

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	1	33

STATE OF SOUTH DAKOTA **FOR BIDDING PURPOSES ONLY**  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

# PROJECT BRO-B 8005(16)

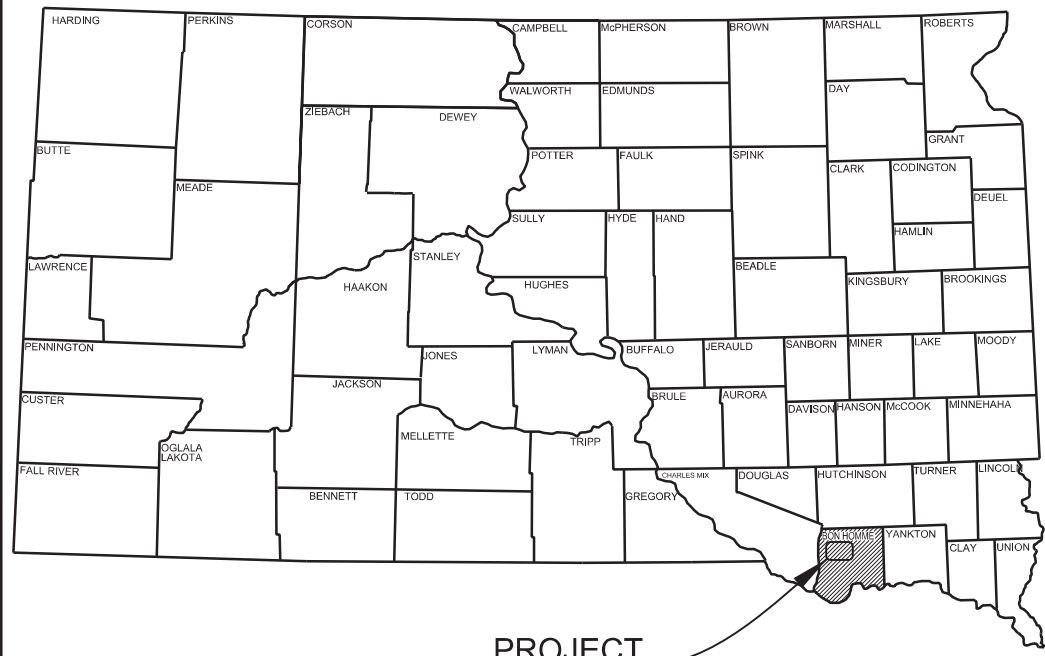
## BON HOMME COUNTY

### STRUCTURE REPLACEMENT AND APPROACH GRADING

Str. No. 05-097-050  
PCN 08MH

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PROJECT LOCATION

Str. No. 05-097-050

**BEGIN PROJECT BRO-B 8005(16)**  
At Sta. 0+00  
2500' West of the SE Corner  
of Sec. 30 - T96N - R60W

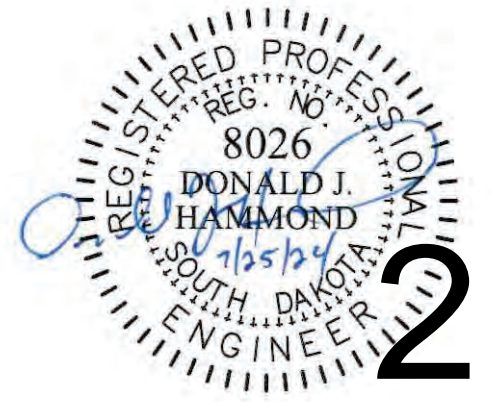
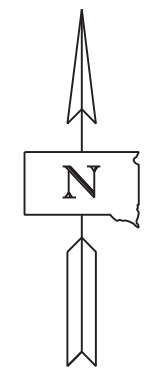
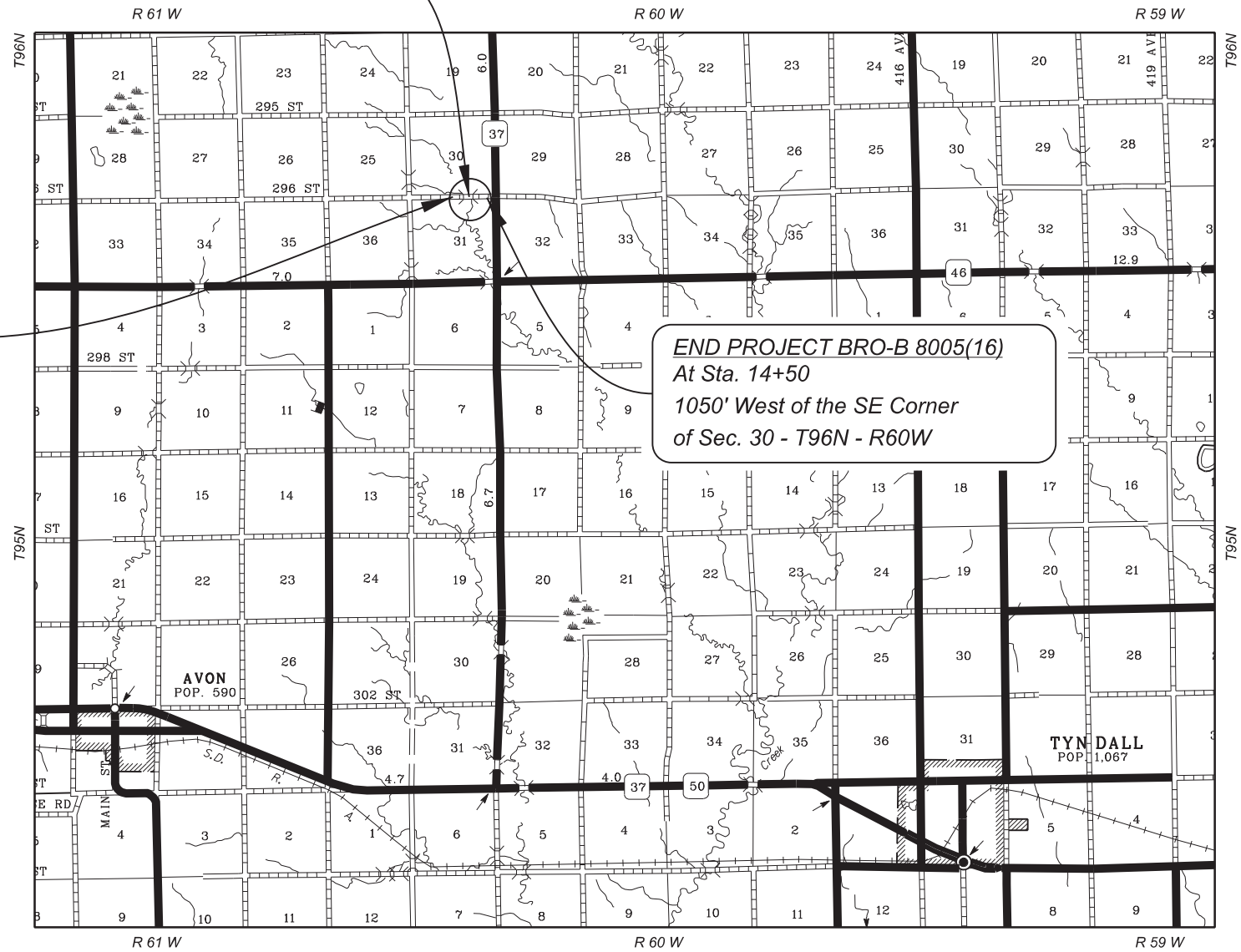
**END PROJECT BRO-B 8005(16)**  
At Sta. 14+50  
1050' West of the SE Corner  
of Sec. 30 - T96N - R60W

**DESIGN DESIGNATION**

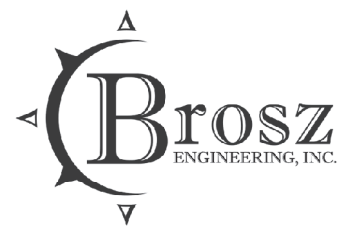
ADT (2019)	60
ADT (2039)	88
DHV	13
D	50.0%
T DHV	3.5%
T ADT	7.7%
V	55 mph

**STORM WATER PERMIT DATA**

Major Receiving Body of Water: Tributary to Emmanuel Creek  
Area Disturbed: 2.39 Acres  
Total Project Area: 6.03 Acres  
Latitude: 43° 05' 48.25" N  
Longitude: 97° 58' 32.34" W



October 16, 2024



# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8005(16)	2	33

## Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.275	Mile
009E3250	Miscellaneous Staking	0.275	Mile
009E3280	Slope Staking	0.275	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
110E0500	Remove Pipe Culvert	24	Ft
110E5020	Salvage Traffic Sign	12	Each
120E0010	Unclassified Excavation	8,070	CuYd
230E0010	Placing Topsoil	1,110	CuYd
250E0030	Incidental Work, Structure	Lump Sum	LS
260E3030	Gravel Surfacing, Salvaged	578.3	Ton
270E0110	Salvage and Stockpile Granular Material	578.3	Ton
420E0400	Structure Excavation, Miscellaneous	8	CuYd
421E0100	Pipe Culvert Undercut	226	CuYd
450E0262	84" RCP Class 2, Furnish	144	Ft
450E0270	84" RCP, Install	144	Ft
450E2060	84" RCP Flared End, Furnish	6	Each
450E2061	84" RCP Flared End, Install	6	Each
450E4759	18" CMP 16 Gauge, Furnish	60	Ft
450E4760	18" CMP, Install	60	Ft
450E5406	18" CMP Safety End, Furnish	2	Each
450E5407	18" CMP Safety End, Install	2	Each
462E0100	Class M6 Concrete	10.4	CuYd
464E0100	Controlled Density Fill	154.2	CuYd
480E0100	Reinforcing Steel	1,578	Lb
634E0110	Traffic Control Signs	114.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	9	Each
700E0210	Class B Riprap	71.0	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	1,300	Ft
734E0602	Low Flow Silt Fence	1,200	Ft
734E0610	Mucking Silt Fence	83	CuYd
734E0620	Repair Silt Fence	300	Ft
831E0110	Type B Drainage Fabric	92	SqYd
831E0300	Reinforcement Fabric (MSE)	327	SqYd
900E0010	Refurbish Single Mailbox	1	Each

### SPECIFICATIONS

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

### ENVIRONMENTAL COMMITMENTS

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

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

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

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

### COMMITMENT A: AQUATIC RESOURCES

#### COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.07 acres of wetlands (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted wetlands.

#### Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1	9+50 – 10+50	0.027	0.027	0.007	0.009	0.07

### Action Taken/Required:

REVISED 8/2/2024

Mitigation is required in accordance with the "Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2018)". Replacement of 0.05 acres of permanent wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established as designated in the plans. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

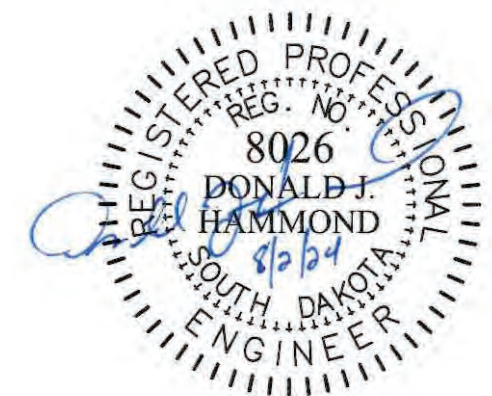
### COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

#### COMMITMENT B2: WHOOPING CRANE

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

### Action Taken/Required:

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





**COMMITMENT C: WATER SOURCE**

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (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 ( $\geq 140$  °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.

**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:

< <https://sdeastwanted.sd.gov/maps/default.aspx> >

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04](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.

**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.

**Action Taken/Required:**

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the SDDANR using the following form:

< [https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR\\_AddTempInfoFillable.pdf](https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_AddTempInfoFillable.pdf) >

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:

< <https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx> >

**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://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR\\_CGPAppendixCCA2018Fillable.pdf](https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_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: < <https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.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:

**COMMITMENT H: WASTE DISPOSAL SITE (CONTINUED)**

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 150 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 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.

**COMMITMENT J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S.**

The Contractor is advised that special construction measures must be taken to ensure that the waterways of the U.S. are not impacted.

**Action Taken/Required:**

Excavation will not occur below the ordinary high-water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting. The natural streambed will not be disturbed unless specified by the plans and under the observation of the Project Engineer. Refer to the Table of U.S. Waterways to Protect for ordinary high-water elevations. Any structure work over or within the waterway will be constructed according to Section 7.21 C of the Specifications.

All dredged or excavated materials will be placed at a site above the ordinary high-water elevation in a confined area (not classified as a wetland) that is a minimum of 50 feet away from concentrated flows of storm water, drainage courses, and inlets to prevent return of such material to the waterway.

The construction of temporary work platforms, crossings, or berms below the ordinary high-water elevation will be allowed if all material placed below the ordinary high-water elevation consists of Class B or larger riprap.

All temporary caissons, cribs, cofferdams, steel piling, sheeting, work platforms, crossings, and berms will be removed with minimal disturbance to the streambed. Proper construction practices will be used to minimize increases in suspended solids and turbidity in the waterway.

Bridge berms, wing dams, traffic diversions, channel reconstruction, stream diversions, grading, etc. will be constructed in close conformity with the plans to ensure that the hydraulic capacity of the waterway is not changed.

Temporary waterway crossings required for the Contractor's construction operations will be constructed with an adequate drainage structure size and minimum fill height to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

All temporary works in waterways of the US are required to be covered in the Corp of Engineers 404 Permit. At the time of the preconstruction meeting, the Contractor will submit documentation for all temporary works for the purpose of complying with the 404 Permit requirements in accordance with Section 423.3 A of the Specifications.

If an on-site construction crossing is used at Sta. 9+50 to 10+50 the temporary crossing will need to be designed so it will not increase the Q<sub>100</sub> water surface elevation. The Contractor will submit the proposed temporary crossing geometric layout and structure size at Sta. 9+50 to 10+50 to the Project Engineer during the preconstruction meeting. This information will be forwarded to the SDDOT Hydraulics Office and Environmental Office for review. Construction of the temporary crossing is not allowed until approval of the proposal is obtained from the SDDOT Hydraulics Office and Environmental Office.

**Table of U.S. Waterways to Protect**

Station	Waterway	Ordinary High-Water Elevation
9+50 – 10+50	Tributary to Emmanuel Creek	1517.90

Stream channel excavation within "Waters of the US" is subject to USACE regulatory jurisdiction. Stream channel excavation cannot exceed the permitted quantities and/or surface area. The 404 Permit is included in the Special Provisions.

The Contractor will take all precautions necessary to prevent any incidental discharges associated with the excavation and hauling of material from the stream channel. This pertains to any excavation operations such as, foundation, pier, or abutment excavation, channel cleanout, excavation for riprap protection, and removal of any temporary fill associated with construction activities.

**COMMITMENT N: SECTION 404 PERMIT**

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

**Action Taken/Required:**

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.



**BON HOMME COUNTY REQUIREMENTS**

The County will be responsible for the following items without federal participation:

- 1) Right of way and temporary and permanent easements
- 2) Coordination of any utility adjustments
- 3) Furnish and install final surfacing
- 4) Furnish and install temporary and/or permanent fencing
- 6) Furnish and install new permanent signing
- 5) Remove silt fence in permanently seeded areas

**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 31 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.

Special ditch grades and other sections of the roadway different than the typical section(s) will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 10-foot-wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

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

**SHRINKAGE FACTOR:** Embankment +35%.

**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. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

The Prevailing Wind Park, LLC has an overhead transmission line located in the north ditch. This is to remain in place and operational during construction. Taper the existing ground 10 feet around the poles in the cut sections. The Contractor is responsible for coordinating work with Prevailing Winds Park, LLC for scheduled shutdowns as to avoid arcing. Prevailing Winds Park, LLC will be invited to the pre-construction meeting. Contacts are Todd Hornstra at (605) 212-0032 and Tyson Brooks at (605) 685-5241.

**UNCLASSIFIED EXCAVATION**

All excavation that must be performed to construct the new grade in conformance with the cross sections and plan details will be included in the contract unit price per cubic yards for "Unclassified Excavation." The plans quantity for "Unclassified Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item without further field measurement. If changes are necessary on construction, the altered quantities will be measured for payment.

**TABLE OF UNCLASSIFIED EXCAVATION**

	(CuYd)
Excavation (Mainline)	6960
Topsoil (Mainline)	1110
Total	8070

**SALVAGE AND STOCKPILE GRANULAR MATERIAL**

The existing gravel surfacing for the length of the project will be salvaged and stockpiled as directed by the Engineer.

The stockpile site will be within the project limits.

Salvaged material will be processed to meet the requirements of Section 884.2D.5 prior to stockpiling. The Contractor will ensure no vegetation, topsoil, subgrade, or other foreign material is incorporated into the salvaged gravel surfacing.

The salvaged gravel, estimated at approximately 414 cubic yards, is based on a depth of 4 inches.

**GRAVEL SURFACING, SALVAGED**

"Gravel Surfacing, Salvaged" will be obtained from the Salvaged and Stockpiled Granular Material and may be used without further testing. The salvaged gravel surfacing will be placed on the finished subgrade by the Contractor.

The County will be responsible for additional final surfacing to bring the total depth of gravel to 6 inches. The County will be responsible for the proper and timely placement of gravel surfacing on the completed placed salvage gravel. Subgrade damage caused by either improper or delayed gravel surfacing placement by the County will be the responsibility of the County.

**CORRUGATED METAL PIPE**

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

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

**PIPE FOR APPROACHES**

Class 2 reinforced concrete pipe, high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe may be substituted for corrugated metal pipe at approaches at no additional cost to the State.

If corrugated metal pipes are provided, the pipes will be as specified in the CORRUGATED METAL PIPE note.

If high density polyethylene pipe, polypropylene pipe (will be in conformance with AASHTO M330), or steel reinforced polyethylene pipe are provided, then the end sections will be metal, be compatible, and conform to the type of end section as shown in the plans.

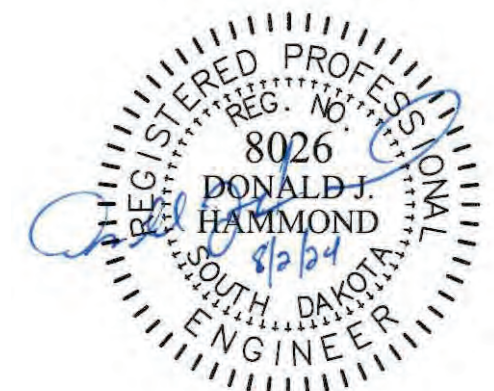
**SALVAGE TRAFFIC SIGNS**

All signs listed for salvage in the Table of Salvage Traffic Signs will have the existing posts, bases, and signs dismantled and delivered to the Bon Homme County Highway Department. The Contractor will notify the County two days prior to time of delivery to the Highway Department so correct placement for storage and inventory of materials can be made upon receipt. All bolts, nuts, and washers will be placed in individual 5-gallon pails. Wooden posts will be stockpiled separately from steel posts. All signs listed for salvage will be handled with care so that the signs are not damaged during removal or transport. The Contractor will replace and pay for any salvaged signs damaged in their care.

All costs for labor and equipment necessary to remove, dismantle, and deliver signs to the Highway Department will be incidental to the contract unit price per each for Salvage Traffic Sign. The quantity of signs to be salvaged is shown in the Table of Salvage Traffic Signs. The plans quantity is shown as per assembly. Payment for salvaging signs will be paid per assembly at the contract unit price per each for "Salvage Traffic Sign".

