DEPARTMENT OF TRANSPORTATION

Planning & Engineering
Office of Project Development
700 E. Broadway Avenue
Pierre, SD 57501
O: 605.773.3275
dot.sd.gov

November 12, 2021

Re: Project's IM 0293(106)76, P 1400(16), P 8050(81), P1423(07), IM 0293(112)76, CIP 11076( ) – PCN's 03RA, 05NF, 06XY, 06Y0, 06VQ, X05Q – I29 Exit 77 Grading, Structure, PCC Paving, Sidewalk, Signals, Lighting, Fiber Reinforced Ditch Liner, City Watermain & City Sanitary Sewer.

To Whom It May Concern,

A pre-bid meeting for the 41st Street Interchange Reconstruction project is being held on December 2nd, 2021 at 1:30 PM CST in Sioux Falls, SD. Interested contracting parties are invited to attend the meeting in-person at the Sioux Falls Convention Center however, the meeting will be available via WEBEX. If you plan to participate via WEBEX, please send your email address to james.unruh@hdrinc.com so that you can be sent an invitation.

Sioux Falls Convention Center, Ballroom B
1101 N. West Avenue
Sioux Falls, SD 57104

This meeting will include a presentation of the project covering topics such as the overall scope of work, design aspects, construction sequencing, traffic control, utility coordination, and contract time. There will be an opportunity for Contractors to present questions to Department staff, consultants, and project stakeholders.

Attendance is not a requirement, but all interested contracting parties are strongly encouraged to attend.

Additional instructions regarding the meeting format will be provided at the beginning of the meeting.

We look forward to seeing you there!

Sincerely,
SD DOT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	1	63

FILE: ...\Sheet Files\01 Title.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

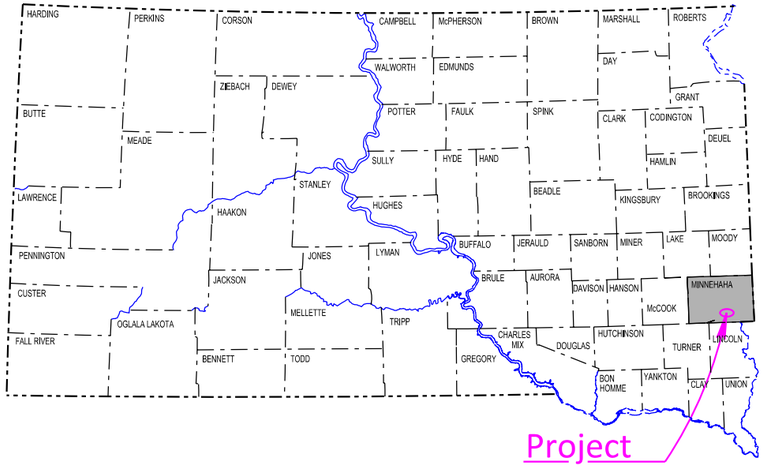
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT IM 0293(112)76

Interstate 29 SBL Ditch

MINNEHAHA COUNTY

REMOVE RIPRAP, CONCRETE DITCH LINING AND CULVERT WORK
PCN 06VQ



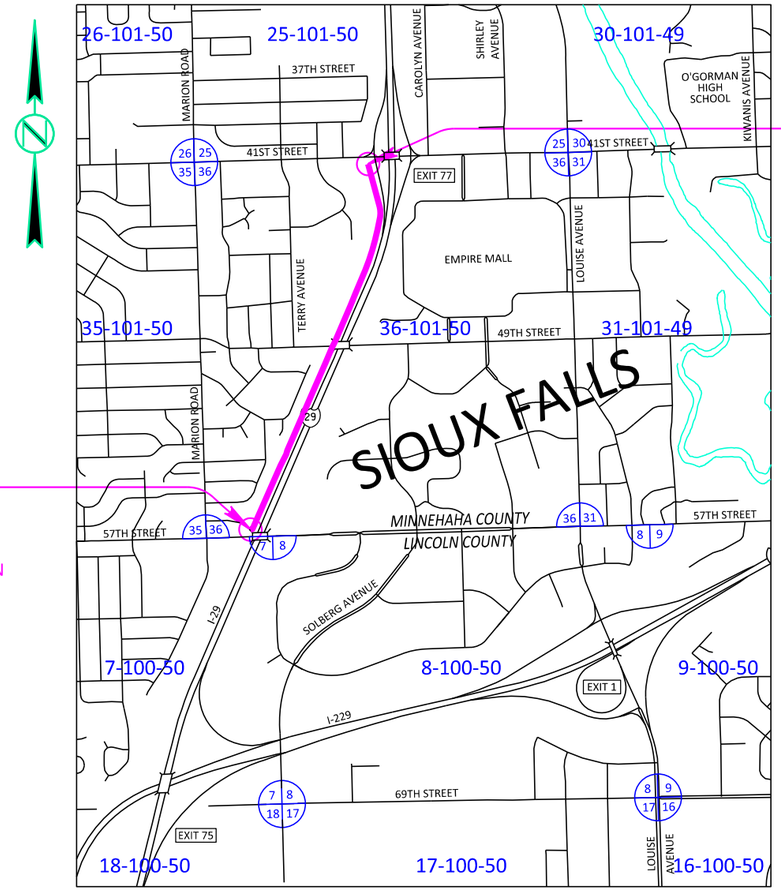
DESIGN DESIGNATION

	I-29 MAINLINE
AADT (2021)	48,900
AADT (2045)	60,600
DHV (2045)	6,915
D (P.M. Peak)	51%
T DHV	11%
T ADT	16%
V	70

STORM WATER PERMIT

Receiving Waters:
Roadside ditch along the I-29 southbound lanes from 57th Street to 41st Street to the Big Sioux River
Area Disturbed: 5.1 Acres
Total Project Area (between I-29 west ROW and I-29 SB lanes): 9.3 Acres
Latitude: 43.5003 (Google Maps)
Longitude: -96.7882 (Google Maps)

BEGIN P 1400(16)
I-29 Southbound Lanes Ditch
Station 10+00.00
Approx. 639.58' east and 5,184.71' south of the NE corner of Section 36 - Township 101 N - Range 50 W of the 5th P.M.



END P 1400(16)
I-29 Southbound Lanes Ditch
Station 65+19.16
Approx. 2,449.73' east and 122.02' south of the NW corner of Section 36 - Township 101 N - Range 50 W of the 5th P.M.

I-29 Ditch Gross Length 2,929.6 Feet 0.555 Miles

INDEX OF SECTIONS

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
6-14-21

HDR

2

December 15, 2021

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.978	Mile
009E3280	Slope Staking	0.978	Mile
110E0510	Remove Pipe End Section	6	Each
110E0530	Remove Storm Sewer Pipe	4	Ft
110E1600	Remove Riprap	1,395.3	SqYd
110E1700	Remove Silt Fence	151	Ft
110E7510	Remove Pipe End Section for Reset	4	Each
120E0010	Unclassified Excavation	9,886	CuYd
120E0600	Contractor Furnished Borrow Excavation	4,314	CuYd
120E1000	Muck Excavation	2,223	CuYd
120E6300	Water for Vegetation	2,239.1	MGal
230E0010	Placing Topsoil	2,259	CuYd
260E2010	Gravel Cushion	7,170.0	Ton
260E6010	Granular Material	3,621.0	Ton
380E2160	5.5" Nonmetallic Fiber Reinforced PCC Pavement	11,377.1	SqYd
380E2210	8" Nonmetallic Fiber Reinforced PCC Pavement	524.3	SqYd
380E6110	Insert Steel Bar in PCC Pavement	99	Each
450E0102	12" RCP Class 2, Furnish	6	Ft
450E0110	12" RCP, Install	6	Ft
450E0162	30" RCP Class 2, Furnish	8	Ft
450E0170	30" RCP, Install	8	Ft
450E2000	12" RCP Flared End, Furnish	4	Each
450E2001	12" RCP Flared End, Install	4	Each
450E2004	15" RCP Flared End, Furnish	1	Each
450E2005	15" RCP Flared End, Install	1	Each
450E2016	24" RCP Flared End, Furnish	1	Each
450E2017	24" RCP Flared End, Install	1	Each
450E3022	30" RCP Arch Class 2, Furnish	40	Ft
450E3030	30" RCP Arch, Install	40	Ft
450E8305	Repair Culvert Joint	10.0	Ft
450E9001	Reset Pipe End Section	4	Each
632E2520	Type 2 Object Marker	17	Each
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	461.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	4	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0640	Temporary Pavement Marking	4,000	Ft
680E0060	6" Underdrain Pipe	200	Ft
700E2010	Place Riprap	54.8	Ton

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
7-12-21

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
730E0212	Type G Permanent Seed Mixture	201	Lb
731E0200	Fertilizing	3.86	Ton
732E0300	Bonded Fiber Matrix	15.0	Ton
734E0604	High Flow Silt Fence	605	Ft
734E0610	Mucking Silt Fence	42	CuYd
734E0620	Repair Silt Fence	151	Ft
831E0110	Type B Drainage Fabric	70	SqYd
831E0200	Woven Separator Fabric	15,601	SqYd

ENVIRONMENTAL COMMITMENTS

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

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: https://dot.sd.gov/doing-business/environmental/about-environmental

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

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

COMMITMENT 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 (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at: http://sdleastwanted.com/maps/default.aspx.

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:

https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as cold water permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as cold water permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required the Contractor will obtain the General Permit for Temporary Discharge Activities from the DANR Surface Water Program, 605-773-3351.

< http://denr.sd.gov/des/sw/swqformsandpermits.aspx >

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:

< http://denr.sd.gov/des/sw/WhatisaDMR.aspx >

HDR

COMMITMENT E: STORM WATER

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

Action Taken/Required:

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

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

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

The form can be found at:
< https://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 DOT 298 Form 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 the site.

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

SDDOT: https://dot.sd.gov/doing-business/environmental/stormwater
DANR: 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 Agriculture and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".

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

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

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

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

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

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the State Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

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

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

UTILITIES

The Contractor will 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.

Impacts to existing utilities are not anticipated. However, in some locations, adjustments to sub cuts and muck excavation may be necessary to avoid existing utilities.

DRAINAGE DURING CONSTRUCTION

Drainage during construction is the Contractor's responsibility. Contractor will be aware of existing drainage conditions and facilities, and will provide for drainage during all phases of construction. Damage caused by improper temporary drainage facilities will be repaired at the Contractor's expense and to the satisfaction of the Engineer.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 82.8 MGal. No separate payment will be made for the Water for Embankment and all costs associated will be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

REGISTERED PROFESSIONAL ENGINEER
5524
JAMES H. UNRUH
SOUTH DAKOTA
7-12-21

REV DATE: 7/12/2021
INITIAL: JHU

SHRINKAGE FACTORS

Item	% Shrinkage
Embankment	+35

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Station	to Station	Topsoil Excavation (CuYd)	Excavation (CuYd)	* (1) Muck Excavation (CuYd)	Total Excavation (CuYd)	* Contractor Furnished Borrow Excavation (CuYd)	(2) Muck Excavation Waste (CuYd)
57th St to 49th St							
10+06 (57th St)	37+10 (49th St)	1,501	1,855	502	3,858	519	502
49th St to 41st St							
37+15 (49th)	65+19 (41st St)	2,160	2,111	1,721	5,992	3,795	1,721
	Totals:	**3,661**	**3,966**	**2,223**	**9,850**	**4,314**	**2,223**

TABLE OF UNCLASSIFIED EXCAVATION

Excavation (includes topsoil excavation quantity)	7,627
Placing Topsoil	2,259
Total	9,886

* The quantities for these items are in the Estimate of Quantities under their respective bid items.

(1) Removal of riprap includes muck material excavated with the riprap. See Riprap Table.
For earthwork computations, muck excavation begins at the north end of the existing riprap (station 14+00)

(2) Overall project shows 1,403 cu yd topsoil waste and 2,223 cy yd muck excavation waste.
Waste material will become the property of the Contractor.

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

The final Unclassified Excavation quantity will be based on plan quantities. If there are locations with substantial deviations from the design cross sections, measured cross sections will be used to determine final quantities at those locations.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil will be used in place of the estimated Topsoil quantity. The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

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

MUCK EXCAVATION

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 2,223 cubic yards of muck excavation will be paid for at the contract unit price per cubic yard for “Muck Excavation”.

Muck excavation consists of the removal of highly organic and/or highly saturated material from the designated areas shown on the cross sections. Highly organic muck material will not be used in the embankment but may be used as topsoil. Non-organic muck material may be used as embankment outside of the fill subgrade shoulder if it is properly handled and dried prior to placement in the embankment.

Field measurement of muck excavation will not be made unless the Engineer orders additional excavation, or when the Engineer determines, in accordance with Section 120.3 A.1 of the Specifications, that the classification of excavation be changed.

If the areas designated as muck excavation can be removed with similar equipment and procedures as used for unclassified excavation, the material will be measured and paid for as “Unclassified Excavation”.

From station 10+06 to 14+00, the Contractor will remove the existing riprap.

TABLE OF MUCK EXCAVATION

Station to	Station	L/R	Depth (Ft)	Quantity (CuYd)
57th St to 49th St				
10+06	14+00	L & R	3'	(1)
14+00	17+50	L& R	3'	502
49th St to 41st St				
48+00	56+00	R	3'	846
59+00	63+00	R	3'	875
			Total	2,223

(1) Muck excavation from station 10+06 to station 14+00 is included in the Remove Riprap quantity.

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.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
7-12-21

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/13/2021

REV DATE: 7/12/2021
INITIAL: JHU

UNDERDRAIN REPAIR

An existing underdrain system may be encountered during construction. The underdrain system consists of 6-inch HDPE underdrain located at depths of 3'-5' near the toe of the inslope (approximately 100' from mainline I29 centerline) from Station 10+70± to the drop inlet at Station 21+70±. If the underdrain pipe is encountered the Contractor will replace the underdrain from the location encountered to the outlet. Replaced underdrain will be graded to maintain a minimum .01ft/ft or 1% drop from beginning to outlet.

Underdrain pipe replaced within 20' of the outlet will be 6-inch diameter PVC Outlet Pipe placed in a trench backfilled with soil. Underdrain pipe replaced more than 20' from the outlet will be 6-inch diameter Perforated PVC Pipe placed in a trench backfilled with a minimum of 1' porous backfill capped with a minimum of 1' soil.

The 6-inch diameter Perforated PVC Drain Pipe will be SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 and ASTM F758. The 6-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve will conform to ASTM D6707.

Care will be taken to ensure that the 6-inch diameter Perforated PVC Drain Pipe and the 6-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Damaged pipe will be replaced by the Contractor at no additional cost to the Department.

All labor, tools, equipment, and any incidentals necessary for the Installation of 6-inch diameter Perforated PVC Drain Pipe, 6-inch diameter PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 6" Underdrain Pipe. The estimated quantity assumes 200' of drain pipe will need to be replaced.

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

The underdrain outlet and drop inlet will be cleared of any debris upon completion of work.

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

NONMETALLIC FIBER REINFORCED PCC DITCH LINER

The Nonmetallic Fiber Reinforced Concrete will be Class M6 and conform to Section 462 of the Construction Specification except as modified by these notes.

The Nonmetallic Fiber Reinforced Concrete at the time of placement will contain 6.5 percent plus 1.0 to minus 1.5 percent entrained air and slump of the concrete will be maintained between 2.0 and 5.0 inches.

The Nonmetallic Fiber Reinforcement will be a macro fiber approximately 1.5 inch or longer (W.R. Grace - STRUX 90/40 or approved equal) at an addition rate of 5 lb/cubic yard . The fiber will be designed specifically for use in concrete, tested according to ASTM C1609, the test results will be supplied by the manufacturer, and the manufacturer will have a documented history of providing fibers for use in concrete.

The minimum coarse aggregate content will be 48 percent of the total aggregate in the mix by weight.

The concrete mix design proportions will be submitted to the Concrete Engineer for review a minimum of 3 weeks prior to first use. This submittal will include a mixing method to ensure the fibers are uniformly distributed in the concrete with no fiber balling.

Preformed expansion joint fillers will be placed transversely in the ditch liner at intervals of not more than 50 feet. Transverse joints will be a minimum 1/4th of the channel depth and will be made at intervals of not more than 12 feet. Longitudinal joints (same depth as transverse joints) will be made at the intersection of the sloped portion and the flat portion of the liner.

All costs for labor, materials, and placing the expansion fillers and incidentals necessary for construction of the Non-Metallic Fiber Reinforced Concrete Ditch Liner will be incidental to the contract unit price per square yard for 5.5" or 8" Non-Metallic Fiber Reinforced PCC Pavement. Excavation necessary will be measured and paid for as Unclassified Excavation and/or Muck Excavation (where applicable) and is quantified in the earthwork computations.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
7-12-21

PCC DITCH LINER FOUNDATION PREPARATION

Excavate the subgrade to 1 foot below the bottom of the PCC Ditch Liner prior to concrete placement. The bottom of the excavation will be covered with Woven Separator Fabric and backfilled with select fill material. Select fill material will conform to the gradation requirements of Gravel Cushion in Section 882 and compacted using a vibratory roller.

Dewatering may be required to construct the PCC Ditch Liner. It is anticipated that groundwater may be encountered during construction from Station 10+00± to Station 21+77± and from Station 58+72± to Station 64+90±. Select fill material placed below the water surface will be Granular Material conforming to the gradation requirements of Section 421.2.A, Box Culvert Undercut Backfill. 3,621 tons of Granular Material and 7,170 tons of Gravel Cushion are included in the materials quantities for bidding purposes. These quantities can be adjusted or eliminated by CCO depending on field conditions.

WOVEN SEPARATOR FABRIC

Geotextile Specification:
Woven Separator Fabric will conform to Section 831. Woven Separator Fabric provided will be on the Approved Products List or will be certified by the supplier to meet this specification prior to installation.

Woven Separator Fabric will be paid for at the contract unit price per sq. yd. for Woven Separator Fabric. Payment will be full compensation for furnishing and installing the Woven Separator Fabric only. Granular backfill materials will be paid for under a separate bid item.

Geotextile Installation Procedure:
Place the Woven Separator Fabric on as level and smooth of surface as possible. Any protrusions that might damage the geotextile will be removed prior to placing the geotextile. All seams in the geotextile will be stitched in accordance with the seaming procedure and as shown on the detail labeled "Seam Types". No equipment will be allowed on the geotextile until the granular backfill material is in place. The geotextile will be kept as taut as possible prior to backfilling. Granular backfill material will be dumped behind the leading edge of the fill and pushed into place with a loader or dozer.

Geotextile Seaming Procedure (see detail):
The sewn seams will consist of two parallel rows of stitching ("prayer" seam, Type SSa-2), or a J-seam (Type SSn-1), using a single row of stitching. The stitching will be a lock type stitch.

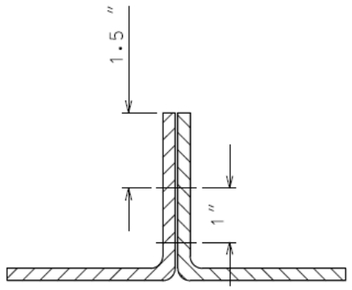
If the Type SSa-2 seam is used, the two rows of stitching will be 1" apart with a tolerance of plus or minus 0.5" and will not cross, except for restitching. The minimum seam allowance, i.e., minimum distance from the geotextile edge to the stitch line nearest to that edge, will be 1.5".

If the J seam (Type SSn-1) is used, the minimum seam allowance will be 1".

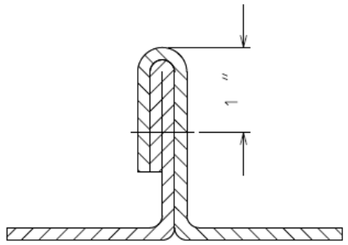
The seam, stitch type, and the equipment used to perform the stitching will be as recommended by the manufacturer of the geotextile and approved by the Engineer. The seams will be sewn in such a manner that the seam can be readily inspected by the Engineer.

The thread used will be high strength polypropylene, polyester, or Kevlar thread. Nylon threads will not be allowed.

WOVEN SEPARATOR FABRIC, CONTINUED



Flat or "prayer" seam
Type SSa-2



J seam
Type SSn-1

Seam Types

TABLE OF CONCRETE CHANNEL, GRAVEL CUSHION, GRANULAR MATERIAL, SEPARATOR FABRIC

Station	to Station	Length (Ft)	Basic Channel Width (Ft)	[1] 5.5" Concrete Channel (SqYd)	[1] 8" Concrete Channel (SqYd)	[1] Gravel Cushion (Tons)	[2] Granular Material (Tons)	[2] Woven Separator Fabric (SqYd)
57th St								
9+99.5	10+40.0	40.5	22		100.5		91	121.3
10+40.0	21+55.0	1,115.0	19	2,482.7			2,251	3,292.0
21+55.0	21+77.0	22.0	varies		57.8		52	77.0
22+29.1	35+58.3	1,329.2	19	2,979.9		2,702		3,965.6
35+58.3	36+08.5	50.2	varies		74.6	68		98.6
36+08.5	37+10.0	101.5	19	236.8		215		317.2
49th St								
39+15.0	58+72.2	1,957.2	19	4,383.6		3,975		5,758.2
58+72.2	59+38.7	66.5	varies		232.6	211		173.6
59+38.7	64+90.0	551.3	19	1,294.1			1,173	1,716.5
64+90.0	65+19.2	29.2	19		58.9		53	80.6
41st St								
			Totals	**11,377.1**	**524.3**	**7,170**	**3,621**	**15,601**

[1] Includes factor for channel side slopes
[2] Includes 20% additional quantity for overlap

TABLE OF REMOVE PIPE AND END SECTION

Station	Offset	Size	Remove Pipe (Ft)	Remove End Section (Each)	Remove End Section for Reset (Each)
10+38	18' R	30" arch			1
10+41	22' R	30" arch			1
17+52	13' L	12"		1	
23+99	10' L	12"		1	
29+95	13' L	12"		1	
32+00	14' L	15"		1	
33+33	9' L	12"			1
36+54	13' L	12"		1	
37+02	3' L	24"	4	1	
58+78	19' L	30"			1
		Total	4	6	4

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STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections will be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even.

Lift holes in the reinforced concrete pipe will be plugged with grout.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, and junction boxes where storm sewers run parallel to and within 10 feet horizontally from existing or proposed water mains.

Watertight joints are required where reinforced concrete pipes, drop inlets, manholes, or junction boxes cross water mains and are separated a distance of 18 inches or less, above or below, the water main.

If watertight joints are required then the watertight joints will extend for a distance of 10 feet beyond the water main. This measurement will be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals will conform to the following requirements:

1. Reinforced Concrete Pipe (Circular): Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe will be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

2. Reinforced Concrete Pipe (Arch): Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.

3. Drop Inlets, Manholes, and Junction Boxes: Joints will be sealed with one of the following methods:

    a. A flexible strip seal placed in the joints conforming to the requirements of ASTM C990 and the perimeter encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

    b. A hydrophilic flexible water stop seal placed in the joints and a 1-foot wide strip of fabric wrapped around the perimeter of the pipe. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.

    c. A self-adhesive external joint seal wrap. The seal wrap will be from the list below.

Approved List of Self-adhesive Joint Wrap

Product	Manufacturer
Mar Mac Seal Wrap	Mar Mac Construction Products McBee, SC 843-335-5909 www.marmac.com
ConWrap CS-217	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 conseal.com

Approved List of Hydrophilic Flexible Water Stop Seal:

Product	Manufacturer
Waterstop RX	Cetco Hoffman Estates, IL 800-527-9948 www.cetco.com
Conseal CS-231	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the Manufacturer's recommendations.

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, and for plugging the lift holes will be incidental to the contract unit price per foot for the corresponding pipe contract item.

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TABLE OF REINFORCED CONCRETE PIPE

	12"	30"	30" Arch	Flared End			Reset End Section
	Cl 2	Cl 2	Cl 2	12"	15"	24"	
	(Ft)	(Ft)	(Ft)	(EA)	(EA)	(EA)	(EA)
10+38 - 18'R to 10+57 - 7'R			16				1
10+41 - 22'R to 10+67 - 7'R			24				1
17+52 - 19'L to 17+53 - 7'L	6			1			
23+99 - 13'L to 7'L				1			
29+95 - 13'L to 7'L				1			
32+00 - 13'L to 7'L					1		
33+33 - 9' L							1
36+54 - 16'L to 10'L				1			
37+02 - 13'L to 7'L						1	
58+78 - 19'L to 58+79 - 8' L		8					1
Total	**6**	**8**	**40**	**4**	**1**	**1**	**4**

TABLE OF RIPRAP AND DRAINAGE FABRIC							
Station	to Station	L/R	Riprap Area (ft)	Riprap Depth (ft)	Remove Riprap (SqYd)	(1) Place Riprap (ton)	Type B Drainage Fabric (SqYd)
10+06	14+00	L & R	varies	assumed 3'	1,352.2		
22+18	22+28	L & R	32 x 10	3		54.8	70
62+52		L	varies	assumed 3'	43.1		
				Total	**1,395.3**	**54.8**	**70**
(1) Place riprap removed from ditch							

TABLE OF CONSTRUCTION STAKING
(See Special Provision for Contractor Staking specifications)

Roadway or Description	Begin Station	End Station	Length (Ft)	Grade Staking Length (Mile)	Grade Staking Sets of Stakes	Grade Staking Quantity (Mile)	Slope Staking Quantity (Mile)
57th St to ditch block	10+00	21+77	1,177	0.223	1	0.223	0.223
Ditch block to 49th St	22+29	37+10	1,481	0.280	1	0.280	0.280
49th St to 41st St	39+15	64+19	2,504	0.474	1	0.474	0.474
					Totals	**0.978**	**0.978**

TABLE OF TYPE 2 OBJECT MARKERS	
Location	**Quantity (Ea)**
10+00 - CL	1
10+57 - 7' R	1
10+67 - 7' R	1
17+53 - 7' L	1
21+77, CL	1
23+99 - 7' L	1
27+76 - CL	1
29+95 - 7' L	1
32+00 - 7' L	1
33+33 - 9' L	1
35+68.5 - 6' R	1
35+98.5 - 6' R	1
36+54 - 10' L	1
37+02 - 7' L	1
58+79 - 8' L	1
58+84.2 - 18.8' R	1
59+03.6 - 25.8' R	1
Total	**17**

STEEL BAR INSTALLATION

At the connections to existing box culvert and drainage structures, the Contractor will install the Steel Bars (#5 x 15 inch epoxy coated deformed tie bars) into drilled holes in the drainage structures at the locations shown in the Table of Steel Bar Installation per the requirements below:

1. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881 Type IV, Grade 3).
2. The diameter of the drilled holes will not be less than 1/8-inch greater, nor more than 3/8-inch greater than the diameter of the dowels or as per the manufacturer's recommendations. Holes will not be drilled using core bits. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
3. Mix epoxy resin as recommended by the manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
4. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
5. Embed dowels 6 inches into existing concrete.
6. Dowel bars will be #5 deformed bars conforming to ASTM A615 Grade 60.

The cost of drilling holes, epoxy resin, dowels, installation, and other incidental items will be incidental to the contract unit price per each for "Install Steel Bar in PCC Pavement".

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

TABLE OF STEEL BAR INSTALLATION				
Location	**Station & offset**	**to Station & offset**	**Total Joint Length (Ft)**	**# of Bars (Each)**
Existing area inlet	21+77, 10' R	21+77, 10' L	27	27
Exising box culvert	35+65, 9' R	36+00, 8' R	50	50
Existing inlet structure	58+83, 19' R	59+04, 26' R	22	22
			Total	**99**

REPAIR CULVERT JOINT

The detail for the connection from the 66" RCP apron at station 10+00 to the concrete channel provides information on this joint.

The cost of drilling holes, hardware, installation of bolts, and other incidental items will be incidental to the contract unit price per foot for "Repair Culvert Joint".

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TRAFFIC CONTROL NOTES

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

A diagram is shown below for the proposed I-29 West Ditch work limits and traffic control plates to be utilized for the project.

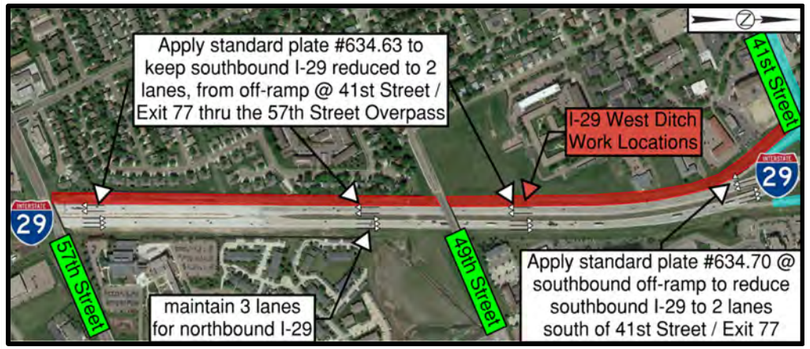

TABLE FOR TRAFFIC CONTROL SIGNS (SqFt)

Sign Description	Sign Code	Width (in)	Height (in)	Sign Quantity (SqFt)	Std Plate #634.63 and #634.70		Field Determined Signs		Payment Quantity*	
					No. of Signs	Total SqFt	No. of Signs	Total SqFt	No. of Signs	Total SqFt
ROAD WORK AHEAD	W20-1	48	48	16.0	3	48.0	1	16.0	4	64.0
RIGHT LANE CLOSED AHEAD	W20-5	48	48	16.0	4	64.0	1	16.0	5	80.0
LANE ENDS	W4-2	48	48	16.0	4	64.0	1	16.0	5	80.0
ADDED LANE	W4-3	48	48	16.0	1	16.0	1	16.0	2	32.0
SPEED LIMIT 45 AHEAD	W3-5	48	48	16.0	1	16.0	1	16.0	2	32.0
SPEED LIMIT 45	R2-1	48	60	20.0	1	20.0	1	20.0	2	40.0
FINES DOUBLE	R2-6aP	36	24	6.0	1	6.0	1	6.0	2	12.0
FLAGGER	W20-7	48	48	16.0	1	16.0	1	16.0	2	32.0
SPEED LIMIT 65	R2-1	48	60	20.0	3	60.0	1	20.0	4	80.0
END ROAD WORK	G20-2	36	18	4.5	1	4.5	1	4.5	2	9.0
				Total		**314.5**		**146.5**		**461.0**

*Only the largest quantity installed during any phase plus the Field Determined Signs will be used for the payment quantity. The highlighted phases are considered one phase due to these phases being completed concurrently.

OTHER TRAFFIC CONTROL QUANTITIES

Item	Unit	Std Plate #634.63 and #634.70	Field Determined	Total
Flagging	Hour	60	40	**100**
Type 3 Barricade	Each	2	2	**4**
Type C Advance Warning Arrow Board	Each	2		**2**
Temporary Pavement Marking	Ft	3000	1000	**4000**

GENERAL TRAFFIC CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans Additional Type 3 Barricades will be installed facing traffic within the closed lane at a spacing of ¼ mile.

Lane closures will be limited to 5 miles in length. The distance between the closest points of any two-lane closures will be at least 3 miles, excluding tapers.

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

INCIDENTS

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

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

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

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

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

Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

WORK ZONE SPEED REDUCTION

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

TEMPORARY PAVEMENT MARKINGS

Temporary Pavement Markings will be temporary raised pavement markers or temporary pavement marking tape. The Contractor will determine the best temporary pavement marking type to use on the project.

The temporary marking type will be approved by the Engineer prior to installation. The temporary markings will not permanently damage the pavements.

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EROSION CONTROL NOTES

PLACING TOPSOIL

The thickness will be approximately 4 inches. The estimated amount of topsoil to be placed is as follows

Table of Placing Topsoil			
Station to	Station		(CuYd)
57th St to 49th St			
10+06 (57th St)	37+10 (49th St)		835
49th St to 41st St			
37+15 (49th)	65+19 (41st St)		1,424
		Total	2,259

The earthwork balance shows an excess of topsoil and muck excavation. The Contractor may increase the thickness of the placed topsoil to minimize the excess.

PERMANENT SEEDING

The areas to be seeded comprise of all newly graded areas within the project limits except for the concrete channel and riprap areas. The quantity of seeding, bonded fiber matrix, fertilizing, and water have been increased by 50% from the anticipated work limit to account for restoration of additional disturbed areas.

Type G 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
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
	Total:	26

WATER FOR VEGETATION

Water for vegetation consists of applying water to seeded areas to enhance germination and/or root growth. When watering, use the following guidelines:

Immediately after seeding:

- Keep the topsoil moist but not excessively wet until the seed has germinated.
- Water a minimum of 3 days a week for 2 weeks preferably watering 2 or 3 times a day in small quantities.
- Use fine spray and low pressure to avoid topsoil wash and to prevent uncovering buried seeds.

After emergence:

- Topsoil will be kept thoroughly moistened by sprinkling, as necessary, for 6 weeks. After the 6 week period, an inspection will be made to determine if grass is established enough to suspend watering. Continue watering until grass has been thoroughly established.
- Never apply water at a rate faster than the topsoil can absorb.
- Water during early morning hours or early evening hours.
- Do not water when rain is forecasted for the area.
- If rainfall occurs, suspend watering according to rainfall amount.

An estimated 60 Gallons of water per square yard of seeding area was used to compute the quantity for the bid item “Water for Vegetation”.

All costs for furnishing and applying the water including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per MGal for “Water for Vegetation”.

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% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer 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 1,000 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

BONDED FIBER MATRIX

Bonded Fiber Matrix (BFM) will conform to Section 732.2C. It will be dyed an appropriate color to allow visual metering for its application. The material will be supplied to the project in packages marked by the manufacturer. Appropriate documentation will be given to the Engineer for prior approval before application. The Bonded Fiber Matrix will be spray-applied at a rate of 3900 lbs/acre, utilizing standard hydraulic seeding equipment in successive layers as to achieve 100% coverage of all exposed soil. The mix will consist of 50 pounds bonded fiber matrix to 125 gallons water unless otherwise specified by the Engineer. It will be installed by a Contractor certified by the manufacturer’s recommendations. Bonded fiber matrix will be placed on a given area as soon as possible or within 48 hours after seeding. The Bonded Fiber Matrix will not be applied immediately before, during or after rainfall, such that the matrix will have the opportunity to dry for up to 24 hours after installation. It will be measured to the nearest 0.1 ton of mulch applied. Bonded fiber matrix will be paid for at the contract unit price per ton. Payment will be full compensation for furnishing, hauling, placing and for materials, equipment, labor, tools and incidentals necessary.

The application area is the same as the permanent seed mixture.

The Contractor will use a bonded fiber matrix from the approved products list, or an approved equal. The approved product list for bonded fiber matrix may be viewed at the following internet site:

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

Maintenance: Bare spots or locations of erosion will be re-seeded at no additional cost to SDDOT.

TABLE OF SEED, FERTILIZER, BONDED FIBER MATRIX, AND WATER					
Location	Area (Acres)	Seed Type G (Lb)	Bonded Fiber Matrix (Ton)	Water for Veg. (MGal)	Fertilizer (Ton)
57th St to 49th St	2.23	87.1	6.5	973	1.68
49th St to 41st St	2.91	113.3	8.5	1,266	2.18
	5.14	**200.5**	**15.0**	**2,239**	**3.86**

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HIGH FLOW SILT FENCE

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

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

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

TABLE OF SILT FENCE

Station	L/R	Location	Quantity (Ft)
10+00	CL	pipe end	50
10+57	R	pipe end	24
10+67	R	pipe end	24
17+53	L	pipe end	24
21+77	CL	pipe end	40
23+99	L	pipe end	24
27+76	CL	pipe end	40
29+95	L	pipe end	24
32+00	L	pipe end	24
33+33	L	pipe end	24
35+68.5 to 35+98.5	R	pipe end	75
36+54	L	pipe end	24
37+02	L	pipe end	24
58+79	L	pipe end	24
58+84.2 to 59+03.6	R	pipe end	60
		Additional quantity	100
		total	**605**

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	12	63

Plotting Date: 6/14/2021

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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): Construct concrete ditch liner
- **5.3 (3b): Total Project Area** 9.3 ac
- **5.3 (3b): Total Area to be Disturbed** 5.1 ac
- **5.3 (3c): Maximum Area Disturbed at One Time** 3.0 acres
- **5.3 (3d): Existing Vegetative Cover (%)** 80
- **5.3 (3d): Description of Vegetative Cover** Grass and riprap

- **5.3 (3e): Soil Properties:** AASHTO Soil Classification A-6, A-7
- **5.3 (3f): Name of Receiving Water Body/Bodies** Big Sioux River
- **5.3 (3g): Location of Construction Support Activity Areas**

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

(Stabilization measures will be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)

- **Special sequencing requirements (**see sheet). none

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.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Grade ditch bottom.	
Install inlet and culvert protection after completing storm drainage installations.	
Final grading.	
Channel 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

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 will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will 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.

