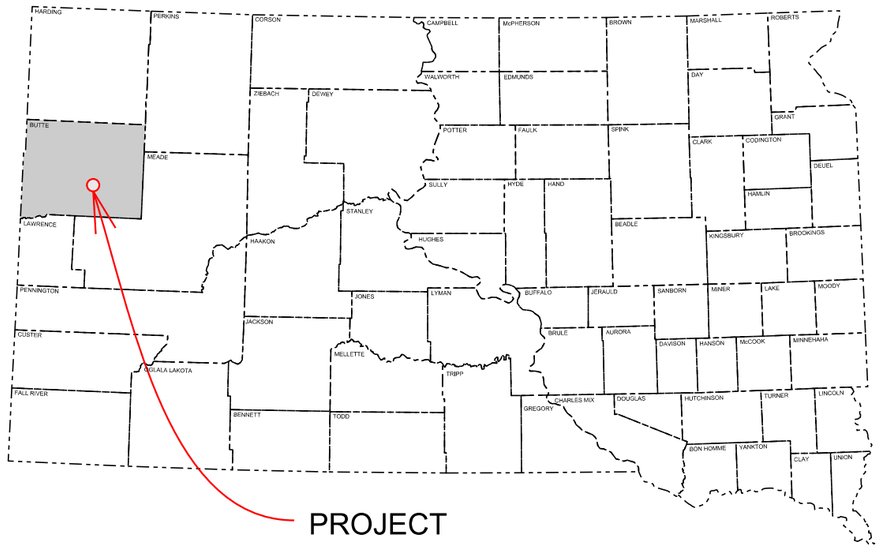


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

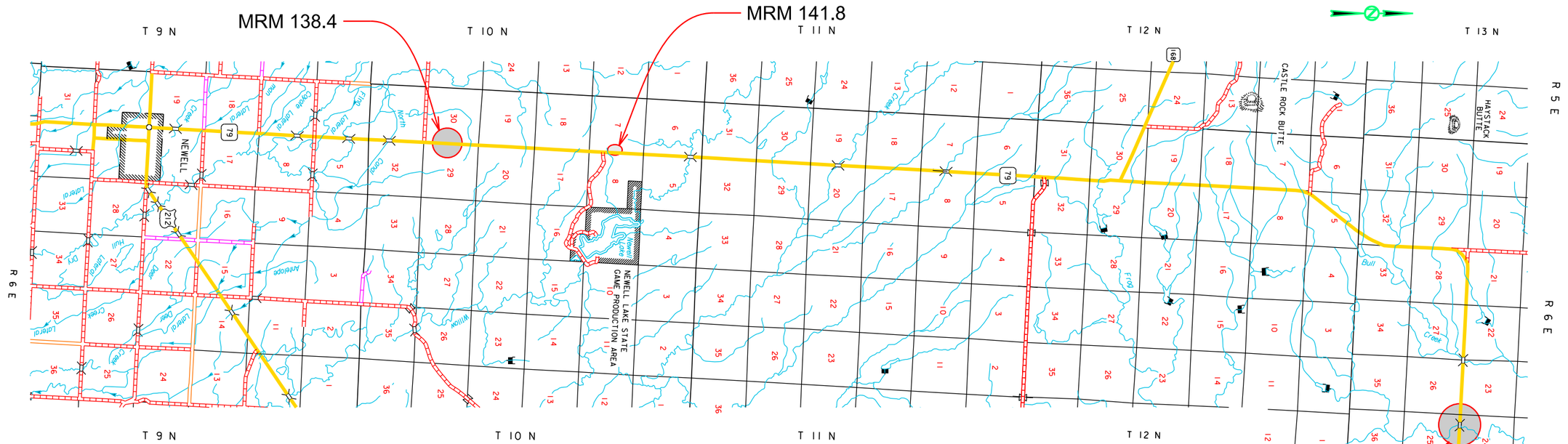
PROJECT 079-471
SD HIGHWAY 79
BUTTE COUNTY

Slide & Erosion Repair
PCN i5qf

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	1	41

Plotting Date: 08/15/2019

INDEX OF SHEETS



DESIGN DESIGNATION

AADT (2018)	738
AADT (2038)	831
DHV	130
D	50 %
DHV T%	10 %
AADT T%	22 %
V	65 mph

STORM WATER PERMIT

Major Receiving
Body of Water: Frog Creek
Area Disturbed: 2.9 ac
Total Project Area: 3.3 ac
Approx. Begin Lat,Long:

Plot Scale - 1:200
Plotted From - trrc11610
File - ...\SD79 Slide Repair\title.dgn

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	20	Ft
110E0510	Remove Pipe End Section	2	Each
110E1010	Remove Asphalt Concrete Pavement	934.0	SqYd
110E7802	Remove Fence for Reset	525	Ft
120E0010	Unclassified Excavation	8,194	CuYd
120E0300	Borrow Unclassified Excavation	9,195	CuYd
120E0600	Contractor Furnished Borrow Excavation	308	CuYd
120E2000	Undercutting	854	CuYd
120E4000	Grading	1.0	Sta
120E6100	Water for Embankment	265.6	MGal
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	666.0	Ton
320E1200	Asphalt Concrete Composite	236.0	Ton
430E0700	Precast Concrete Headwall for Drain	1	Each
450E4778	30" CMP 14 Gauge, Furnish	64	Ft
450E4780	30" CMP, Install	64	Ft
450E5219	30" CMP Flared End, Furnish	2	Each
450E5220	30" CMP Flared End, Install	2	Each
451E0514	4" PVC Pipe	215	Ft
620E0520	Type 2 Temporary Fence	875	Ft
620E1020	2 Post Panel	4	Each
620E4100	Reset Fence	525	Ft
634E0110	Traffic Control Signs	465.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	2	Each
634E0310	Temporary Flexible Vertical Markers (Tabs)	7,400	Ft
634E0600	4" Temporary Pavement Marking Tape Type I	432	Ft
634E0900	Portable Temporary Traffic Control Signal	2	Unit
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	855	Ft
680E2000	Concrete Headwall for Underdrain	3	Each
680E2500	Porous Backfill	362.0	Ton
720E1010	PVC Coated Bank and Channel Protection Gabion	6.0	CuYd
730E0210	Type F Permanent Seed Mixture	81	Lb
731E0200	Fertilizing	2.40	Ton
732E0100	Mulching	6.1	Ton
734E0154	12" Diameter Erosion Control Wattle	3,210	Ft
831E0110	Type B Drainage Fabric	19	SqYd
831E0300	Reinforcement Fabric (MSE)	420	SqYd

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 Section A 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. 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: http://www.sddot.com/resources/Manuals/EnvironProcManual.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 Office at 605-773-3098 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

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.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species waters within South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment to prevent and control the introduction and spread of invasive species into the project vicinity.

COMMITMENT E: STORM WATER

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

Action Taken/Required:

The DENR General Permit for Storm Water 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 DENR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DENR 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 DENR 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 DENR.

The form can be found at:
https://denr.sd.gov/des/sw/eforms/CGPAppendixCCA2018Fillable.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.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The Storm Water, Erosion, and Sediment Control Inspection Report Form DOT 298, will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly and sediment is not tracked off of the site.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT:
http://www.sddot.com/business/environmental/stormwater/Default.aspx
DENR: http://denr.sd.gov/des/sw/stormwater.aspx
EPA: https://www.epa.gov/npdes

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 Environment 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:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench completely 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".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

State Historical 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 of 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 will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office 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.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste.

Temporary fence and/or permanent fence will be placed ahead of the grading operation unless otherwise directed by the Engineer.

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.

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

SHRINKAGE FACTOR: Embankment +25%

CLASSIFICATION OF EXCAVATION

All materials encountered during the construction of this project, regardless of their nature or the manner in which they are excavated, will be considered Unclassified Excavation.

LANDSLIDE DEBRIS EXCAVATION MRM 138.4

The temporary Landslide Debris Excavation slope shall be 2:1. Warp into and out of full Landslide Debris Excavation. Landslide Debris Excavation will be required at each site as shown on the cross sections. It is anticipated that most of the excavated Landslide Debris can be used in the construction of embankment. The Landslide Debris Excavation limits shall not exceed those shown on the cross sections unless directed by the Engineer. Temporary 2:1 backslopes are required to excavate the Landslide Debris and reconstruct the inslopes. The temporary slopes will be unstable over the long-term. However, the slopes should remain globally stable over the short-term during construction if measures are taken to divert runoff away from the slopes and construction activities are sequenced to minimize the amount of time the temporary backslopes are left exposed and unsupported. Regular monitoring of temporary slopes is required during construction. If temporary slopes become unstable, excavation shall cease, and the slope shall be evaluated as directed by the Engineer. Landslide Debris Excavation shall be paid for as Unclassified Excavation.

UNSTABLE MATERIAL EXCAVATION MRM 138.4

Prior to embankment construction Unstable Excavation will be required to excavate displaced or weak compressible soils and other organic materials. A nominal 3 ft. depth of compressible material is anticipated to be removed from the embankment footprint prior to construction of the embankment. The depth of unstable excavation may be adjusted by the Engineer to ensure a solid foundation free of organic, soft, unstable material is prepared. Unstable and/or highly organic material shall be stockpiled for use as topsoil or wasted at a site approved by the Engineer.

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 1398 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for “Unclassified Excavation”. If there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

UNDERDRAINS MRM 138.4

Several underdrain systems will be required to capture water from local seeps and improve subgrade and embankment foundation conditions. Underdrains shall be installed as per the following:

Station 997+50± to Station 999+50±, Rt. – Ditch Drain

Install an underdrain in the left inslope from Station 997+50±, 35’ Lt. to Station 999+00±, 40’ Lt. to Station 999+50±, 50’ Lt. The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 5-foot-deep trench backfilled with 3 feet of Porous Backfill and 2 feet of compacted soil. The underdrain shall outlet through 50 feet of 4-inch PVC pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe shall daylight at an Outlet Headwall at approximately Station 999+50±, 50’ Lt. as directed by the Engineer.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	150 feet
4-inch Schedule 40 PVC Pipe	50 feet
Porous Backfill	68 tons
Headwalls (See Standard Plate No. 430.50)	1 each

Station 997+50± to Station 998+00±, Lt. – Ditch Drain

Install an underdrain in the right ditch from Station 997+50±, 40’ Rt. to Station 997+50±, 90’ Rt. to Station 998+00±, 100’ Rt. The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 5-foot-deep trench backfilled with 3 feet of Porous Backfill and 2 feet of compacted soil. The underdrain shall outlet through 50 feet of 4-inch PVC pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe shall daylight at an Outlet Headwall at approximately Station 998+00±, 100’ Rt. as directed by the Engineer.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	50 feet
4-inch Schedule 40 PVC Pipe	50 feet
Porous Backfill	21 tons
Headwalls (See Standard Plate No. 680.01)	1 each

Station 999+00± to Station 1003+00±, Rt. – Toe Drain

An underdrain shall be installed at the toe of the embankment slope from Station 999+00±, 50’ Rt. to Station 1003+00±, 160’ Rt. Excavate all landslide debris and unstable material and construct the embankment to elevation 2965 prior to underdrain installation.

The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain shall outlet through 65 feet of 4-inch PVC pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe shall daylight at an Outlet Headwall at approximately Station 1003+00±, 160’ Rt. as directed by the Engineer.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	405 feet
4-inch Schedule 40 PVC Pipe	65 feet
Porous Backfill	168 tons
Headwalls (See Standard Plate No. 680.01)	1 each

Station 1000+50± to Station 1003+50±, Lt. – Toe Drain

An underdrain shall be installed at the toe of the embankment slope from Station 1000+50±, 55 Lt. to Station 1003+50±, 80 Lt. Excavate all landslide debris and unstable material and construct the embankment to elevation 2975 prior to underdrain installation.

The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot-wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain shall outlet through 50 feet of 4-inch PVC Pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe shall daylight at an Outlet Headwall at approximately Station 1003+50±, 80’ Lt. as directed by the Engineer. The Outlet Headwall shall be installed adjacent to the mainline pipe at the toe of the proposed inslope.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	250 feet
4-inch Schedule 40 PVC Pipe	50 feet
Porous Backfill	105 tons
Headwalls (See Standard Plate No. 680.01)	1 each

UNDERDRAINS MRM 138.4 (Cont.)

Underdrain Construction

Each underdrain trench shall be graded to maintain a minimum of .01ft/ft. or 1% drop from beginning to outlet. Each 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.

The 4" Dia. PVC Outlet Pipe shall be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections shall be connected using a PVC Solvent Cement conforming to ASTM 2564. All labor, tools, equipment, and incidentals necessary for the installation of the of the PVC Outlet Pipe will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

The Contractor shall ensure all segments of drainage tubing and outlet pipe are positively connected utilizing couplers, tees, gaskets, fittings or other approved methods. The contractor shall take precautions to assure each connection remains soil tight during installation of the underdrain system.

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

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

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

The total project underdrain quantities are summarized below:

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Drainage Tubing	855 feet
4-inch Schedule 40 PVC Pipe	215 feet
Porous Backfill	362 tons
Headwalls	
(Standard Plate No. 680.01)	3 each
(Standard Plate No. 430.50)	1 each

Embankment Construction

Embankment construction shall not begin until all unstable compressible materials have been excavated from the embankment footprint to the satisfaction of the Engineer. A suitable embankment foundation consists of compacted soil which does not pump, rut, or otherwise displace when traveled over with construction equipment. Each embankment shall be benched into the existing slopes in accordance with Section 120.3.B.2 of the Standard Specifications for Roads and Bridges.

Compaction of the embankment will be according to the Specified Density Method. Moisture testing shall remain as per Minimum Sample Testing Requirements. Minimum density testing requirements shall be one test per zone per site. Individual embankment test sites are as follows:

Station 999+00 to Station 1004+68, Rt. – Mainline embankment
Station 1000+50 to Station 1004+00, Lt. – Mainline embankment

TABLE OF UNCLASSIFIED EXCAVATION MRM 138.4

Unstable Exc=	1398	Emb=	7336	
Debris Exc=	5690	25.00%	1834	9170
Borrow=	9195	Debris Exc=	5690	
Total=	16283	25.00%	1423	7113
			Total=	16283

PIPE QUANTITIES MRM 138.4

		Corrugated Metal			
		Circular	Circular Flared End	Remove Pipe End Section	Remove Pipe
		30" 14 Ga	30"		
Station	Offset (L/R)	Ft	Each	Each	Ft
1003+53	L	32	1	1	20
1003+53	R	32	1	1	
	Total:	64	2	2	20

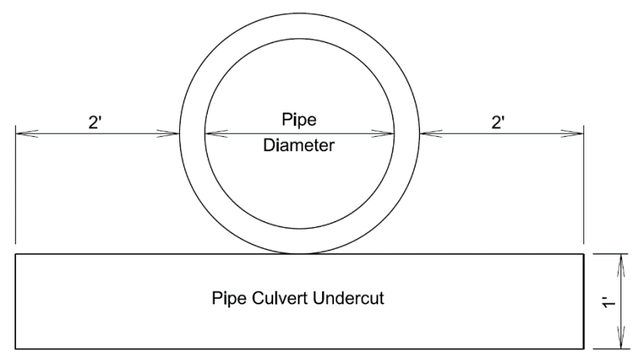
PIPE CULVERT UNDERCUT MRM 138.4

Pipe culvert undercut may be required for this project. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

If pipe culvert undercut is required, the table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

The table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the drawing below and conforms to the Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1' Depth (CuYd/Ft)	Arch Pipe Undercut Rate for 1' Depth (CuYd/Ft)
30	0.2623	0.2847



CORRUGATED METAL PIPE MRM 138.4

Corrugated metal pipes will have 2 ⅔-inch x ½-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes will have 3-inch x 1-inch or 5-inch x 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

The gauge of the corrugated metal ends will match the thickest gauge of corrugated metal pipe it is connected to.

The soils within the project area are highly corrosive to steel. Corrugated metal pipe in these areas are specified in the Table of Pipe Quantities and the pipe will be 14 gauge steel. Corrugated metal pipe in these areas including the connection bands will be polymer coated and will be in conformance with AASHTO M245 and AASHTO M36. Riveted pipe will not be allowed. The connection bands will be 24 inches wide.

All damage to the polymer coating will be repaired in accordance with the manufacturer's recommendations prior to installation of the pipe.

All costs associated with the polymer coating including repair of polymer coating will be incidental to the corresponding CMP contract items.

Metal pipe end sections connected to polymer coated CMP will be aluminum-coated (Type 2) in accordance with AASHTO M36 as specified in the Table of Pipe Quantities. All costs associated for gauge, coating, and connections will be incidental to the corresponding CMP End Section contract items

TABLE OF PVC COATED BANK AND CHANNEL PROTECTION GABIONS AND DRAINAGE FABRIC MRM 138.4

Station	L/R	PVC Coated Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
1003+53	R	6.0	19
	Totals:	6.0	19

MRM 141.9 SLIDE REPAIR

The slide is located on the west side of the highway. The slump is approximately 100' long with the apex of the scarp is approximately 5' from the edgeline and the scarp has dropped 1-2 feet. Repair at this site will consist of removing the topsoil, reshaping the inslope, replacing the topsoil and seeding the area.

All costs associated with reshaping the inslope will be incidental to the contract unit price per station for "Grading".

TABLE OF UNCLASSIFIED EXCAVATION MRM 160.47

Exc=	252	Emb=	277	
Undercut	854	25.00%	69	346
Borrow=	308	Undercut=	854	
Total=	1414	25.00%	214	1068
			Total=	1414

ASPHALT CONCRETE PAVEMENT REMOVAL MRM 160.47

The Contractor will remove 2 layers of asphalt. One layer is the temporary asphalt patch (4") and one layer is the original surfacing (6") that is below gravel that was placed over the box culvert following the flood event.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL MRM 160.47

Station	to	Station	Quantity (SqYd)
147+50		149+50	934
		Total:	934

SUBGRADE REPAIR MRM 160.47

In sections 148+00 to 148+75 the earthen subgrade will be undercut 4 feet below the earthen subgrade surface. The undercut material or other suitable material, as directed by the Engineer, will then be replaced and compacted to the density specified for the section being constructed.

The plan shown quantity will be the basis of payment. However, if there are additional areas of undercut other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

Included in the Estimate of Quantities Reinforcement Fabric (MSE) to be placed on the top of the excavated subgrade.

10" Base Course will be placed on top of the Reinforcement Fabric (MSE). 6" of Asphalt Concrete Composite will be placed on top of the Base Course. Asphalt Concrete Composite is to be placed in 2-3" lifts.

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.

TABLE OF SURFACING QUANTITIES

Location	Base Course	Asphalt Concrete Composite
	Ton	Ton
MRM 138	178	
MRM 160.5	488	236
	666	236

TABLE OF FENCE QUANTITIES

	Right-of-Way Fence		Temporary Fence		Post Panels	
	Remove Fence for Reset	Reset Fence	Type 2		2 Post Panel	
MRM	(Ft)	(Ft)	(Ft)		(Each)	
138.4	375	375	875		2	
141.9	150	150			2	
TOTALS:	525	525	875		4	

TEMPORARY FENCE

The Contractor will verify the location of the temporary fence with the landowner prior to installation of the fence.