**TABLE OF SALVAGE TRAFFIC SIGNS**

Station/Location	L/R	Remarks
0.7 Miles W. of Structure	R	Load Posting Sign
West Approach	R	Load Posting Sign
9+30 to 10+70	L & R	4 Delineators
9+88	L & R	(2) Type 3 Object Markers
10+12	L & R	(2) Type 3 Object Markers
East Approach	L	Load Posting Sign
0.3 Miles of E. Structure	L	Load Posting Sign



**MAILBOXES**

The Contractor will reset the existing mailboxes on new posts with the necessary support hardware for single mailbox assemblies. The local Postmaster will determine the recommended mounting height of the mailboxes throughout the project. The Contractor will coordinate with the Engineer on the proper postal representative to contact.

All costs for removing existing mailboxes, providing temporary mailboxes, and resetting mailboxes with new posts and necessary support hardware will be incidental to the contract unit price per each for "Refurbish Single Mailbox".

Single mailbox will be refurbished at Sta 8+15 R.

**GENERAL TRAFFIC CONTROL**

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.

**PLACING TOPSOIL**

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements. The topsoil thickness for the option borrow pits will be as stated on the option borrow pit sheets.

The estimated amount of topsoil to be placed is as follows:

Station	to	Station	Topsoil (CuYd)
-3+50		14+00	1110
Total:			1110

**EROSION CONTROL**

The estimated area requiring erosion control is 79,056 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching will be incidental to the contract lump sum price for "Erosion Control".

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

**Mycorrhizal Inoculum**

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

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

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract lump sum price for "Erosion Control".

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

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

**Permanent Seeding**

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

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

**Mulching (Grass Hay or Straw)**

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

**EROSION CONTROL WATTLE**

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

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

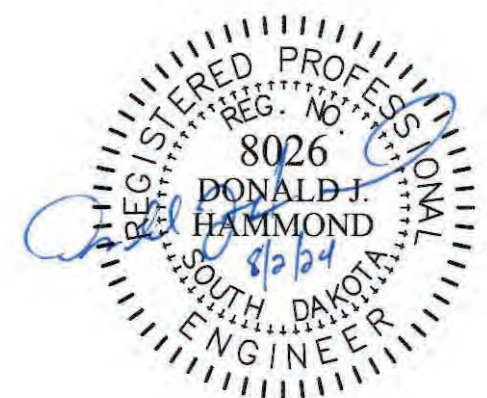
Erosion control wattles will remain on the project to decompose.

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

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

**TABLE OF EROSION CONTROL WATTLE**

Station	L/R	Diameter (Inch)	Location	Quantity (Ft)
1+75	L/R	12	Ditch Bottom	30
3+00	L/R	12	Ditch Bottom	30
4+00	L/R	12	Ditch Bottom	30
5+50	L/R	12	Ditch Bottom	30
7+00	L/R	12	Ditch Bottom	30
8+50	R	12	Ditch Bottom	15
9+50 to 9+75	L/R	12	Along Channel	300
10+25 to 10+50	L/R	12	Along Channel	300
11+50 to 13+50	L	12	Toe of Fill Slope	200
12+25	R	12	Ditch Bottom	15
13+00	R	12	Ditch Bottom	15
			Additional Quantity:	305
			Total:	1300



**LOW FLOW SILT FENCE**

The low 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>

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

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

**TABLE OF LOW FLOW SILT FENCE**

Station	L/R	Location	Quantity (Ft)
7+00 to 8+50	L	Toe of Slope	150
9+00	R	Perimeter of Storage	450
11+00	R	Perimeter of Storage	450
		Engineer's Discretion	150
Total:			1200

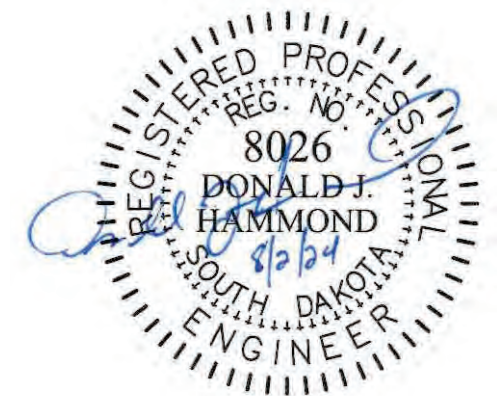
**TABLE OF CONSTRUCTION STAKING**

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking			Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
					Length (Mile)	Lane Factor	*Sets of Stakes			
County Road (2 Lanes Gravel Road)	0+00	14+50	2	1,450	0.275	1	1	0.275	0.275	
County Road (RCP)	9+83.60	10+16.40								1
Totals:								0.275	0.275	1

\* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)  
 2 = Blue Top and Paving Hub Stakes (PCC Pavement)

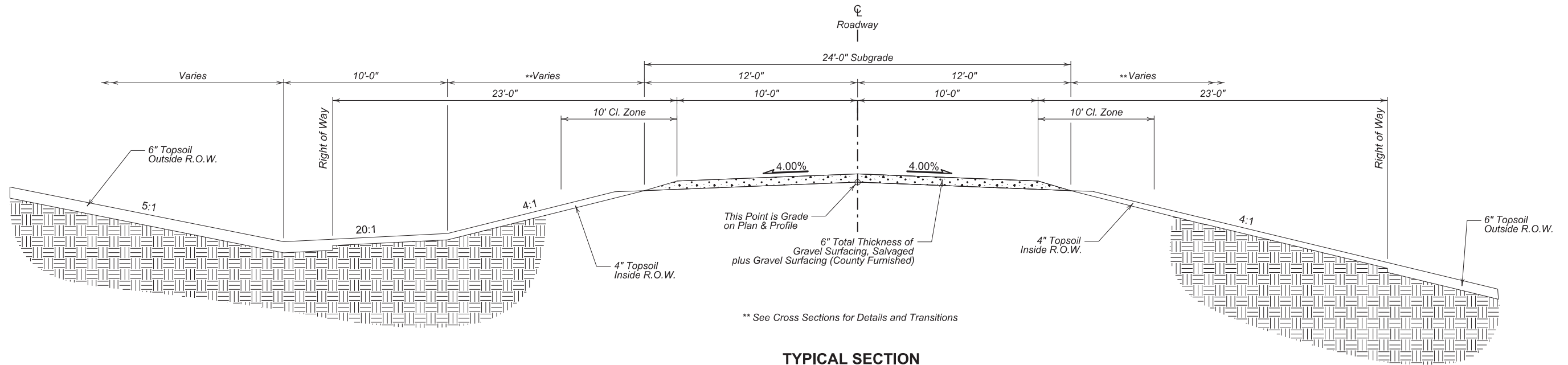
\*\* Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)





FOR BIDDING PURPOSES ONLY

# TYPICAL SECTION AND CONTROL DATA



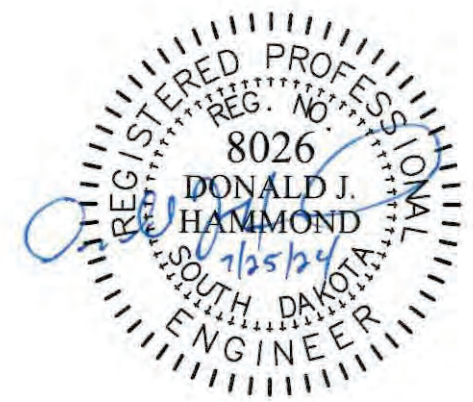
\*\* See Cross Sections for Details and Transitions

**TYPICAL SECTION**  
Sta. 0+50 to Sta. 13+50

HORIZONTAL ALIGNMENT				
ELEMENT	STATION	NORTHING	EASTING	TANGENT DIRECTION
P.O.B.	-3+56.15	287151.44	2596759.90	
P.O.E.	16+49.68	287217.89	2598764.62	N 88°06'05" E

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 88) SF = 0.999889

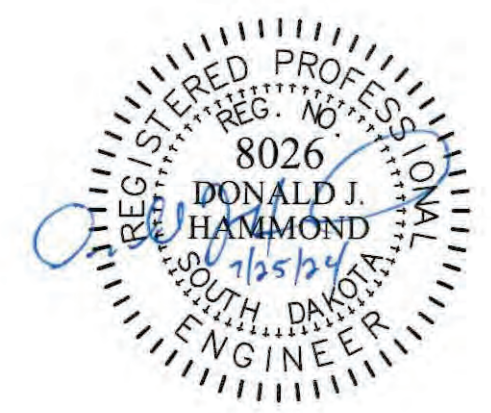
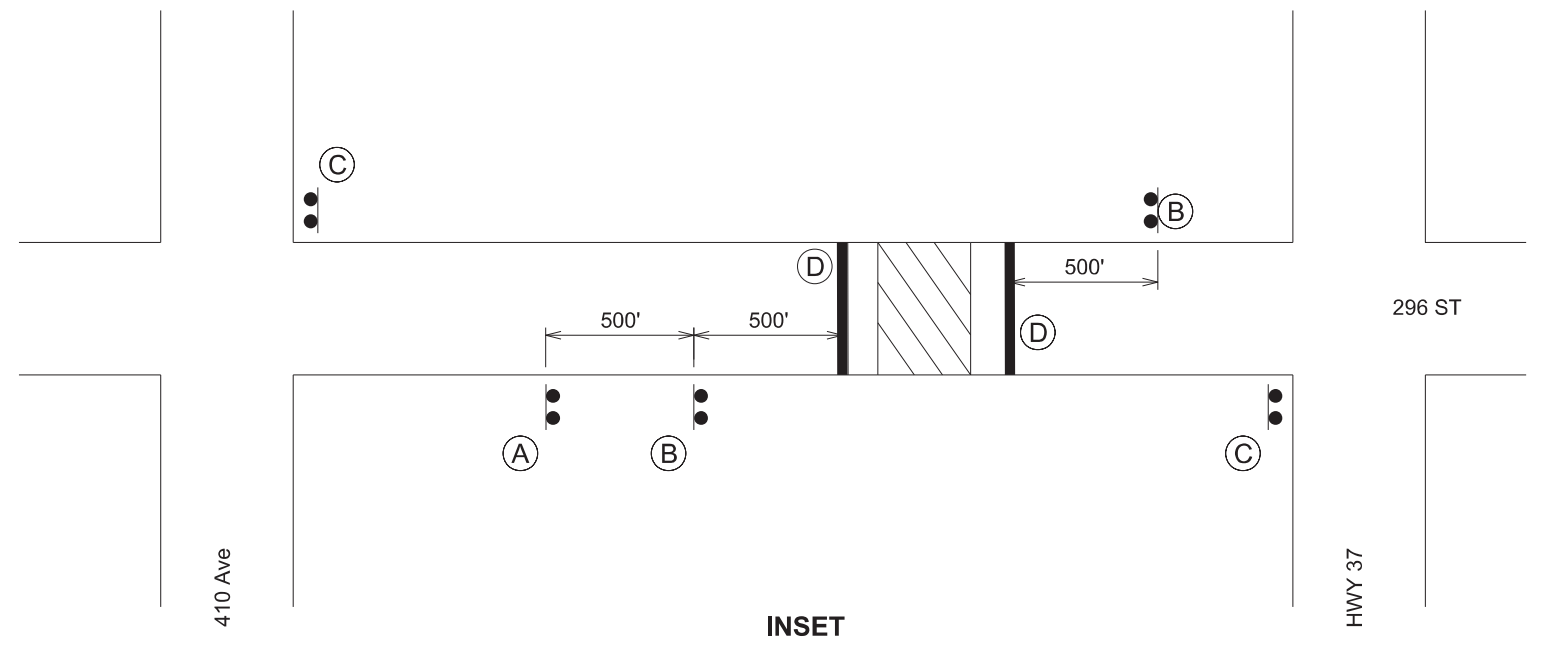
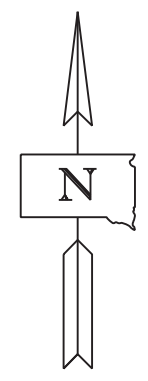
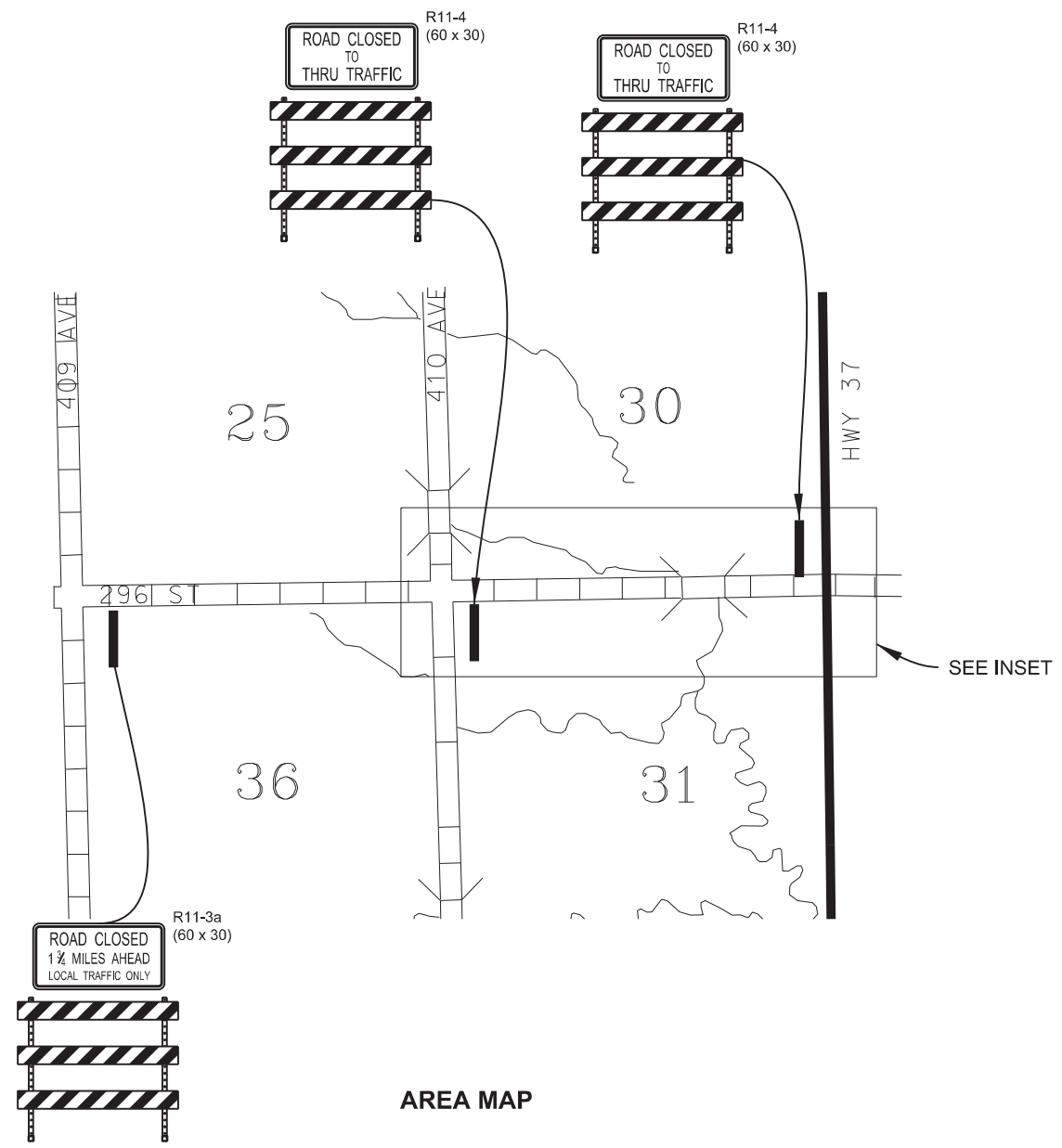
CONTROL DATA					
HORIZONTAL AND VERTICAL CONTROL POINTS					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
CP1 - REBAR	-2+11.76	28.60' Rt.	287127.641	2596905.116	1543.10
CP2 - REBAR	13+24.03	31.38' Rt.	287175.738	2598440.191	1540.12





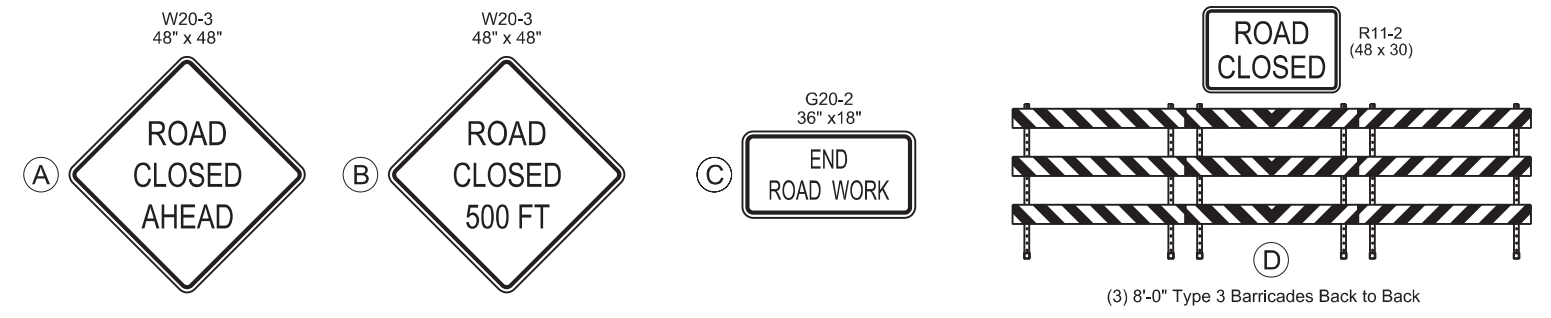
TRAFFIC CONTROL DETAILS FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	9	33



ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
R11-3a	ROAD CLOSED 1 1/2 MILES AHEAD LOCAL TRAFFIC ONLY	1	60" x 30"	12.5	12.5
R11-4	ROAD CLOSED TO THRU TRAFFIC	2	60" x 30"	12.5	25.0
W20-3	ROAD CLOSED AHEAD	1	48" x 48"	16.0	16.0
W20-3	ROAD CLOSED 500 FT	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>114.5</b>

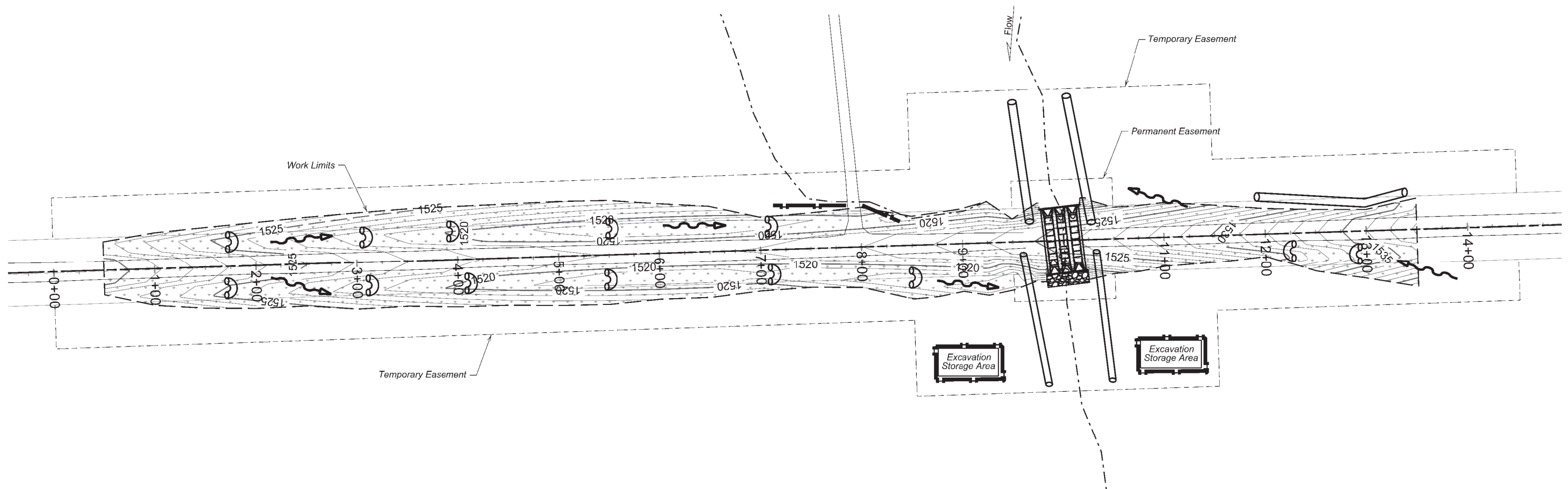


# EROSION AND SEDIMENT CONTROL DETAILS FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	10	33



Scale: 1"=100'



