

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	1	36

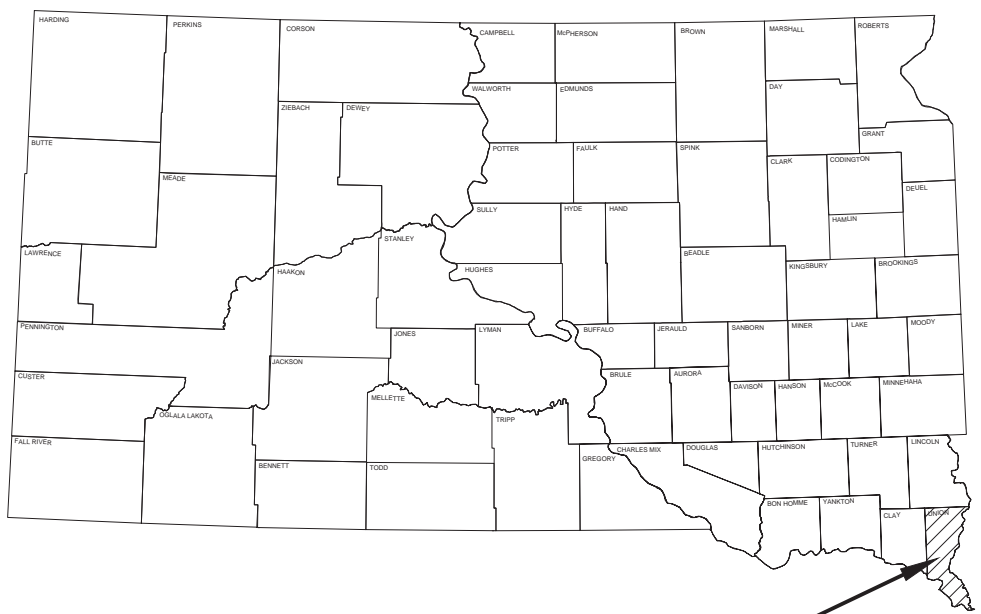
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

**PROJECT BRO-B 8064(31)**  
**UNION COUNTY**  
STRUCTURE REPLACEMENT AND APPROACH GRADING  
STRUCTURE NO. 64-105-140  
PCN 08ND

INDEX OF SHEETS

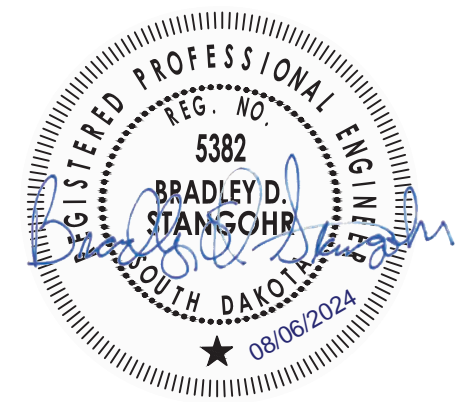
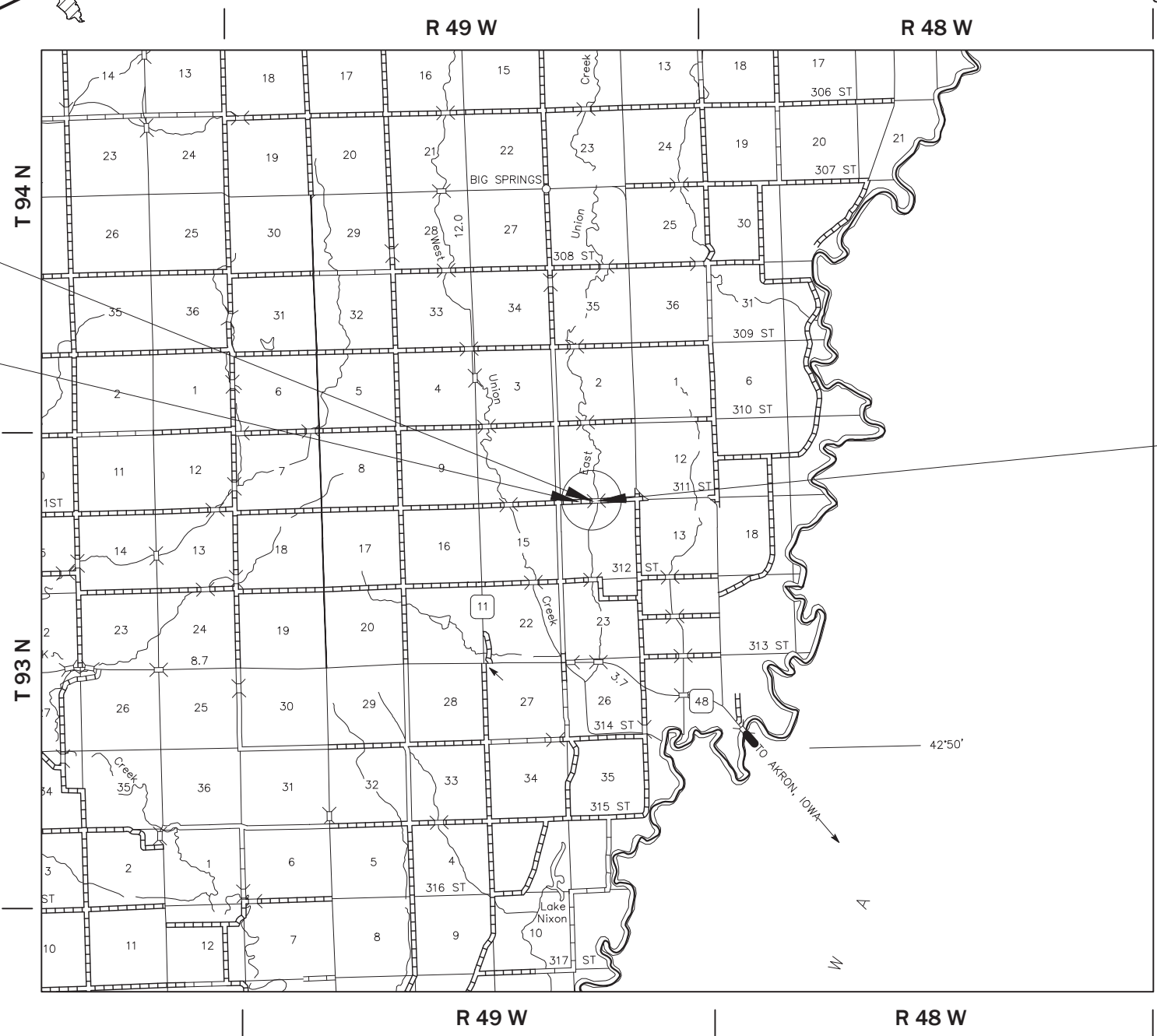
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PROJECT LOCATION

STRUCTURE  
64-105-140

BEGIN PROJECT  
STA. 6+41.86



END PROJECT  
STA. 12+00.00

DESIGN DESIGNATION

ADT (2019): 110  
ADT (2039): 170  
DHV: 26  
d: 50%  
T DHV: 3.5%  
T ADT: 7.7%  
DESIGN SPEED: 55 MPH

STORM WATER PERMIT

MAJOR STREAM: East Union Creek  
AREA DISTURBED: **1.0** ACRES  
PROJECT AREA: **1.6** ACRES

**Ulteig**  
5701 S Corporate Place, Suite 1  
Sioux Falls, South Dakota 57108  
Phone: 605.323.2306  
Fax: 605.323.2308  
Web: www.Ulteig.com

**1**

October 16, 2024

**GRADING**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.100	Mile
009E3250	Miscellaneous Staking	0.100	Mile
009E3280	Slope Staking	0.100	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0500	Remove Pipe Culvert	75	Ft
120E0010	Unclassified Excavation	3,536	CuYd
120E0600	Contractor Furnished Borrow Excavation	1,653	CuYd
230E0010	Placing Topsoil	443	CuYd
450E4767	24" CMP 12 Gauge, Furnish	76	Ft
450E4770	24" CMP, Install	76	Ft
450E5410	24" CMP Safety End, Furnish	4	Each
450E5411	24" CMP Safety End, Install	4	Each
634E0110	Traffic Control Signs	109.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	8	Each
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	2,758	SqYd
734E0154	12" Diameter Erosion Control Wattle	495	Ft
734E0510	Shaping for Erosion Control Blanket	1,060	Ft
734E0604	High Flow Silt Fence	712	Ft
734E0610	Mucking Silt Fence	49	CuYd
734E0620	Repair Silt Fence	178	Ft

**STRUCTURE No. 64-105-140**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	86	CuYd
421E0200	Box Culvert Undercut	317	CuYd
464E0100	Controlled Density Fill	28.6	CuYd
560E0118	9'x9' Precast Concrete Box Culvert, Furnish	76.0	Ft
560E0119	9'x9' Precast Concrete Box Culvert, Install	76.0	Ft
560E1118	9'x9' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E1119	9'x9' Precast Concrete Box Culvert End Section, Install	2	Each
560E2100	2-9'x9' Precast Concrete Box Culvert, Furnish	76.0	Ft
560E2101	2-9'x9' Precast Concrete Box Culvert, Install	76.0	Ft
560E3100	2-9'x9' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E3101	2-9'x9' Precast Concrete Box Culvert End Section, Install	2	Each
700E0210	Class B Riprap	175.0	Ton
831E0110	Type B Drainage Fabric	171	SqYd
831E0300	Reinforcement Fabric (MSE)	528	SqYd

**SPECIFICATIONS**

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

**ENVIRONMENTAL COMMITMENTS**

The SDDOT is committed to protecting the environment and uses 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 A2: STREAMS**

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 0.04 acres of stream (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted streams.

**Table of Impacted Streams**

Stream Name	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
East Union Creek	9+00 – 10+00	0.01	0.03	0.00	0.00	0.04

**Action Taken/Required:**

It has been determined that project impacts do not require mitigation. Temporary impacts identified in the Table of Impacted Streams will not be mitigated as the finished ground under the bridge will be shaped to match the upstream channel and flood plain and the existing low water channel will be maintained as near as practical to the existing location as designated in the plans.

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

**COMMITMENT C: WATER SOURCE**

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

**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://sdleastwanted.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> >

**COMMITMENT D: WATER QUALITY STANDARDS**

**COMMITMENT D1: SURFACE WATER QUALITY**

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

**Action Taken/Required:**

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





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**COMMITMENT D2: SURFACE WATER DISCHARGE**

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

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

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

**Action Taken/Required:**

If construction dewatering is required 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\\_CGPAappendixCCA2018Fillable.pdf](https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAappendixCCA2018Fillable.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:

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

**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.

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

Station	Waterway	Ordinary High-Water Elevation
9+00 – 10+00	East Union Creek	1188.93'

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.

**SEQUENCE OF OPERATIONS**

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

1. Install traffic control signs as shown on the plans.
2. Install erosion control.
3. Deconstruct and remove existing structure.
4. Construct the new structure.
5. Grading operations.
6. Open the roadway to through traffic.
7. Permanent seeding.
8. Complete miscellaneous cleanup under traffic.

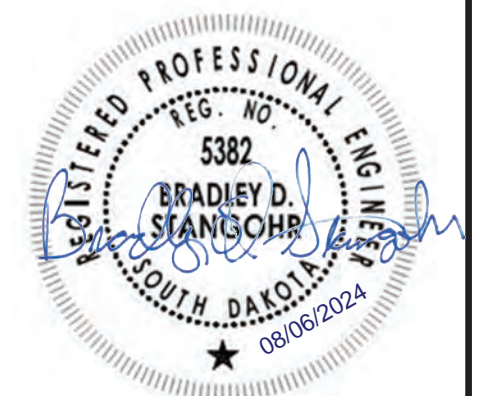
**COUNTY RESPONSIBILITIES**

Union County will be responsible for the following at no cost to the Contractor:

1. Right of way and temporary and permanent easements.
2. Coordination of any utility adjustments.
3. Removal of existing fencing, Furnish and install temporary and/or permanent fencing.
4. Furnish and install gravel surfacing.
5. Furnish and install new permanent signing of structure.
6. Remove silt fence in permanently seeded areas.

**CLEARING**

Before clearing activities begin, the Contractor will contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor will replace them with the same size and type at the Contractor's expense.





**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 2 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".

Compaction of earth and road embankment material will be governed by the Ordinary Compaction Method.

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 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.

**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.

Premier Communications Inc.  
339 1<sup>st</sup> Ave NE  
Sioux Center, IA 51250  
(712) 722-3451

Union County Electric Coop  
122 W Main St  
Elk Point, SD 57025  
(605) 356-3395

**EARTHWORK BALANCE**

Excavation	1259	CuYd	Embankment	1527	CuYd
Contractor	803	CuYd	35% Shrinkage	535	CuYd
Furnished Borrow					
Total	2062	CuYd	Total	2062	CuYd

Excavation is the quantity of Unclassified Excavation less the quantity of topsoil, excavation for RCBC installation, and gravel surfacing.

Other excavation includes the excavation for Class B Riprap (128 CuYd) and Box Culvert Undercut (317 CuYd).

These quantities are for informational purposes only, compensation for these is accounted for within the various bid items.

The Contractor may, at the discretion of the Engineer, use the material from other excavation in the inslopes and as sub-base with the condition that said material meets all requirements as set forth in the Standard Specifications for Roads and Bridges, 2015 Edition.

It is assumed (for the purpose of earthwork balance) that the Contractor will not be able to use any of the material from Other Excavation and will have to waste the material at (a) site(s) provided by the Contractor and approved by the Engineer. All cost for labor, materials, and equipment necessary to waste material as well as restoration of the waste site(s) will be incidental to the contract unit price per cubic yard of "Unclassified Excavation."

**TABLE OF UNCLASSIFIED EXCAVATION**

Excavation	1259	CuYd
Topsoil	443	CuYd
Exc. For RCBC Installation	1834	CuYd
Total	3536	CuYd

**PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY**

The plans quantity for "Unclassified Excavation" as shown in the estimate of quantities will be the basis for payment for this item. No field measurements will be made.

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item. No field measurements will be made.

Restoration of the Contractor Furnished Borrow Excavation site will be the responsibility of the Contractor.

Included in the quantity of Contractor Furnished Borrow Excavation are 850 cubic yards of borrow for the backfill for the box culvert trench excavation.

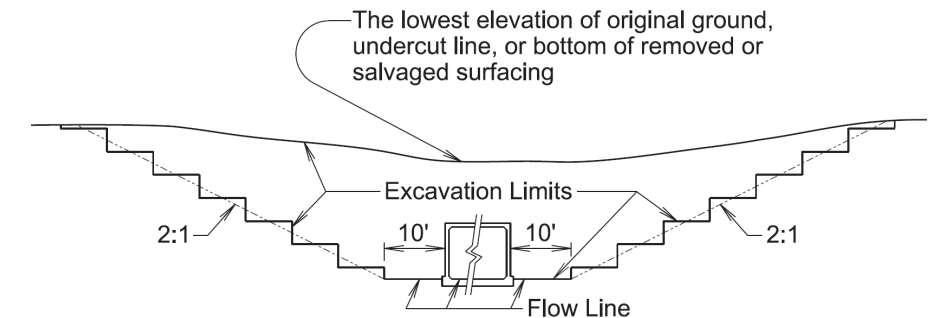
**EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION**

Included in the quantity of "Unclassified Excavation" are 1834 cubic yards of excavation for installation of reinforced concrete box culverts.

All work necessary to excavate a trench for installation of reinforced concrete box culverts including labor, equipment, and incidentals will be incidental to the contract unit price per cubic yard for "Unclassified Excavation." Payment for excavation of reinforced concrete box culverts will be based only on plans

quantity and measurement of these excavation quantities during construction will be not be performed.

The excavation quantities for installation of reinforced concrete box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the reinforced concrete box culverts are based on the limits shown in the drawing below.



**TABLE OF EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION**

Station	Quantity (CuYd)
9+21.37	1834
Total:	1834

**PLACING TOPSOIL**

The thickness will be approximately 6 inches within the project limits.

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

Station	to	Station	Topsoil (CuYd)
6+41 L		10+71 L	233
10+87 L		12+00 L	27
6+41 R		7+88 R	26
8+08 R		9+86 R	119
10+09 R		12+00 R	38
Total:			443

All cost associated with placing the topsoil along areas to be resurfaced will be incidental to the contract unit price per cubic yard for "Placing Topsoil."

The plans quantity for "Placing Topsoil" as shown in the estimate of quantities will be the basis for payment for this item.

**EROSION CONTROL**

The estimated area requiring erosion control is 2,658 square yards. This quantity includes 729 square yards for seeding under erosion control blanket and 200 square yards for seeding and mulching (grass hay or straw of miscellaneous disturbed areas. Mulching will be required



**EROSION CONTROL CONTINUED**

on the inslopes and backslopes in the disturbed areas.

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.

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 estimated area of Erosion Control is calculated from neat line dimensions of disturbed areas. Additional seeding and mulching of disturbed areas from the Contractor's operations are not eligible for additional payment.

Type C Permanent Seed Mixture will consist of the following:

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

**MYCORRHIZAL INOCULUM**

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

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

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture. The mycorrhizal inoculum will be as shown below or an approved equal:

Product

MycApply

Manufacturer

Mycorrhizal Applications, Inc.  
Grants Pass, OR  
Phone: 1-866-476-7800  
[www.mycorrhizae.com](http://www.mycorrhizae.com)

AM 120 Multi Species Blend

Reforestation Technologies Int.  
Gilroy, CA  
Phone: 1-800-784-4769  
[www.reforest.com](http://www.reforest.com)

**EROSION CONTROL WATTLE**

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

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

Erosion control wattles will remain on the project to decompose.

An additional quantity of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

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**

12" Diameter Wattle			
Station	L/R	Diameter (Inch)	Quantity (Ft)
7+12	L	12	15
7+65	L	12	15
8+25	L	12	15
8+82	L	12	15
8+96	L	12	15
9+05	L	12	40
9+40	L	12	35
9+62	L	12	15
9+86	L	12	15
10+47	L	12	15
11+12	L	12	15
10+27	R	12	15
9+73	R	12	15
9+54	R	12	15
9+47	R	12	15
9+41	R	12	15
9+36	R	12	40
9+01	R	12	40
8+95	R	12	15
8+92	R	12	15
Miscellaneous			100
Total			495

**REMOVE EROSION CONTROL WATTLE**

Erosion control wattles will be removed by Union County once vegetation is established.

**HIGH FLOW SILT FENCE**

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

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

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

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

**TABLE OF HIGH FLOW SILT FENCE**

High Flow Silt Fence				
Station		Station	L/R	Quantity (Ft)
8+97	To	9+19	L	55
9+29	To	9+56	L	60
10+39	To	12+00	R	162
9+35	To	9+63	R	65
8+08	To	9+01	R	110
6+43	To	7+79	R	140
Miscellaneous				120
Total				712

**REMOVE SILT FENCE**

Silt fence will be removed by Union County once vegetation is established.





**EROSION CONTROL BLANKET**

Erosion control blanket will be installed at the locations noted in the table and at locations determined by the Engineer during construction. The erosion control blanket provided will be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

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

An additional quantity of Type 2 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

**TABLE OF EROSION CONTROL BLANKET**

Type 2 Erosion Control Blanket					
Station		Station	L/R	Type	Quantity (SqYd)
6+41	To	10+71	L	2	1398
10+87	To	12+00	L	2	161
6+41	To	7+88	R	2	157
8+08	To	9+86	R	2	713
10+09	To	12+00	R	2	229
Miscellaneous					100
Total					2758

**SHAPING FOR EROSION CONTROL BLANKET**

The ditches will be shaped for the erosion control blanket as specified on Standard Plate 734.01.

**TABLE OF SHAPING FOR EROSION CONTROL BLANKET**

Station	Location	(Ft)
6+41 to 7+87	Rt	143
6+41 to 10+70	Lt	430
8+07 to 9+93	Rt	183
10+08 to 12+00	Rt	190
10+86 to 12+00	Lt	114
Total:		1060

**GENERAL TRAFFIC CONTROL**

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

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

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

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

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

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

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

**CORRUGATED METAL PIPE**

Corrugated metal pipes will have 2 3/8-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 elbows, tees, crosses, wyes, and ends will match the thickest gauge of corrugated metal pipe it is connected to.