BRACE PANELS FOR ROW FENCE

The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer. The E-Z Brace will be attached to each wood post utilizing two 5/16" x 3" lag screws. Holes of appropriate diameter, based on wood post condition, will be drilled before placement of lag screws. The following are contacts regarding the E-Z Brace:

Roger Papka
E-Z Brace
1160 Karen St.
Watertown, SD 57201
605-881-6142

Dennis Mack
E-Z Brace
108 18th St. NE
Watertown, SD 57201
605-881-4990

REMOVE AND REPLACE TOPSOIL

Prior to beginning slide repair operations, and underdrain installation, a 4" depth of topsoil will be removed or bladed down the respective inslope and left in a windrow. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 1593 CuYd.

Location	sqft	depth (in)	CuYd
MRM 138.4	68463	4	846
Borrow MRM 138.4	43068	4	532
MRM 141.9	3000	4	38
MRM 160.5	14299	4	177
Total:	128830		1593

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".

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 the following fungal species:

25% *Glomus intraradices*
25% *Glomus aggregatum or deserticola*
25% *Glomus mosseae*
25% *Glomus etunicatum*

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 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

FERTILIZING

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P_2O_5) available phosphate, a minimum of 4% (K_2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer's recommended method of application.

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

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com
Perfect Blend	Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 www.perfect-blend.com

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

Type F Permanent Seed Mixture will consist of the following:

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

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 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 to decompose.

An additional quantity of 12” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels.

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

TABLE OF EROSION CONTROL WATTLE

Location	L	R	Diameter (Inch)	Quantity
MRM 138.4	700	900	12	1600
Borrow 138.4		510	12	510
MRM 141.9	150		12	150
MRM 160.5	520	130	12	650
		Additional Quantity:		300
			Total:	**3210**

STORMWATER POLLUTION PREVENTION PLAN CHECKLIST

*(The numbers left of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES (Stormwater Permit))*

5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION

To promote stormwater management awareness specific for this project, the Contractor's Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor's Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - ☐ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☐ Grading and shaping
  - ☒ Filling
  - ☐ Other (describe):
- **5.3 (3b): Total Project Area** 3.3 ac
- **5.3 (3b): Total Area to be Disturbed** 2.9 ac
- **5.3 (3c): Maximum Area Disturbed at One Time**
- **5.3 (3d): Existing Vegetative Cover (%)**
- **5.3 (3d): Description of Vegetative Cover**

- **5.3 (3e): Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification Pierre Shale
- **5.3 (3f): Name of Receiving Water Body/Bodies** Frog Creek
- **5.3 (3g): Location of Construction Support Activity Areas**

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

- **Special sequencing requirements** (see sheet).

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install stabilized construction entrance(s).	
Install perimeter protection where runoff may exit site.	
Install perimeter protection around stockpiles.	
Install channel and ditch bottom protection.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Install utilities, storm sewers, curb and gutter.	
Install inlet and culvert protection after completing storm drainage and other utility installations.	
Final grading.	
Final paving.	
Removal of protection devices.	
Reseed areas disturbed by removal activities.	

5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES

All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

Perimeter Controls (See Detail Plan Sheets)

Description	Estimated Start Date
☐ Natural Buffers (within 50 ft of Waters of State)	
☐ Silt Fence	
☒ Erosion Control Wattles	
☐ Temporary Berm / Windrow	
☐ Floating Silt Curtain	
☐ Stabilized Construction Entrances	
☐ Entrance/Exit Equipment Tire Wash	
☐ Other:	

Structural Erosion and Sediment Controls

Description	Estimated Start Date
☐ Silt Fence	
☐ Temporary Berm/Windrow	
☒ Erosion Control Wattles	
☐ Temporary Sediment Barriers	
☐ Erosion Bales	
☐ Temporary Slope Drain	
☐ Turf Reinforcement Mat	
☐ Riprap	
☐ Gabions	
☐ Rock Check Dams	
☐ Sediment Traps/Basins	
☐ Culvert Inlet Protection	
☐ Transition Mats	
☐ Median/Area Drain Inlet Protection	
☐ Curb Inlet Protection	
☐ Interceptor Ditch	
☐ Concrete Washout Facility	
☐ Work Platform	
☐ Temporary Water Barrier	
☐ Temporary Water Crossing	
☐ Permanent Stormwater Ponds	
☐ Permanent Open Vegetated Swales	
☐ Natural Depressions to allow for Infiltration	
☐ Sequential Systems that combine several practices	
☐ Other:	

Dust Controls

Description	Estimated Start Date
☐ Tarps & Wind impervious fabrics	
☐ Watering	
☐ Stockpile location/orientation	
☐ Dust Control Chlorides	
☐ Other	

Dewatering BMPs

Description	Estimated Start Date
☐ Sediment Basins	
☐ Dewatering bags	
☐ Weir tanks	
☐ Temporary Diversion Channel	
☐ Other:	

Stabilization Practices (See Detail Plan Sheets)

(Stabilization measures shall begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization shall be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities (**3.18**))

Description	Estimated Start Date
☐ Vegetation Buffer Strips	
☐ Temporary Seeding (Cover Crop Seeding)	
☒ Permanent Seeding	
☐ Sodding	
☐ Planting (Woody Vegetation for Soil Stabilization)	
☒ Mulching (Grass Hay or Straw)	
☐ Fiber Mulching (Wood Fiber Mulch)	
☐ Soil Stabilizer	
☐ Bonded Fiber Matrix	
☐ Fiber Reinforced Matrix	
☐ Erosion Control Blankets	
☐ Surface Roughening (e.g. tracking)	
☐ Other:	

Wetland Avoidance

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☐ No ☒ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

5.3 (6): PROCEDURES FOR INSPECTIONS

- Inspections will be conducted at least once every 7 days.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $^1/_3$ of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and Contractor's Erosion Control Supervisor are responsible for inspections. Maintenance and repair activities are the responsibility of the Contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

Stormwater management will be handled by temporary controls outlined in "DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES" above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

5.3 (8): POLLUTION PREVENTION PROCEDURES

5.3 (8a): Spill Prevention and Response Procedures

➢ **Material Management**

- Housekeeping
  - Only needed products will be stored on-site by the Contractor.
  - Except for bulk materials the contractor will store all materials under cover and/or in appropriate containers.
  - Products must be stored in original containers and labeled.
  - Material mixing will be conducted in accordance with the manufacturer's recommendations.
  - When possible, all products will be completely used before properly disposing of the container off-site.
  - The manufacturer's directions for disposal of materials and containers will be followed.
  - The Contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
  - Dust generated will be controlled in an environmentally safe manner.

- Hazardous Materials
  - Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
  - Original labels and material safety data sheets will be retained in a safe place to relay important product information.
  - If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
  - Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
  - Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any stormwater system or stormwater treatment system.
  - Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of stormwater runoff.

➢ **Spill Control Practices**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill cleanup will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for cleanup purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator.

➢ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SDDENR.
- Personnel with primary responsibility for spill response and cleanup will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

5.3 (8b): WASTE MANAGEMENT PROCEDURES

➢ **Waste Disposal**

- All liquid waste materials will be collected and stored in approved sealed containers. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal and notices stating proper practices will be posted. The Contractor is responsible for ensuring waste disposal procedures are followed.

➢ **Hazardous Waste**

- All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the Contractor will be responsible for seeing that these practices are followed.

➢ **Sanitary Waste**

- Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

5.3 (9): CONSTRUCTION SITE POLLUTANTS

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the heading "POLLUTION PREVENTION PROCEDURES" (check all that apply).

- ☐ Concrete and Portland Cement
- ☐ Detergents
- ☐ Paints
- ☐ Metals
- ☒ Bituminous Materials
- ☐ Petroleum Based Products
- ☐ Diesel Exhaust Fluid
- ☐ Cleaning Solvents
- ☐ Wood
- ☐ Cure
- ☐ Texture
- ☐ Chemical Fertilizers
- ☐ Other:

Product Specific Practices

- **Petroleum Products**
  All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

- **Fertilizers**
  Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to stormwater. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

- **Paints**
  All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

- **Concrete Trucks**
  Contractors will provide designated truck washout facilities on the site. These areas must be self-contained and not connected to any stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

5.3 (10): NON-STORMWATER DISCHARGES

The following non-stormwater discharges are anticipated during the course of this project (check all that apply).

- ☐ Discharges from water line flushing.
- ☐ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☐ Uncontaminated ground water associated with dewatering activities.

5.3 (11): INFEASIBILITY DOCUMENTATION

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

7.0: SPILL NOTIFICATION

In the event of a spill, the Contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to SDDENR immediately **if any one of the following** conditions exists:
  - The release or spill threatens or is able to threaten waters of the state (surface water or ground water)
  - The release or spill causes an immediate danger to human health or safety
  - The release or spill exceeds 25 gallons
  - The release or spill causes a sheen on surface water
  - The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01
  - The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01
  - The release or spill of any substance that harms or threatens to harm wildlife or aquatic life
  - The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.

- To report a release or spill, call SDDENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge shall be sent to SDDENR within 14 days of the discharge.

5.4: SWPPP CERTIFICATIONS

➢ **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

➢ **South Dakota Department of Transportation**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Joanne M. Higlit

_____

Authorized Signature (See the General Permit, Section 7.4 (1))

➢ **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Authorized Signature

CONTACT INFORMATION

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

➢ **Contractor Information**:

- Prime Contractor Name: _____
- Contractor Contact Name: _____
- Address: _____
- _____
- City: _____State: _____Zip: _____
- Office Phone: _____Field: _____
- Cell Phone: _____Fax: _____

➢ **Erosion Control Supervisor**

- Name: _____
- Address: _____
- _____
- City: _____State: _____Zip: _____
- Office Phone: _____Field: _____
- Cell Phone: _____Fax: _____

➢ **SDDOT Project Engineer**

- Name: _____
- Business Address: _____
- Job Office Location: _____
- City: _____State: _____Zip: _____
- Office Phone: _____Field: _____
- Cell Phone: _____Fax: _____

➢ **SDDENR Contact Spill Reporting**
- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➢ **SDDENR Contact for Hazardous Materials.**
- (605) 773-3153

➢ **National Response Center Hotline**
- (800) 424-8802.

➢ **SDDENR Stormwater Contact Information**
- SDDENR Stormwater (800) 737-8676
- Surface Water Quality Program (605) 773-3351

5.5: REQUIRED SWPPP MODIFICATIONS

➢ **5.5 (1): Conditions Requiring SWPPP Modification**

The SWPPP must be modified, including the site map(s), in response to any of the following conditions:

- When a new operator responsible for implementation of any part the SWPPP begins work on the site.
- When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
- To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- If inspections by site staff, local officials, SDDENR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
- To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
- If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.

➢ **5.5 (2): Deadlines for SWPPP Modification**

Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.

➢ **5.5 (3): Documentation of Modifications to the Plan**

All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.

➢ **5.5 (4): Certification Requirements**

All modifications made to the SWPPP must be signed and certified as required in Section 7.4.

➢ **5.5 (5): Required Notice to Other Operators**

If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting.

Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

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.

Traffic Control Signs, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

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.

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".

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

SHEETING FOR TRAFFIC CONTROL SIGNS

All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R1-2), DO NOT ENTER (R5-1), and WRONG WAY (R5-1a) signs will conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors will conform to the requirements of ASTM D4956 Type IV.

TEMPORARY PAVEMENT MARKING

Temporary flexible vertical markers (tabs) may be used as detailed in the specifications.

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 slide repair.

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

Temporary pavement marking for stop bars will consist of 4" temporary pavement marking tape type I. Placement of each 24" white stop bar will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop bars which is an equivalent of approximately 144' of 4" tape (3 workspaces at 144' = 432'). Temporary pavement marking on centerline will consist of temporary flexible vertical markers (tabs) or temporary raised pavement markers and will be used as depicted on standard plate 634.25 and 634.26 when the stop condition must remain in place during nighttime hours, 9:00 pm to 6:00 am (Estimate 3 workspaces remaining during nighttime hours x 2,200' per workspace = 6,600').

PORTABLE TEMPORARY TRAFFIC CONTROL SIGNAL

The Contractor will furnish, install, operate, and maintain a portable temporary traffic control signal during construction phases as determined by the Engineer. There will be one controller and one slave unit per location.

The portable temporary traffic control signal will be set up to dwell in red. The green time may be adjusted as needed. The initial timings for the construction sites are given below:

Location MRM 138.4

Red = 30 sec. Yellow = 7 sec. Green = 40 sec.

The timings above are based on 700 feet between opposing stop bars.
Check with Region Traffic Engineer to determine the appropriate temporary signal timings.

All vehicle signal heads will have backplates with retroreflective border. The vehicle signal head backplates will have a factory applied 3-inch wide yellow retroreflective border. Sheeting for the border will be Type XI in conformance with ASTM D4956.

Signal backplates will extend not less than 5 inches from the edge of the signal head at the top, bottom, and sides.

All traffic signal equipment and materials will meet the requirements of Sections 635 and 985 of the Specifications except the controller requirements.

All costs involved with constructing the portable temporary traffic control signal as specified above and on the plans, will be included in the contract unit price per unit for "Portable Temporary Traffic Control Signal".

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

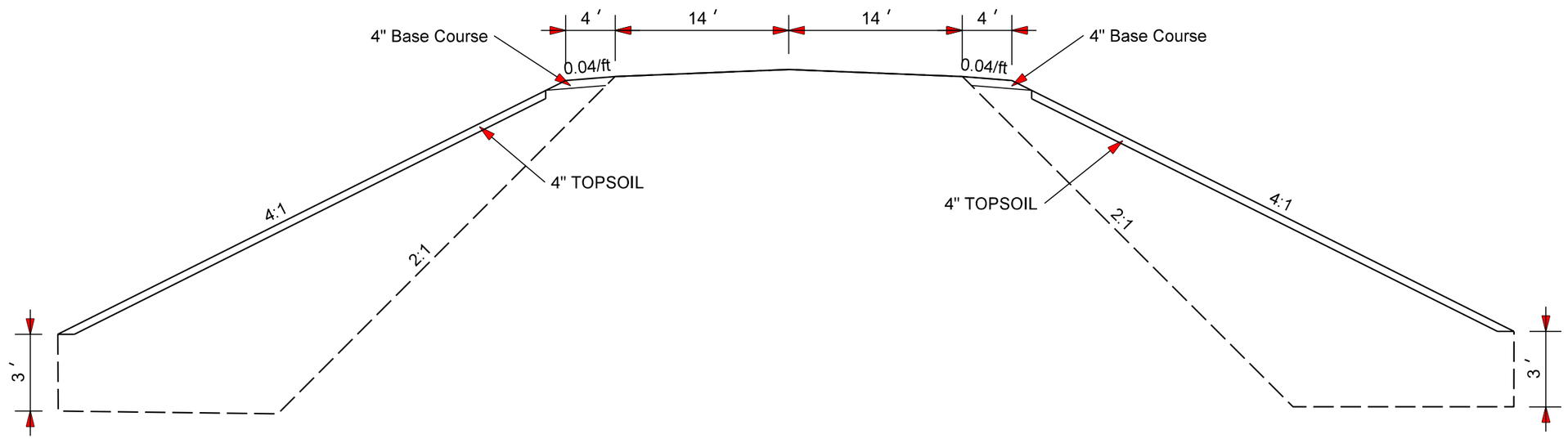
		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	4	30"	5.2	20.8
R10-6	STOP HERE ON RED	2	24" x 36"	6.0	12.0
W1-4	REVERSE CURVE (L or R)	3	48" x 48"	16.0	48.0
W3-1	STOP AHEAD (symbol)	4	48" x 48"	16.0	64.0
W3-3	SIGNAL AHEAD (symbol)	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	6	48" x 48"	16.0	96.0
W20-4	ONE LANE ROAD AHEAD	6	48" x 48"	16.0	96.0
G20-2	END ROAD WORK	6	36" x 18"	4.5	27.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			465.6

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	14	41

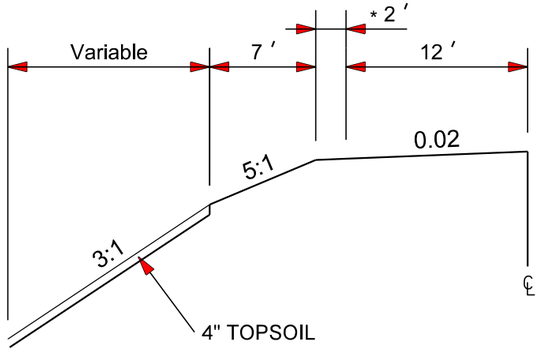
Plotting Date: 08/15/2019

TYPICAL SECTIONS

SD79 MRM 138.4
See Cross Sections for Stationing

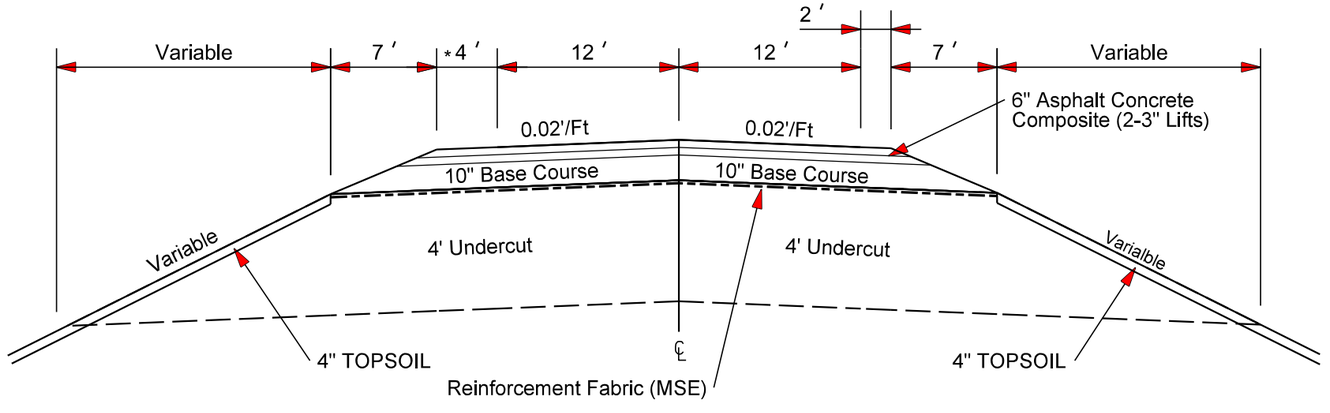


SD79 MRM 160.47
at Frog Creek
Inslope Repair
144+00 to 147+50
149+00



* Transition 147+50 to 148+00
148+75 to 149+00

SD79 MRM 160.47
at Frog Creek
148+00 to 148+75



LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	15	41

Plotting Date: 08/15/2019

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Commercial Sign Double Face
- Commercial Sign One Post
- Commercial Sign Overhead
- Commercial Sign Two Post
- Concrete Symbol
- Control Point
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Deck Edge
- Ditch Block
- Doorway Threshold
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Electric Transformer/Power Junction Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Miscellaneous
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Guide Sign One Post
- Guide Sign Two Post
- Gutter
- Guy Pole
- Haystack
- Hedge
- Highway ROW Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Miscellaneous
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Miscellaneous Line
- Miscellaneous Property Corner
- Miscellaneous Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pedestrian Push Button Pole
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad ROW Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Regulatory Sign One Post
- Regulatory Sign Two Post
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Subsurface Utility Exploration Test Hole
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Warning Sign One Post
- Warning Sign Two Post
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner

- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- ROW Line
- New ROW Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)

- Drainage Arrow

- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement
- Remove Concrete Curb and/or Gutter

- Detectable Warning
- Pedestrian Push Button Pole and 30" x 48" Clear Space with 1.5% slope

Plot Scale - 1:200

Plotted From - trrc11610

File - ...\SD79 Slide Repair\legend.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	16	41

Plotting Date: 08/15/2019

Install Ditch Drain
Station 997+50± to Station 999+50±, Lt.

