip) x 1320 LF/Mile = 660 LF x 2 lifts = **1320 LF**

- 0.5 miles (Length of project)
- 1320 LF/Mile for 10' Line, 30' Skip
- 2 lifts

Pvmt MK Painted 4 In Line

0.5 miles (10' Line, 30' Skip) x 1320 LF/Mile = **660 LF**

- 0.5 miles (Length of project)
- 1320 LF/Mile for 10' Line, 30' Skip
- 1 lift

0.5 (Length of project for edge lines) x 5280 x 2 = **5280 LF**

- 5280 LF/Mile for Outside edge lines

Barrier Stripes

WB Lane Restriction

Beginning RP	Ending RP	Length(Miles)
8.2972	8.4251	0.1279

Total Barrier Stripes = **675 LF**

- 65 MPH Design Speed
- Sight Dist. For No Passing Zone = 1100 LF

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Location	Excavation (CY)	Pavement Removal from Excavation Areas (CY)	Common Excavation - Type A (CY) Pay Item	Embankment (CY)	Borrow Required (CY) Pay Item
	A	B	C = A - B		D
ND 3					
Sta 574+10 to 589+10	657	323	334	34975	34641
TOTALS =	657	323	334	34975	34641

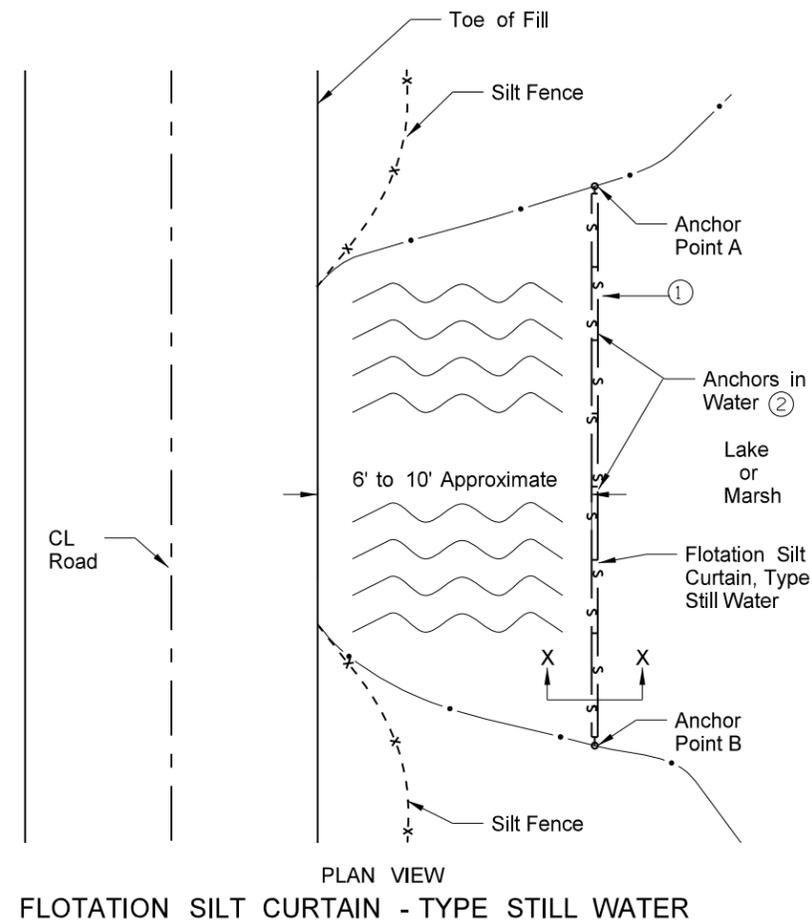
Note: The quantity shown for embankment has been increased by 30% above water, and 50% below water to adjust for shrinkage.

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Earth summary

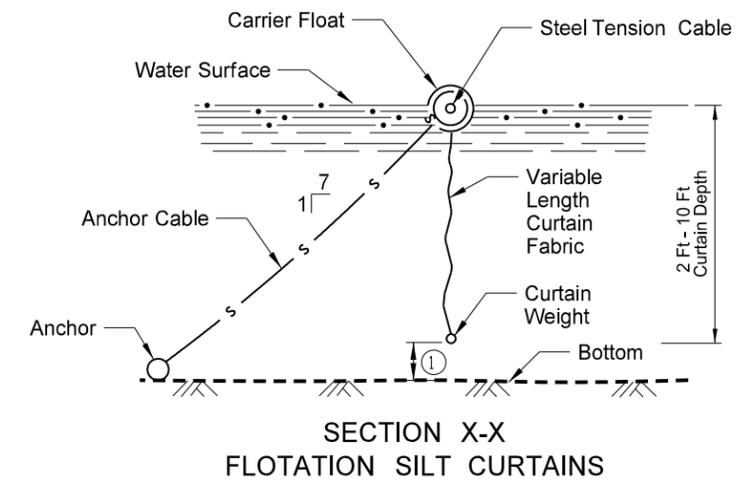
Grade Raise
1 1/2 Miles West of Ashley

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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DESIGN GUIDELINES:
 MAXIMUM WATER DEPTH: 11 FT. ①
 MINIMUM WATER DEPTH: 3 FT.

- Notes:
- ① Curtain 1 FT from Bottom
 - ② Use enough Anchors to Hold Silt Curtain in Place

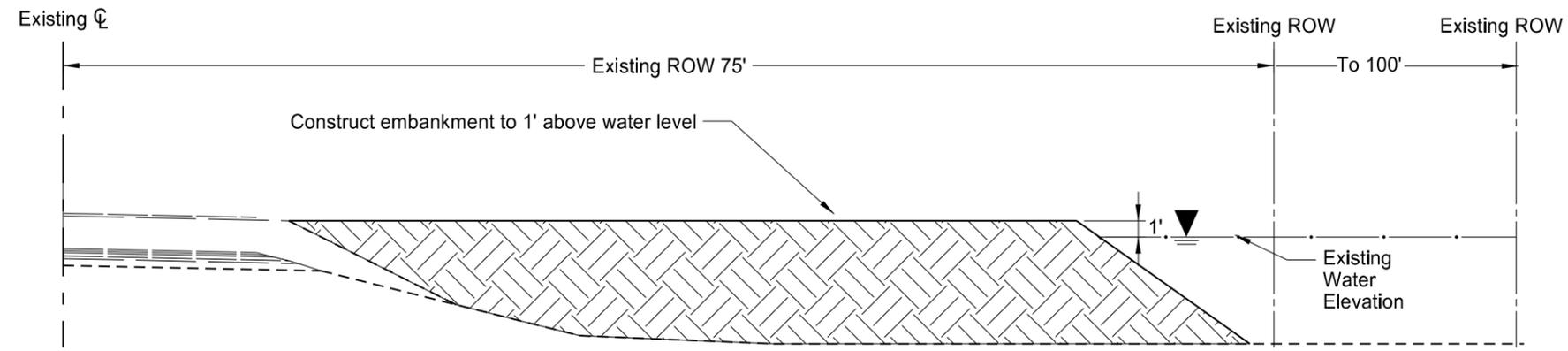


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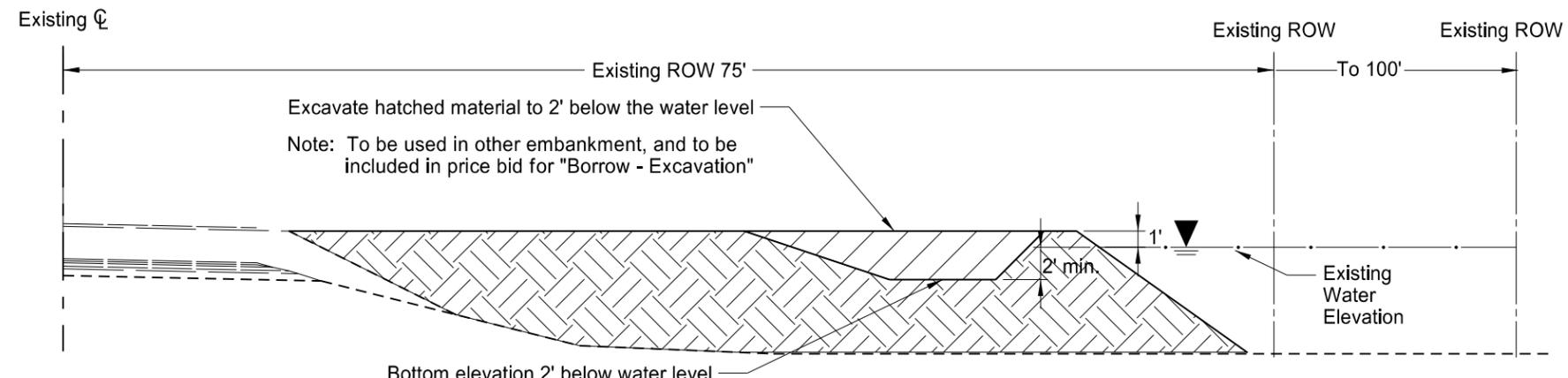
Temporary Erosion Control
 Flotation Silt Curtain