**TABLE OF CONSTRUCTION STAKING**

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking		*Sets of Stakes	**Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
					Length (Mile)	Lane Factor					
311th (2 Lanes Gravel)	6+41.86	12+00	2	558	0.1	1	1	0.1	0.1	0.1	1
Totals:								0.1	0.1	0.1	1

- \* 1 = Blue Top Stakes Only (Gravel Surfacing)
- 2 = Blue Top and Paving Hub Stakes (PCC Pavement)

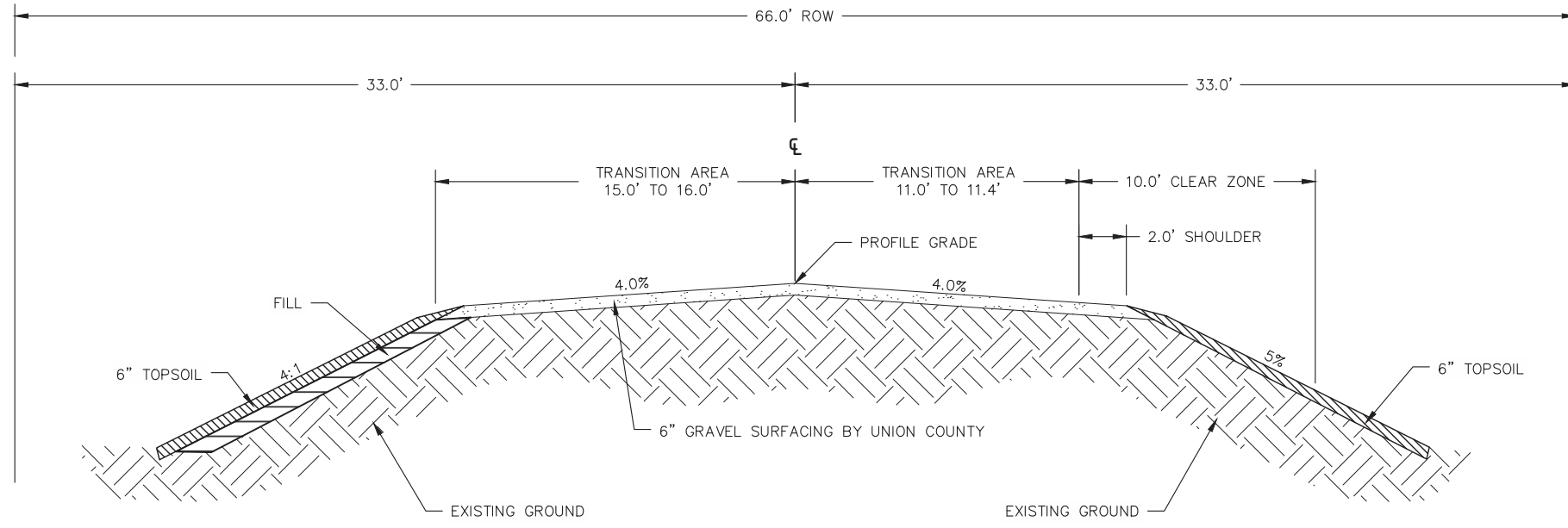
\*\* Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)



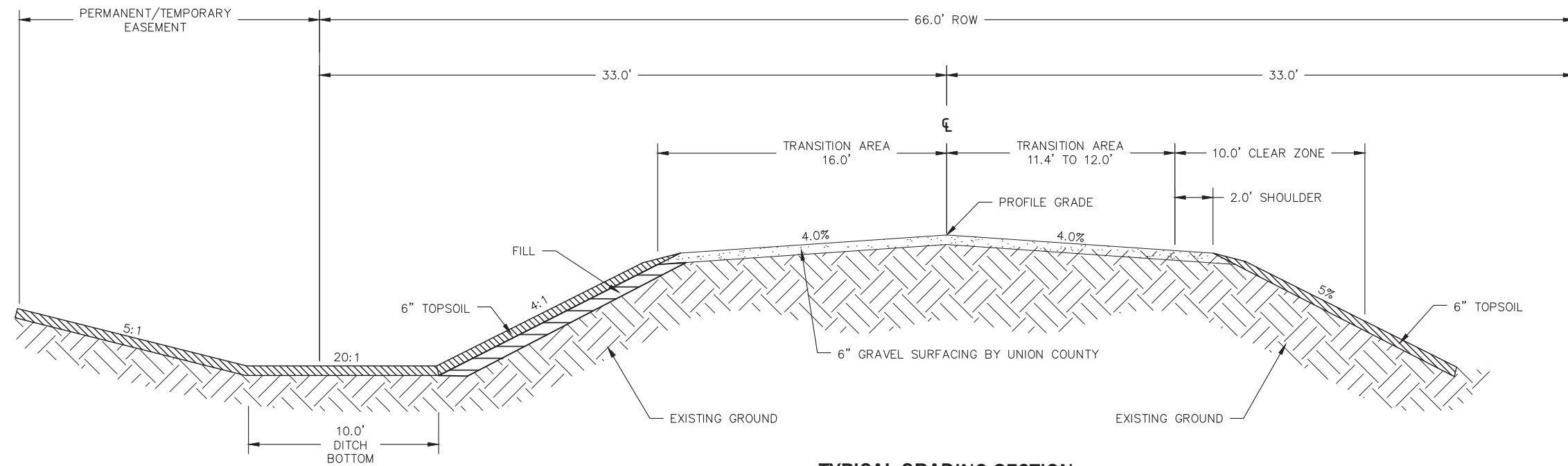
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	8	36

# TYPICAL SECTION

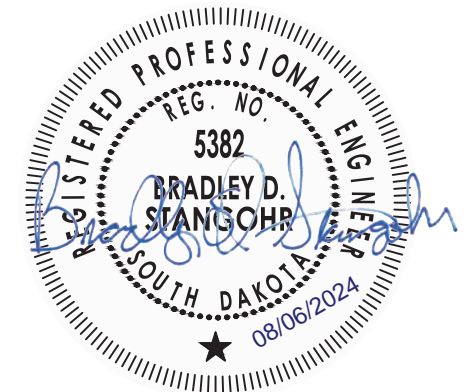
REVISED 8/5/2024  
FOR BIDDING PURPOSES ONLY



**TYPICAL GRADING SECTION**  
STA. 6+41.86 to STA. 7+35.00



**TYPICAL GRADING SECTION**  
STA. 7+35.00 to STA. 8+75.76  
(FIELD APPROACH ON RIGHT SIDE FROM STA. 7+75.00 TO STA. 8+23.00)

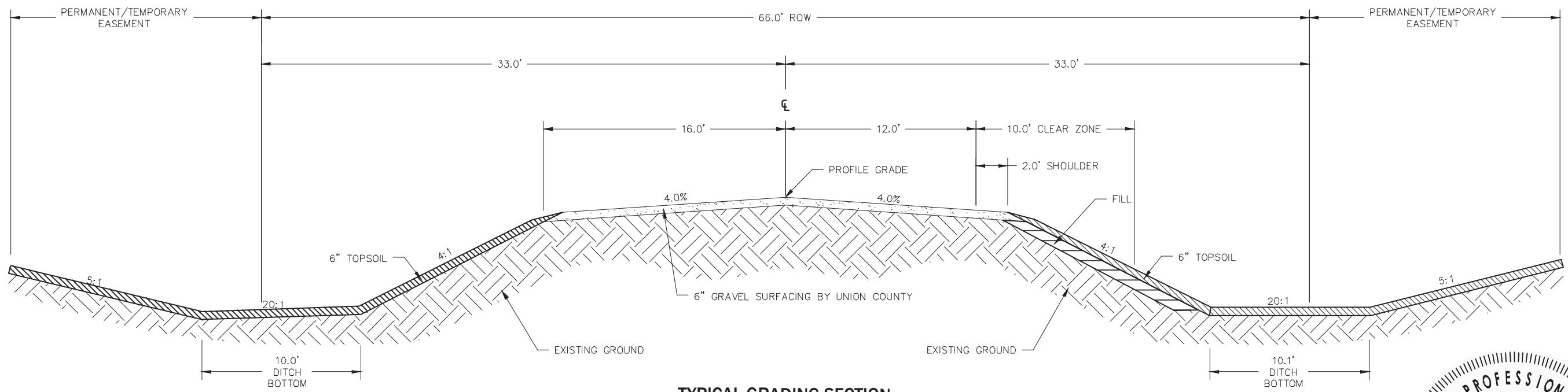




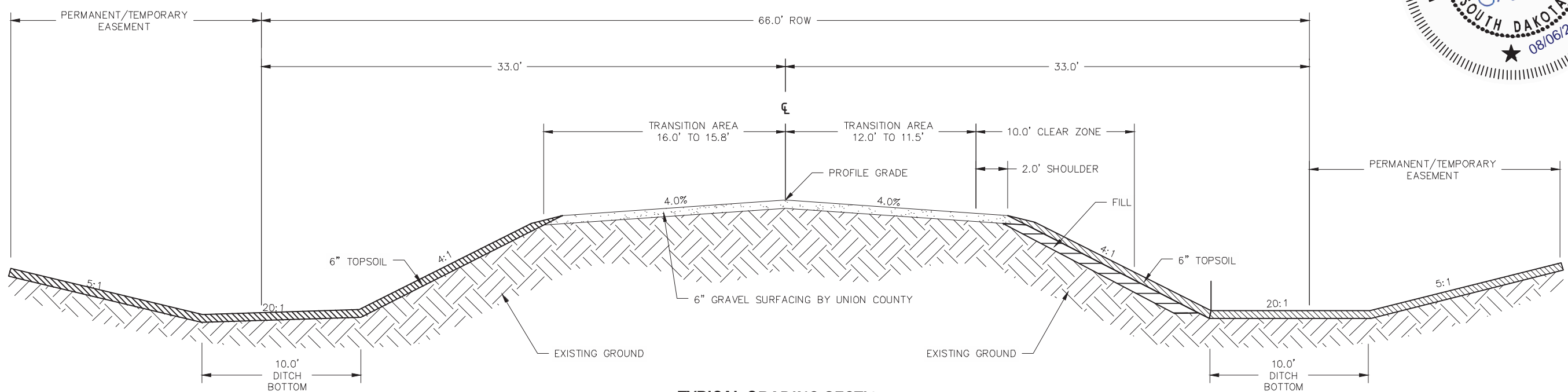
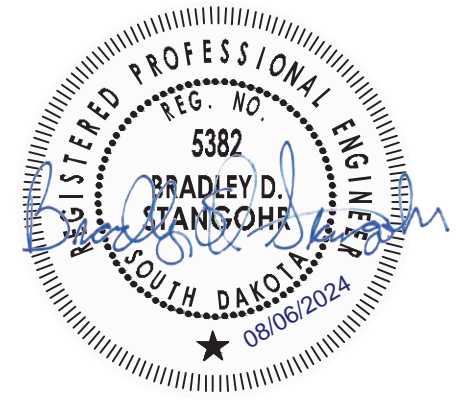
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	9	36

# TYPICAL SECTION

FOR BIDDING PURPOSES ONLY



**TYPICAL GRADING SECTION**  
STA. 8+75.76 TO STA. 9+66.97



**TYPICAL GRADING SECTION**  
STA. 9+66.97 to STA. 10+23.63  
(FIELD APPROACH ON RIGHT SIDE  
FROM STA. 9+72.66 TO STA. 10+23.63)



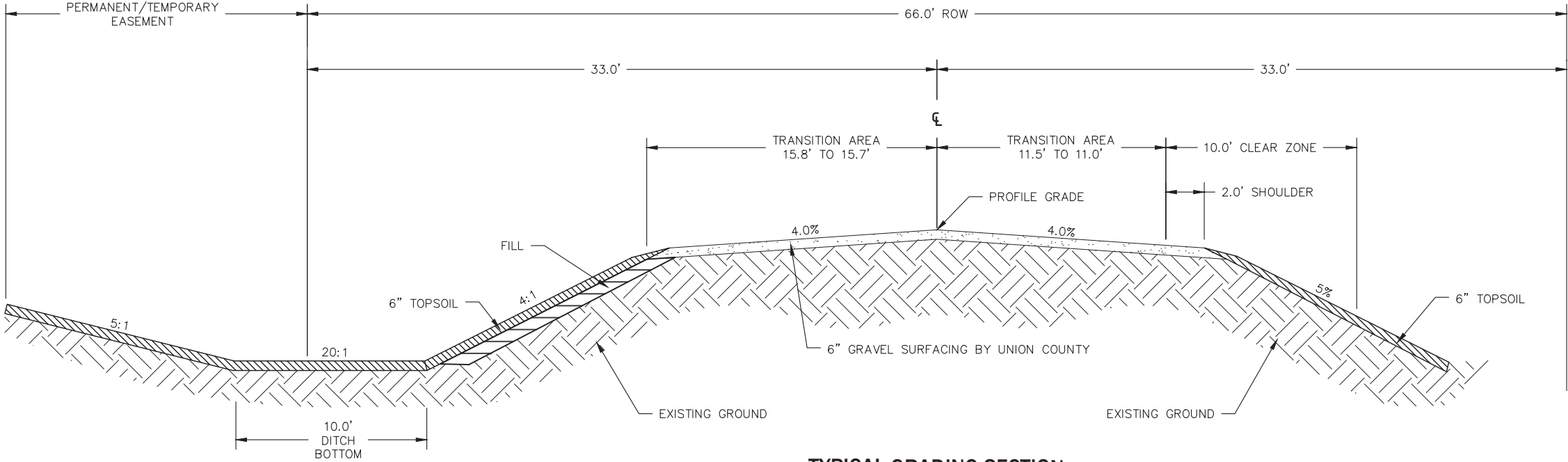
We listen. We solve.

# TYPICAL SECTION

FOR BIDDING PURPOSES ONLY

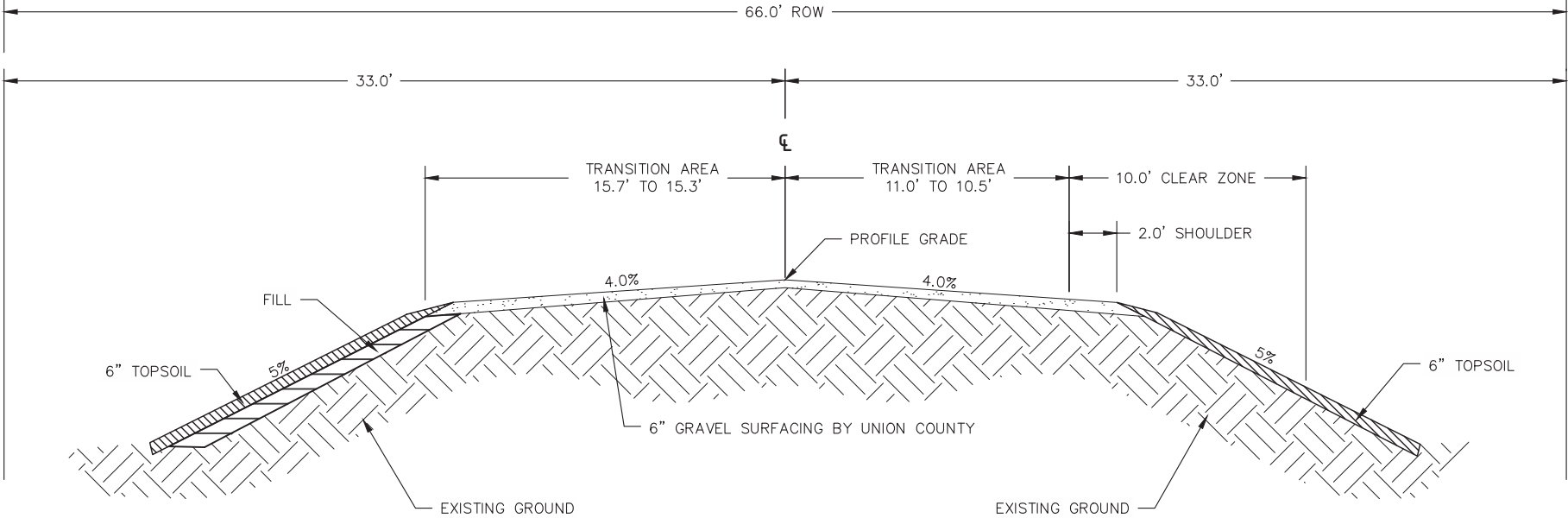
REVISED 8/5/2024

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	10	36



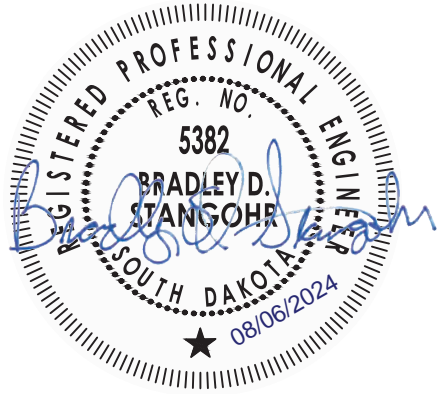
## TYPICAL GRADING SECTION

STA. 10+23.63 to STA. 11+01.83  
(FIELD APPROACH ON LEFT SIDE FROM  
STA. 10+55.81 TO STA. 11+01.83)



## TYPICAL GRADING SECTION

STA. 11+01.83 to STA. 12+00



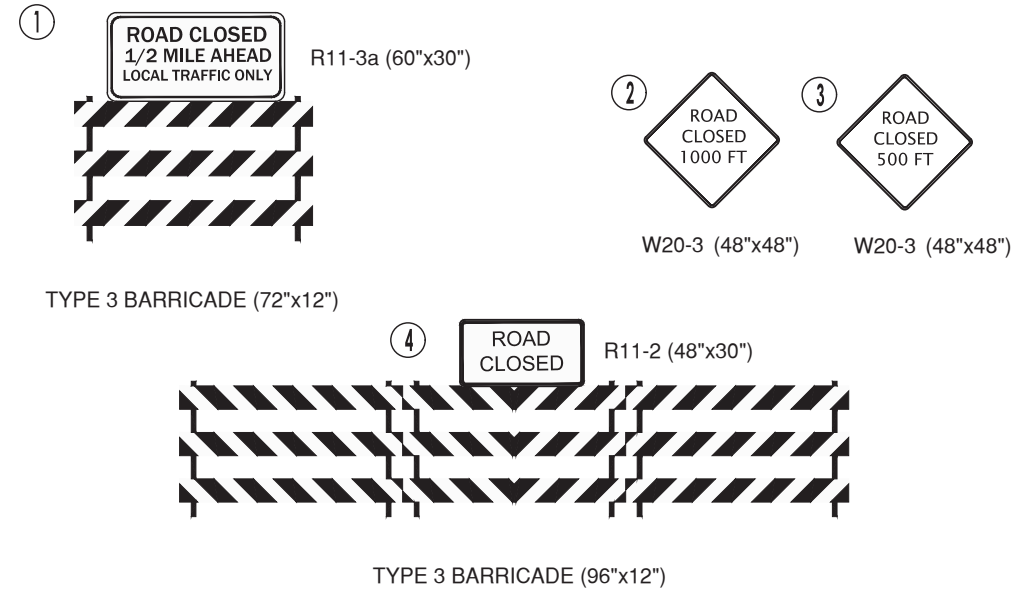
We listen. We solve.



# TRAFFIC CONTROL

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	11	36



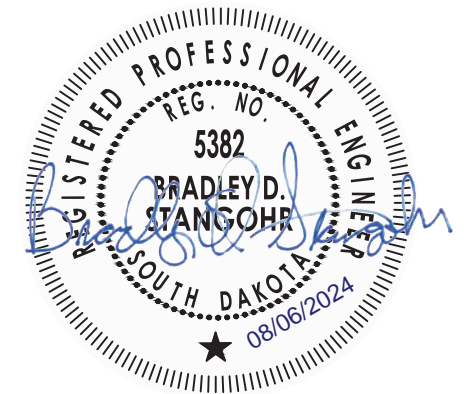
## ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

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 1/2 MILES AHEAD LOCAL TRAFFIC ONLY	2	60" x 30"	12.5	25.0
W20-3	ROAD CLOSED AHEAD	4	48" x 48"	16.0	64.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					<b>109.0</b>

T 93 N

## TYPE 3 BARRICADES

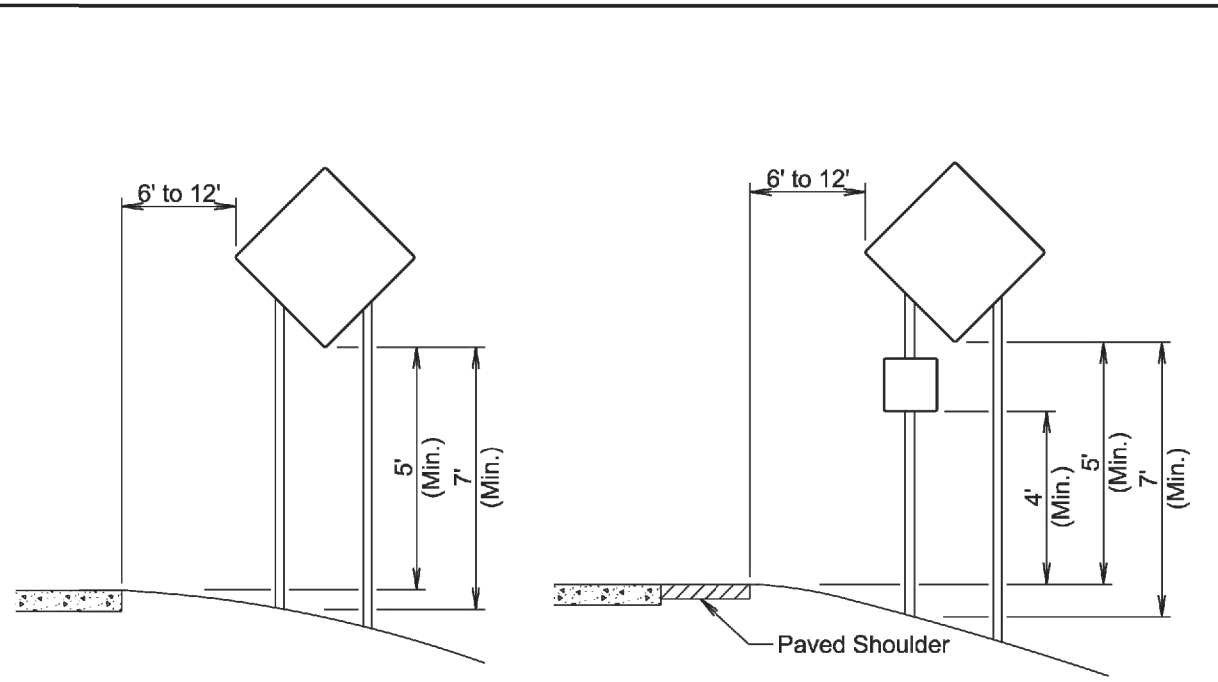
ITEM DESCRIPTION	QUANTITY
Type 3 Barricade	8 Each



Ulteig

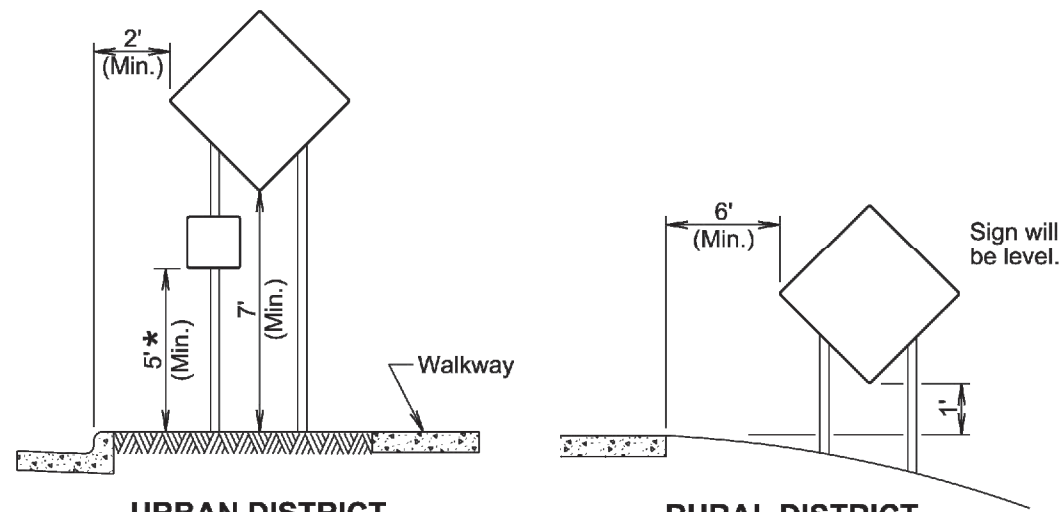
We listen. We solve.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	12	36