**LEGEND:**

	Low Flow Silt Fence
	12" Dia. Erosion Control Wattle
	Type G Permanent Seed Mixture
	Riprap and Drainage Fabric

Table of Erosion Control Wattles				
Station	L/R	Dia (In.)	Location	Quantity (Ft.)
1+75	L/R	12	Ditch Bottom	30
3+00	L/R	12	Ditch Bottom	30
4+00	L/R	12	Ditch Bottom	30
5+50	L/R	12	Ditch Bottom	30
7+00	L/R	12	Ditch Bottom	30
8+50	R	12	Ditch Bottom	15
9+50 to 9+75	L/R	12	Along Channel	300
10+25 to 10+50	L/R	12	Along Channel	300
11+50 to 13+50	L	12	*Toe of Fill Slope	200
12+25	R	12	Ditch Bottom	15
13+00	R	12	Ditch Bottom	15
Additional Quantity:			Engineer's Discretion	305
Total:				1300

Table of Low Flow Silt Fence			
Station	L/R	Location	Quantity (Ft.)
7+00 to 8+50	L	Toe of Slope	150
9+00	R	Perimeter of Storage	450
11+00	R	Perimeter of Storage	450
Additional Quantity:			Engineer's Discretion
Total:			1200

*\* Upon approval of the Engineer, the Contractor may substitute topsoil windrows at these locations.*



**STORMWATER POLLUTION PREVENTION PLAN CHECKLIST**

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

**5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION**

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

**5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES**

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - Clearing and grubbing
  - Excavation/borrow
  - Grading and shaping
  - Filling
  - Other (describe):
- **5.3 (3b): Total Project Area** 6.03 Acres
- **5.3 (3b): Total Area to be Disturbed** 2.39 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time** 2.39 Acres
- **5.3 (3d): Existing Vegetative Cover (%)** 100%
- **5.3 (3d): Description of Vegetative Cover** Grass
  
- **5.3 (3e): Soil Properties:** Salmo silty clay loam
- **5.3 (3f): Name of Receiving Water Body/Bodies** Tributary to Emmanuel Creek
- **5.3 (3g): Location of Construction Support Activity Areas** On Site

**5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES**

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install perimeter protection where runoff may exit site.	
Install channel protection.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Remove existing structure.	
Install pipe culvert and rough grade roadway.	
Install Riprap.	
Final grading.	
Replace topsoil.	
Install ditch bottom protection.	
Removal of silt fence.	
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)

**FOR BIDDING PURPOSES ONLY**

**Perimeter Controls (See Detail Plan Sheets)**

Description	Estimated Start Date
<input type="checkbox"/> Natural Buffers (within 50 ft of Waters of State)	
<input checked="" type="checkbox"/> Silt Fence	
<input checked="" type="checkbox"/> Erosion Control Wattles	
<input type="checkbox"/> Temporary Berm / Windrow	
<input type="checkbox"/> Floating Silt Curtain	
<input type="checkbox"/> Stabilized Construction Entrances	
<input type="checkbox"/> Entrance/Exit Equipment Tire Wash	
<input type="checkbox"/> Other:	

**Structural Erosion and Sediment Controls**

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

**Dust Controls**

Description	Estimated Start Date
<input type="checkbox"/> Tarps & Wind impervious fabrics	
<input type="checkbox"/> Watering	
<input type="checkbox"/> Stockpile location/orientation	
<input type="checkbox"/> Dust Control Chlorides	
<input type="checkbox"/> Other	

**Dewatering BMPs**

Description	Estimated Start Date
<input type="checkbox"/> Sediment Basins	
<input type="checkbox"/> Dewatering bags	
<input type="checkbox"/> Weir tanks	
<input type="checkbox"/> Temporary Diversion Channel	
<input type="checkbox"/> 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
<input type="checkbox"/> Vegetation Buffer Strips	
<input type="checkbox"/> Temporary Seeding (Cover Crop Seeding)	
<input checked="" type="checkbox"/> Permanent Seeding	
<input type="checkbox"/> Sodding	
<input type="checkbox"/> Planting (Woody Vegetation for Soil Stabilization)	
<input checked="" type="checkbox"/> Mulching (Grass Hay or Straw)	
<input type="checkbox"/> Fiber Mulching (Wood Fiber Mulch)	
<input type="checkbox"/> Soil Stabilizer	
<input type="checkbox"/> Bonded Fiber Matrix	
<input type="checkbox"/> Fiber Reinforced Matrix	
<input type="checkbox"/> Erosion Control Blankets	
<input type="checkbox"/> Surface Roughening (e.g. tracking)	
<input type="checkbox"/> 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 1/2 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 SDDANR.
- Personnel with primary responsibility for spill response and cleanup will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

**5.3 (8b): WASTE MANAGEMENT PROCEDURES**

➤ **Waste Disposal**

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

➤ **Hazardous Waste**

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

➤ **Sanitary Waste**

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

**5.3 (9): CONSTRUCTION SITE POLLUTANTS**

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

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

**Product Specific Practices**

- **Petroleum Products**

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

- **Fertilizers**

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

- **Paints**

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

- **Concrete Trucks**

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

**5.3 (10): NON-STORMWATER DISCHARGES**

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

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

**5.3 (11): INFEASIBILITY DOCUMENTATION**

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

**7.0: SPILL NOTIFICATION**

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

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to SDDANR 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 SDDANR 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 SDDANR 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 SDDANR within 14 days of the discharge.

**5.4: SWPPP CERTIFICATIONS**

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

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

➤ **South Dakota Department of Transportation**

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



\_\_\_\_\_  
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: \_\_\_\_\_

➤ **SDDANR Contact Spill Reporting**

- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➤ **SDDANR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

➤ **SDDANR Stormwater Contact Information**

- SDDANR Stormwater (800) 737-8676
- Surface Water Quality Program (605) 773-3351

**5.5: REQUIRED SWPPP MODIFICATIONS**

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

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

- When a new operator responsible for implementation of any part the SWPPP begins work on the site.
- When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
- To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- If inspections by site staff, local officials, SDDANR, 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.



# PLAN AND PROFILE

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	15	33

- Sta. 10+00.00  
Remove 24'-0" Single Span Steel I-Beam Bridge (Incidental Work, Structure)
- 10+00.00  
Install Class B Riprap & Type B Drainage Fabric See Structure Sheets
- 8+15.00 R  
Refurbish Single Mailbox
- 5+00 Offset 28' R  
Install 18" X 60'-0" CMP (16 GA) with 2 Safety End Sections
- 5+00 R  
Remove 18" CMP

Salvage Signs at the Following Locations:

Station	L/R	Remarks
0.7 Miles W. of Structure	R	Load Posting Sign
West Approach	L&R	Load Posting Sign
9+30 to 10+70	L&R	Four Delineators
9+88	L&R	Two Object Markers
10+12	L&R	Two Object Markers
East Approach	L	Load Posting Sign
0.3 Miles E. of Structure	L	Load Posting Sign

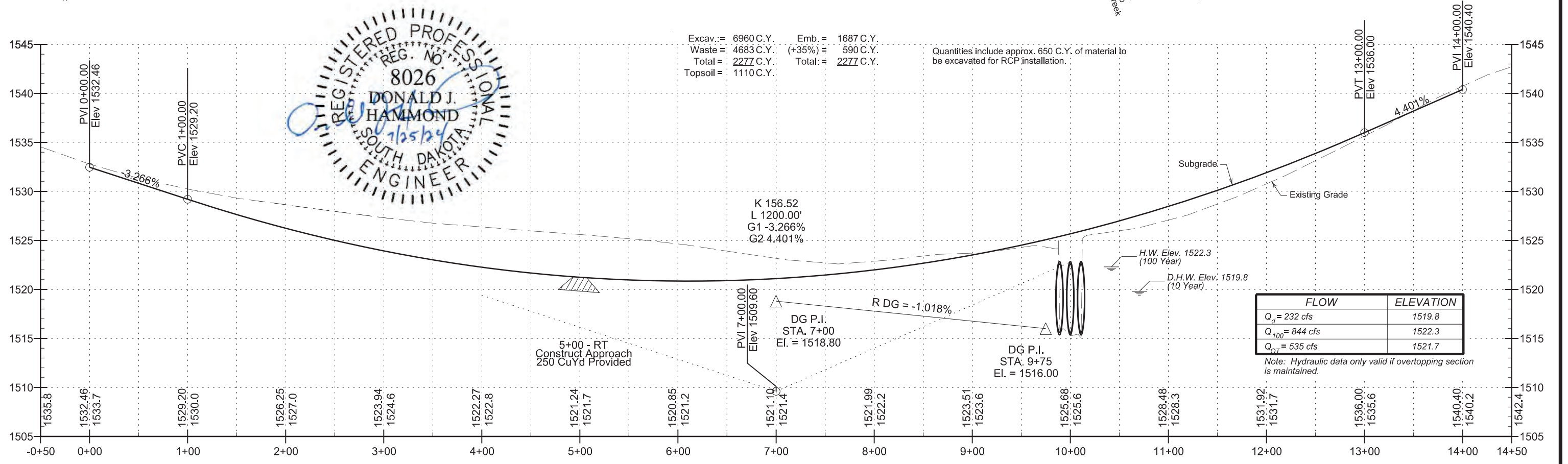
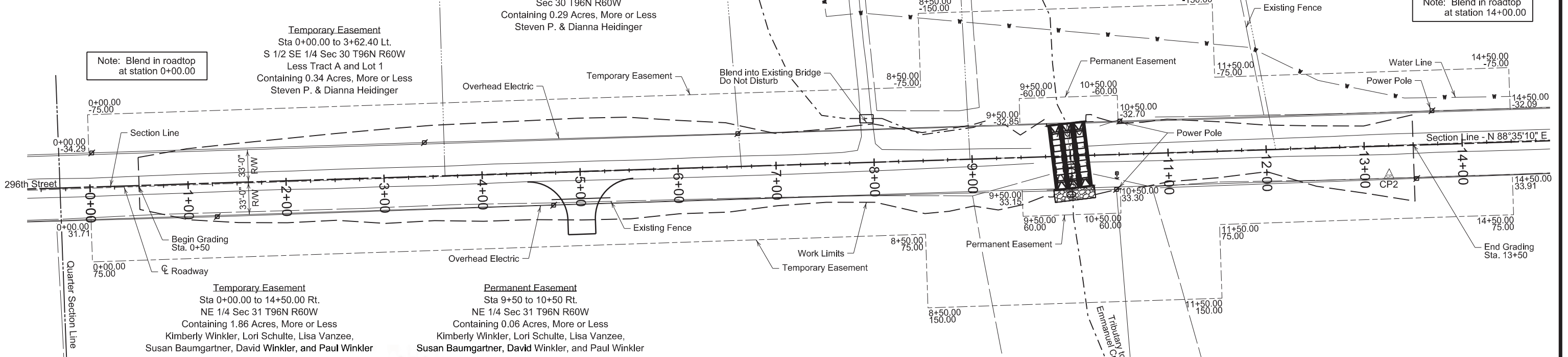
Temporary Easement  
Sta 6+60.86 to 8+94.41 Lt.  
Lot 1 In Tract A SE 1/4 Sec 30 T96N R60W  
Less Tract A and Lot 1  
Containing 0.30 Acres, More or Less  
David Winkler

Temporary Easement  
Sta 9+94.41 to 11+07.92 Lt.  
Tract A In The SE 1/4 Less Lot 1  
Of Sec 30 T96N R60W  
Containing 0.67 Acres, More or Less  
Steven P. & Dianna Heidinger  
Revocable Living Trust

Permanent Easement  
Sta 9+50.00 to 10+50.00 Lt.  
Tract A In The SE 1/4 Less Lot 1  
Sec 30 T96N R60W  
Containing 0.06 Acres, More or Less  
Steven P. & Dianna Heidinger  
Revocable Living Trust

Temporary Easement  
Sta 11+97.32 to 14+50.00 Lt.  
S 1/2 SE 1/4 Sec 30 T96N R60W  
Less Tract A and Lot 1  
Containing 0.24 Acres, More or Less  
Steven P. & Dianna Heidinger

Scale: 1"=100'



Excav. = 6960 C.Y.	Emb. = 1687 C.Y.	Quantities include approx. 650 C.Y. of material to be excavated for RCP installation.
Waste = 4683 C.Y.	(+35%) = 590 C.Y.	
Total = 2277 C.Y.	Total = 2277 C.Y.	
Topsoil = 1110 C.Y.		



FLOW	ELEVATION
$Q_{50} = 232$ cfs	1519.8
$Q_{100} = 844$ cfs	1522.3
$Q_{OT} = 535$ cfs	1521.7

Note: Hydraulic data only valid if overtopping section is maintained.

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

- ⊕ Dimension may vary with fabricator and/or installation. See Shop Plans for actual installation length.
- ★ Minimum distance to satisfy clear zone.
- △ Based on dimensions shown.
- ⊕ Based on 8" Walls.

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	16	33

**INDEX OF CULVERT SHEETS**

- Sheet No. 1 - General Drawing and Quantities
- Sheet No. 2 - Notes and Undercut Details
- Sheet No. 3 - Headwall Details
- Sheet No. 4 - Standard Plate No's. 450.01 & 450.10
- Sheet No. 5 - Standard Plate No's. 450.18

**HYDRAULIC DATA**

$Q_d$	232 cfs
$A_d$	51 sq ft
$V_d$	4.6 fps
$Q_F$	232 cfs
$Q_{100}$	844 cfs
$Q_{OT}$	535 cfs
$V_{Max}$	8.2 fps

$Q_d$  = Design discharge for the proposed culvert based on 10 year frequency. El. 1519.8  
 $Q_{OT}$  = Overtopping discharge and frequency 39.9 year recurrence interval. El. 1521.7 at Station 6+25  
 $Q_F$  = Designated peak discharge for the basin approaching proposed project based on 10 year frequency.  
 $Q_{100}$  = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1522.3  
 $V_{max}$  = Maximum computed outlet velocity for the proposed culvert based on 100 year frequency.  
 Note: Hydraulic data only valid if overtopping section is maintained.

**ESTIMATED QUANTITIES**

ITEM	UNIT	QUANTITY
Incidental Work, Structure	L.S.	L.S.
Structure Excavation, Miscellaneous	Cu. Yd.	7.8
Pipe Culvert Undercut	Cu. Yd.	226
84" RCP Class 2, Furnish	Ft.	144
84" RCP, Install	Ft.	144
84" RCP Flared End, Furnish	Each	6
84" RCP Flared End, Install	Each	6
Class M6 Concrete	Cu. Yd.	10.4
Controlled Density Fill	Cu. Yd.	154.2
Reinforcing Steel	Lb	1578
Class B Riprap	Ton	71.0
Type B Drainage Fabric	Sq. Yd.	92
Reinforcement Fabric (MSE)	Sq. Yd.	327

Quantity is based on 9" walls.

For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons

**GENERAL DRAWING**

FOR

**3 - 84" REINFORCED CONCRETE PIPE**  
 OVER TRIBUTARY TO EMANUEL CREEK 5° RHF SKEW  
 STA. 10+00.00 SEC. 30/31-T96N-R60W  
 STR. NO. 05-097-050 BRO-B 8005(16)  
 PCN 08MH HL-93

BON HOMME COUNTY

S. D. DEPT. OF TRANSPORTATION

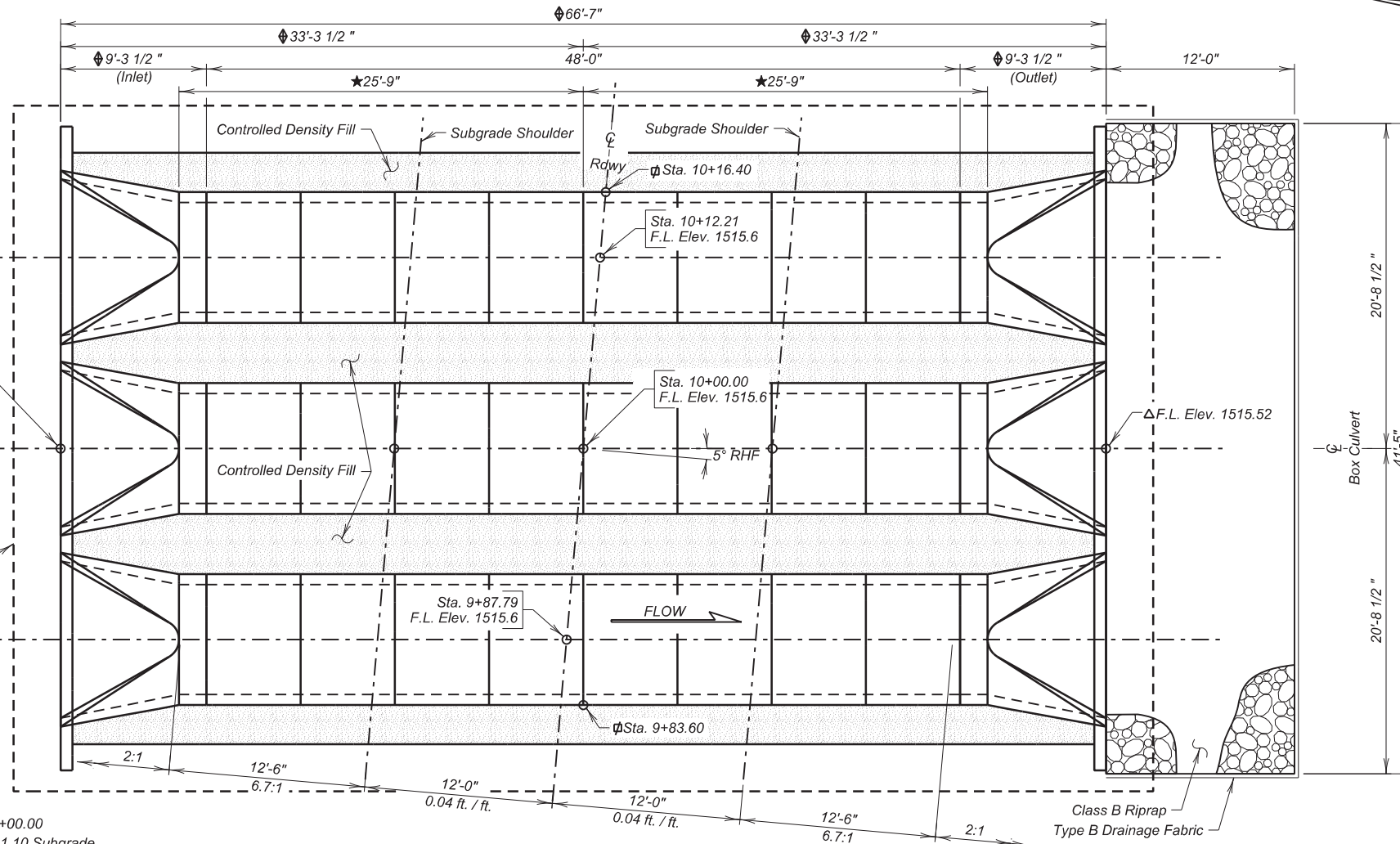
July 2024

1 OF 5

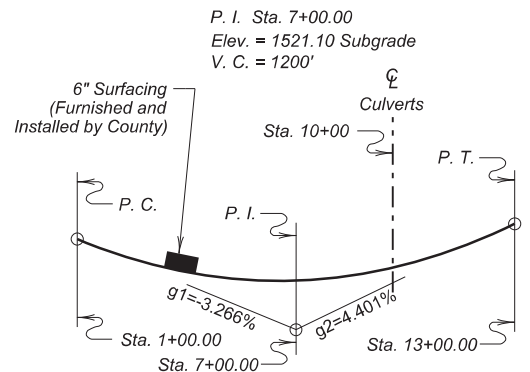
Plans By:  
 Brosz Engineering, Inc.  
 Consulting Engineers