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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 will be sent to SDDENR within 14 days of the discharge.

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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. Hight

_____

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

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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.

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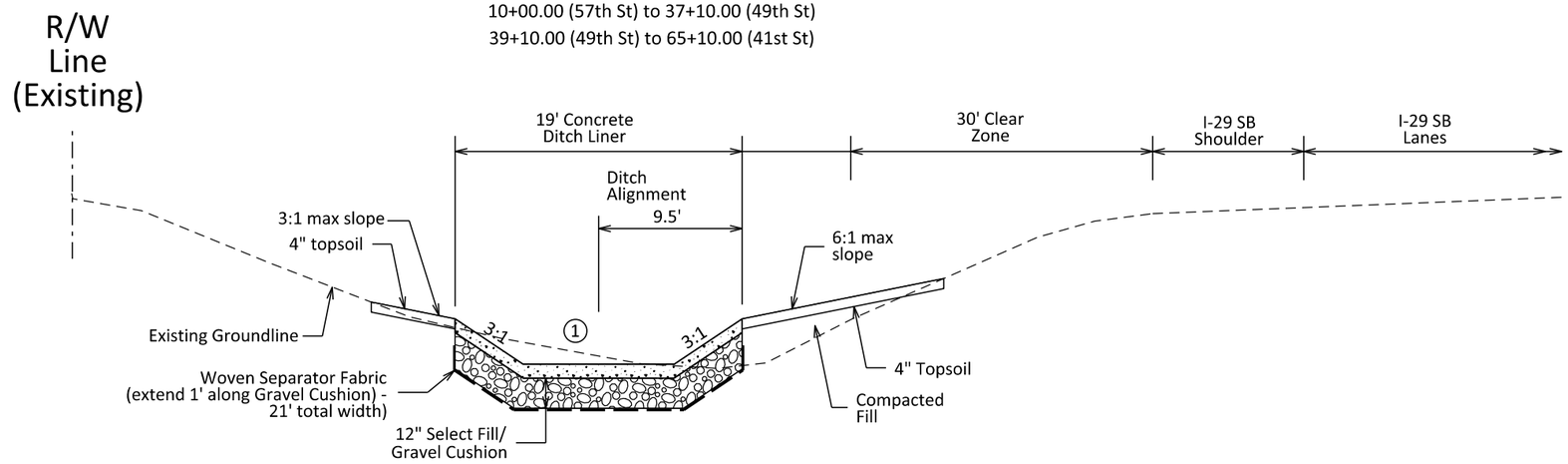
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	16	63

FILE: ...\Sheet Files\16 Typicals.dgn
PLOTTING DATE: 07-12-2021

REV DATE: 7/12/2021
INITIAL: JHU

Typical Grading and Surfacing Sections

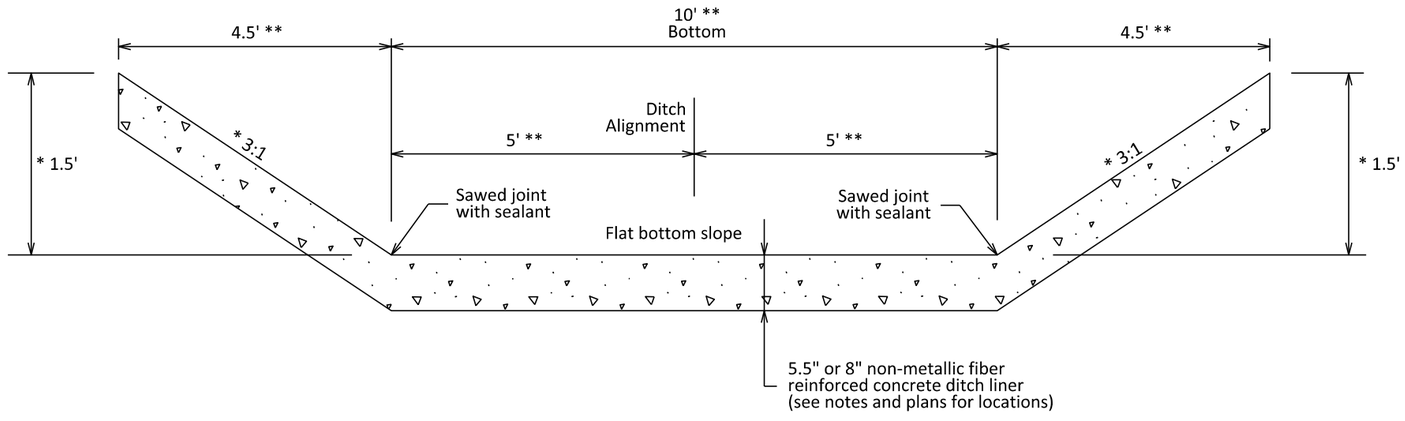
I-29 Concrete Ditch Liner
10+00.00 (57th St) to 37+10.00 (49th St)
39+10.00 (49th St) to 65+10.00 (41st St)



① 10+00 to 14+00
Remove existing riprap
(estimated 3' depth)

② Station 10+70 +/- to Station 21+70 +/-
Existing drain tile - see notes

Concrete Ditch Liner Detail



* See cross sections for slopes and heights. Adjust slope and height to match existing or new culvert ends.

** Unless otherwise noted on the plan sheets.

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HORIZONTAL ALIGNMENT DATA

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	17	63

Plotting Date: 6/14/2021

Ditch Alignment

Type	Station			Northing	Easting
POB	10+00.00			445499.432	2908732.902
		TL=23.48	N 77° 30' 11" E		
PC	10+23.48			445504.513	2908755.828
PI	10+31.22	R = 15.00	Delta = 54° 35' 34" L	445506.188	2908763.386
PT	10+37.77			445513.318	2908766.399
		TL=962.23	N 22° 54' 37" E		
PI	20+00.00			446399.640	2909140.981
		TL=180.60	N 25° 42' 22" E		
PC	21+80.60			446562.370	2909219.319

Ditch Alignment

Type	Station			Northing	Easting
POB	21+97.12			446628.170	2909179.493
		TL=40.47	N 86° 56' 34" E		
PC	22+37.59			446630.328	2909219.903
PI	22+56.40	R = 30.00	Delta = 64° 10' 33" L	446631.332	2909238.686
PCC	22+71.19			446648.676	2909245.965
		TL=534.57	N 22° 46' 01" E		
PI	28+05.76			447141.593	2909452.834
		TL=762.56	N 22° 38' 55" E		
PI	35+68.32			447845.345	2909746.479
		TL=232.62	N 22° 14' 52" E		
PI	38+00.93			448060.643	2909834.550
		TL=100.24	N 26° 15' 07" E		
PI	39+01.18			448150.549	2909878.889
		TL=542.81	N 22° 14' 52" E		
PI	44+43.98			448652.948	2910084.402
		TL=187.25	N 21° 22' 21" E		
PI	46+31.23			448827.317	2910152.641
		TL=264.44	N 22° 13' 12" E		
PC	48+95.67			449072.115	2910252.640
PI	51+95.12	R = 3534.00	Delta = 9° 41' 13" L	449349.333	2910365.883
PT	54+93.15			449641.654	2910430.866
		TL=75.36	N 12° 31' 59" E		
PI	55+68.51			449715.221	2910447.220
		TL=161.55	N 9° 57' 53" E		
PC	57+30.06			449874.330	2910475.174
PI	58+22.10	R = 400.00	Delta = 25° 54' 57" L	449964.979	2910491.101
PT	59+10.99			450053.473	2910465.807
		TL=598.17	N 15° 57' 03" W		
POE	65+09.16			450628.612	2910301.422

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83) SF = 0.9998439671 Vertical Datum: NAVD 88

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	18	63

FILE: ...\Sheet Files\18 Symbology.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

Legend

- 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
- 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
- Elec. Trans./Power Jct. Box
- Environmental Sensitive Site —ESS—
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Misc.
- 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 R.O.W. Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Misc
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Misc. Line
- Misc. Property Corner
- Misc. Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- 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 R.O.W. 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
- R. O. W. Line
- New R. O. W. Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)

- Drainage Arrow

- Remove Riprap
- 8" Non-Metallic Fiber Reinforced PCC Pavement
- 5.5" Non-Metallic Fiber Reinforced PCC Pavement

- Doweled Joint at Existing Structure

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HDR

Ditch Plan and Profile

Sec. 36-T101N-R50W

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	19	63

FILE: ...\Sheet Files\19 (10+00).dgn
PLOTTING DATE: 07-12-2021
REV DATE: 7/12/2021
INITIAL: JHU

Take Out Riprap
at the Following Location:
10+40 to 14+28 L/R
(1,352 sq.yd.)

17+52, 13' L
Remove 12" End Section

10+38, 18' R to 10+57, 7' R
Install 16' -30" RCP arch
Connect to existing
Remove and reset sloped end section

10+41, 22' R to 10+67, 7' R
Install 24' -30" RCP arch
Connect to existing
Remove and reset sloped end section

17+52, 19' L to 17+53, 7' L
Install 6' -12" RC Pipe and
1 Flared End
Connect to existing

17+46.5 to 17+59, 9.5' L
Adjust channel to match end section

BEGIN IM 0293(112)76
I-29 Ditch
Station 10+00.00

See Detail A

See Detail B

66" ST
30" ARCH ST
30" ARCH ST
16"W
12" ST
Slotted Drain Tile
Slotted Drain Tile
T/F
S
10+00
15+00
20+00
22+00

Present 57th Street
Present I-29 SB
Present I-29 NB

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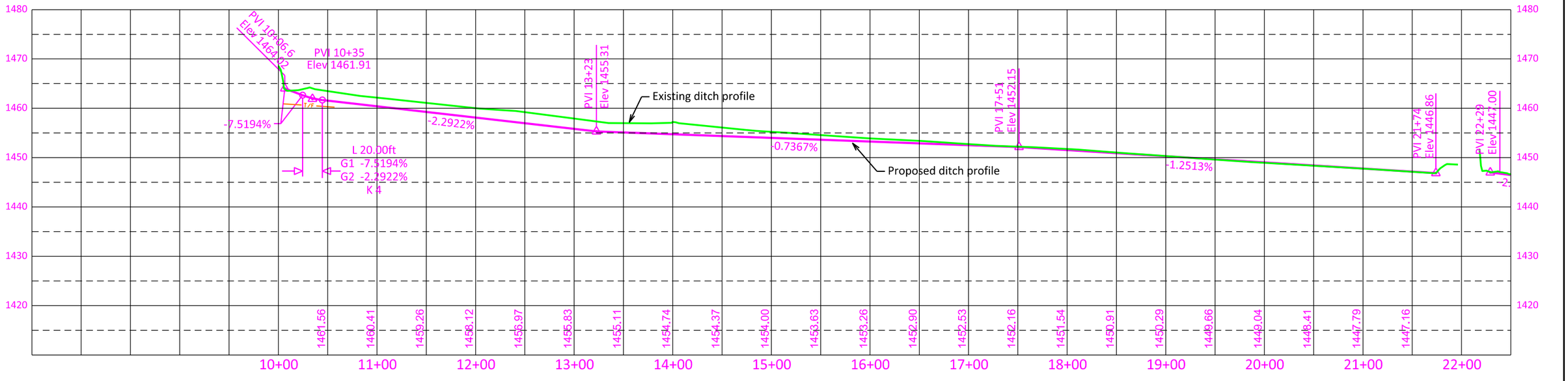
7-12-21



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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	20	63

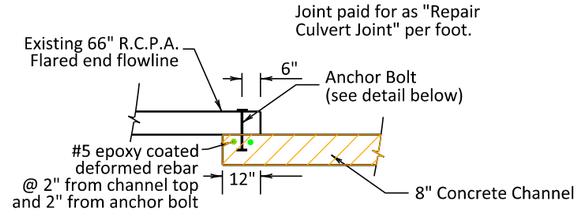
FILE: ...\Sheet Files\20.dgn
PLOTTING DATE: 07-12-2021

REV DATE: 7/12/2021
INITIAL: JHU

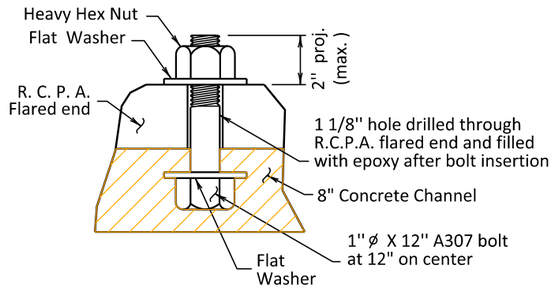
Detail A and Detail B

STA. 10+00 - 66" RCP

STA. 10+42 - DOUBLE 30" RCP ARCH

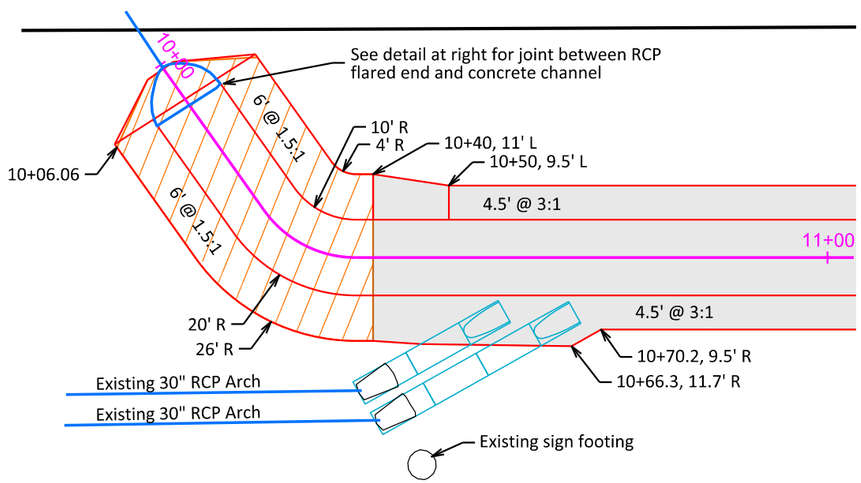


RCP APRON/CONCRETE CHANNEL JOINT DETAIL



ANCHOR BOLT DETAIL

STA. 21+75 - AREA INLET AT DITCH BLOCK



Detail A

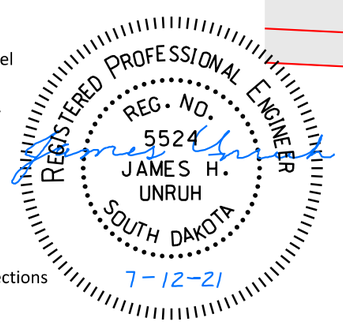
10+00, CL
Shape concrete to match RCP flared end

10+00, CL
Begin 8" fiber reinforced channel

10+00, CL
Begin channel bottom 6" under existing apron end

10+40, 11' L to 5'L
10+50, 9.5' L to 5' L
Transition from 6' @ 1.5:1 to 4.5' @ 3:1

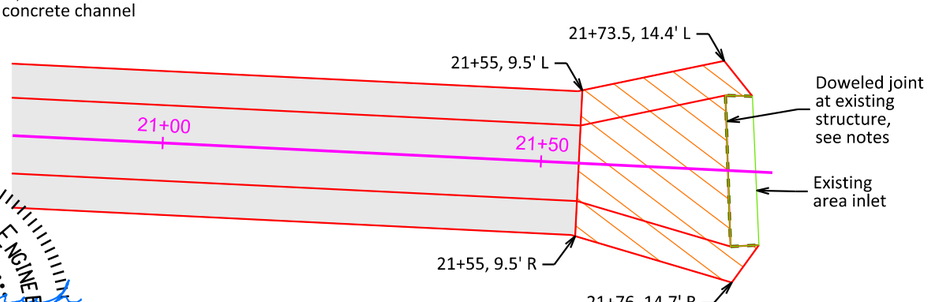
10+40 to 10+70.2, R
Adjust channel to match end sections



21+55, CL
End 10' channel bottom

21+55 to 21+77, CL
20' transition to match existing area inlet

21+78, CL
End concrete channel



Detail B

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	21	63

FILE: ...\Sheet Files\21 (24+00).dgn
PLOTTING DATE: 07-12-2021
REV DATE: 7/12/2021
INITIAL: JHU

Ditch Plan and Profile

Sec. 36-T101N-R50W

23+99, 10' L
Remove 12" End Section

29+95, 13' L
Remove 12" End Section

32+00, 14' L
Remove 15" End Section

36+54, 13' L
Remove 12" End Section

37+02, 3' L
Remove 4' -24" Pipe and End Section

23+92 to 24+05, 9.5' L
Adjust channel to match end section

23+99, 13' L to 7' L
Install 12" Flared End
Connect to existing

27+76, CL
Match existing inlet

29+89 to 30+00, 9.5' L
Adjust channel to match end section

29+95, 13' L to 7' L
Install 12" Flared End
Connect to existing

31+95 to 32+06, 9.5' L
Adjust channel to match end section

32+00, 13' L to 7' L
Install 15" Flared End
Connect to existing

33+33, 9' L
Remove and reset end section

36+48.5 to 36+60, 9.5' L
Adjust channel to match end section

36+54, 16' L to 10' L
Install 12" Flared End
Connect to existing

36+94.4 to 37+08.9, 9.5' L
Adjust channel to match end section

37+02, 13' L to 7' L
Install 24" Flared End
Connect to existing

37+10, CL
End 5.5" fiber reinforced channel

See Detail C

See Detail D

22+00 25+00 30+00 35+00

12" ST 12" ST 12" ST 15" ST 12" ST 12" ST 24" ST

Present I-29 SB

Present I-29 NB

8'x8' BOX CULVERT

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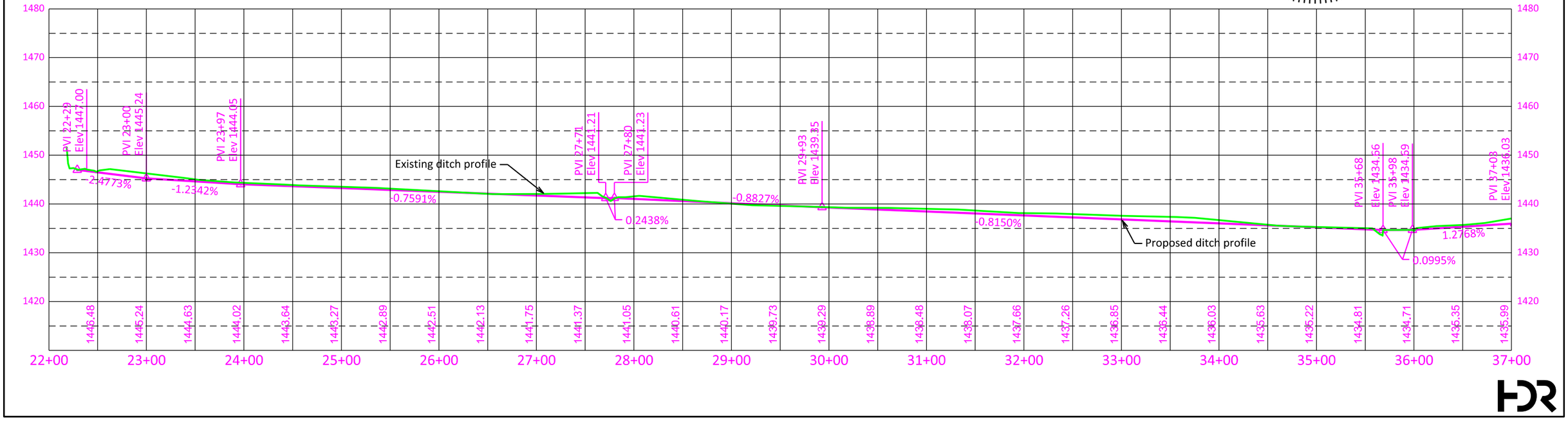

Detail C and Detail D

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	22	63

FILE: ...\Sheet Files\22-23.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

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6-14-21

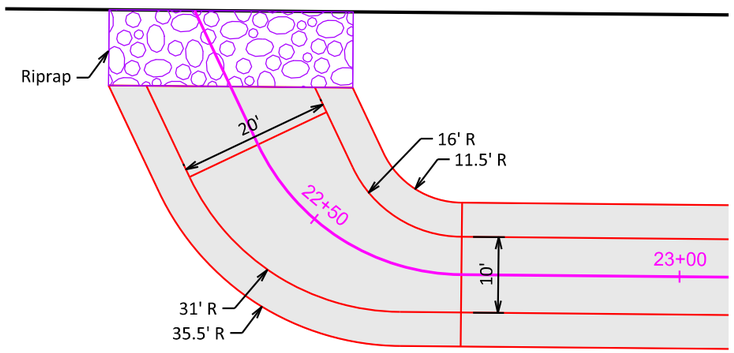
STA. 22+18 - DRAINAGE UNDER WALL

22+18 to 22+28 Install ripap
(32'x10'x3' between
wall and concrete channel)
54.8 ton salvaged riprap
70 sq.yd. drainage fabric

22+29, CL
Begin concrete channel with
20' bottom width (10' from wall)

22+38, CL
Begin transition from 20' bottom
width to 10' bottom width

22+71, CL
End transition
Begin 10' channel bottom width

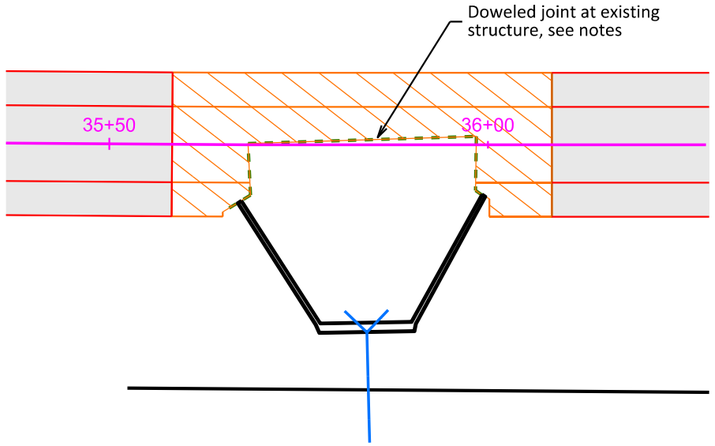


Detail C

35+58, CL
Begin 8" fiber reinforced channel
End 5.5" fiber reinforced channel

35+68.5 to 35+98.5
Match box culvert

36+08.5, CL
Begin 8" fiber reinforced channel
End 5.5" fiber reinforced channel



Detail D

STA. 35+84 - 8'x8' BOX CULVERT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	23	63

FILE: ...\Sheet Files\22-23.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

Detail E
Available Existing Storm Sewer Photos

STA. 23+99 - 12" RCP

STA. 27+70 - AREA INLET

STA. 27+76 - AREA INLET

STA. 36+83 - 12" RCP

STA. 37+30 - 30" RCP

STA. 33+33 - 12" RCP

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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	24	63

FILE: ...\Sheet Files\24 (38+00).dgn
PLOTTING DATE: 06-14-2021

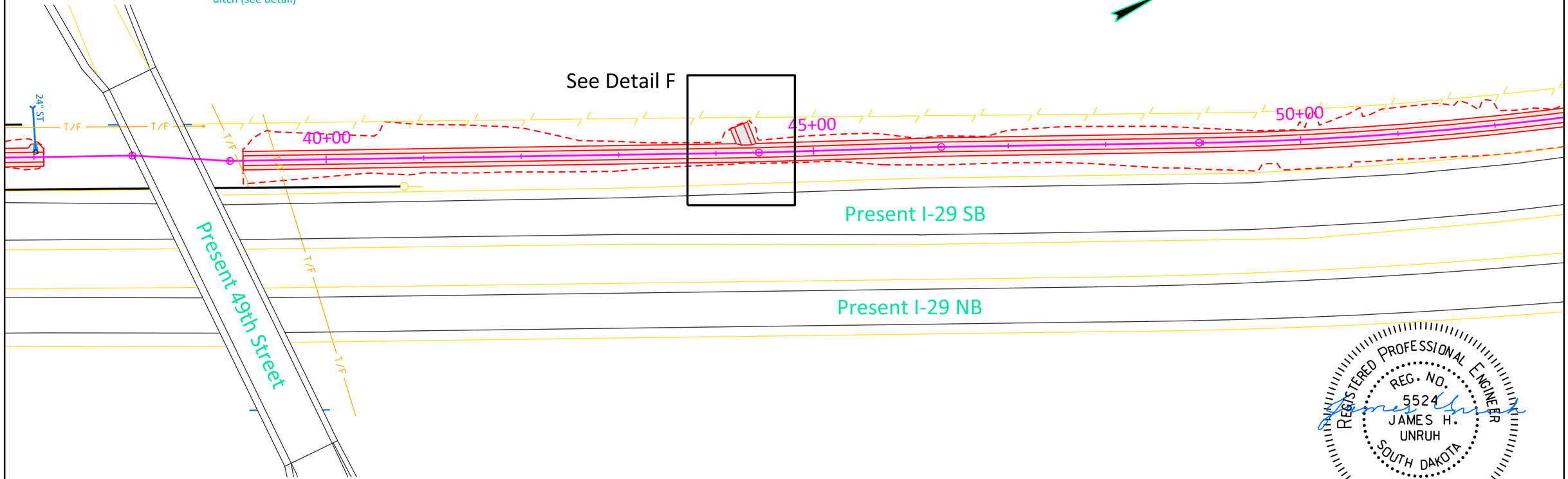
REV DATE:
INITIAL:

Ditch Plan and Profile

Sec. 36-T101N-R50W

39+15, CL
Begin 5.5" fiber reinforced channel

44+20.9 to 44+41.2, 9.5' L
Extend concrete channel to existing ditch (see detail)



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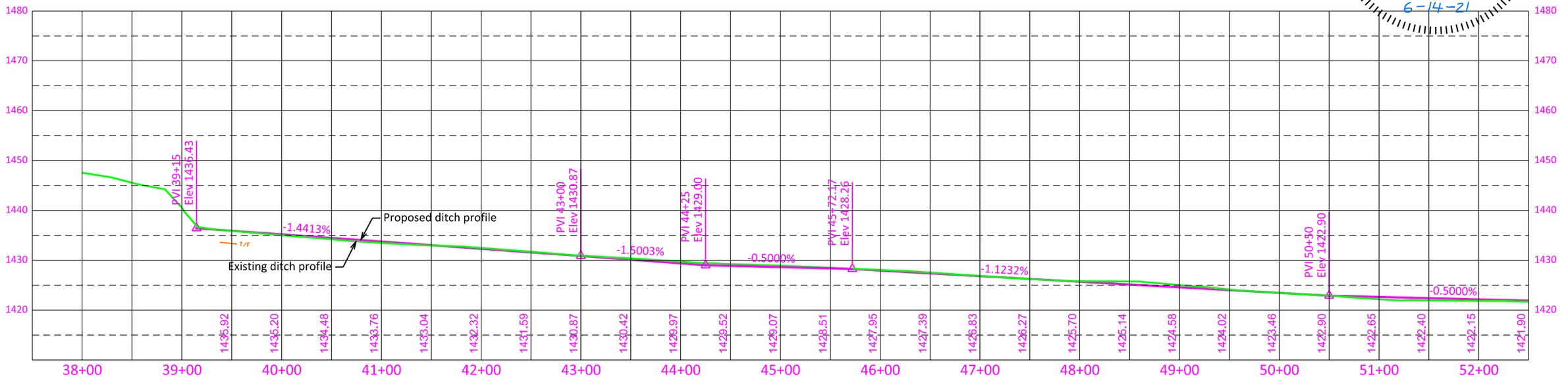
6-14-21



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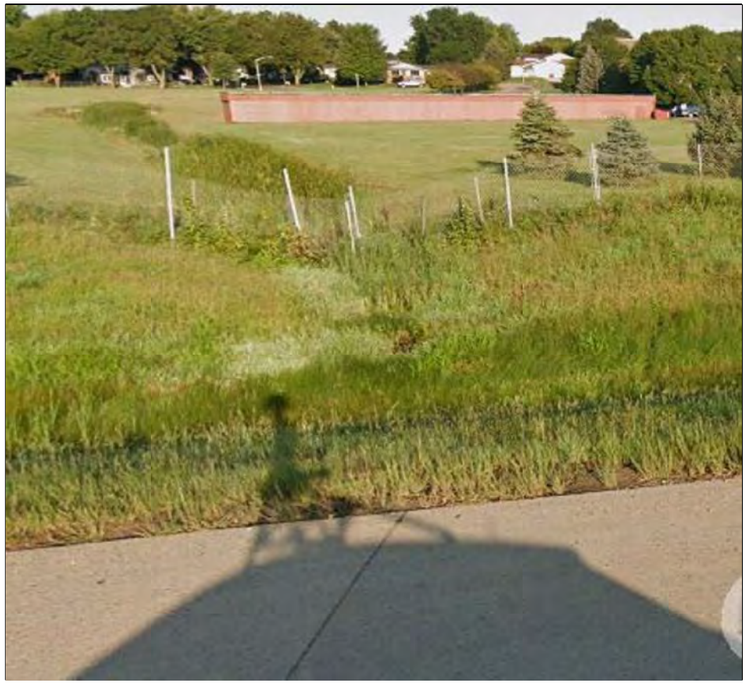
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	25	63

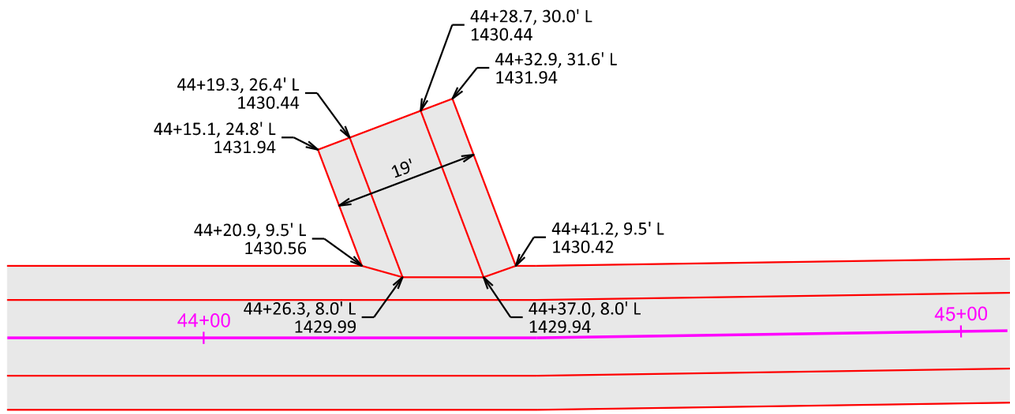
FILE: ...\Sheet Files\25.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

Detail F



STA. 44+35 - DRAINAGE DITCH - LOOKING WEST



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6-14-21

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	26	63

FILE: ...\Sheet Files\26 (52+00).dgn
PLOTTING DATE: 06-24-2021
REV DATE:
INITIAL:

Ditch Plan and Profile

Sec. 36-T101N-R50W

Take Out Riprap
at the Following Location:
58+68 to 58+87 L/R
(43 sq.yd.)