 Grade Raise
 1 1/2 Miles West of Ashley

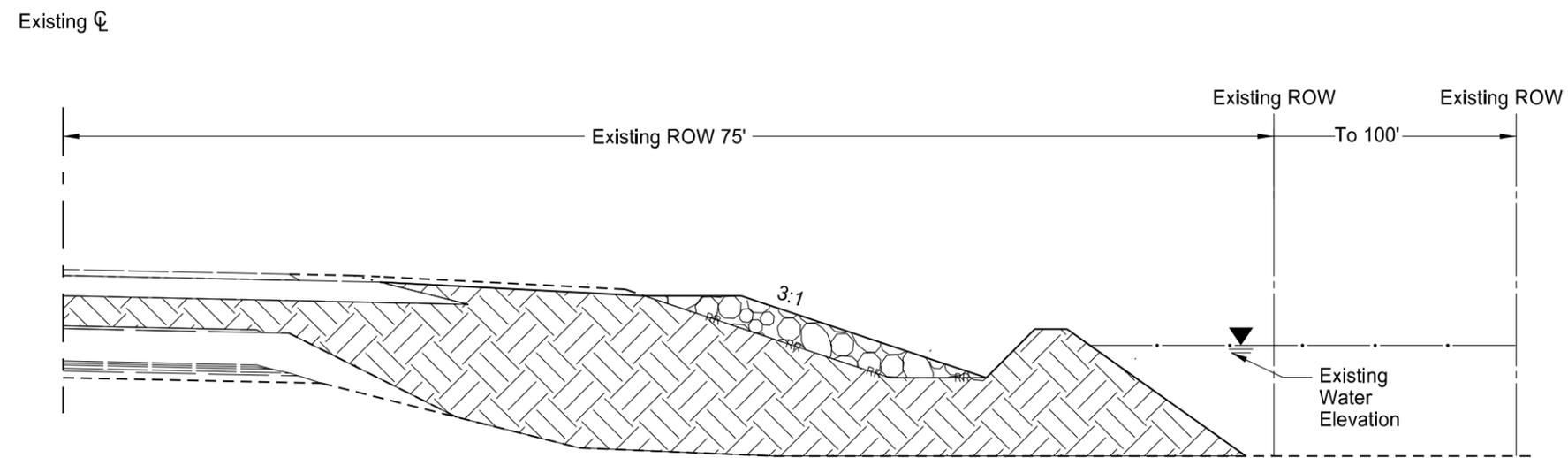
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	20	2



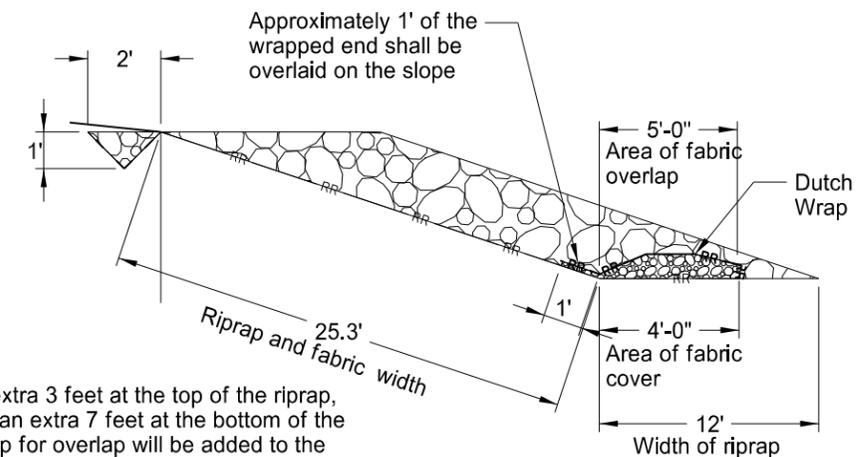
Stage 1 - Embankment Placement



Stage 2 - Excavation



Stage 3 - Fabric, Riprap, Additional Embankment



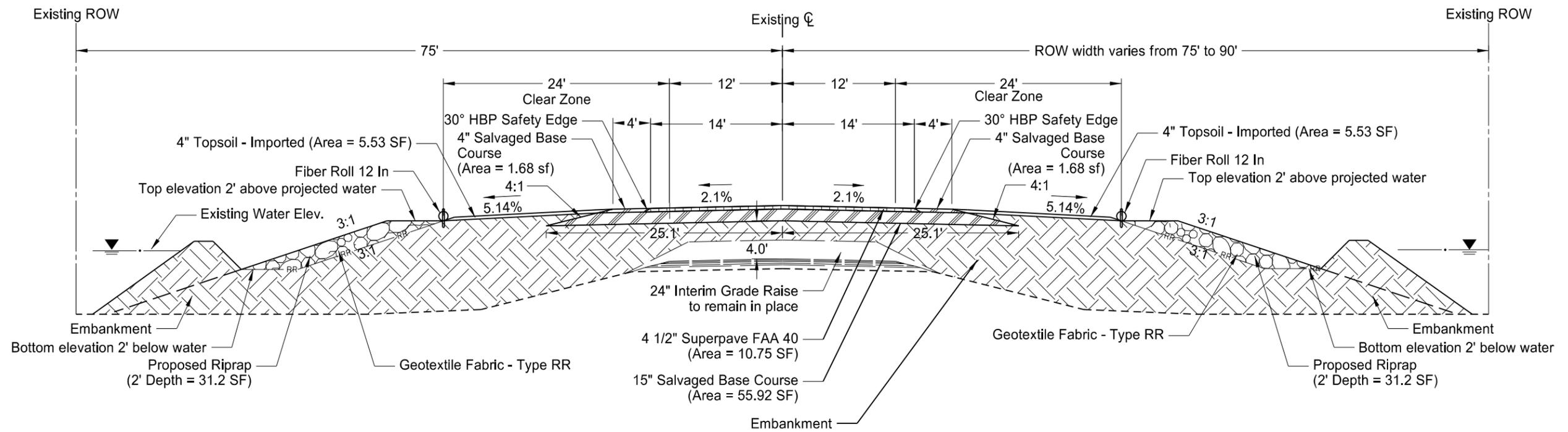
Note: An extra 3 feet at the top of the riprap, and an extra 7 feet at the bottom of the riprap for overlap will be added to the width of the fabric and paid for as "Geotextile Fabric - Type RR".

Geotextile Fabric and Riprap Placement Detail

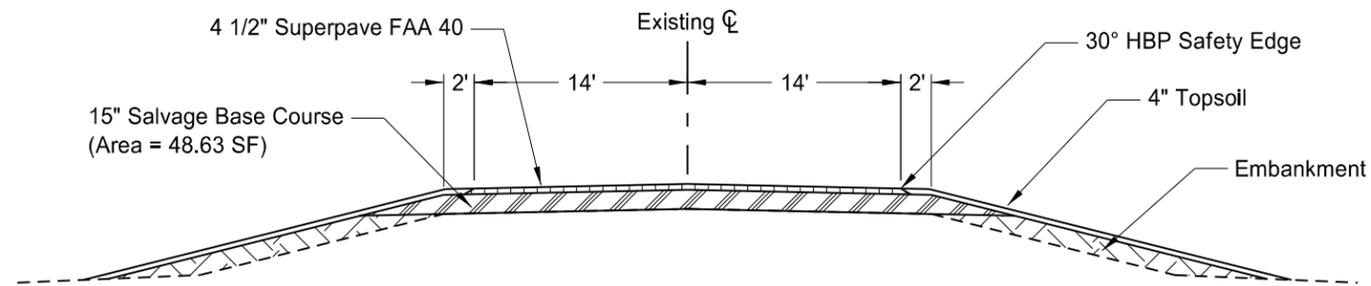
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Riprap Placement Detail
Grade Raise
1 1/2 Miles West of Ashley

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Proposed Typical Section
Station 578+10 to 584+40



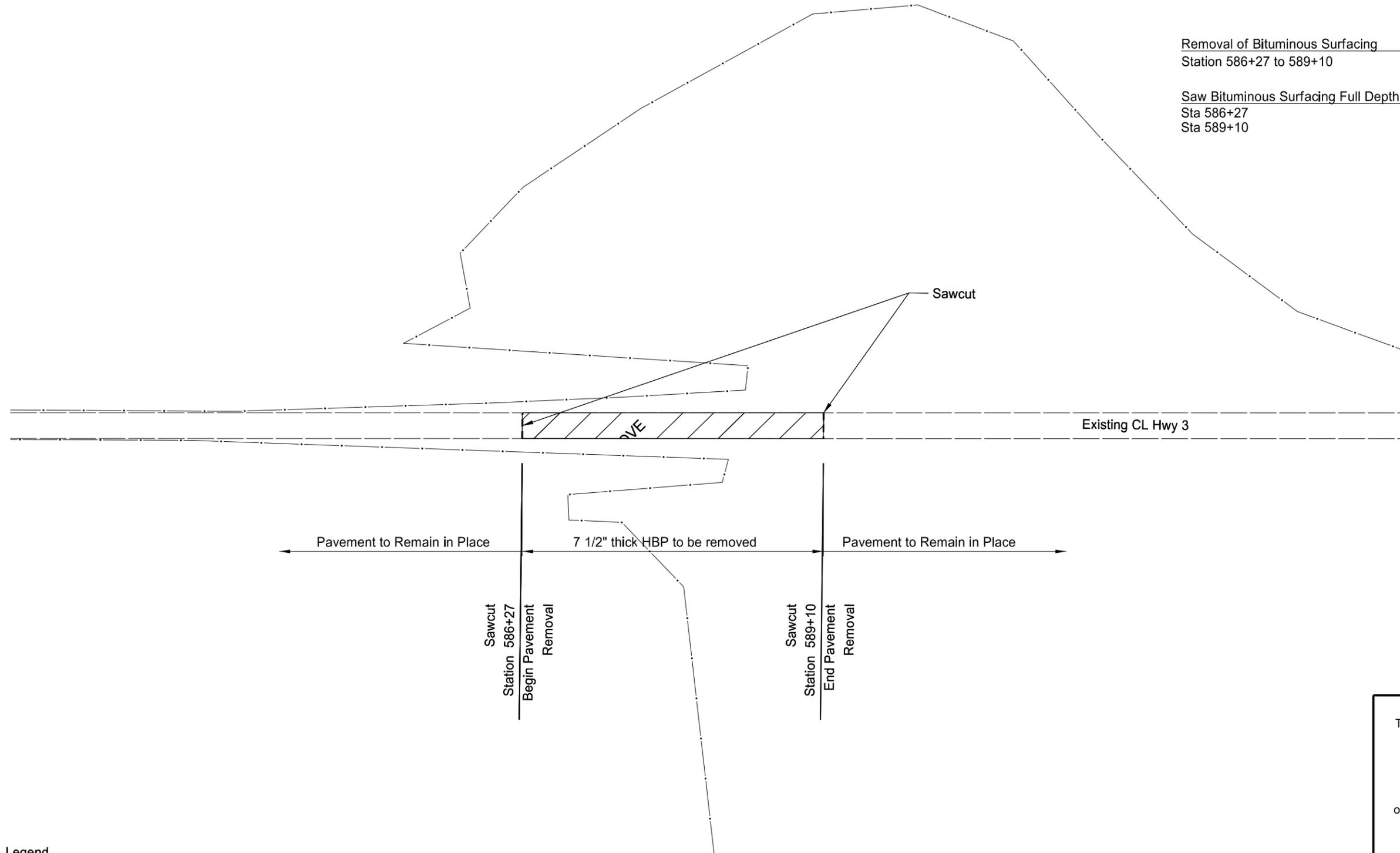
Proposed Typical Section
Beginning of Project
End of Project