4-inch Corrugated Slotted Polyethylene Tubing	150 feet
4-inch Schedule 40 PVC Pipe	50 feet
Porous Backfill	68 tons
Headwalls (See Standard Plate No. 430.50)	1 each

Install Toe Drain
Station 1000+50±to Station 1003+50±, Lt.

4-inch Corrugated Slotted Polyethylene Tubing	250 feet
4-inch Schedule 40 PVC Pipe	50 feet
Porous Backfill	105 tons
Headwalls (See Standard Plate No. 680.01)	1 each

1003+53
Retain existing 30" - 134' CMP
Remove 30" - 20' CMP L
& Remove 2 Flared Ends

1000+81 R to 1004+54
Remove & Reset fence

1003+53 L
Install 30" - 32' CMP
& 1 Flared End

1003+53 R
Install 30" - 32' CMP
& 1 Flared End

1003+53 R
Install Bank and Channel
Protection Gablons
(6.0 CY)

Install Ditch Drain
Station 997+50± to Station 998+00±, Rt.

4-inch Corrugated Slotted Polyethylene Tubing	50 feet
4-inch Schedule 40 PVC Pipe	50 feet
Porous Backfill	21 tons
Headwalls (See Standard Plate No. 680.01)	1 each

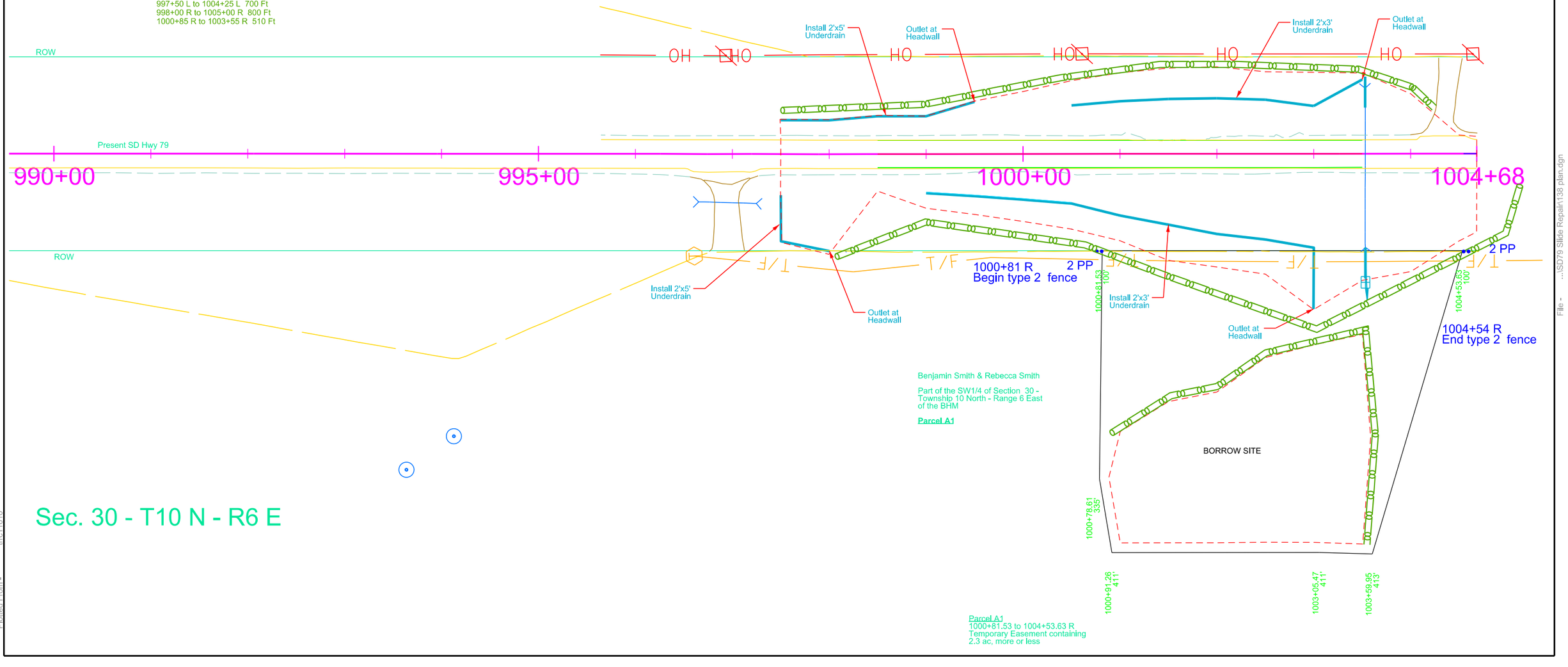
Install Toe Drain
Station 999+00±to Station 1003+00±, Rt.

4-inch Corrugated Slotted Polyethylene Tubing	405 feet
4-inch Schedule 40 PVC Pipe	65 feet
Porous Backfill	168 tons
Headwalls (See Standard Plate No. 680.01)	1 each

Sec. 29 - T10 N - R6 E

Leave 12" Diameter Erosion Control Wattles and allow to decompose while the site revegetates.

Install (12") Diameter Erosion Control Wattles on slope contour at the following locations:
997+50 L to 1004+25 L 700 Ft
998+00 R to 1005+00 R 800 Ft
1000+85 R to 1003+55 R 510 Ft



Sec. 30 - T10 N - R6 E

Parcel A1
1000+81.53 to 1004+53.63 R
Temporary Easement containing
2.3 ac, more or less

Plot Scale - 1:100

Plotted From - trrc11610

File - ...\SD79 Slide Repair\136 plan.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	17	41

Plotting Date: 08/15/2019

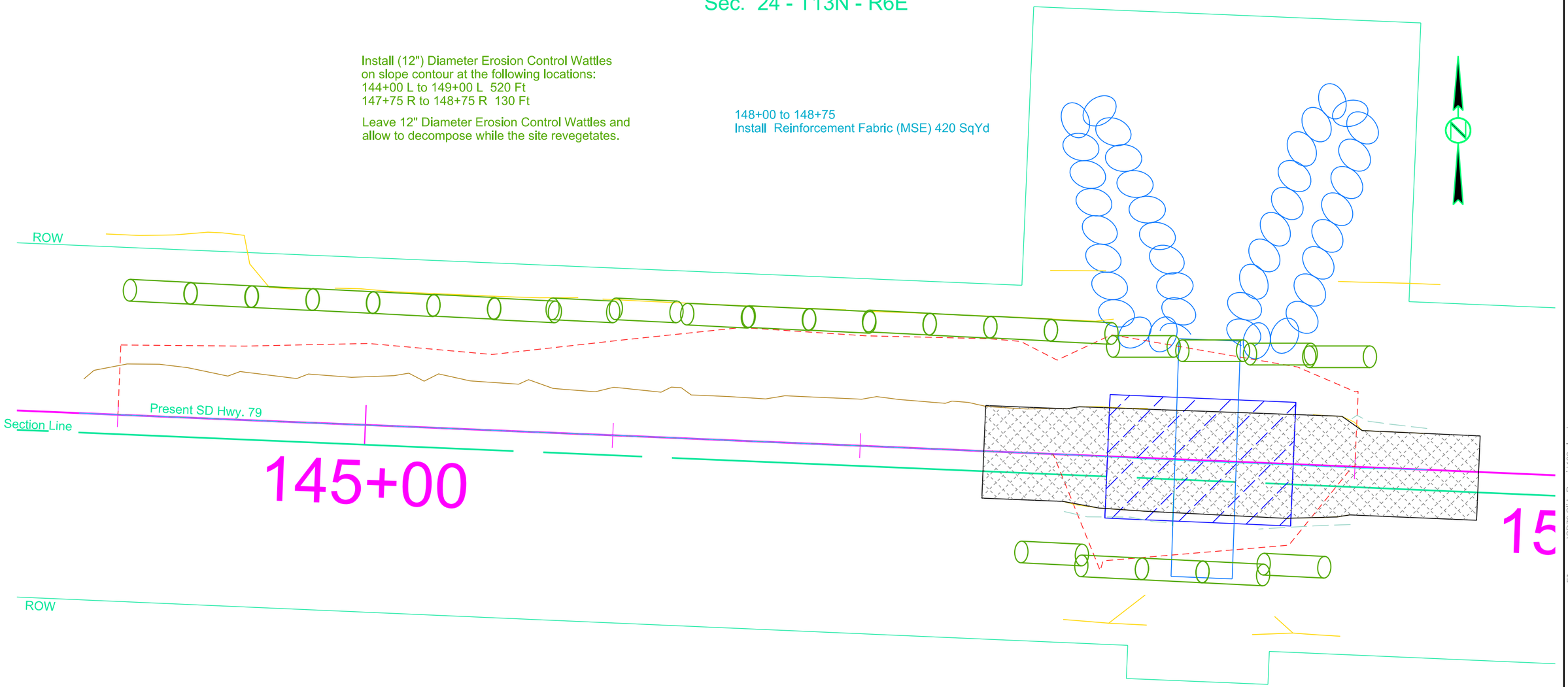
Plot Scale - 1:40

Sec. 24 - T13N - R6E

Install (12") Diameter Erosion Control Wattles
on slope contour at the following locations:
144+00 L to 149+00 L 520 Ft
147+75 R to 148+75 R 130 Ft

Leave 12" Diameter Erosion Control Wattles and
allow to decompose while the site revegetates.

148+00 to 148+75
Install Reinforcement Fabric (MSE) 420 SqYd



Remove Asphalt Concrete Pavement

Reinforcement Fabric (MSE)

Sec. 25 - T13N - R6E

Plotted From - trnc11610

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	18	41

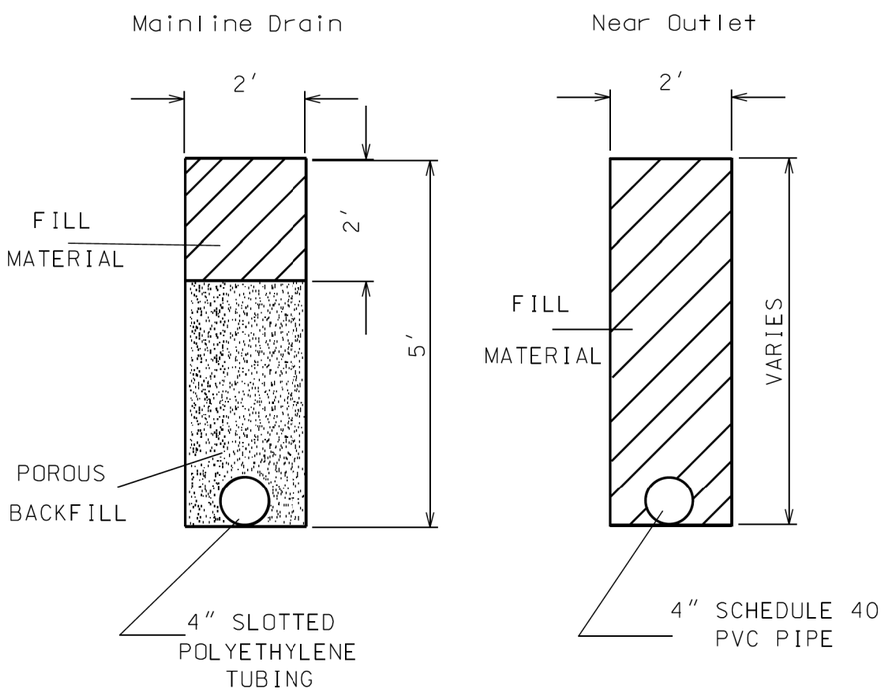
Plotting Date: 08/15/2019

TYPICAL UNDERDRAIN INSTALLATION

DITCH DRAINS

Station 997+50, Rt. to Station 998+00, Rt.

Station 997+50, Lt. to Station 999+50, Lt.



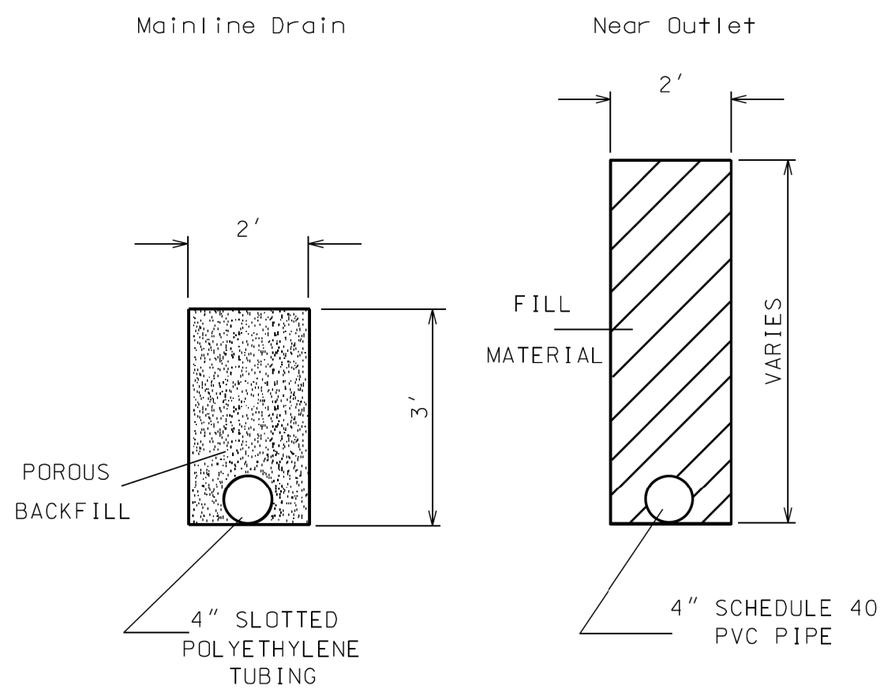
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 680, STANDARD SPECIFICATONS FOR ROADS AND BRIDGES 2015 EDITION

TYPICAL UNDERDRAIN INSTALLATION

TOE DRAINS

Station 999+00, Rt. to Station 1003+00, Rt.

Station 1000+50, Lt. to Station 1003+00, Lt.



UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 680, STANDARD SPECIFICATONS FOR ROADS AND BRIDGES 2015 EDITION

Plot Scale - 1:200

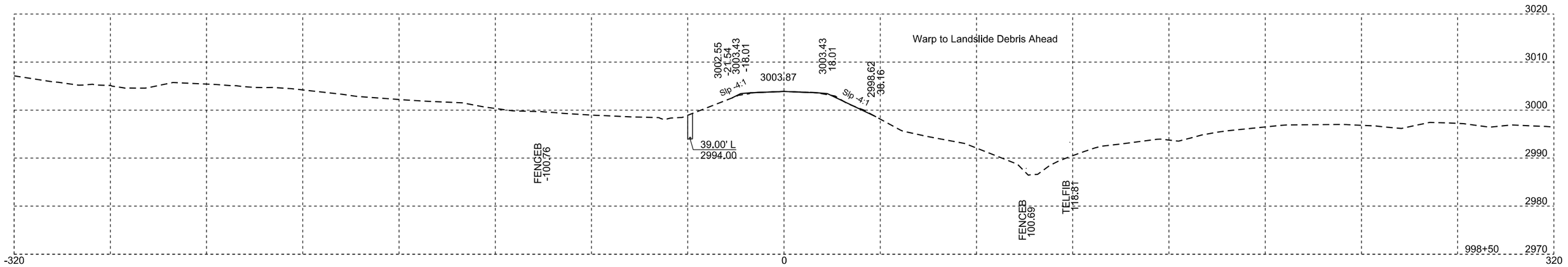
Plotted From - trrc11610

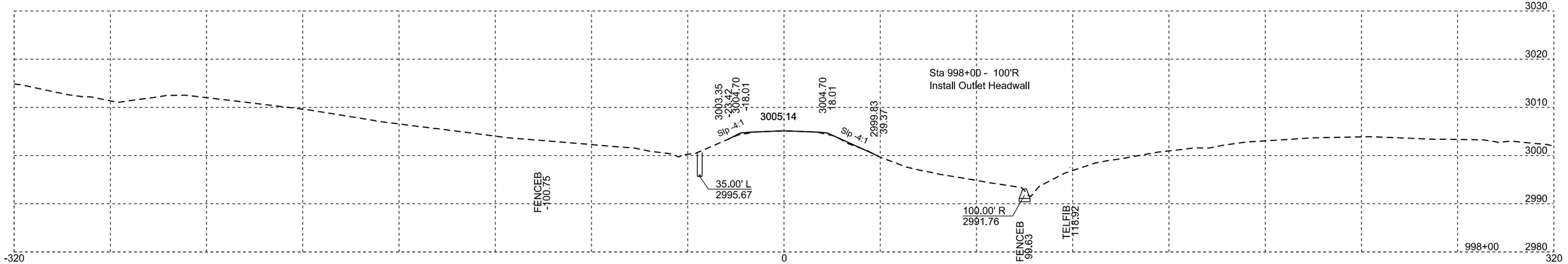
File - ...\drain detail.dgn

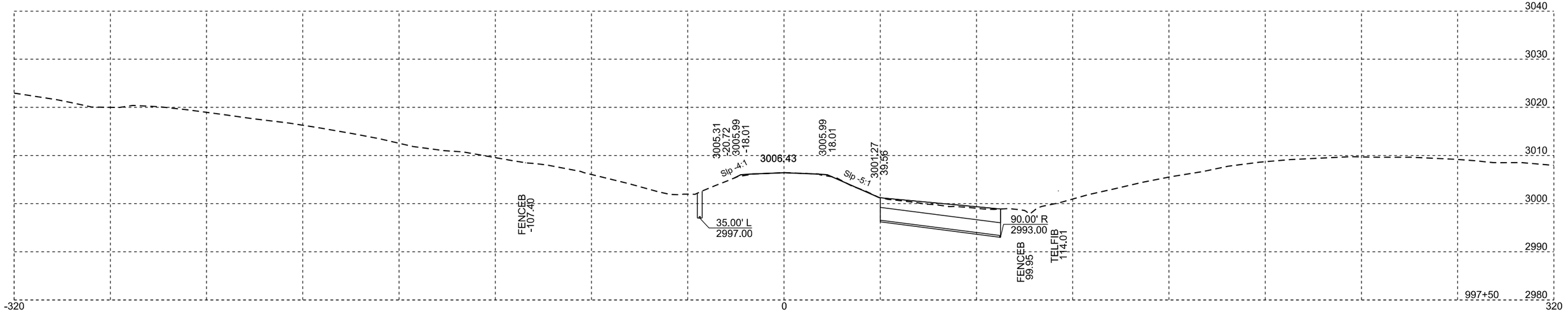
MRM 138

Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	19	41



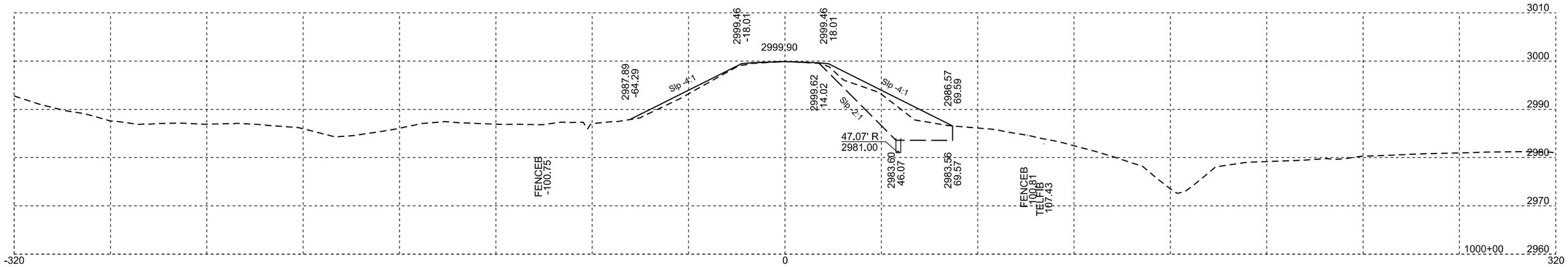


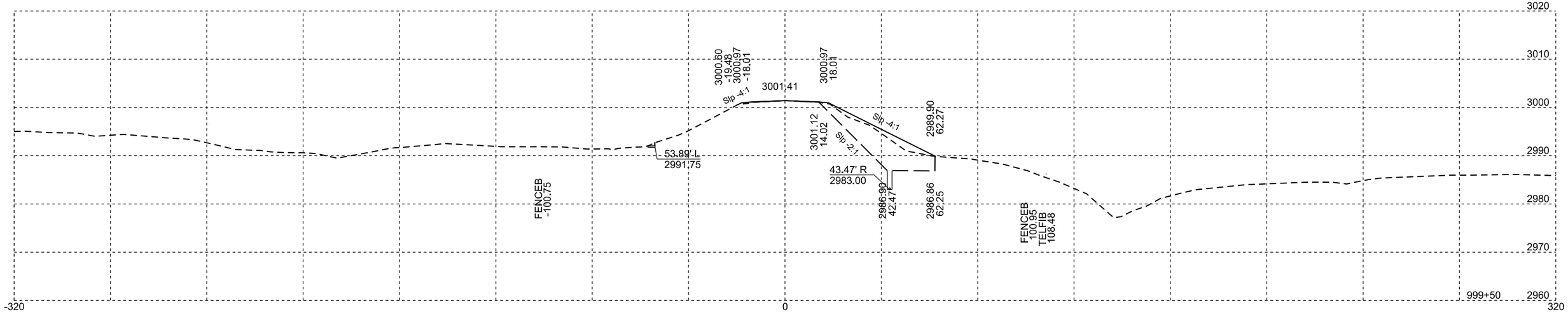


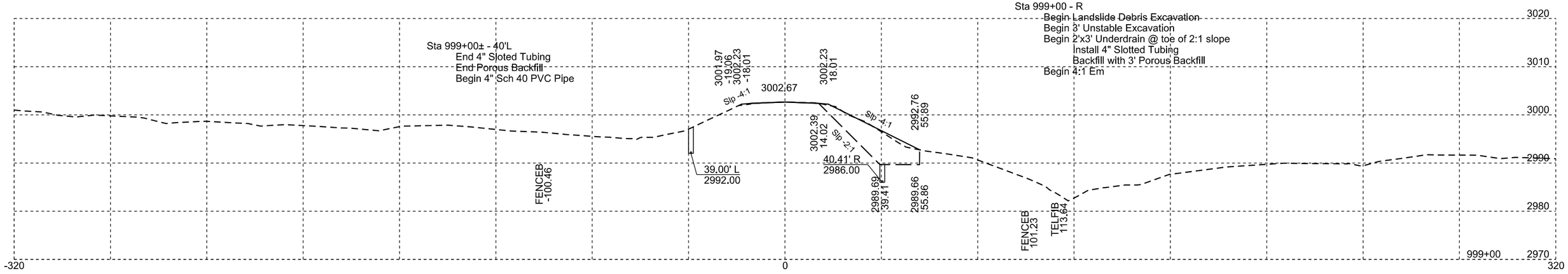
MRM 138

Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	20	41



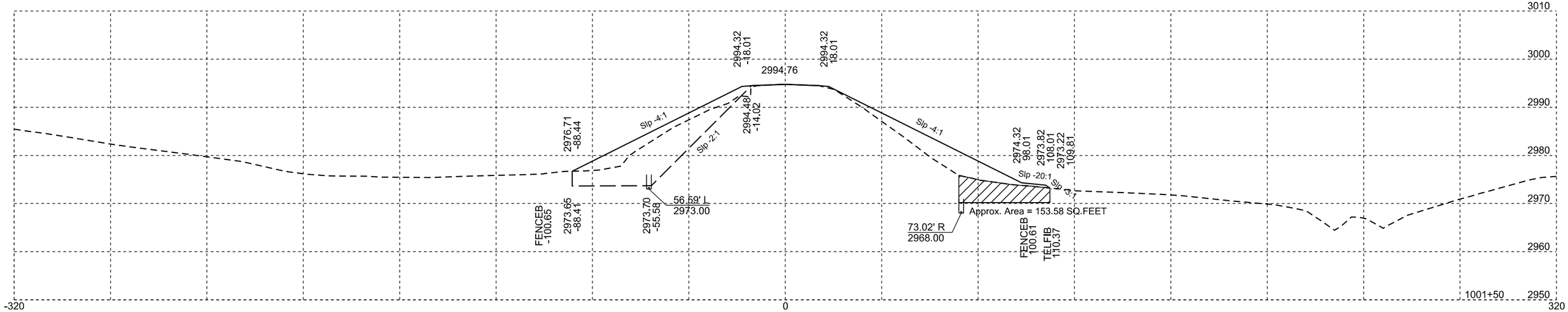


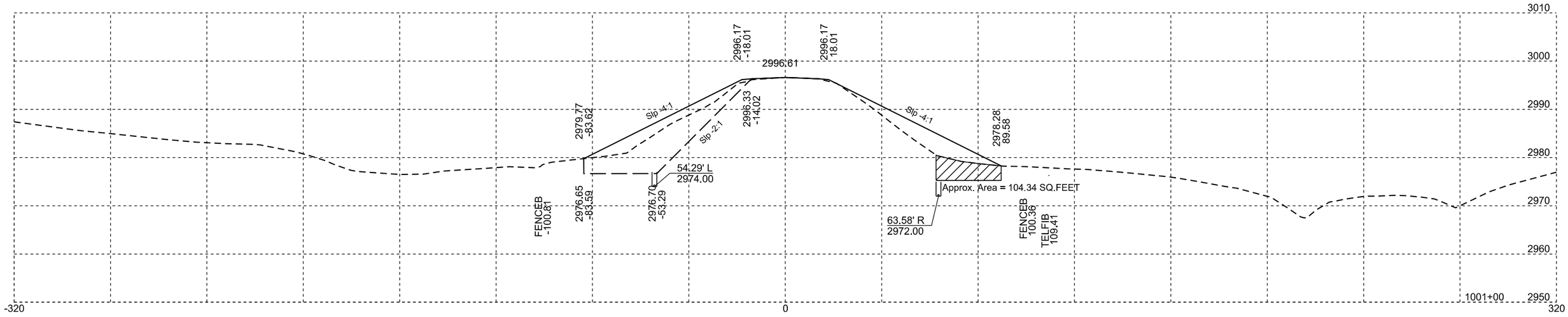


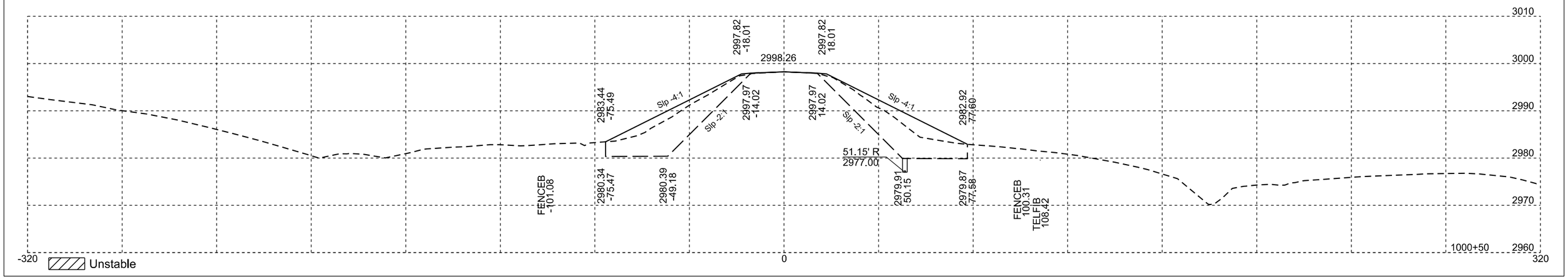
MRM 138

Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	21	41



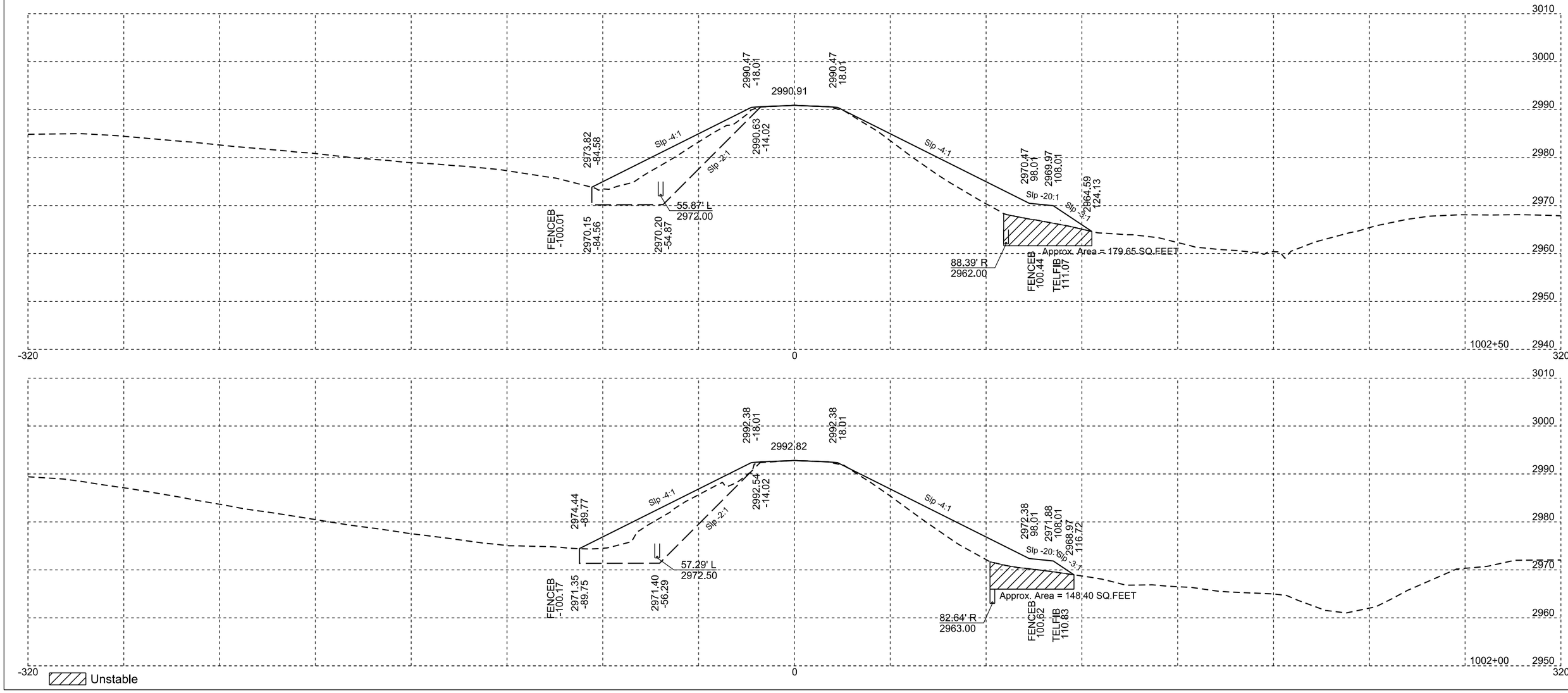




MRM 138

Plotting Date: 08/15/2019

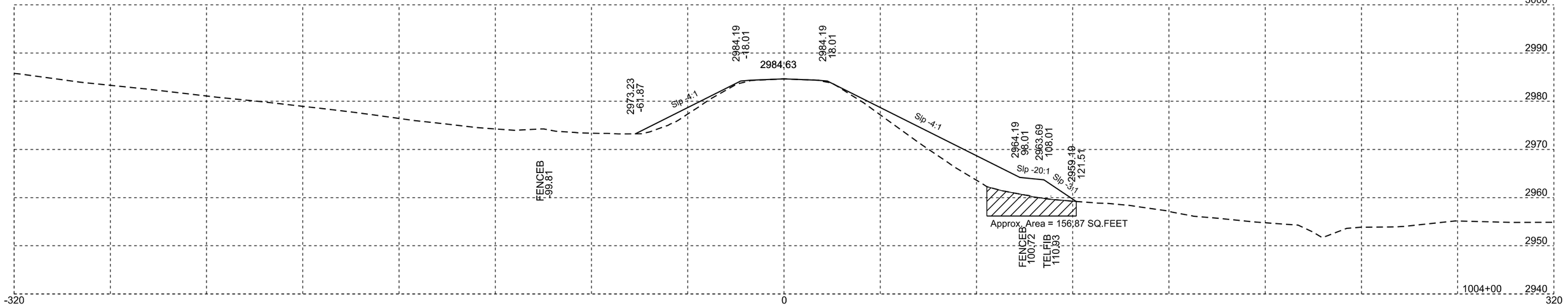
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	22	41