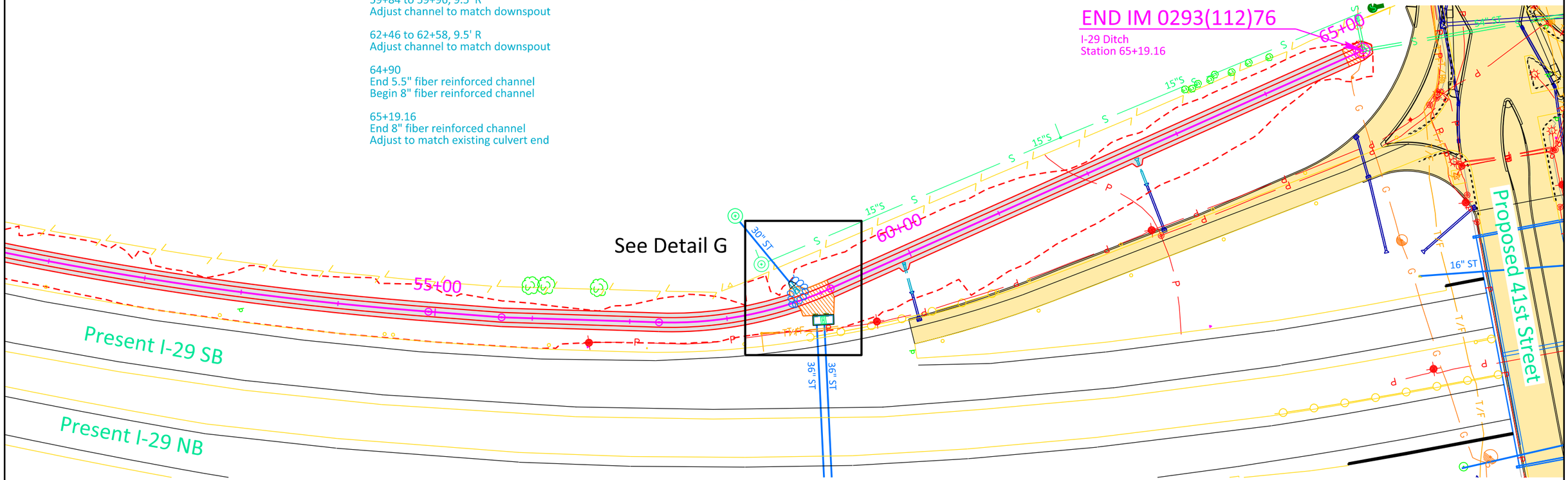
58+78, 19' L to 58+79, 8' L
Install 8' -30" RC Pipe
Remove and reset end section
Connect to existing

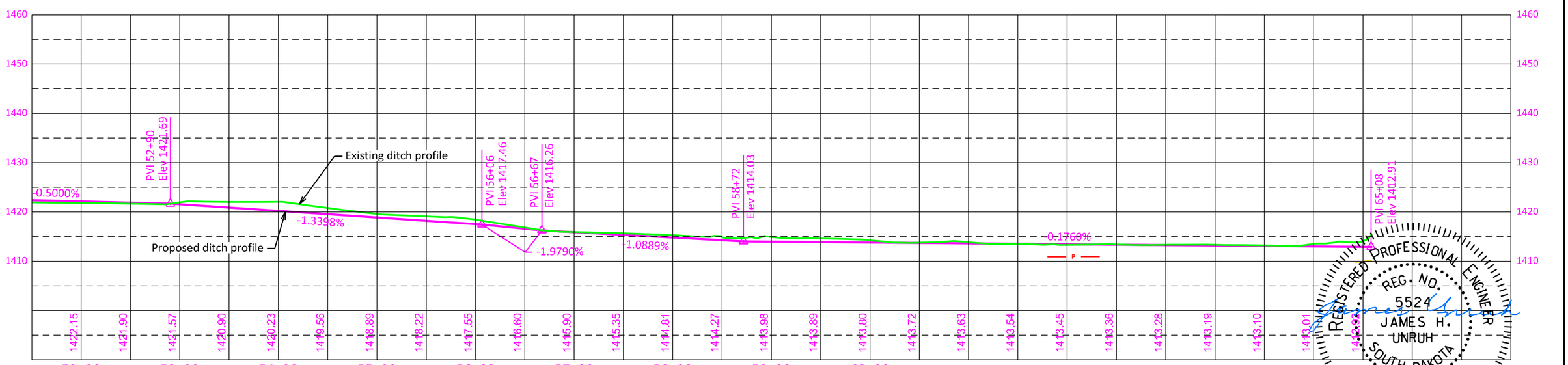
59+84 to 59+96, 9.5' R
Adjust channel to match downspout

62+46 to 62+58, 9.5' R
Adjust channel to match downspout

64+90
End 5.5" fiber reinforced channel
Begin 8" fiber reinforced channel

65+19.16
End 8" fiber reinforced channel
Adjust to match existing culvert end





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SOUTH DAKOTA
6-24-21

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	27	63

FILE: ...\Sheet Files\27.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

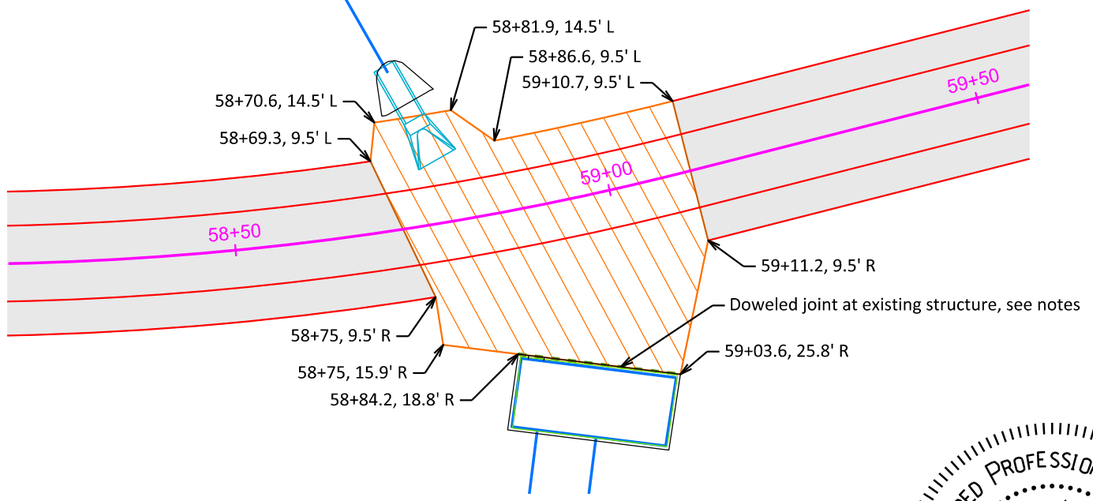
Detail G

STA. 59+00 - 30" RCP

STA. 59+28 LOW FLOW CUTOUT
OF 9' X 20' INLET

58+72, CL
End 5.5" fiber reinforced channel
Begin 8" fiber reinforced channel

59+11, CL
End 8" fiber reinforced channel
Begin 5.5" fiber reinforced channel



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6-14-21

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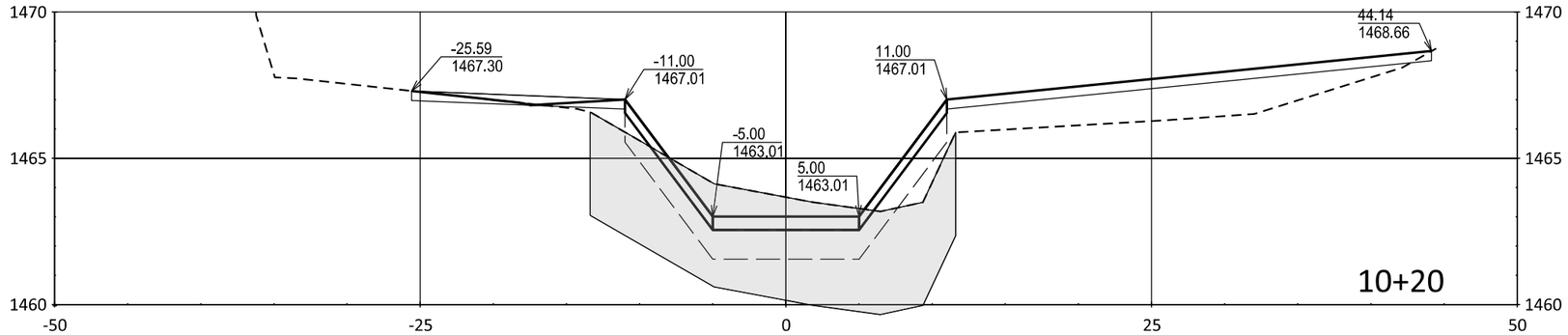
I-29 Ditch Cross Sections

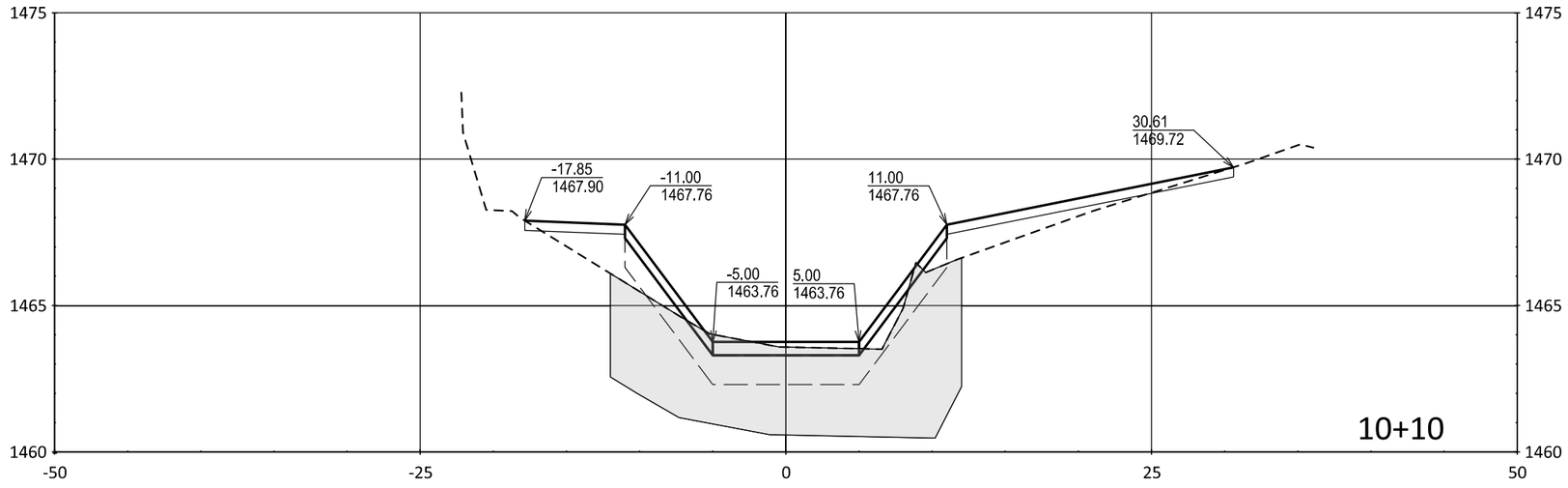
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	28	63

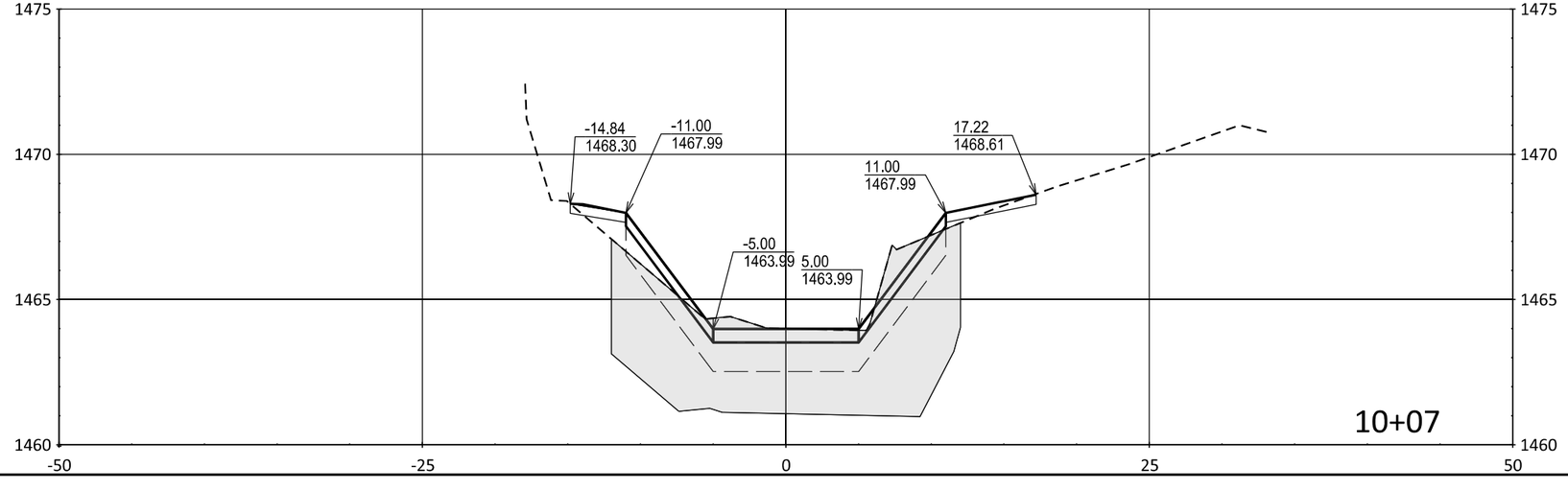
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

Remove Riprap







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6-14-21

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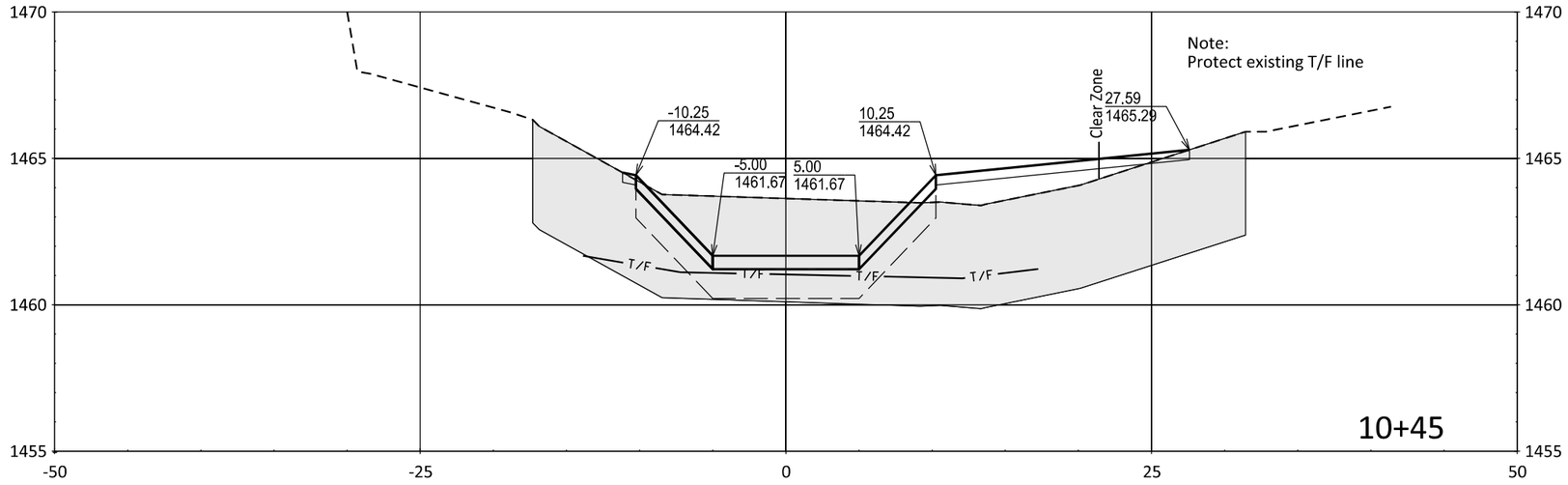
I-29 Ditch Cross Sections

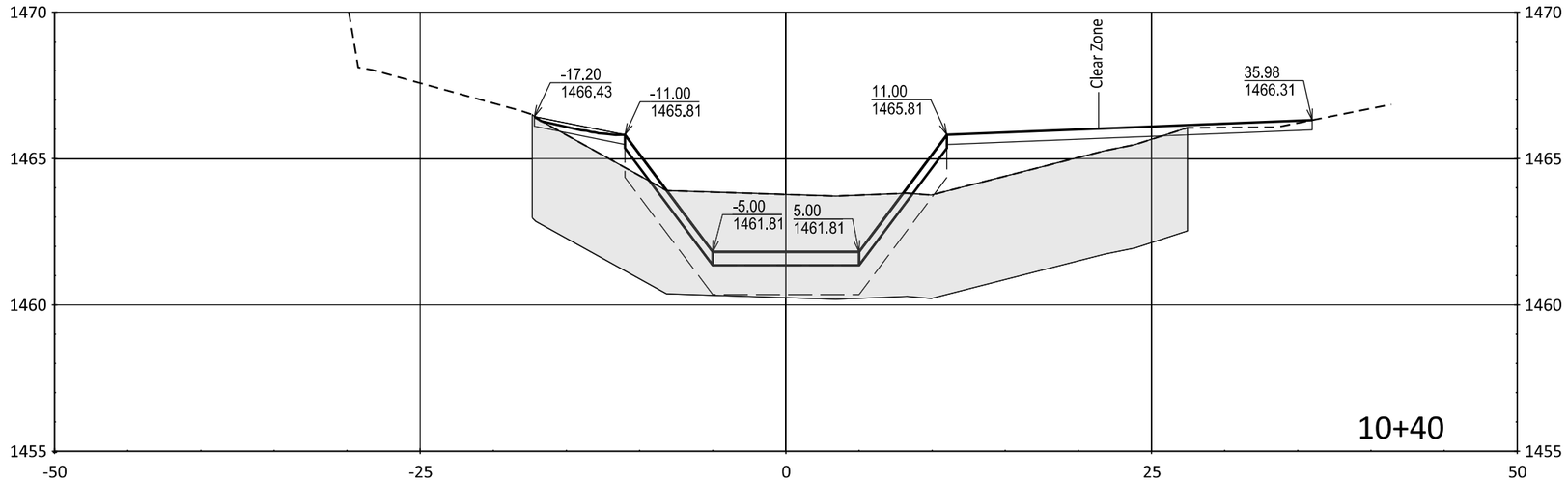
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	29	63

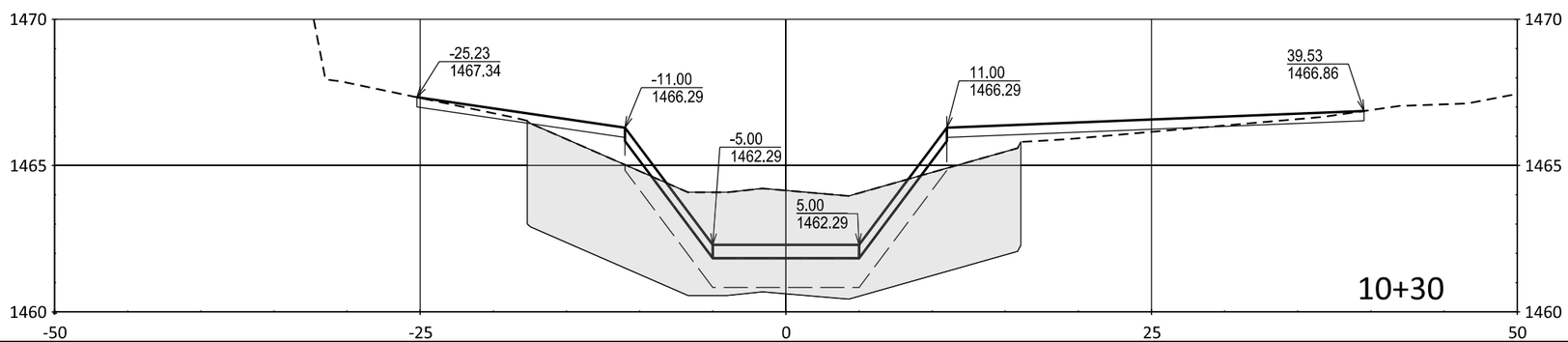
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

Remove Riprap







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6-14-21

FOR BIDDING PURPOSES ONLY

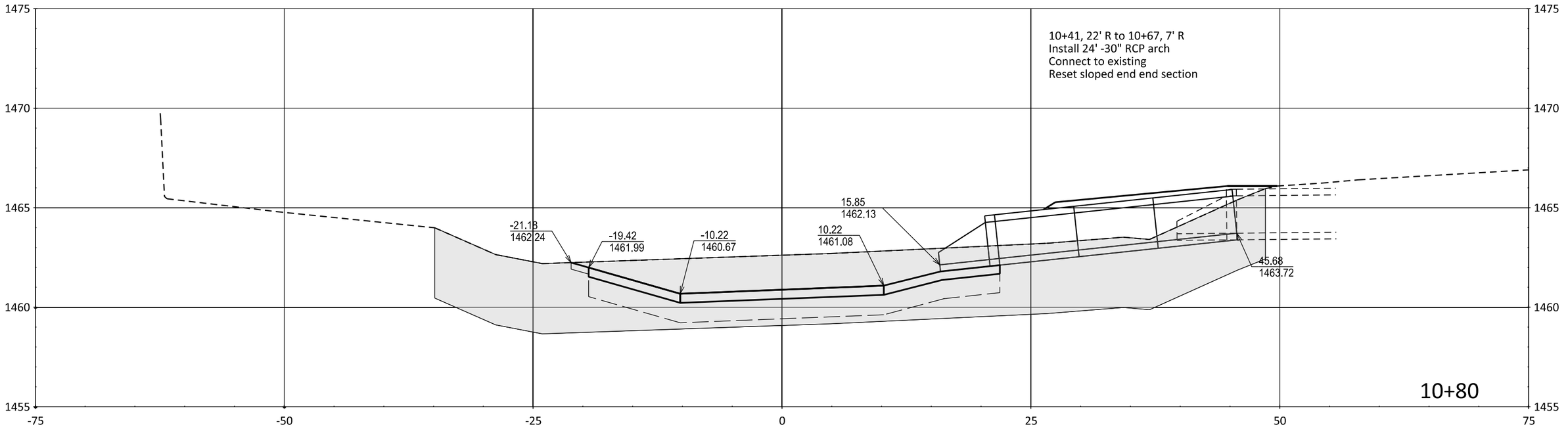
I-29 Ditch Cross Sections

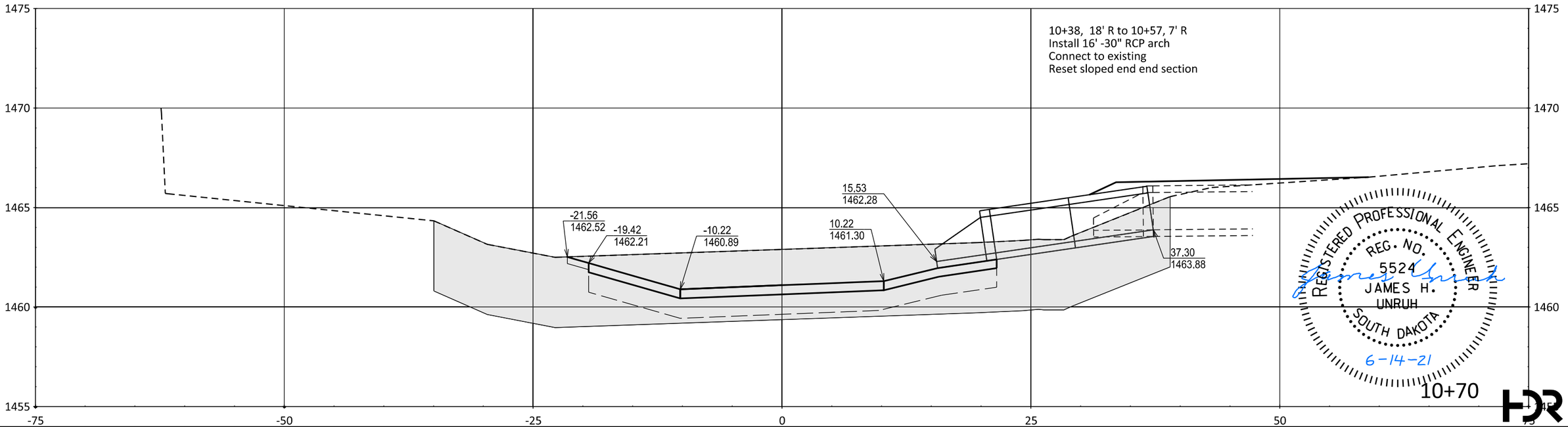
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	30	63

Remove Riprap

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:





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6-14-21

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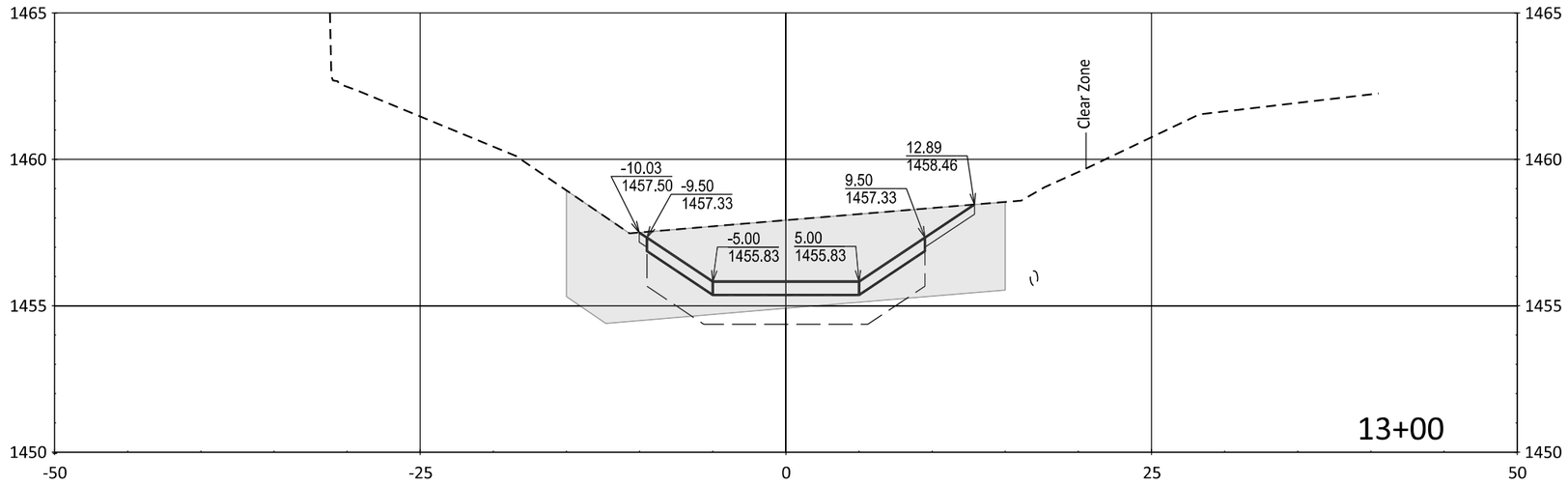
I-29 Ditch Cross Sections

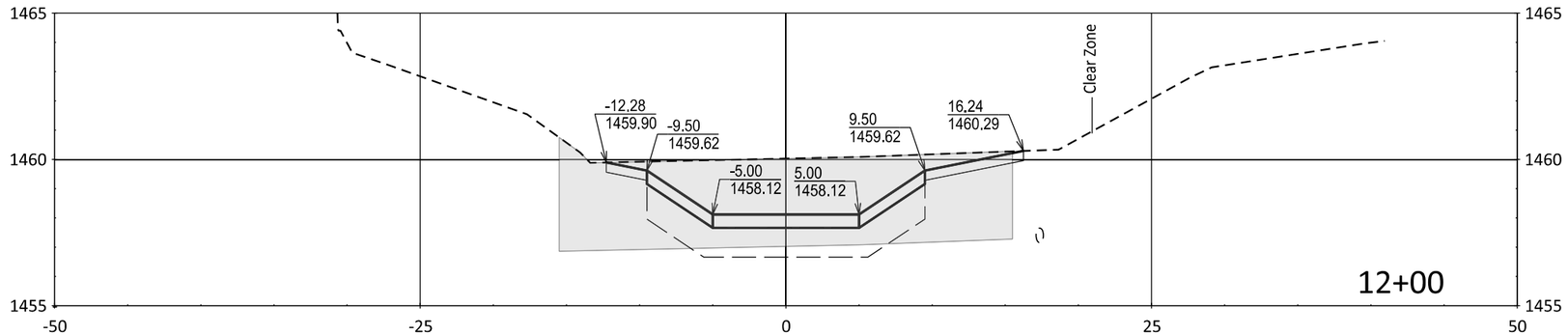
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	31	63

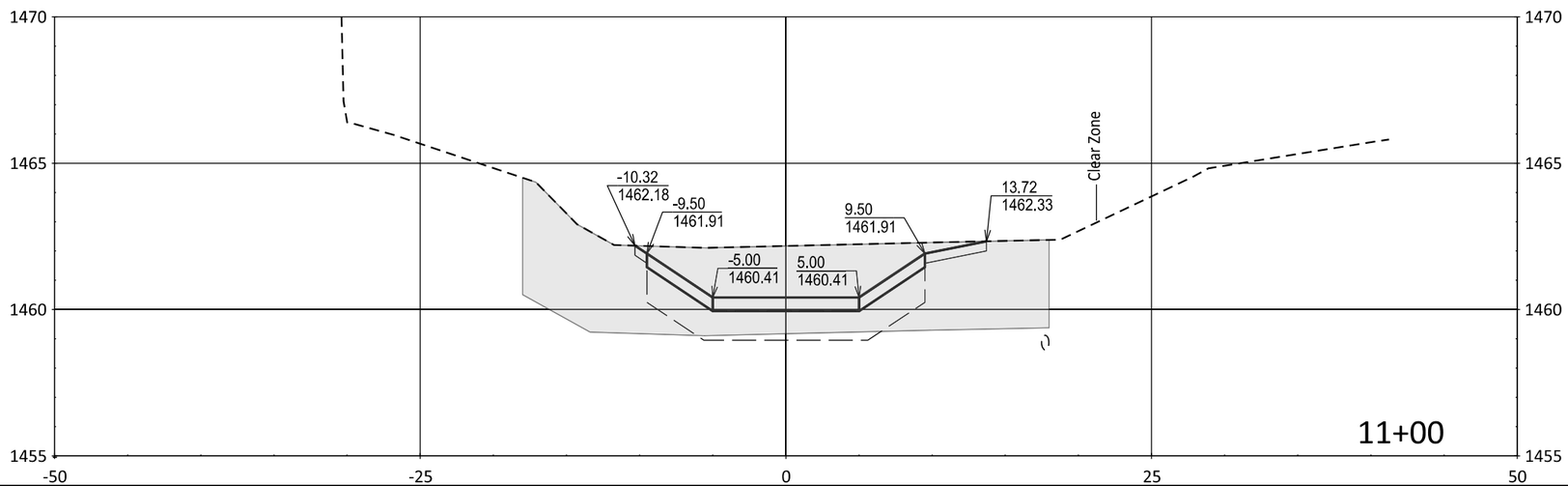
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

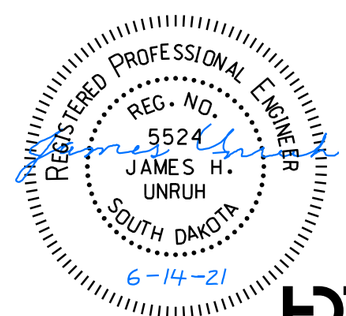
REV DATE:
INITIAL:

Remove Riprap









FOR BIDDING PURPOSES ONLY

I-29 Ditch Cross Sections

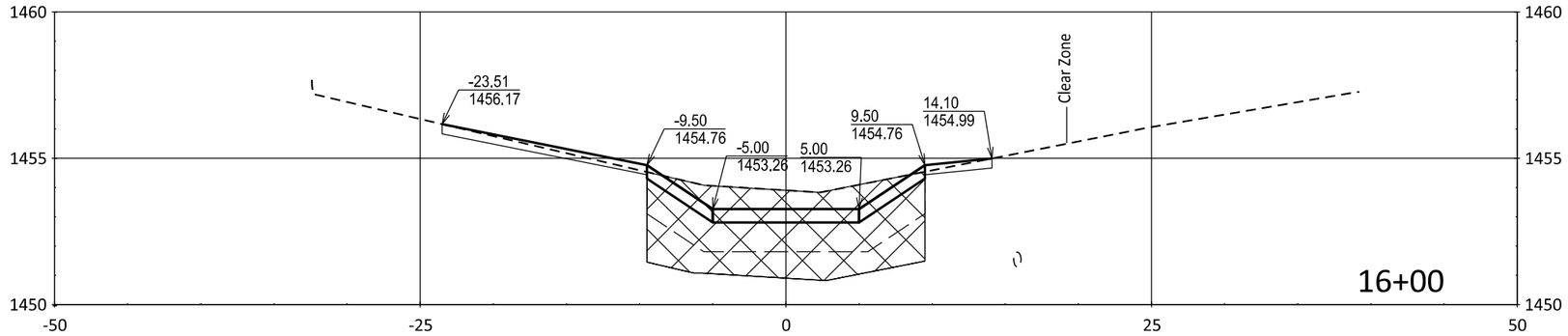
Muck Excavation

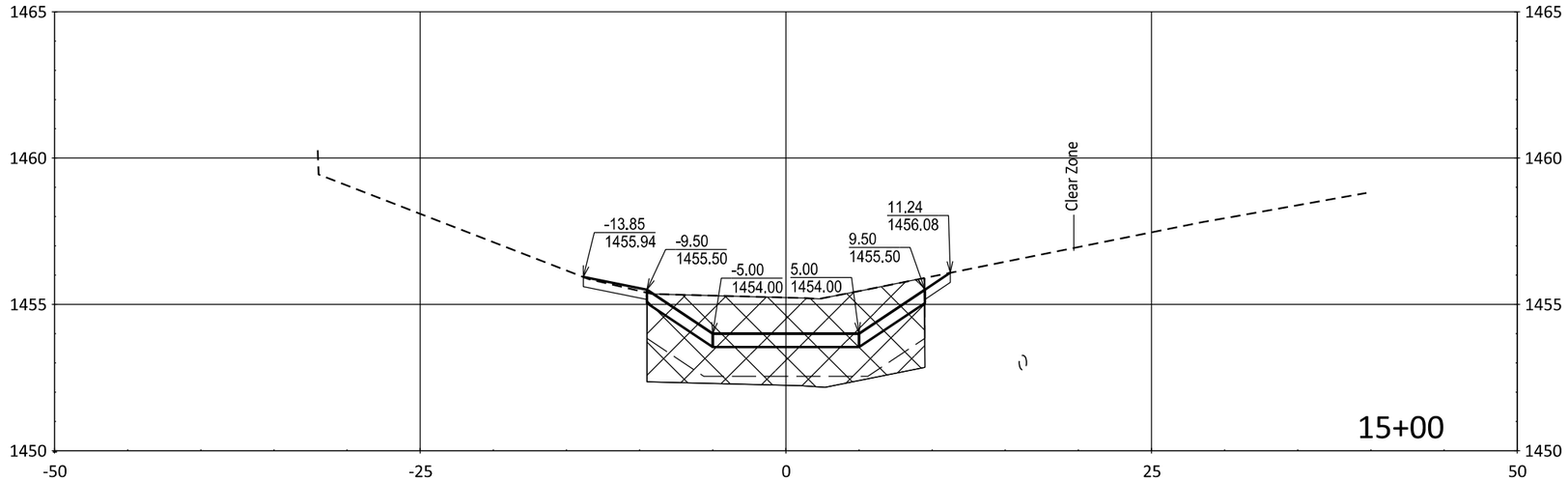
Remove Riprap

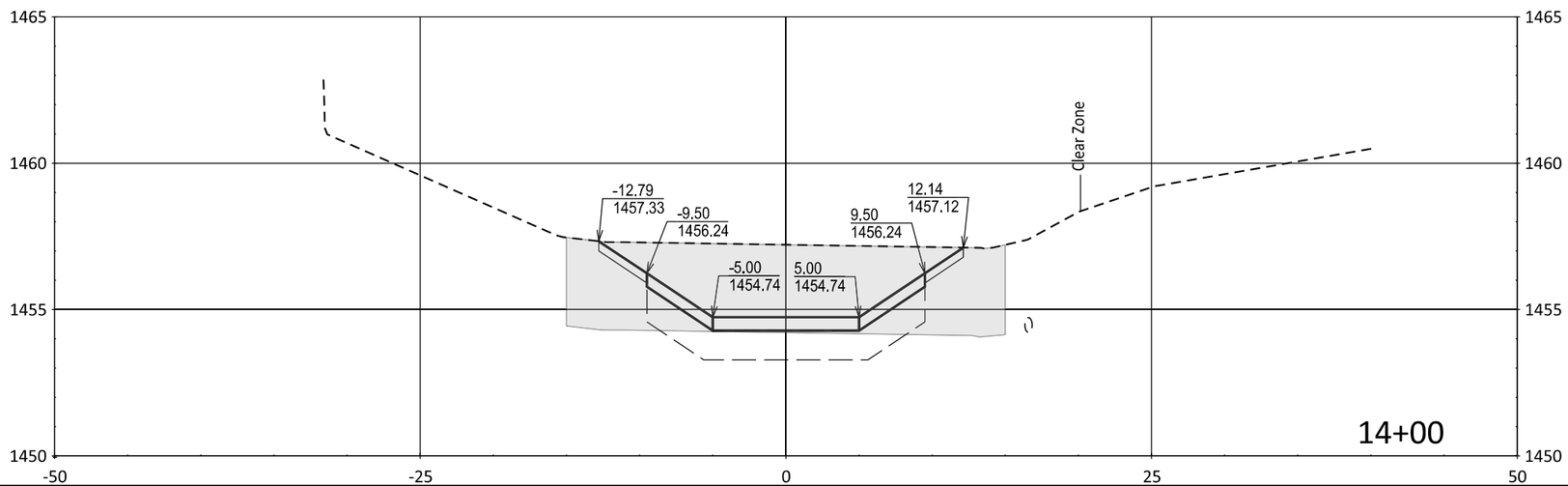
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	32	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:







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6-14-21

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FOR BIDDING PURPOSES ONLY

I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	33	63

Muck Excavation

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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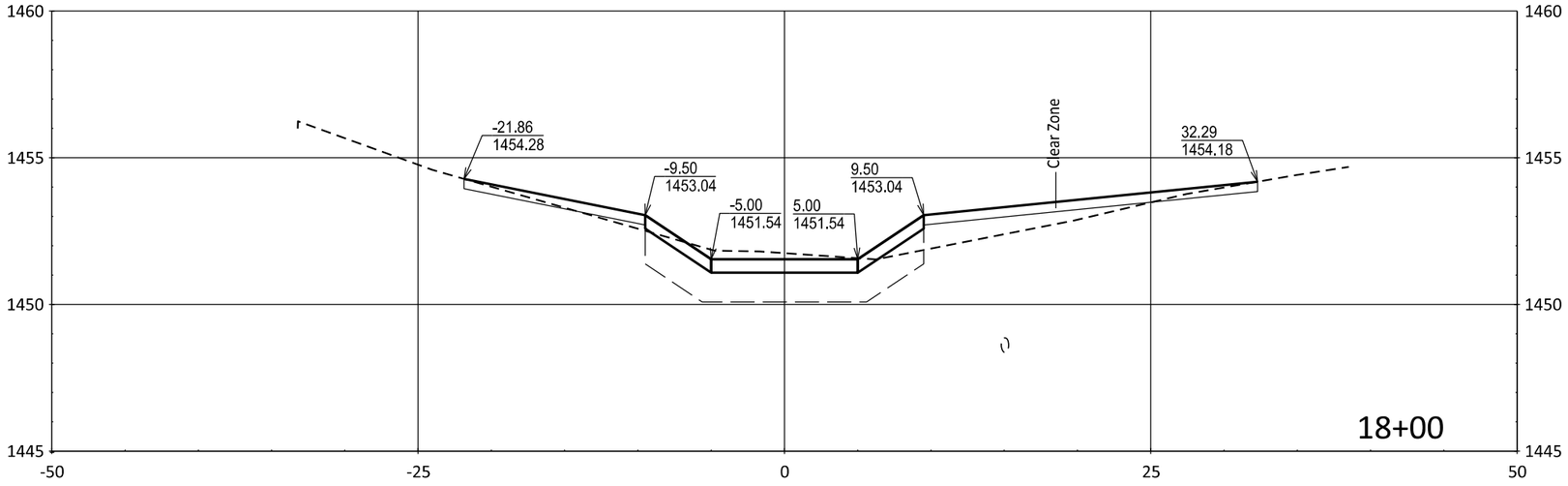

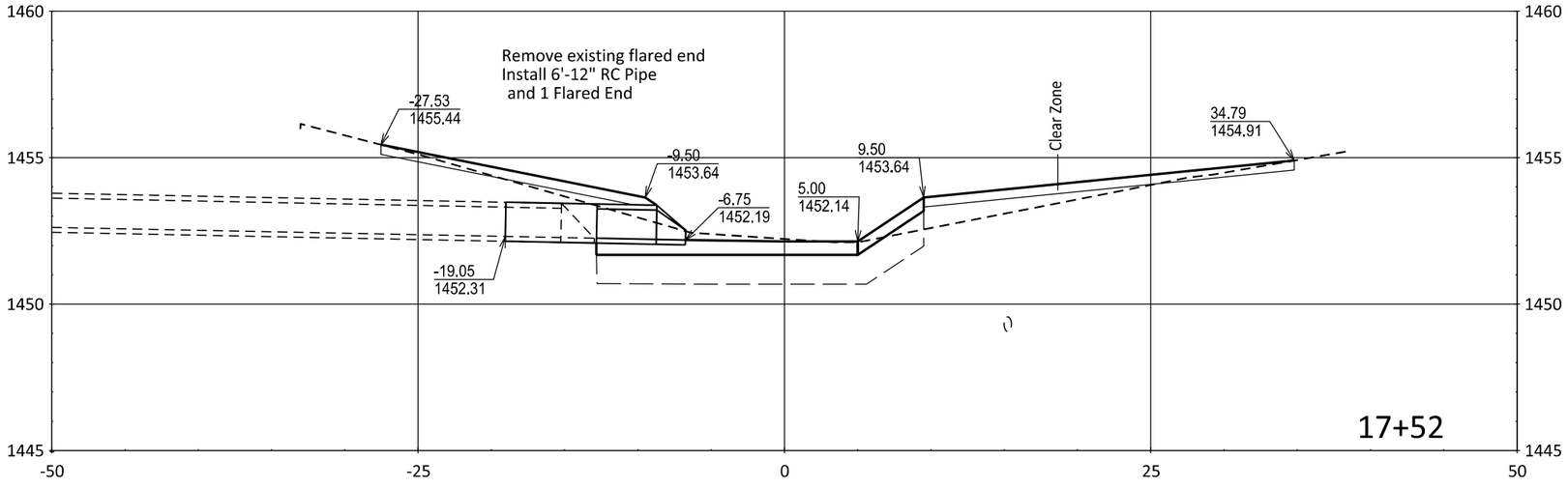

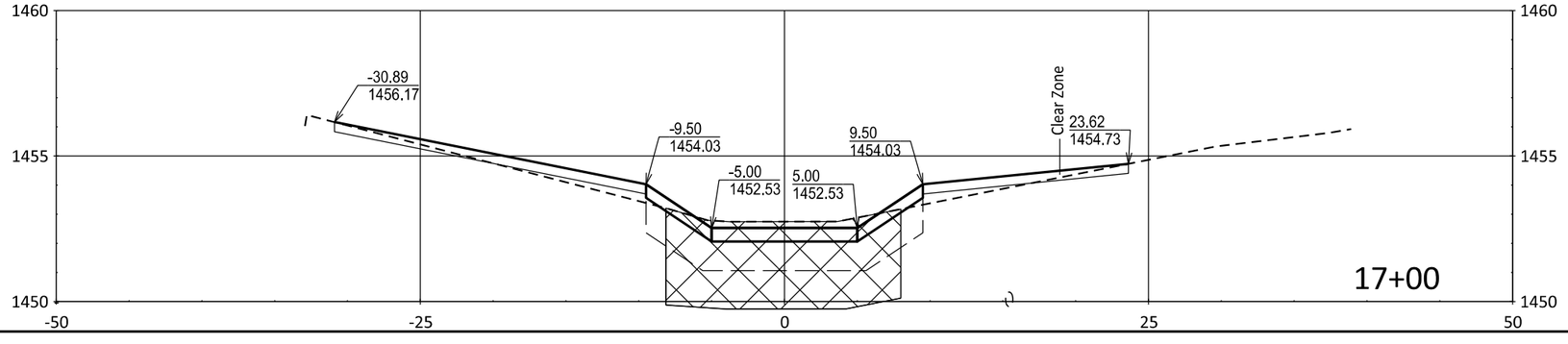

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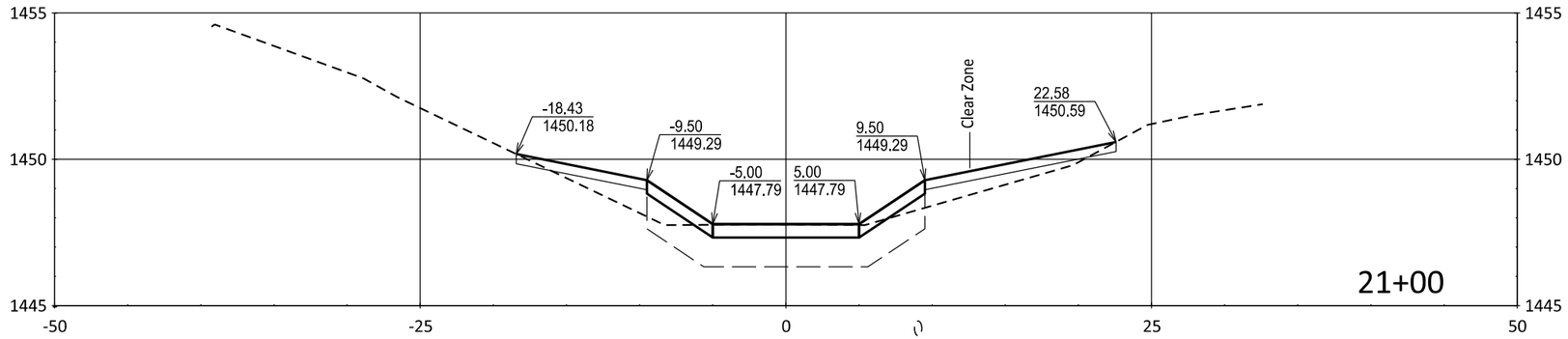
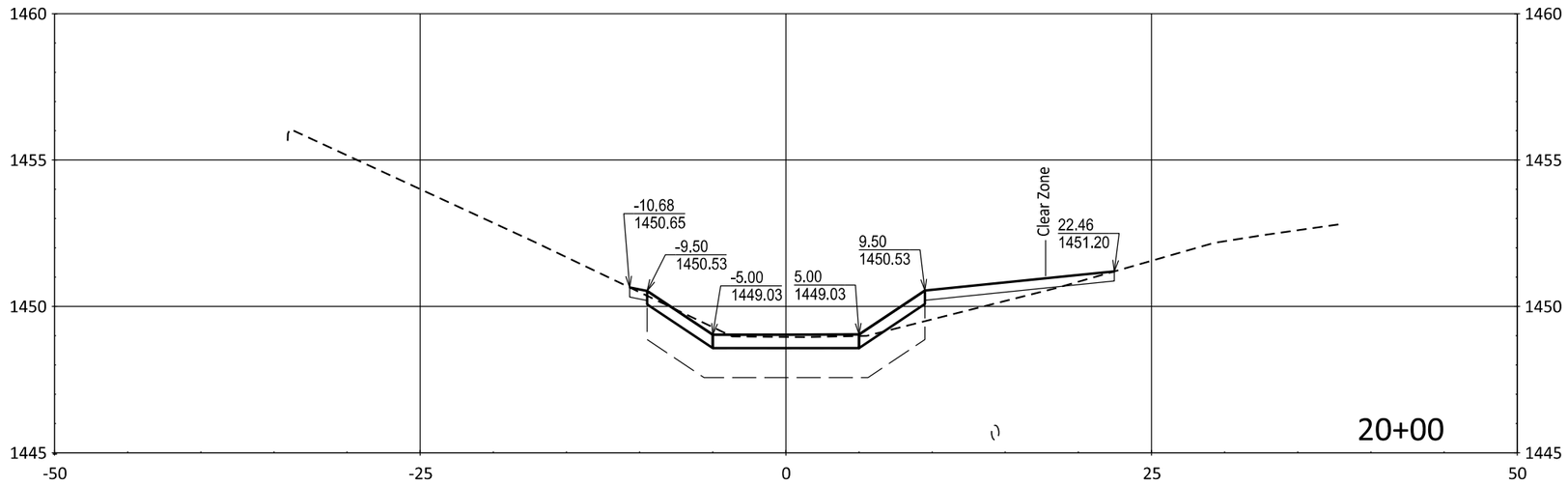
I-29 Ditch Cross Sections

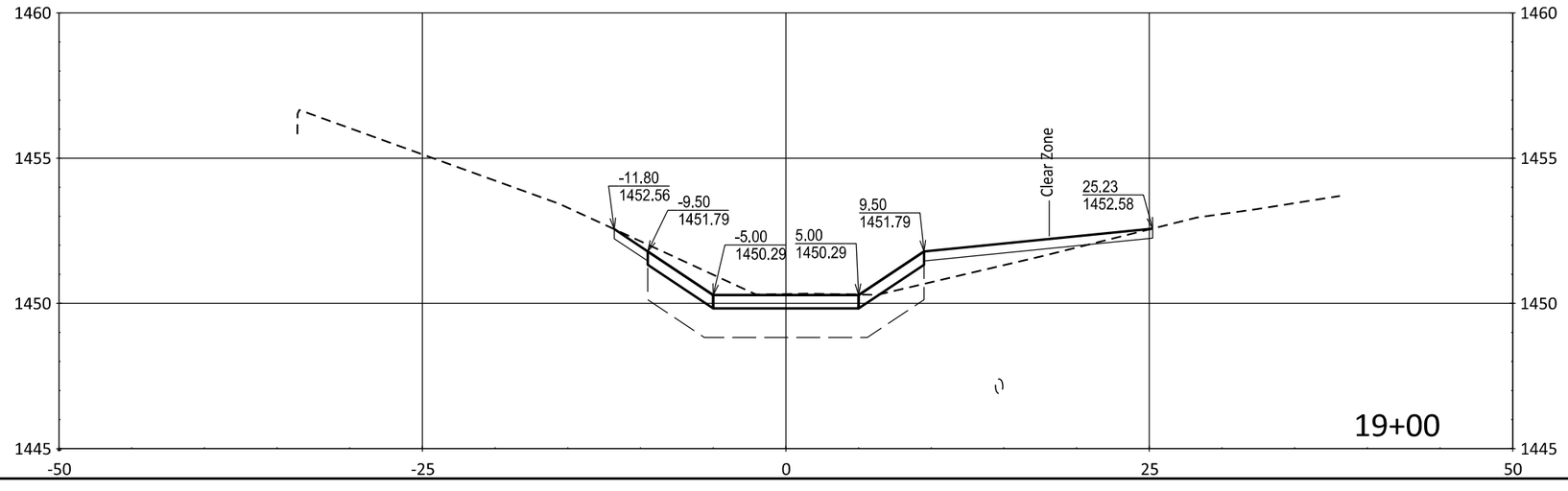
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	34	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:







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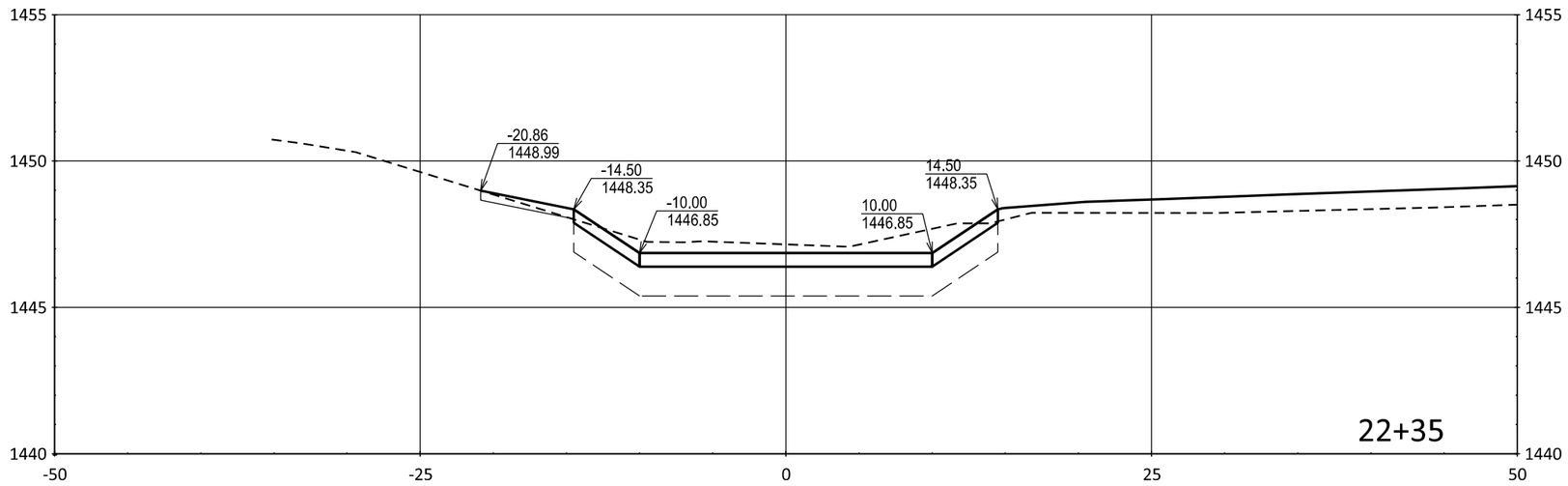
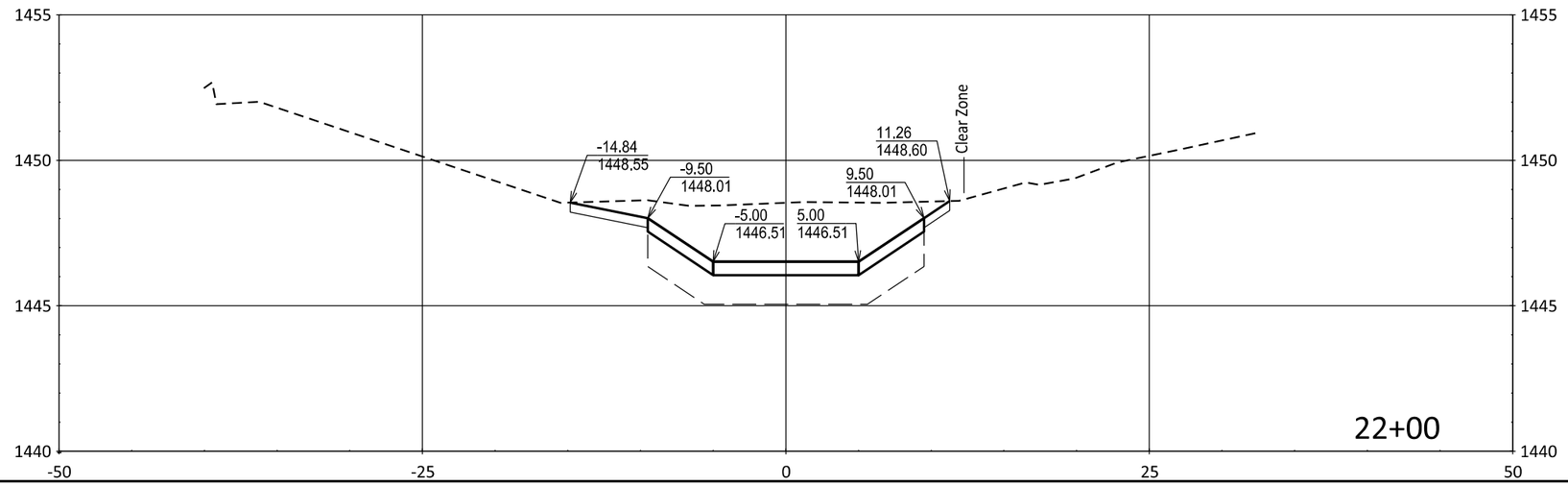
I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	35	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:





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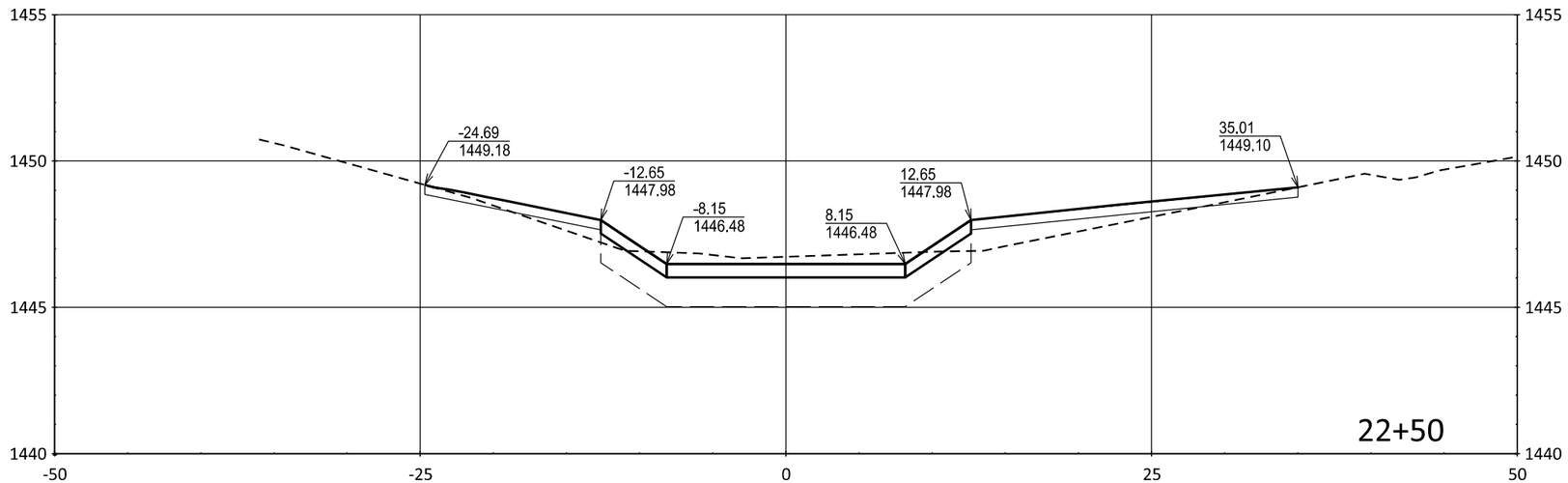
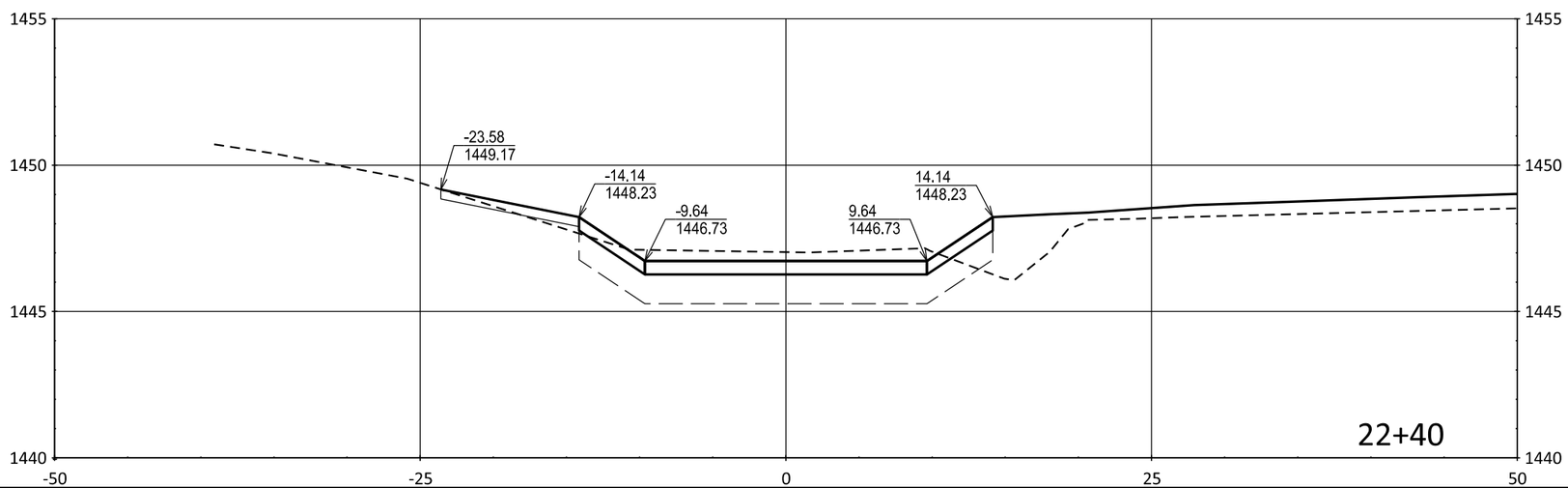
I-29 Ditch Cross Sections

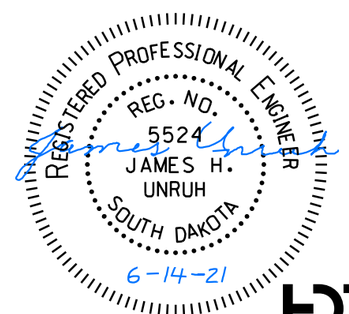
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	36	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:







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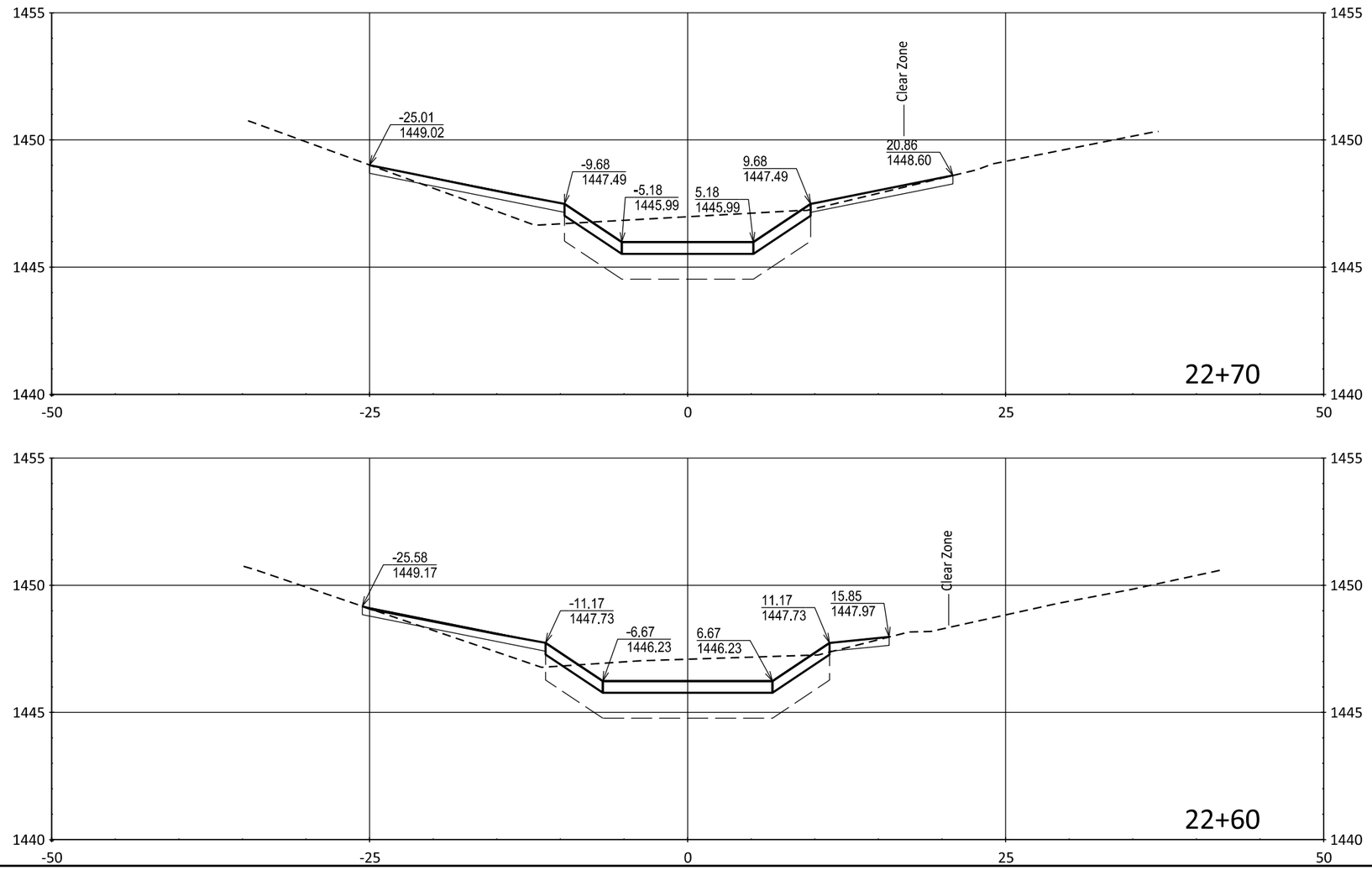
I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	37	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:



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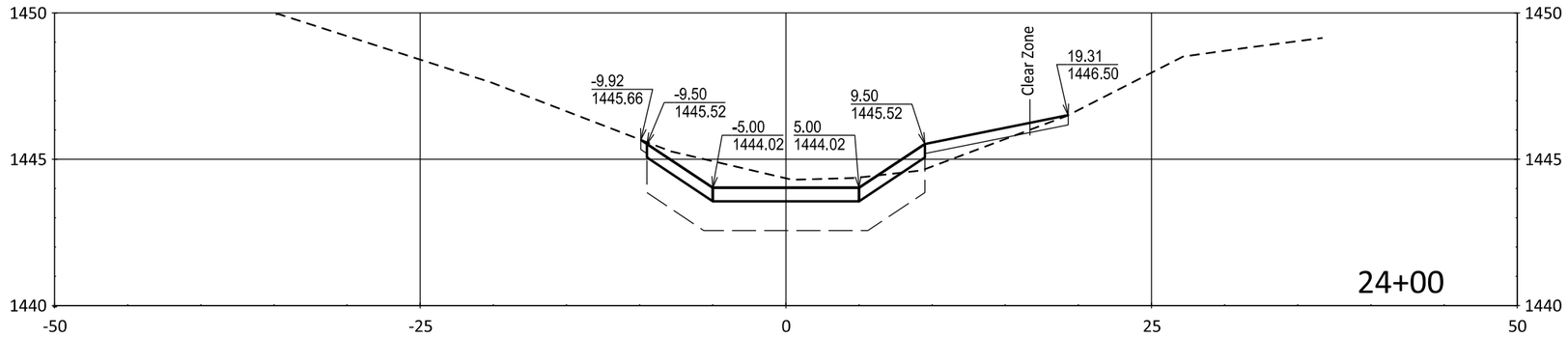
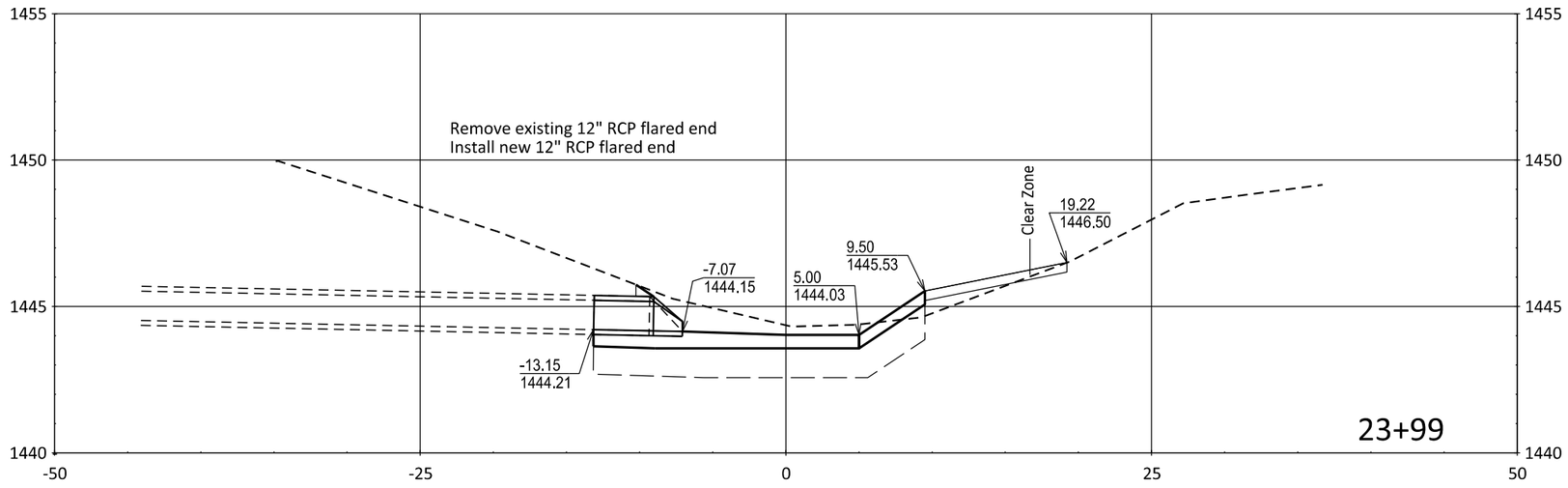
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	38	63

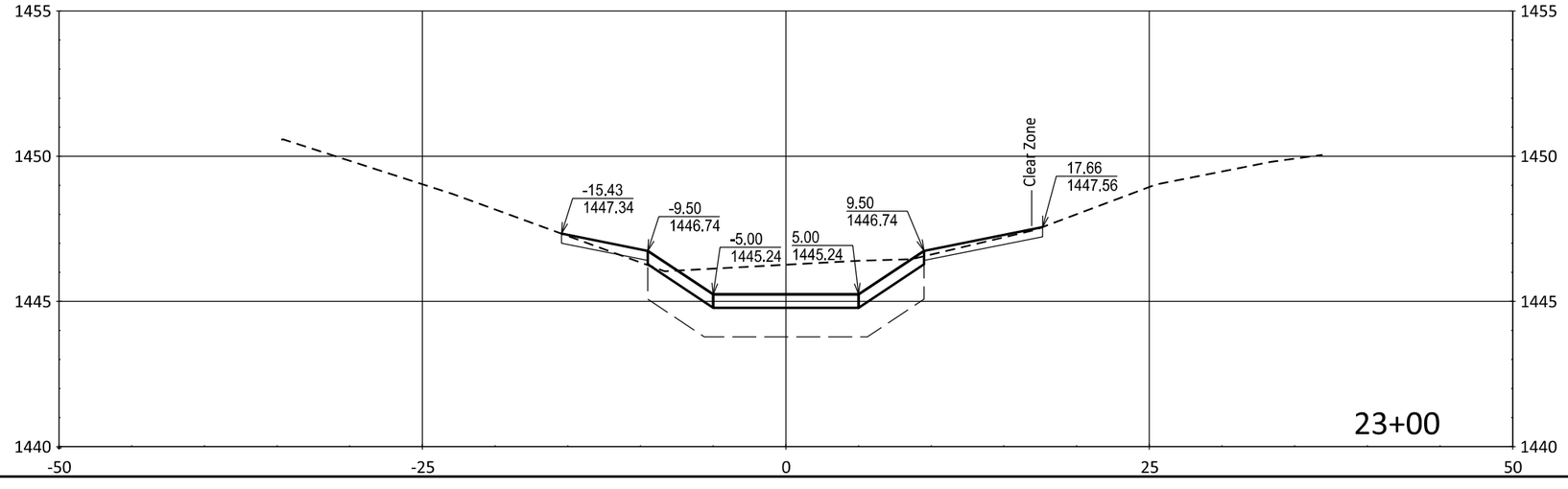
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

I-29 Ditch Cross Sections







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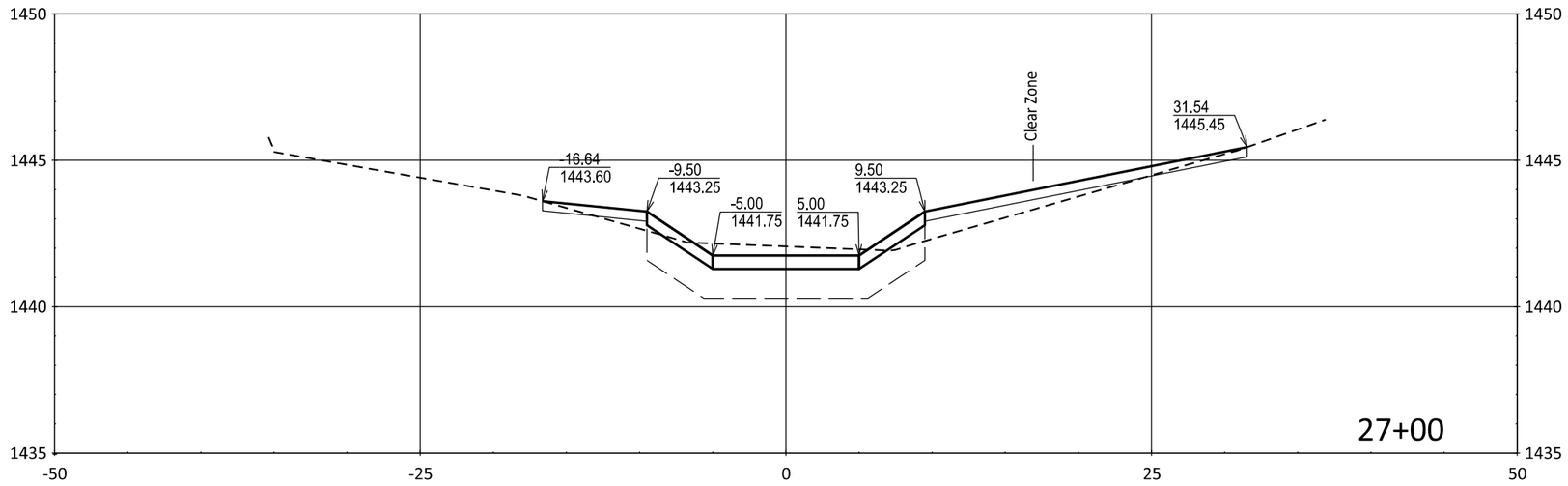
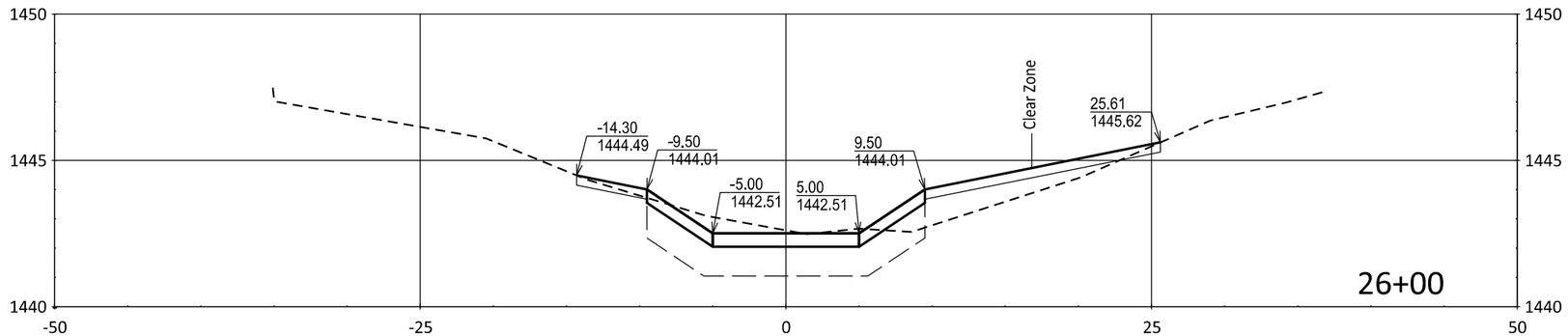
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	39	63