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Proposed Typical Section
Grade Raise
1 1/2 Miles West of Ashley

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	40	2

Removal of Bituminous Surfacing	748 SY
Station 586+27 to 589+10	
Saw Bituminous Surfacing Full Depth	
Sta 586+27	24 LF
Sta 589+10	24 LF



Legend

- Saw Bituminous Surfacing Full Depth
-  Removal of Bituminous Surfacing

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Removals
 Station 582+00 to 589+10

Grade Raise
 1 1/2 Miles West of Ashley

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	MER-2-003(018)008	50	1

HYDRAULIC DATA FOR MER-2-003(018)008 (A)									
STATION	EXISTING Structure	PROPOSED PIPE SIZE	DRAINAGE AREA (ACRES)	25-YEAR DATA				100-YEAR DATA	
				DESIGN DISCHARGE (CFS)	DESIGN HEADWATER (FT)	DESIGN VELOCITY (FPS)	DESIGN STAGE (NAVD 88)	100-YEAR DISCHARGE (CFS)	100-YEAR STAGE (NAVD 88)
581+27	2-36" CSP	2-36" Conduit	505	99	4.5	8.15	2010.90	166	2014.41

(A) Hydraulic Data provided is for smooth walled (Manning's n = 0.012) type conduits.

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Culvert Hydraulic Data
Hwy 3
1.5 West of Ashley

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	MER-2-003(018)008	51	1

Begin Station / Location	Begin Offset	End Station / Location	End Offset	Length	Pipe Conduit Pay Size	Allowable Material	Required Diameter	Minimum Thickness	R1 Fabric (Pay Item)	(A) End Sections		Applicable Backfill Detail
										Begin	End	
				LF	LF		In	In	SY	EA	EA	
581+21.42	69' Lt	581+21.42	69' Rt	138	36	Reinforced Concrete Pipe - Class II (barrel length = 132 LF)	36		1904	Y	Y	D-714-28
						Polymeric Coated Steel - Corrugated - 2-2/3" x 1/2" (over zinc or aluminum coated steel)	42	0.064				
						Polymeric Coated Steel - Spiral Rib - 3/4" x 3/4" @ 7-1/2" (over zinc or aluminum coated steel)	42	0.064				
						Polymeric Coated Steel - Spiral Rib - 3/4" x 1" @ 11-1/2" (over zinc or aluminum coated steel)	42	0.064				
						Aluminum Coated Corrugated Steel - 2-2/3" x 1/2' Ribs	42	0.075				
581+32.58	69' Lt	581+21.43	69' Rt	138	36	Reinforced Concrete Pipe - Class II (barrel length = 132 LF)	36		(B)	Y	Y	D-714-28
						Polymeric Coated Steel - Corrugated - 2-2/3" x 1/2" (over zinc or aluminum coated steel)	42	0.064				
						Polymeric Coated Steel - Spiral Rib - 3/4" x 3/4" @ 7-1/2" (over zinc or aluminum coated steel)	42	0.064				
						Polymeric Coated Steel - Spiral Rib - 3/4" x 1" @ 11-1/2" (over zinc or aluminum coated steel)	42	0.064				
						Aluminum Coated Corrugated Steel - 2-2/3" x 1/2' Ribs	42	0.075				

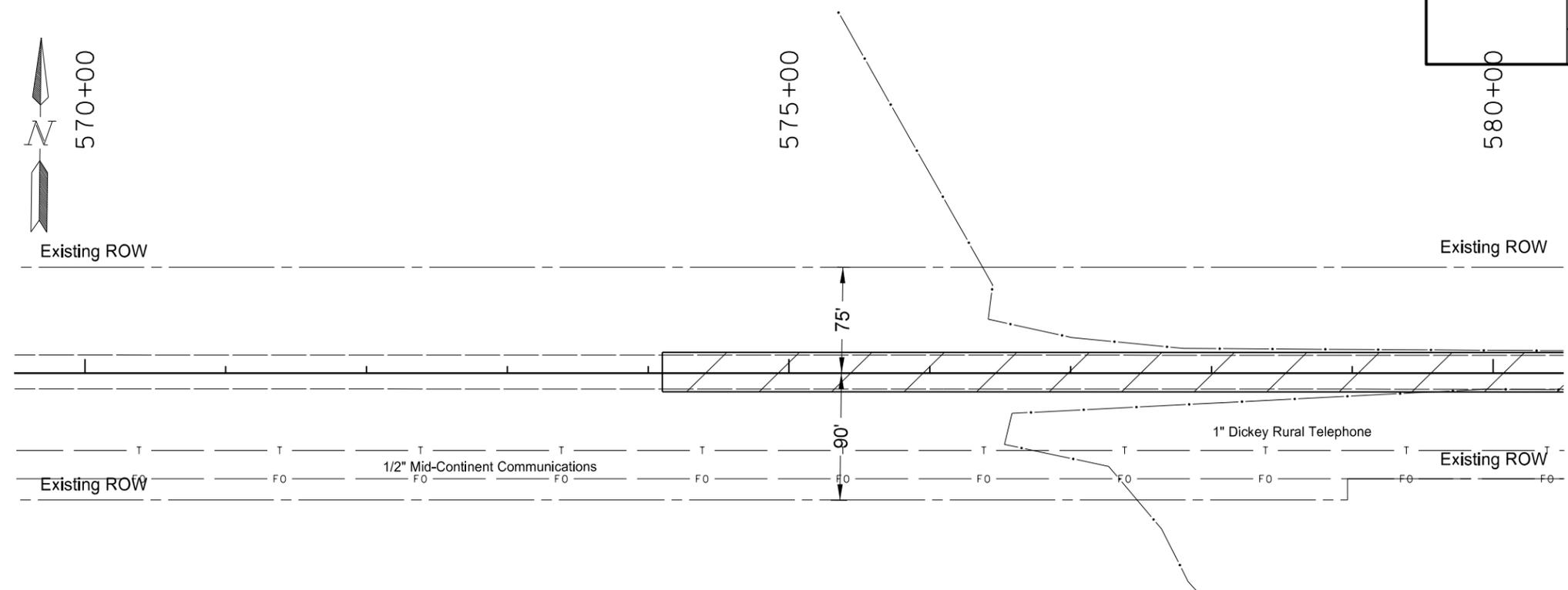
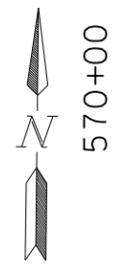
(A) Not paid for separately, to be included in the price bid for Pipe Conduit.

(B) Pipe is located in the same trench as the pipe above, therefore fabric is calculated for one location.

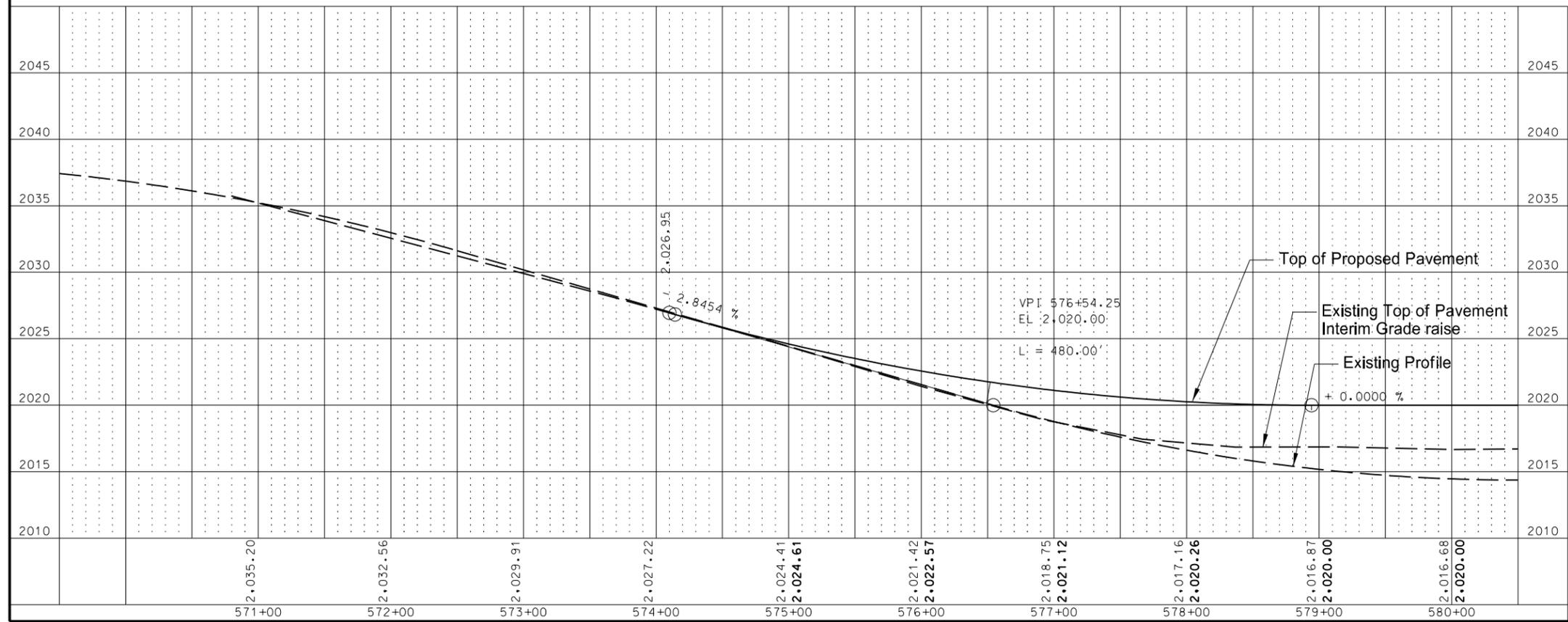
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Allowable Pipe List

 Grade Raise
 1 1/2 Miles West of Ashley



Note: Underground utilities shown on this page are approximate. Verify location with utility company before construction.