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JVZ	DJH	JVZ	

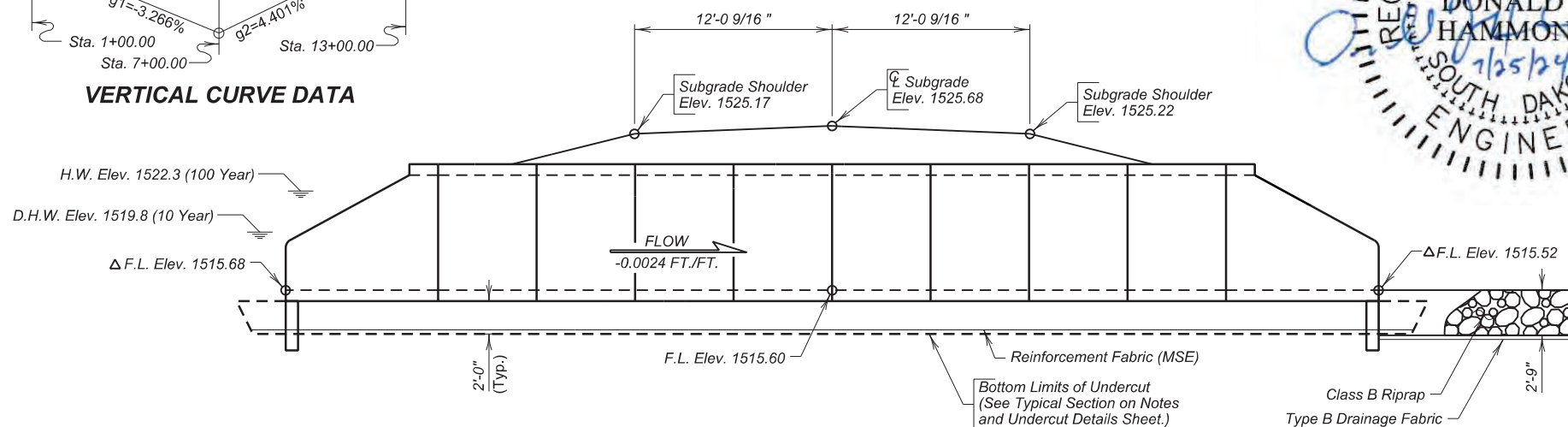
BRIDGE ENGINEER



**PLAN**

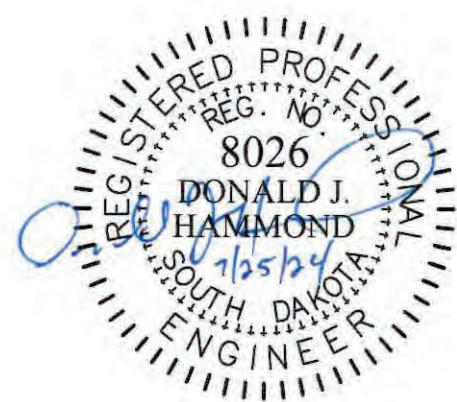


**VERTICAL CURVE DATA**



**ELEVATION**

NOTE:  
 Pipe culvert flow line has been depressed 1'-0" below channel flow line to accommodate aquatic organisms. The 1'-0" depression will be allowed to fill in naturally over time.





**SPECIFICATIONS**

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

**INCIDENTAL WORK, STRUCTURE**

- The in-place structure is a 24.0' long Steel I-Beam Bridge with Timber Abutments and Timber Deck. The Contractor will remove and dispose of the in-place structure. The abutments will be removed 1' below the bottom of the undercut.
- The foregoing is a general description of the in-place structure and should not be considered complete in all details. Before preparing a bid, it is the Contractor's responsibility to make a visual inspection of the structure to verify the extent of work and materials involved.
- All costs associated with the aforementioned work will be incidental to the contract lump sum price for "Incidental work, Structure".

**GENERAL NOTES**

Design will be in accordance with Section 560 of the Specifications, with the following criteria:

- Soils below the bottom of the proposed RCPs consist of soft dark gray clay silt with sand.
- Groundwater was encountered in the borings at an elevation of 1513.7 feet during the subsurface investigation conducted in June 2022, but the elevation of the water surface in the creek was 1515.7 feet. Dewatering will be required during construction.
- The type of cement will be either a Type V or a Type II with 20% to 25% Class F Modified Fly Ash substituted for cement in accordance with section 605. The Water/Cementitious material ratio will not exceed 0.45 as defined in section 460.3 C. The mix will be as per fabricator's design; however, minimum compressive strength will not be less than 4500 psi at 28 days. The pipe must be marked in an acceptable way to designate meeting requirements for sulfate resistance.

**REINFORCEMENT FABRIC (MSE)**

The pipe culvert will be undercut a minimum depth of 24 inches, and a layer of Reinforcement Fabric (MSE) will be placed at the bottom of the undercut prior to backfilling with granular material.

**GEOTEXTILE SPECIFICATIONS:**

Reinforcement Fabric (MSE) will conform to Section 831. The Reinforcement Fabric (MSE) provided will be on the Approved Products List or will be certified by the supplier to meet this specification prior to installation.

Reinforcement Fabric (MSE) will be paid for at the contract unit price per sq. yd. for Reinforcement Fabric (MSE). Payment will be full compensation for furnishing and installing the Reinforcement Fabric (MSE) only. Granular backfill materials will be paid for as part of the Pipe Culvert Undercut bid item.

**GEOTEXTILE INSTALLATION PROCEDURE:**

Place the Reinforcement Fabric (MSE) on as level and smooth of a surface as possible. Any protrusions that might damage the geotextile will be removed prior to placing the geotextile. All seams 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:**

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.

**GRANULAR MATERIAL:**

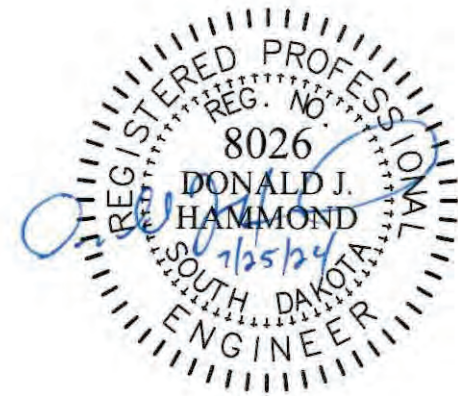
Granular material will conform to the gradation requirements in Section 421.2.A of the Specifications and will be paid for at the contract unit price per ton for "Granular Material."

**SHOP PLANS**

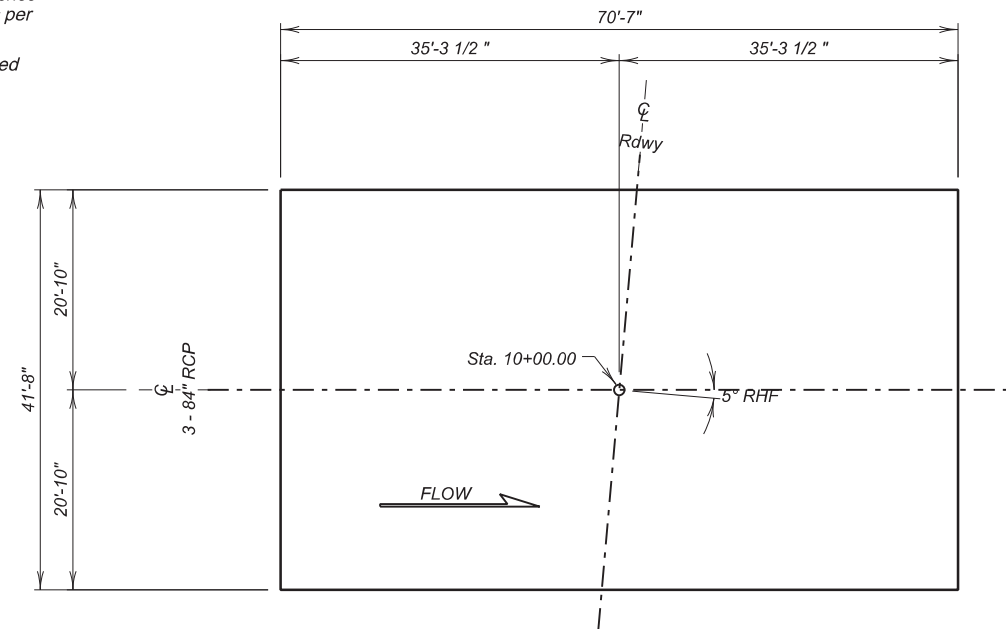
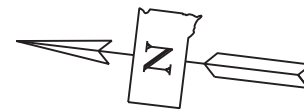
The fabricator will submit shop plans in accordance with the specifications to Brosz Engineering Inc., 2309 W. 50 Street, Sioux Falls, SD 57105 (donh@broszengineering.com). After review and corrections (if necessary), Brosz Engineering will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

**CONTROLLED DENSITY FILL**

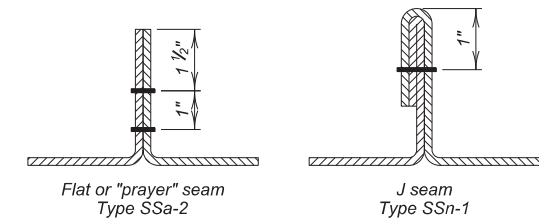
- Controlled density fill will be placed between the lines of RCP and along haunches as shown on the plans. Controlled density fill will be a Standard Mix Design as per Section 464.3 B.1 of the Specification.
- No backfill will be placed sooner than 24 hours after placement of the controlled density fill.



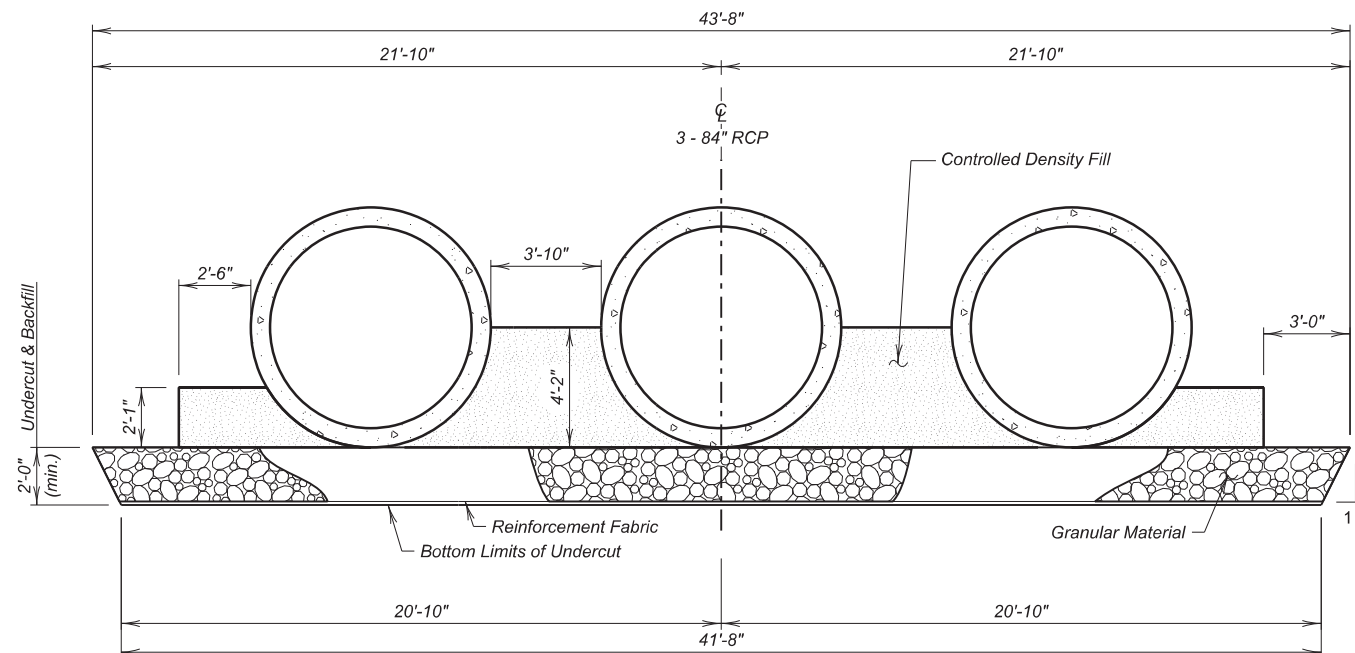
**FOR BIDDING PURPOSES ONLY**



**UNDERCUT LAYOUT**  
(Bottom Dimensions)



**GEOTEXTILE SEAM TYPES**



**TYPICAL SECTION**  
(For Limits of Undercut)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
∅ Pipe Culvert Undercut	Cu. Yd.	226
∅ Reinforcement Fabric (MSE)	Sq. Yd.	327

∅ For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

**UNDERCUT DETAILS AND NOTES**

FOR

**3 - 84" REINFORCED CONCRETE PIPE**  
OVER TRIBUTARY TO EMANUEL CREEK 5° RHF SKEW  
STA. 10+00.00 SEC. 30/31-T96N-R60W  
STR. NO. 05-097-050 BRO-B 8005(16)  
PCN 08MH HL-93

BON HOMME COUNTY  
S. D. DEPT. OF TRANSPORTATION

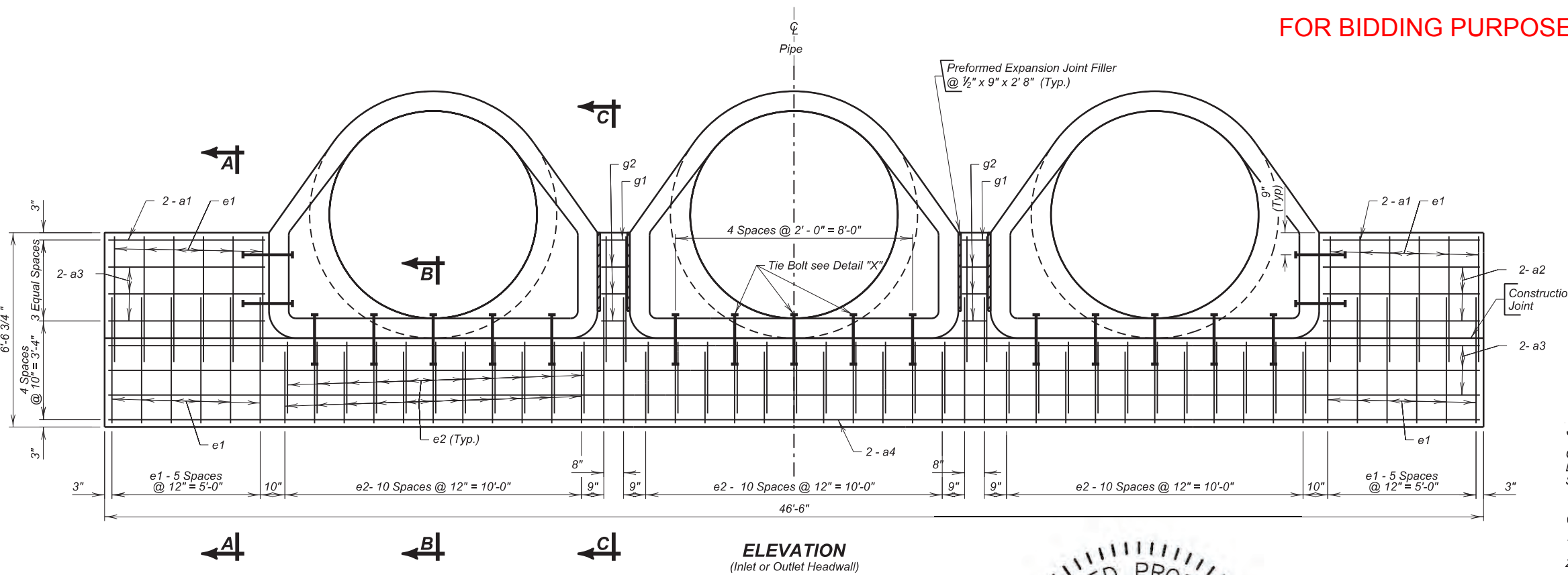
July 2024

DESIGNED BY JVZ	CK. DES. BY DJH	DRAFTED BY JVZ	BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	18	33



ELEVATION  
(Inlet or Outlet Headwall)

REINFORCING SCHEDULE					
(For One Inlet or One Outlet Headwall)					
Mk.	No.	Size	Length	Type	Bending Details
a1	4	5	5'-3"	Str.	
a2	12	4	5'-3"	Str.	
a3	6	4	46'-3"	Str.	
a4	2	5	46'-3"	Str.	
e1	32	4	9'-0"	S10	
e2	66	4	5'-3"	S10	
g1	2	5	3'-3"	T1	
g2	6	4	3'-3"	T1	

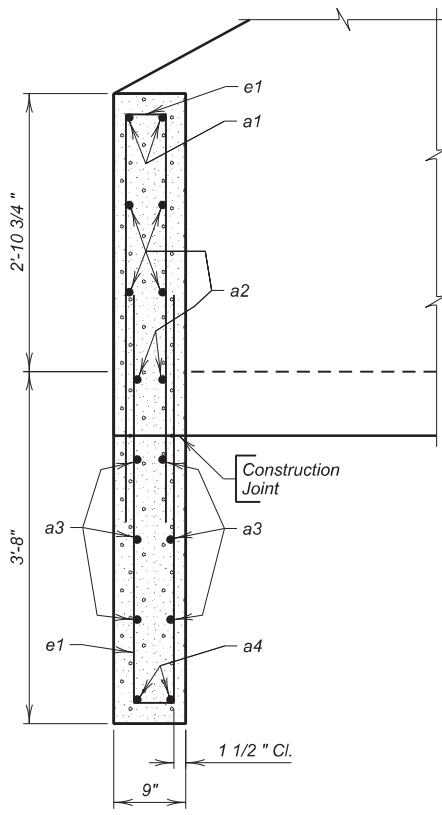
NOTES:  
All dimensions are out to out of bars.