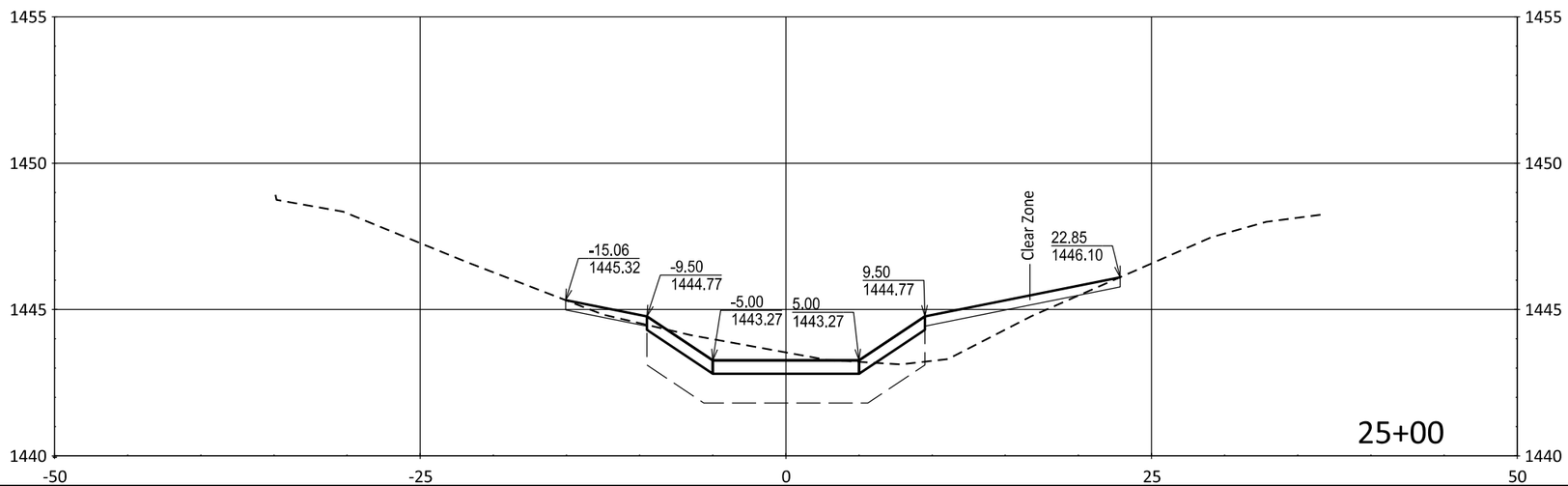
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

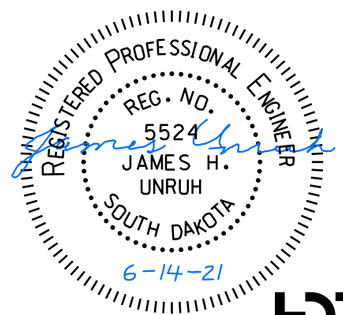
REV DATE:
INITIAL:

I-29 Ditch Cross Sections









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I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	40	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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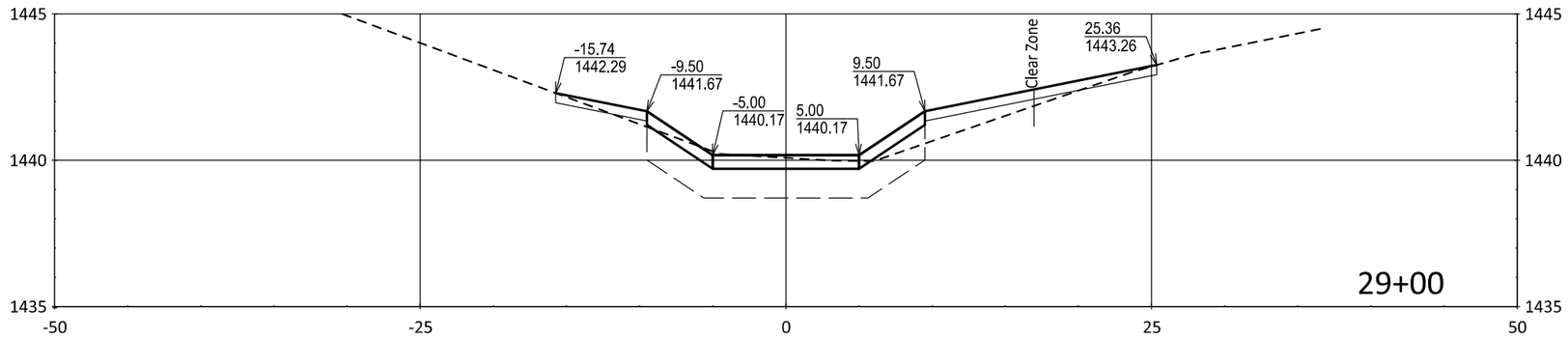

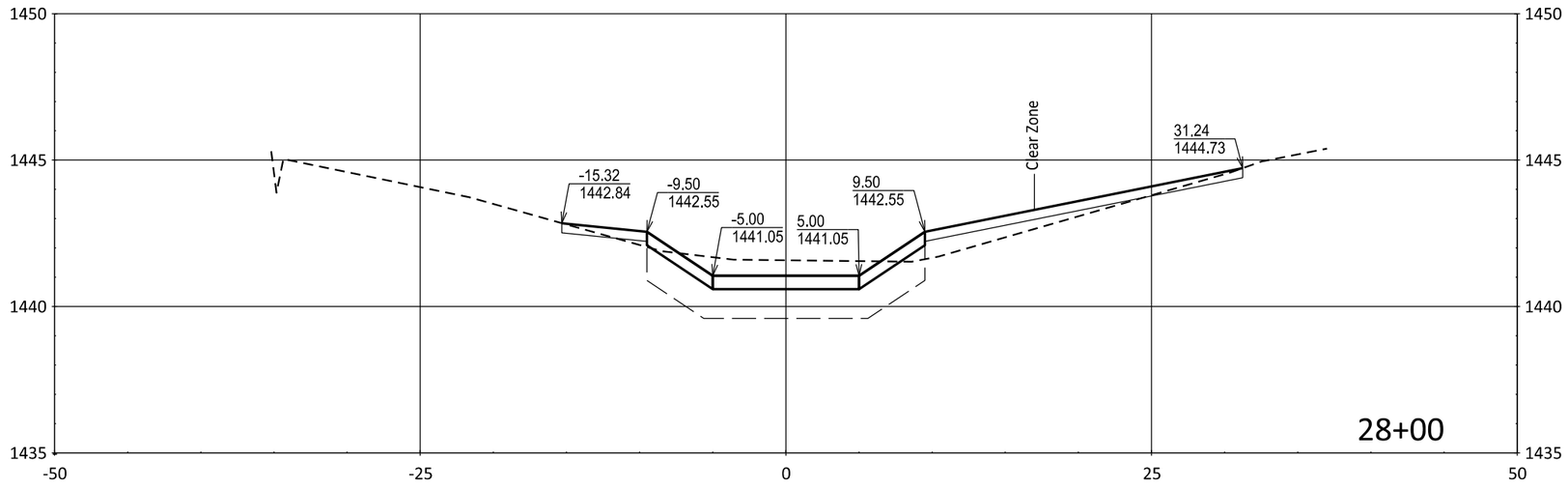

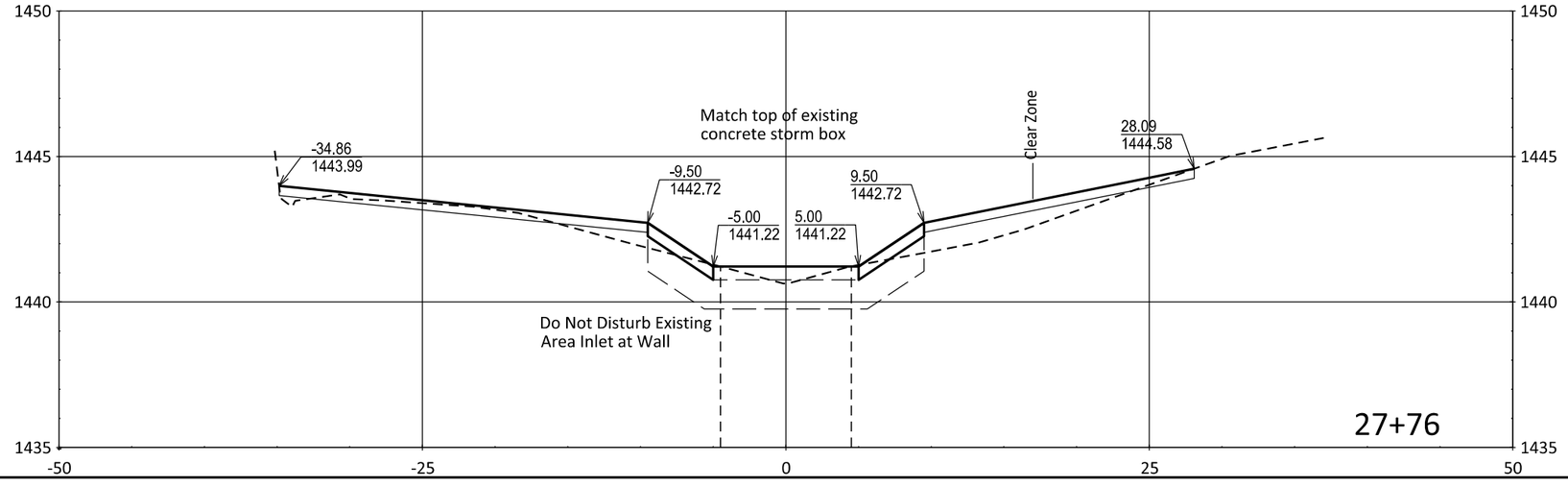

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I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	41	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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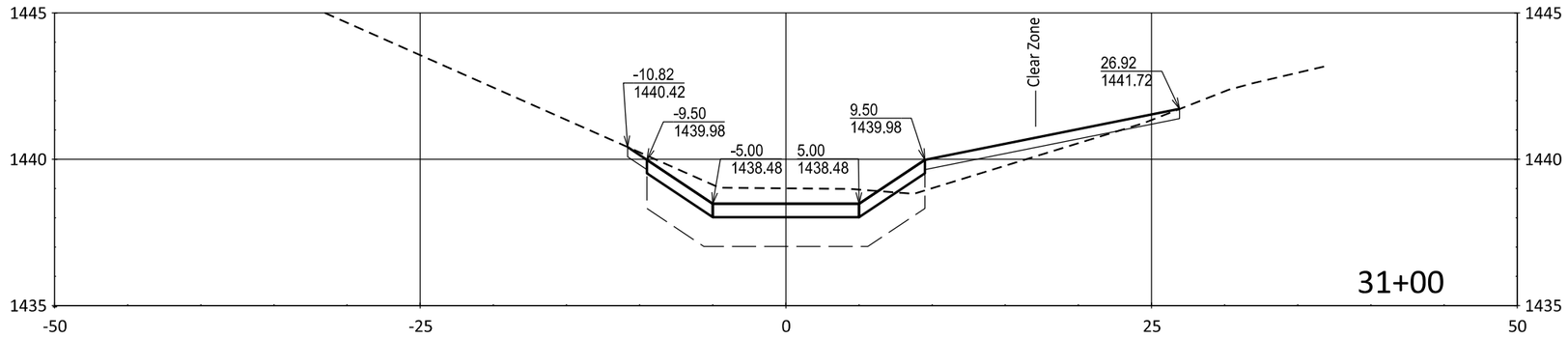

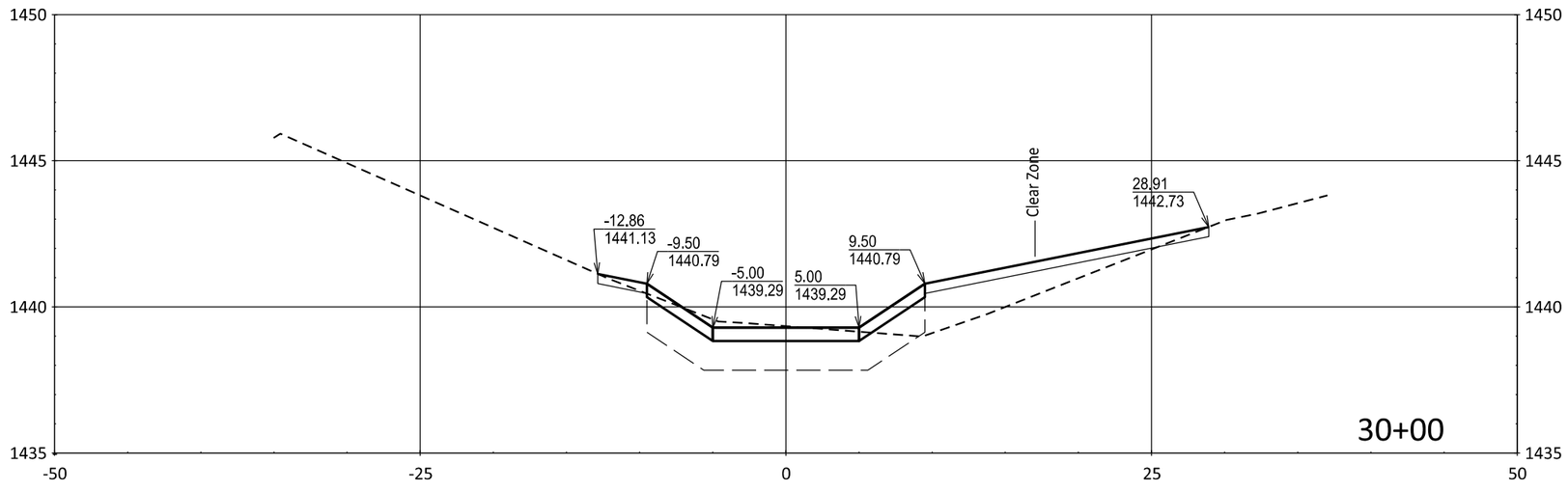

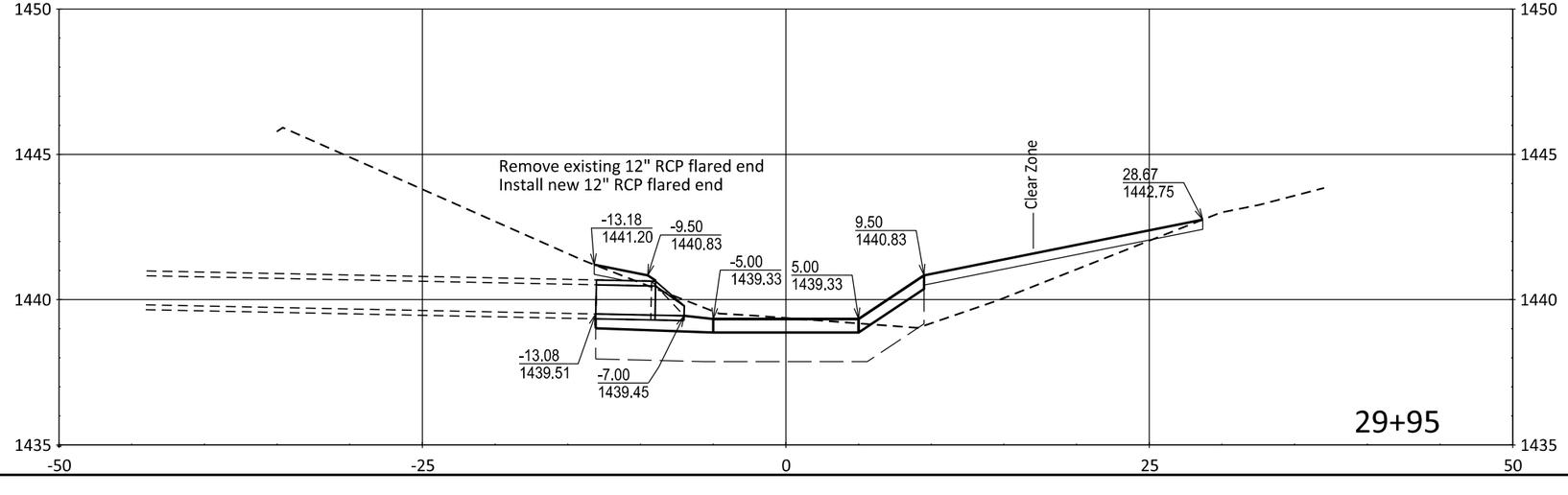

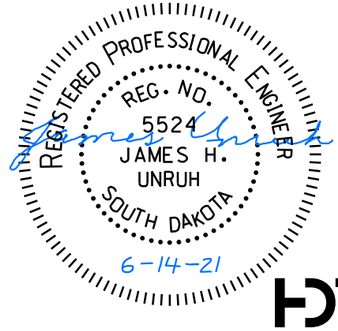

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I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	42	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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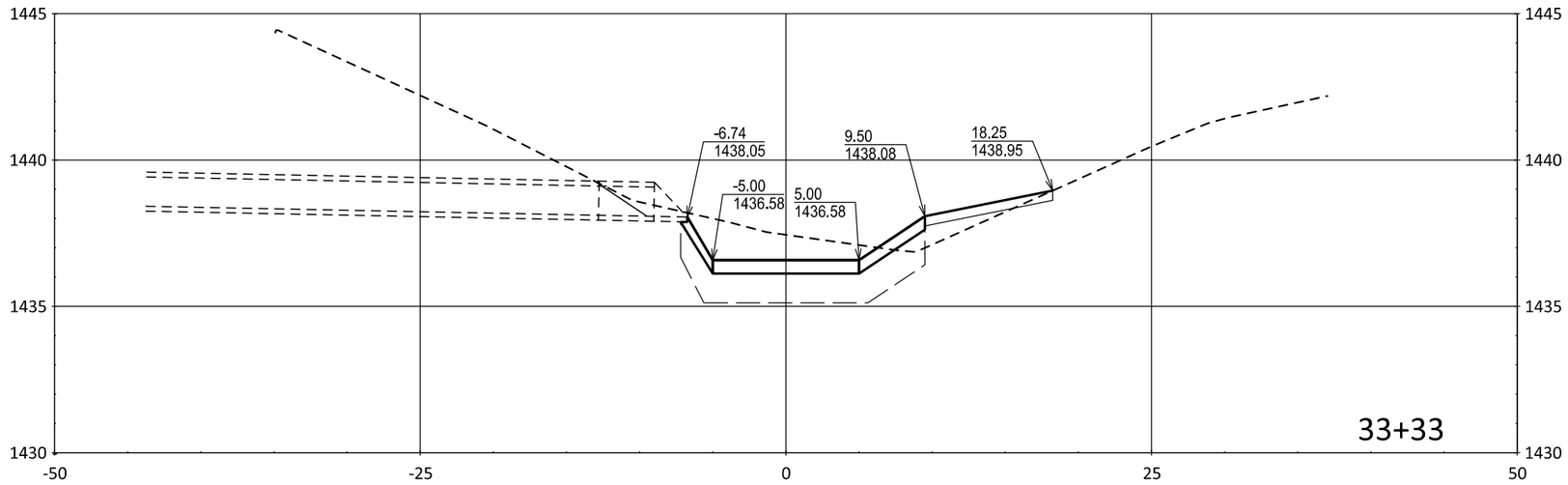

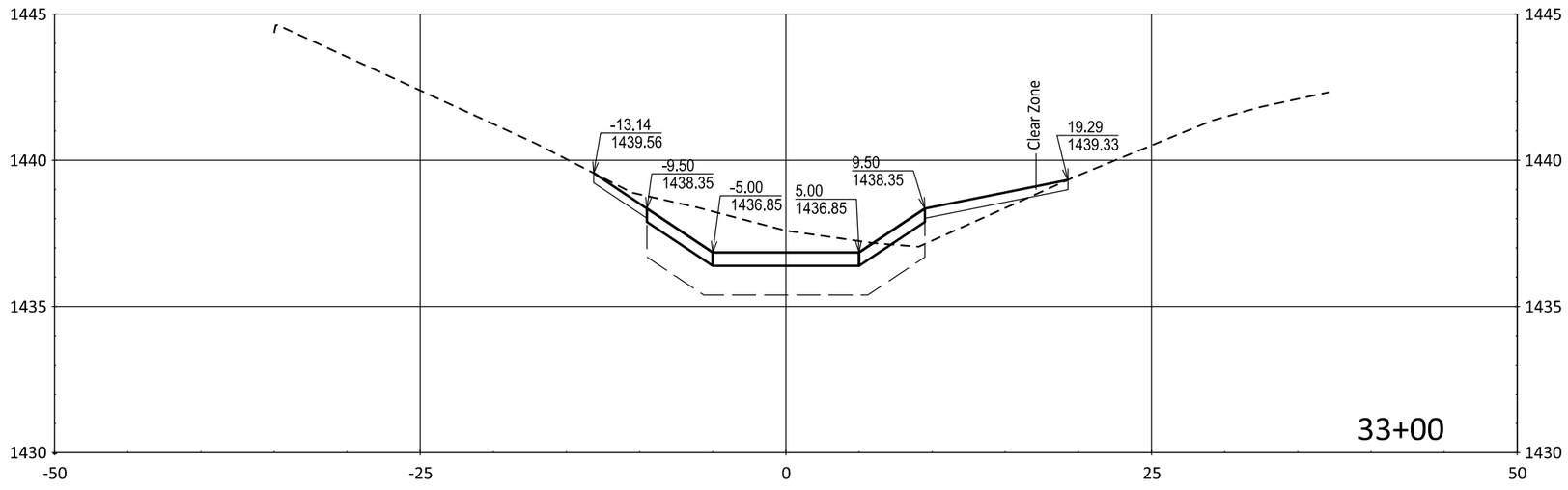

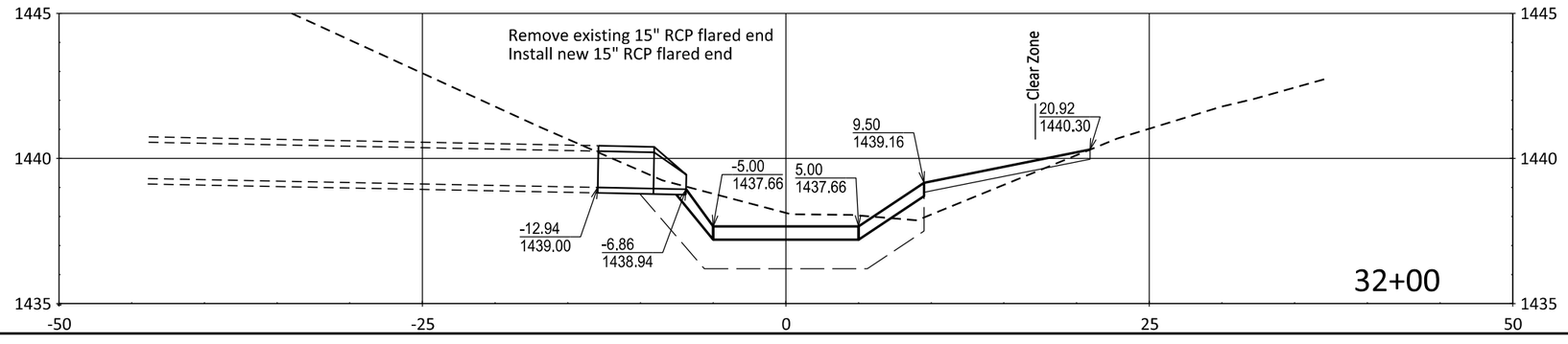

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	43	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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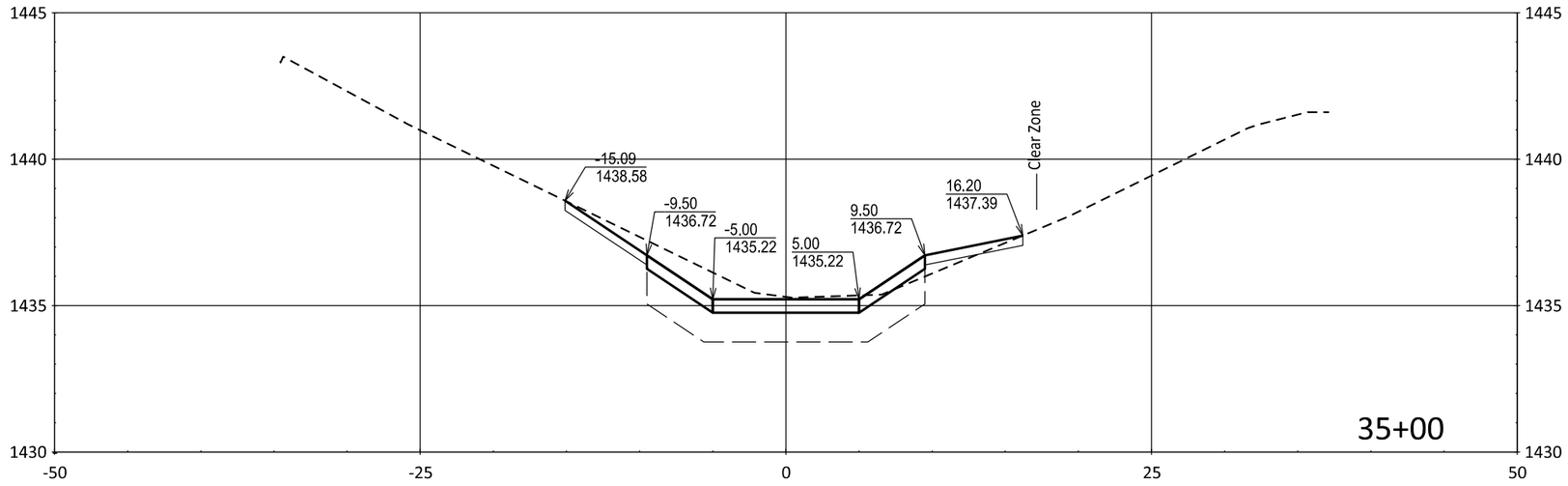

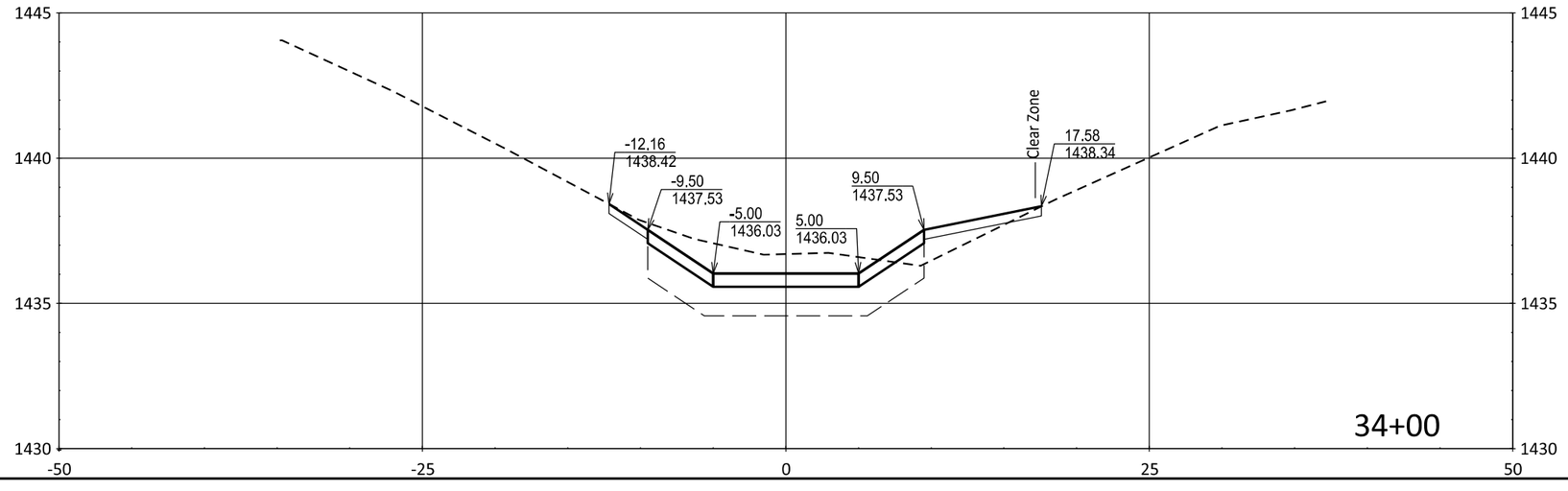

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I-29 Ditch Cross Sections

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	44	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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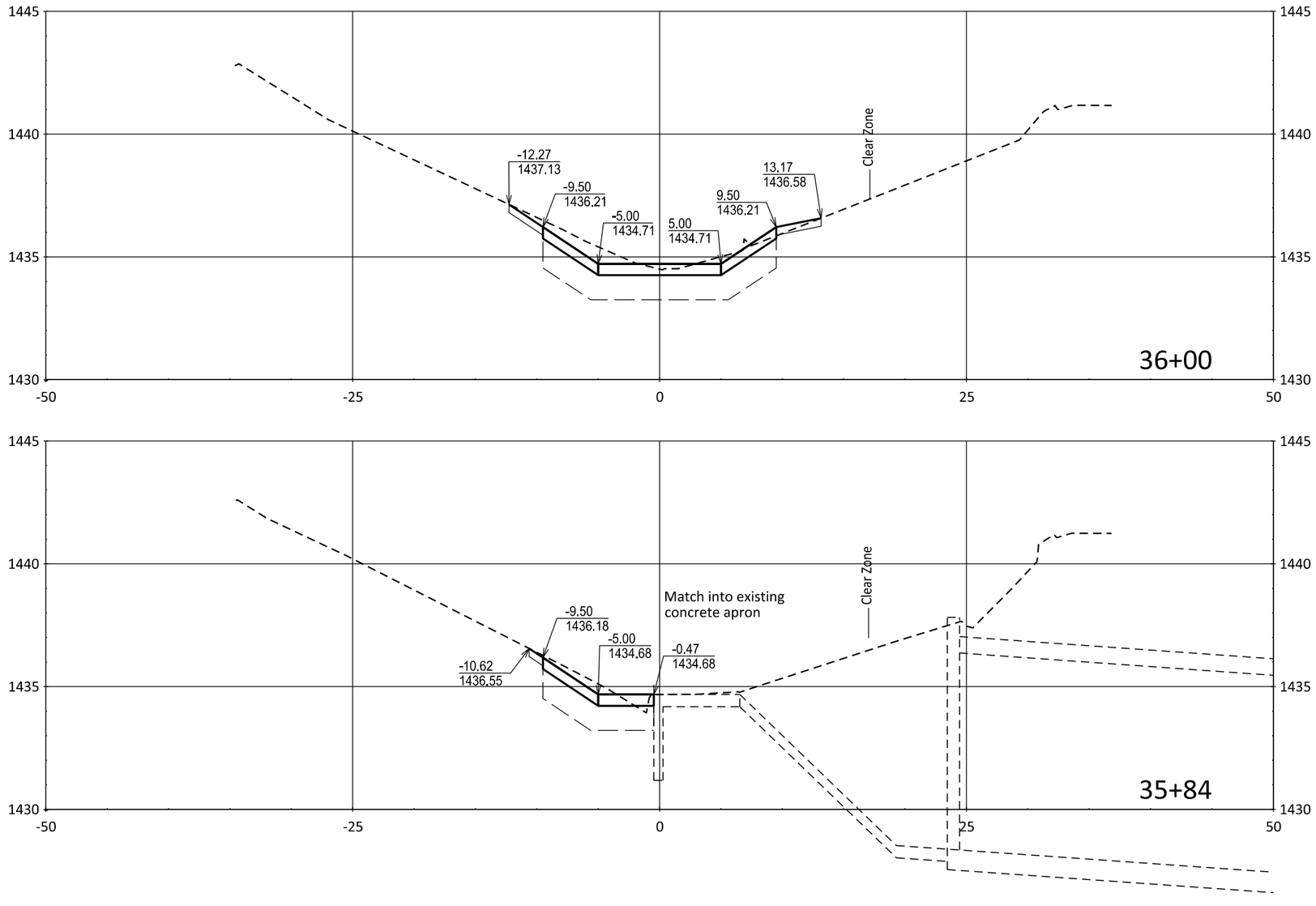