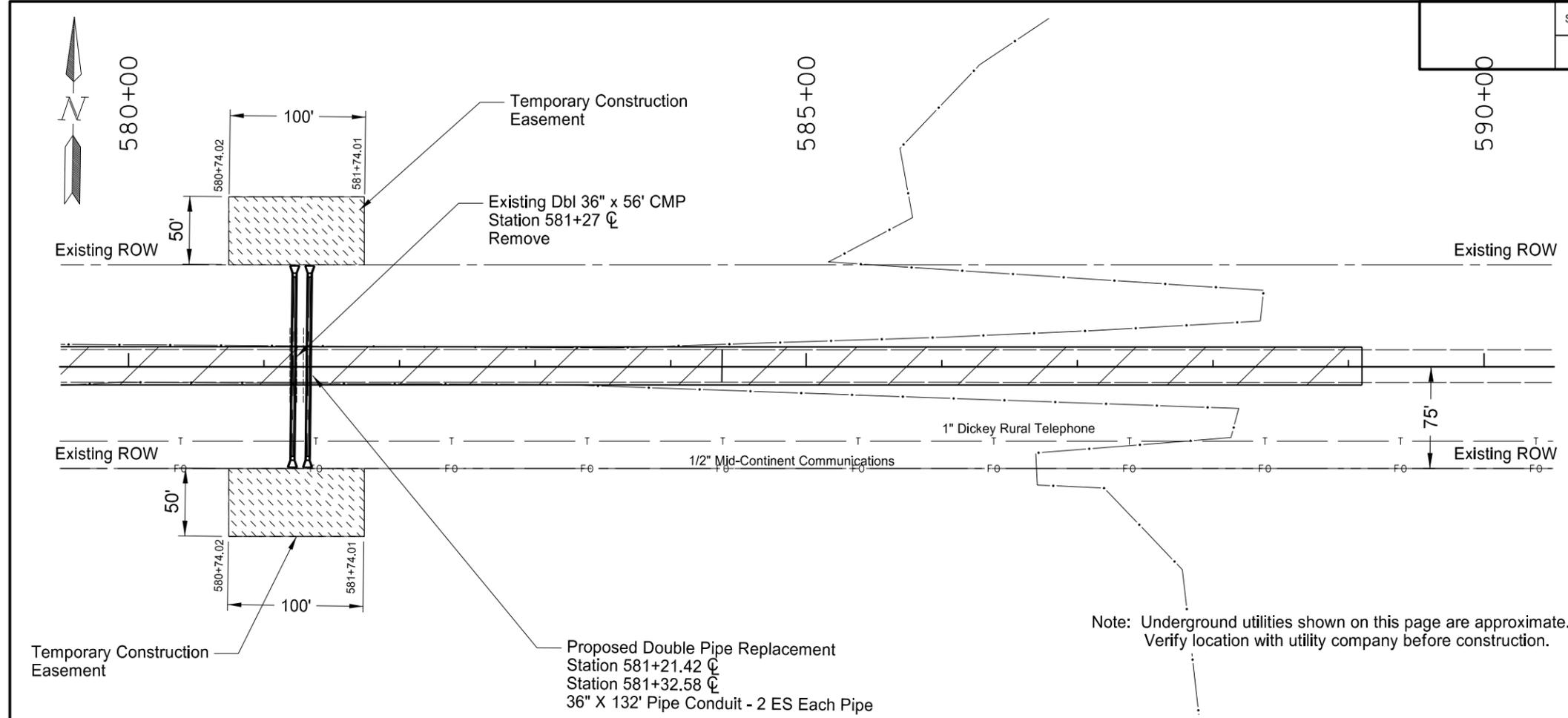


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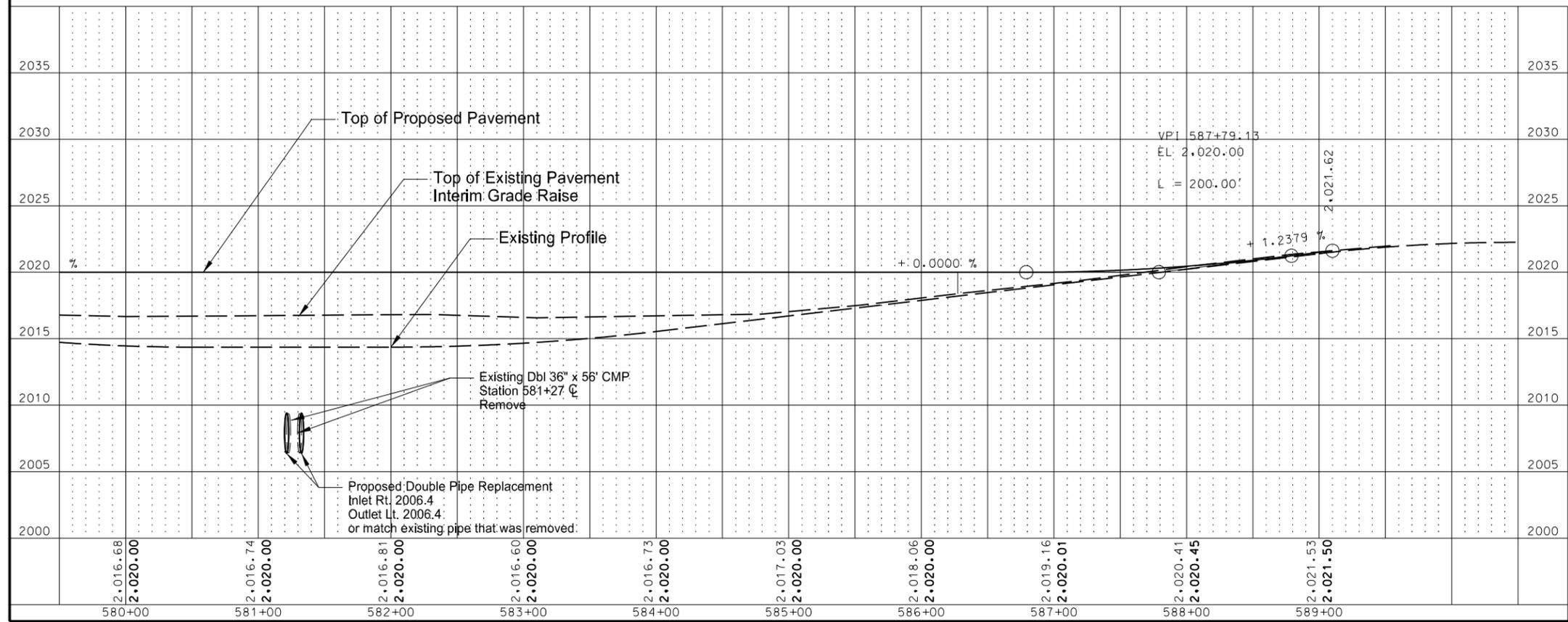
Plan and Profile
Grade Raise
1 1/2 Miles West of Ashley

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)018	60	2

Removal of Pipe All Types and Sizes	
☉ Station 581+27 Double 36" CSP	112 LF
Pipe Conduit 36In	
☉ Station 581+21.42	138 LF
☉ Station 581+32.58	138 LF



Note: Underground utilities shown on this page are approximate. Verify location with utility company before construction.

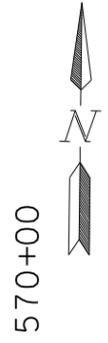


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Plan and Profile
Grade Raise
1 1/2 Miles West of Ashley

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	75	1

Section 35
T 130 N
R 70 W



570+00

Begin Seeding
Sta 574+10

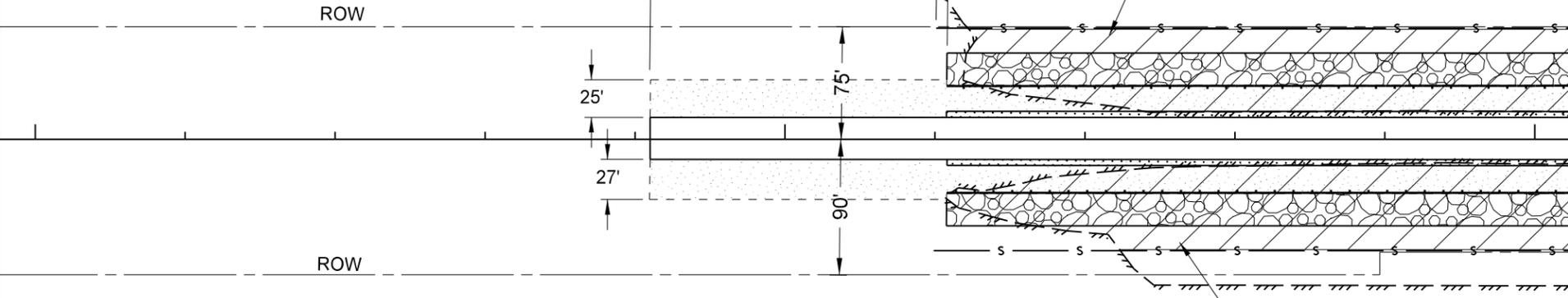
575+00

Begin Silt Curtain
Sta 576+00
Begin Riprap
Begin 12" Fiber roll
Sta 576+07

580+00

Wetland 1A
Permanent Impacts
Sta 576+23 to Sta 580+00
Area = 0.45 Acre

Wetland 1B
Permanent Impacts
Sta 576+09 to Sta 580+00
Area = 0.43 Acre



Topsoil	
Sta 574+10 Lt to 576+07 Lt	62 CY
Sta 574+10 Rt to 576+07 Rt	62 CY
Topsoil - Imported	
Sta 576+07 Lt to 580+00 Lt	81 CY
Sta 576+07 Rt to 580+00 Rt	81 CY
Riprap - Loose Rock	
Sta 576+07 Lt to 580+00 Lt (31.2 SF)	772 Ton
Sta 576+07 Rt to 580+00 Rt (31.2 SF)	772 Ton
Flotation Silt Curtain	
Sta 576+00 Lt to 580+00 Lt	400 LF
Sta 576+00 Rt to 580+00 Rt	400 LF
Fiber Rolls 12 In	
Sta 576+07 Lt to 580+00 Lt	393 LF
Sta 576+07 Rt to 580+00 Rt	393 LF
Seeding - Type B Cl II	
Sta 574+10 Lt to 580+00 Lt	0.3 Acre
Sta 574+10 Rt to 580+00 Rt	0.3 Acre
Seeding - Type B Cl IV	
Sta 574+10 Lt to 580+00 Lt	0.3 Acre
Sta 574+10 Rt to 580+00 Rt	0.3 Acre
Mulching	
Sta 574+10 Lt to 580+00 Lt	0.3 Acre
Sta 574+10 Rt to 580+00 Rt	0.3 Acre
Geotextile Fabric - Type RR	
Sta 576+07 Lt to 580+00 Lt	1703 SY
Sta 576+07 Rt to 580+00 Rt	1703 SY