**SPECIFICATIONS**

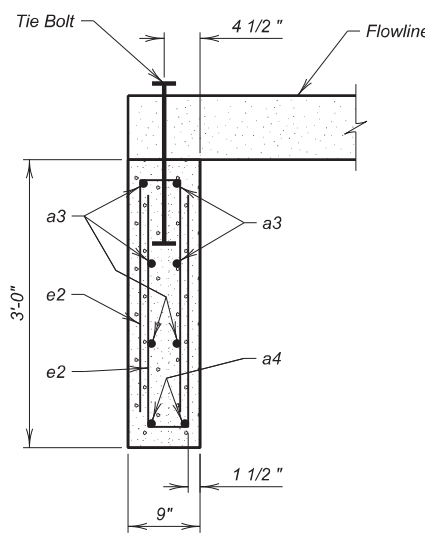
Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**GENERAL NOTES**

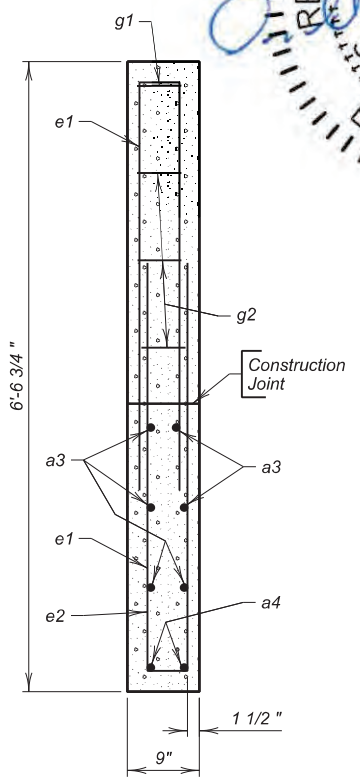
- Concrete will be Class M6 in conformance with Section 462.
- Reinforcing Steel will conform to ASTM A615 Grade 60.
- Use 1/2" clear cover on all reinforcing steel except as shown.
- All exposed edges will be chamfered 3/4".
- Anchor Bolts will be 1" Ø x 20" A307 bolts with heavy hex nuts and 2 washers. Bolts, nuts, and washers will be galvanized in accordance with ASTM F2329. Nineteen bolts, or equivalent as approved by the Engineer, are required for each headwall. Embed bolts in concrete headwall as detailed.
- Drilling holes thru RCP Flared End Sections will not be allowed. Provide 1 1/4" Ø holes in RCP Flared End sections for tie bolts. Sleeves, if used, will be made of a corrosion resistant material.
- Headwall dimensions and quantities shown are based on S.D. Standard Plate No. 450.10. For RCP Flared Ends with differing dimensions, adjust headwall as required and submit revised details to the Office of Bridge Design, thru proper channels, for approval. Payment will be for plans quantities unless changes are ordered by the Engineer.
- All costs for furnishing and installing the galvanized Tie Bolts will be incidental to the other contract items.



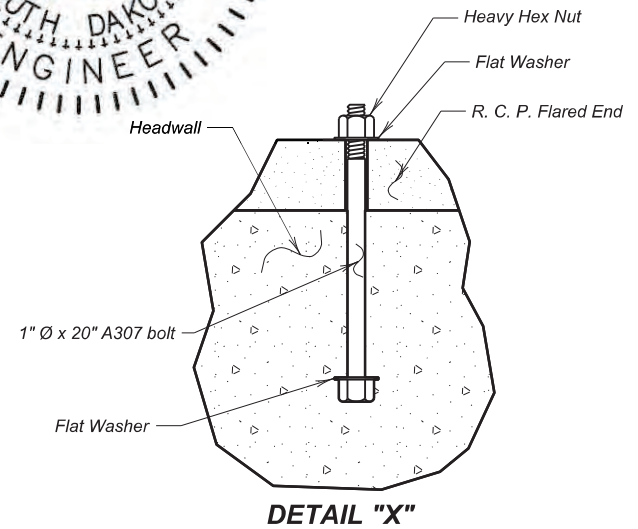
SECTION A - A



SECTION B - B



SECTION C - C



DETAIL "X"

ESTIMATED QUANTITIES		
(For One Inlet or One Outlet Headwall)		
ITEM	UNIT	QUANTITY
Class M6 Concrete	Cu. Yd.	5.2
Reinforcing Steel	LB.	789
Structure Excavation, Miscellaneous	Cu. Yd.	3.9

Quantity based on neat line excavation to the dimensions of the headwall below the bottom of the pipe. Payment will be for plans quantity regardless of actual volume excavated.

**HEADWALL & CUTOFF WALL DETAILS**

FOR  
**3 - 84" REINFORCED CONCRETE PIPE**  
 OVER TRIBUTARY TO EMANUEL CREEK 5° RHF SKEW  
 STA. 10+00.00 SEC. 30/31-T96N-R60W  
 STR. NO. 05-097-050 BRO-B 8005(16)  
 PCN 08MH HL-93

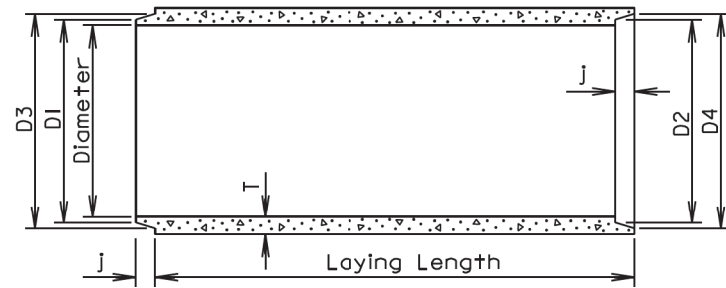
BON HOMME COUNTY  
 S. D. DEPT. OF TRANSPORTATION

July 2024 3 OF 5

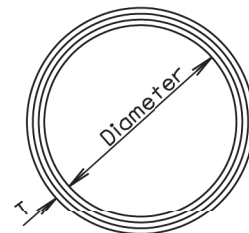
DESIGNED BY JVZ	CK. DES. BY DJH	DRAFTED BY JVZ	BRIDGE ENGINEER
--------------------	--------------------	-------------------	-----------------

**TOLERANCES IN DIMENSIONS**

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



LONGITUDINAL SECTION



END VIEW

**GENERAL NOTES:**

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

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

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

June 26, 2015

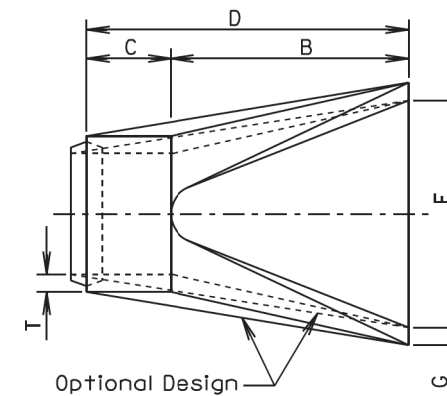
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**REINFORCED CONCRETE PIPE**

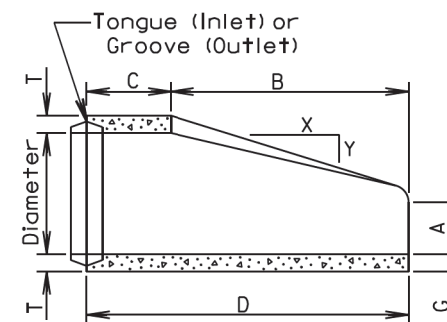
PLATE NUMBER  
450.01

Sheet 1 of 1

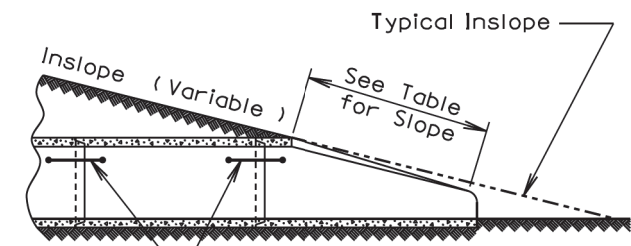
Published Date: 2025



TOP VIEW



LONGITUDINAL SECTION



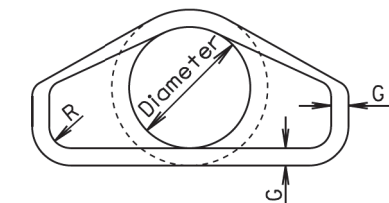
See Standard Plate 450.18  
(TIE BOLTS FOR R.C.P. AND R.C.P. ARCH)

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 1/8	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

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**R. C. P. FLARED ENDS**

PLATE NUMBER  
450.10

Sheet 1 of 1

Published Date: 2025

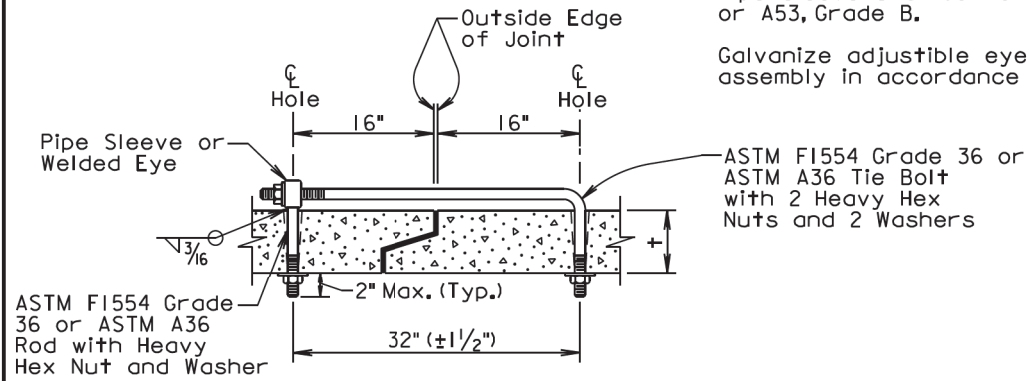
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
$\leq 3/4$	$5/8$	$3/4$
$3/2 - 6/2$	$3/4$	1
$\geq 7$	1	$1 1/4$

**GENERAL NOTES:**

Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.

Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.



**ADJUSTABLE EYE BOLT TIE**

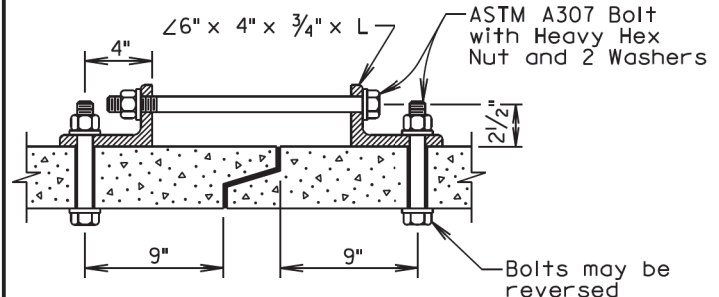
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
$\leq 48$	4	$3/4$
$> 48$	6	1

**GENERAL NOTES:**

Angles shall conform to ASTM A36.

Bolts shall conform to ASTM A307. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



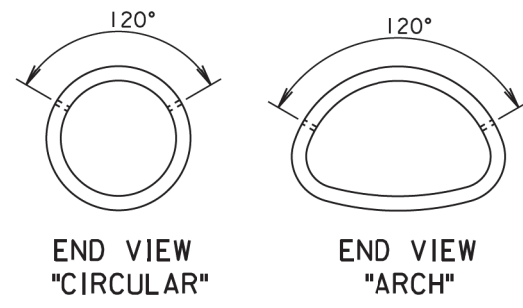
**ANGLE AND BOLT TIE**

**GENERAL NOTES:**

In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch shall be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manhole, and junction boxes shall be tied with tie bolts.

There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



**END VIEW "CIRCULAR"**

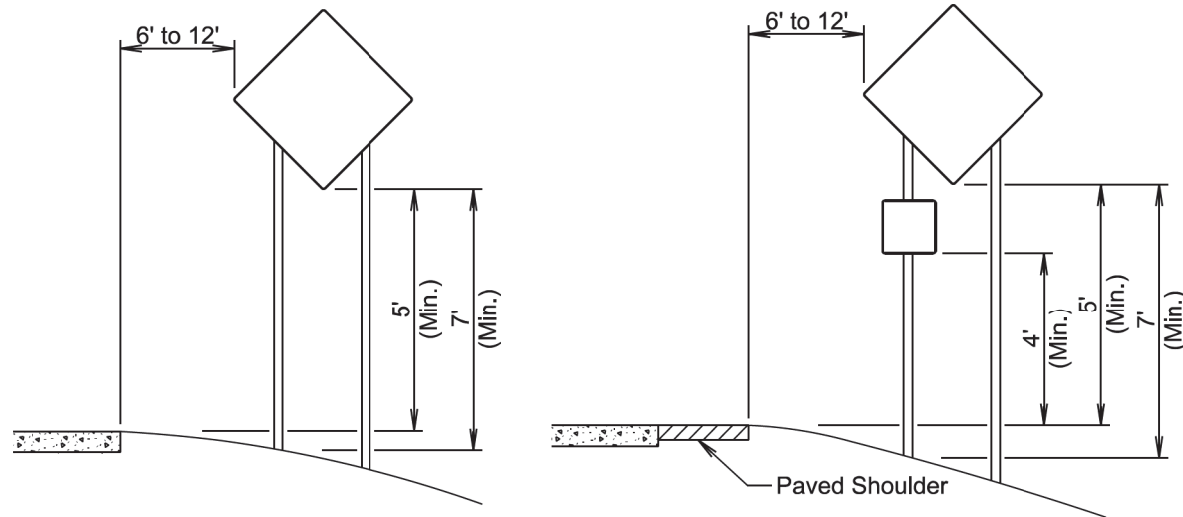
**END VIEW "ARCH"**

February 28, 2013

Published Date: 2025	S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1

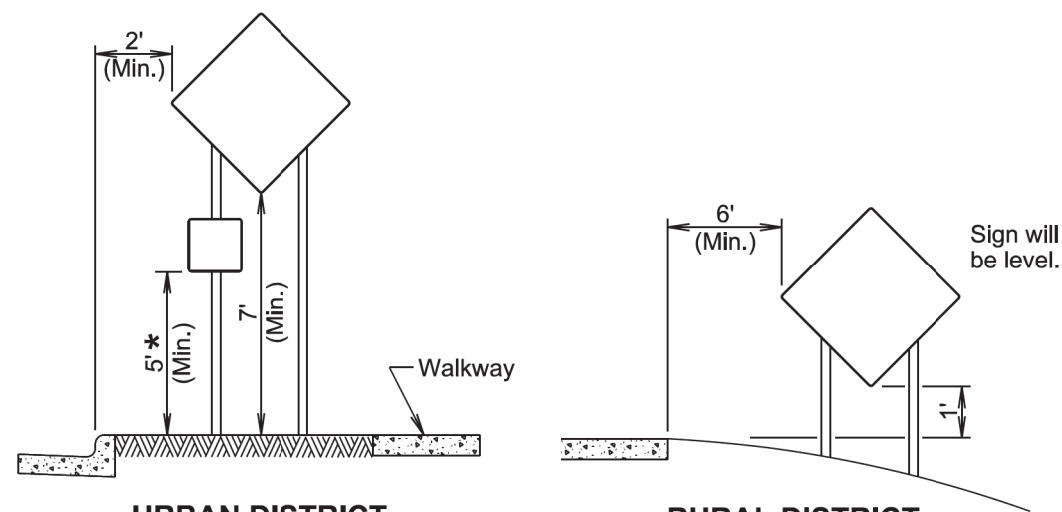






RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



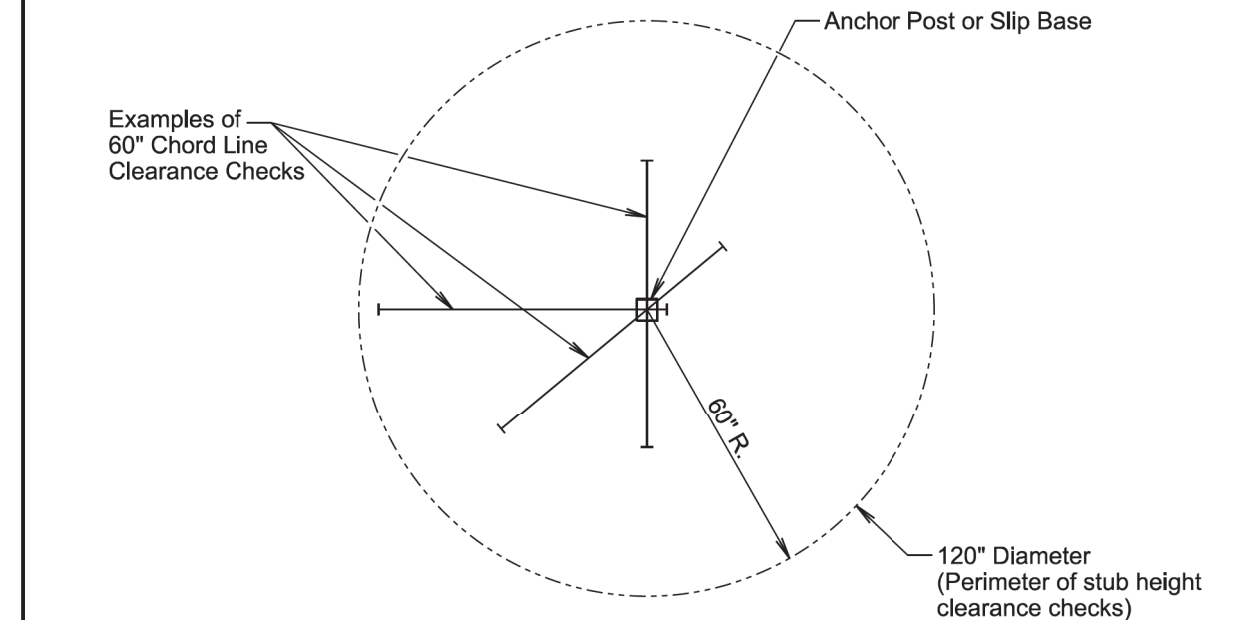
URBAN DISTRICT

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

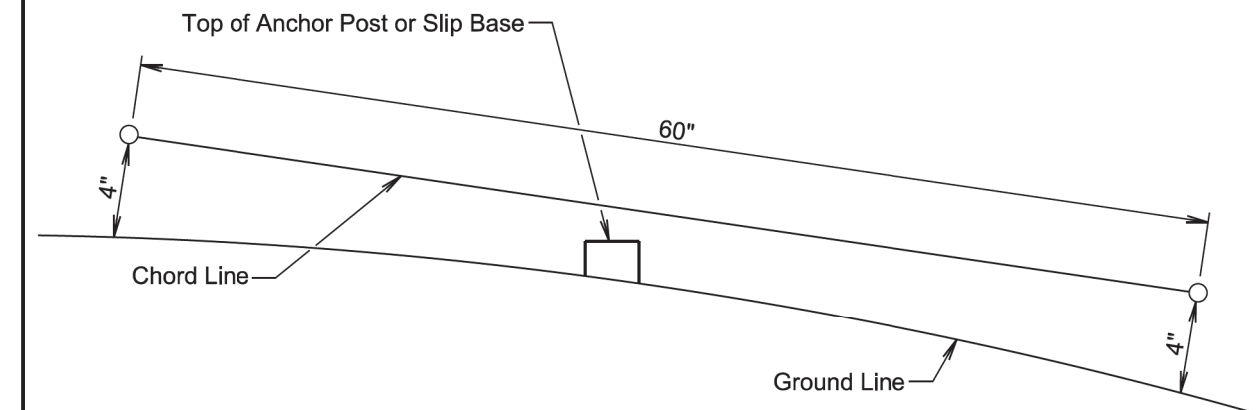
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	S D D O T	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.