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



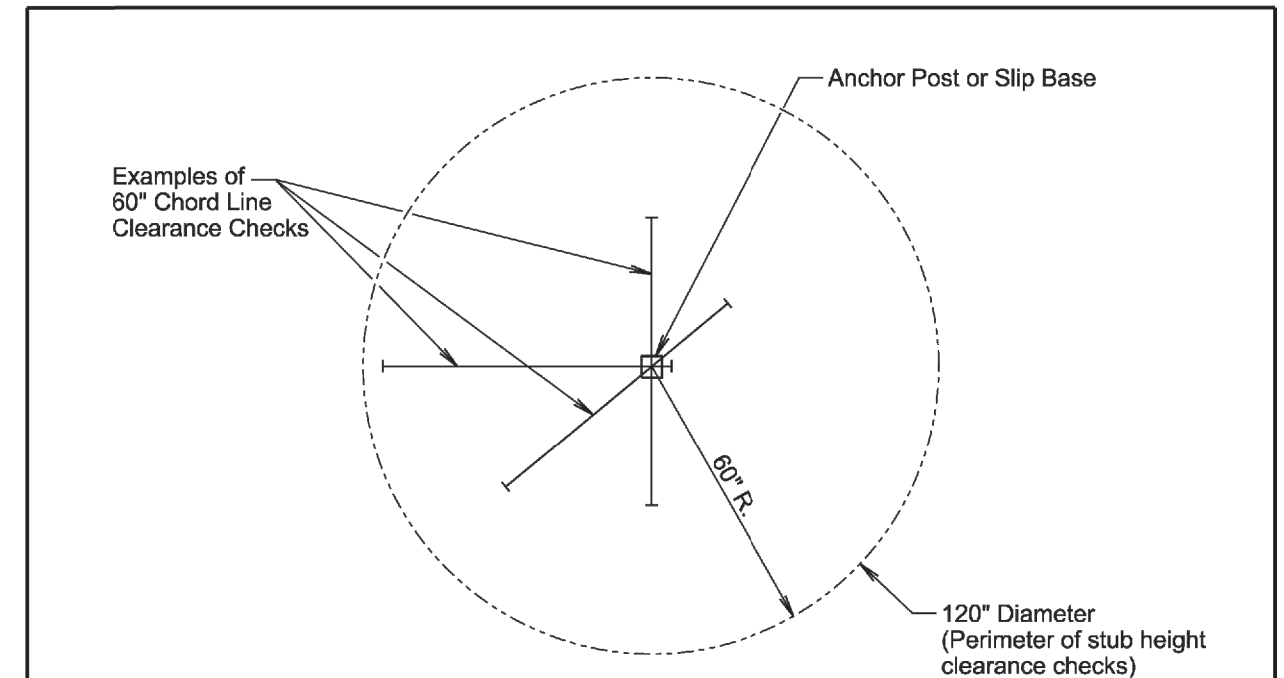
URBAN DISTRICT

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

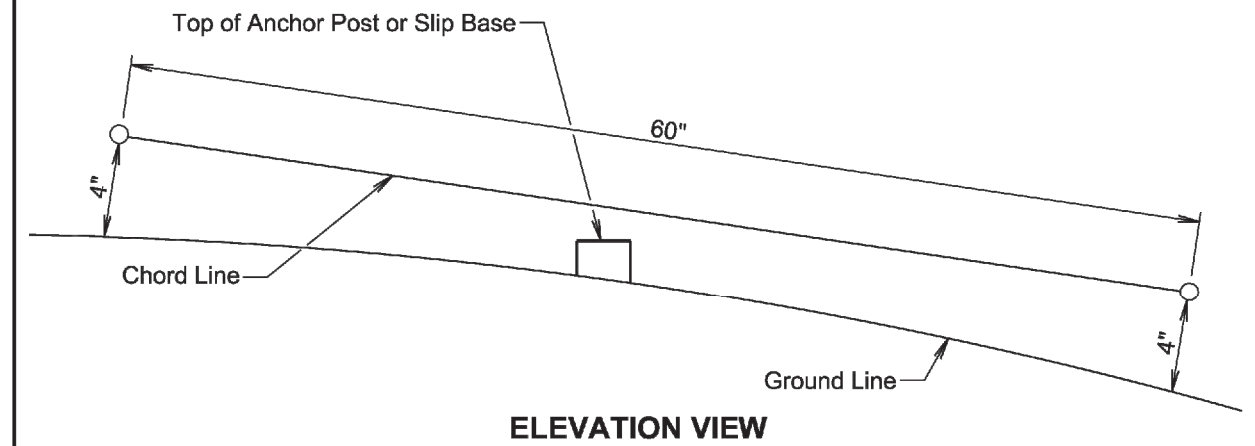
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

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





# EROSION CONTROL

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	13	36

### LEGEND

- EROSION CONTROL BLANKET
- CLASS B RIPRAP
- TEMPORARY CONSTRUCTION EASEMENT
- HIGH FLOW SILT FENCE
- 12" DIAMETER EROSION CONTROL WATTLE

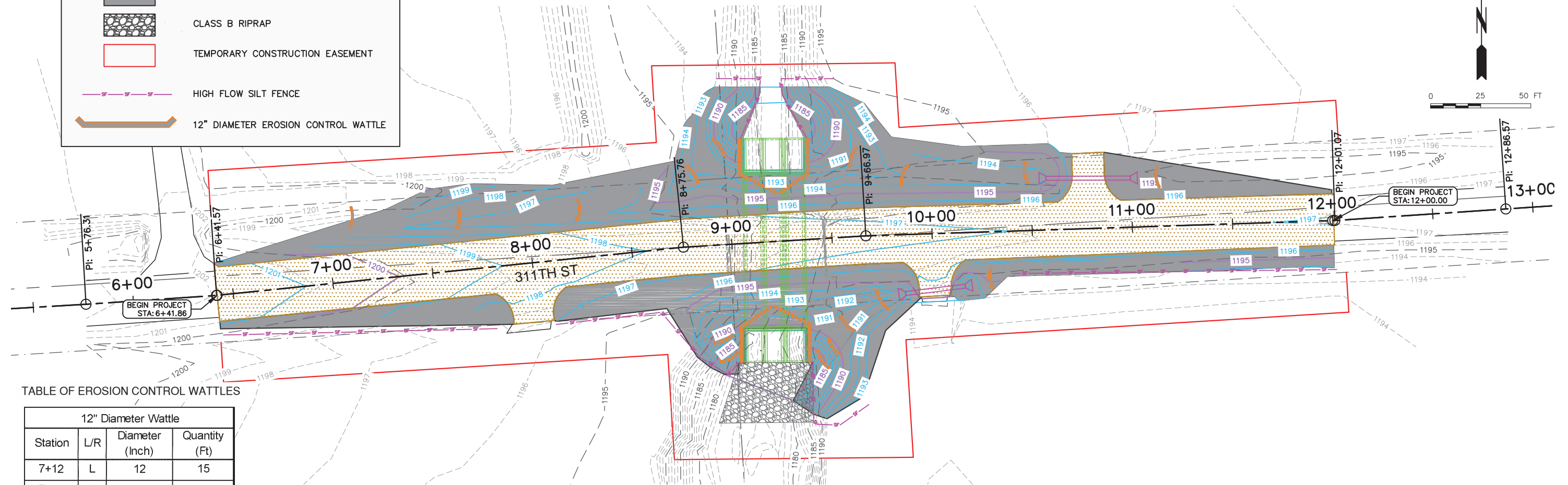


TABLE OF EROSION CONTROL WATTLES

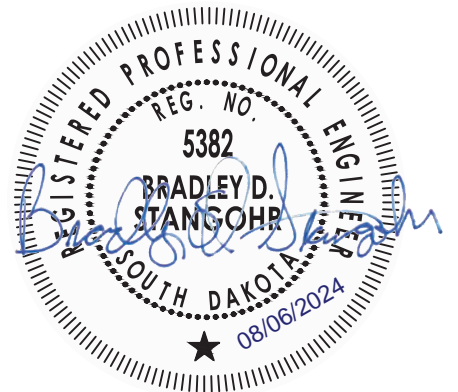
12" Diameter Wattle			
Station	L/R	Diameter (Inch)	Quantity (Ft)
7+12	L	12	15
7+65	L	12	15
8+25	L	12	15
8+82	L	12	15
8+96	L	12	15
9+05	L	12	40
9+40	L	12	35
9+62	L	12	15
9+86	L	12	15
10+47	L	12	15
11+12	L	12	15
10+27	R	12	15
9+73	R	12	15
9+54	R	12	15
9+47	R	12	15
9+41	R	12	15
9+36	R	12	40
9+01	R	12	40
8+95	R	12	15
8+92	R	12	15
Miscellaneous			100
Total			495

TABLE OF EROSION CONTROL BLANKET

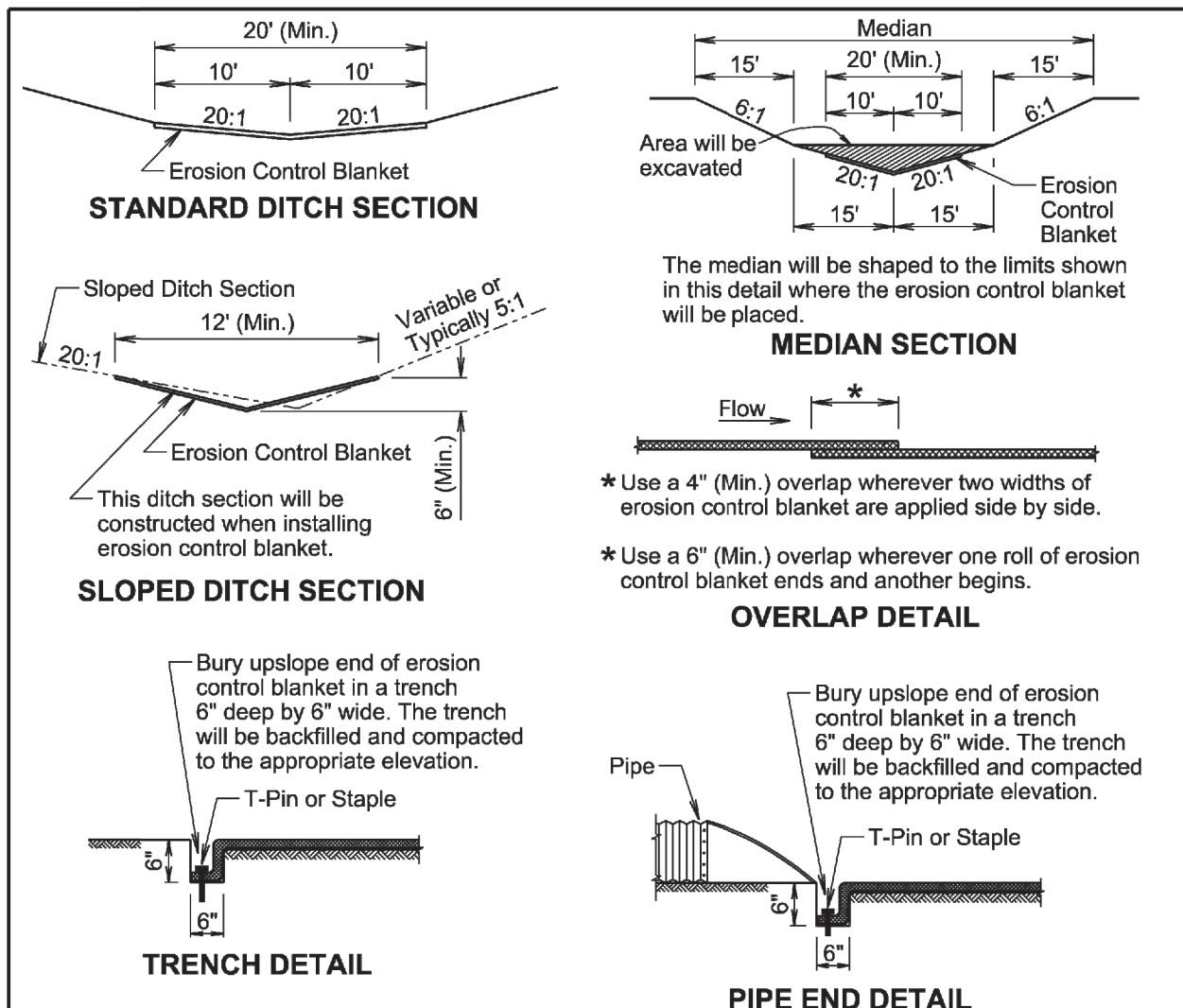
Type 2 Erosion Control Blanket					
Station		Station	L/R	Type	Quantity (SqYd)
6+41	To	10+70	L	2	1398
6+41	To	7+87	R	2	157
8+07	To	9+93	R	2	713
10+08	To	12+00	R	2	229
10+86	To	12+00	L	2	161
Miscellaneous					100
Total					2758

TABLE OF HIGH FLOW SILT FENCE

High Flow Silt Fence			
Station		Station	Quantity (Ft)
8+97	To	9+19	55
9+29	To	9+56	60
10+39	To	12+00	162
9+35	To	9+63	65
8+08	To	9+01	110
6+43	To	7+79	140
Miscellaneous			120
Total			712



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	14	36



**GENERAL NOTES:**

Prior to placement of the erosion control blanket, the areas will be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket will be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket will be buried in a trench 6" wide by 6" deep. There will be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

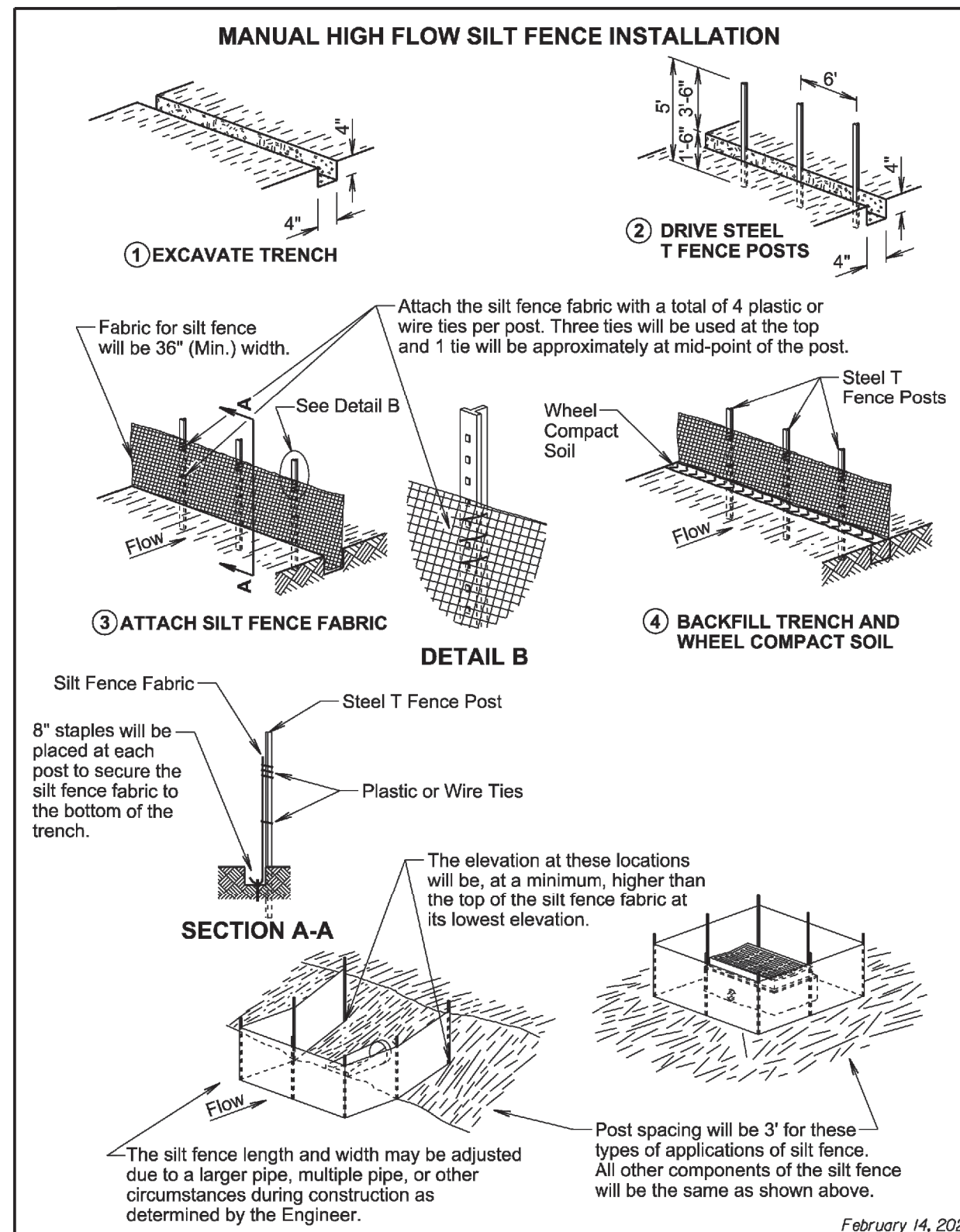
The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor will fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections will be shaped when installing the erosion control blanket. All costs for shaping the ditches will be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

February 14, 2020

Published Date: 2025	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER
			734.01
			Sheet 1 of 1



February 14, 2020

Published Date: 2025	S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER
			734.05
			Sheet 1 of 2





STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	15	36

### MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION

**Operation**

Roll of Silt Fence Fabric

Fabric Above Ground

Slicing Blade (3/4" Width)

8" to 12" Sliced in Fabric Depth

Horizontal Chisel Point (3" Width)

6'

3'-6"

1'-6"

WHEEL COMPACT SOIL

DRIVE STEEL T FENCE POSTS

**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.

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

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

See Detail B

Steel T Fence Post

Silt Fence Fabric

Plastic or Wire Ties

Wheel Compacted Areas

Flow

**3** ATTACH SILT FENCE FABRIC

**DETAIL B**

**SECTION A-A**

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

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.

The radius of the silt fence will be the minimum capable by the slicing machine. The post spacing will be 3' for these types of applications of silt fence. All the other components of the silt fence will be the same as shown above.

**GENERAL NOTE:**

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

February 14, 2020

S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER
		734.05

Published Date: 2025

Sheet 2 of 2

Spacing Varies (See Table)

Flow

See Detail B

Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40

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

Excavated Material from Trench

2" to 3"

3" to 5" Trench

Flow

Wood Stake

9" (Min.)

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

6"

6"

Ends of Erosion Control Wattles

Wood Stake

**DETAIL C**  
(See General Notes)

Point A

Point B

Point A

Flow

Point A

Point B

Wood Stake (Typ.)

**PLAN VIEW**  
(Ditch Installation)

Point A

Point B

Point A

Flow

Wood Stake

**SECTION A-A**

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

February 14, 2020

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER
		734.06

Published Date: 2025

Sheet 1 of 2



# EROSION CONTROL

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	16	36

**GENERAL NOTES:**

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

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

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

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

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

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

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

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

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

February 14, 2020

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



**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** 1.6 Acres
- **5.3 (3b): Total Area to be Disturbed** 1.0 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time** 1.0 Acres
- **5.3 (3d): Existing Vegetative Cover (%)** 70%
- **5.3 (3d): Description of Vegetative Cover** Native Grasses and Crop Lands
- **5.3 (3e): Soil Properties:** USDA-NRCS Soil Series Classification Ma: McPaul Silt Loam
- **5.3 (3f): Name of Receiving Water Body/Bodies** East Union Creek
- **5.3 (3g): Location of Construction Support Activity Areas**

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

The Contractor will enter the Estimated Start Date.

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

**5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES FOR BIDDING PURPOSES ONLY**

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

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

Description	Estimated Start Date
<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 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 checked="" 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.

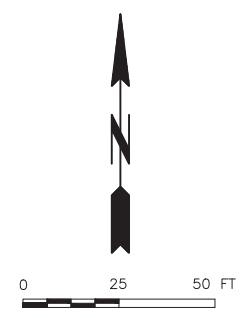
When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the 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.



