

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

FOR BIDDING PURPOSES ONLY

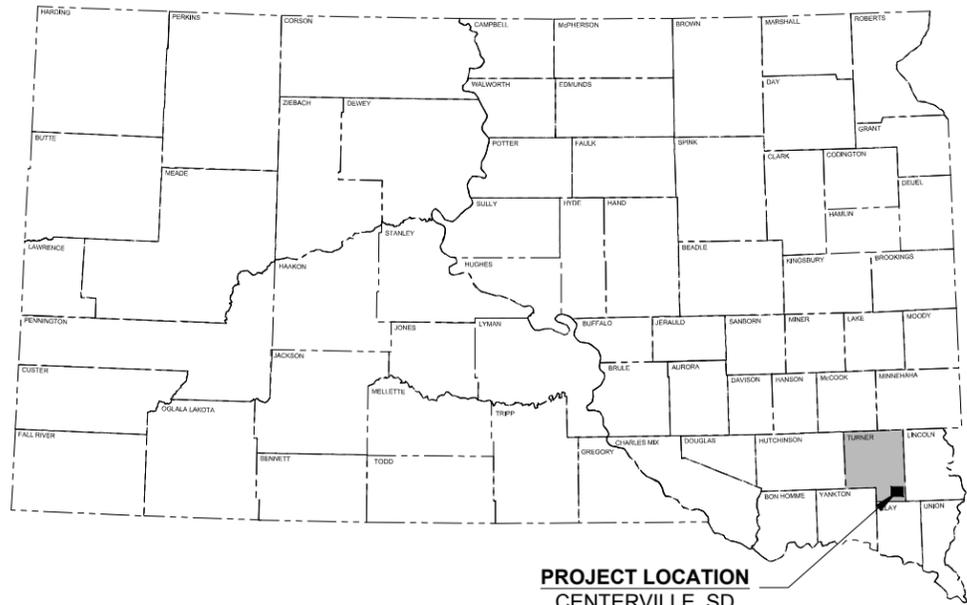
PROJECT	SHEET	TOTAL SHEETS
P TAPR(05)	1	48

**PROJECT P TAPR(05)**  
**CITY OF CENTERVILLE**  
**TURNER COUNTY**

CENTERVILLE GUNDERSON PARK SHARED USE PATH  
PCN 04QD

**INDEX OF SHEETS:**

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**PROJECT LOCATION**  
CENTERVILLE, SD  
TURNER COUNTY



Location Map

REGISTERED PROFESSIONAL ENGINEER  
REG. NO. 9234  
PHILIP L. GUNDAVLDSON  
SOUTH DAKOTA  
8-8-16

I, Philip L. Gundvaldson, hereby certify that these plans were prepared by me, or under my direct supervision and that I am a duly registered engineer under the laws of the State of South Dakota.

PHILIP L. GUNDAVLDSON S.D. No. 9234 Date 8-8-16

**STORM WATER PERMIT**  
Major Receiving Body of Water: Vermillion River  
Area Disturbed: 1.09 Acres  
Project Area: 1.09 Acres  
NOI Permit #  
Latitude 43° 7' 10" N  
Longitude 96° 57' 35" W

Drawing indicates general utility locations only. Neither the correctness or completeness of locations are guaranteed.  
Prior to excavation contact:  
SOUTH DAKOTA ONE CALL (1-800-781-7474)

**infrastructure**  
design group, inc.

Plans By:  
INFRASTRUCTURE DESIGN GROUP, INC.  
1111 N. LAKE AVENUE  
SIOUX FALLS, SOUTH DAKOTA 57104  
PH. (605) 271-5527  
www.infrastructuredg.com

# ESTIMATE OF QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P TAPR(05)	SHEET 2	TOTAL SHEETS 48
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Revised 08/08/16