Legend

	RIPRAP-LOOSE ROCK		FLOTATION SILT CURTAIN
	SEEDING-TYPE B CL II SEEDING-TYPE B CL IV MULCHING		FIBER ROLLS 12"
	PERMANENT WETLAND IMPACTS		DELINIATED WETLAND
			SURFACE GRAVEL

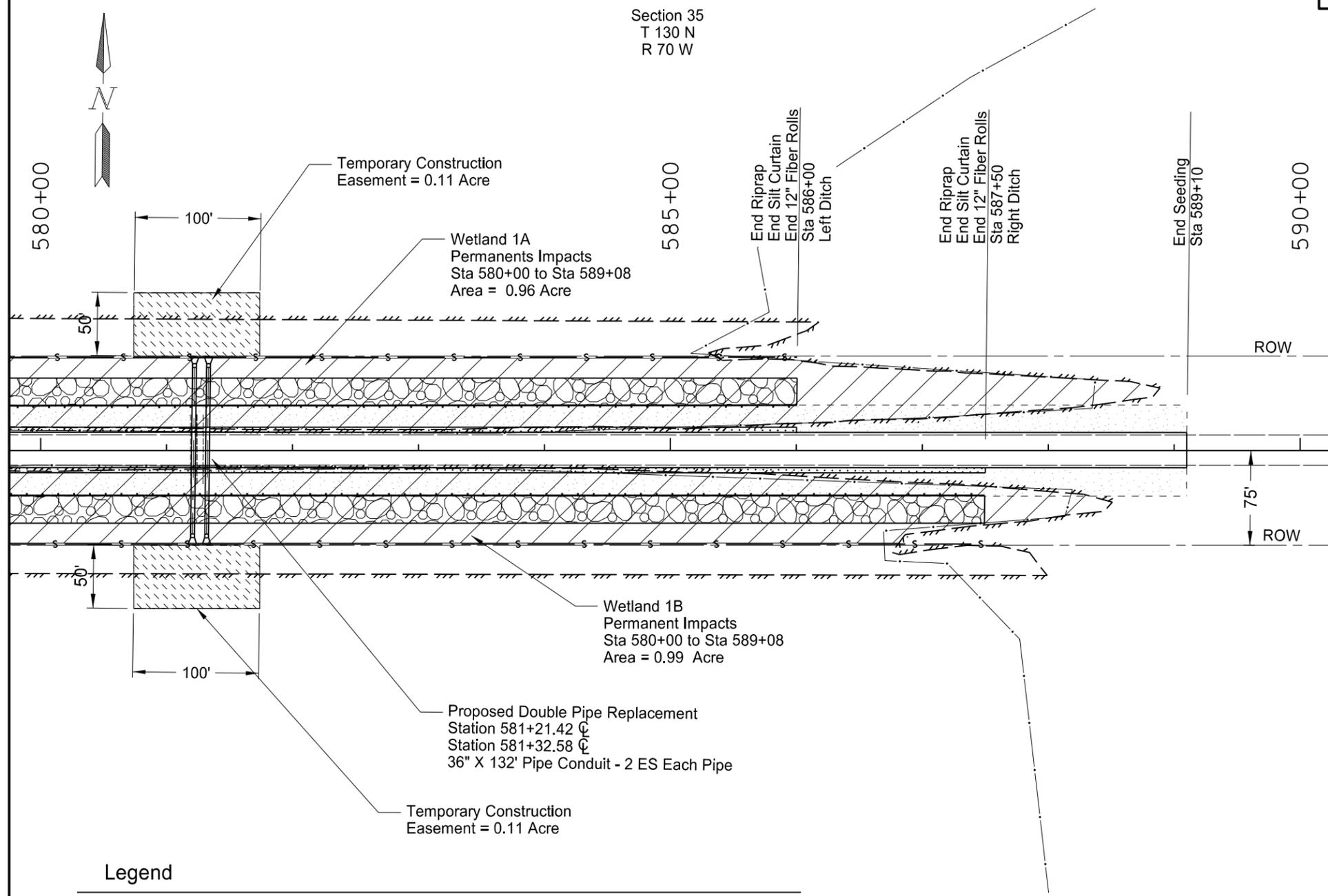
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Wetland, Erosion Control and Seeding

Grade Raise
1 1/2 Miles West of Ashley

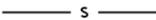
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	75	2

Section 35
T 130 N
R 70 W



Topsoil	
Sta 586+00 Lt to 589+10 Lt	97 CY
Sta 587+50 Rt to 589+10 Rt	50 CY
Topsoil - Imported	
Sta 580+00 Lt to 589+10 Lt	186 CY
Sta 580+00 Rt to 589+10 Rt	186 CY
Riprap - Loose Rock	
Sta 580+00 Lt to 586+00 Lt (31.2 SF)	1179 Ton
Sta 580+00 Rt to 587+50 Rt (31.2 SF)	1473 Ton
Flotation Silt Curtain	
Sta 580+00 Lt to 586+00 Lt	600 LF
Sta 580+00 Rt to 587+50 Rt	750 LF
Fiber Rolls 12 In	
Sta 580+00 Lt to 586+00 Lt	600 LF
Sta 580+00 Rt to 587+50 Rt	750 LF
Seeding - Type B Cl II	
Sta 580+00 Lt to 589+10 Lt	0.4 Acre
Sta 580+00 Rt to 589+10 Rt	0.4 Acre
Seeding - Type B Cl IV	
Sta 580+00 Lt to 589+10 Lt	0.4 Acre
Sta 580+00 Rt to 589+10 Rt	0.4 Acre
Mulching	
Sta 580+00 Lt to 589+10 Lt	0.4 Acre
Sta 580+00 Rt to 589+10 Rt	0.4 Acre
Geotextile Fabric - Type RR	
Sta 580+00 Lt to 586+00 Lt	2600 SY
Sta 580+00 Rt to 587+50 Rt	3250 SY

Legend

	RIPRAP-LOOSE ROCK		FLOTATION SILT CURTAIN
	SEEDING-TYPE B CL II SEEDING-TYPE B CL IV MULCHING		FIBER ROLLS 12"
	PERMANENT WETLAND IMPACTS		DELINIATED WETLAND
	TEMPORARY WETLAND IMPACTS		SURFACE GRAVEL

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Wetland, Erosion Control and Seeding