# SURVEY DATA AND EASEMENTS

**LEGEND**

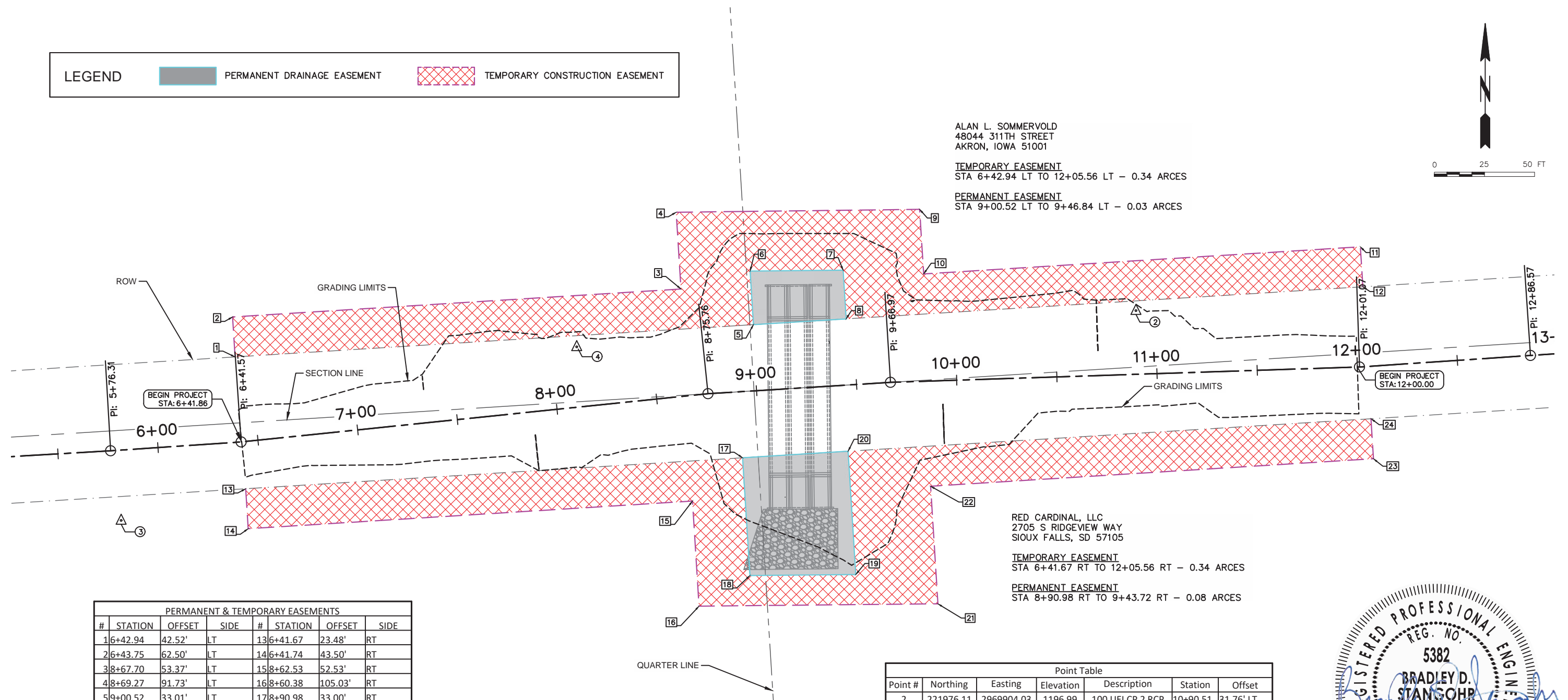
- PERMANENT DRAINAGE EASEMENT
- TEMPORARY CONSTRUCTION EASEMENT



ALAN L. SOMMERVOLD  
48044 311TH STREET  
AKRON, IOWA 51001

TEMPORARY EASEMENT  
STA 6+42.94 LT TO 12+05.56 LT - 0.34 ARCSES

PERMANENT EASEMENT  
STA 9+00.52 LT TO 9+46.84 LT - 0.03 ARCSES



RED CARDINAL, LLC  
2705 S RIDGEVIEW WAY  
SIOUX FALLS, SD 57105

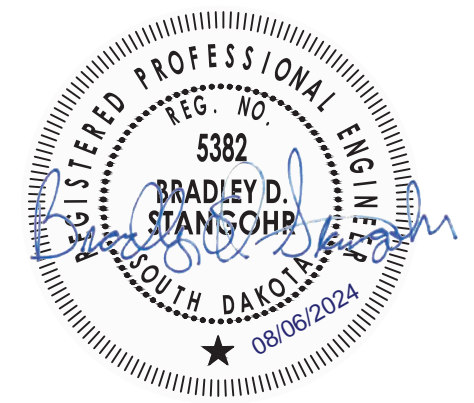
TEMPORARY EASEMENT  
STA 6+41.67 RT TO 12+05.56 RT - 0.34 ARCSES

PERMANENT EASEMENT  
STA 8+90.98 RT TO 9+43.72 RT - 0.08 ARCSES

#	STATION	OFFSET	SIDE	#	STATION	OFFSET	SIDE
1	6+42.94	42.52'	LT	13	6+41.67	23.48'	RT
2	6+43.75	62.50'	LT	14	6+41.74	43.50'	RT
3	8+67.70	53.37'	LT	15	8+62.53	52.53'	RT
4	8+69.27	91.73'	LT	16	8+60.38	105.03'	RT
5	9+00.52	33.01'	LT	17	8+90.98	33.00'	RT
6	9+00.52	59.78'	LT	18	8+90.98	91.91'	RT
7	9+46.84	57.35'	LT	19	9+43.71	94.69'	RT
8	9+46.84	33.00'	LT	20	9+43.72	33.00'	RT
9	9+84.33	85.85'	LT	21	9+86.99	111.27'	RT
10	9+85.28	53.55'	LT	22	9+85.26	52.49'	RT
11	12+05.56	59.84'	LT	23	12+04.93	46.16'	RT
12	12+05.45	39.84'	LT	24	12+05.04	26.20'	RT

POINT TYPE	LENGTH	STATION	DIRECTION	NORTHING (y)	EASTING (x)
START		6+41.57		2969457.6155	221910.5757
	234.2		N84°05' 57.32" E		
	91.2	8+75.76	N88°26' 25.11" E	2969690.5690	221934.6522
		9+66.97		2969781.6012	221940.3152
	234.1		N88°07' 19.58" E		
END		12+01.07		221943.6360	2969835.8845

Point #	Northing	Easting	Elevation	Description	Station	Offset
2	221976.11	2969904.03	1196.99	100 UEI CP 2 RCP	10+90.51	31.76' LT
3	221871.39	2969397.75	1202.22	100 UEI CP 3 RCP	5+79.18	35.03' RT
4	221958.05	2969625.04	1200.03	100 UEI CP 4 BM	8+12.99	30.01' LT



# PLAN & PROFILE

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	22	36

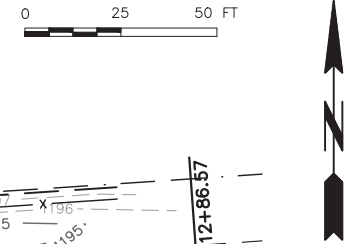
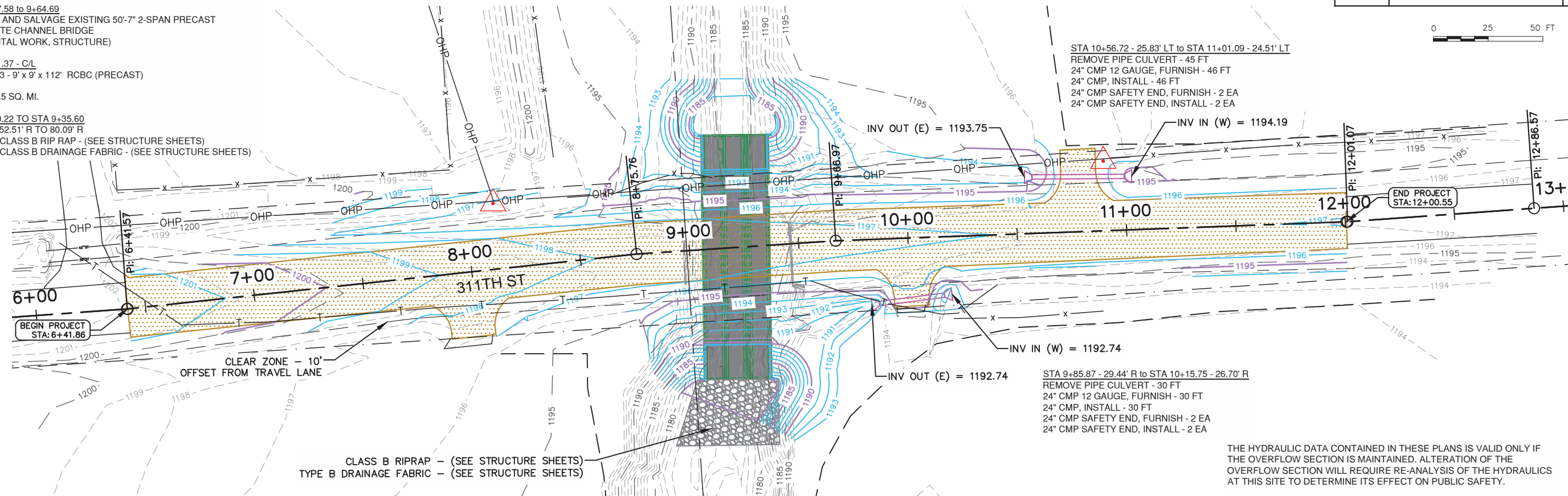
STA 8+87.58 to 9+64.69  
REMOVE AND SALVAGE EXISTING 50'-7" 2-SPAN PRECAST CONCRETE CHANNEL BRIDGE (INCIDENTAL WORK, STRUCTURE)

STA 9+21.37 - C/L  
INSTALL 3 - 9' x 9' x 112" RCBC (PRECAST)  
3° SKEW  
D.A. = 16.5 SQ. MI.

STA 9+00.22 TO STA 9+35.60  
OFFSET 52.51' R TO 80.09' R  
INSTALL CLASS B RIP RAP - (SEE STRUCTURE SHEETS)  
INSTALL CLASS B DRAINAGE FABRIC - (SEE STRUCTURE SHEETS)

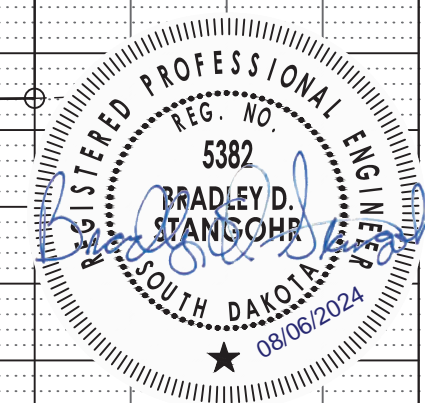
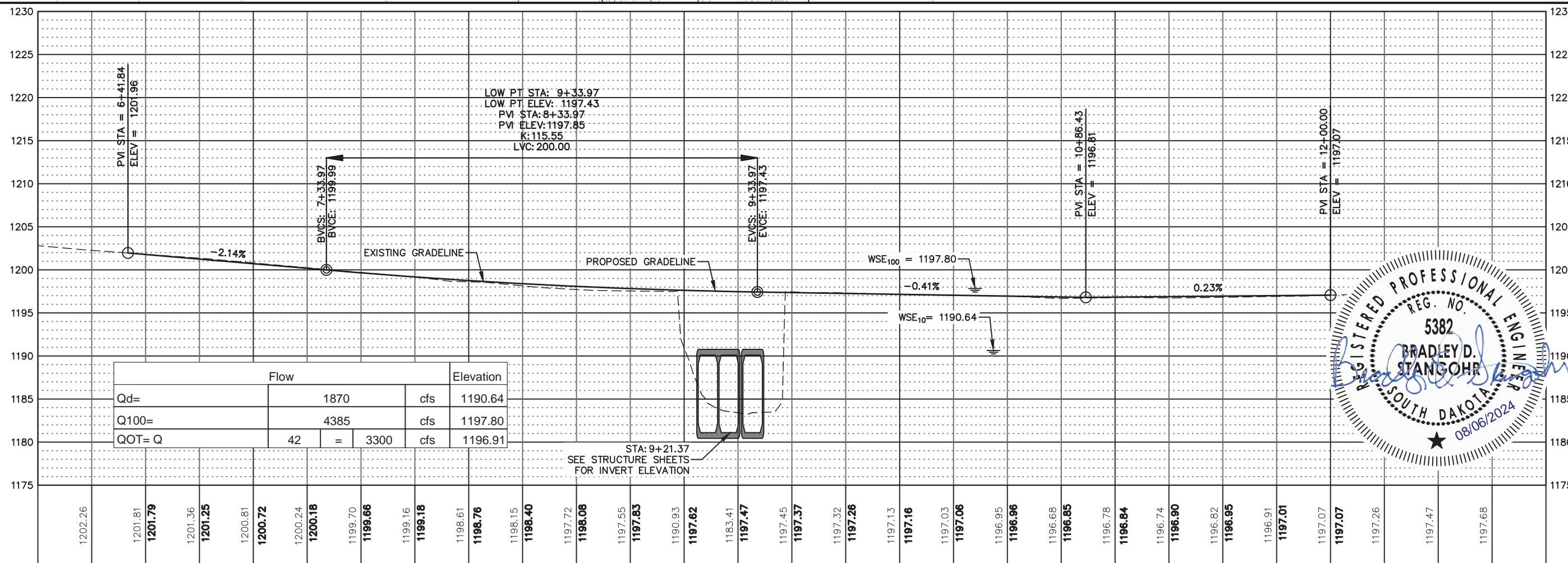
STA 10+56.72 - 25.83' LT to STA 11+01.09 - 24.51' LT  
REMOVE PIPE CULVERT - 45 FT  
24" CMP 12 GAUGE, FURNISH - 46 FT  
24" CMP, INSTALL - 46 FT  
24" CMP SAFETY END, FURNISH - 2 EA  
24" CMP SAFETY END, INSTALL - 2 EA

STA 9+85.87 - 29.44' R to STA 10+15.75 - 26.70' R  
REMOVE PIPE CULVERT - 30 FT  
24" CMP 12 GAUGE, FURNISH - 30 FT  
24" CMP, INSTALL - 30 FT  
24" CMP SAFETY END, FURNISH - 2 EA  
24" CMP SAFETY END, INSTALL - 2 EA

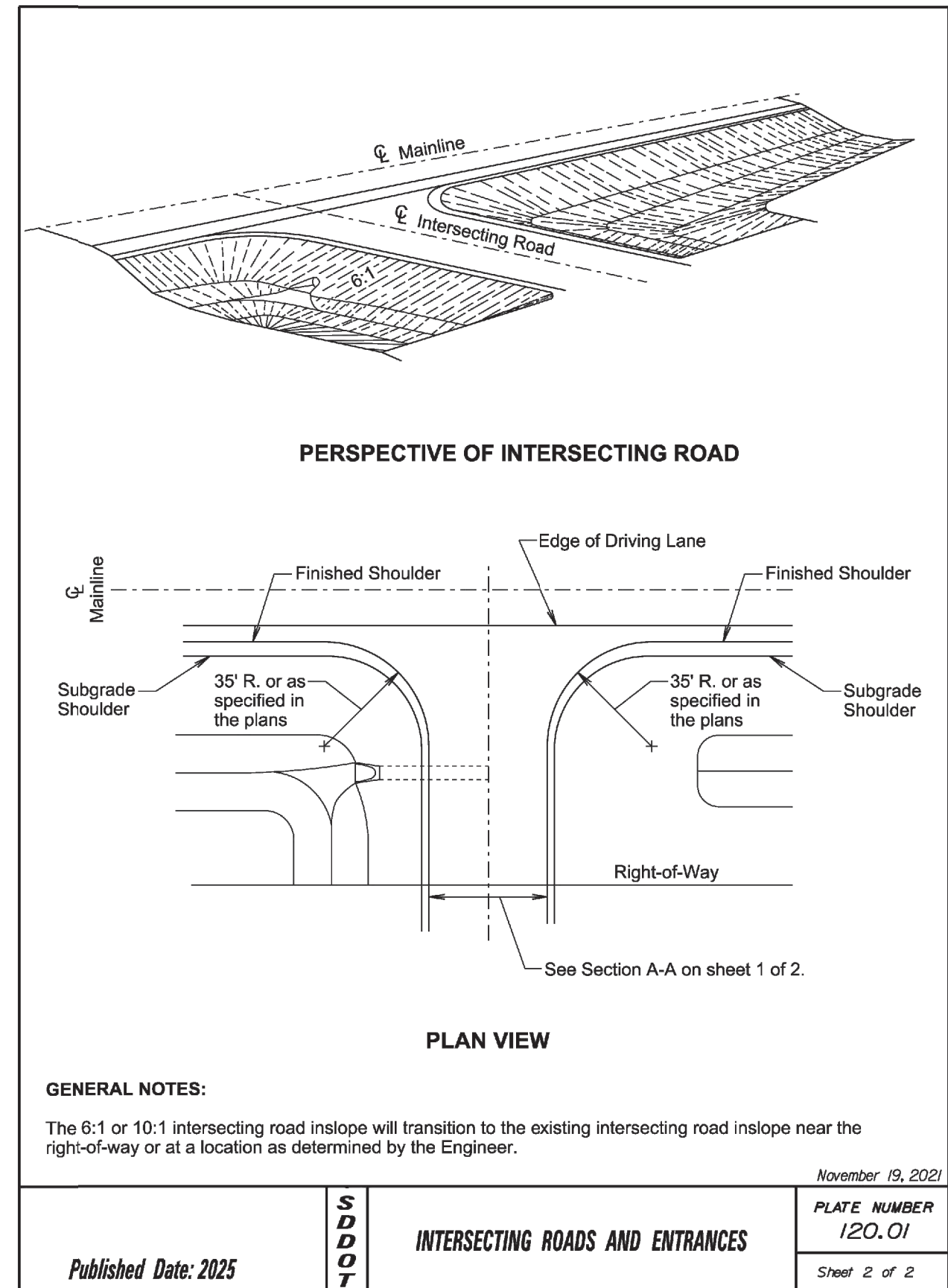
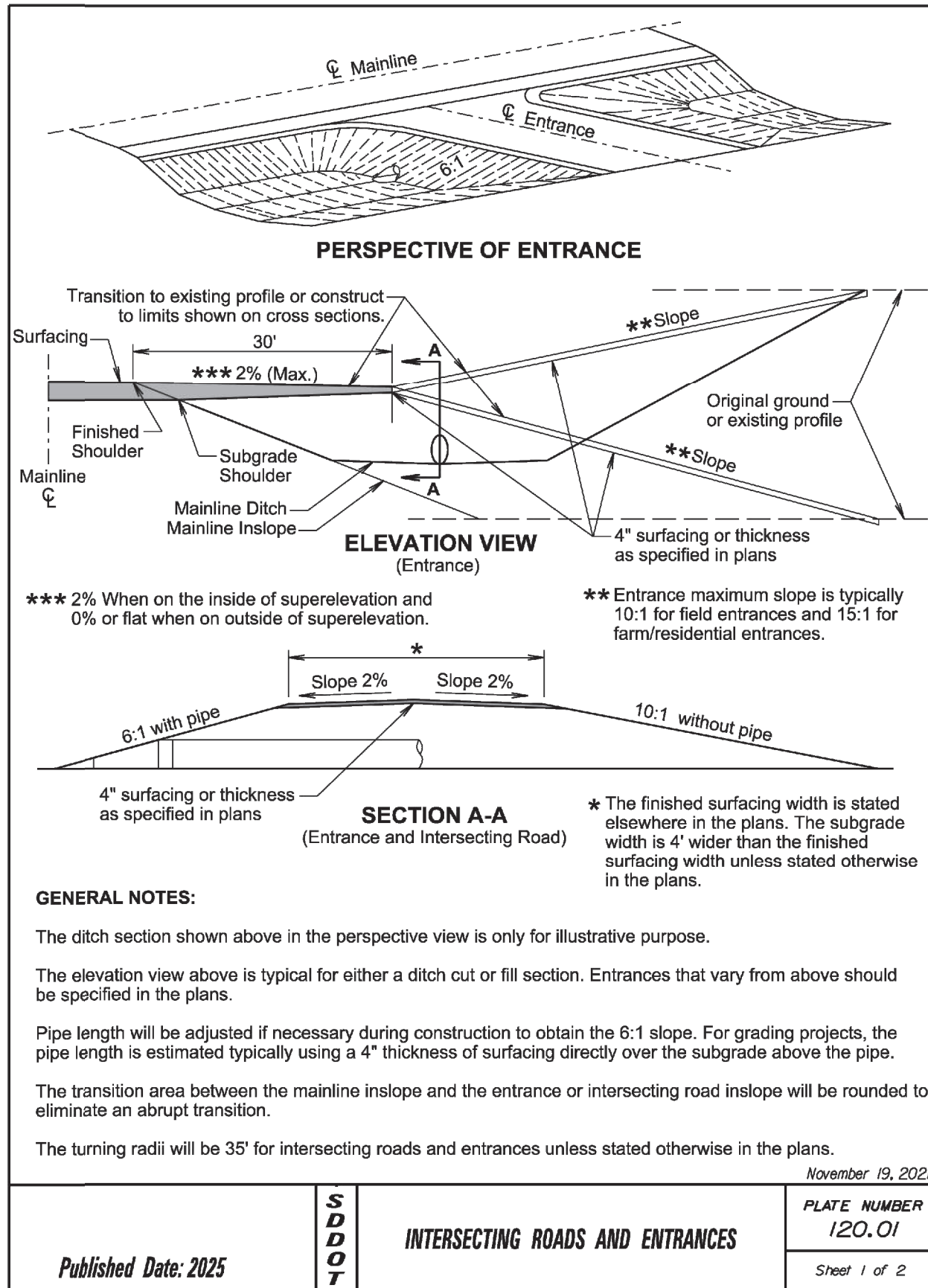


CLASS B RIPRAP - (SEE STRUCTURE SHEETS)  
TYPE B DRAINAGE FABRIC - (SEE STRUCTURE SHEETS)

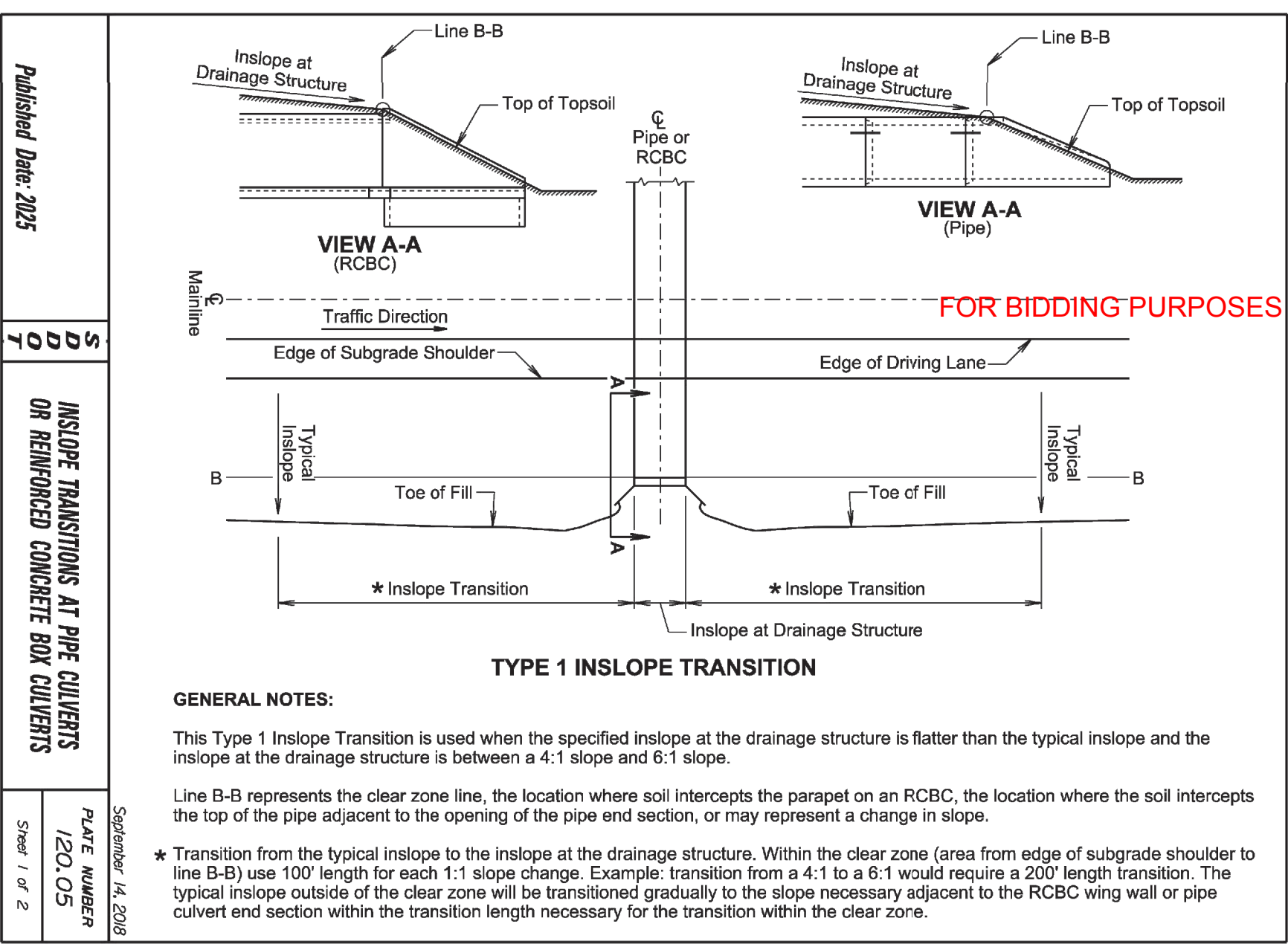
THE HYDRAULIC DATA CONTAINED IN THESE PLANS IS VALID ONLY IF THE OVERFLOW SECTION IS MAINTAINED. ALTERATION OF THE OVERFLOW SECTION WILL REQUIRE RE-ANALYSIS OF THE HYDRAULICS AT THIS SITE TO DETERMINE ITS EFFECT ON PUBLIC SAFETY.