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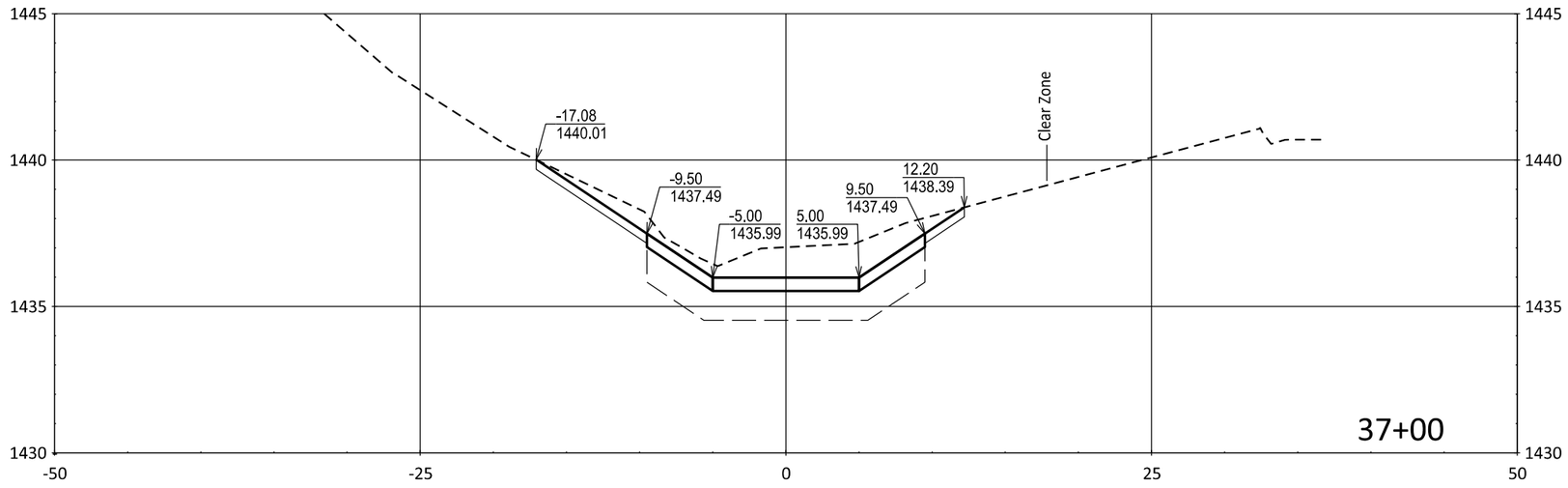
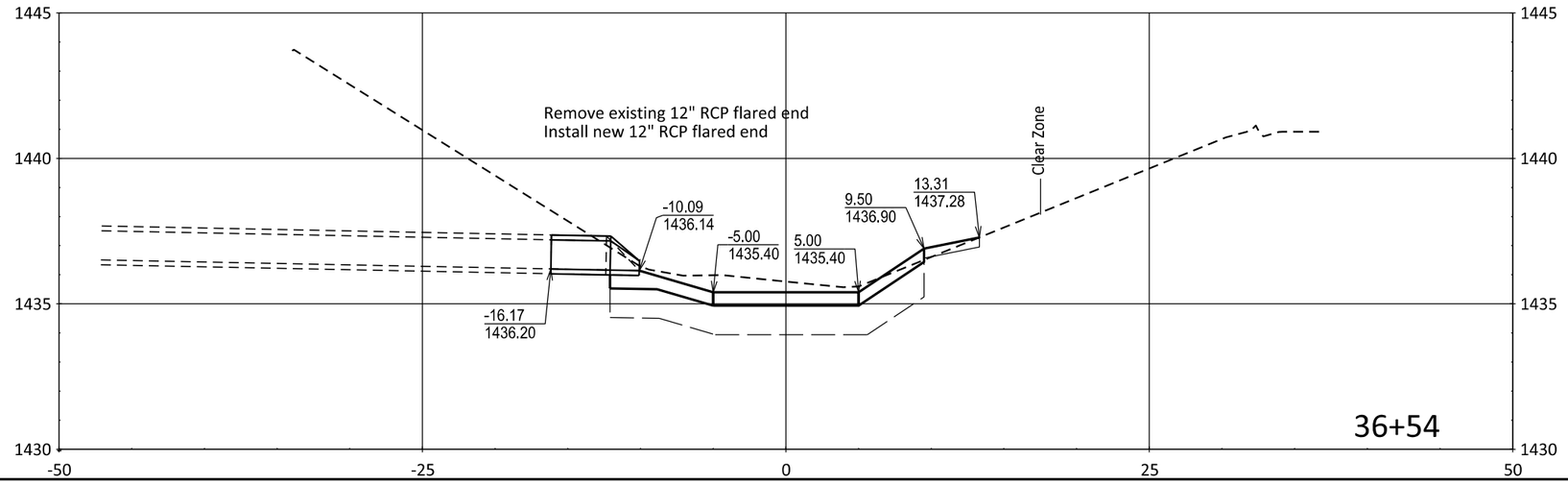
I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	45	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:





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I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	46	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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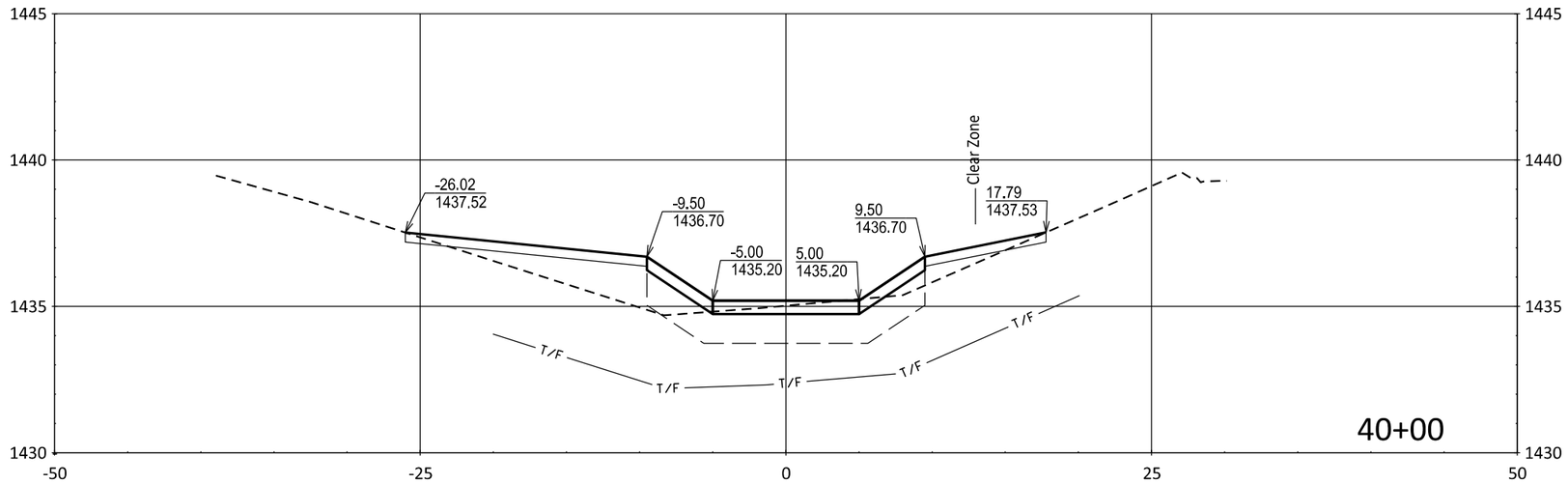

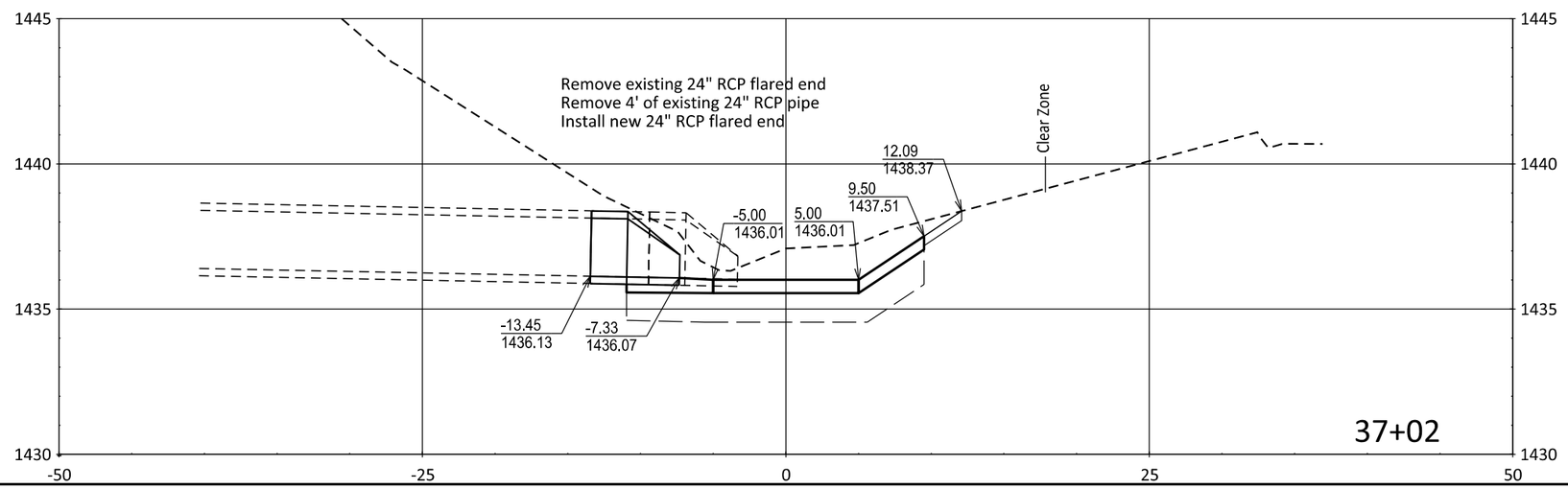

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I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	47	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

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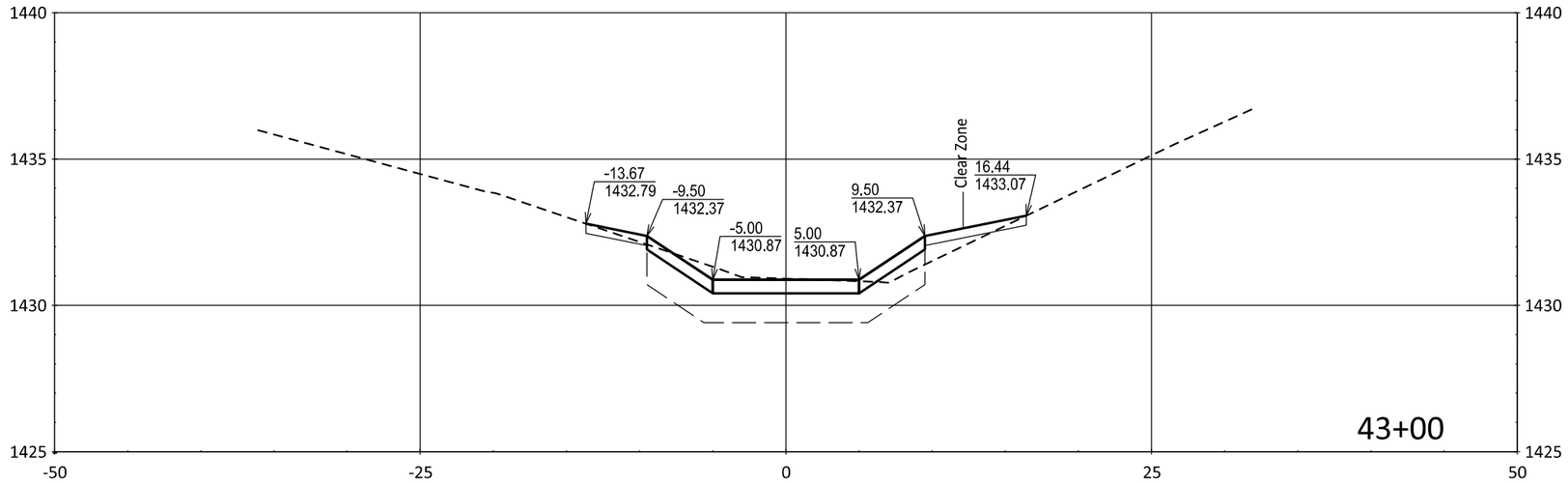

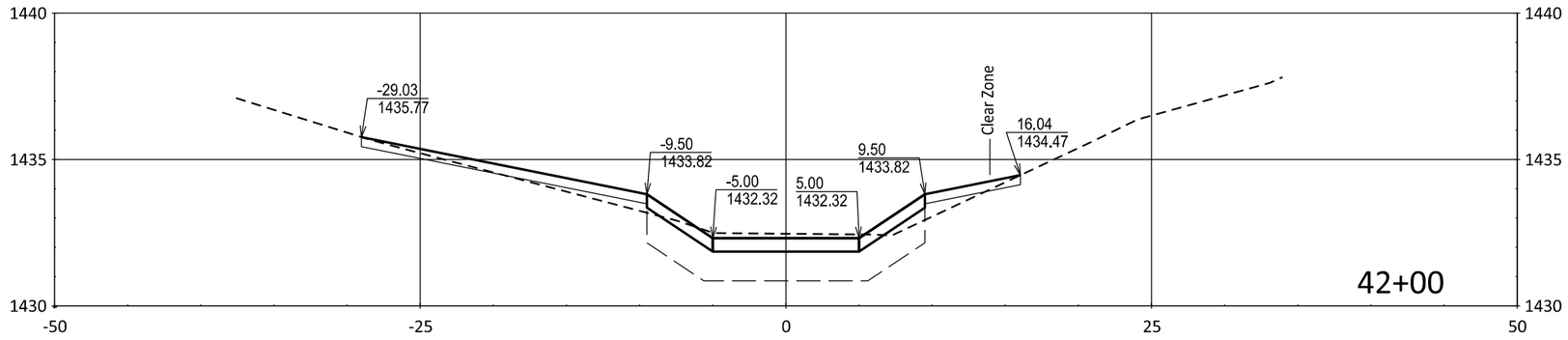

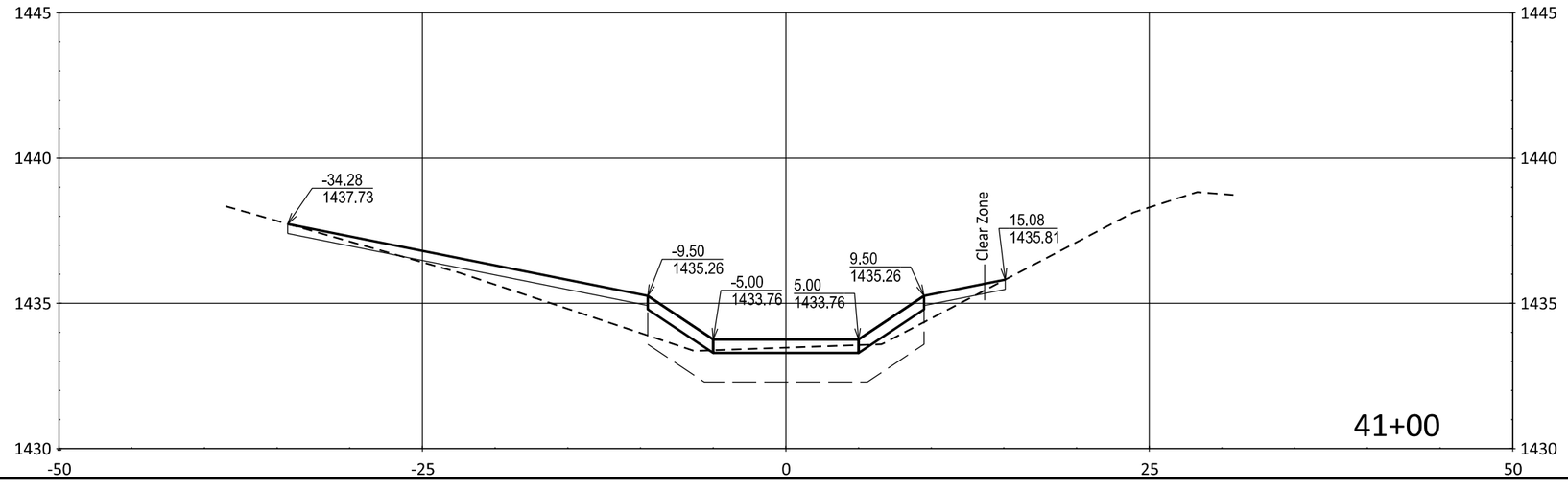

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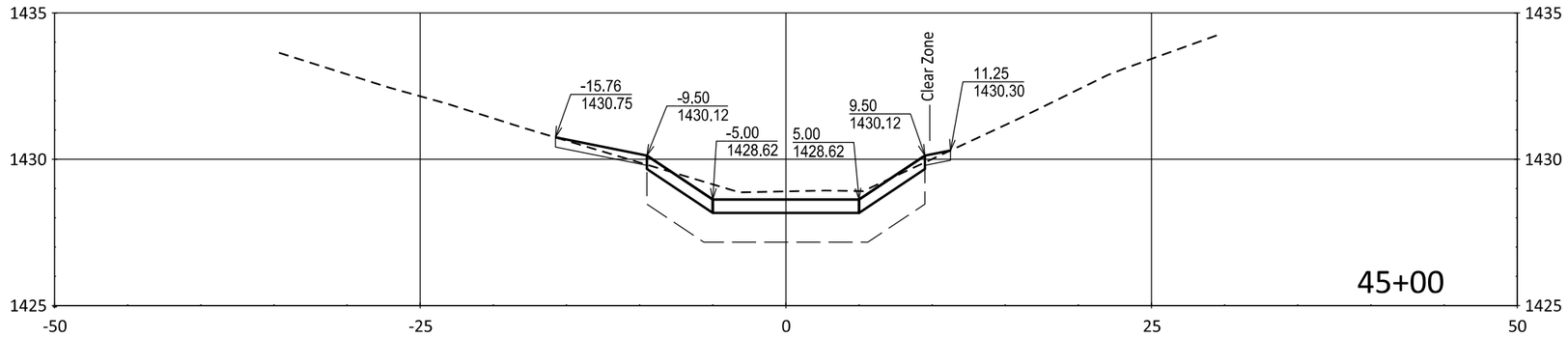
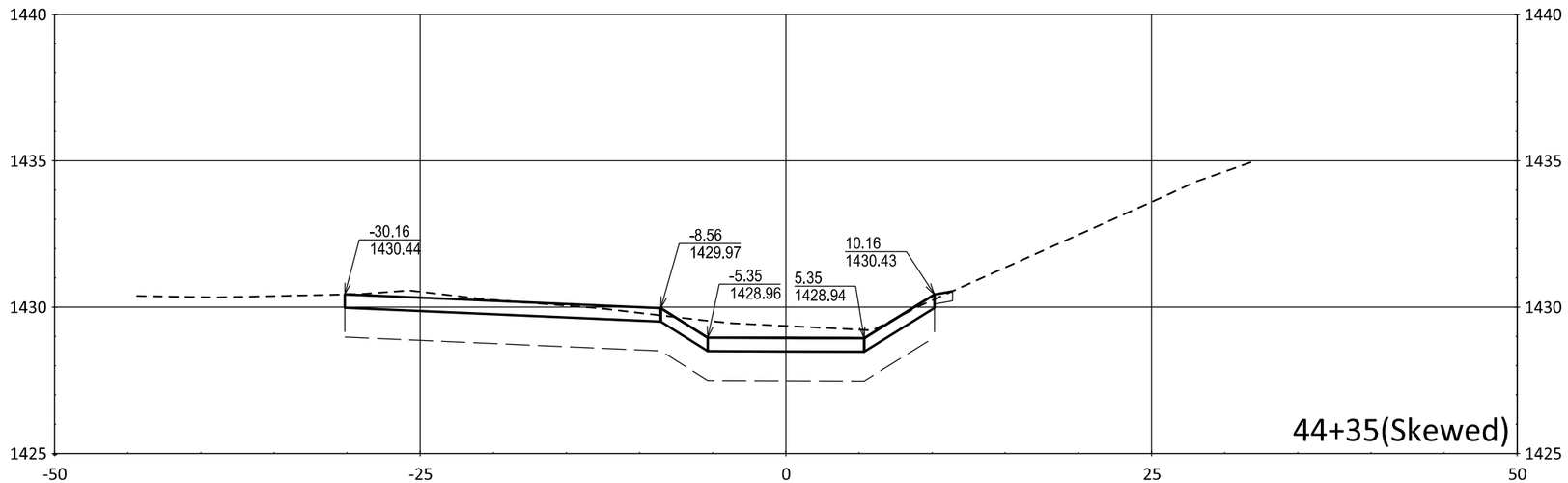
I-29 Ditch Cross Sections

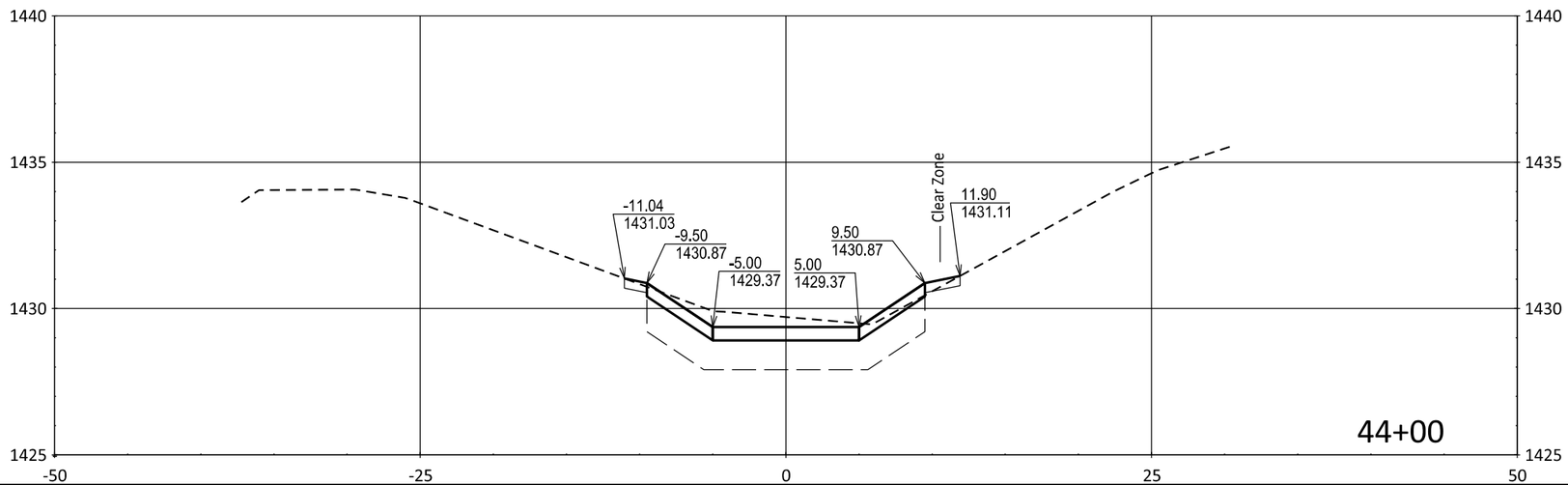
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	48	63

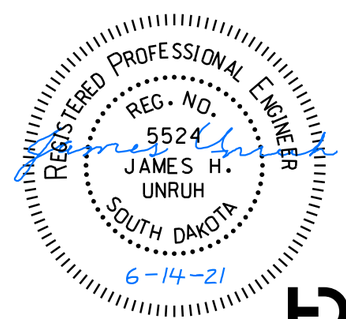
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:









FOR BIDDING PURPOSES ONLY

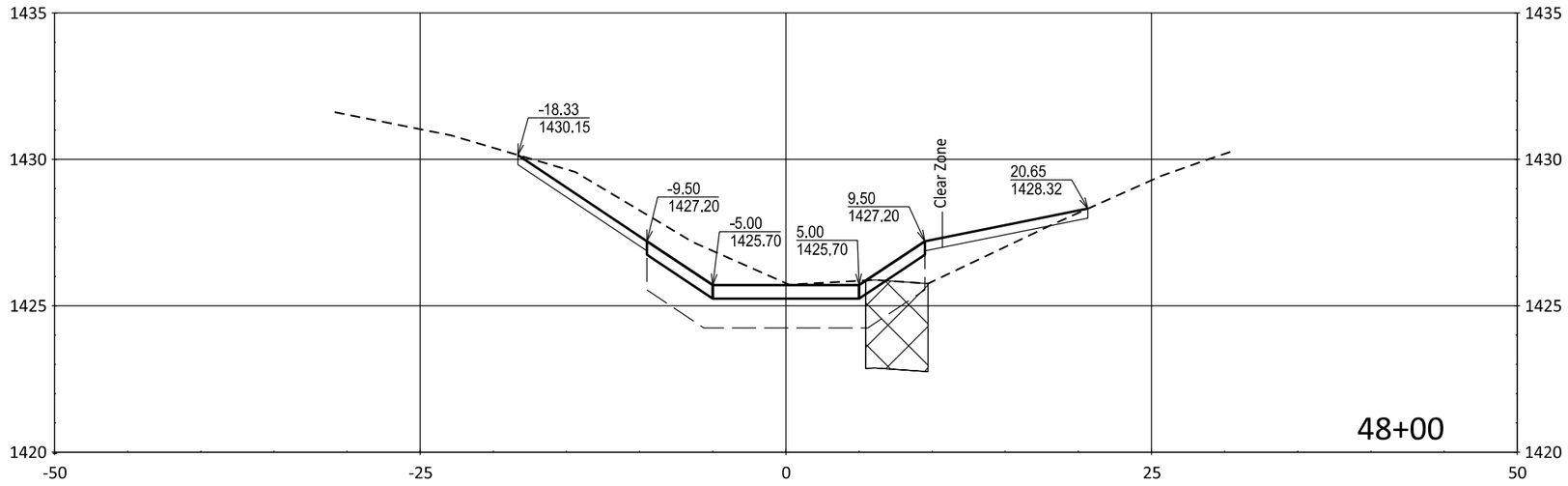
I-29 Ditch Cross Sections

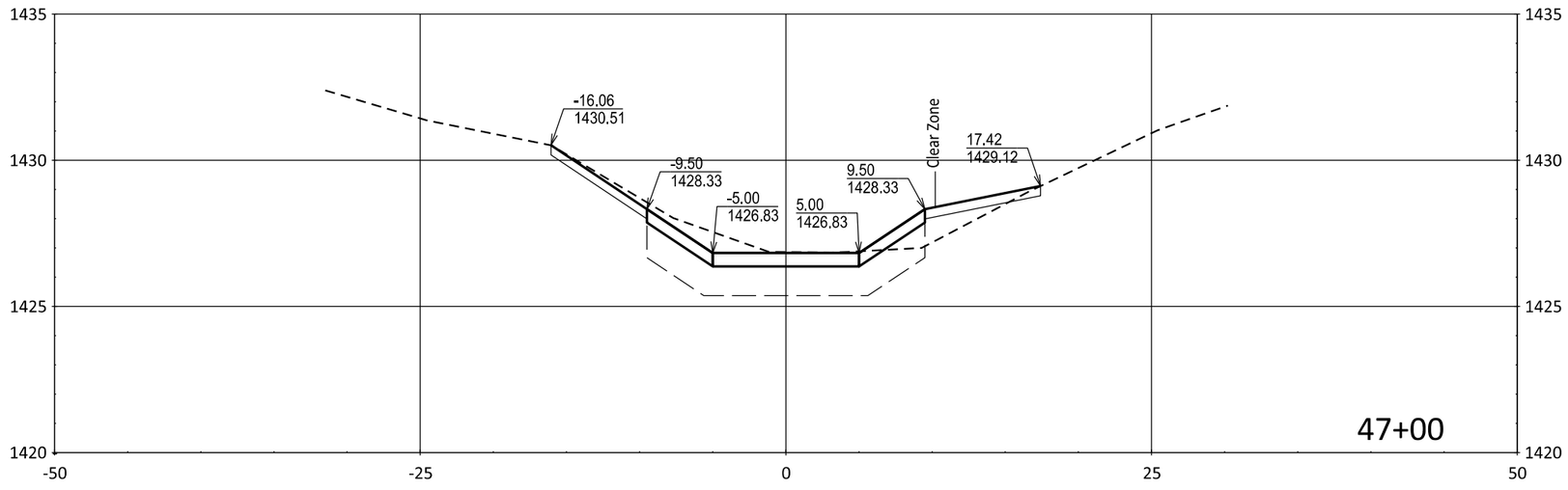
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	49	63

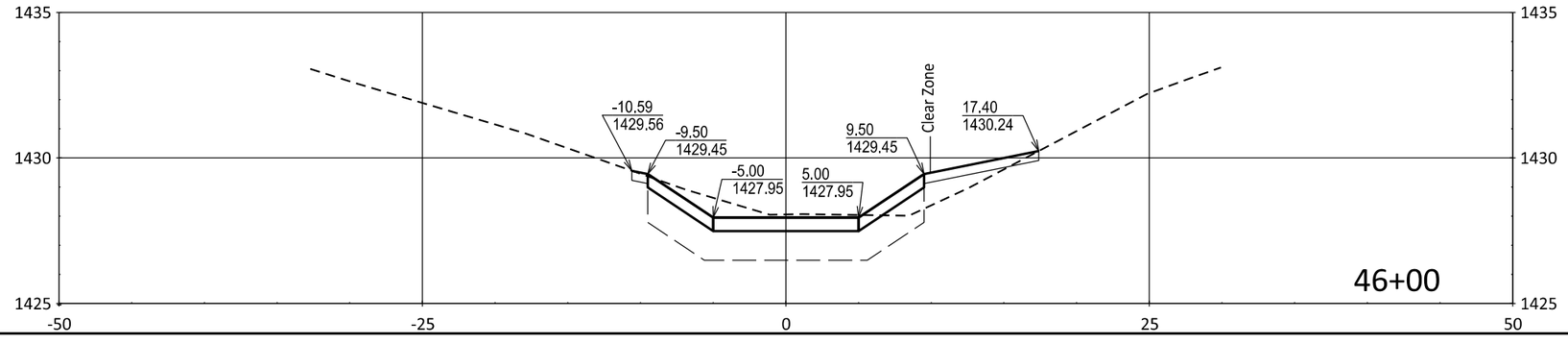
Muck Excavation

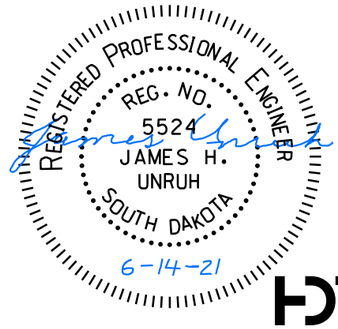
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:









FOR BIDDING PURPOSES ONLY

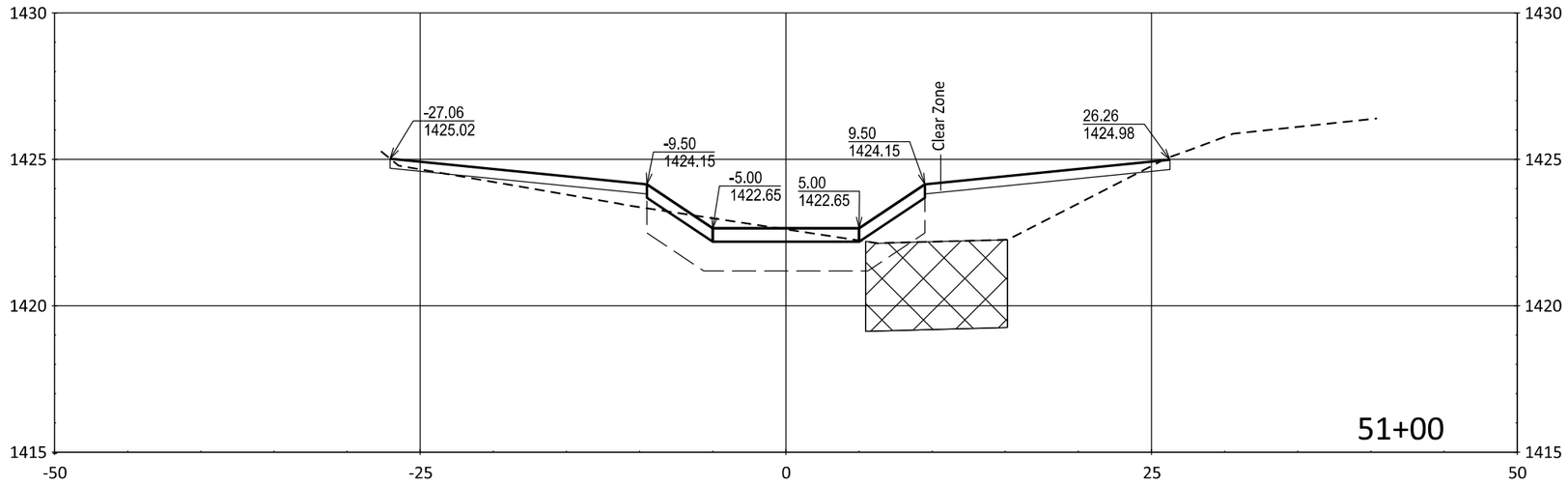
I-29 Ditch Cross Sections

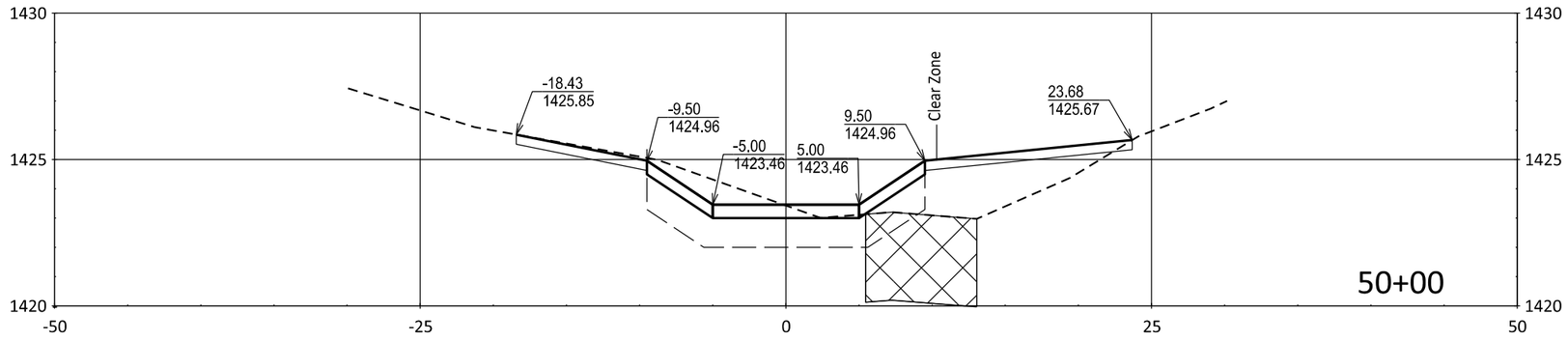
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	50	63

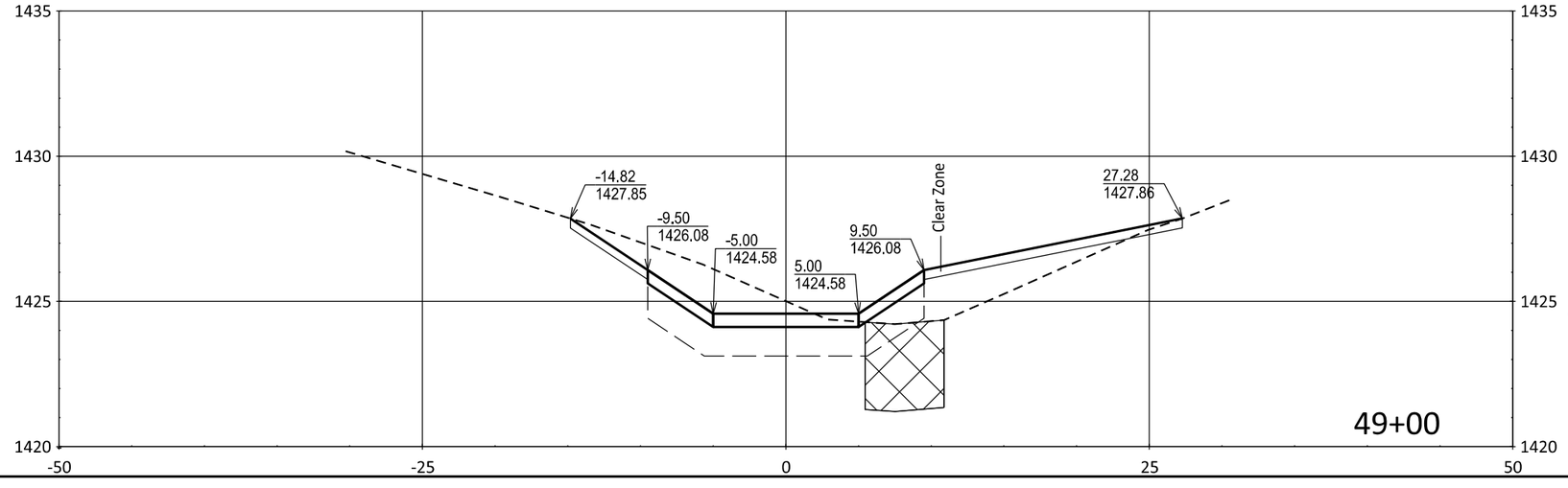
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:

Muck Excavation







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REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
6-14-21