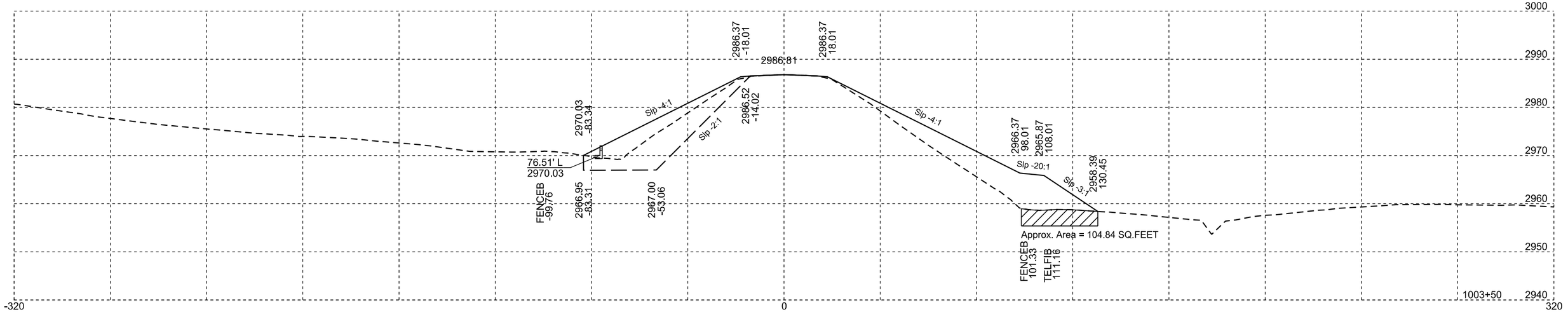


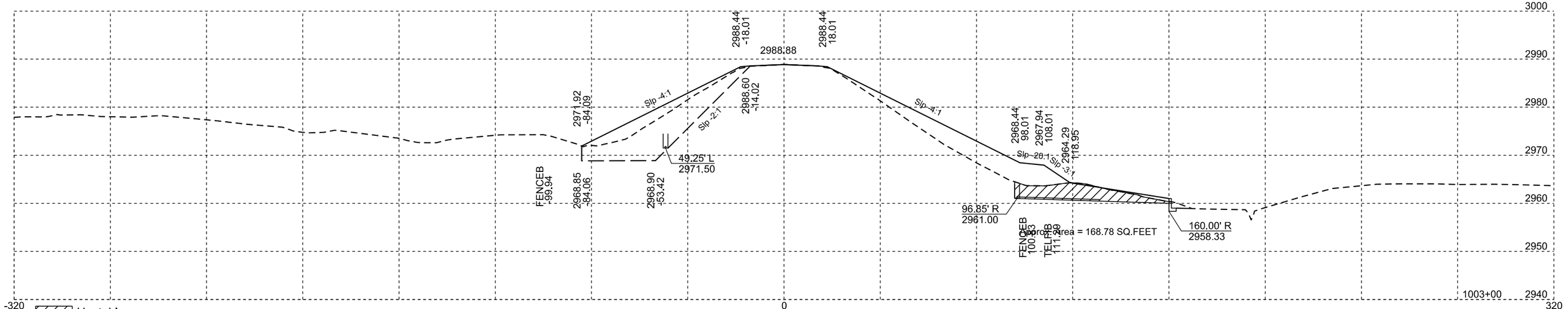
MRM 138

Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	23	41



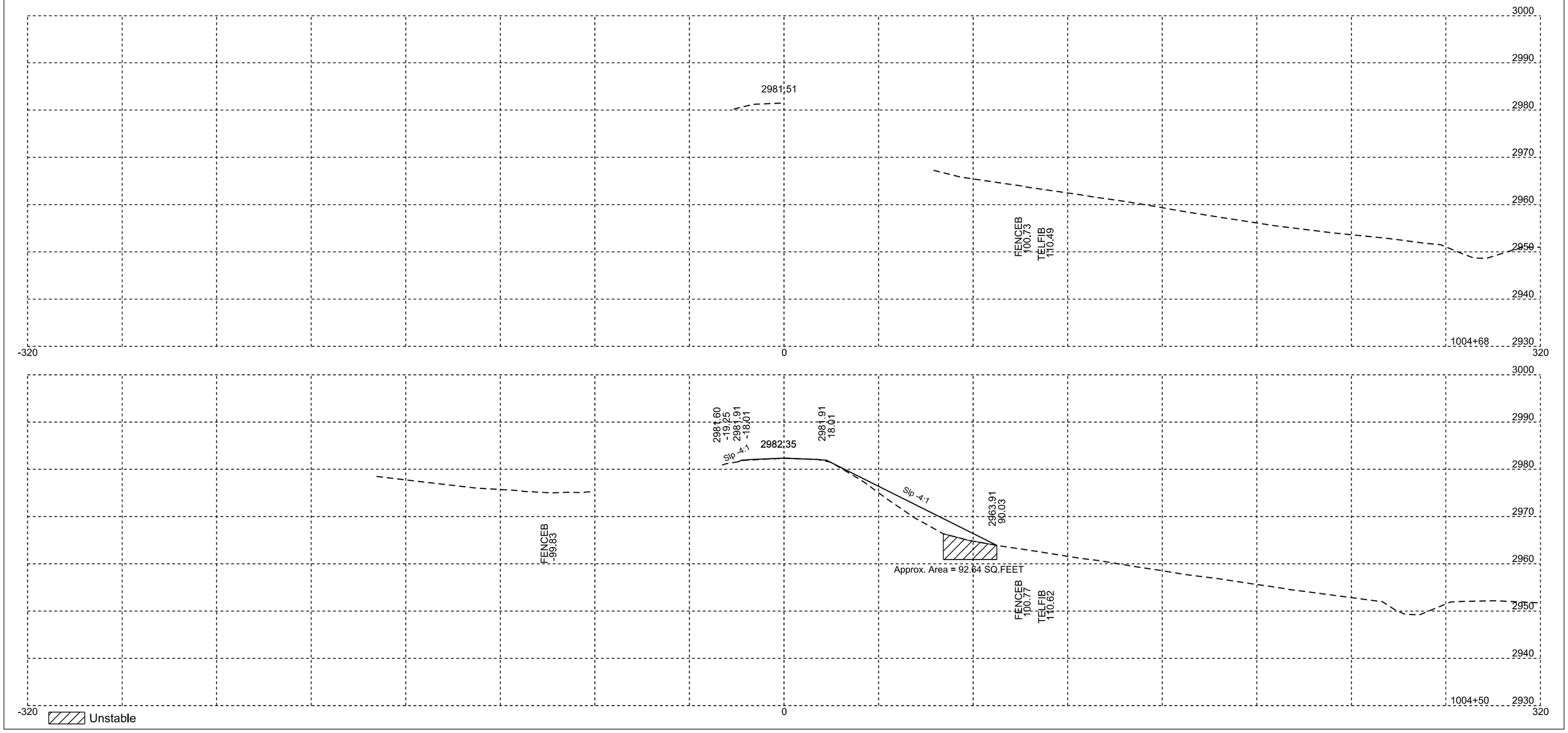




MRM 138

Plotting Date: 08/15/2019

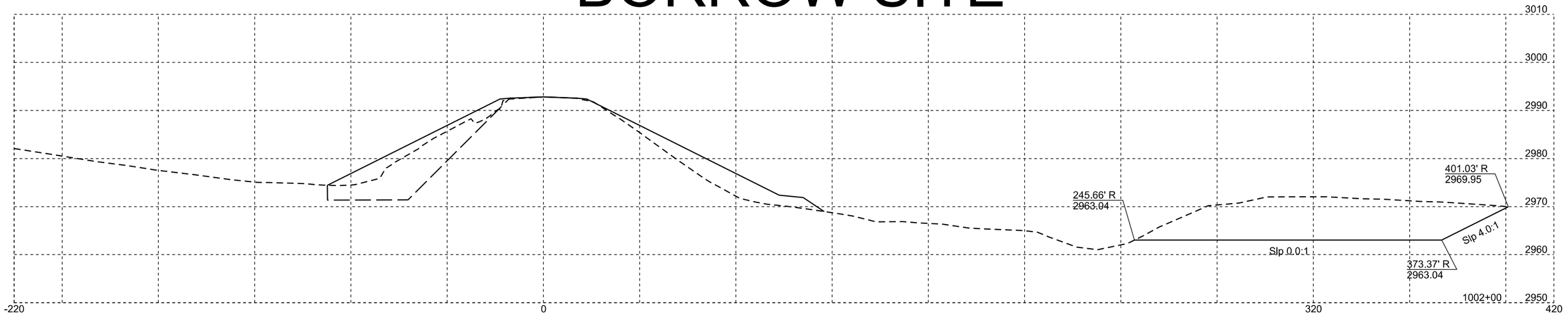
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	24	41