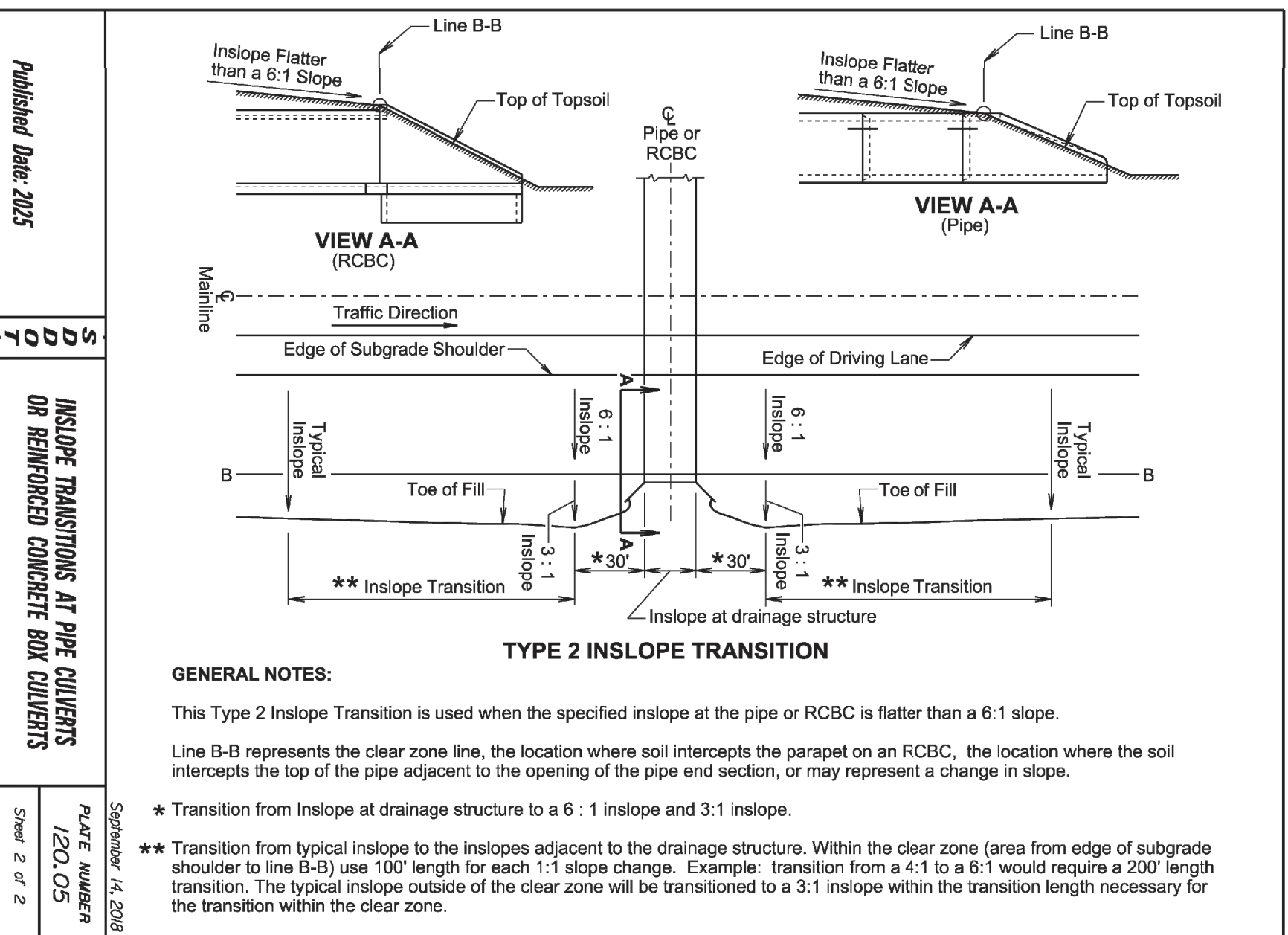
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	23	36







FOR BIDDING PURPOSES ONLY



Published Date: 2025

SD DOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

September 14, 2018

PLATE NUMBER 120.05

Sheet 1 of 2

Published Date: 2025

SD DOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

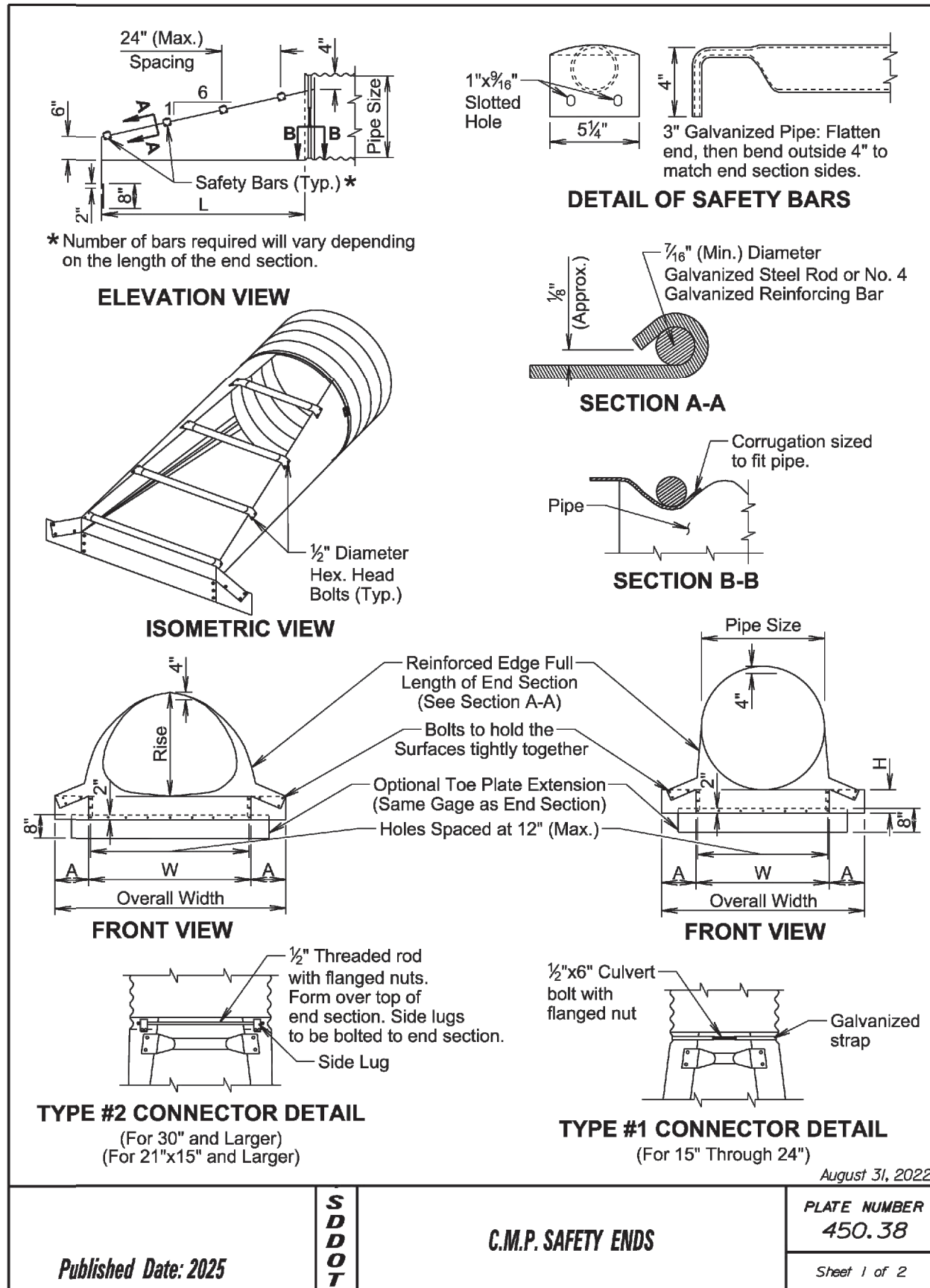
September 14, 2018

PLATE NUMBER 120.05

Sheet 2 of 2

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	24	36





**ARCH C.M.P. SAFETY ENDS**

Equiv. Dia. (Inch)	(Inches)		(Min.) Thick.	Dimensions (Inches)			L Dimensions			
	Span	Rise		Inch	Gage	A	H	W	Overall Width	Slope
18	21	15	.064	16	8	6	27	43	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	38	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

**CIRCULAR C.M.P. SAFETY ENDS**

Pipe Dia. (Inch)	(Min.) Thick.	Dimensions (Inches)			L Dimensions			
		Inch	Gage	A	H	W	Overall Width	Slope
15	.064	16	8	6	21	37	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

**GENERAL NOTES:**

Safety bars will be provided when specified in the plans.

Safety ends will be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment will be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter will be made with Type #1 straps. All other sizes will be attached with Type #2 rods and lugs.

When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with <sup>3</sup>/<sub>8</sub>" diameter galvanized bolts. Steel for toe plate extension will be same gauge as end section. Dimensions will be overall width less 6" by 8" high.

Installation will be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of safety ends will be incidental to the bid items for the various sizes of safety ends.

Published Date: 2025	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 of 2

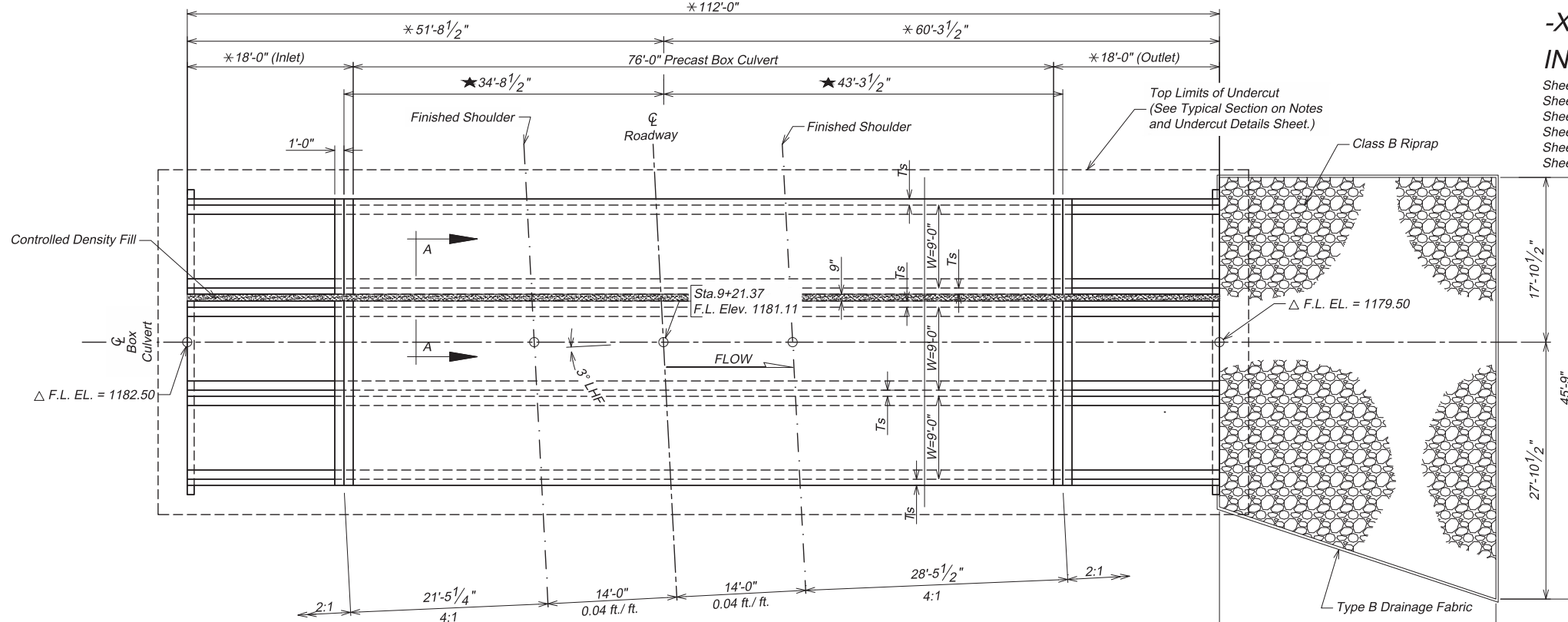


The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

- \* Dimension may vary with fabricator and/or Installation. See Shop Plans for actual length.
- ★ Minimum distance to satisfy clear zone/fill slope.
- △ Based on dimensions shown.
- All dimensions shown are based on 8" thick top slab, bottom slab, and walls.

REVISED 8/5/2024  
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	26	36



**INDEX OF CULVERT SHEETS**

- Sheet No. 1 General Drawing and Quantities
- Sheet No. 2 Notes and Undercut Details (A)
- Sheet No. 3 Notes and Undercut Details (B)
- Sheet No. 4 Standard Plate No's. 460.02 and 560.01
- Sheet No. 5 Standard Plate No's. 560.10 and 560.11
- Sheet No. 6 Standard Plate No. 620.16

**HYDRAULIC DATA**

$Q_d$	1870 cfs
$A_d$	237 sq.ft.
$V_d$	7.9 fps
$Q_p$	1870 cfs
$Q_{100}$	4,385 cfs
$Q_{OT}$	3,300 cfs
$V_{max}$	15.5 fps

$Q_d$  = Design discharge for the proposed culvert based on 10 year frequency. El. 1190.64.

$Q_{OT}$  = Overtopping discharge and frequency 42 year recurrence interval. El. 1196.91. Location Sta. 10+86±.

$Q_p$  = 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. 1197.80.

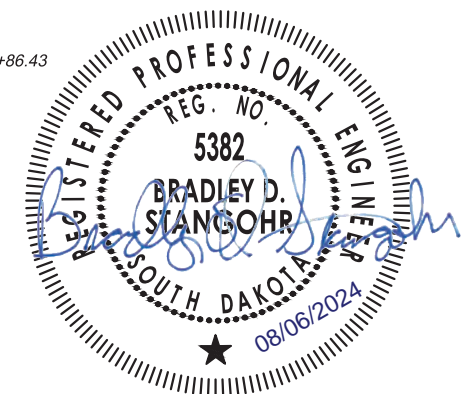
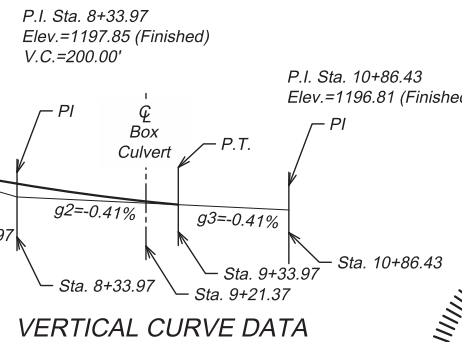
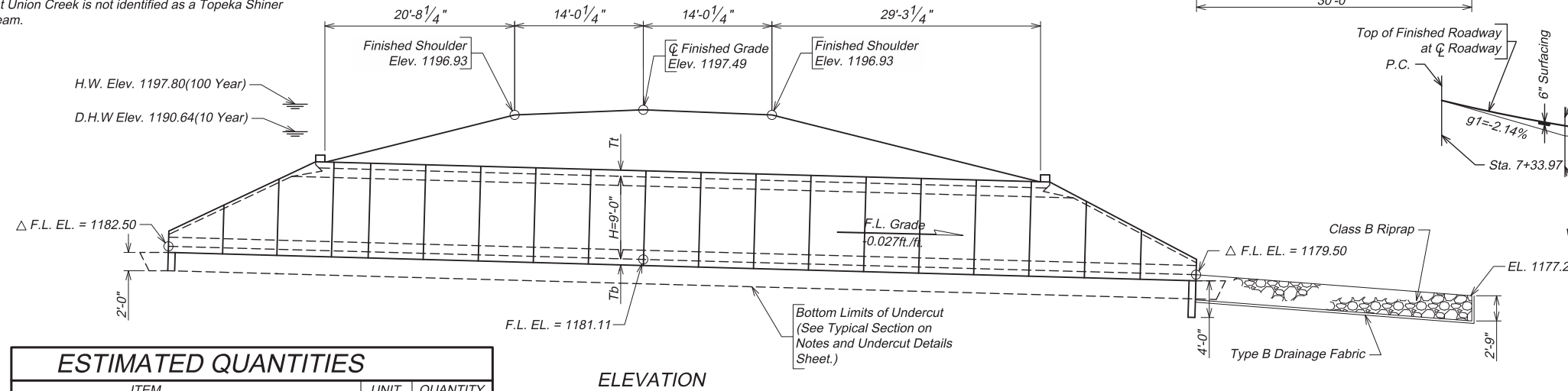
$V_{max}$  = Maximum computed outlet velocity for the proposed culvert based on a 2 year frequency.

The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re-analysis of the hydraulics at this site to determine its effect on public safety.

**LEGEND**

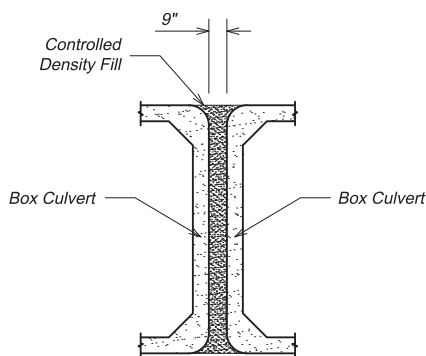
- W = Width of Opening
- H = Height of Opening
- Tt = Thickness of Top Slab
- Tb = Thickness of Bottom Slab
- Ts = Thickness of Side Wall

NOTE:  
East Union Creek is not identified as a Topeka Shiner Stream.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Incidental Work, Structure	LS	Lump Sum
Structure Excavation, Box Culvert	Cu. Yd.	86
Box Culvert Undercut	Cu. Yd.	317
Controlled Density Fill	Cu. Yd.	28.6
9'x9' Precast Concrete Box Culvert, Furnish	Ft.	76
9'x9' Precast Concrete Box Culvert, Install	Ft.	76
9'x9' Precast Concrete Box Culvert End Section, Furnish	Each	2
9'x9' Precast Concrete Box Culvert End Section, Install	Each	2
2-9'x9' Precast Concrete Box Culvert, Furnish	Ft.	76
2-9'x9' Precast Concrete Box Culvert, Install	Ft.	76
2-9'x9' Precast Concrete Box Culvert End Section, Furnish	Each	2
2-9'x9' Precast Concrete Box Culvert End Section, Install	Each	2
Class B Riprap	Ton	175
Type B Drainage Fabric	Sq. Yd.	171
Reinforcement Fabric (MSE)	Sq. Yd.	528

- ≠ For estimating purposes only, a factor of 1.4 Tons/CuYd was used to convert CuYds to Tons.
- ☐ For payment, quantity is based on plan shown undercut dimensions and will not be measured for payment unless the Engineer orders a change.
- △ Quantity is based on 8" bottom slab, 8" top slab, and 8" walls.