I-29 Ditch Cross Sections

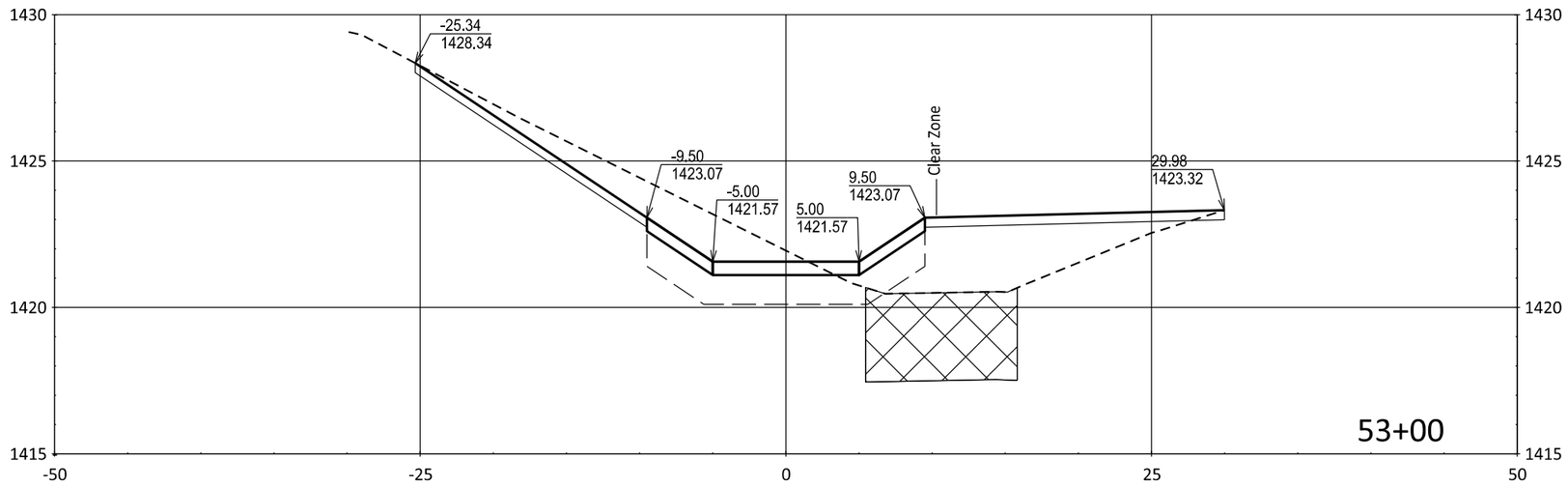
FOR BIDDING PURPOSES ONLY

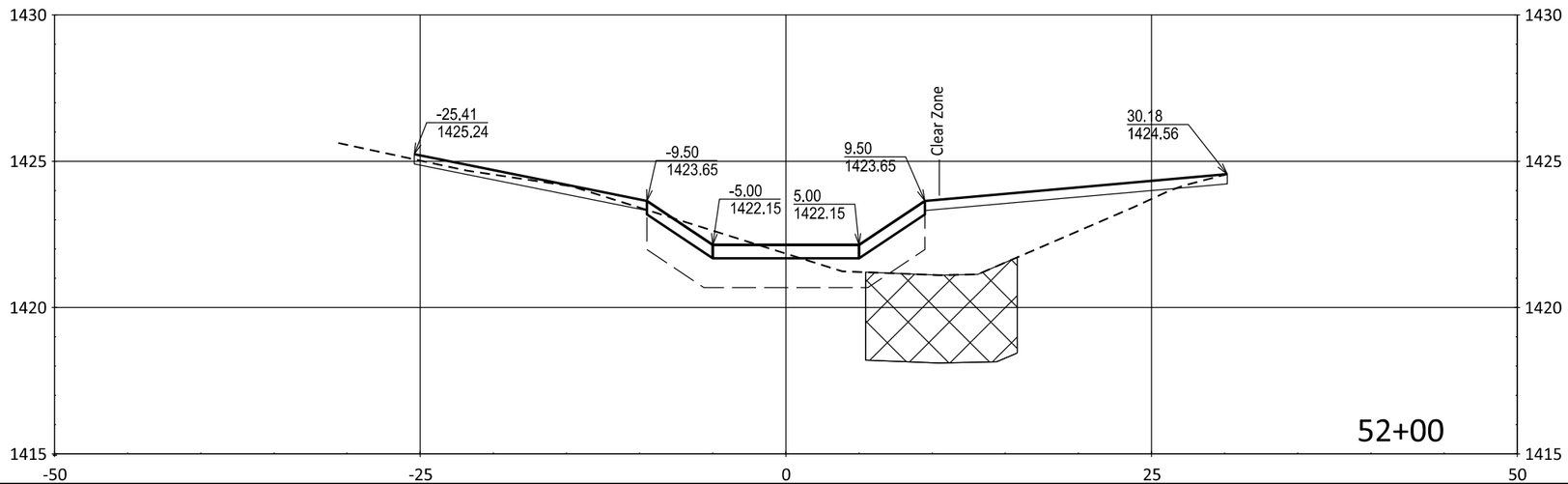
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	51	63

Muck Excavation

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:





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6-14-21

FOR BIDDING PURPOSES ONLY

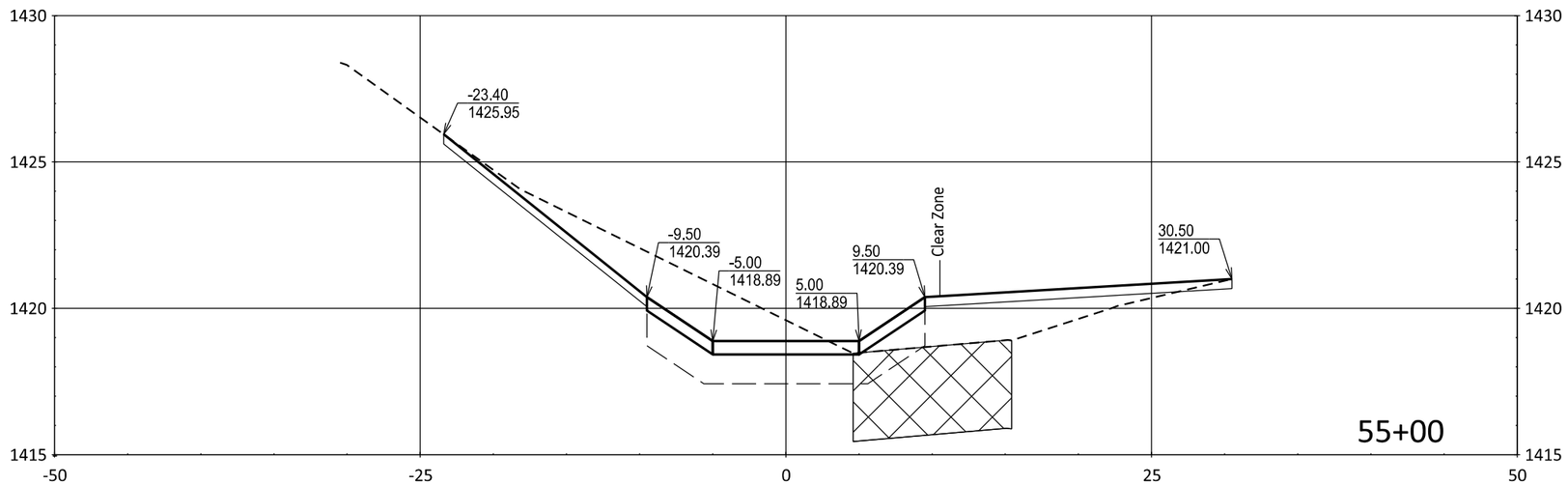
I-29 Ditch Cross Sections

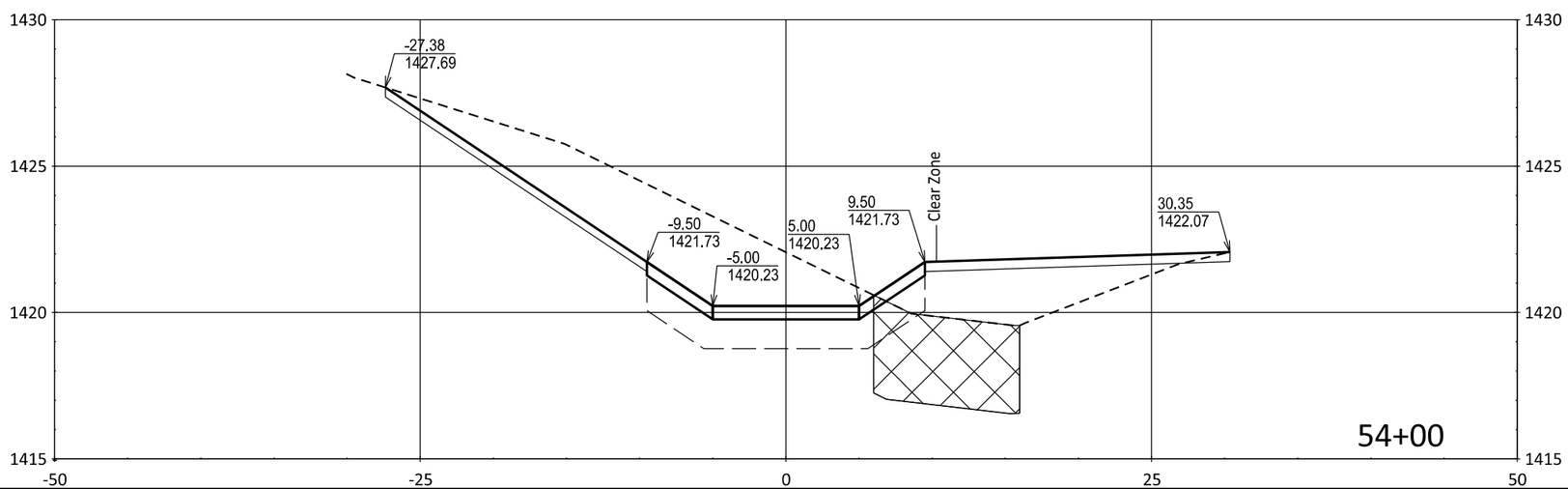
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	52	63

Muck Excavation

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:





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SOUTH DAKOTA
6-14-21

FOR BIDDING PURPOSES ONLY

I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	53	63

Muck Excavation

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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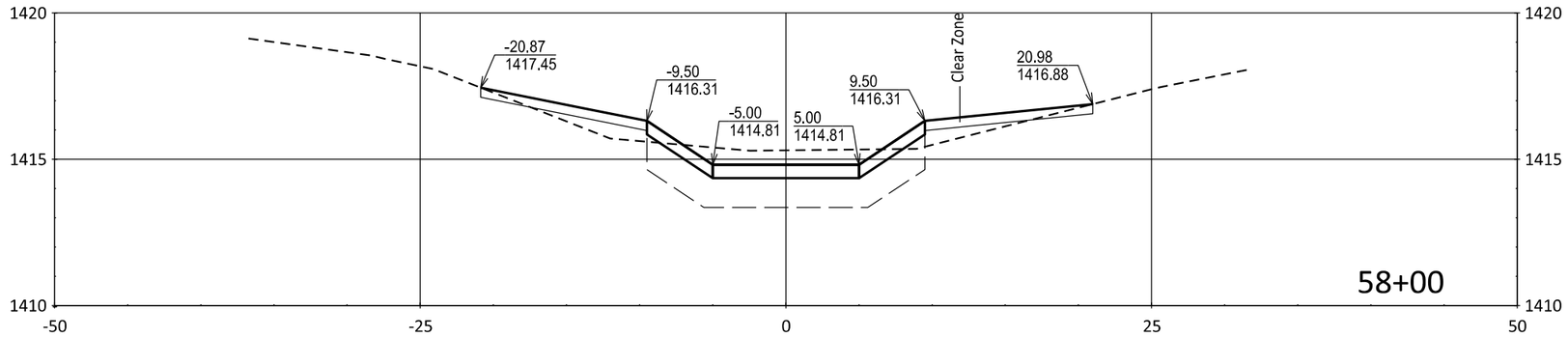
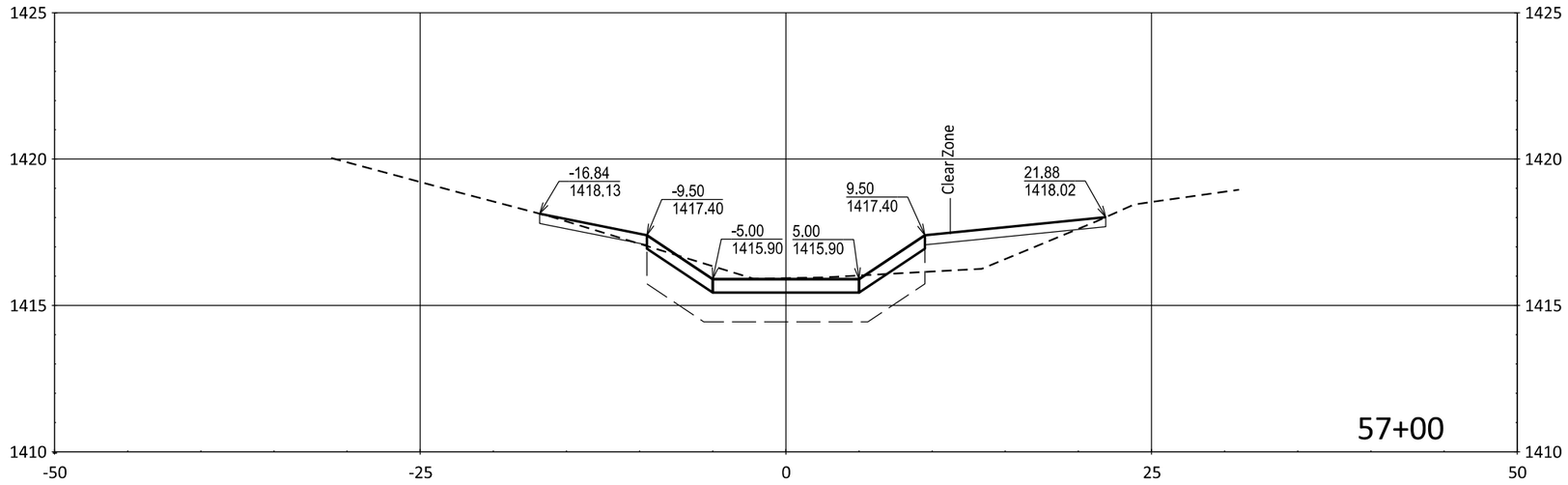
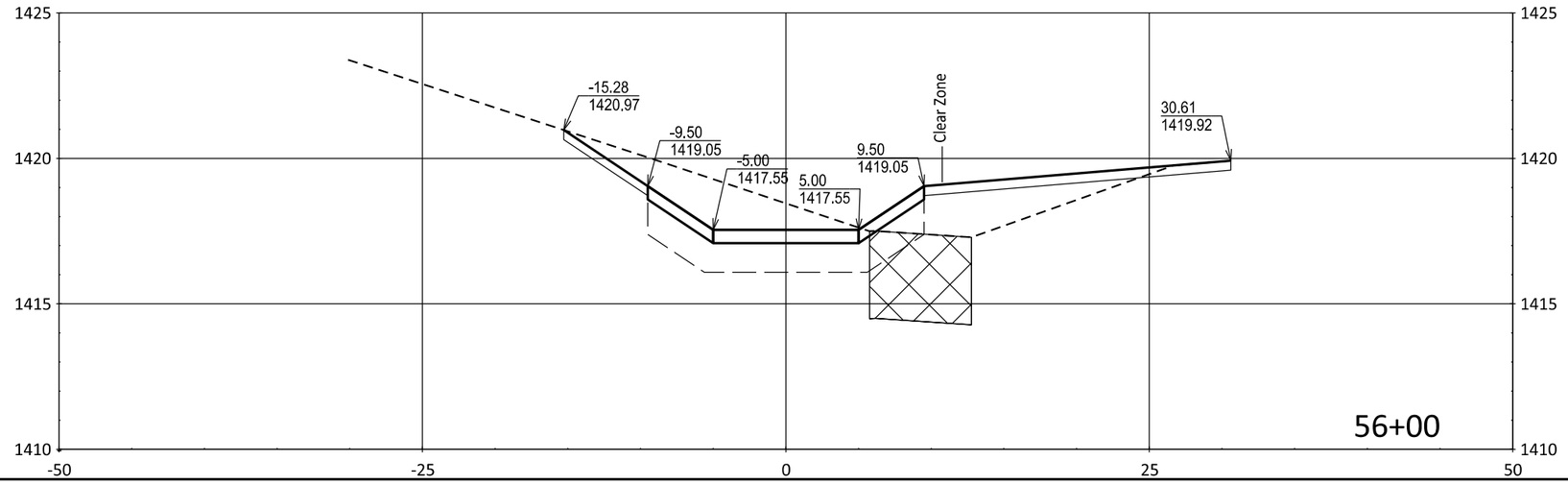






REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
6-14-21

FOR BIDDING PURPOSES ONLY

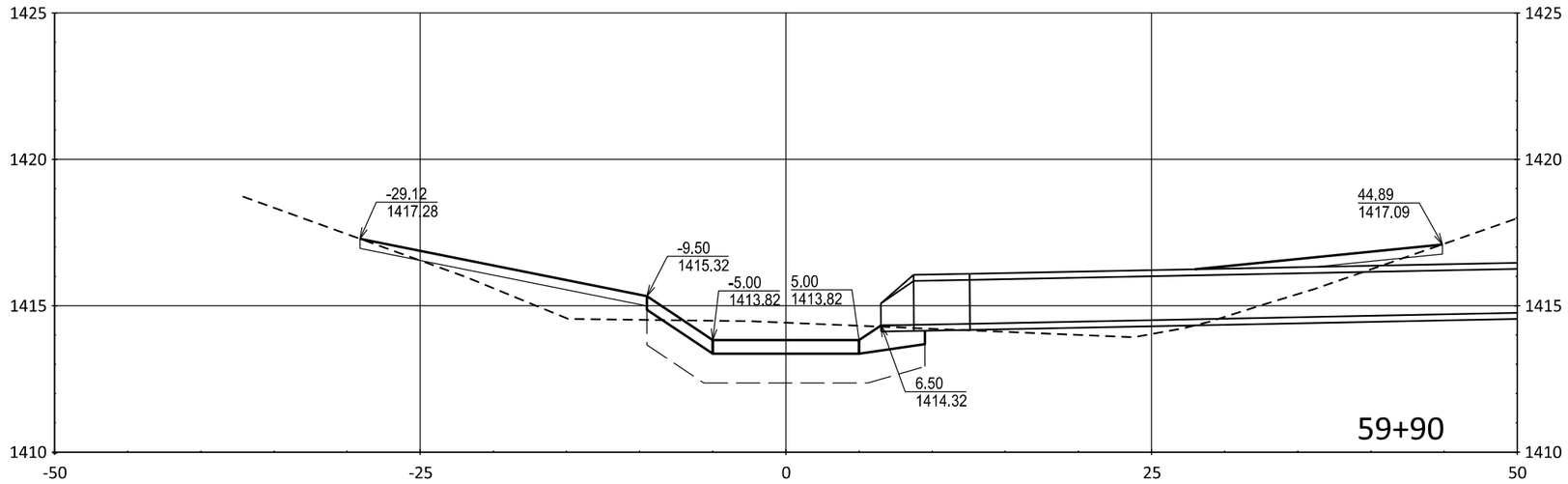
I-29 Ditch Cross Sections

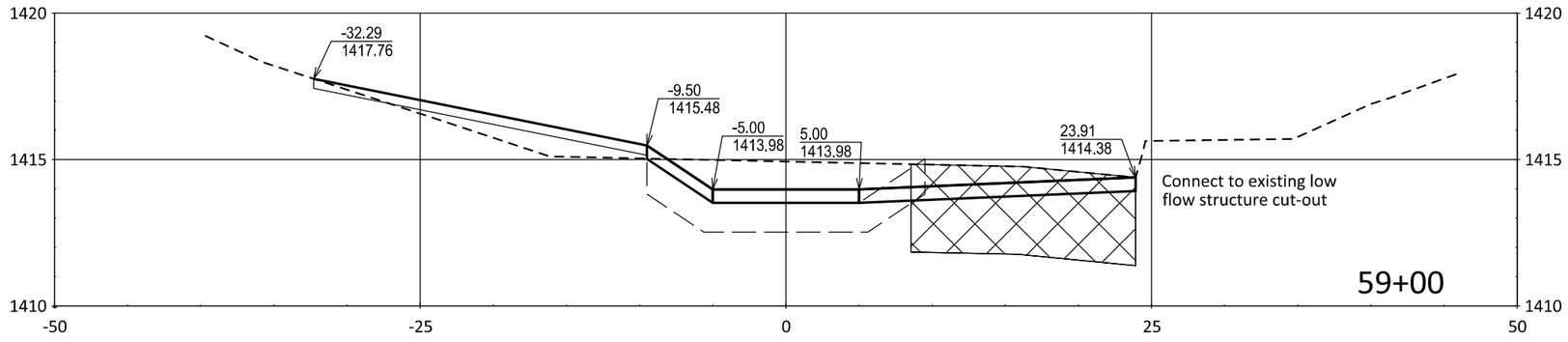
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	54	63

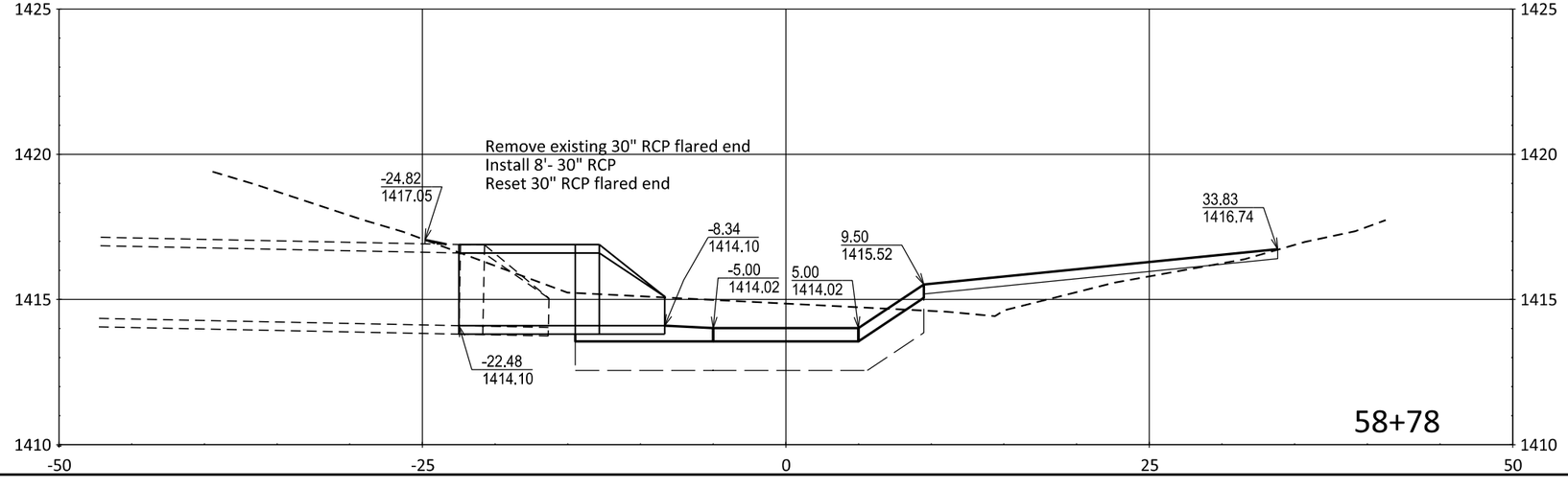
Muck Excavation

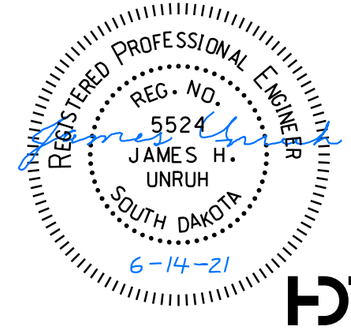
FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
INITIAL:









FOR BIDDING PURPOSES ONLY

I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	55	63

Muck Excavation

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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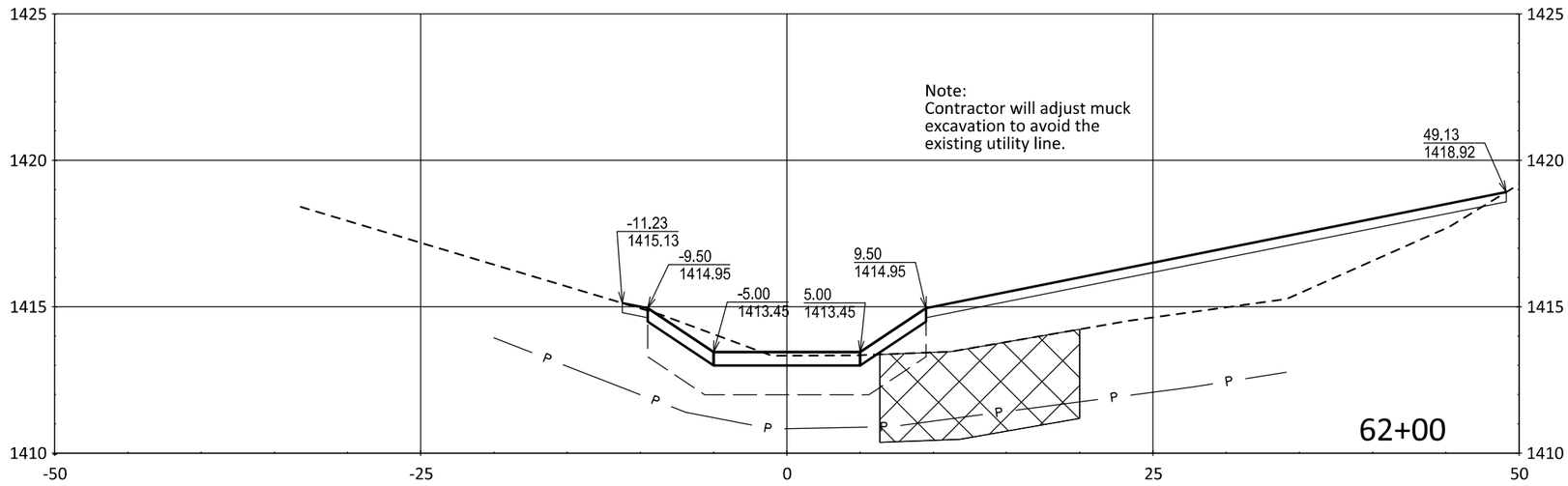

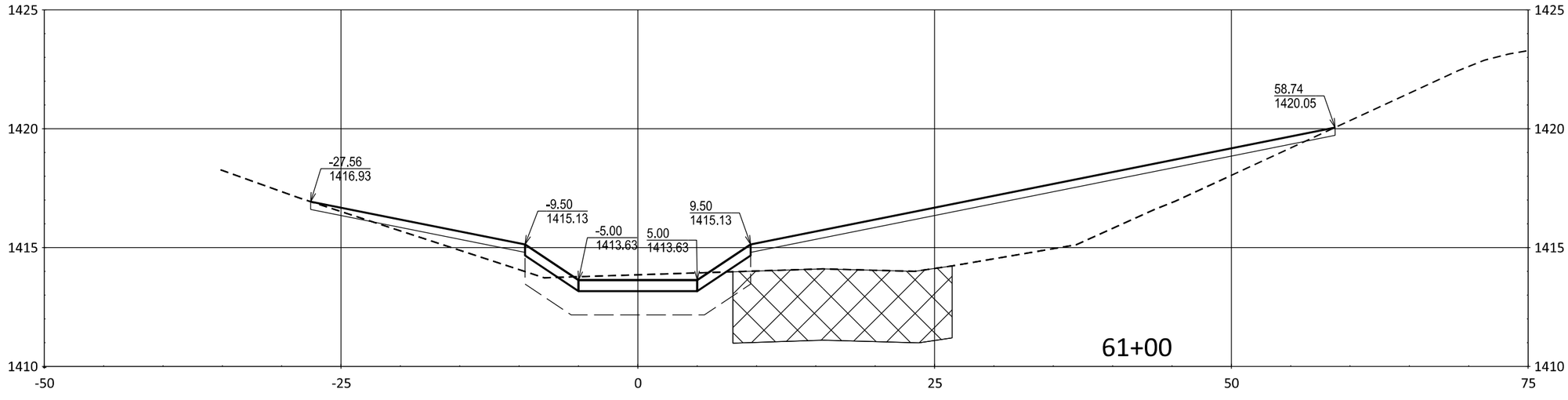

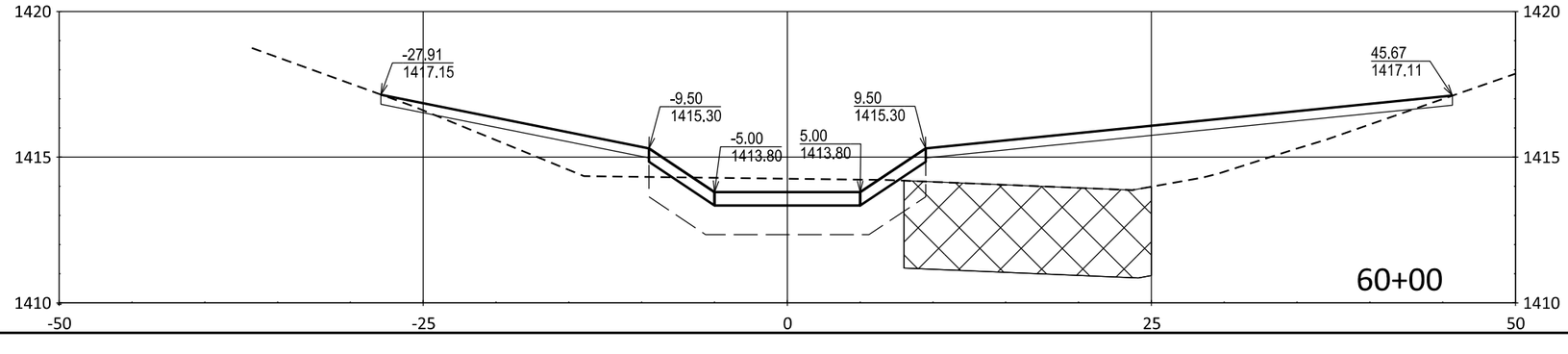

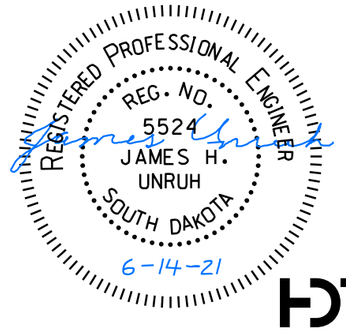

FOR BIDDING PURPOSES ONLY

I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	56	63

Muck Excavation

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

REV DATE:
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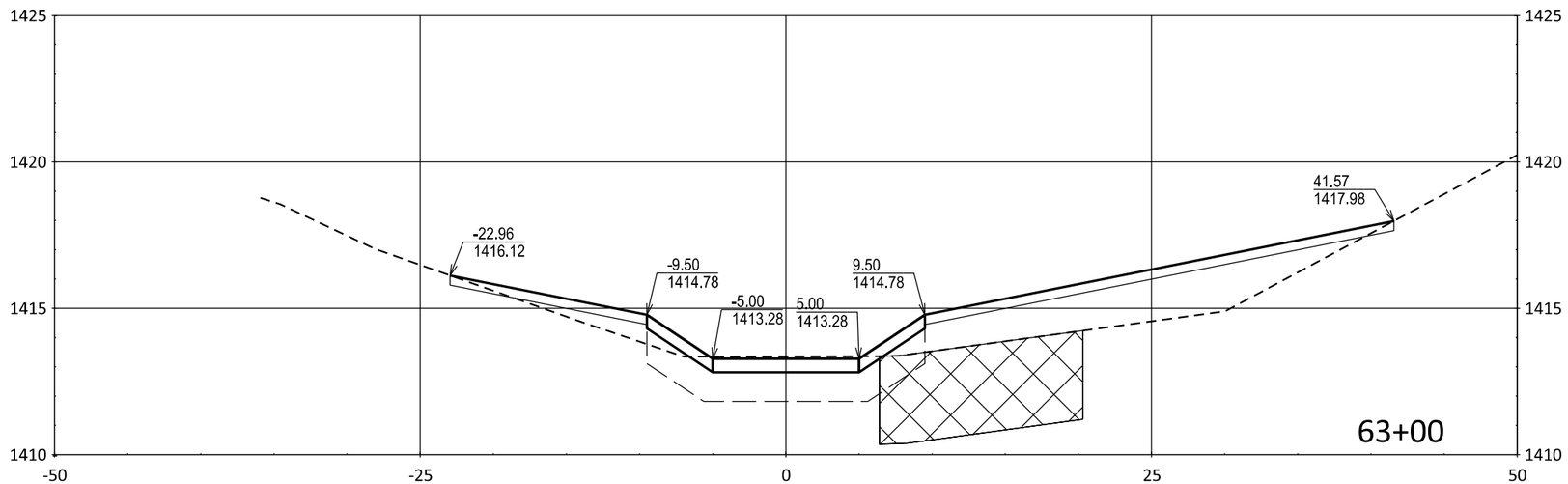

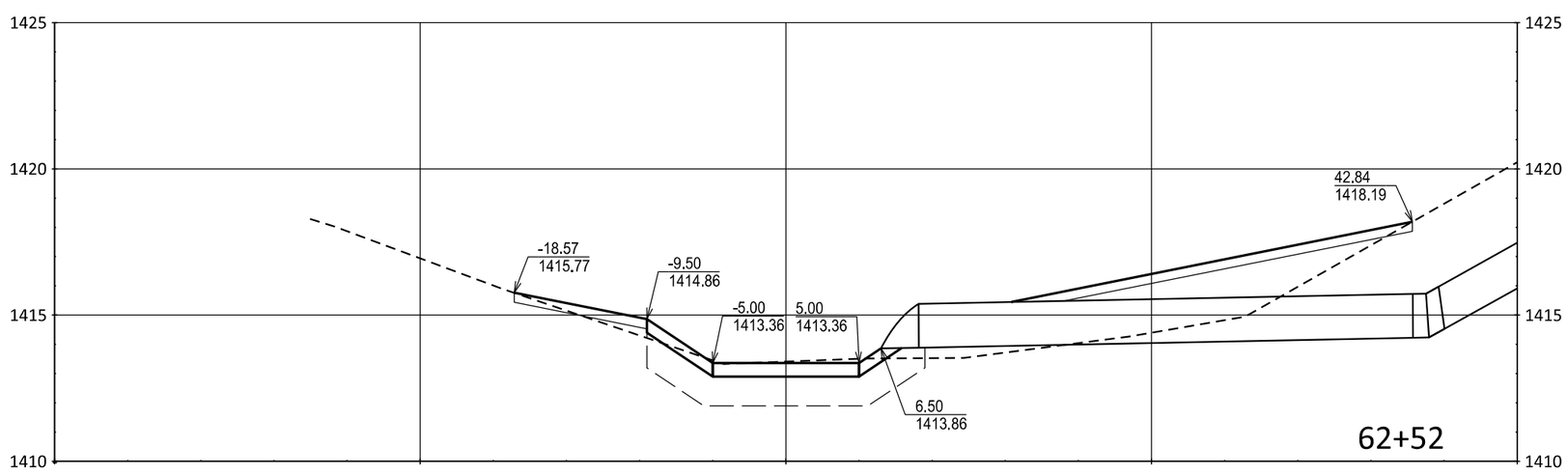

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5524
JAMES H. UNRUH
SOUTH DAKOTA
6-14-21

FOR BIDDING PURPOSES ONLY

I-29 Ditch Cross Sections

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	57	63

FILE: ...\28-57 Cross Sections.dgn
PLOTTING DATE: 06-14-2021

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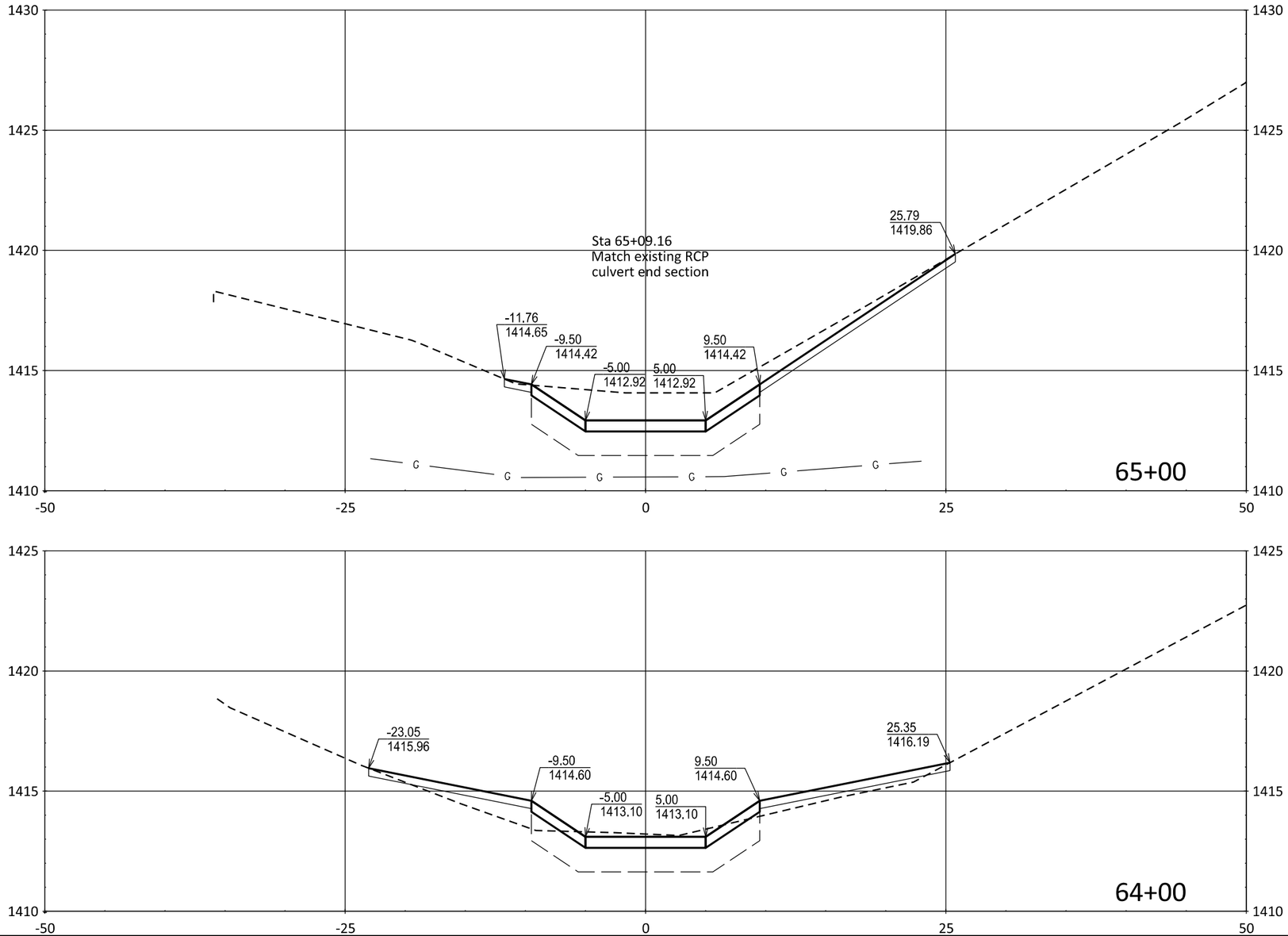

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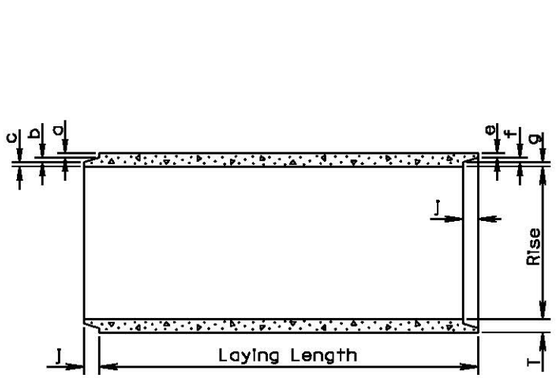
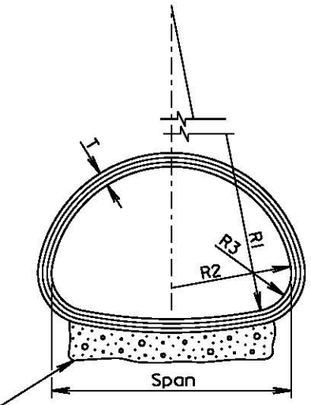
6-14-21



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

Radial dimensions at joints: ± 1/8" for 65" span or less and ± 1/4" for longer spans.
Rise and Span: ±2% of tabular values.
Length of Joint (J): ± 1/4".
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.
Laying length: shall not underrun by more than 1/2".