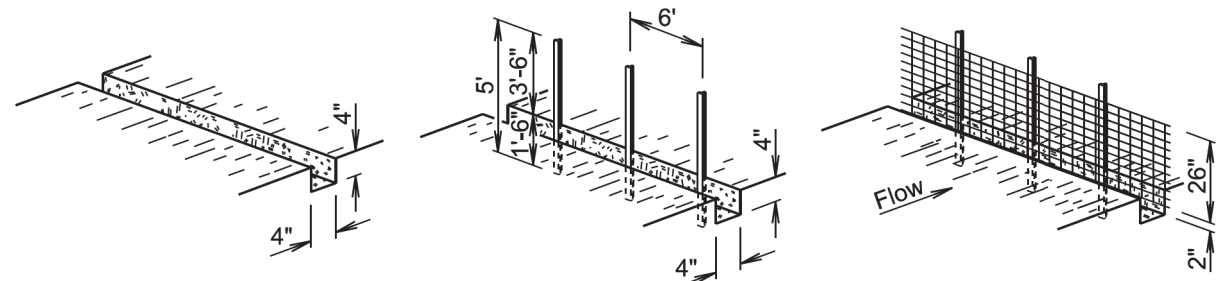
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

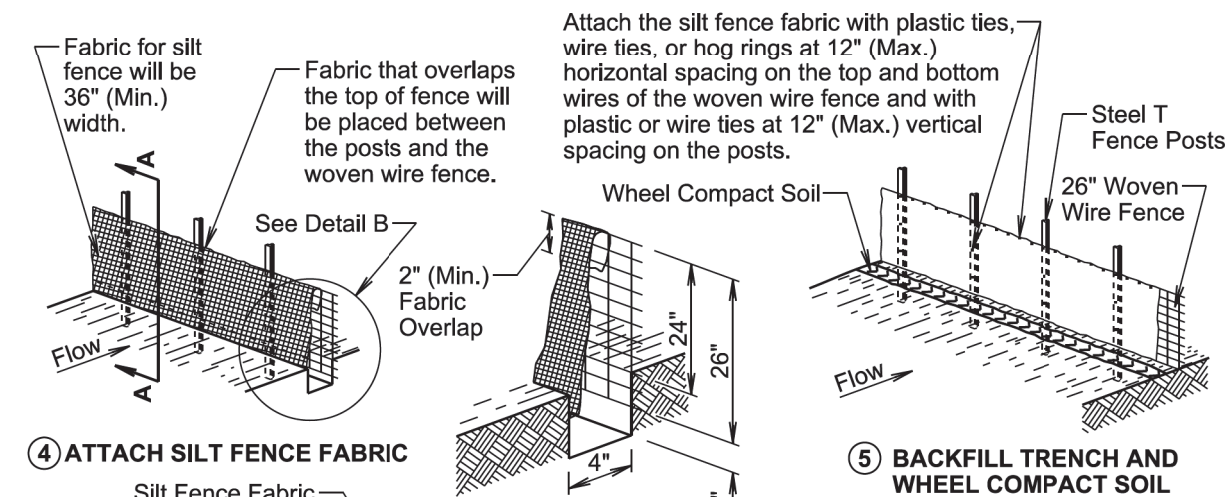
Published Date: 2025	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



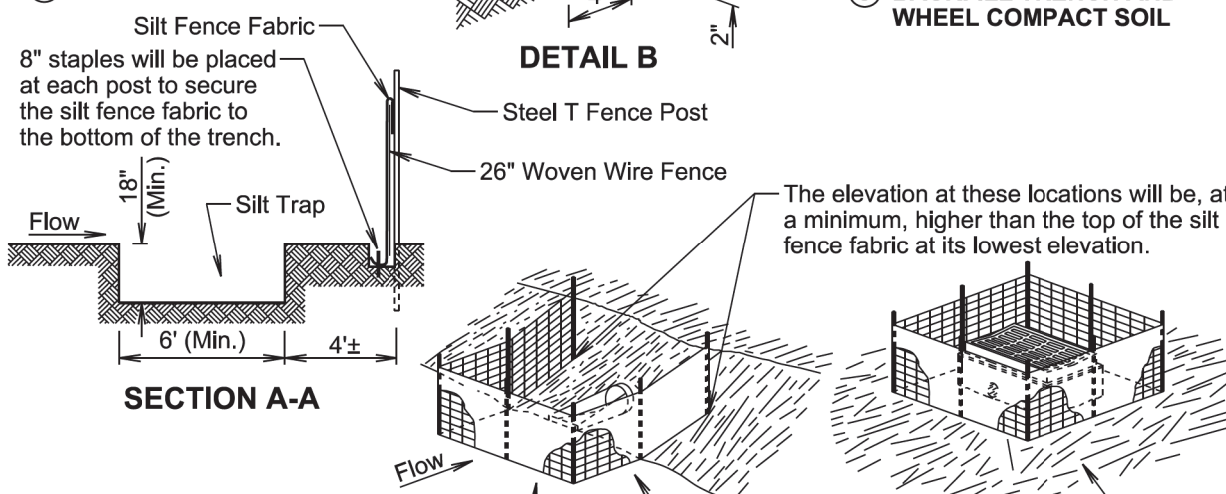
**MANUAL LOW FLOW SILT FENCE INSTALLATION**



- 1 EXCAVATE TRENCH
- 2 DRIVE STEEL T FENCE POSTS
- 3 ATTACH 26" WOVEN WIRE FENCE TO POSTS



- 4 ATTACH SILT FENCE FABRIC



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

Post spacing will be 3' for these types of applications of silt fence. All other components of the silt fence will be the same as shown above.

February 14, 2020

Published Date: 2025

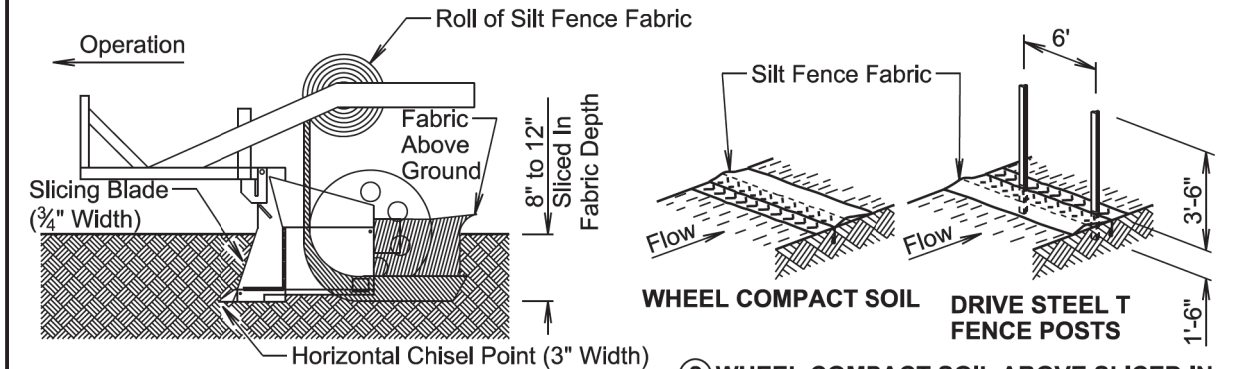
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LOW FLOW SILT FENCE  
AND SILT TRAP

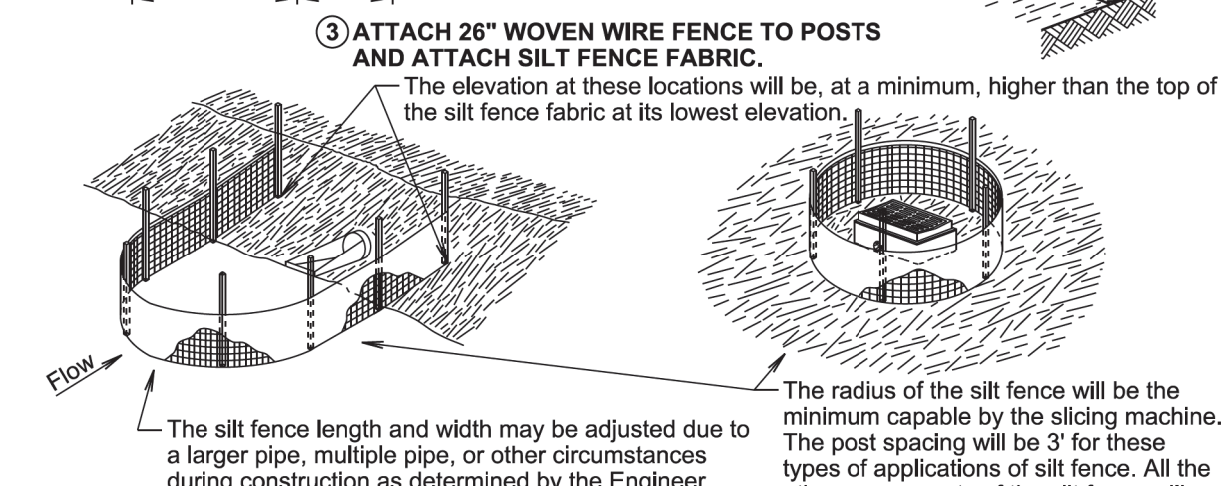
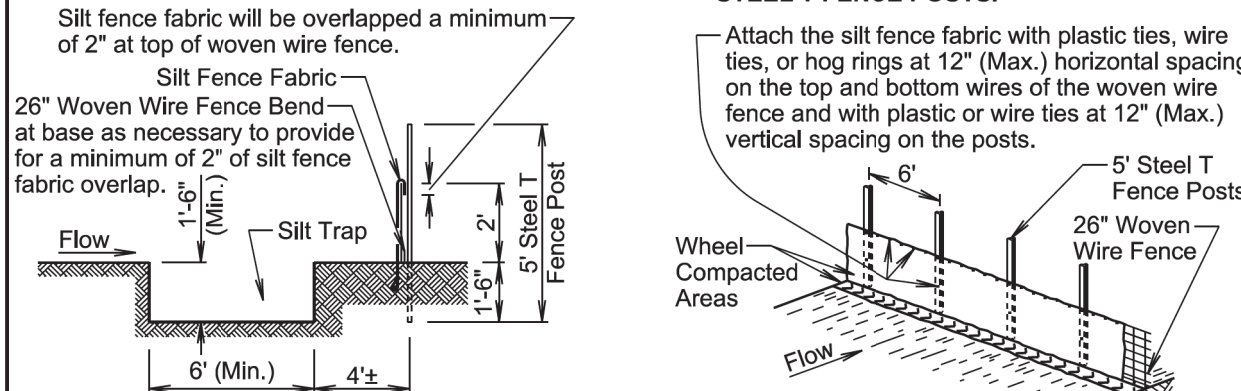
PLATE NUMBER  
734.04

Sheet 1 of 2

**MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION**



- 1 INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.
- 2 WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



**GENERAL NOTES:**

A silt trap will be provided when specified by a plan note. All costs for constructing the silt trap will be incidental to the contract unit price per cubic yard for "Silt Trap".

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: 2025

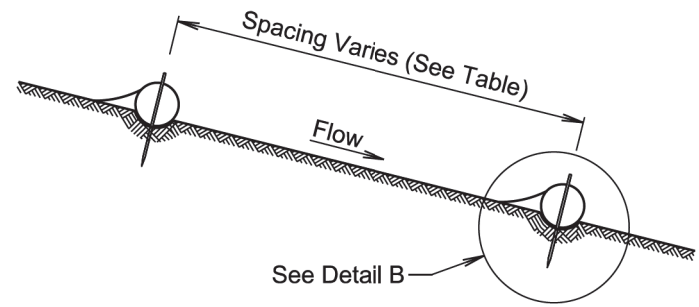
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LOW FLOW SILT FENCE  
AND SILT TRAP

PLATE NUMBER  
734.04

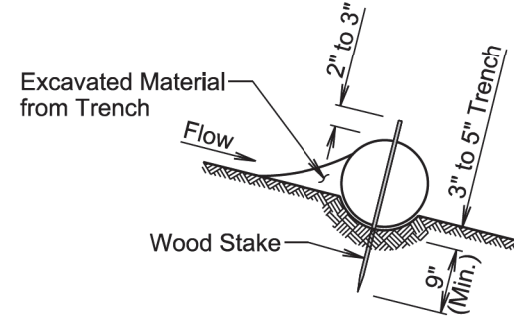
Sheet 2 of 2



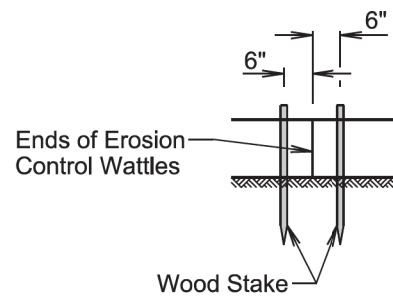


**ELEVATION VIEW**  
(Cut or Fill Slope Installation)

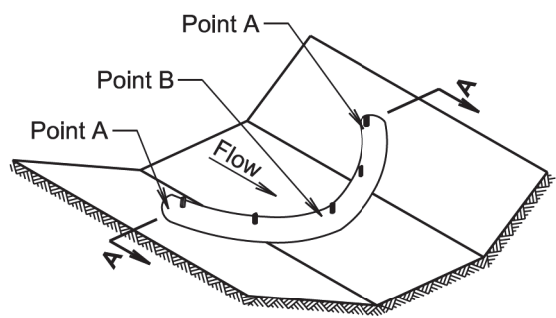
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



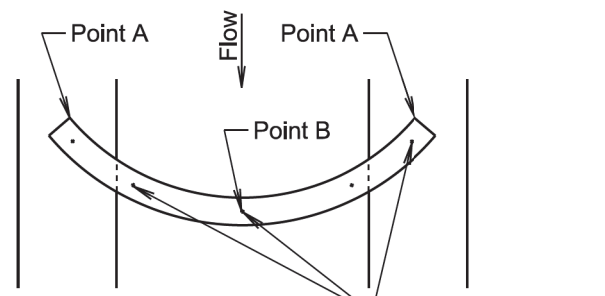
**DETAIL B**  
(Typical of All Installations)



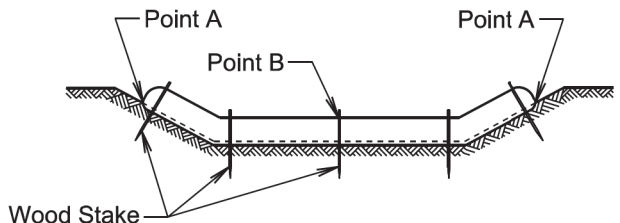
**DETAIL C**  
(See General Notes)



**ISOMETRIC VIEW**  
(Ditch Installation)



**PLAN VIEW**  
(Ditch Installation)



**SECTION A-A**

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

**GENERAL NOTES:**

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

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

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

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

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

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

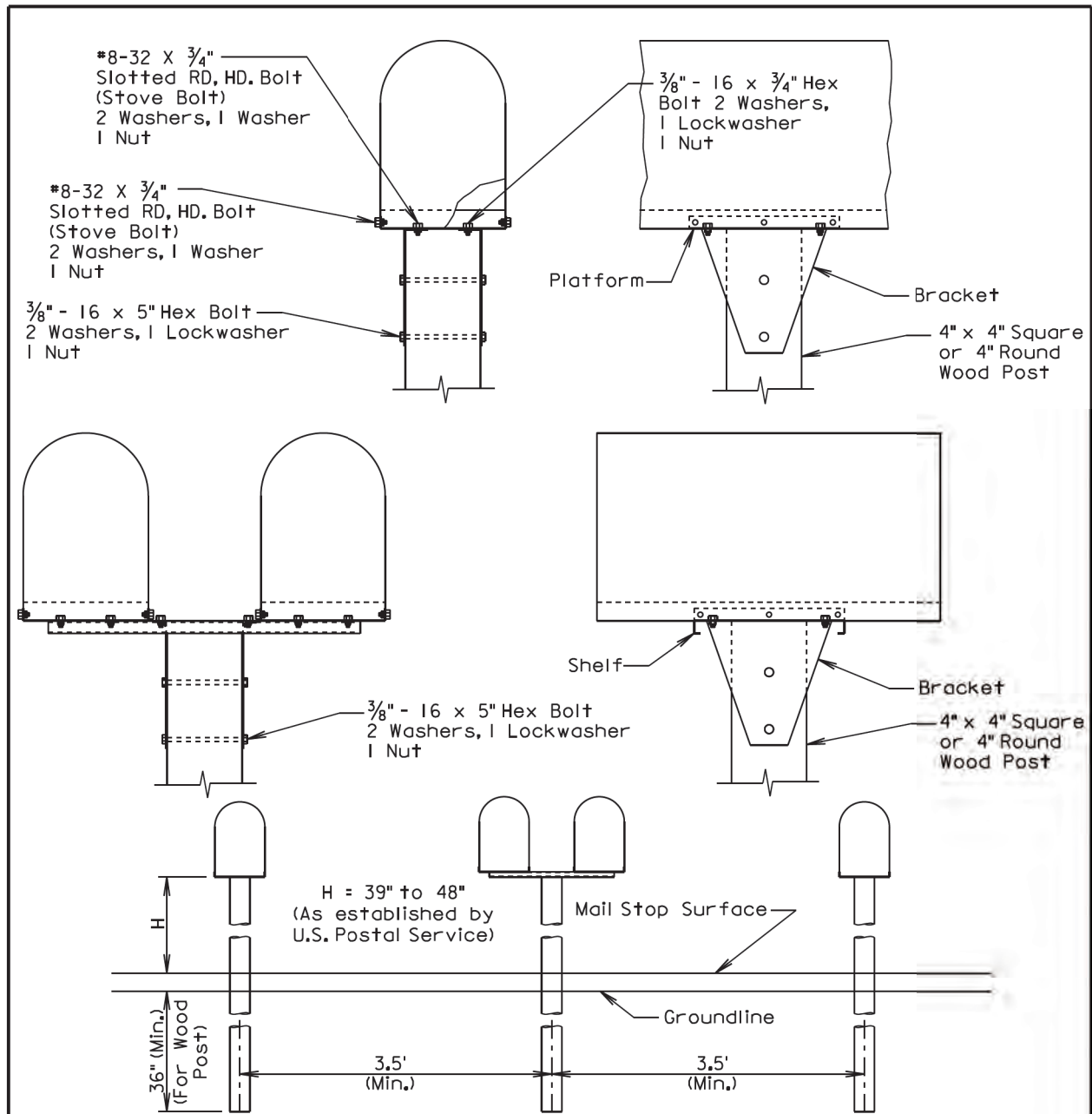
Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will be incidental to the contract unit price per cubic yard for "Remove Sediment".

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

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

February 14, 2020

February 14, 2020



**GENERAL NOTES:**

**SPACING FOR MULTIPLE POST INSTALLATION**

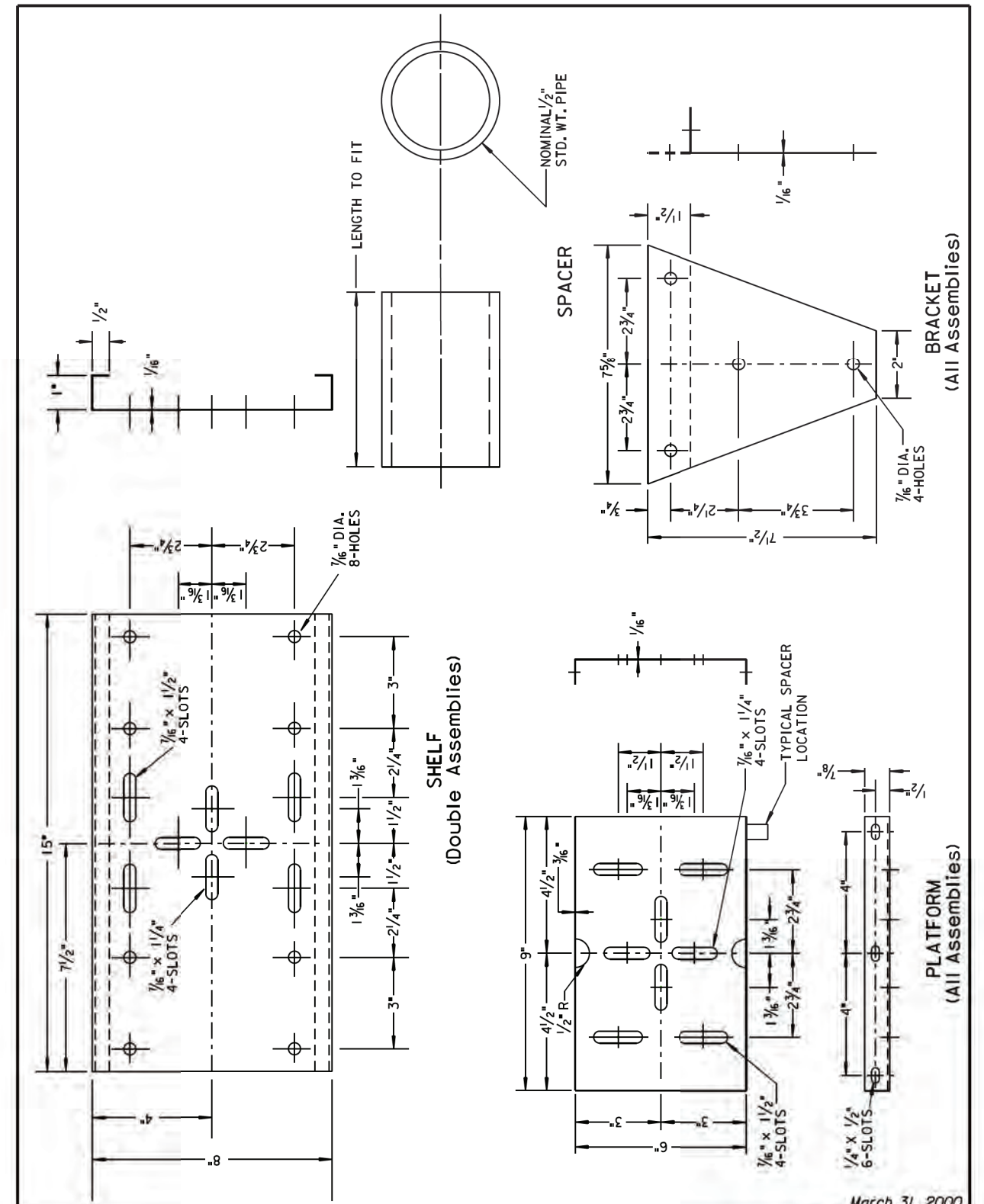
The post support assemblies provided should be consistent throughout the project. Single and double mailboxes may be in any sequence.