SEC. A-A

GENERAL DRAWING AND QUANTITIES

FOR

3 - 9' X 9' BOX CULVERT (PRECAST)

OVER EAST UNION CREEK  
STA. 9 + 21.37  
STR. NO. 64-105-140  
PCN 08ND

3° LHF SKEW  
SEC. 11/14-T93N-R49W  
BRO 8064(31)  
HL-93

UNION COUNTY

JANUARY 2023

-X028-

1 of 6

DESIGNED BY BS	CK. DESIGN BY MH	DRAFTED BY BS	BRIDGE ENGINEER
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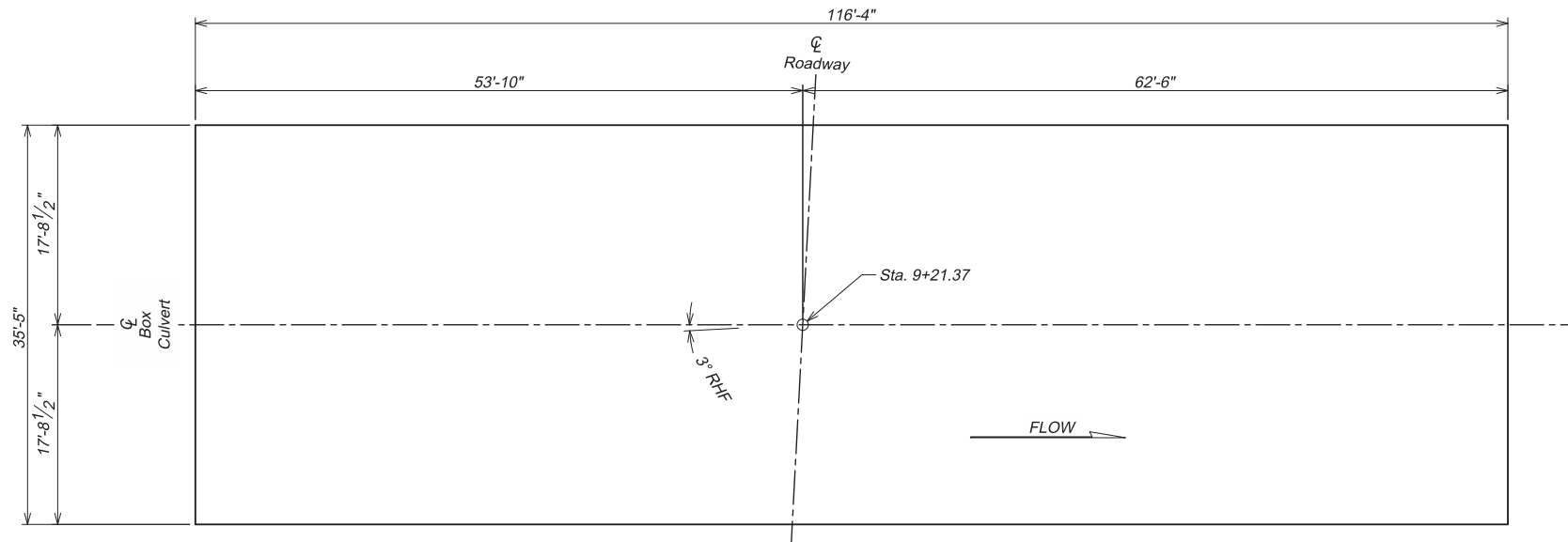
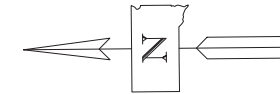
PLANS BY ULTEIG, SIOUX FALLS, SD



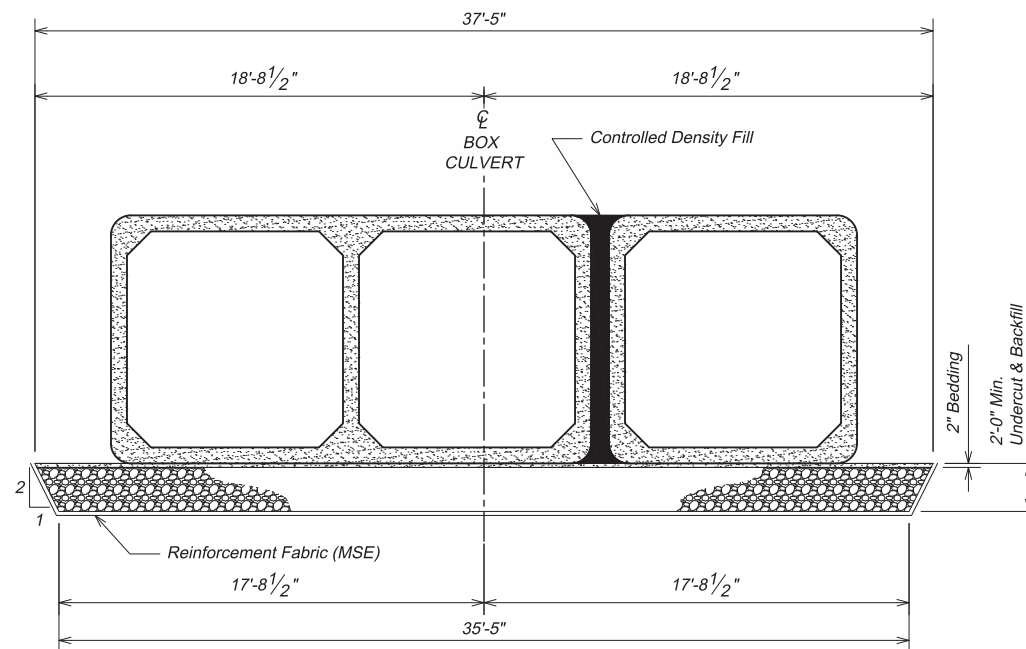
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	27	36

FOR BIDDING PURPOSES ONLY

REVISED 9/5/2024



**UNDERCUT LAYOUT**  
(Bottom Dimensions)



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

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	317
Reinforcement Fabric (MSE)	Sq. Yd.	528

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

**SPECIFICATIONS-**

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
- 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-**

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

- Box culvert and box culvert end section design will conform to the AASHTO LRFD Bridge Design Specifications, 9<sup>th</sup> Edition.
- Design Live Load: HL-93. No construction loading in excess of legal load is anticipated. If construction loading in excess of legal load is anticipated by the Contractor, the Contractor will submit a proposal including a design analysis for the anticipated construction loading, through the proper channels, to the Office of Bridge Design for approval. Upon approval, the construction load shall not be applied until the depth of fill over the box culvert as required by analysis has been placed. At a minimum, 4 feet of fill will be placed over the box culvert prior to applying the construction load. All costs associated with accommodating any construction loads will be borne by the Contractor.
- The box culvert will be load rated in accordance with the AASHTO Manual for Bridge Evaluation, 2018 Edition with latest Interim Revisions using the LRFR method. The rating will include evaluation of the Design HL-93 truck at both Inventory and Operating levels and a Legal Load rating for the three SD legal trucks (Type 3, 3S2, and 3-2) as well as the notional rating load and four specialized hauling vehicles. The structure will also be evaluated for the emergency vehicles, EV2 and EV3, at the legal load rating level. All sections of the box culvert will rate at HL-93 or better (Inventory Level). The three SD Legal Loads, the notional rating load, and the four specialized hauling vehicles will rate greater than 0.8 at legal load rating level. The emergency vehicles, EV2 and EV3, will rate 0.8 or greater at the legal load rating level. AASHTO Ware Bridge Rating (BrR) is required to be used to rate the box culvert. Include the BrR rating model and a load rating summary sheet with load rating calculations. Submit load rating calculations with the design and independent check design calculations or shop plans, as appropriate.
- The design of the barrel sections will be based on a minimum fill height of 2 feet and include all subsequent fill heights up to and including the maximum fill height of 10 feet over the box culvert.
- Minimum inside corner fillet will be 6-inch.
- Minimum precast barrel section length will be 6-foot sections; however, no more than two 4-foot sections are allowed in any one length of precast barrel.
- Lift holes will be plugged with an approved non-shrinkable grout.
- The fabricator will imprint on the structure the date of construction as specified and detailed on Standard Plate 460.02.
- Alternate end section details will be allowed, subject to the approval of the Bridge Construction Engineer. No additional payment will be made for any change in the barrel/end section configuration.
- Installation of the precast sections will be in accordance with the final approved shop plans.
- Care will be taken when placing sections. Sections will be only moved using the lifting holes by approved equipment.
- Adjust cutoff wall shown on Standard Plates 560.10 and 560.20 to extend the full width of the end sections (out-to-out) plus the 9-inch spacing.
- Compaction of earth embankment and box culvert backfill material will be governed by the Ordinary Compaction Method.
- Soils below the bottom of the proposed RCBC consist of grey clay sand. Groundwater was encountered at an elevation of 1183.8 on the upstream end of the box and 1180.1 on the downstream end of the box during the subsurface investigation in April 2020.
- Dewatering will be required to construct the box culvert. All costs incurred for dewatering will be incidental to other contract items.



NOTES AND UNDERCUT DETAILS (A)

FOR  
3 - 9' X 9' BOX CULVERT (PRECAST)

OVER EAST UNION CREEK  
STA. 9 + 21.37  
STR. NO. 64-105-140  
PCN 08ND

3° LHF SKEW  
SEC. 11/14-T93N-R49W  
BRO 8064(31)  
HL-93

UNION COUNTY

JANUARY 2023

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DESIGNED BY BS	CK. DESIGN BY MH	DRAFTED BY BS	BRIDGE ENGINEER
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PLANS BY ULTEIG, SIOUX FALLS, SD

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	28	36

**DESIGN MIX OF CONCRETE**

1. Mix will be as fabricator's design; however, a minimum compressive strength will not be less than 4500 p.s.i. at 28 days.

**SHOP PLANS**

The fabricator will submit shop plans in accordance with the Construction Specifications to Ulteig, 5701 S. Corporate Place, Sioux Falls, SD 57108 (brad.stango@ulteig.com). After review, corrections (if necessary), and approval by Ulteig, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

**REINFORCEMENT FABRIC**

A layer of Reinforcement Fabric (MSE) will be placed at the bottom of the undercut prior to backfilling with granular material.

**Geotextile Specification:**

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 Box Culvert Undercut bid item.

**Geotextile Installation Procedure:**

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

**Geotextile Seaming Procedure:**

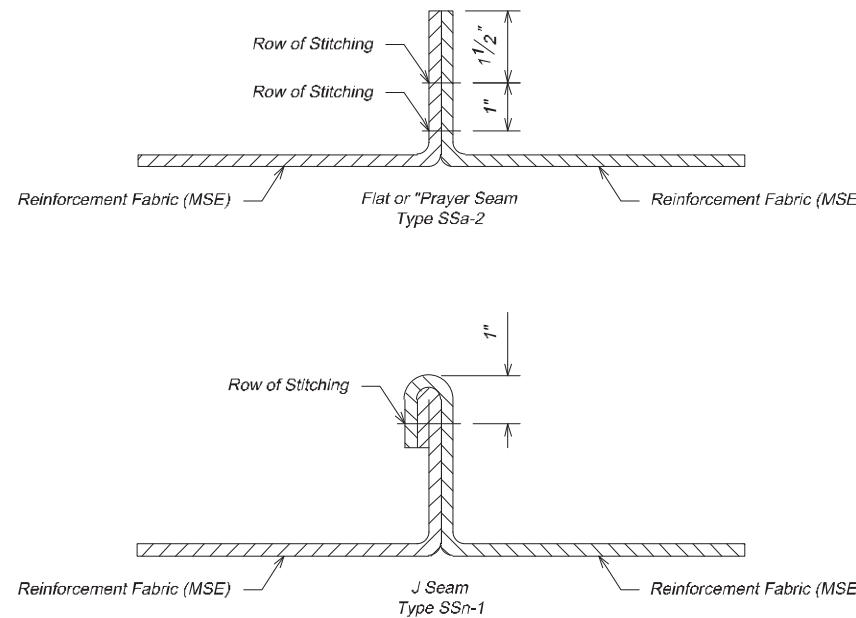
The sewn seams will consist of two parallel rows of stitching ("prayer" seam, Type SSa-2), or a J-seam (Type SSn-1), using a single row of stitching. The stitching will be a lock type stitch.

If the Type SSa-2 seam is used, the two rows of stitching will be 1" apart with a tolerance of plus or minus 1/2" 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.



DETAILS FOR GEOTEXTILE SEAMS

**INCIDENTAL WORK, STRUCTURE**

In place is a 50'-7" long, two span precast concrete channel bridge with timber pile abutments with timber caps and timber backwalls. The center bent is constructed of timber piles that are armored with concrete filled corrugated metal pipes, and a timber cap.

Break down and remove the existing bridge to the bottom of the undercut or as required to construct the new structure in accordance with section 110 of the Specifications.

The Contractor will salvage the precast concrete channel deck units for Union County. The deck units will be delivered to the Union County Highway Department's yard 1/2 mile East of the site at SW 1/4, 11-93-49, SD. The Contractor will contact the County Highway Superintendent prior to salvage of the deck units to coordinate their delivery. All items not salvaged and delivered to the county will be properly disposed of by the Contractor. The bent and abutments will be removed 1' below the bottom of the undercut.

The foregoing is a general description of the in-place bridge and will not be construed to be complete in all details. Before preparing the bid it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. All costs involved in this removal will be incidental to the contract lump sum price for "Incidental Work, Structure".



NOTES AND UNDERCUT DETAILS (B)

FOR

3 - 9' X 9' PRECAST BOX CULVERT (PRECAST)

OVER EAST UNION CREEK

3° LHF SKEW

STA. 9 + 21.37

SEC. 11/14-T93N-R49W

STR. NO. 64-105-140

BRO 8064(31)

PCN 08ND

HL-93

UNION COUNTY

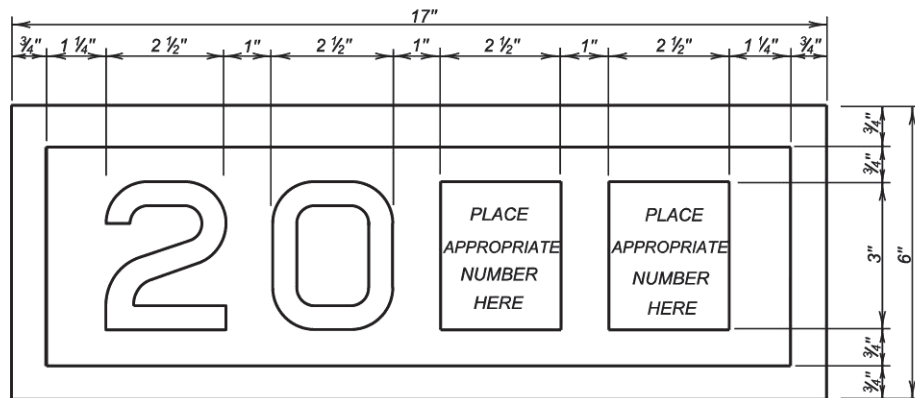
JANUARY 2023

3 of 6

DESIGNED BY BS	CK. DESIGN BY MH	DRAFTED BY BS	BRIDGE ENGINEER
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PLANS BY ULTEIG, SIOUX FALLS, SD

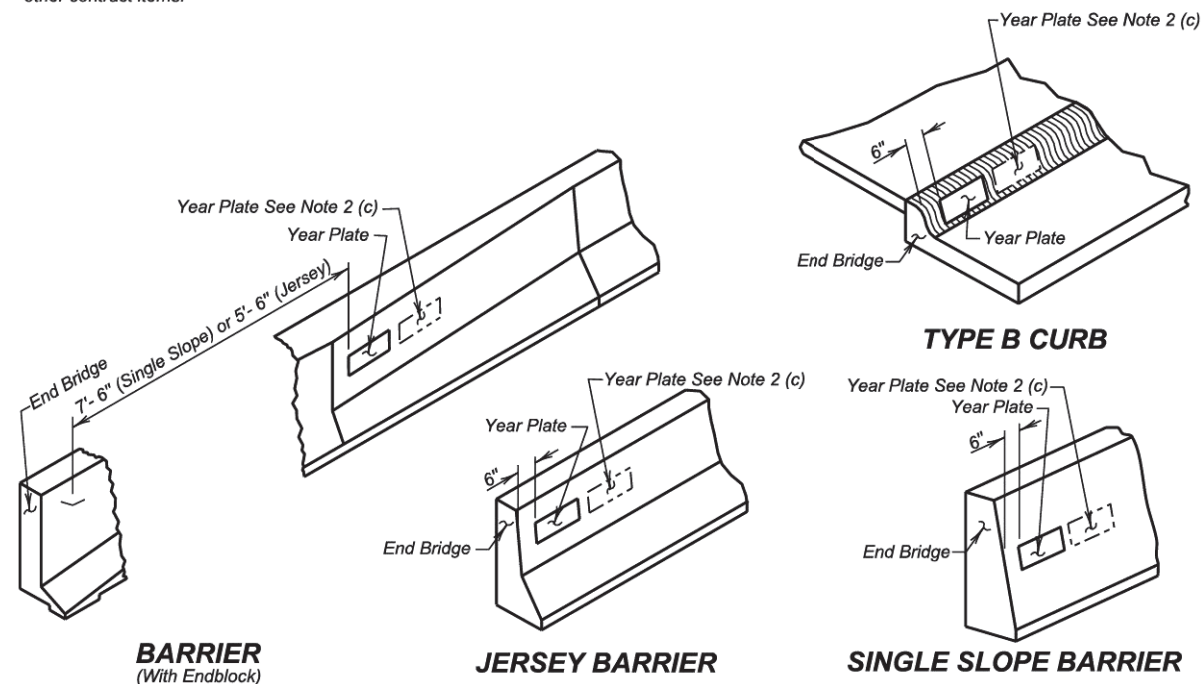
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	29	36



**YEAR PLATE DETAILS**

**GENERAL NOTES:**

- Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates will be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates will be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'-6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.

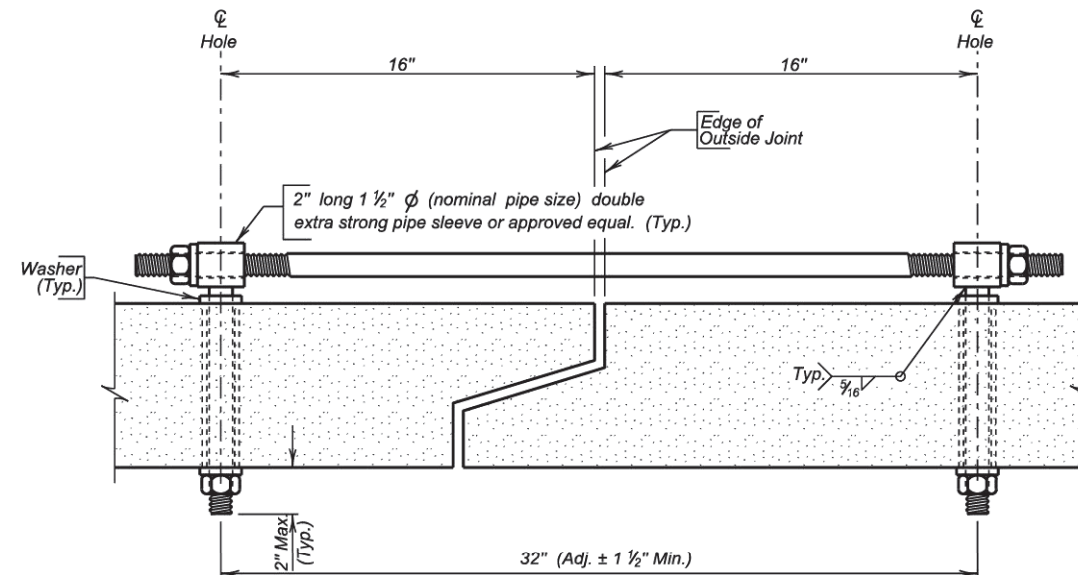


**TYPE B CURB**

**SINGLE SLOPE BARRIER**

January 22, 2021

Published Date: 2025	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER
			460.02
			Sheet 1 of 1



**TIE BOLT ASSEMBLY**

**GENERAL NOTES:**

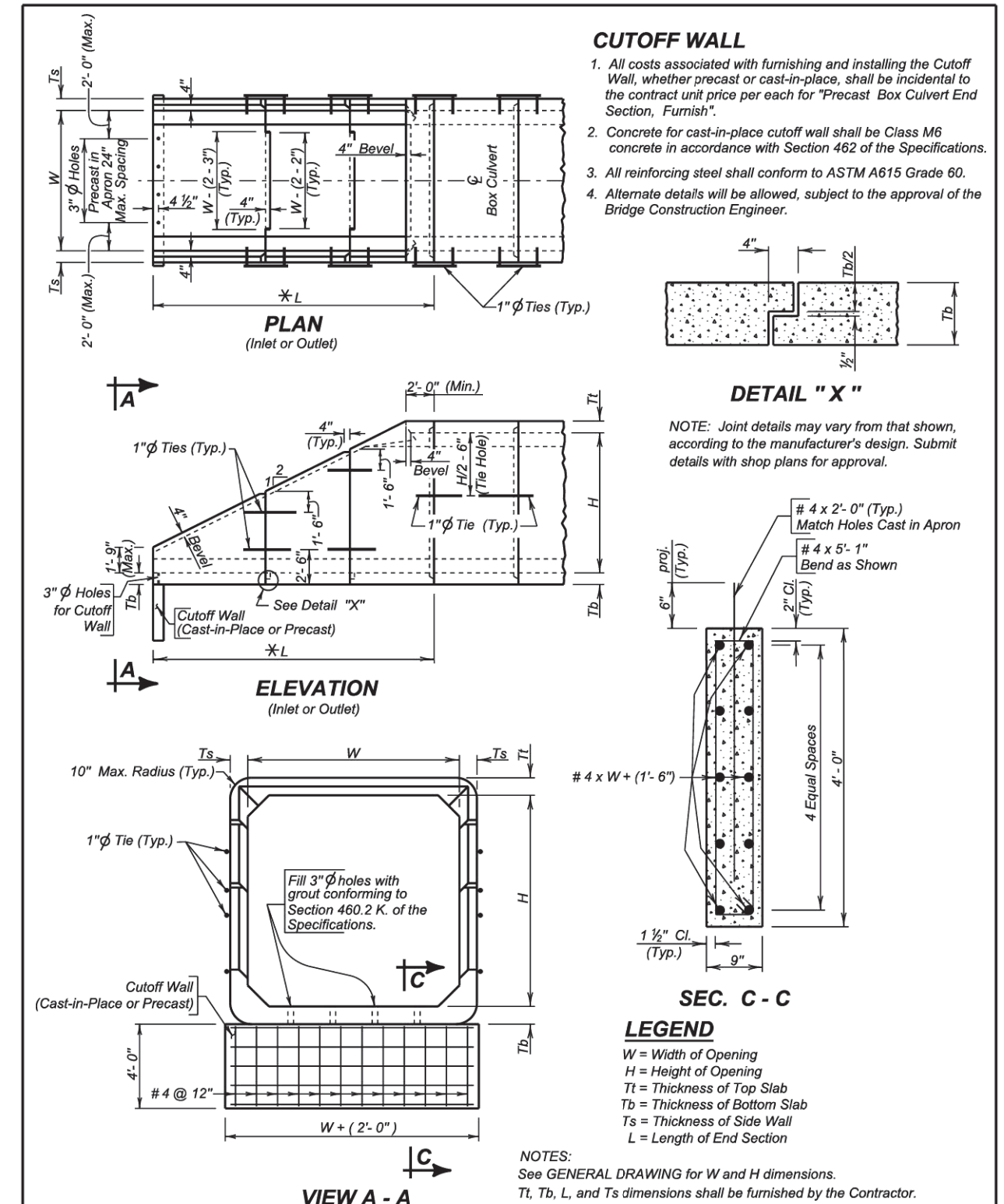
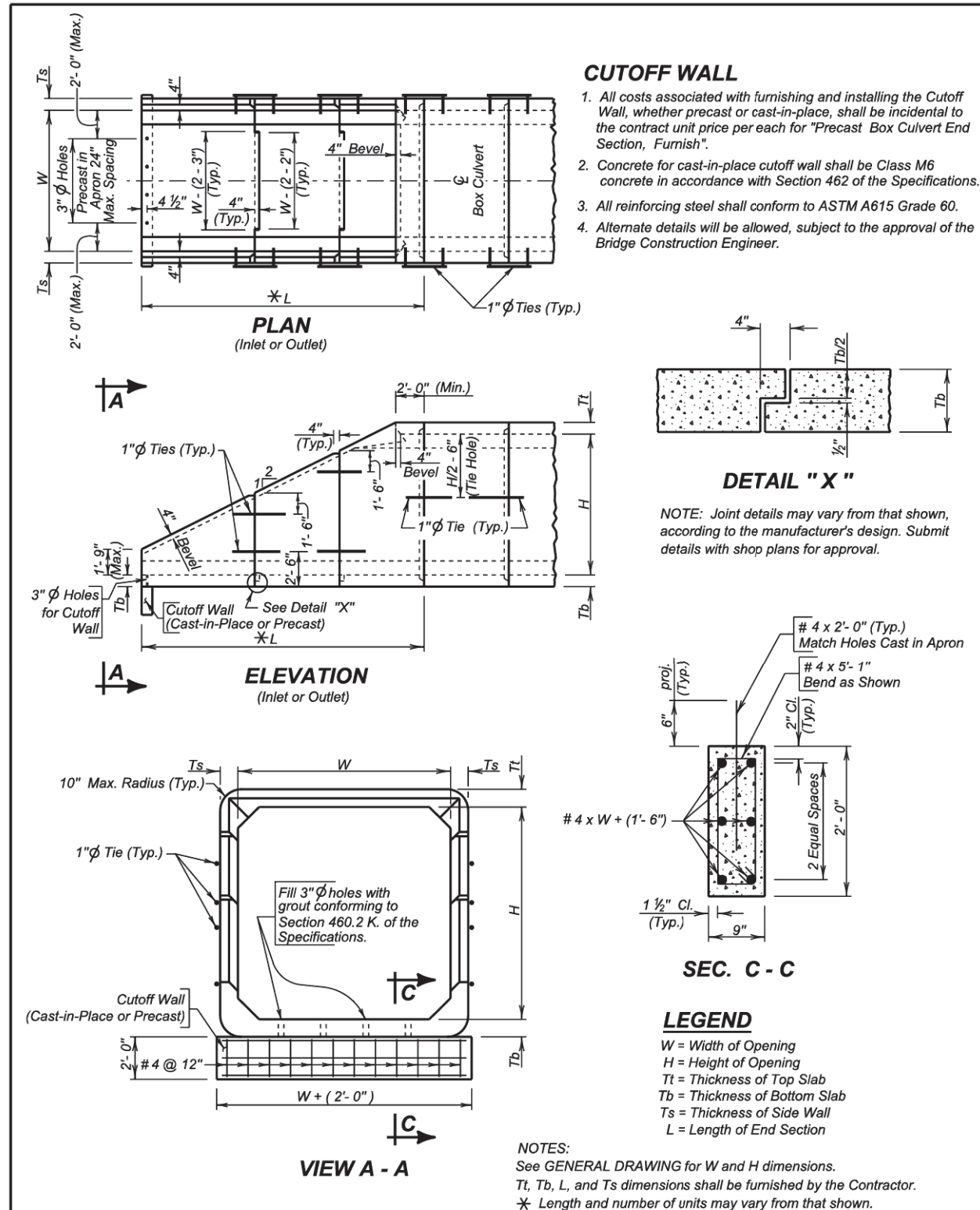
- All holes for tie bolts shall be cast-in-place, 16 inches from outside edge of joint. Cast in inserts or sleeves, if used, shall be made of a corrosion resistant material.
- Ties shall be 1 inch diameter and conform to the requirements of ASTM A36, ASTM A307, or ASTM F1554, Gr. 36. Nuts shall be heavy hex in conformance with ASTM A563. Washers shall conform to ASTM F436, Type 1. The welded pipe sleeve shall conform to ASTM A53, Grade B.
- Welding and weld inspection shall be in conformance with AWS/ANSI D1.1 - (Current Year) Structural Welding Code - Steel.
- Tie Bolt Assembly shall be galvanized in accordance with ASTM A153 or ASTM F2329 as applicable.
- Tie Bolt Assembly details may vary from that shown, but alternate tie bolt assemblies are subject to testing to demonstrate equal strength. Submit details, through proper channels, to the Office of Bridge Design for approval.
- All costs for furnishing and installing the precast box culvert tie bolt assembly shall be incidental to the contract unit price per Foot for "Precast Concrete Box Culvert, Furnish".