Grade Raise
1 1/2 Miles West of Ashley

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	175	1

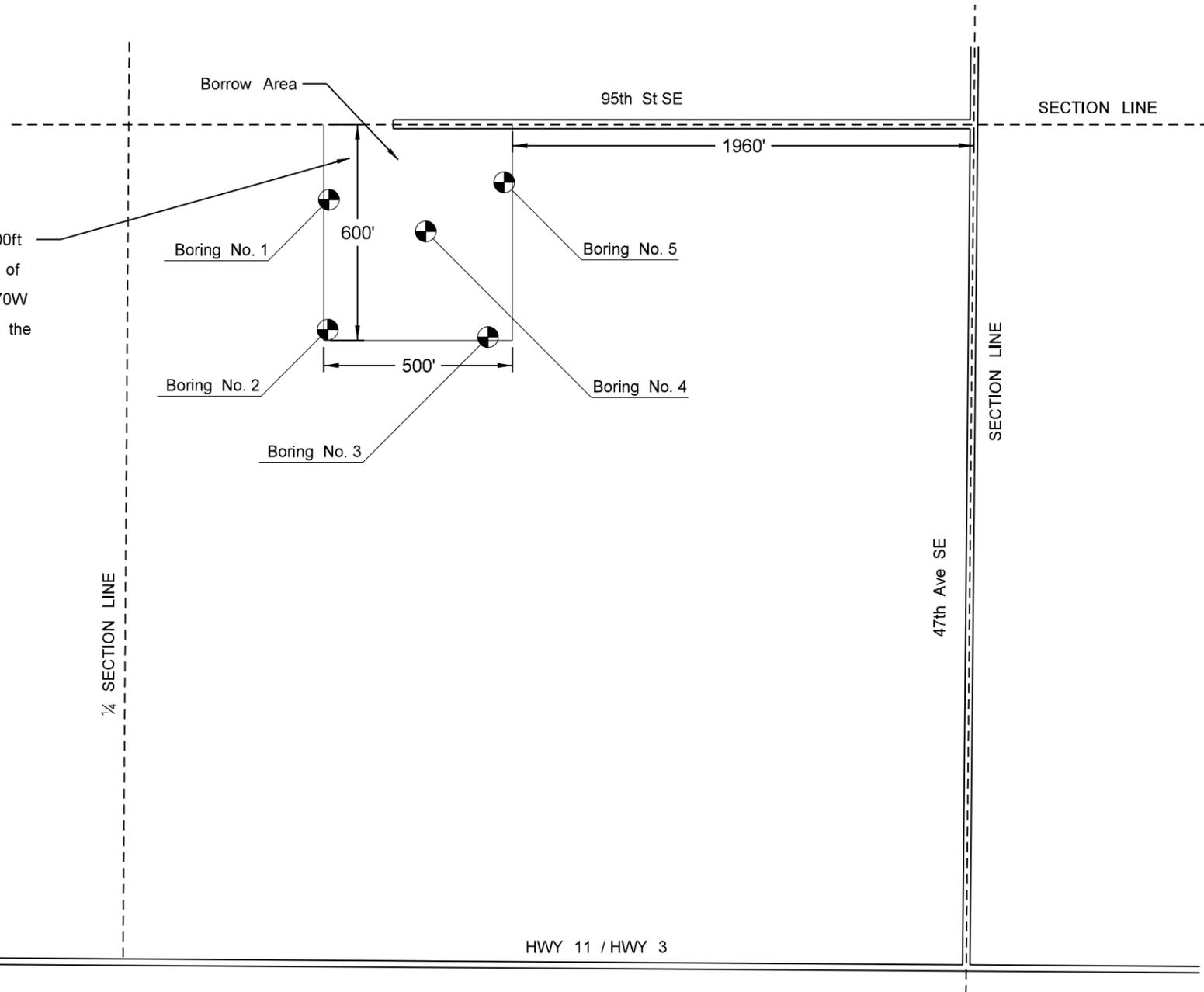
TEST HOLE PLAT

Location: Part of the NE¹/₄-35-130N-70W County: MCINTOSH

Ownership: Ronald Geisler



The north 600ft of the west 500ft of the east 1960ft of the NE¹/₄ of section 35, TWP 130N Rge 70W excepting all that portion within the Hwy Right of Way



BORROW AREA

BORING LOCATION		
BORING NO.	NORTHING	EASTING
1	5098693.848	468459.958
2	5098570.408	468458.428
3	5098563.340	468611.779
4	5098664.069	468552.472
5	5098710.374	468627.615

NOTE: THESE COORDINATES ARE ACCORDING TO THE NAD_1983_UTM_ZONE_14N COORDINATE SYSTEM

BORROW AREA INFORMATION

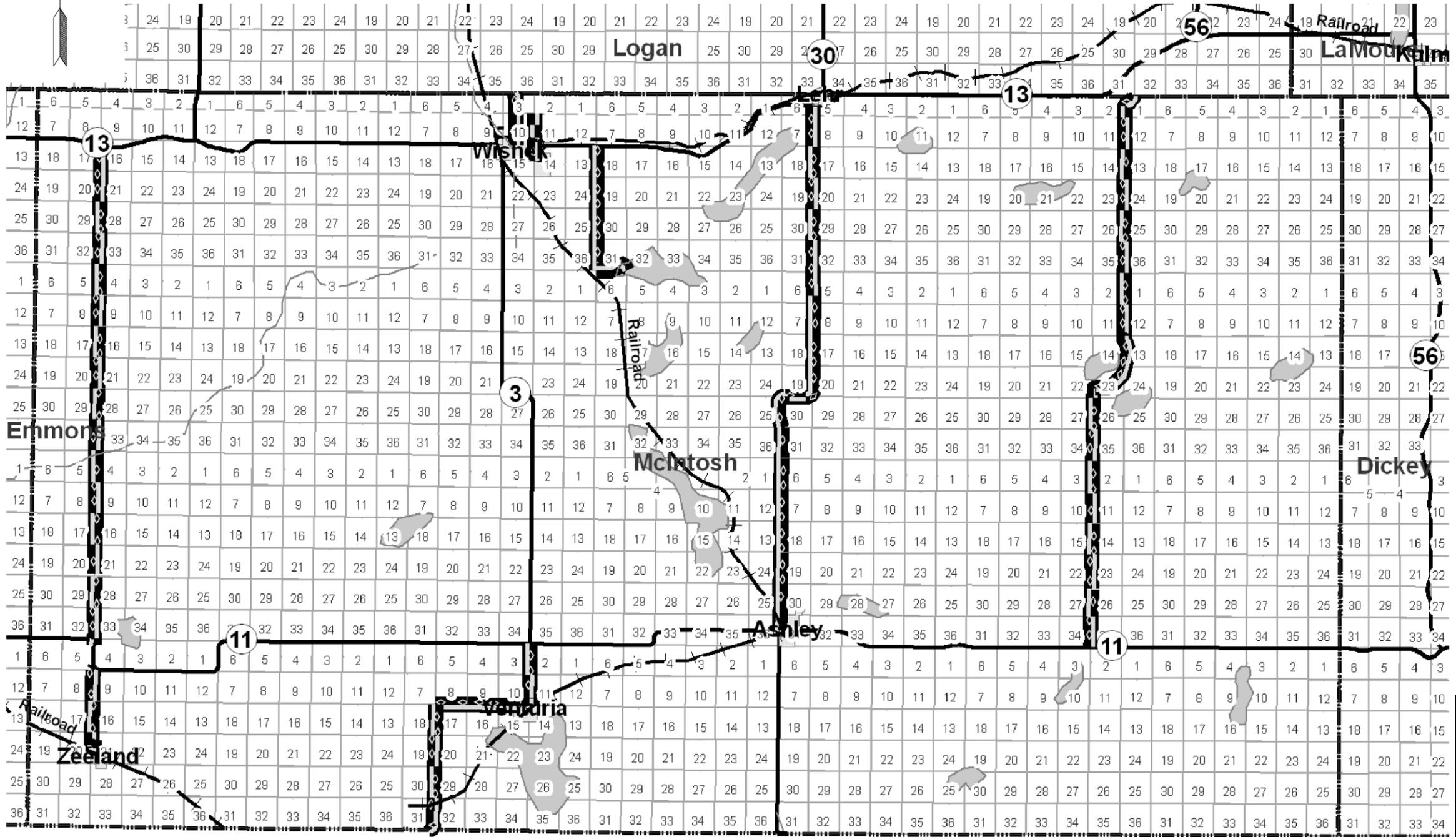
STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	MER-2-003(018)008	175	2

BORROW AREA

BORING NO.	1	2	3	4	5
SAMPLE NO.	1376	1377	1378	1379	1380
SAMPLE DEPTH	0.8-9.0	1.0-10.0	2.5-10.0	1.0-6.0	6.0-10.0
TEXTURAL CLASSIFICATION	BRN SNDY LM	BRN/BLK CLY	BRN/BLK SNDY LM	BRN/BLK SNDY LM	BRN CLY
AASHTO CLASSIFICATION	A-2-4(0)	A-2-6(0)	A-2-4(0)	A-4(0)	A-7-6(24)
MOISTURE RANGE (%)	9.7-22.9	6.8-19.4	5.8-15.8	8.4-17.8	20.0-27.9
AVERAGE MOISTURE (%)	13.4	13.3	8.6	13.1	25.7
OPTIMUM MOISTURE (%)	10.4	11.8	10.1	10.8	14.8
MAX. DRY DENSITY (pcf)	125.3	120.4	124.5	122.7	117.1
% PASSING NO. 200	27	19	21	44	93

MOISTURE % AT DEPTH						
BORING		1	2	3	4	5
DEPTH (FT)	1	13.1	19.4	21.2	13.6	12.8
	2	13.8	12.8	18.5	9.3	9.6
	3	12.7	14.5	10.0	8.4	7.6
	4	13.3	15.2	6.3	14.6	10.1
	5	11.3	13.2	6.8	17.8	11.3
	6	11.7	13.1	10.0	14.5	22.2
	7	9.7	6.8	5.8	20.0	24.8
	8	12.3	9.2	15.8	27.8	24.6
	9	22.9	16.7	6.4	27.1	26.9
	10	24.9	11.2	7.9	27.9	28.4

BORROW AREA INFORMATION



 Indicates Haul Road Restriction

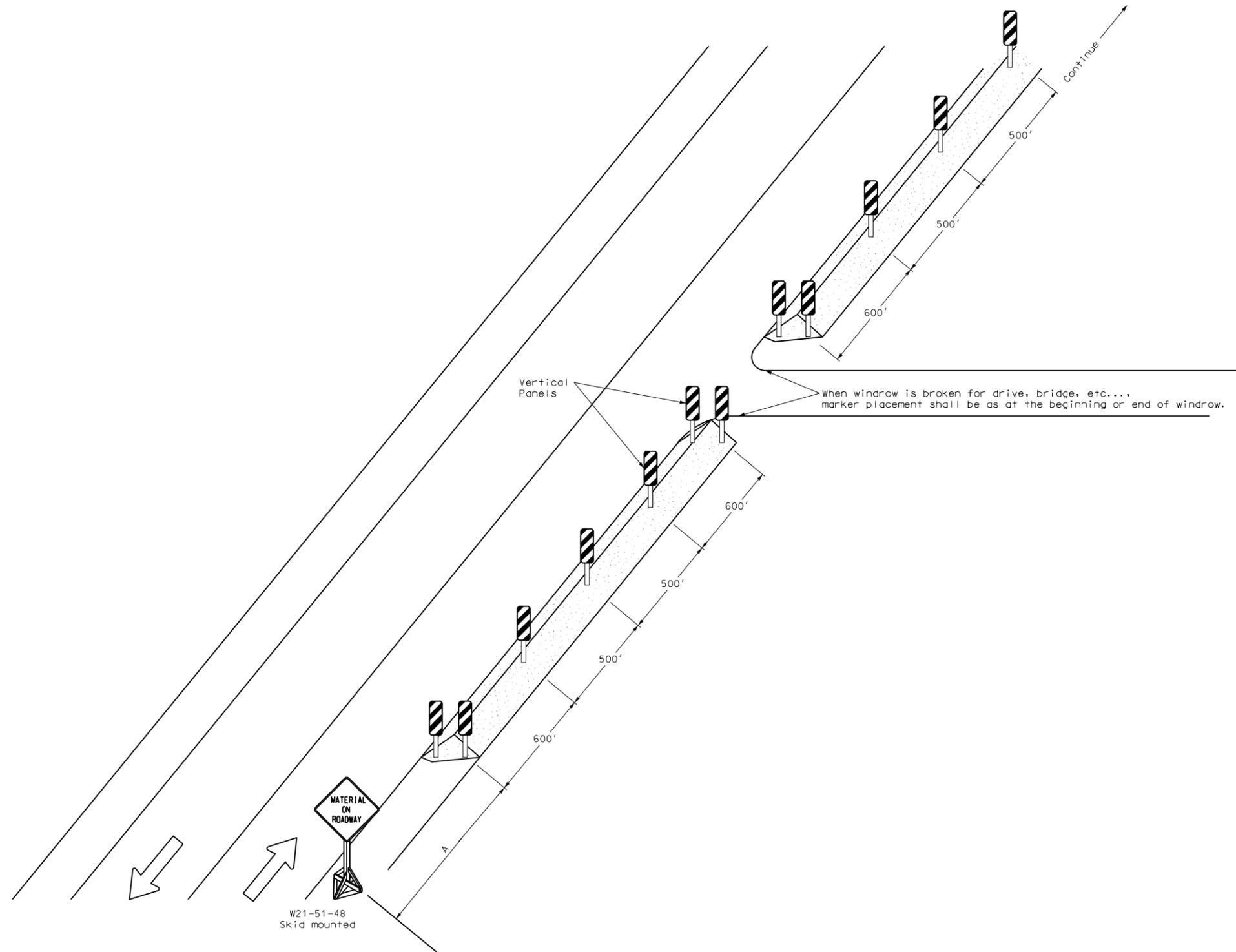
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Haul Road Restrictions
 McIntosh County
 Grade Raise
 1 1/2 Miles West of Ashley