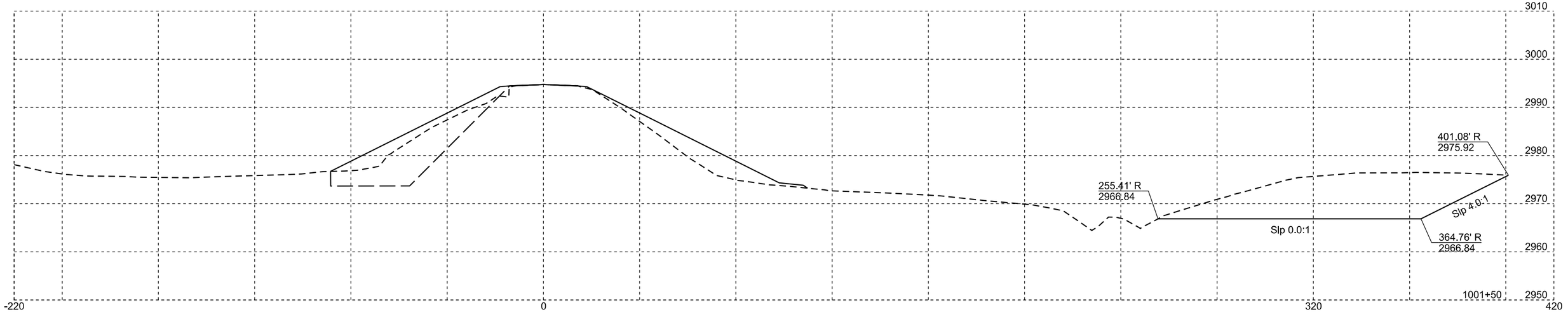


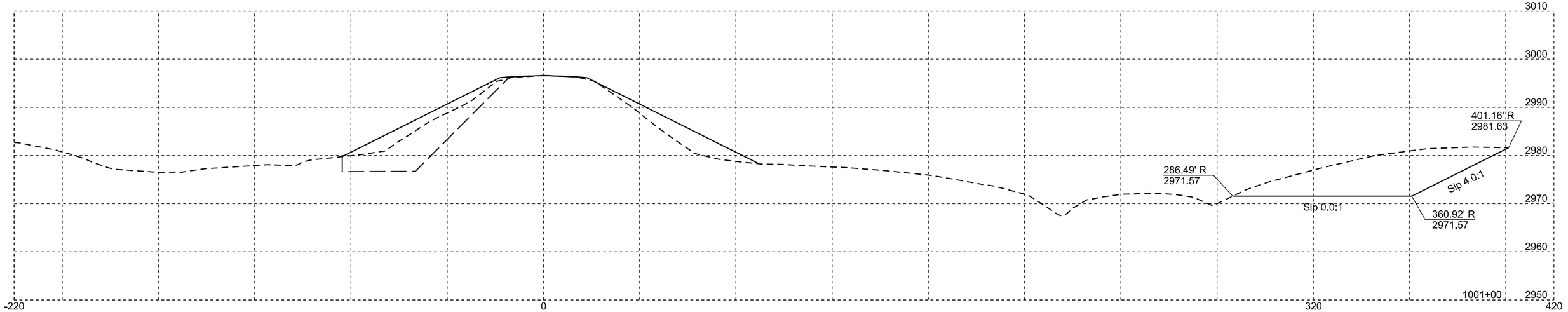
BORROW SITE

Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	25	41



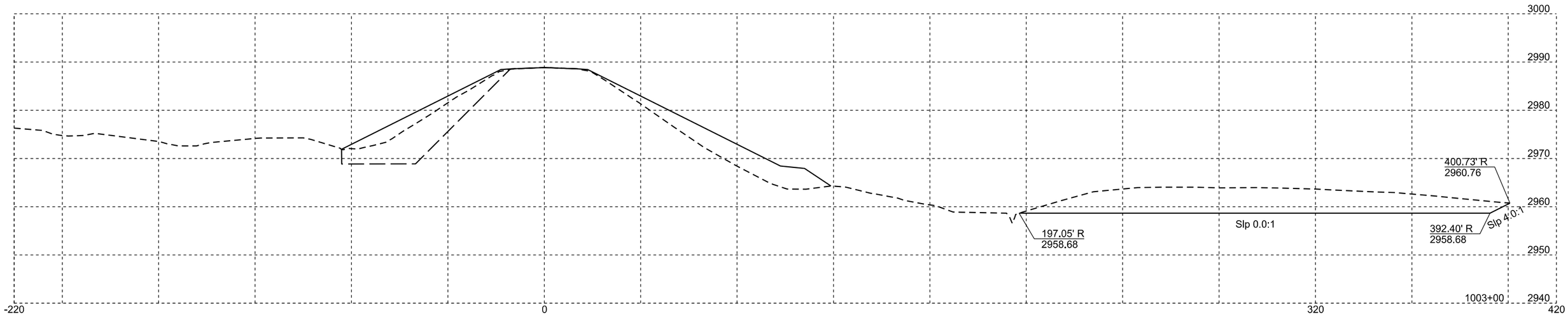


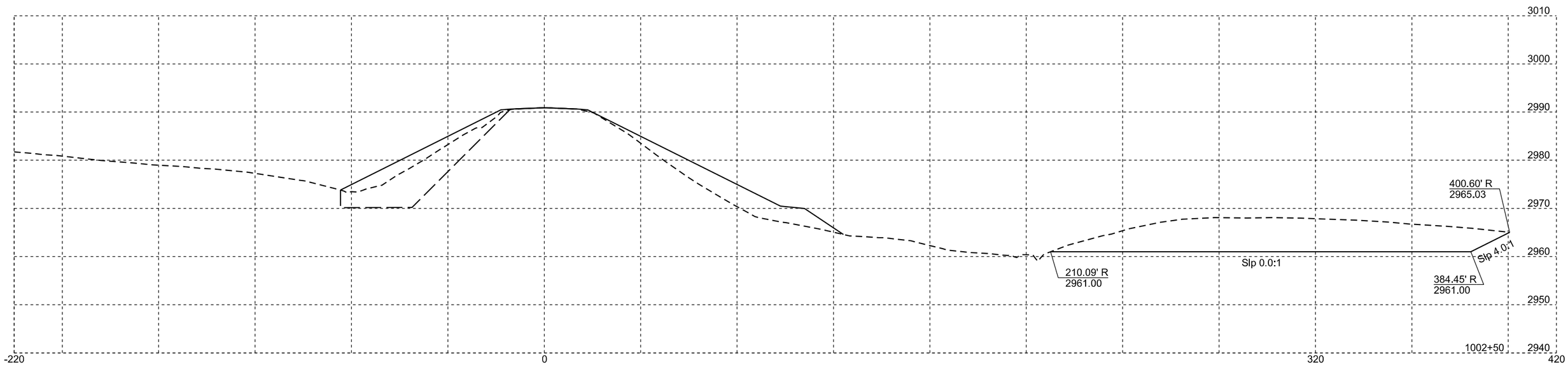


Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	26	41

BORROW SITE

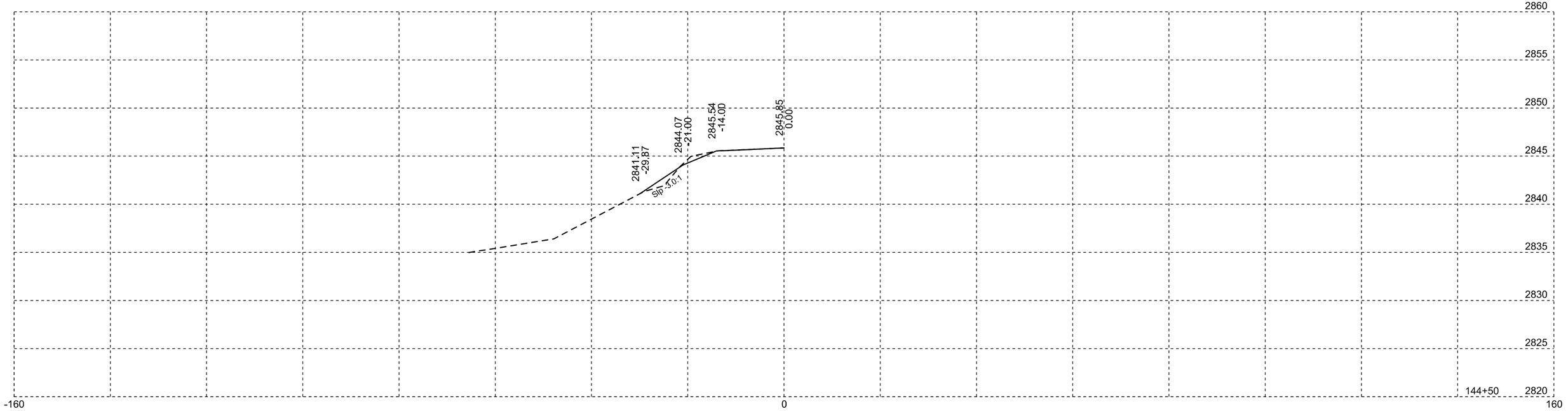


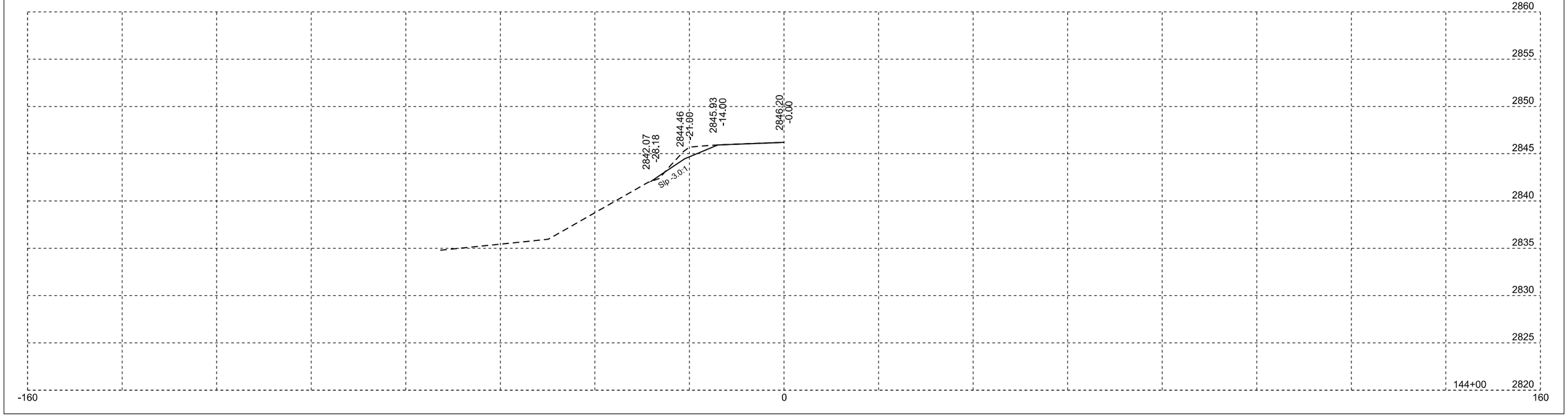


Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	27	41

MRM 160.5

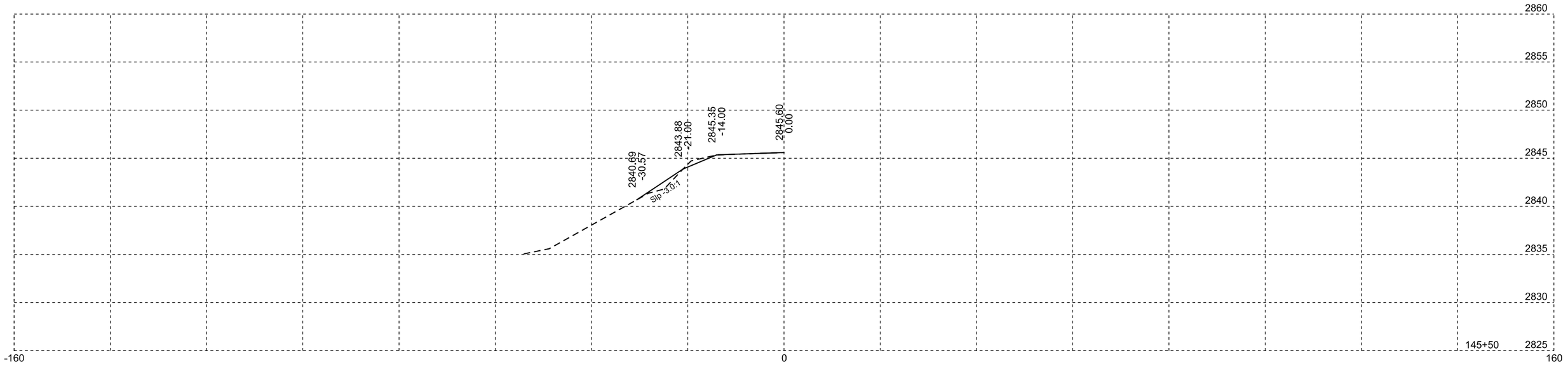


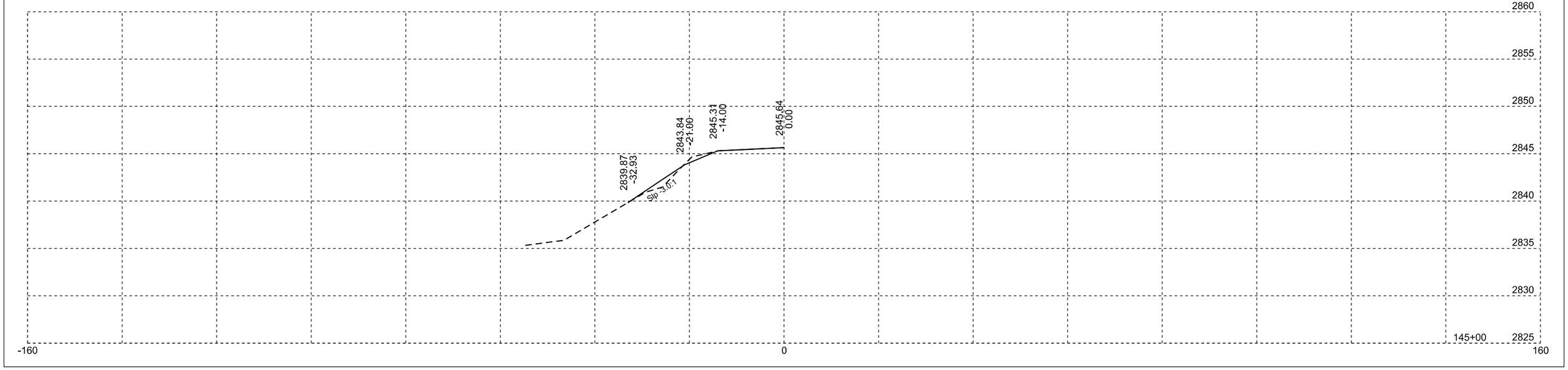


Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	28	41

MRM 160.5

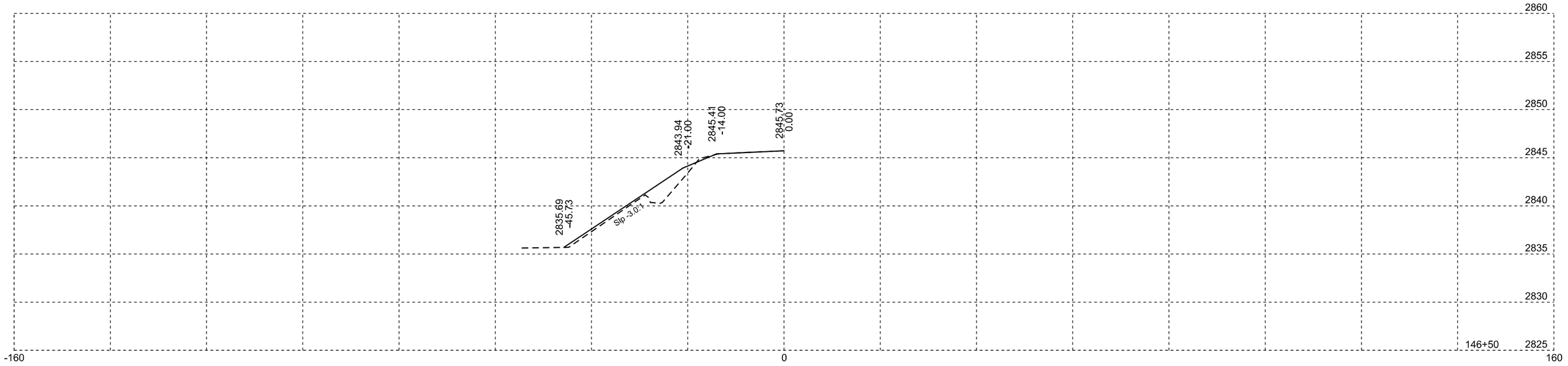


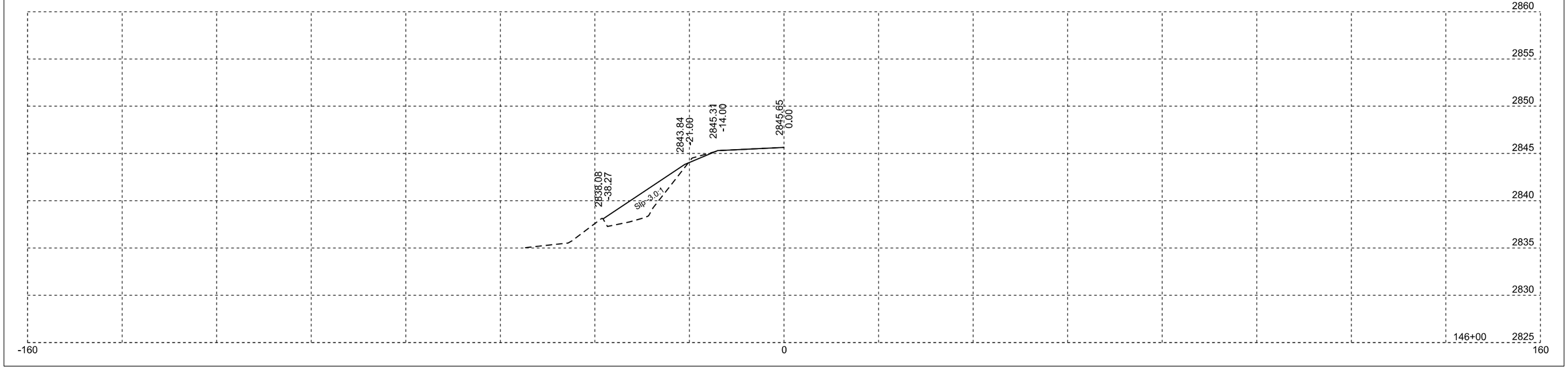


Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	29	41

MRM 160.5

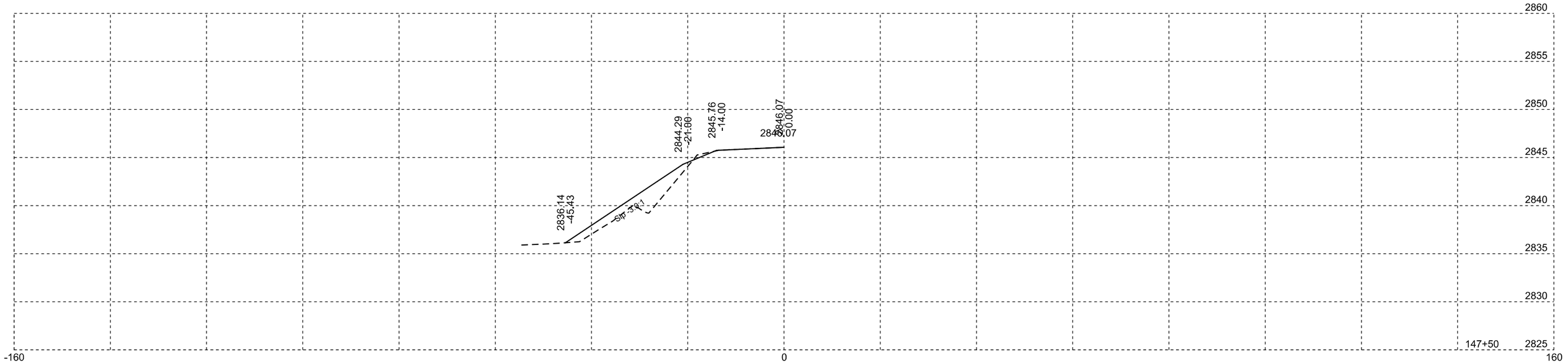


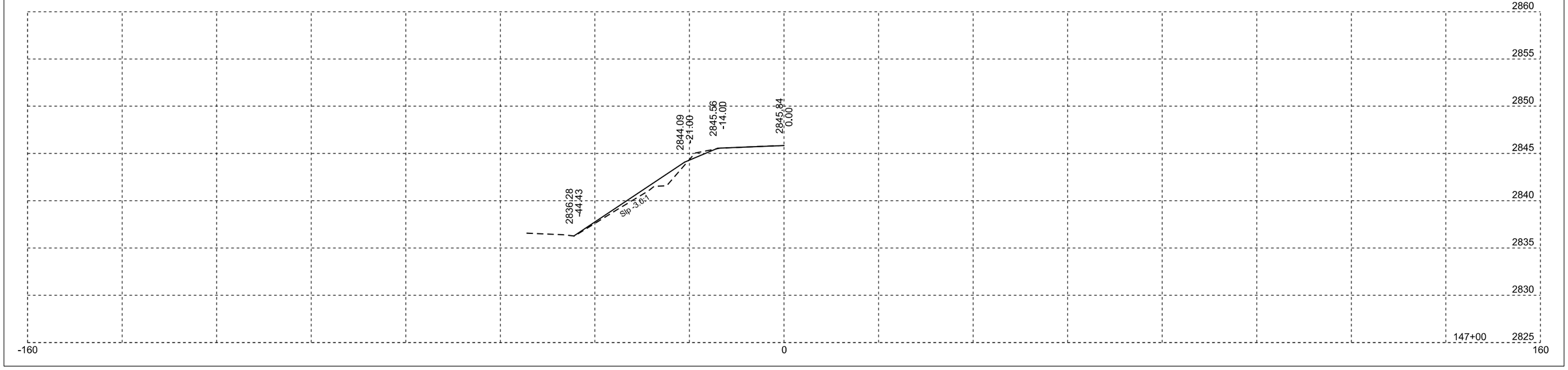


Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	30	41

MRM 160.5

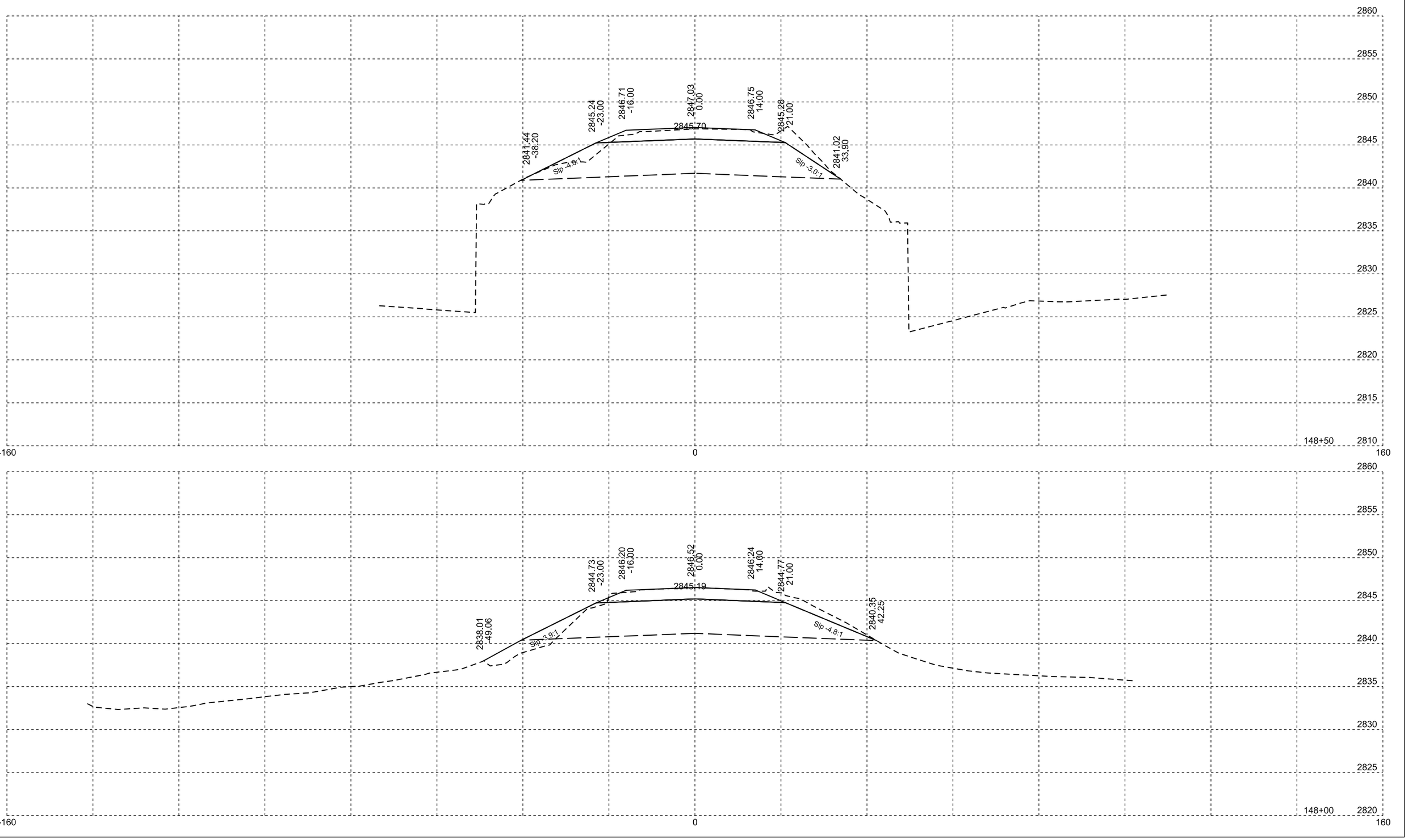




Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	31	41

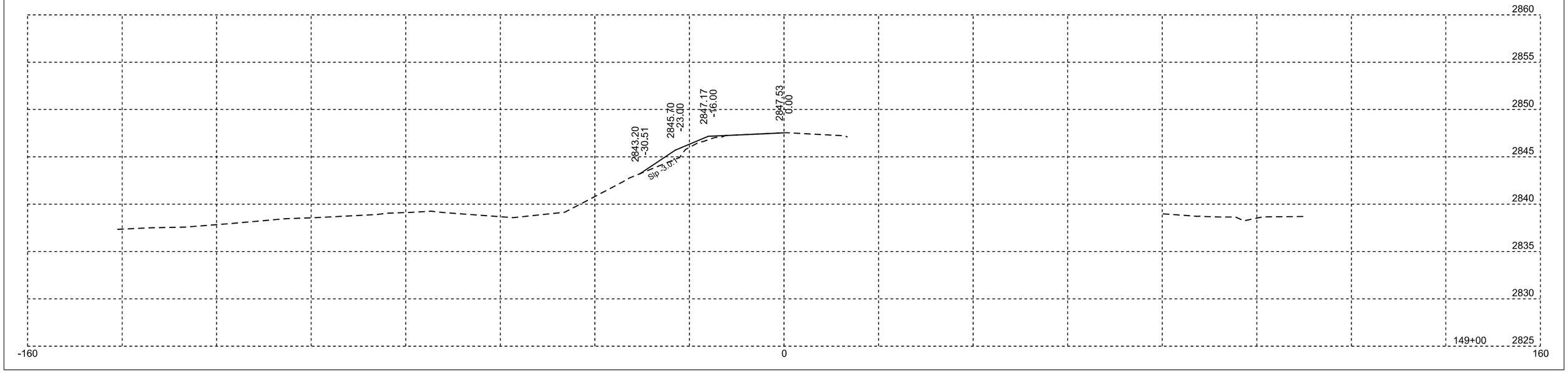
MRM 160.5



MRM 160.5

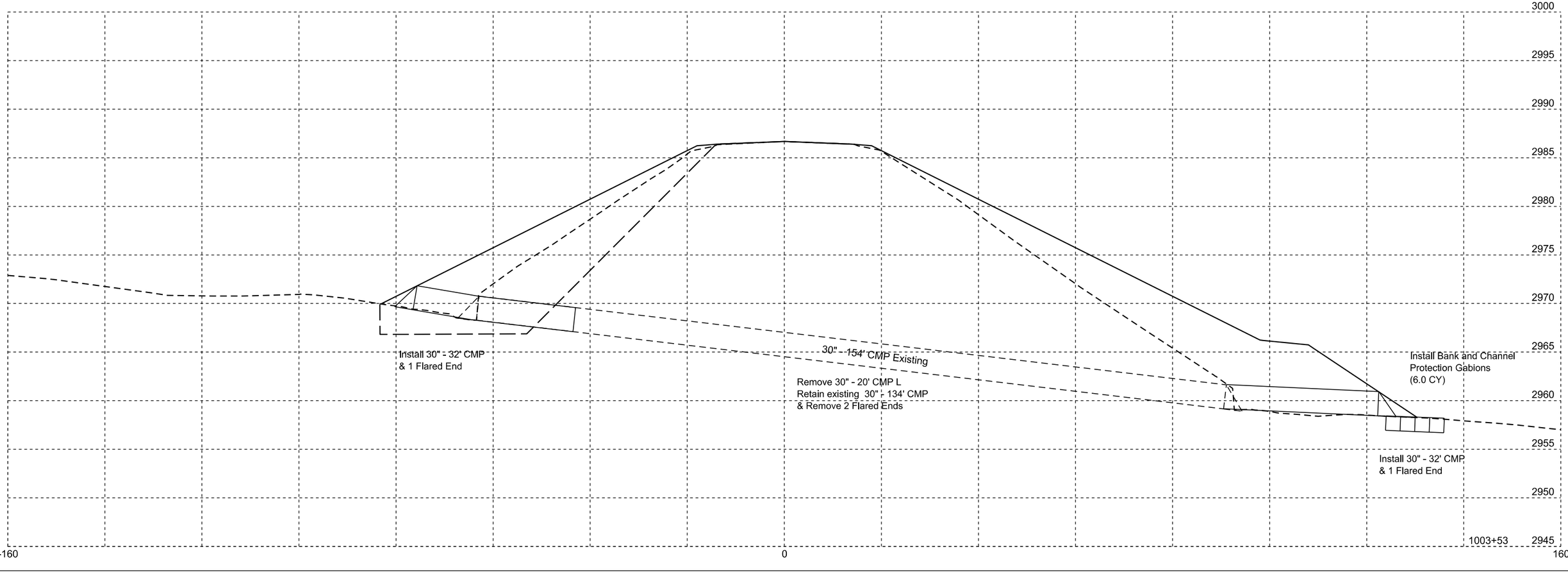
Plotting Date: 08/15/2019

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	32	41



Plotting Date: 08/15/2019

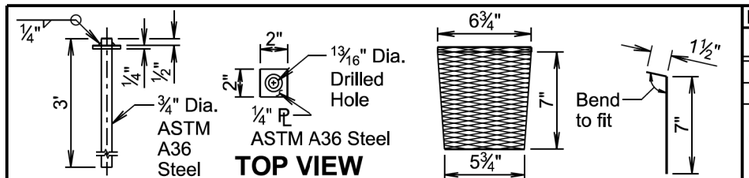
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	33	41



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	079-471	34	41

Plotting Date: 08/15/2019

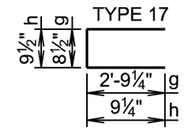
Plot Scale - 1:200

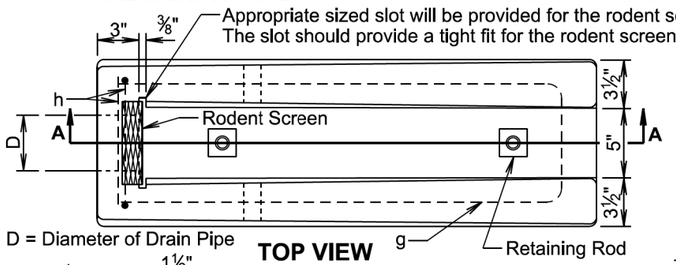


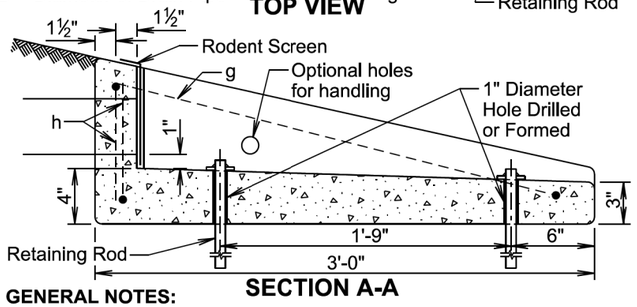
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

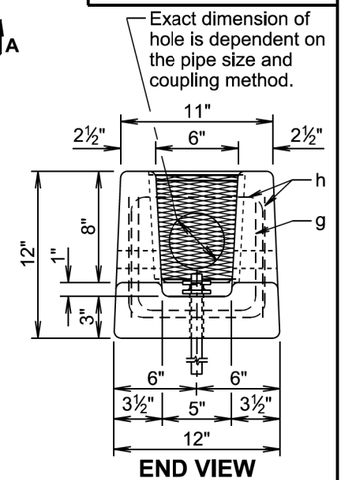
NOTE: All dimensions are out to out of bars.

Bending Details









GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

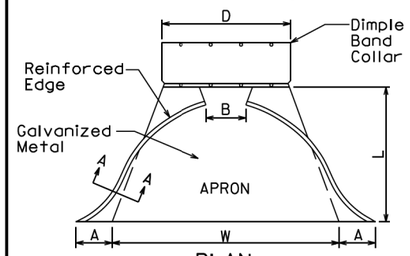
The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

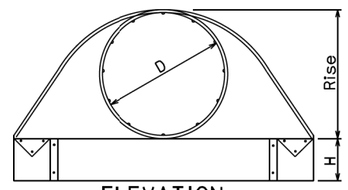
All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

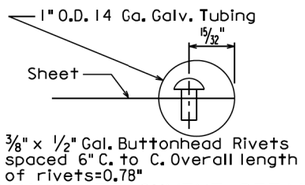
June 26, 2019

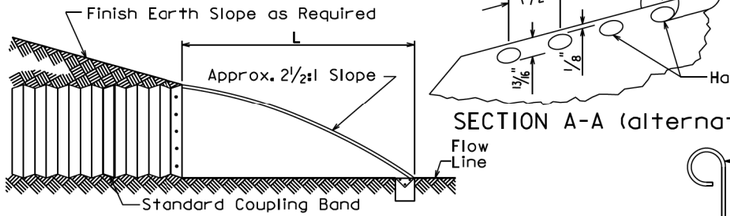
Published Date: 3rd Qtr. 2019	SDDOT	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50
			Sheet 1 of 1

Alternate Type Connector Sections may be used with approval of the Engineer.