Post support assemblies shall be one from the approved products list, a 4"x4" or 4" round wood post, or an alternate post support assembly that meets the test level 3 crash testing requirements of NCHRP 350 or MASH.

Alternate mailbox support assemblies shall be approved by the Engineer prior to installation. The Contractor shall provide the Engineer written certification that the mailbox support assembly has met the crash testing requirements and will be installed in accordance with the manufacturer's installation instructions.

September 6, 2013

Published Date: 2025	S D D O T	SINGLE AND DOUBLE MAILBOX ASSEMBLIES	PLATE NUMBER
			900.02
			Sheet 1 of 1

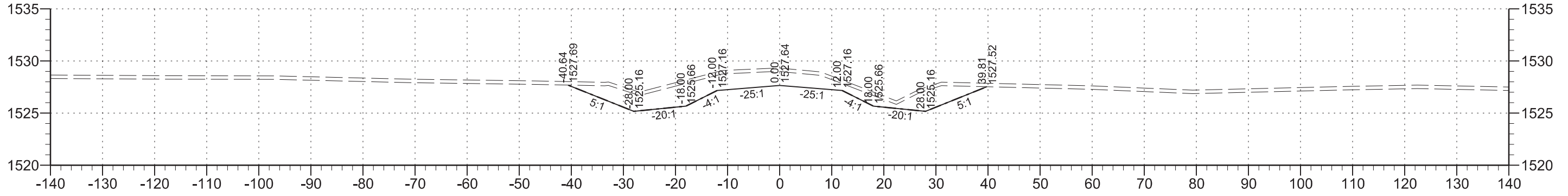


March 31, 2000

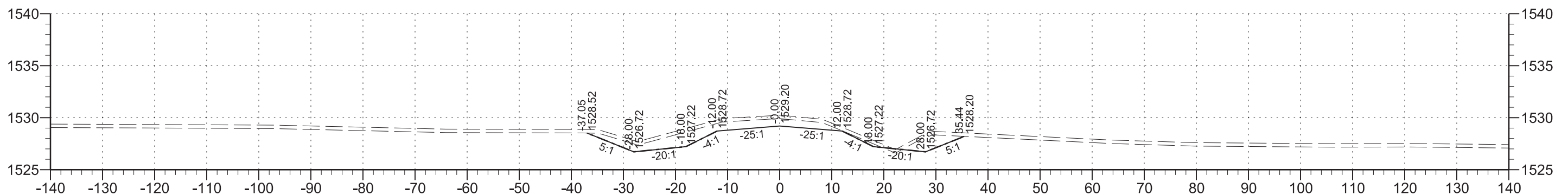
Published Date: 2025	S D D O T	MAILBOX SUPPORT HARDWARE	PLATE NUMBER
			900.03
			Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

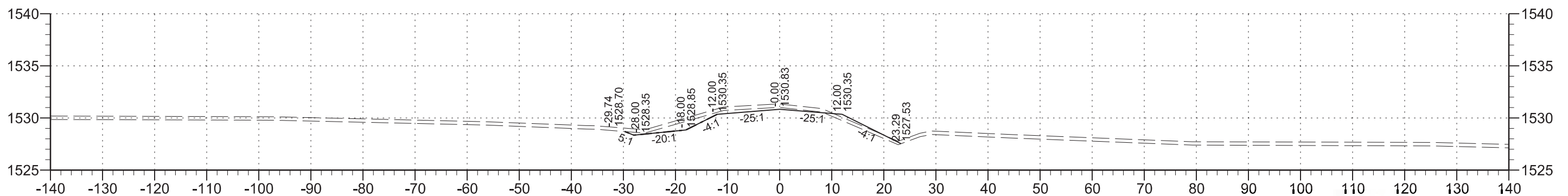
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S.D.	BRO-B 8005(16)	26	33



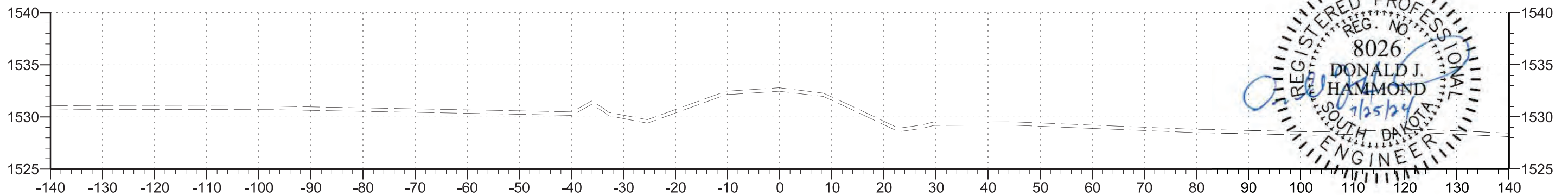
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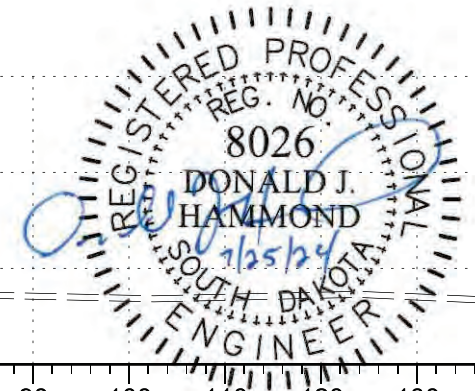
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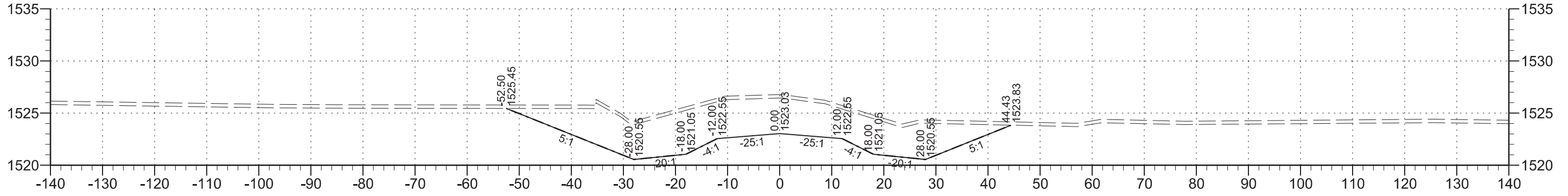
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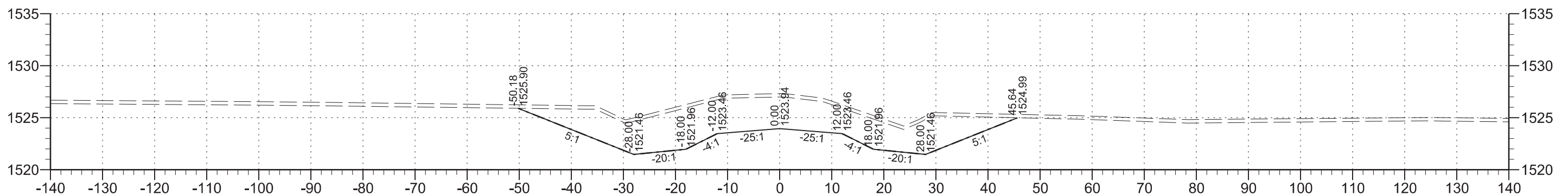


FOR BIDDING PURPOSES ONLY

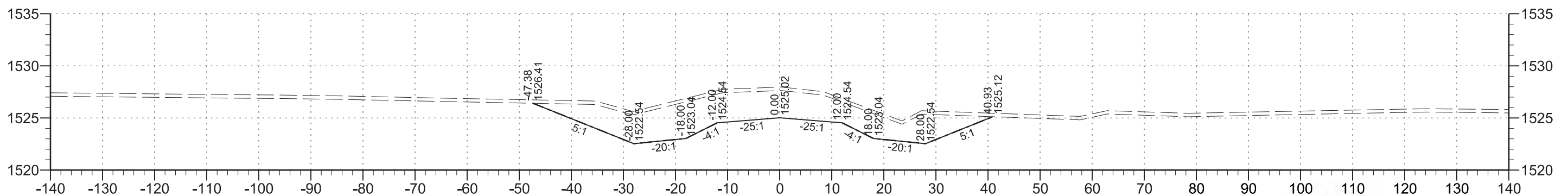
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S.D.	BRO-B 8005(16)	27	33



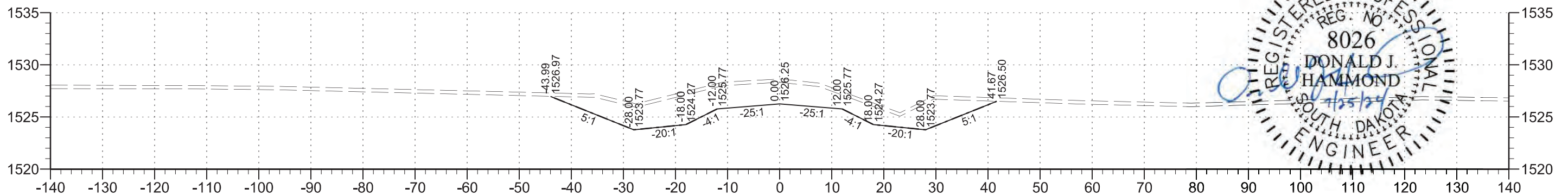
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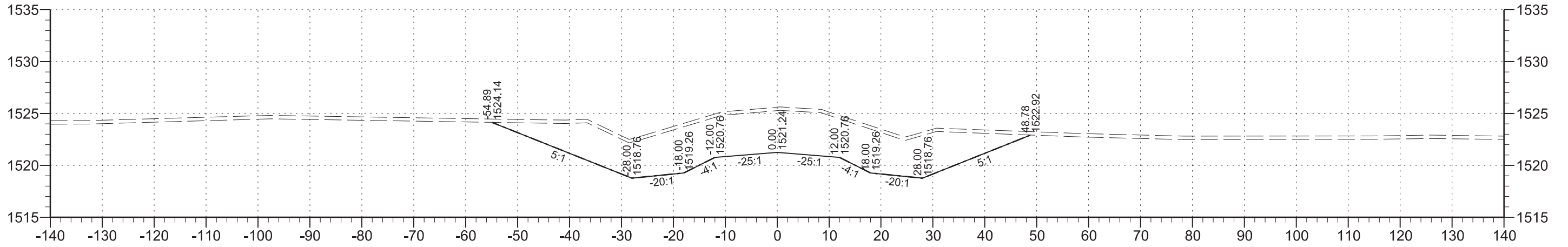


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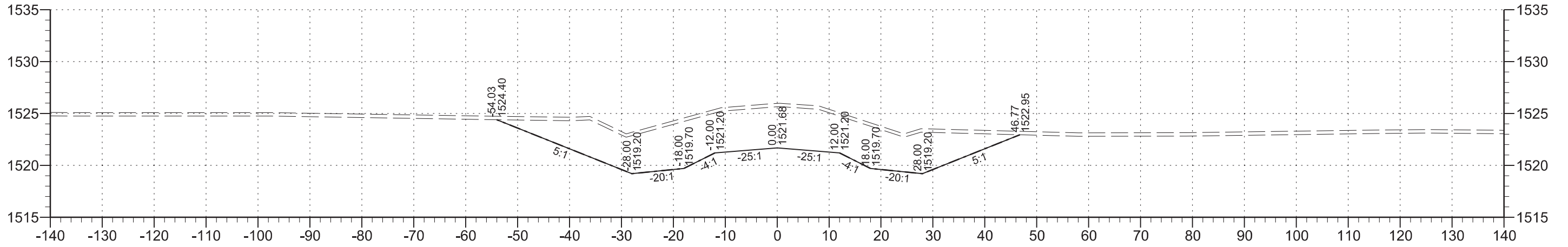


FOR BIDDING PURPOSES ONLY

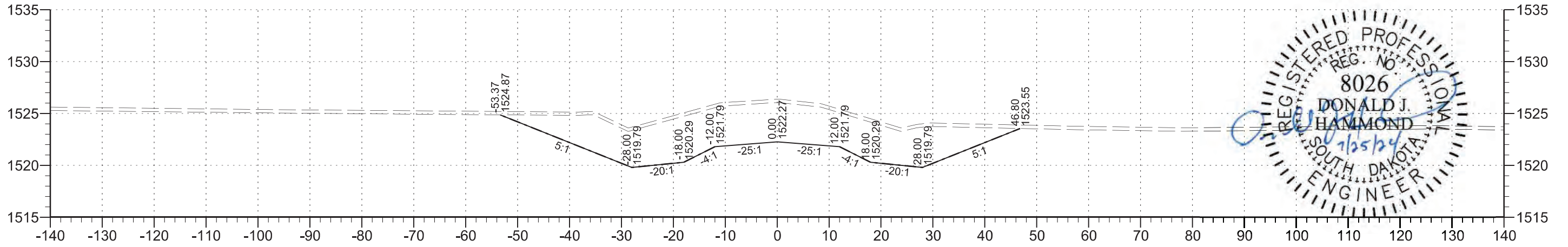
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	28	33



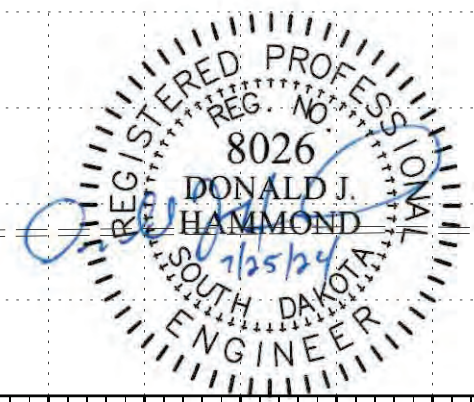
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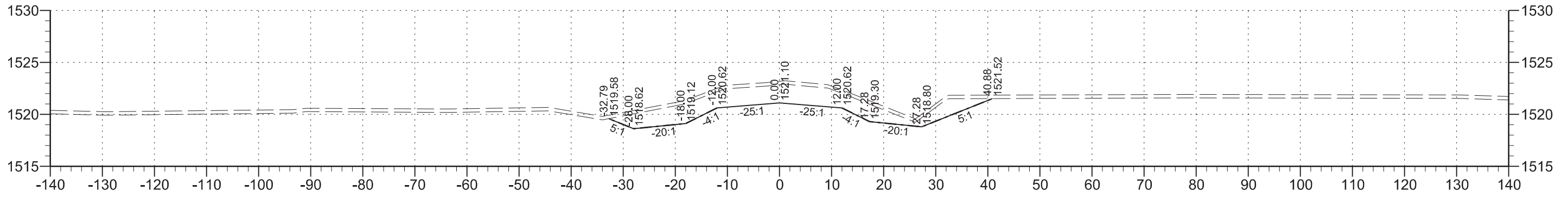


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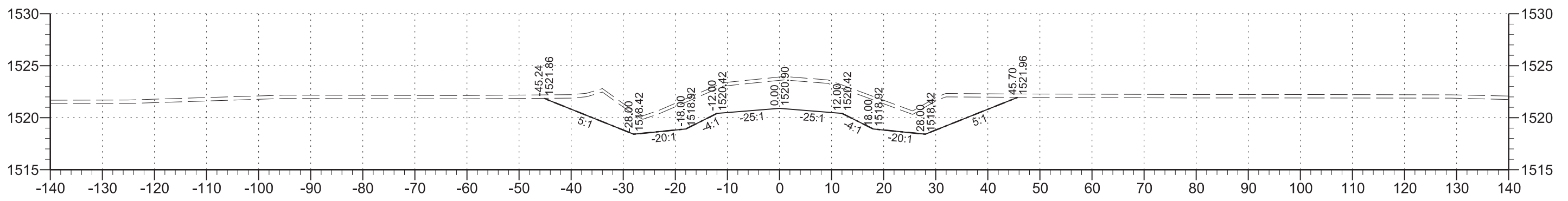


FOR BIDDING PURPOSES ONLY

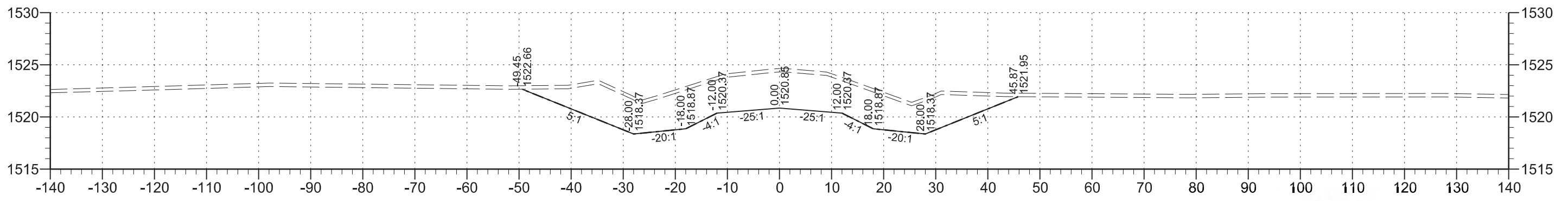
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	29	33



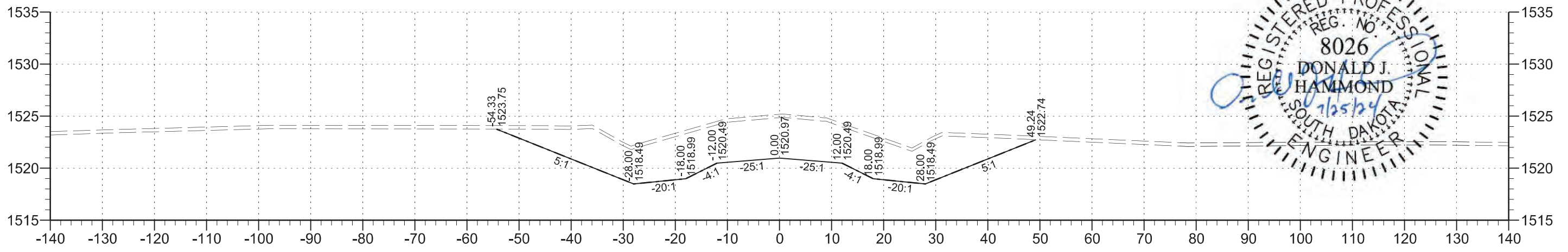
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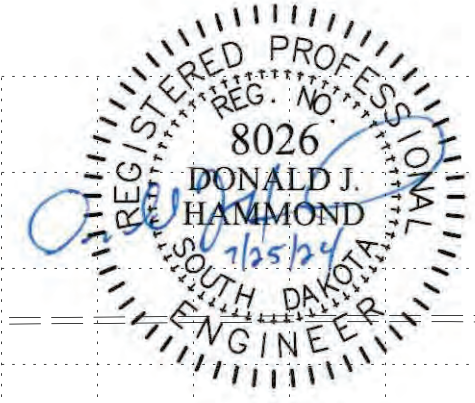
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6+00