WINDROW MARKING

D-704-30

Notes
 The contractor has the option of using portable sign supports in lieu of post mounted sign as shown on the standard drawings as specified in section 704.03 C.



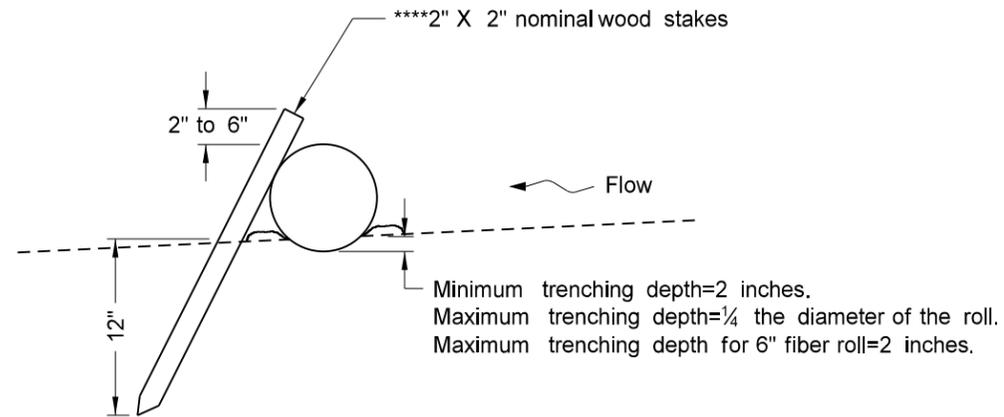
Road Type	ADVANCE WARNING SIGN SPACING		
	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
05-01-92	General revisions
10-01-99	General revisions
12-01-04	PE stamp added
06-29-05	Rev. Adv. Warning Table

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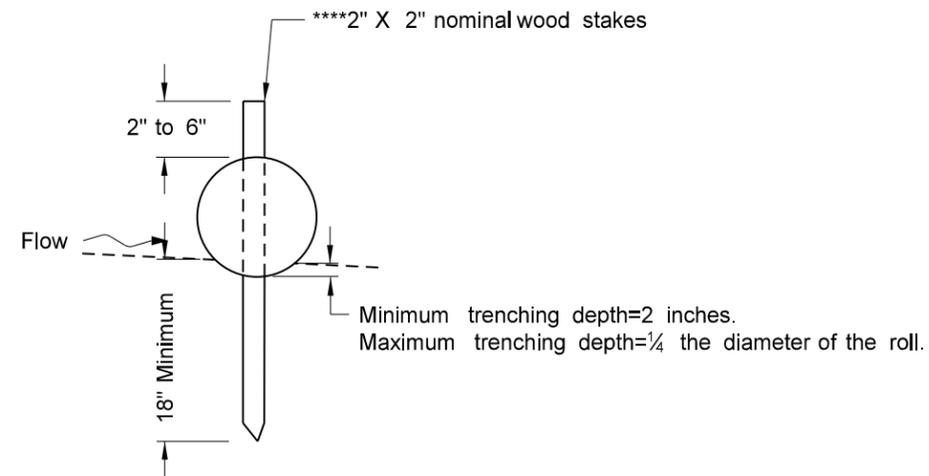
EROSION CONTROL
FIBER ROLL STAKING DETAILS

D-708-7



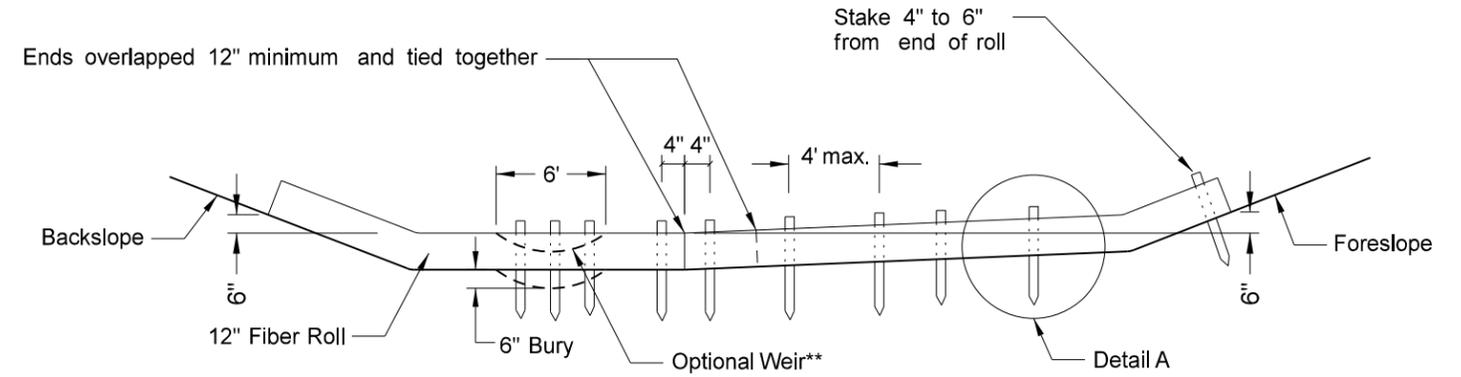
***DETAIL A**
6" or 12" Fiber Roll Staking Detail

*Manufacturer may require stake through center of fiber roll.
****Stakes spaced every 3-4 feet.



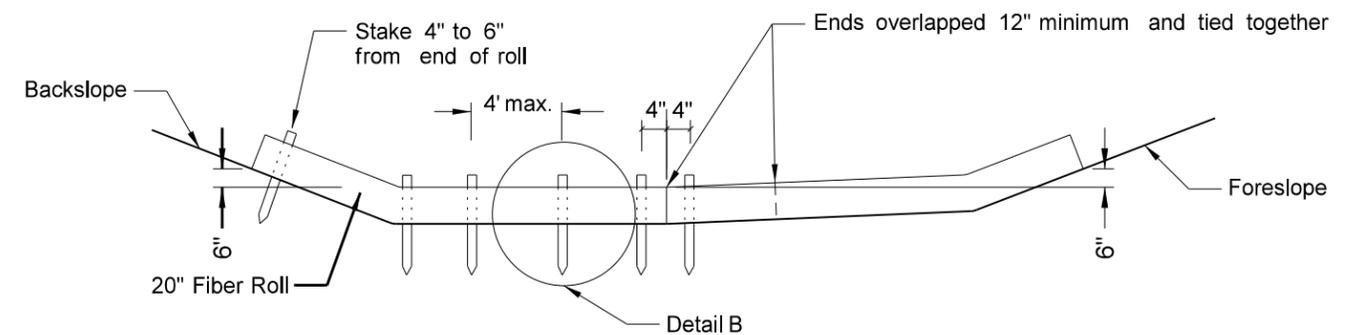
DETAIL B
20" Fiber Roll Staking Detail

NOTE: Runoff must not be allowed to run under or around roll.



**Optional Weir. Use in flat areas, such as the Red River Valley, where there is potential for water to back up on adjacent property. Lower fiber roll enough to prevent water from backing up on adjacent property.