Std. Bid Item	Item Description	Unit	Qty.
009E0010	Mobilization	LS	Lump Sum
100E0020	Clear and Grub Tree	Each	38
100E0100	Clearing	LS	Lump Sum
110E0020	Remove Bridge Railing	Ft	240
110E0030	Remove Bridge Rail End	Each	2
110E0130	Remove Traffic Sign	Each	6
110E0135	Remove Delineator	Each	4
110E0510	Remove Pipe End Section	Each	1
110E0530	Remove Storm Sewer Pipe	Ft	70
110E1010	Remove Asphalt Concrete Pavement	SqYd	30.6
110E1690	Remove Sediment	CuYd	0.6
110E1695	Remove Sediment Filter Bag	Ft	36
110E1700	Remove Silt Fence	Ft	430
110E7152	Remove Delineator for Reset	Each	1
110E7500	Remove Pipe for Reset	Ft	20
110E7510	Remove Pipe End Section for Reset	Each	1
120E0010	Unclassified Excavation	CuYd	627
120E0600	Contractor Furnished Borrow Excavation	CuYd	1,985
120E6100	Water for Embankment	MGal	9.9
120E6200	Water for Granular Material	MGal	2.1
230E0010	Placing Topsoil	CuYd	225
230E0020	Contractor Furnished Topsoil	CuYd	207
250E0010	Incidental Work	LS	Lump Sum
260E1010	Base Course	Ton	5.8
380E3000	4" PCC Driveway Pavement	SqYd	8.9
380E3020	6" PCC Driveway Pavement	SqYd	15.6
421E0100	Pipe Culvert Undercut	CuYd	45
450E4788	36" CMP 14 Gauge, Furnish	Ft	36
450E4790	36" CMP, Install	Ft	36
450E7029	24" High Density Polyethylene Pipe, Furnish	Ft	127
450E7030	24" High Density Polyethylene Pipe, Install	Ft	127
450E7400	24" High Density Polyethylene Pipe Bend, Furnish	Each	1
450E7401	24" High Density Polyethylene Pipe Bend, Install	Each	1
450E8600	36" CMP Flap Gate	Each	1
450E9000	Reset Pipe	Ft	20
450E9001	Reset Pipe End Section	Each	1
462E0100	Class M6 Concrete	CuYd	3.6
470E0050	Steel Bicycle Railing	Ft	240
480E0100	Reinforcing Steel	Lb	742
632E1320	2.0" X 2.0" Perforated Tube Post	Ft	86.5
632E2100	Reset Delineator	Each	1
632E2520	Type 2 Object Marker	Each	4

Std. Bid Item	Item Description	Unit	Qty.
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	SqFt	20.0
632E3520	Remove, Salvage, Relocate, and Reset Traffic Sign	Each	2
633E1400	Pavement Marking Paint, 4" White	Ft	950
633E1408	Pavement Marking Paint, 6" Yellow	Ft	240
633E1425	Pavement Marking Paint, 12" Yellow	Ft	240
634E0010	Flagging	Hour	24
634E0110	Traffic Control Signs	SqFt	172.0
634E0120	Traffic Control, Miscellaneous	LS	Lump Sum
634E0530	Flexible Delineator	Each	4
651E0040	4" Concrete Sidewalk	SqFt	17,500
651E0060	6" Concrete Sidewalk	SqFt	285
671E6008	Type A8 Manhole Frame and Lid	Each	1
671E6035	Special Manhole Frame and Lid	Each	1
700E0110	Class A Riprap	Ton	55.6
700E0310	Class B Riprap	Ton	26.0
730E0202	Type B Permanent Seed Mixture	Lb	12
731E0100	Fertilizing	Lb	631
732E0100	Mulching	Ton	1.3
734E0180	Sediment Filter Bag	Ft	36
734E0602	Low Flow Silt Fence	Ft	1,722
734E0604	High Flow Silt Fence	Ft	36
734E0610	Mucking Silt Fence	CuYd	120
734E0620	Repair Silt Fence	Ft	430
734E0845	Sediment Control at Inlet with Frame and Grate	Each	1
734E5010	Sweeping	Hour	16
831E0110	Type B Drainage Fabric	SqYd	108
900E1310	Concrete Washout Facility	Each	1



**SPECIFICATIONS**

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

**PROJECT SCOPE**

This project is located within the City of Centerville and consists of constructing a new shared use path between North Street and the Vermillion River.