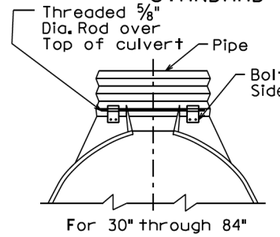


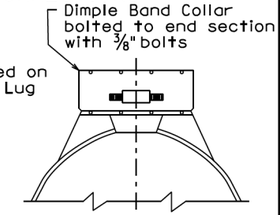




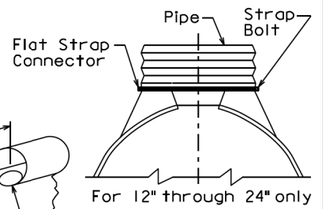
Dia. D (in.)	Ga.	DIMENSIONS (in.) A	B	H	L	W	Approx. Slope	Body
12	16	6	6	6	21	24	2½:1	1 Pc.
15	16	7	8	6	26	30	2½:1	1 Pc.
18	16	8	10	6	31	36	2½:1	1 Pc.
21	16	9	12	6	36	42	2½:1	1 Pc.
24	16	10	13	6	41	48	2½:1	1 Pc.
30	14	12	16	8	46	60	2½:1	1 Pc.
36	14	14	19	9	51	72	2½:1	2 Pc.
42	12	16	22	11	60	84	2½:1	2 Pc.
48	12	18	27	12	69	90	2¼:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1¾:1	3 Pc.
66	12	18	36	12	87	120	1½:1	3 Pc.
72	12	18	39	12	87	126	1⅓:1	3 Pc.
78	12	18	42	12	87	132	1¼:1	3 Pc.
84	12	18	45	12	87	138	1⅙:1	3 Pc.

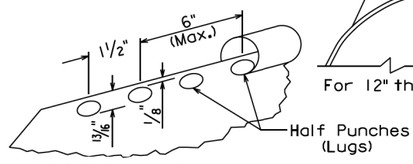
STANDARD CONNECTIONS

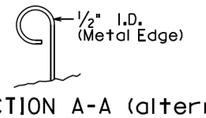




NOTE: Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.







GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by ⅜" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x ¼" for 60" through 72" diameters and 2½" x 2½" x¼" for 78" and 84" diameters. The angles shall be attached by ⅜" diameter galvanized nuts and bolts.

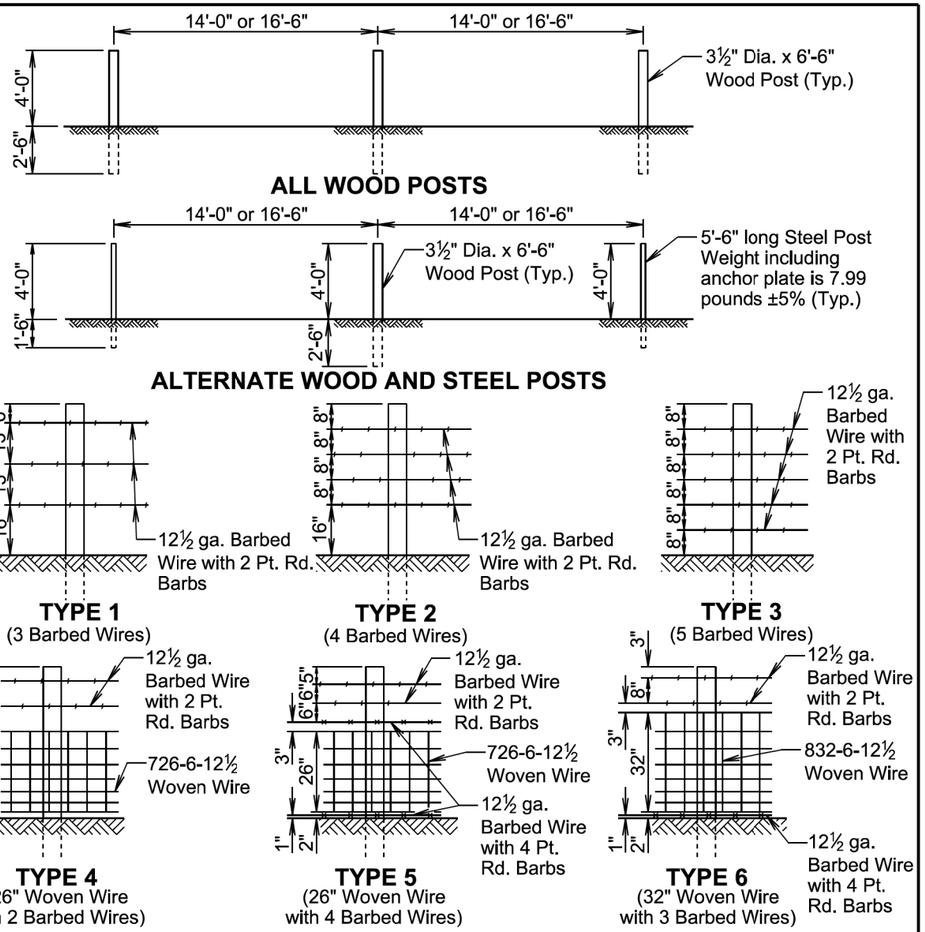
Rivets and Bolts shall be ⅜" Dia. Min. for 10 Ga. and 12 Ga. sheet, and ⅝" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

Published Date: 3rd Qtr. 2019	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1

Plotted From - trnc11610

File - ...\15qf std plates.dgn



TYPE OF FENCE		LINE POST SPACING	BARBED WIRE		WOVEN WIRE
TYPE	DESCRIPTION		WIRE GAGE	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
1	3 Barbed Wires	16'-6"	12½	2 Point Round	—
2	4 Barbed Wires	16'-6"	12½	2 Point Round	—
3	5 Barbed Wires	16'-6"	12½	2 Point Round	—
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12½	2 Point Round	726-6-12½
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd.	726-6-12½
6	32" Woven Wire with 3 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 1 wire with 4 Pt. Rd.	832-6-12½

GENERAL NOTES:

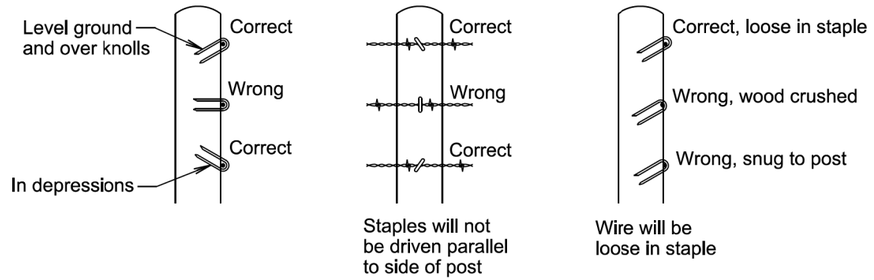
Fence types designated on the plans that are followed by the letter S will have smooth (barbless) wires.

When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

All degrees of curvature stated for fence are at centerline of roadway.

June 26, 2019

Published Date: 3rd Qtr. 2019	SDDOT	***RIGHT-OF-WAY FENCE***	***PLATE NUMBER*** 620.01 *Sheet 1 of 1*



STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence will consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire will be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts will be used for brace panels. Gates will be of the type designated in the plans or as otherwise directed by the Engineer. Fence will be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

Right-of-Way fence on Interstate Projects will be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

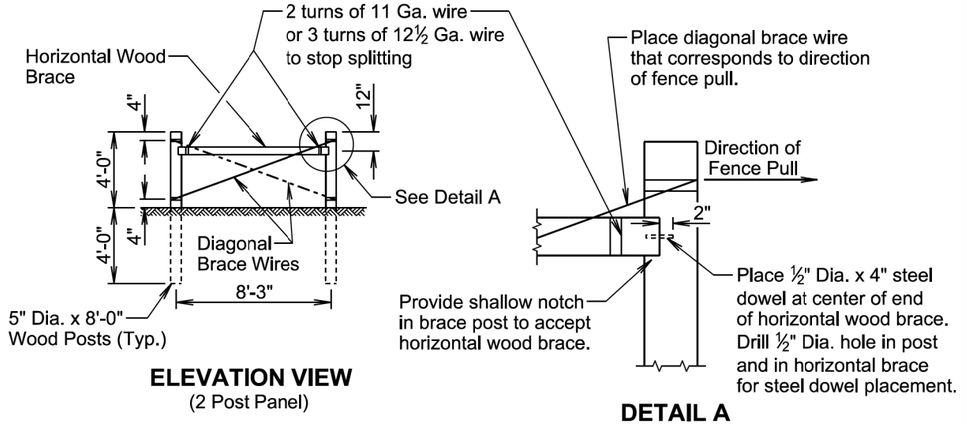
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs will be fabricated from zinc coated 14 ga. wire. Two point barbs will be wrapped twice around one main strand at four-inch spacings and the four point barbs will be interlocked and wrapped around both main strands at five-inch spacings.

The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts will be as stated in AASHTO M281. Woven wire will conform to design and specifications of ASTM A116 and barbed wire will conform to ASTM A121.

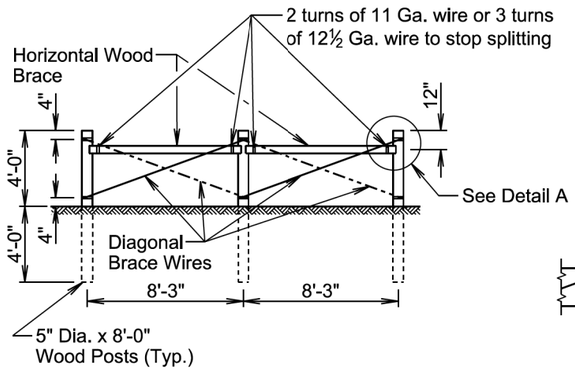
June 26, 2019

Published Date: 3rd Qtr. 2019	SDDOT	***STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES***	***PLATE NUMBER*** 620.02 *Sheet 1 of 1*

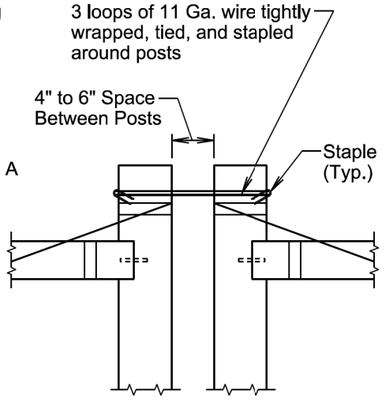


ELEVATION VIEW
(2 Post Panel)

DETAIL A



ELEVATION VIEW
(3 Post Panel)



DETAIL B

GENERAL NOTES:

Two Post Panels will be installed at least every 1320' between corners.

Two Post Panels will be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces will consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires will be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires will be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

June 26, 2019

Published Date: 3rd Qtr. 2019	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 1 of 3

SPACING OF 2 POST PANELS WITHIN CURVES	
DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	** At P.C., P.T., and at every 1320' between P.C. and P.T.

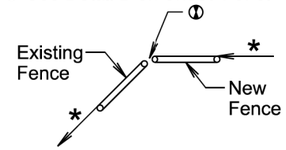
GENERAL NOTE:

All degrees of curvature stated for fence are at centerline of roadway.

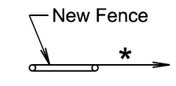
* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

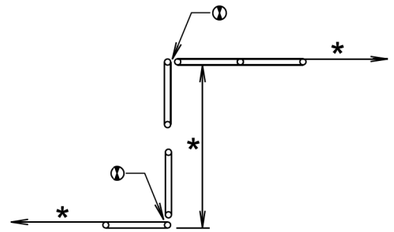
** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

① See Detail B on Sheet 1 of 3.

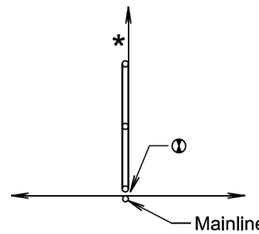


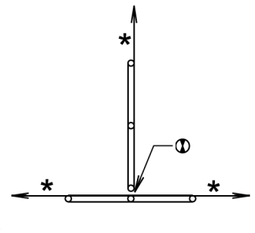
BEGIN OR END FENCE
(Where new fence ties into existing fence)



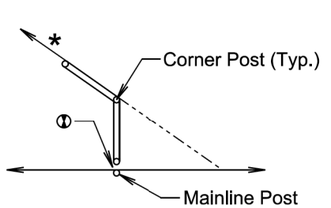


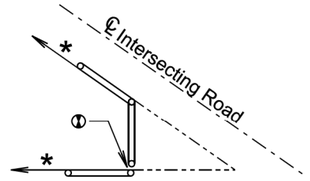
SHORT JOGS IN FENCE

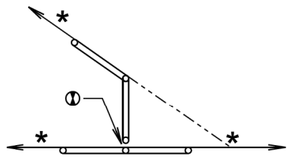




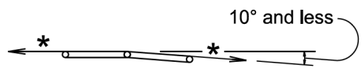
CROSS FENCE



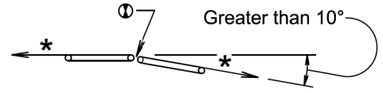




SHARP ANGLES IN CROSS FENCE



Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

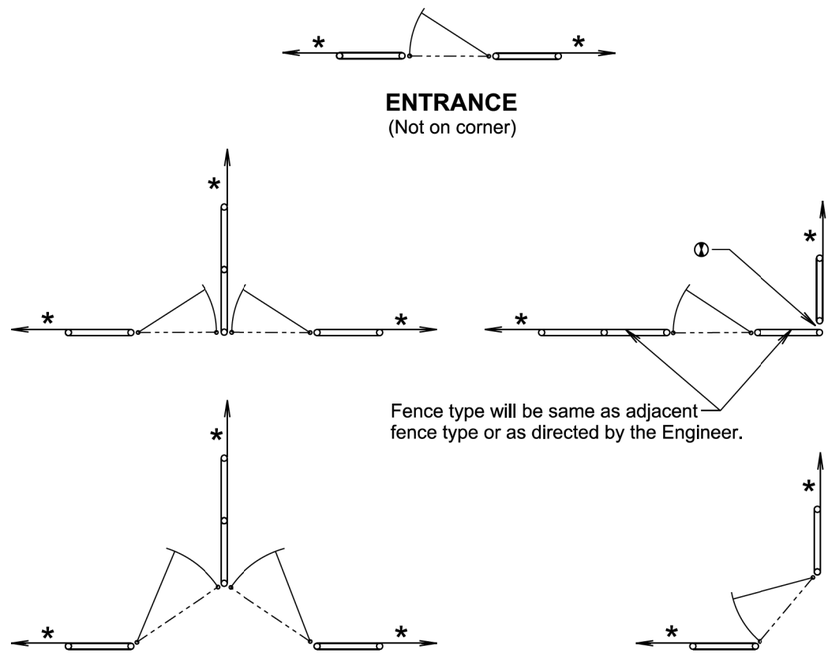


Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

June 26, 2019

Published Date: 3rd Qtr. 2019	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 2 of 3

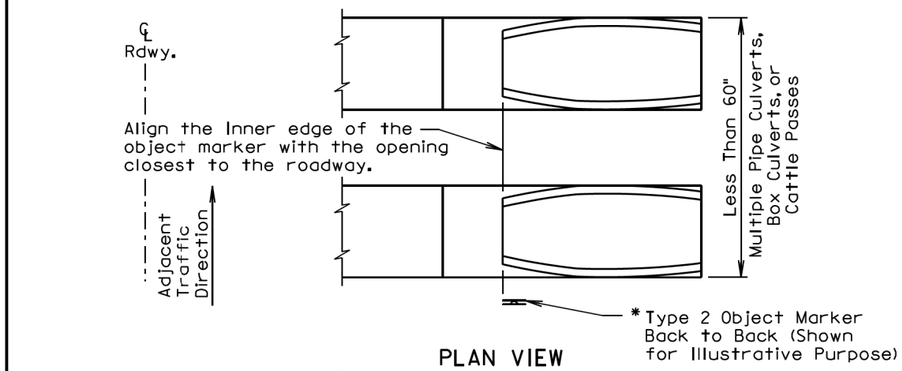


* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

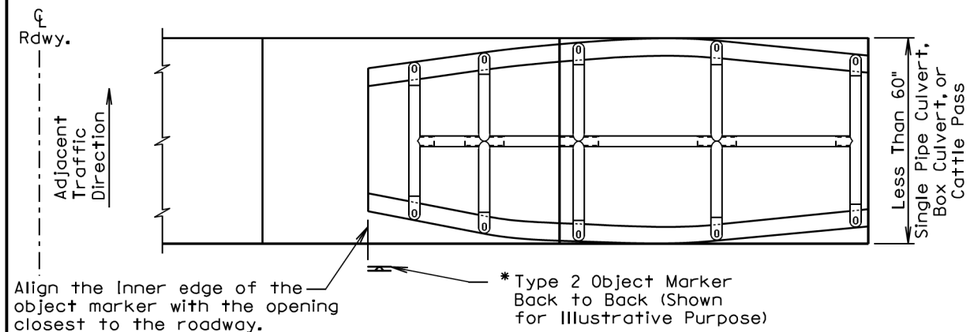
① See Detail B on Sheet 1 of 3.

June 26, 2019

Published Date: 3rd Qtr. 2019	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 3 of 3



PLAN VIEW
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)
(Pipe culverts shown for illustrative purpose.)
(Embankment is not shown.)



PLAN VIEW
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)
(Pipe culvert shown for illustrative purpose.)
(Embankment is not shown.)

GENERAL NOTES:

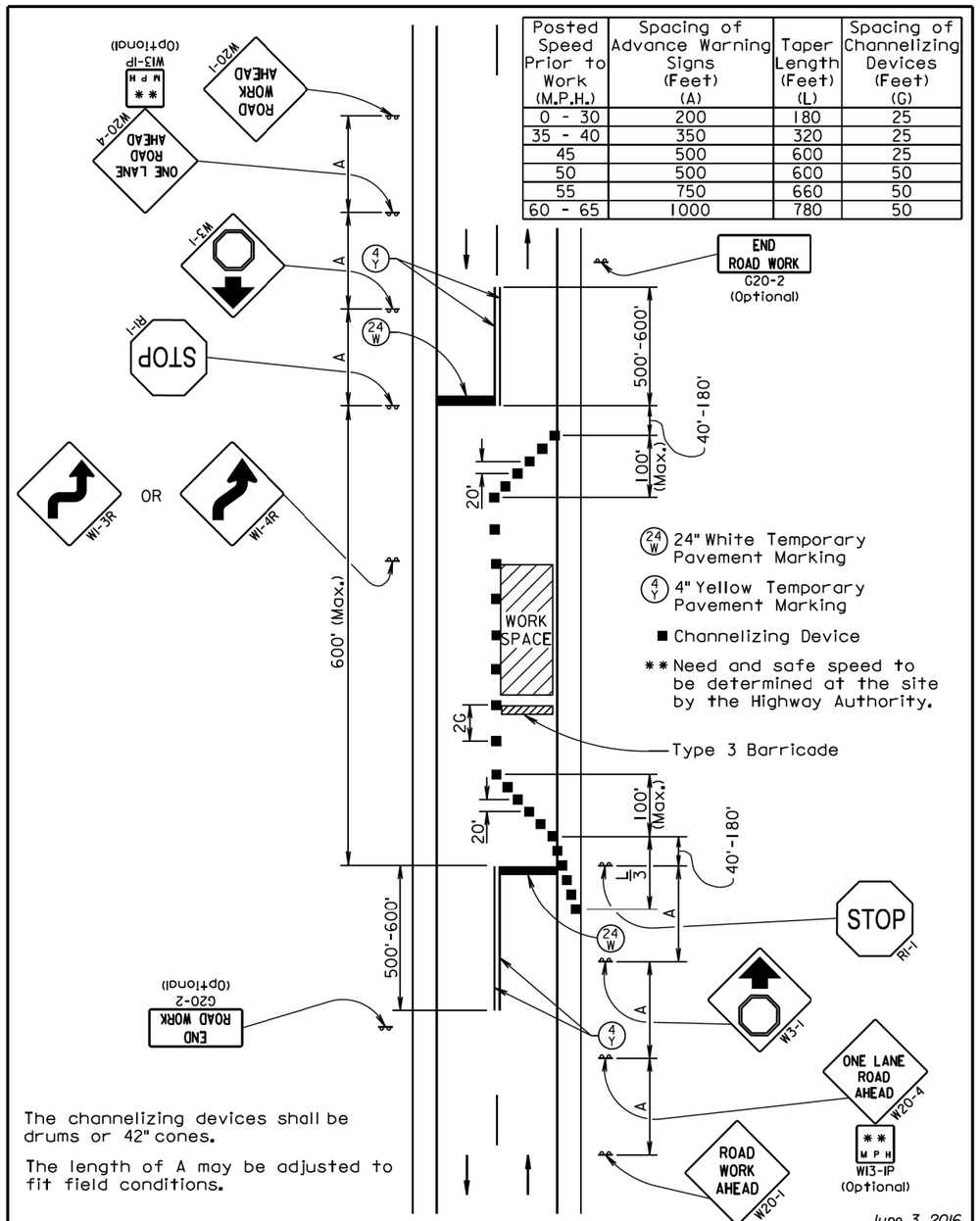
This standard plate will be used in conjunction with standard plate 632.01.

* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

September 14, 2018

Published Date: 3rd Qtr. 2019	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)	PLATE NUMBER 632.03
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50



24 W 24" White Temporary Pavement Marking

4 Y 4" Yellow Temporary Pavement Marking

■ Channelizing Device

** Need and safe speed to be determined at the site by the Highway Authority.

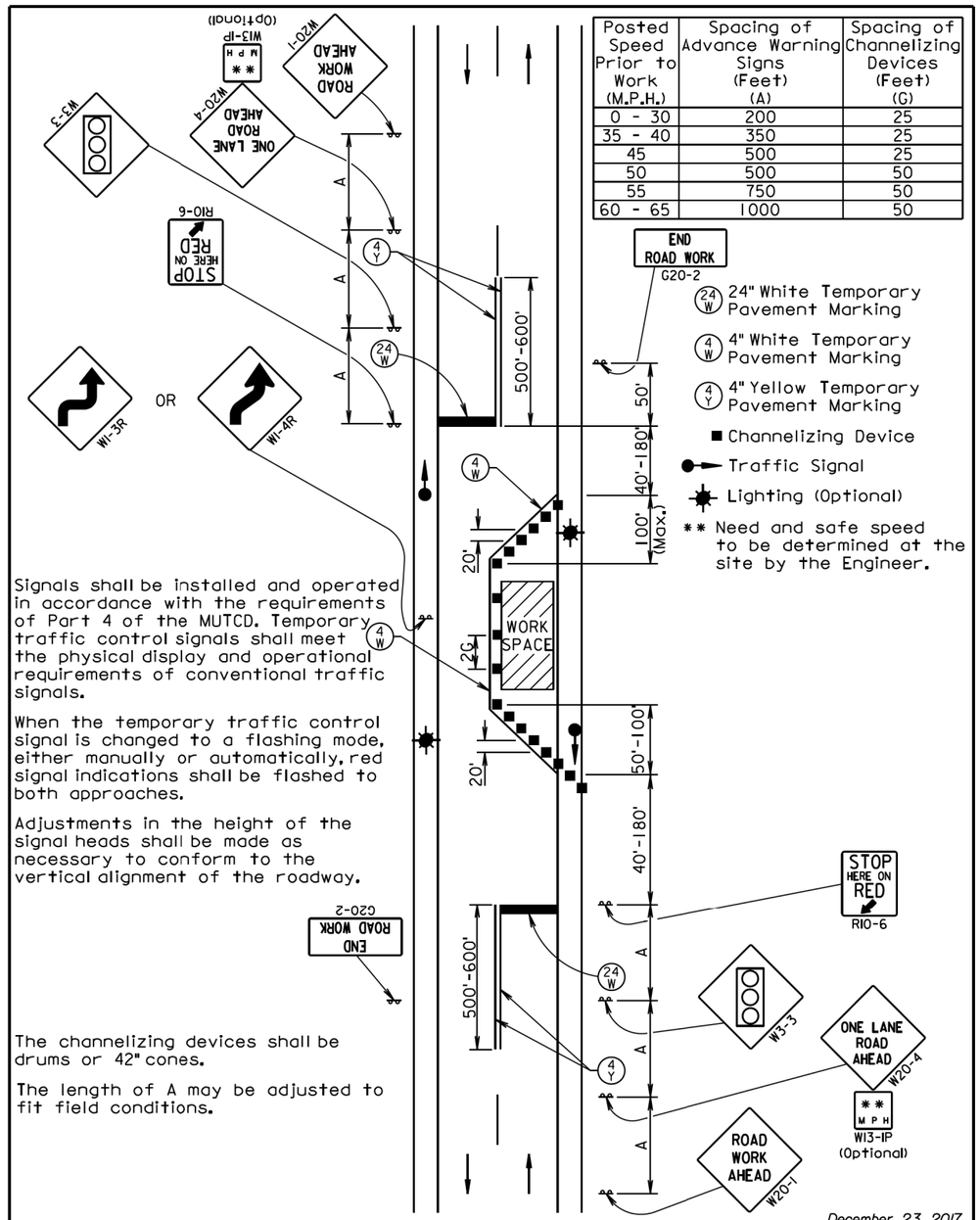
The channelizing devices shall be drums or 42" cones.

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

June 3, 2016

Published Date: 3rd Qtr. 2019	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25
			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



24 W 24" White Temporary Pavement Marking

4 W 4" White Temporary Pavement Marking

4 Y 4" Yellow Temporary Pavement Marking

■ Channelizing Device

Traffic Signal

Lighting (Optional)

** Need and safe speed to be determined at the site by the Engineer.

Signals shall be installed and operated in accordance with the requirements of Part 4 of the MUTCD. Temporary traffic control signals shall meet the physical display and operational requirements of conventional traffic signals.

When the temporary traffic control signal is changed to a flashing mode, either manually or automatically, red signal indications shall be flashed to both approaches.

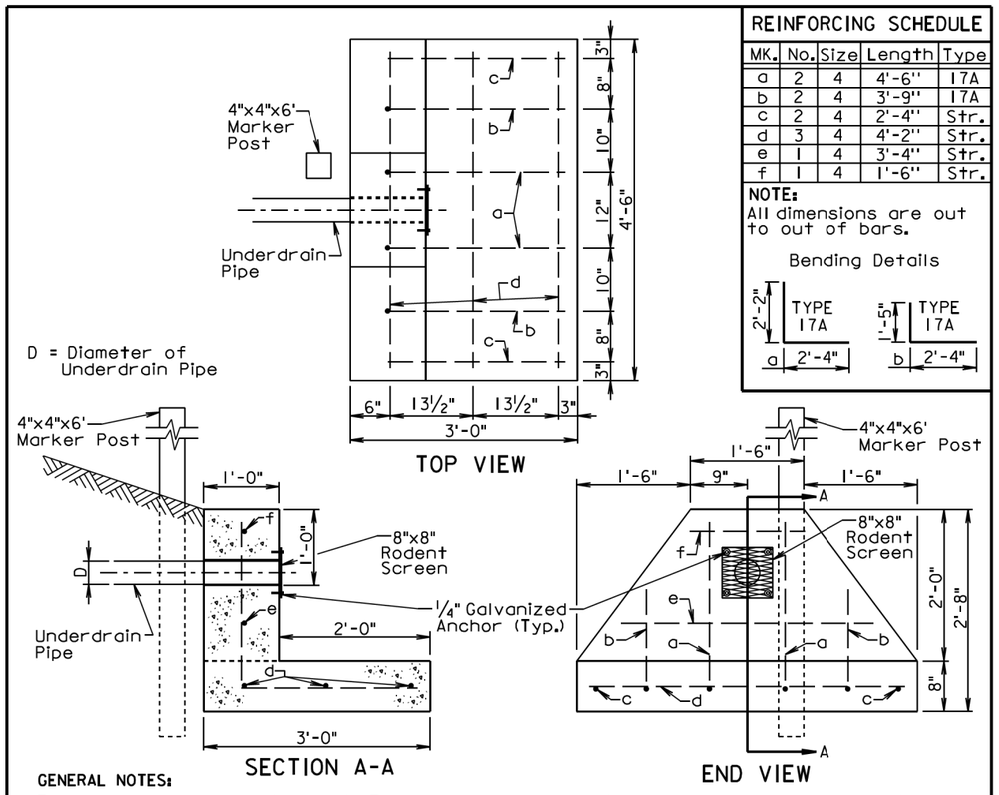
Adjustments in the height of the signal heads shall be made as necessary to conform to the vertical alignment of the roadway.

The channelizing devices shall be drums or 42" cones.

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

December 23, 2017

Published Date: 3rd Qtr. 2019	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING TRAFFIC SIGNALS	PLATE NUMBER 634.26
			Sheet 1 of 1



REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
a	2	4	4'-6"	17A
b	2	4	3'-9"	17A
c	2	4	2'-4"	Str.
d	3	4	4'-2"	Str.
e	1	4	3'-4"	Str.
f	1	4	1'-6"	Str.

NOTE:
All dimensions are out to out of bars.

Bending Details

GENERAL NOTES:

The concrete shall be Class M6. The concrete shall conform to the requirements of Section 462 of the Specifications except the minimum curing time shall be 72 hours. It is estimated that 0.55 cubic yards of concrete is required for each unit.

Four cast-in-place or drilled-in 1/4" galvanized anchors shall be placed in the headwall. Each galvanized anchor shall be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.

All reinforcing steel shall conform to ASTM A615 Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.

The underdrain pipe shall be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

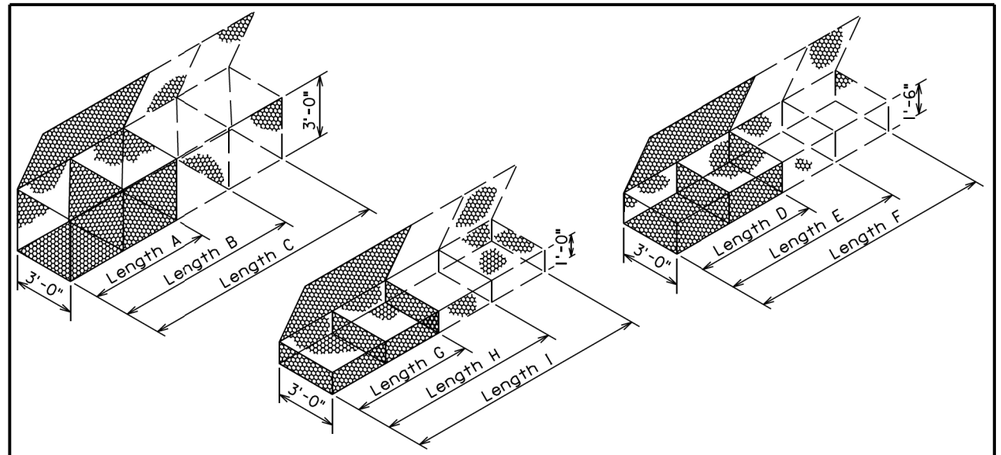
The 8"x8" rodent screen shall be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size shall be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen shall be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.

A 4"x4"x6' marker post shall be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post shall project 3'± above the ground line. The marker post shall be cedar or treated with a wood preservative and shall be painted with two coats of white paint.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, rodent screen, anchors, and marker post shall be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

June 26, 2015

Published Date: 3rd Qtr. 2019	SDDOT	**CONCRETE HEADWALL FOR UNDERDRAIN**	PLATE NUMBER 680.01 Sheet 1 of 1



GABION DETAILS

STANDARD SIZES

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

Above Dimensions subject to mill tolerances.

GENERAL NOTES:

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

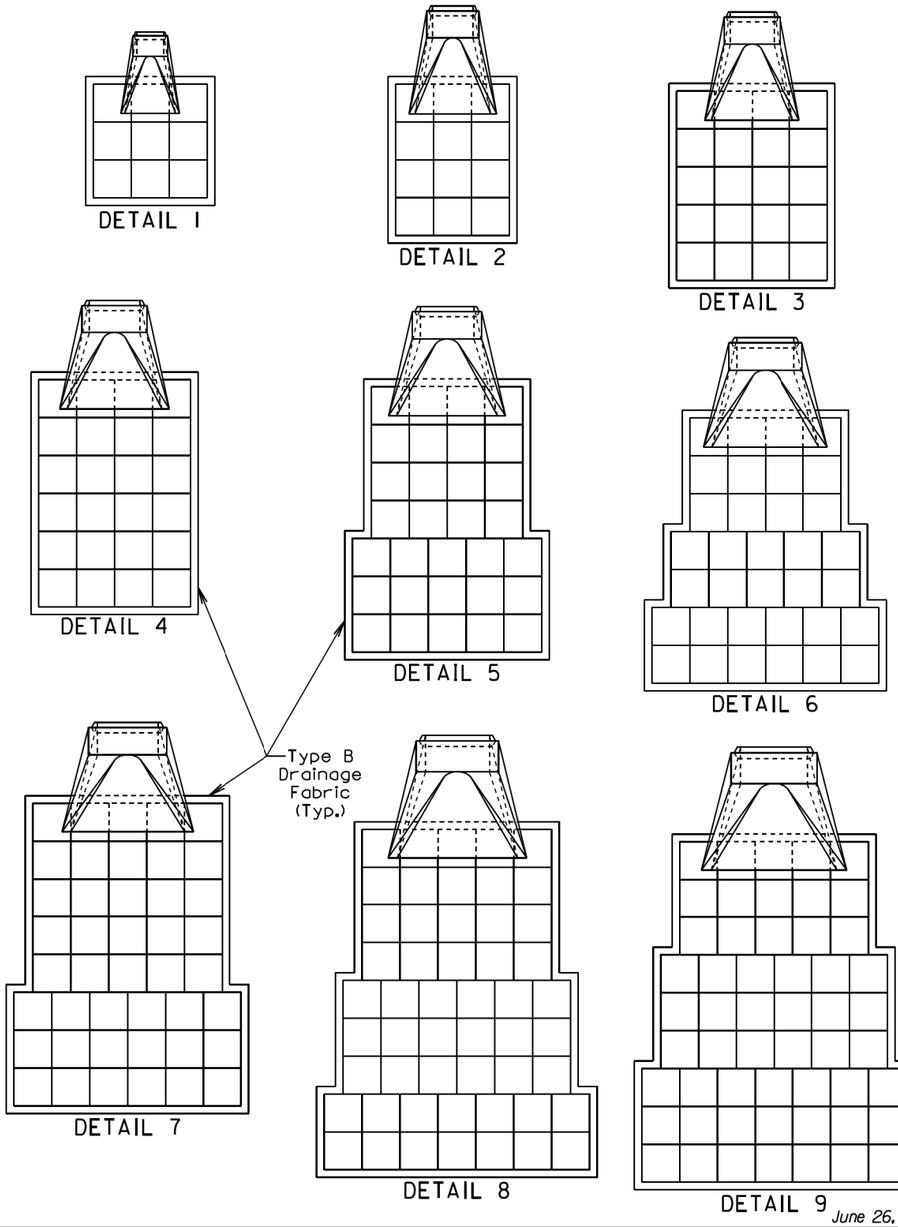
The lacing procedure is as follows:
1. Cut a length of lacing wire approximately 1 1/2 times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.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

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

Interlocking fasteners for PVC coated gabions shall be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction shall not exceed 6 inches. All fasteners shall be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

June 26, 2001

Published Date: 3rd Qtr. 2019	SDDOT	**BANK AND CHANNEL PROTECTION GABIONS**	PLATE NUMBER 720.01 Sheet 1 of 1



June 26, 2016

Published Date: 3rd Qtr. 2019

SDDOT

BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS

PLATE NUMBER 720.03

Sheet 1 of 2

	ESTIMATED QUANTITIES *			
	Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)
RCP, RCP Arch, CMP, and CMP Arch	1	12, 18, and 24	4.5	15
	2	30 and 36	6.0	19
	3	42	10.0	29
	4	48 and 54	12.0	34
	5	60	15.5	43
	6	66	17.0	47
	7	72	21.5	57
	8	78	26.0	68
	9	84	27.0	70

GENERAL NOTES:

Gabions at outlets of CMP and RCP shall be placed under the end section a distance of 2' from the outlet end. For CMP end section installations, the upper fabric of the gabions shall be modified to accommodate the metal end section as approved by the Engineer.

* Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on Standard Plate 720.01.

Type B drainage fabric shall be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric shall be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric shall be in conformance with Section 720 of the Specifications.

June 26, 2016

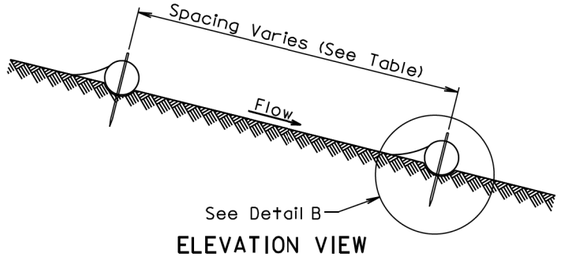
Published Date: 3rd Qtr. 2019

SDDOT

BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS

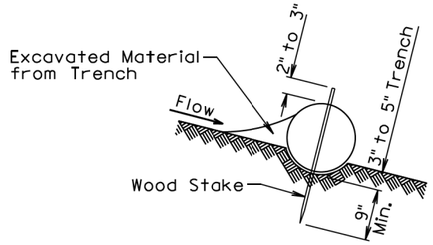
PLATE NUMBER 720.03

Sheet 2 of 2

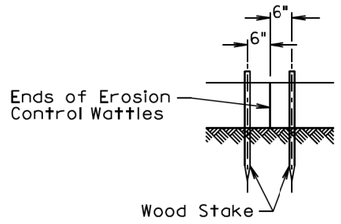


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

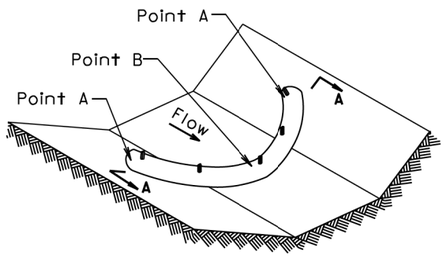
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



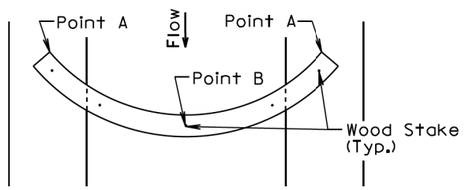
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

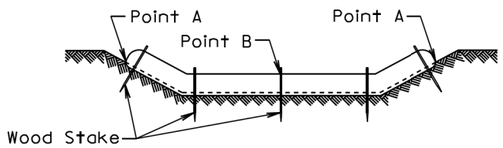


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 3rd Qtr. 2019	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than ½". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

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

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

December 23, 2004

Published Date: 3rd Qtr. 2019	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2