12 INCH FIBER ROLL - DITCH BOTTOM



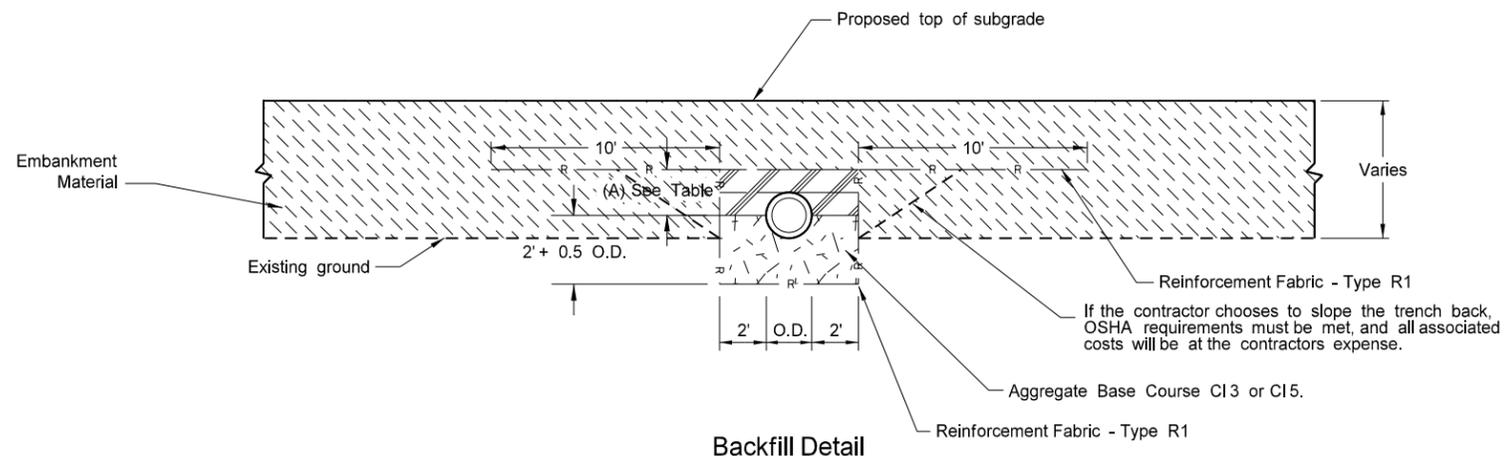
*****20 INCH FIBER ROLL - DITCH BOTTOM**

***Do not use 20-inch fiber rolls in flat areas where there is potential for water to back up on adjacent property.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
11-18-10	
REVISIONS	
DATE	CHANGE

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TRANSVERSE CENTERLINE FILL FOR NEW PIPE
LAID ON EXISTING GROUND IN EMBANKMENT AREAS



Included in Pipe Pay Item

- 1) Pipe
- 2) Trench excavation
- 3) Disposal of unsuitable excavated material and placement of suitable excavated material on inslope.
- 4) Aggregate Base Course CI3 or CI5

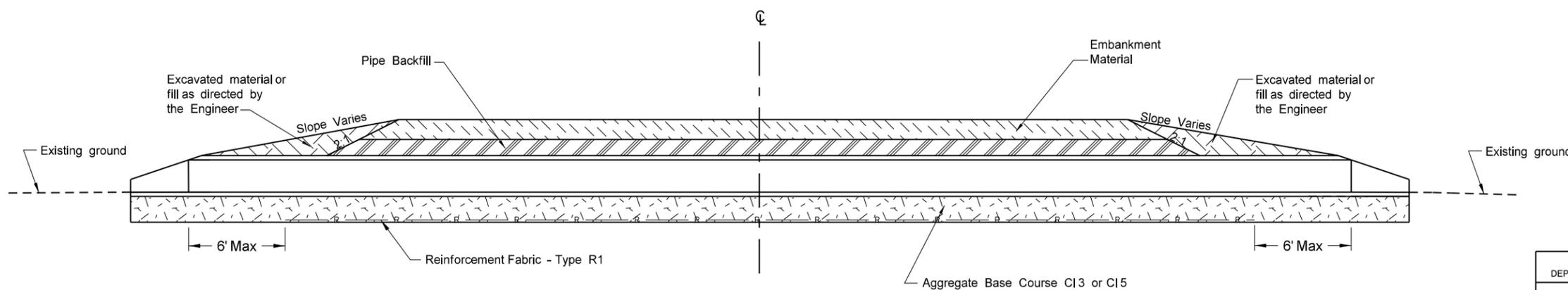
Pay Items

- 1) Pipe
- 2) Reinforcement Fabric - Type R1
- 3) Surfacing removal if required

NOTES:

1. This drawing corresponds to new/extended mainline and paved intersection roadway pipes only (including ramps). It does not include pipes in approaches.
2. Approved backfill shall meet the requirements of AASHTO M 145 for A-1, A-2 or A-3 soils.
3. Compaction requirements for all materials associated with the trench installation shall meet 90% of AASHTO T-180. Maximum thickness of any one lift shall not exceed 6 inches.

Backfill Requirements		
Pipe Material	Dimension (A)	Backfill
Concrete	0.5 O.D.	Approved Backfill (Note 2)
Metal	0.5 O.D. + 1'	CI3 or CI5

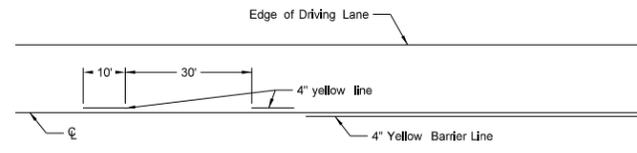


Cross Section View - Proposed Section

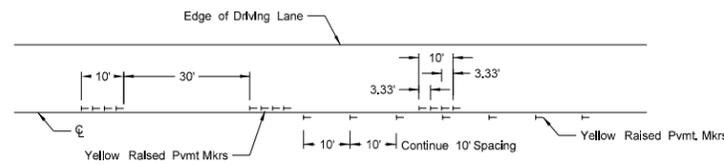
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-08-08	
REVISIONS	
DATE	CHANGE

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SHORT-TERM PAVEMENT MARKING

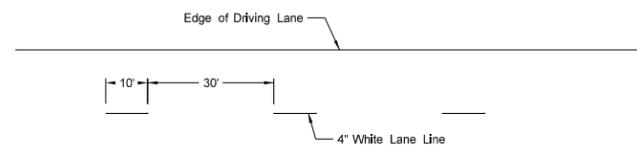


Painted or Tape Lines

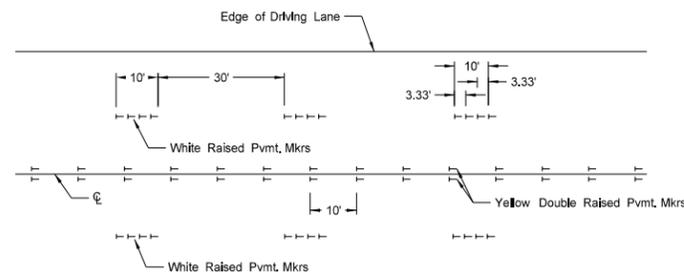


Raised Pavement Markers

TWO-LANE TWO-WAY ROADWAY

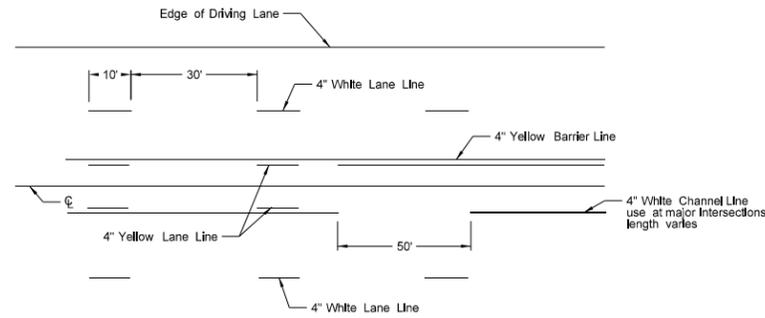


Painted or Tape Lines

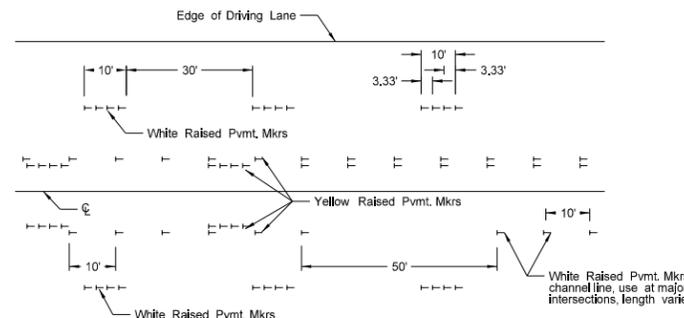


Raised Pavement Markers

FOUR LANE ROADWAY

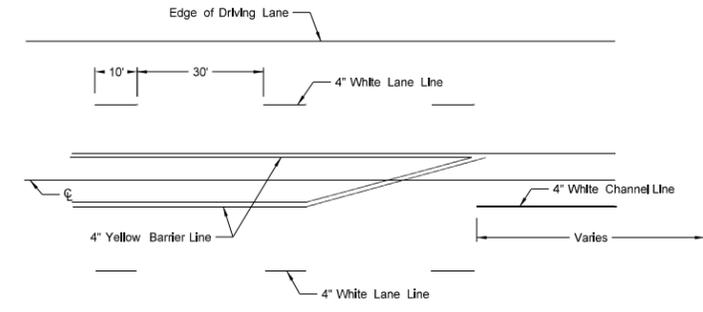


Painted or Tape Lines

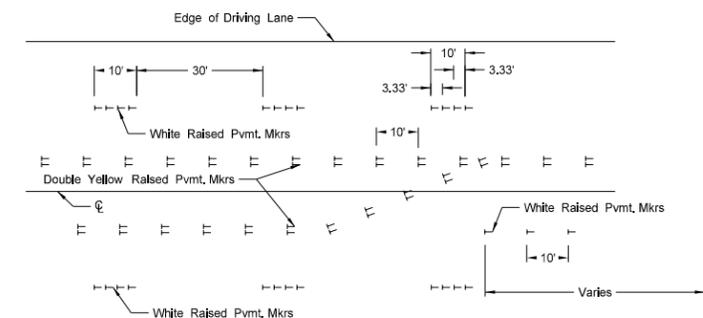


Raised Pavement Markers

FIVE LANE ROADWAY TWO WAY LEFT TURN



Painted or Tape Lines



Raised Pavement Markers

FIVE LANE ROADWAY WITH MARKED ISLANDS

NOTES:

- Two-lane two-way roadways shall have no passing zones placed as shown. No passing zone signs may be placed in lieu of short term no passing zone pavement markings. These signs will be allowed to remain in place for three days, at which time the short term no passing zone pavement marking shall be placed.
- Short term center line stripe (paint) on top lift shall be carefully placed with exact spacing so that the permanent stripe will match when applied.
- Raised markers and tape markings shall be removed after permanent pavement marking has been installed. Removed markings shall become the property of the contractor.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
12-1-10	
REVISIONS	
DATE	CHANGE

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