Published Date: 2025	S D D O T	PRECAST BOX CULVERT TIE BOLT ASSEMBLY DETAILS	PLATE NUMBER
			560.01
			Sheet 1 of 1

March 21, 2016



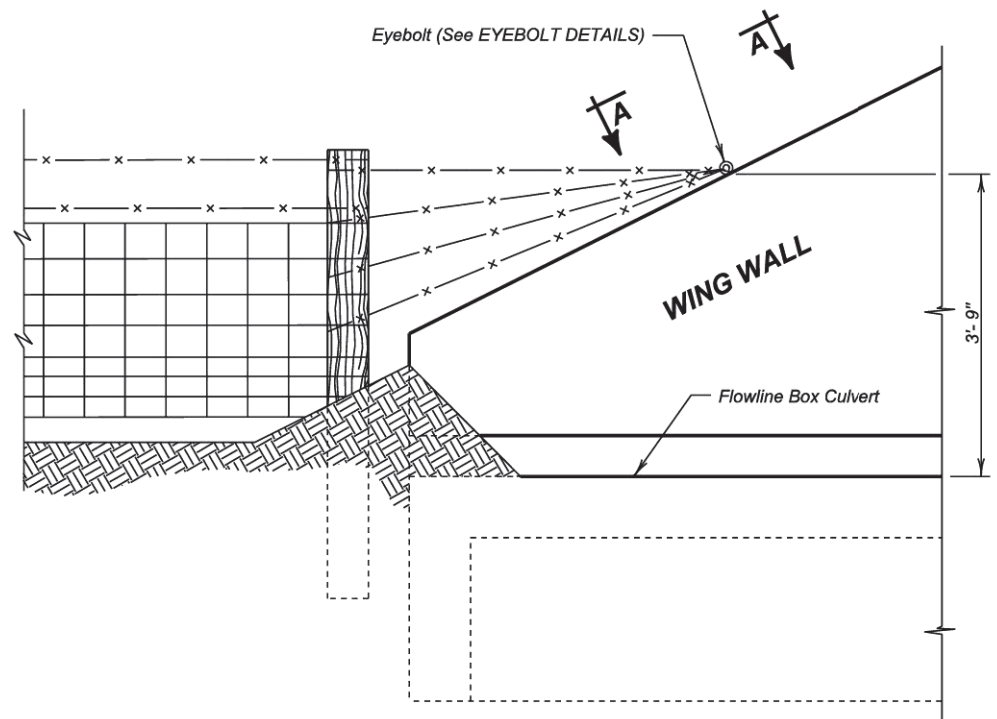
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	30	36



Published Date: 2025	S D D O T	PRECAST SINGLE BOX CULVERT SLOPED END SECTION DETAILS WITH 2'-0" CUTOFF WALL	PLATE NUMBER 560.10
			Sheet 1 of 1

Published Date: 2025	S D D O T	PRECAST SINGLE BOX CULVERT SLOPED END SECTION DETAILS WITH 4'-0" CUTOFF WALL	PLATE NUMBER 560.11
			Sheet 1 of 1

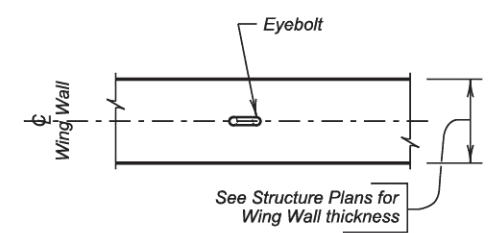
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	31	36



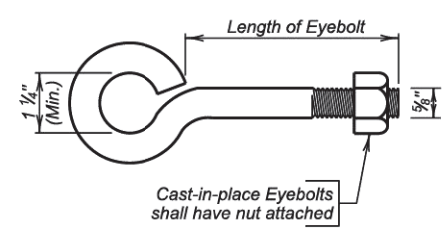
**DETAIL FOR FENCE ANCHORS**

**GENERAL NOTES:**

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



**VIEW A - A**



**EYEBOLT DETAILS**

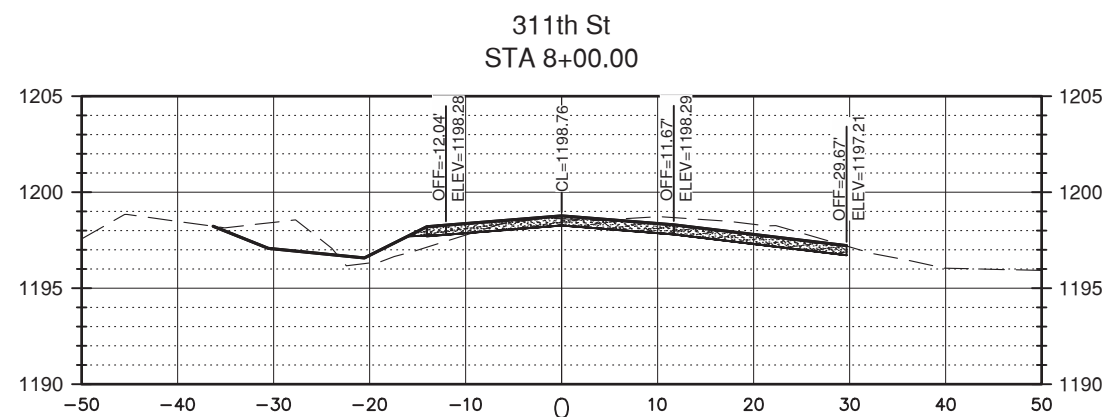
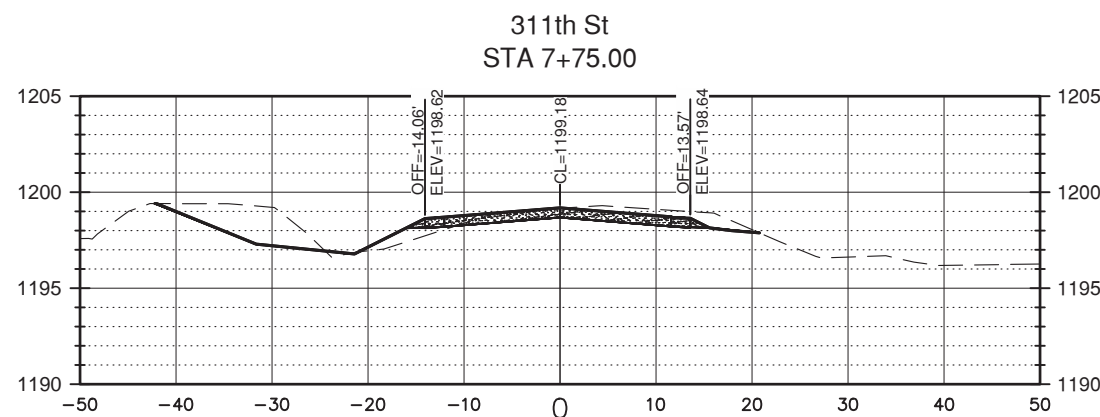
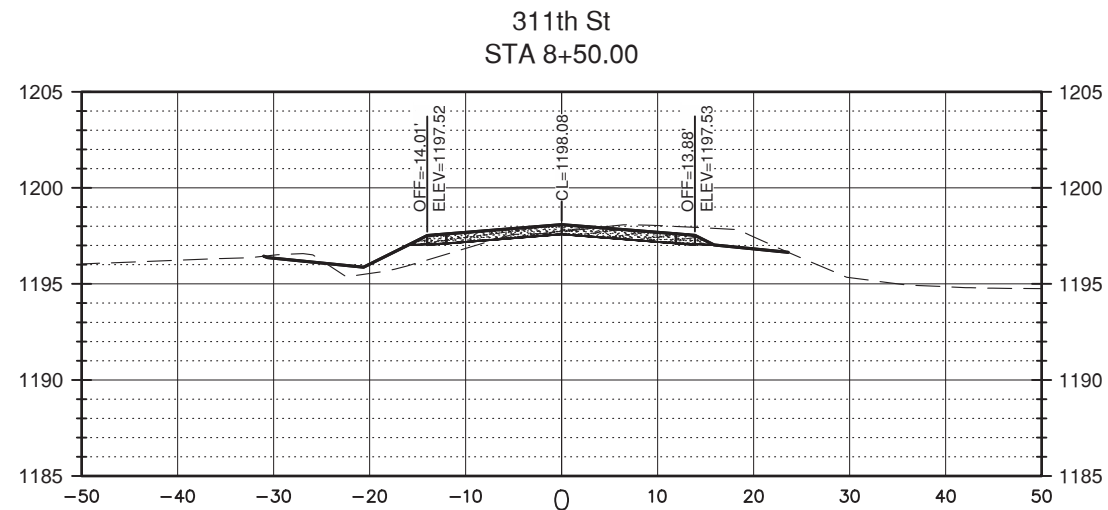
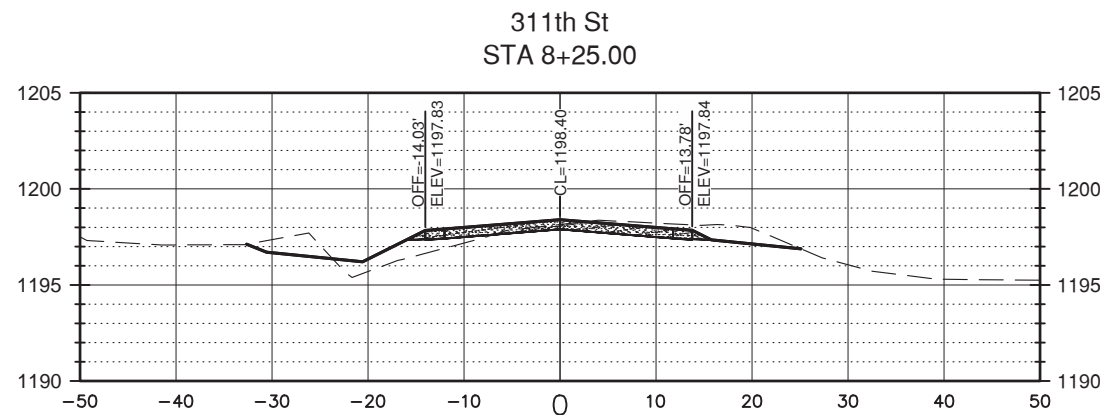
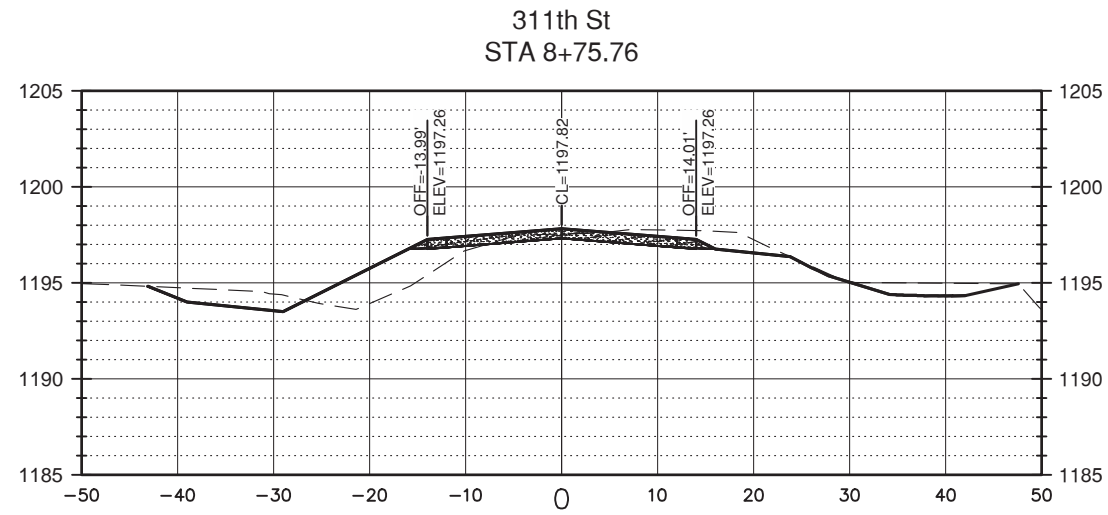
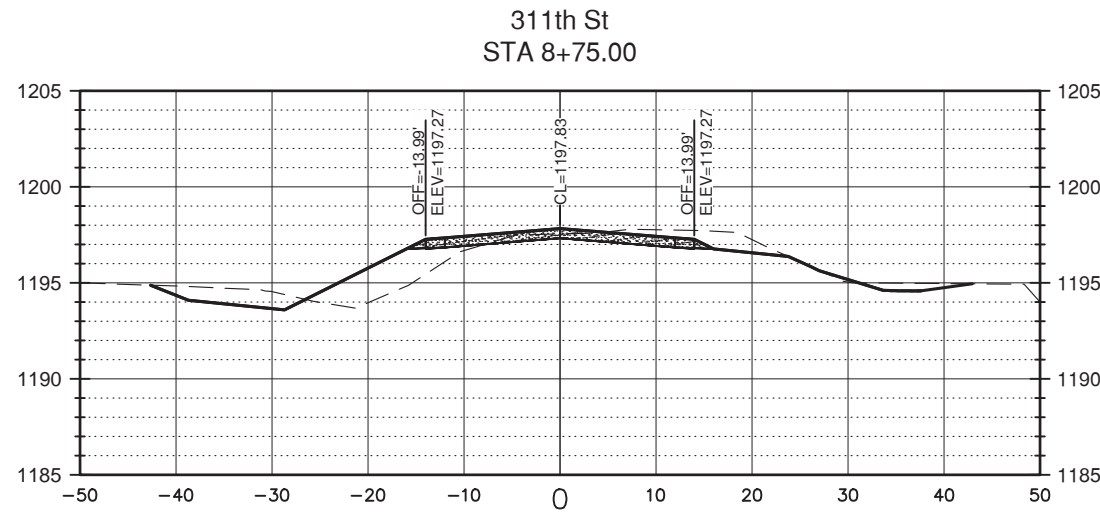
December 23, 2012

<b>S D D O T</b>	<b>FENCE ANCHORS FOR BOX CULVERT WING WALLS</b>	<b>PLATE NUMBER 620.16</b>
	<i>Published Date: 2025</i>	<i>Sheet 1 of 1</i>

# CROSS SECTION

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	33	36



Ulteig

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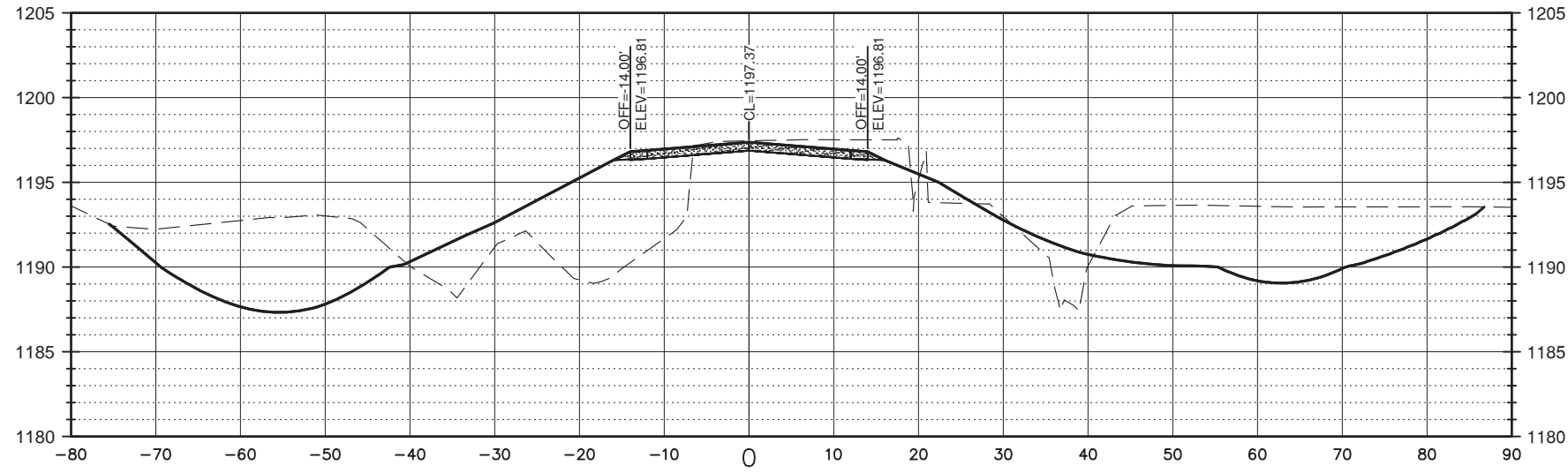


311th St  
STA 9+50.00

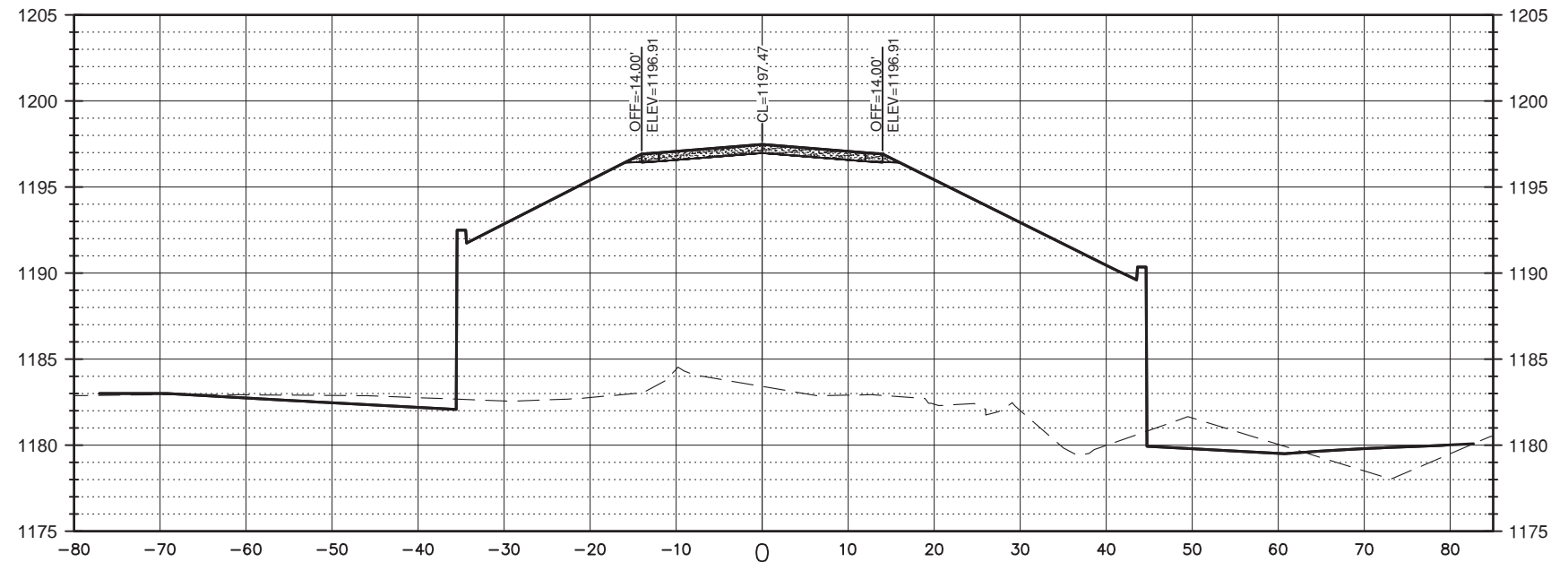
# CROSS SECTION

FOR BIDDING PURPOSES ONLY

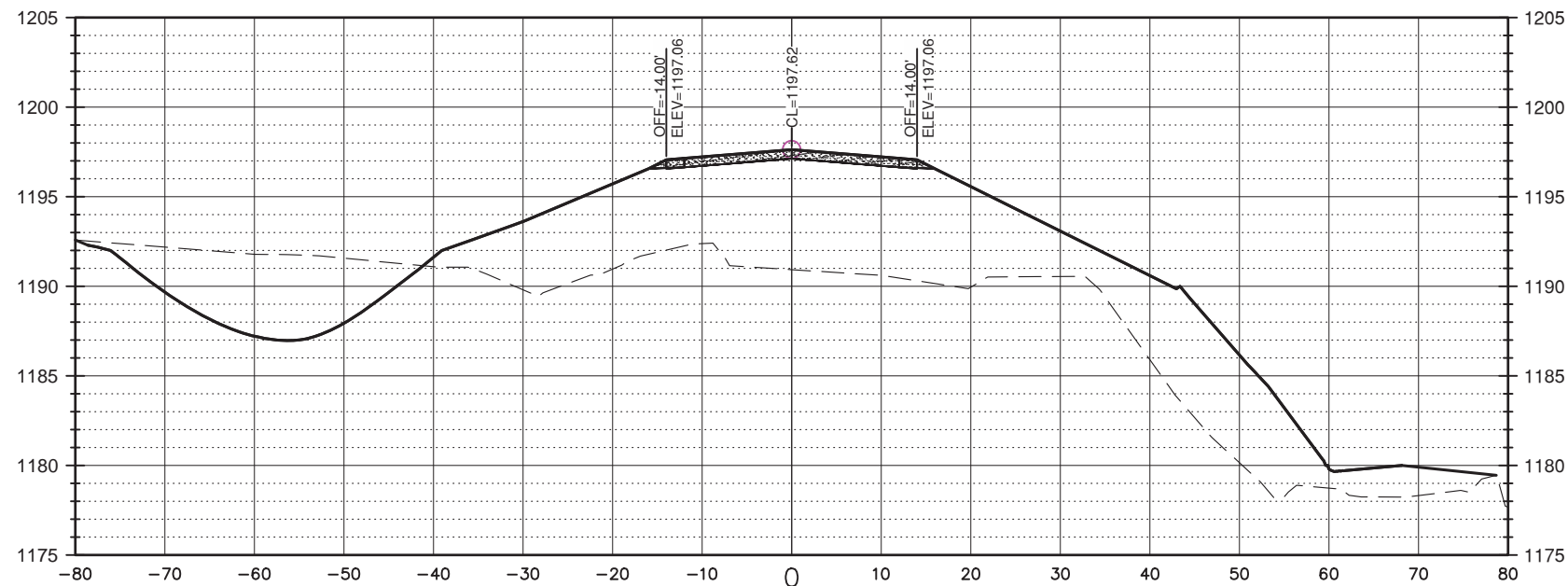
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	34	36