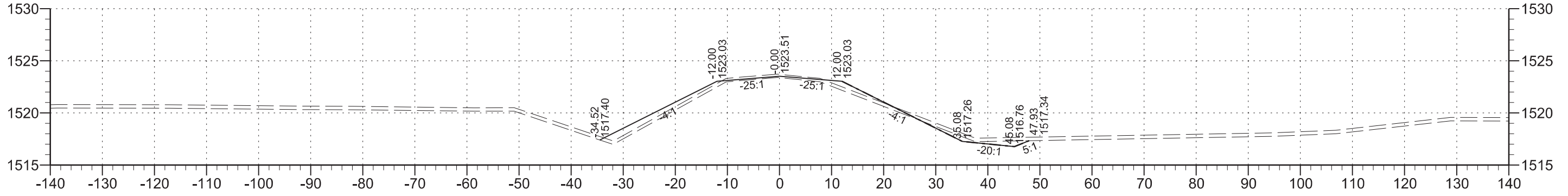
5+50



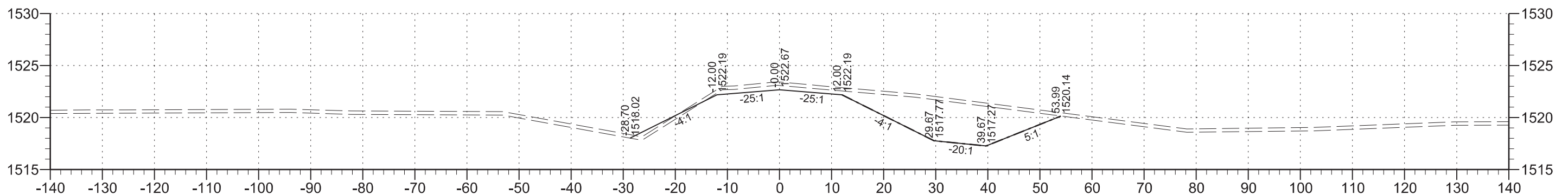


FOR BIDDING PURPOSES ONLY

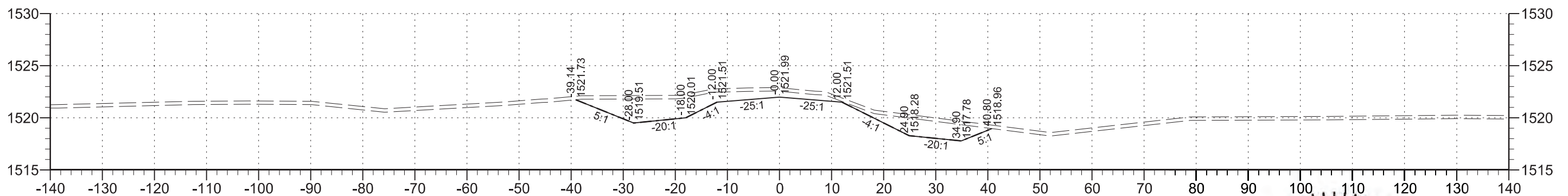
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	30	33



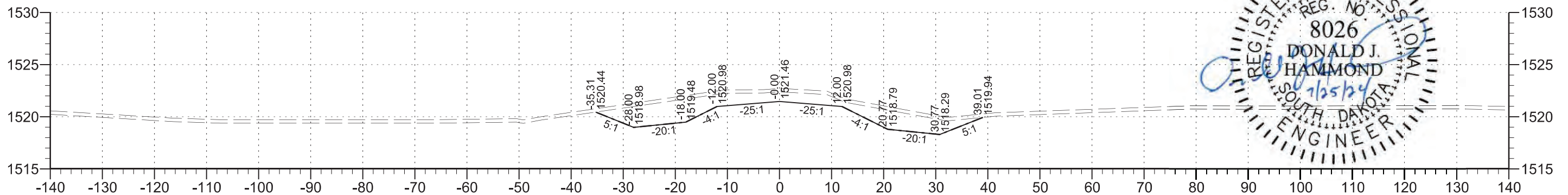
9+00



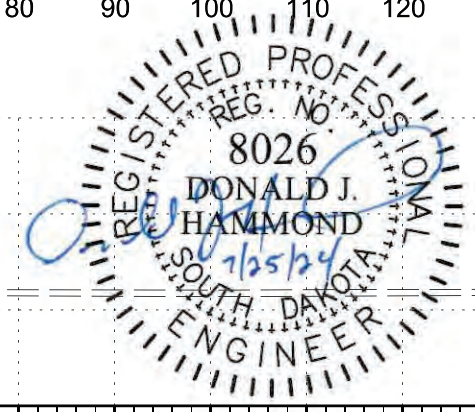
8+50



8+00

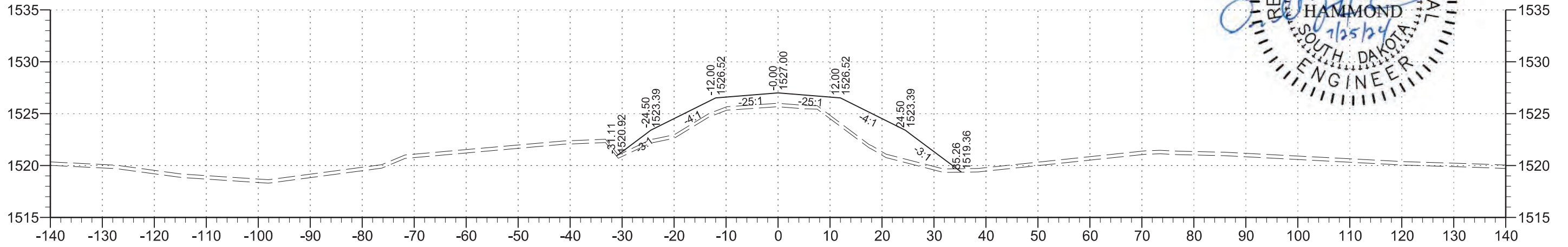
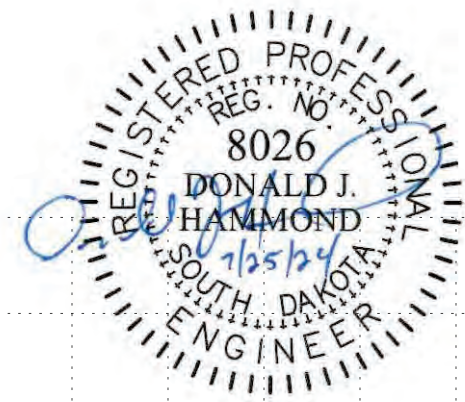


7+50

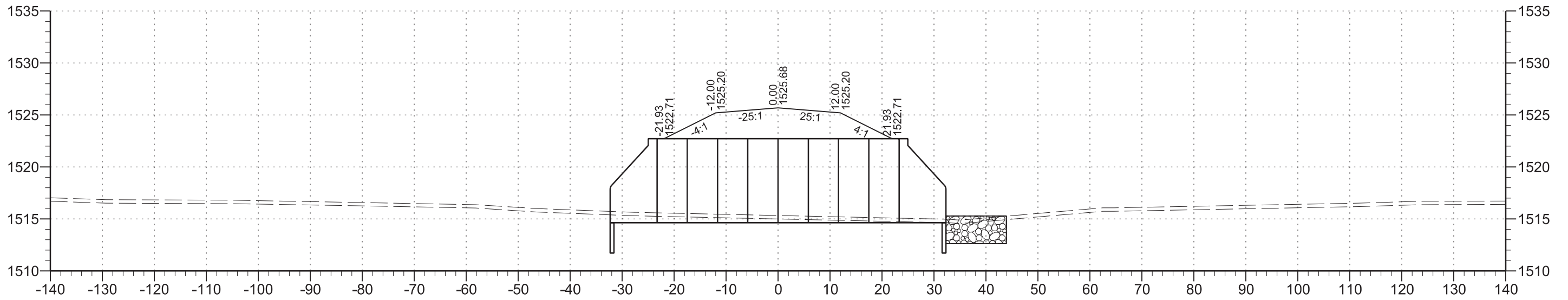


FOR BIDDING PURPOSES ONLY

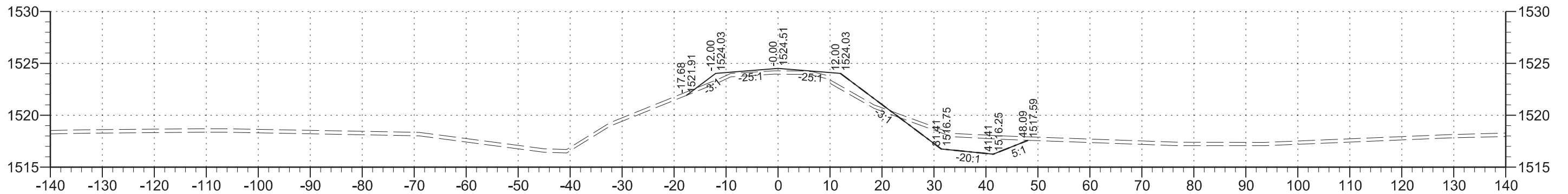
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	31	33



10+50



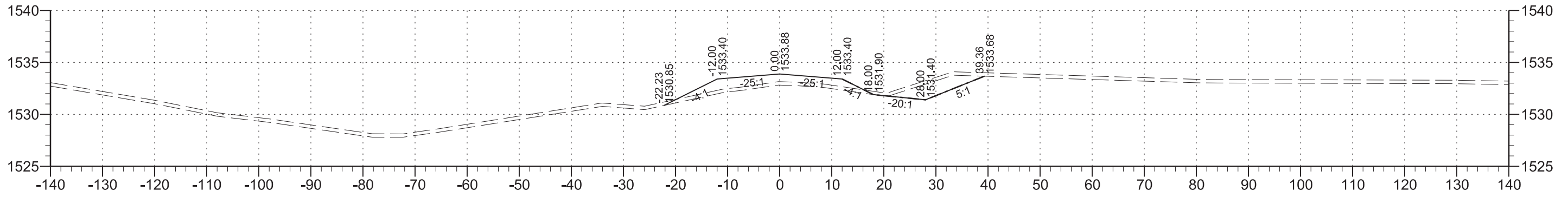
10+00



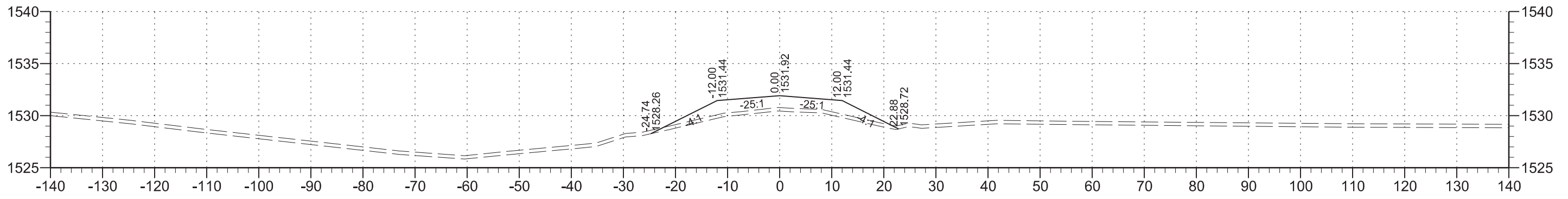
9+50

FOR BIDDING PURPOSES ONLY

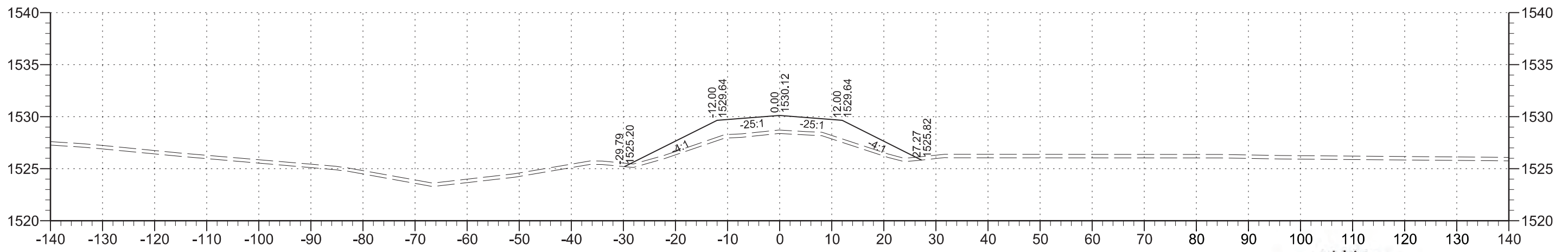
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	32	33



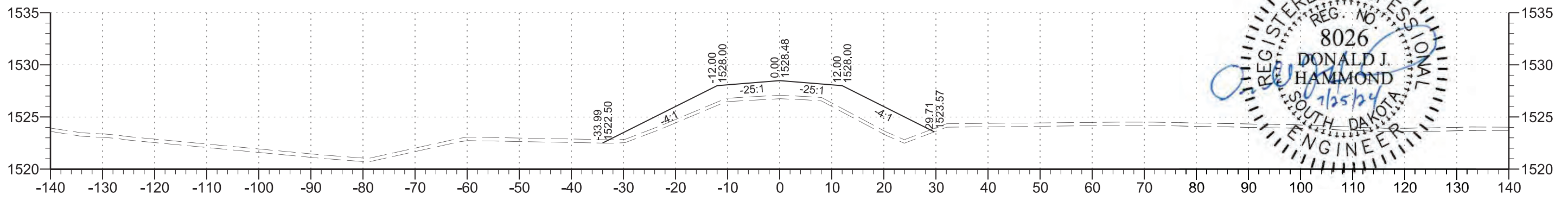
12+50



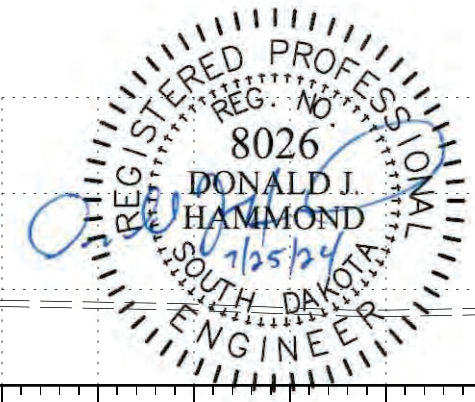
12+00



11+50



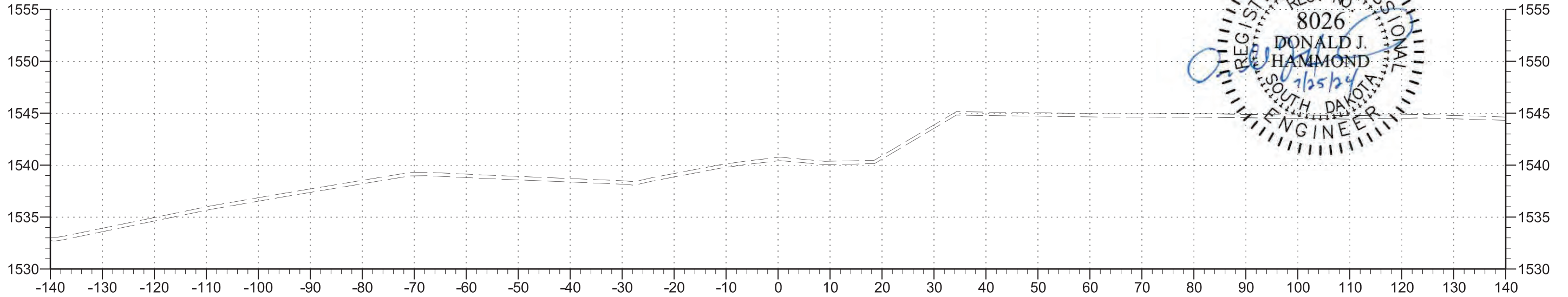
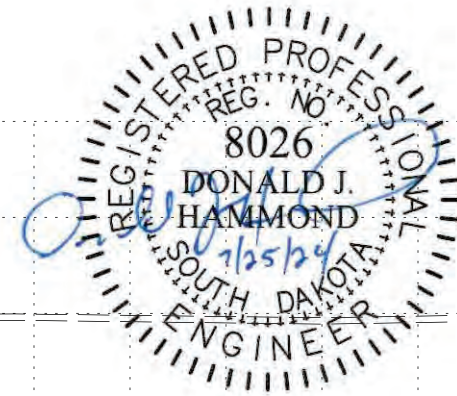
11+00



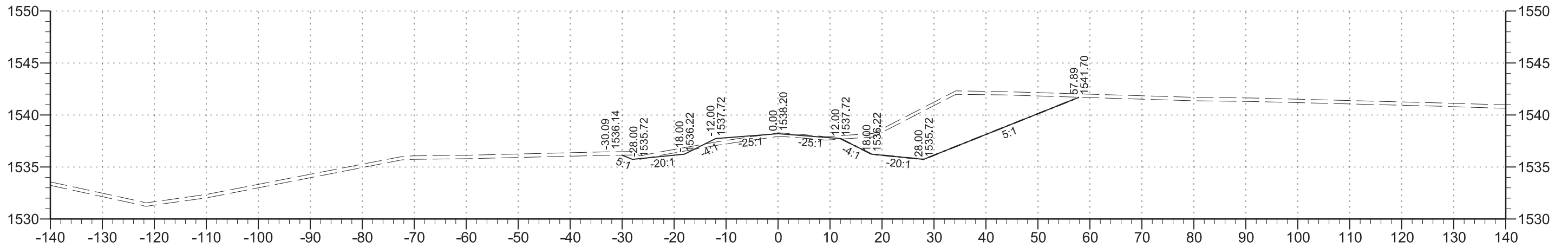


FOR BIDDING PURPOSES ONLY

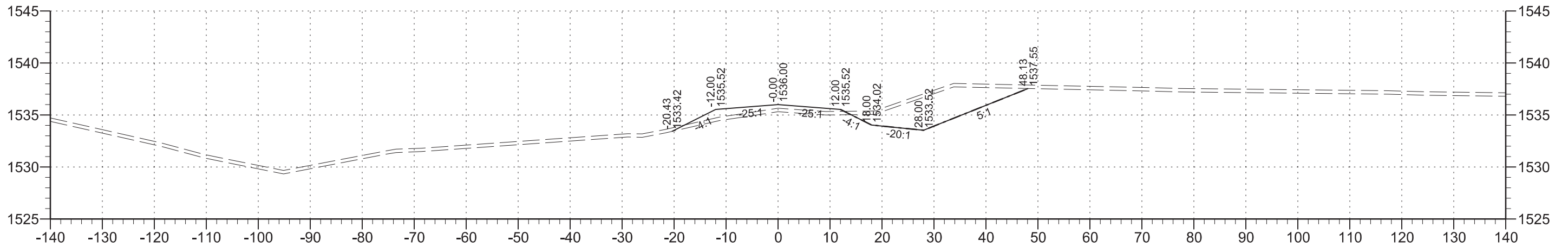
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8005(16)	33	33



14+00



13+50



13+00