Gravel Bedding Material shall be supplied for 102" to 169" spans. It shall be placed to a thickness of 6" (Min.) x 85% of the Span x Length of culvert and shall conform to the gradation requirements for gravel surfacing except material may be screened or may be plan provided material.

* Size (In.)	Approx. Wt./Ft. (lb.)	Rise (in.)	Span (in.)	T (in.)	a (in.)	b (in.)	c (in.)	J (in.)	e (in.)	f (in.)	g (in.)	R1 (in.)	R2 (in.)	R3 (in.)
18	170	13 1/2	22	2 1/2	1 3/8	3/8	3/4	2	1 1/8	3/8	1	27 1/2	13 3/4	5 1/4
24	320	18	28 1/2	3 1/2	1 5/8	1/2	1 3/8	3	1 3/8	1/2	1 5/8	40 11/16	14 3/4	4 5/8
30	450	22 1/2	36 1/4	4	1 13/16	5/8	1 9/16	3 1/2	1 9/16	5/8	1 13/16	51	18 3/4	6 1/8
36	600	26 5/8	43 3/4	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	62	22 1/2	6 1/2
42	740	31 5/16	51 1/8	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	73	26 1/4	7 3/4
48	890	36	58 1/2	5	2 1/4	3/4	2	5	2	3/4	2 1/4	84	30	8 1/8
54	1100	40	65	5 1/2	2 1/2	3/4	2 1/4	5	2 1/4	3/4	2 1/2	92 1/2	33 3/8	10
60	1400	45	73 1/2	6	3 5/16	3/4	1 15/16	5	2 3/4	3/4	2 1/2	105	37 1/2	11
72	1900	54	88	7	3 13/16	1	2 3/16	6	3 1/4	1	2 3/4	126	45	13 5/16
84	2500	62	102	8	4 1/8	1	2 7/8	6	3 1/2	1	3 1/2	162 1/2	52	14 1/2
96	3300	78	122 3/8	9	4 1/2	1	3 1/2	7	4	1	4	218	62	20
108	4200	88	138 1/2	10	5	1	4	7	4 1/2	1	4 1/2	269	70	22
120	5100	96 7/8	154	11	5 1/2	1	4 1/2	7	5	1	5	301 3/8	78	24
132	5100	106 1/2	168 3/4	10		1	4	7	4 1/2	1	4 1/2	329	85 5/8	26 7/8

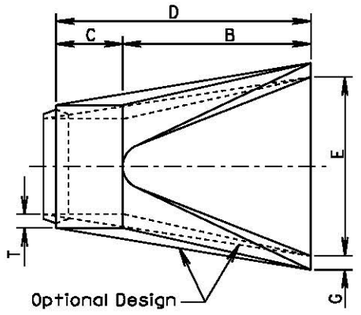
* Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

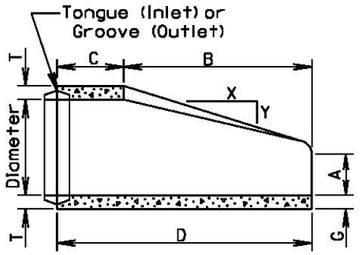
Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Specifications. Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

June 26, 2015

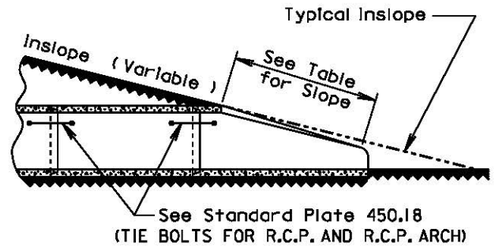
Published Date: 2nd Qtr. 2021	SDDOT	REINFORCED CONCRETE PIPE ARCH	PLATE NUMBER 450.02
			Sheet 1 of 1



TOP VIEW



LONGITUDINAL SECTION

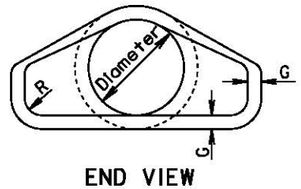


SLOPE DETAIL

GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

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

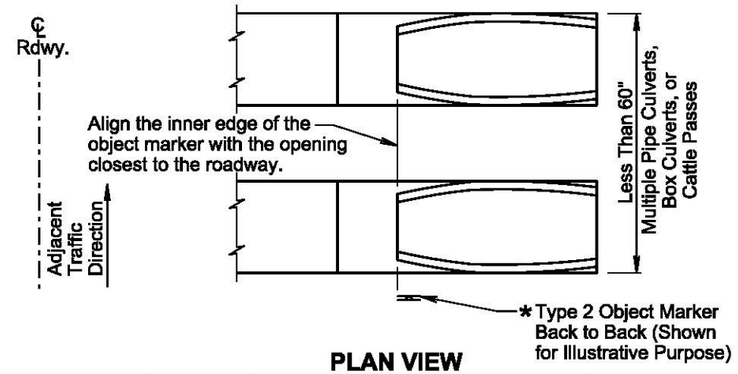


END VIEW

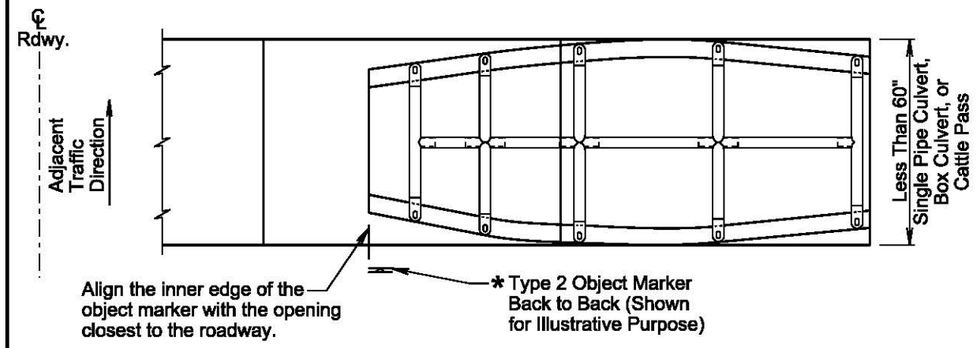
Dia. (In.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4: 1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4: 1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3: 1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4: 1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5: 1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5: 1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5: 1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5: 1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5: 1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5: 1	5	24	72	26	98	84	5	1 1/2
54	8240	2: 1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9: 1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7: 1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8: 1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8: 1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6: 1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5: 1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

Published Date: 2nd Qtr. 2021	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1



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.)

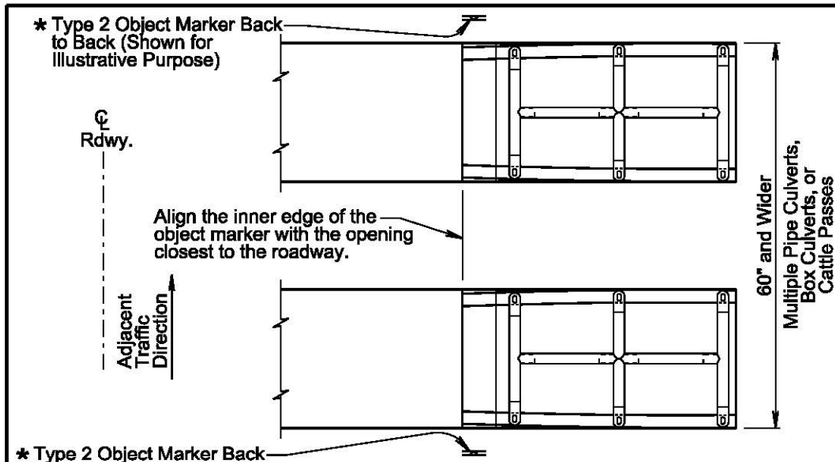
GENERAL NOTES:

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

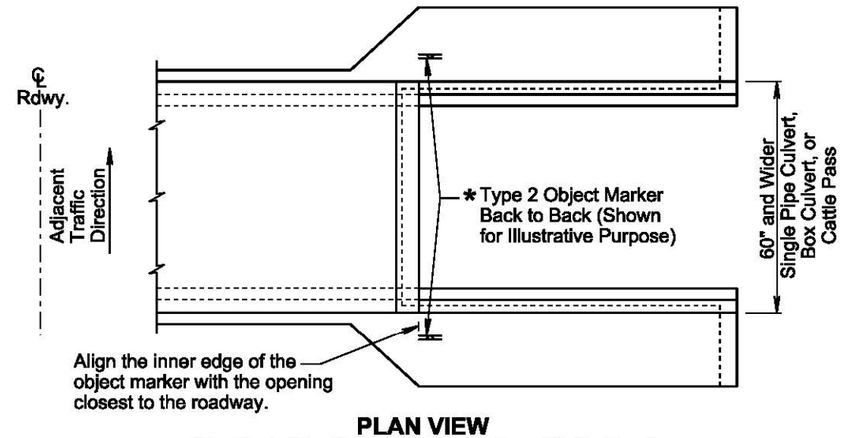
* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2nd Qtr. 2021	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



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)
(Box 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.

December 23, 2019

Published Date: 2nd Qtr. 2021	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (60" and Greater Overall Width)	PLATE NUMBER 632.04 Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	60	63

Plotting Date: 6/24/2021

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

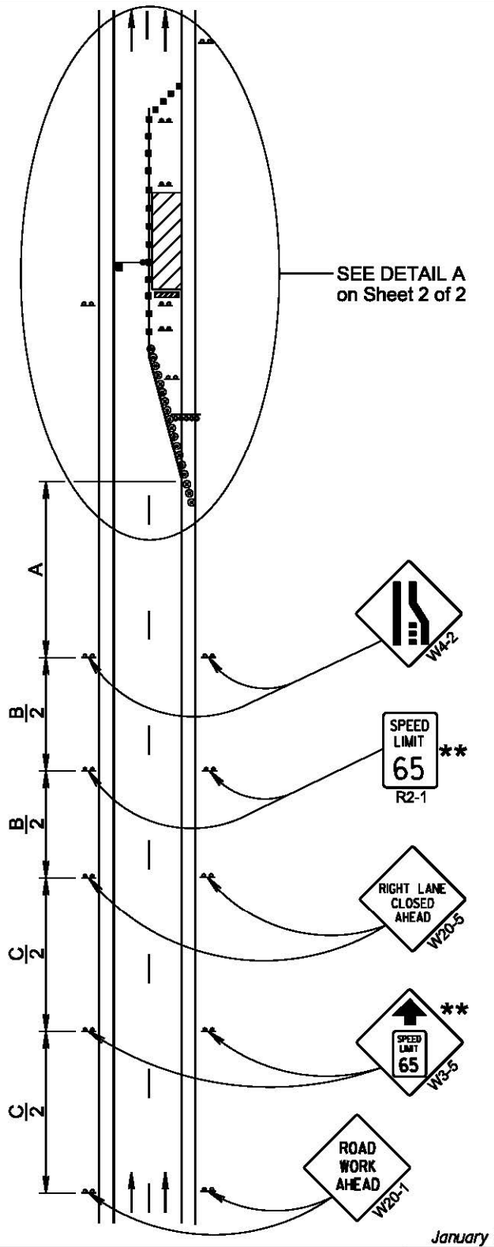
** Speed appropriate for location.

◉ Reflectorized Drum

▪ Channelizing Device

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

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



January 22, 2021

Published Date: 2nd Qtr. 2021	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63 Sheet 1 of 2

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

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

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

Flagger (As Necessary)

◎ Reflectorized Drum

▪ Channelizing Device

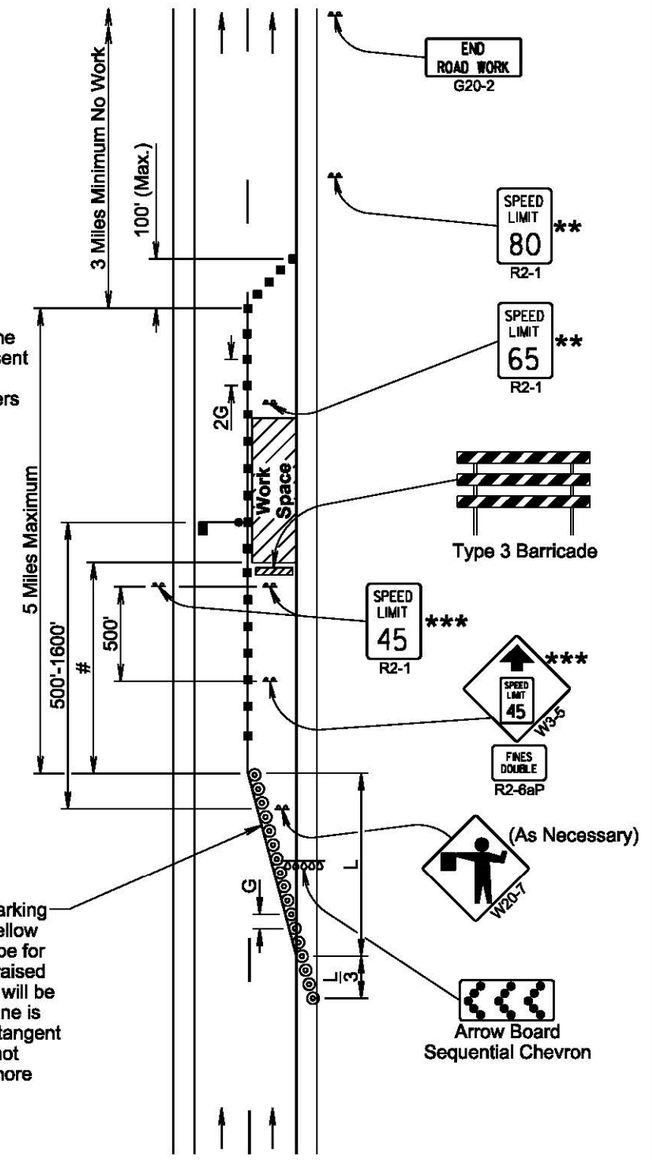
The Work Space will be a minimum of 500' from the end of the taper.

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

The channelizing devices will be 42" cones or drums.

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

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



DETAIL A

January 22, 2021

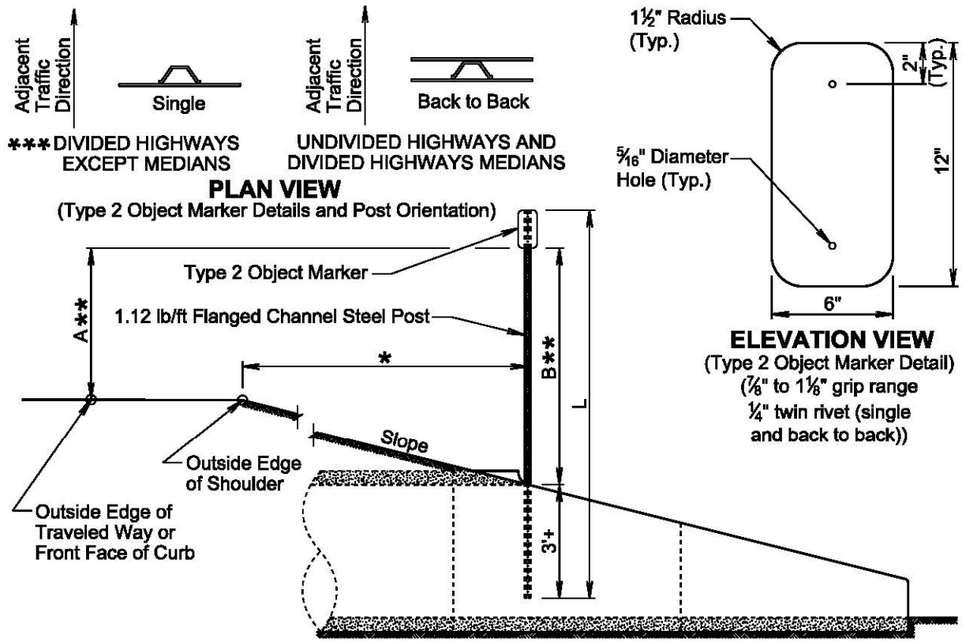
Published Date: 2nd Qtr. 2021	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63 Sheet 2 of 2

HDR

REV DATE: 7/12/2021
INITIAL: JHU

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	61	63

Plotting Date: 7/12/2021



TYPE 2 OBJECT MARKER POST LENGTHS									
OFFSET (*)		1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'
		POST LENGTH (L)								
SLOPE	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

GENERAL NOTES:

*** The type 2 object marker may be installed back to back when specified in the plans.

Post Length L was calculated based on a shoulder width of 6 feet at a crosslope of 4 percent and L was rounded up to the nearest 3 inches.

** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.

The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.

Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

Published Date: 3rd Qtr. 2021	SDDOT	***TYPE 2 OBJECT MARKER (DIRECT DRIVE)***	***PLATE NUMBER 632.01*** Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	1125

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 80	50 *

* Spacing is 40' for 42" cones.

◎ Reflectorized Drum

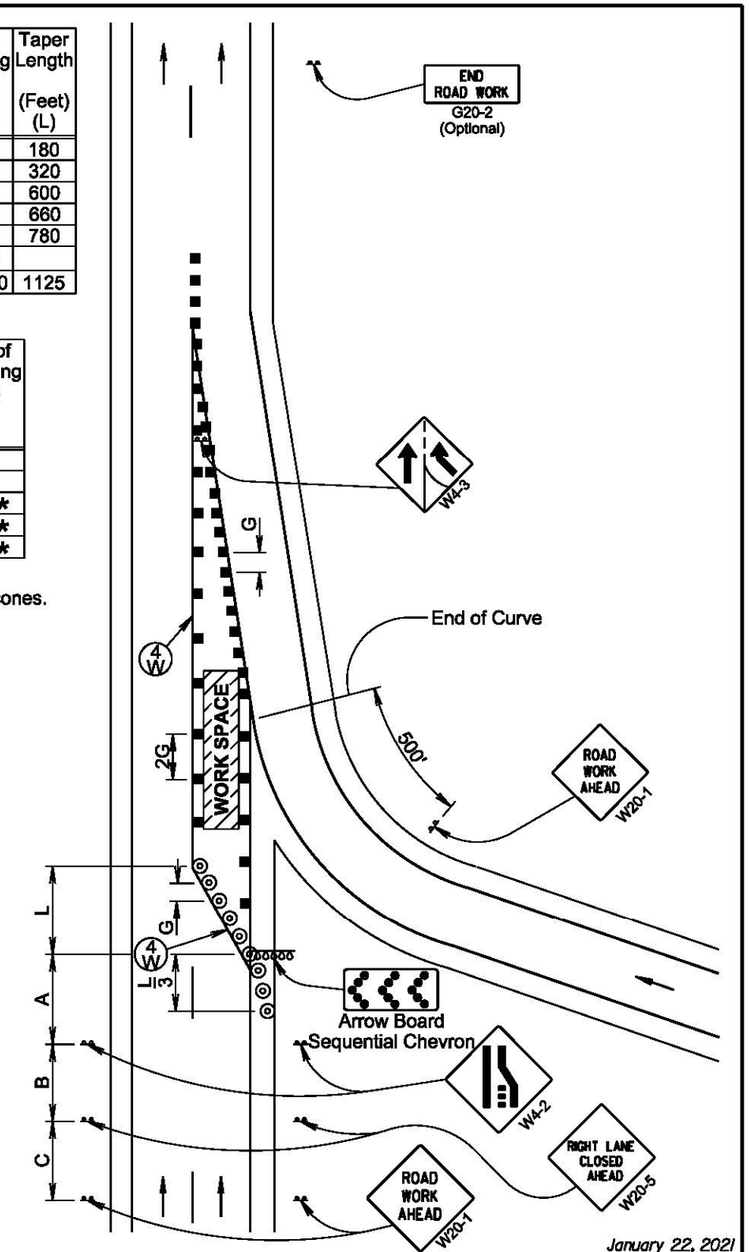
■ Channelizing Device

(4W) 4" White Temporary Pavement Marking

Temporary pavement markings will be used if traffic control must remain overnight.

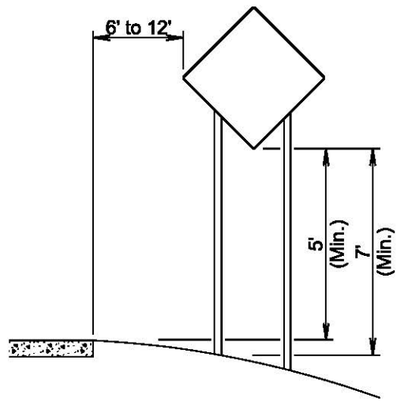
The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

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

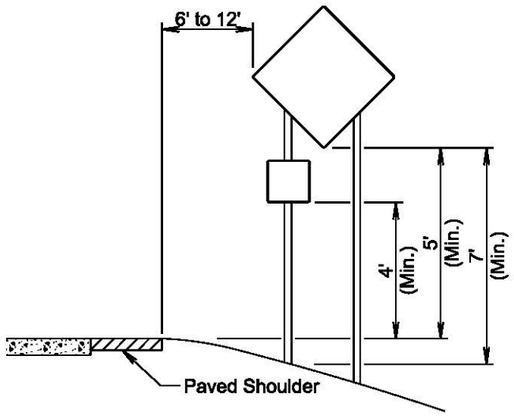


January 22, 2021

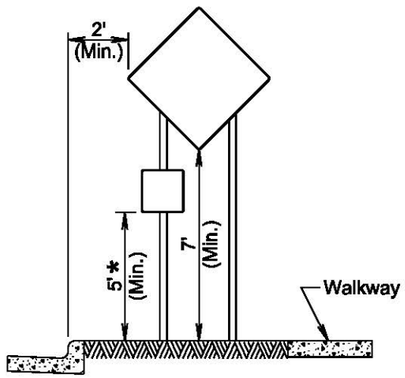
Published Date: 2nd Qtr. 2021	SDDOT	***WORK IN VICINITY OF ENTRANCE RAMP***	***PLATE NUMBER 634.70*** Sheet 1 of 1



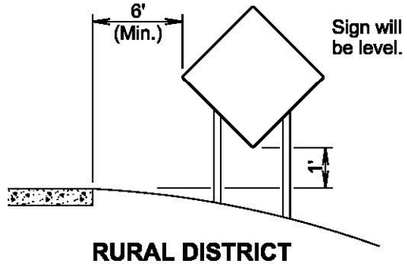
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

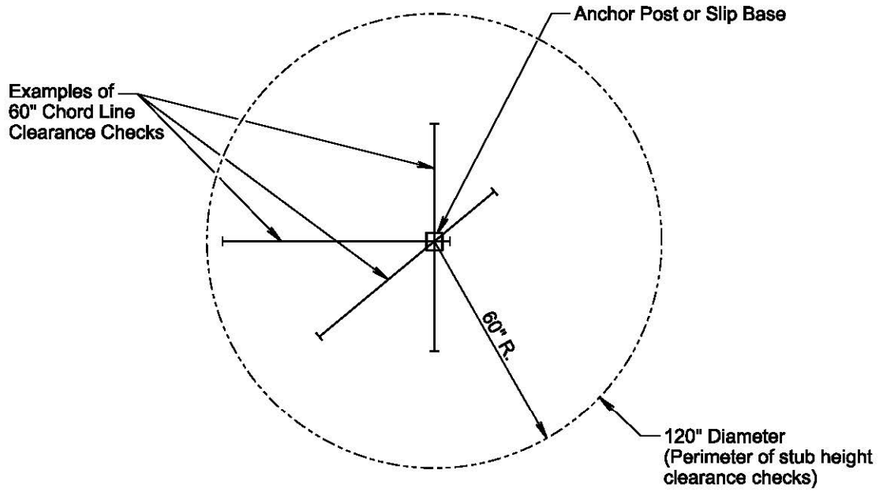


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

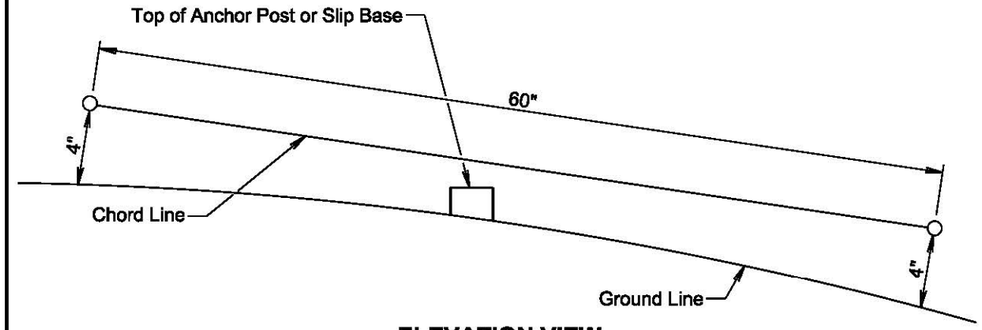
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2nd Qtr. 2021	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

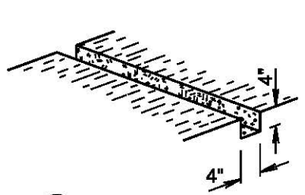
January 22, 2021

Published Date: 2nd Qtr. 2021	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

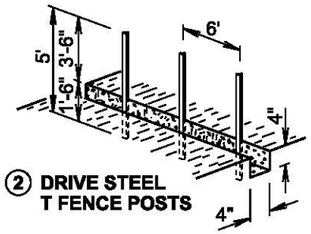
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0293(112)76	63	63

Plotting Date: 6/24/2021

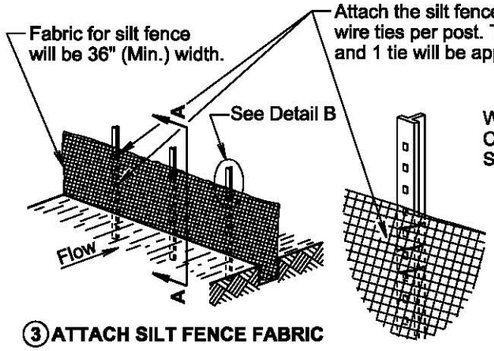
MANUAL HIGH FLOW SILT FENCE INSTALLATION



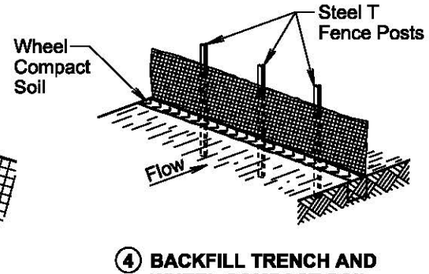
① EXCAVATE TRENCH



② DRIVE STEEL T FENCE POSTS

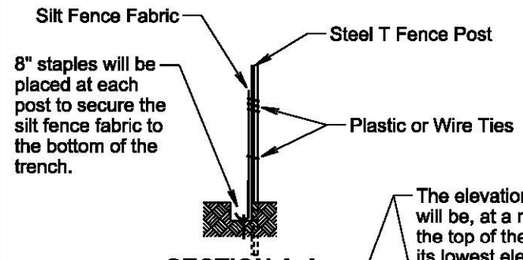


③ ATTACH SILT FENCE FABRIC

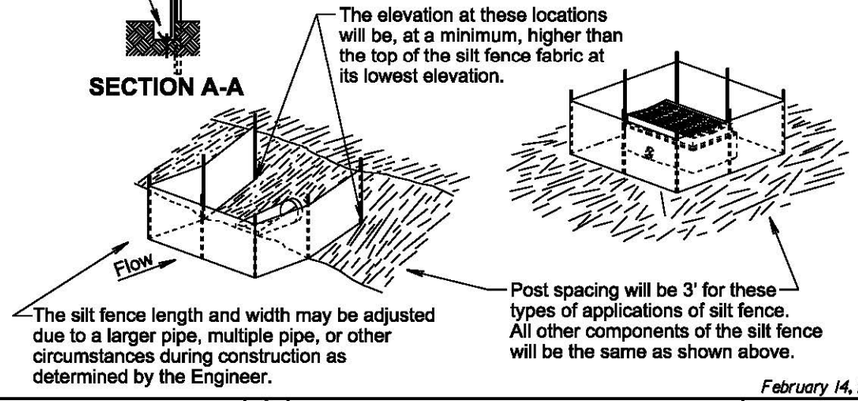


④ BACKFILL TRENCH AND WHEEL COMPACT SOIL

DETAIL B



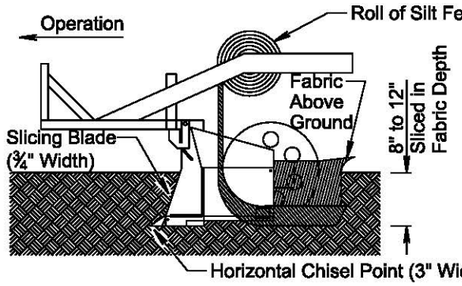
SECTION A-A



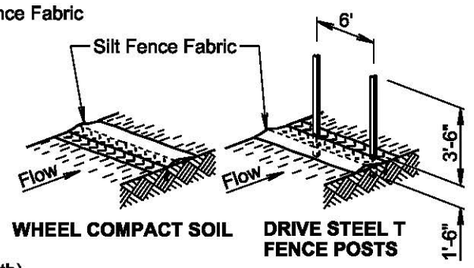
February 14, 2020

Published Date: 2nd Qtr. 2021	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



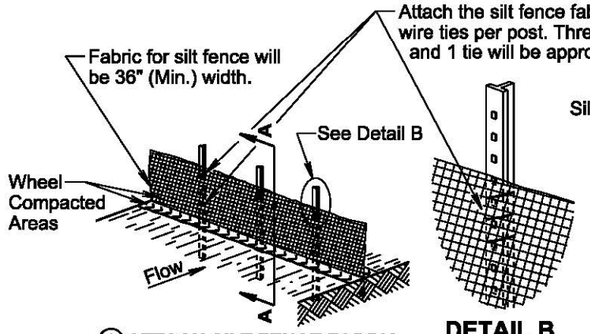
① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



WHEEL COMPACT SOIL

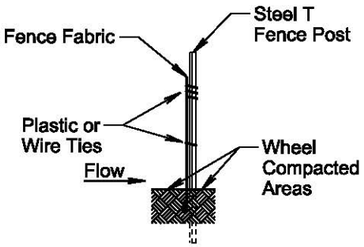
DRIVE STEEL T FENCE POSTS

② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.

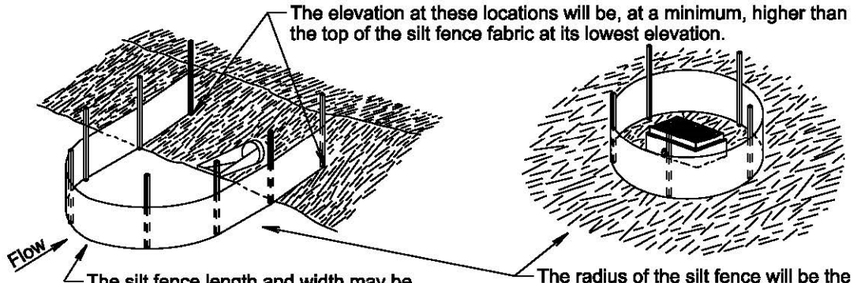


③ ATTACH SILT FENCE FABRIC

DETAIL B



SECTION A-A



GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end will be provided on top of the extra length of silt fence fabric to prevent underflow.

February 14, 2020

Published Date: 2nd Qtr. 2021	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2