311th St  
STA 9+25.00



311th St  
STA 9+00.00



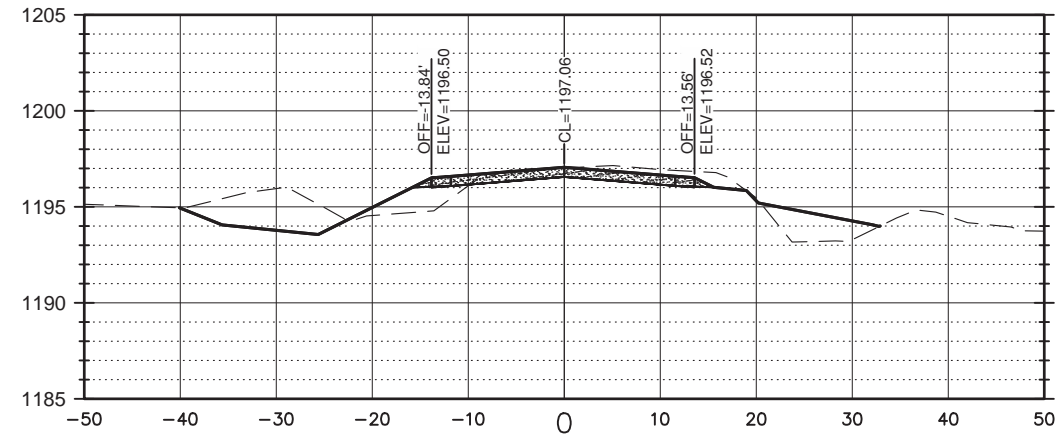
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# CROSS SECTION

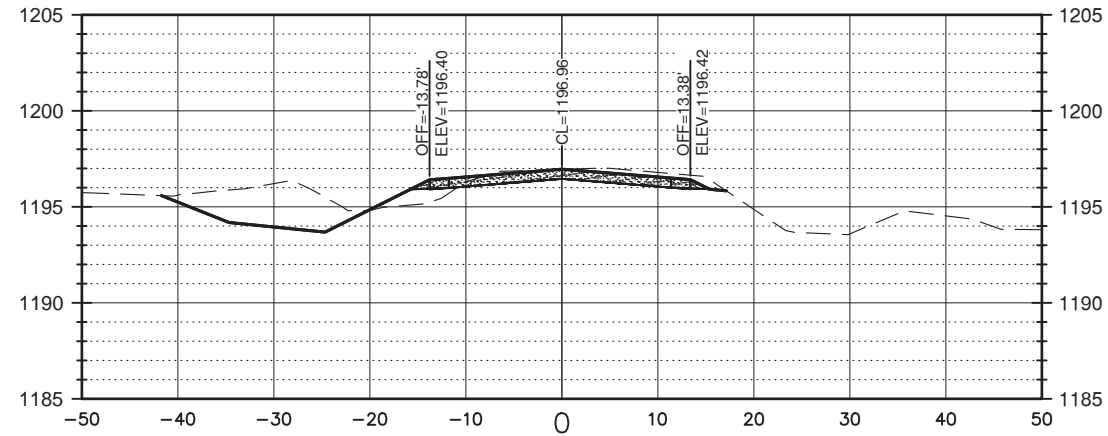
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8064(31)	35	36

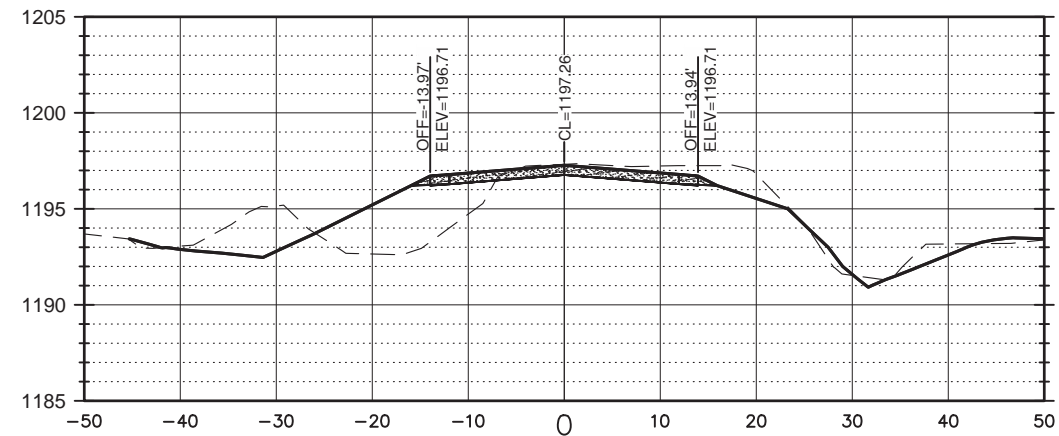
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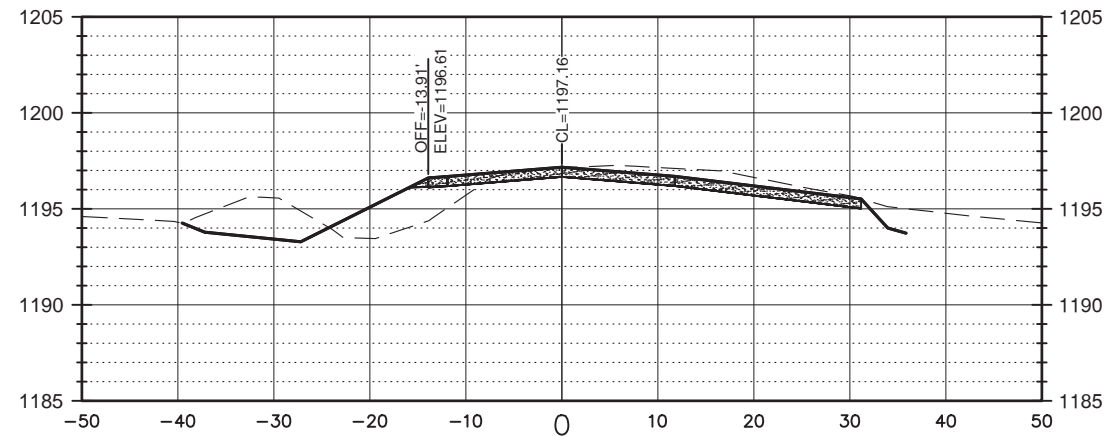
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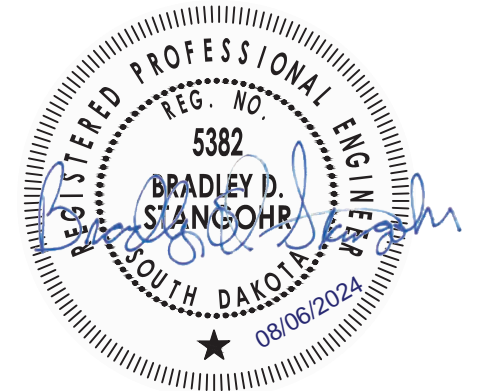
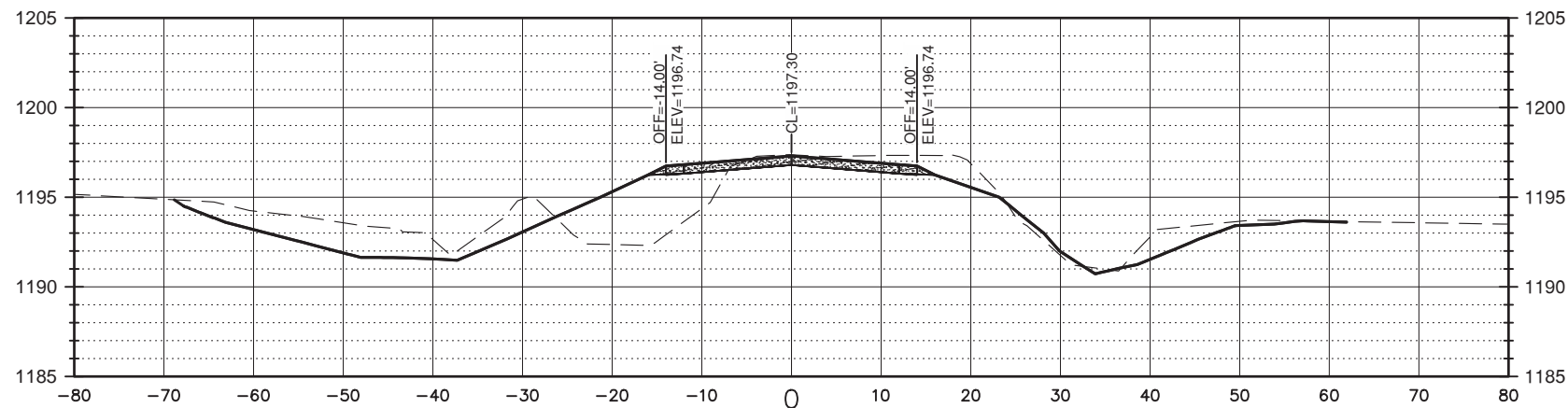
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311th St  
STA 10+00.00



311th St  
STA 9+66.97



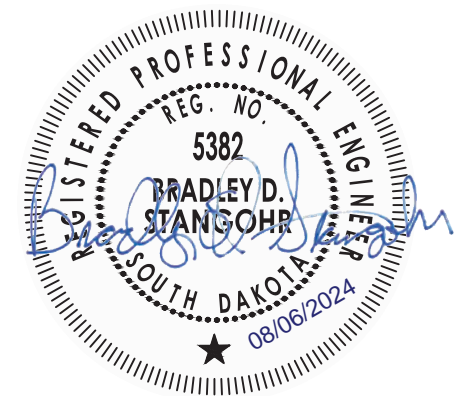
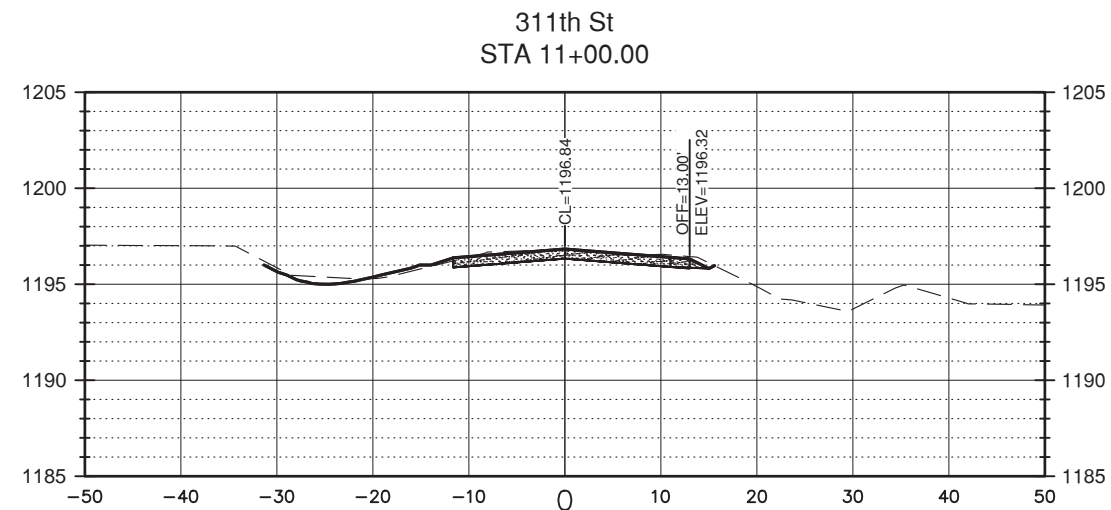
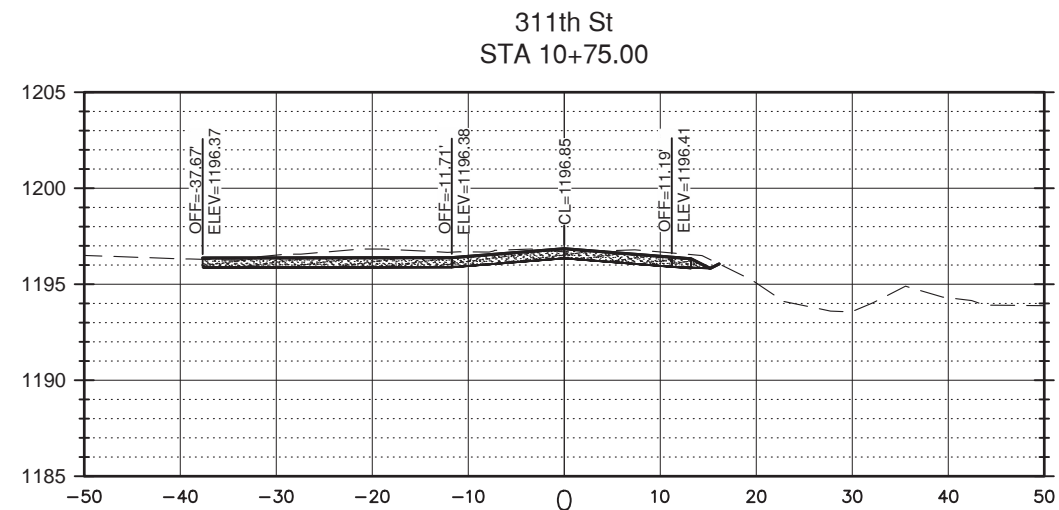
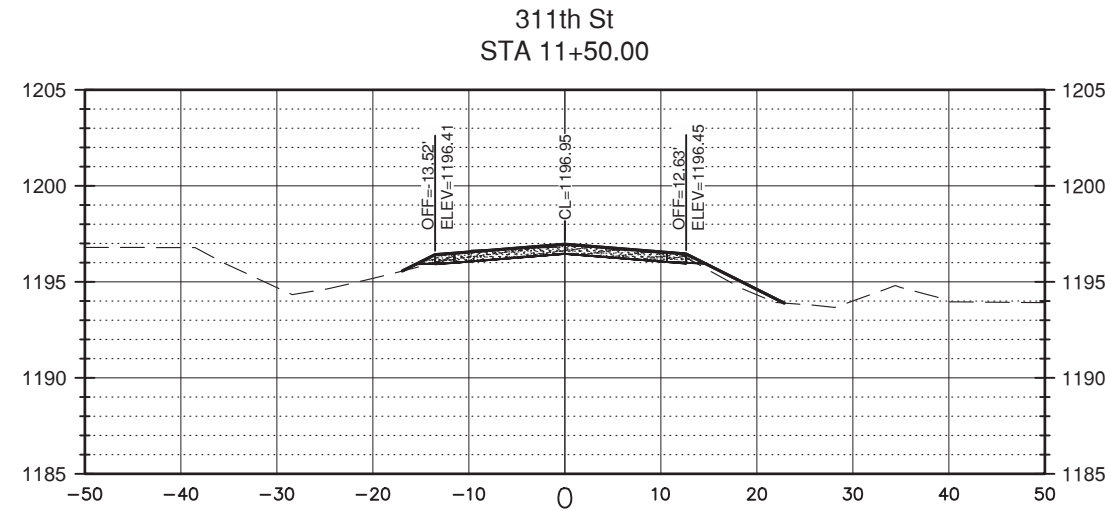
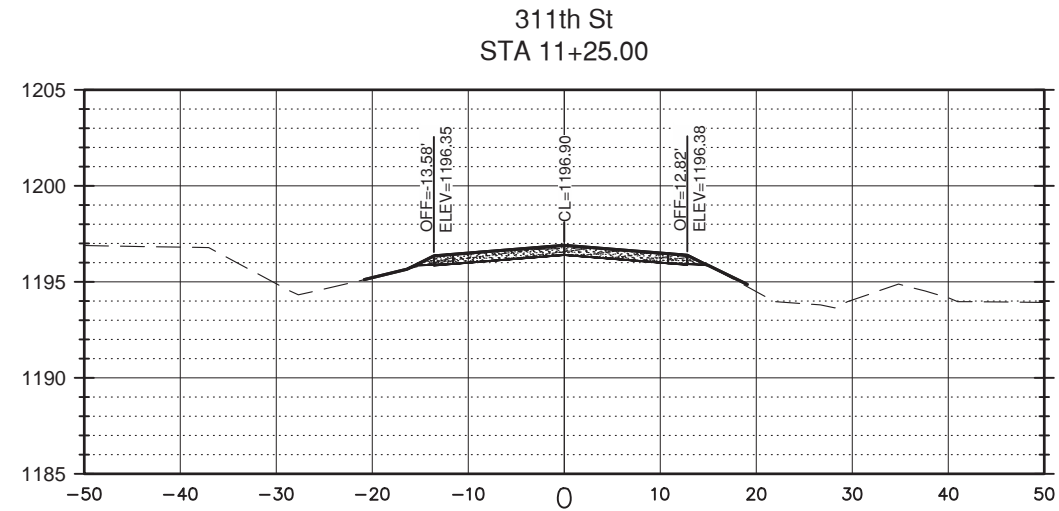
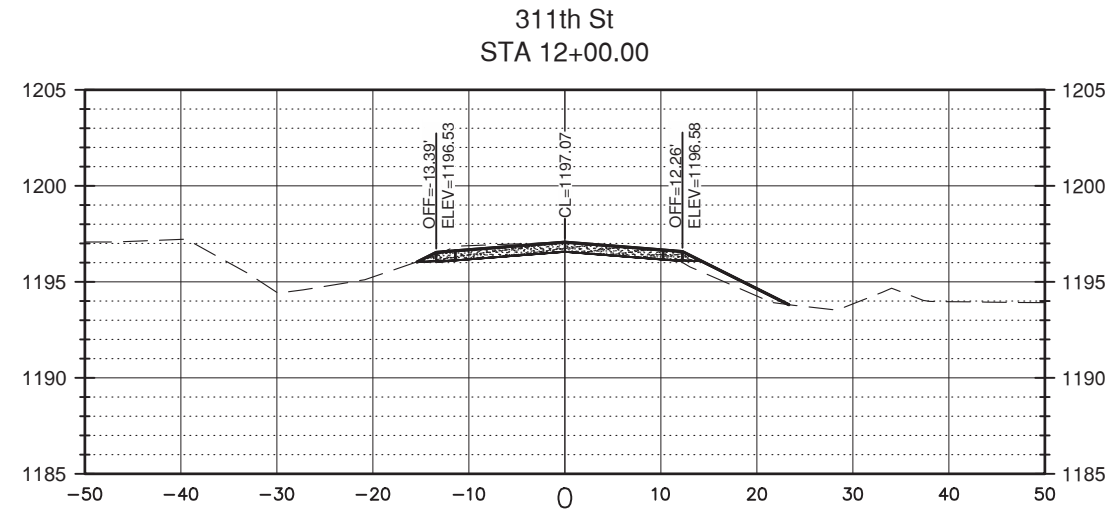
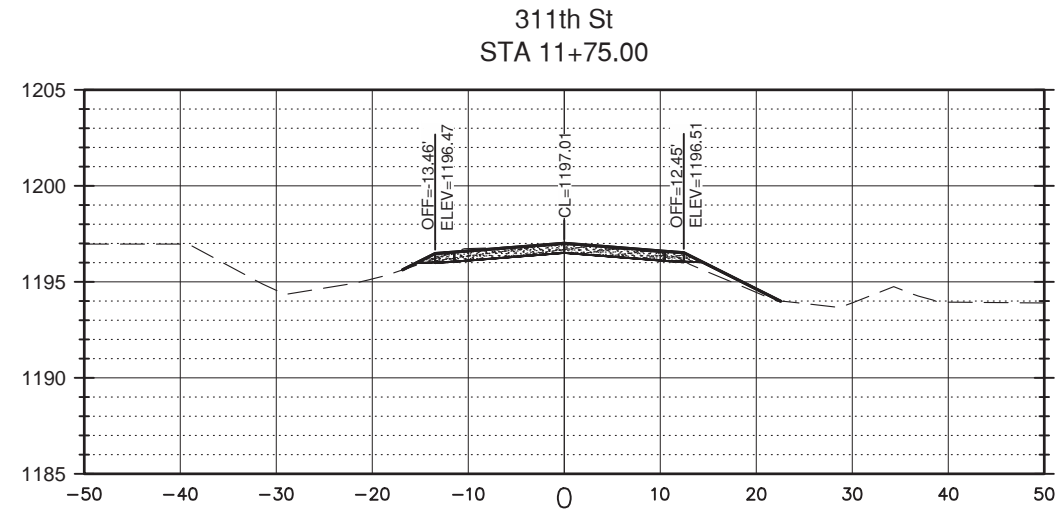
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S.D.	BRO-B 8064(31)	36	36



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