**ENVIRONMENTAL COMMITMENTS**

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

**COMMITMENT A: WETLANDS**

Approximately 0.08 acres of wetlands will be impacted by the project. These unavoidable impacts to wetlands are less than 0.1 acres and the "Statewide Wetland Finding for South Dakota Federal-Aid Highway Projects" will apply.

**Table of Impacted Wetlands**

Wetland No.	Type	Station	Impact Left (Acres)	Impact Right (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
1	PEMC	26+34 to 28+60	0.01	0.07	0	0.08

**Action Taken/Required:**

Temporary impacts will not be mitigated as the impact is less than 0.1 acre.

**Wetland Topsoil**

Wetland topsoil shall be stripped from all wetland areas which will be impacted by the project. Surplus wetland topsoil shall be used as topsoil along the project route and at other locations as approved by the Project Engineer.

Refer to Sheet 3 for Placing Topsoil quantities. All costs to remove and stockpile the wetland topsoil shall be paid for at the contract unit price per cubic yard for "Unclassified Excavation". All costs to place the wetland topsoil shall be incidental to the contract unit price per cubic yard for "Placing Topsoil".

**COMMITMENT B1: CONSTRUCTION PRACTICES FOR STREAMS INHABITED BY THE TOPEKA SHINER**

The US Fish and Wildlife Service (USFWS) have designated the following as Topeka Shiner streams associated with this project.

**Table of Topeka Shiner Streams**

Station	Stream Name	Ordinary High Water Elevation
15+43	Vermillion River	1205'

**Action Taken/Required:**

The Contractor shall adhere to the "Special Provision for Construction Practices in Streams Inhabited by the Topeka Shiner".

Stream turbidity will be monitored during all stages of the project. Turbidity measurements should be taken in conjunction with normal storm water inspections.

**COMMITMENT B1: CONSTRUCTION PRACTICES FOR STREAMS INHABITED BY THE TOPEKA SHINER (Continued)**

The Contractor shall produce a comprehensive Construction Plan that includes all products, materials, and methods of construction and removal for temporary water barriers, cofferdams, and diversion channels including de-watering, handling, storage, and disposal of excavated material and pumped effluent throughout all phases of construction, including post-construction stabilization. This plan shall be approved by the SDDOT Environmental office prior to any work occurring in the above streams. Upon plan approval the Construction Plan shall be amended to the SWPPP document located in the Erosion and Sediment Control Plans.

**COMMITMENT B2: WHOOPING CRANE**

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

**Action Taken/Required:**

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

**COMMITMENT C: WATER SOURCE**

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

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

**Action Taken/Required:**

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

**COMMITMENT D: WATER QUALITY STANDARDS**

**COMMITMENT D2: SURFACE WATER DISCHARGE**

The Vermillion River warm water semi-permanent fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended solids.

**Action Taken/Required:**

If construction dewatering is required, the Contractor shall obtain a Temporary Discharge Permit from the DENR and provide a copy to the Project Engineer. Contact the DENR Surface Water Program at 605-773-3351 to apply for a permit.

**COMMITMENT E: STORM WATER**

Construction activities constitute 1 acre or more of earth disturbance.

**Action Taken/Required:**

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

**COMMITMENT E: STORM WATER (Continued)**

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

A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance with the SWPPP. The SWPPP is a dynamic document and is to be available on-site at all times.

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

SDDOT: <http://www.sddot.com/business/environmental/stormwater/Default.aspx>

DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

EPA: [http://cfpub.epa.gov/npdes/home.cfm?program\\_id=6](http://cfpub.epa.gov/npdes/home.cfm?program_id=6)

**Contractor Certification Form:**

The "Department of Environment and Natural Resources – Contractor Certification Form" (SD EForm – 2110LDV1-ContractorCertification.pdf) shall be completed by the Contractor or their certified Erosion Control Supervisor after the award of the contract. Work may not begin on the project until this form is signed.

The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the Surface Water Discharge General Permit for Storm Water Discharges Associated with Construction Activities for the Project.

The online form can be found at: <http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

**COMMITMENT H: WASTE DISPOSAL SITE**

The Contractor shall 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) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall 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 Project Engineer.

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

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

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



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

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) shall be incidental to the various contract items.

**COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES**

The SDDOT has obtained concurrence with the State Historical 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 review of cultural resources impacts. 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 shall arrange and pay for a cultural resource survey and/or records search. 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; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on 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 shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). 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.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order 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 shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

**COMMITMENT N: SECTION 404 PERMIT**

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

**Action Taken/Required:**

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

**CONSTRUCTION LIMITS**

The construction limits shall be within temporary easement areas. Material storage and vehicle and equipment traffic shall be limited to the construction limits.

**GRADE STAKES, BENCHMARKS AND MONUMENTS**

All monuments now in place and marking lines and corners of boundaries which are likely to be affected by the work herein provided for shall be carefully preserved by the Contractor. In no case shall any excavation be made within five feet (5') of any such monument until they have been properly reset, witnessed, or otherwise cared for by the Engineer and permission is given to proceed with the work. The Engineer shall mark the above described monuments prior to commencing work.

Any monuments disturbed or removed through carelessness or without proper authority will be reset by a licensed Land Surveyor at the expense of the Contractor.

**DRAINAGE**

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

**UTILITIES**

The Contractor shall 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 shall contact each utility owner and confirm the status of all existing and new utility facilities.

The following utility companies are known to have facilities on the project:

- |   |   |
|---|---|
| Centerville Water & Sewer<br>Chris Anderson<br>(605) 670-9842 | Vast Broadband<br>Scott Pingrey<br>(605) 670-2984 |
| Fort Randall<br>Dean Brue<br>(605) 491-0422                   | Xcel Energy<br>Aaron Bickett<br>(605) 339-8315    |

**PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY**

Plan quantities shall be used for final payment for Unclassified Excavation unless changes are requested by the Project Engineer. Unstable material excavation, if deemed necessary, shall be measured in the field and paid for at the contract unit price per cubic yard for "Unclassified Excavation".

**TABLE OF UNCLASSIFIED EXCAVATION**

	CuYd
Excavation (EG to FG)	25
Excavation for Imported Materials	125
Strip Topsoil (9+90 to 15+40 - 4" depth)	225
Unstable Material Excavation (if necessary)	252
<b>Total Unclassified Excavation</b>	<b>627</b>
Embankment	1860
Imported Materials	-205
Shrink (30%)	330
<b>Total Embankment</b>	<b>1985</b>

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor shall 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 shall be approved by the Engineer. The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site shall be the responsibility of the Contractor.

Water for Embankment is estimated at the rate of 5 gallons of water per cubic yard of Embankment minus Waste.

**UNSTABLE MATERIAL EXCAVATION**

Revised 08/08/16

Potential areas of unstable material excavation are drawn on the cross sections with a normal depth of 2 feet. The material shall be deemed unstable by the Engineer during construction prior to any excavation. If utilized, the additional quantity of unstable material excavation shall be measured in the field and paid for at the contract unit price per cubic yard for "Unclassified Excavation".

All areas designated by the Engineer as Unstable shall be excavated. The unstable material excavated on this project shall be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil if acceptable to the Engineer.

If there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer shall direct removal of these areas and the additional areas will be measured according to the Engineer.

**TABLE OF UNSTABLE MATERIAL EXCAVATION (If deemed necessary by Engineer)**

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
18+00		18+25	40' R	2	44
18+25		18+50	36' R	2	57
18+50		18+75	33' R	2	60
18+75		19+00	33' R	2	53
19+00		19+25	31' R	2	38
Total:					252

**INCIDENTAL WORK**

Station	L/R	Description
26+45.06	LT	Remove and Dispose of 36" Flap Gate

**REMOVAL OF EXISTING ASPHALT PAVEMENT**

The asphalt concrete pavement shall be disposed of by the Contractor. Payment for asphalt removal is included in the contract unit price per square yard for "Remove Asphalt Concrete Pavement". Payment shall be at the contract unit price per square yard, regardless of variations in thickness.

**TABLE OF ASPHALT CONCRETE REMOVAL**

Station	to	Station	L/R	Quantity (SqYd)
10+14.44		10+14.17	RT	24.2
15+26.69		15+42.85	LT	6.4
Total:				30.6

**TABLE OF PIPE END SECTION REMOVAL AND RESET**

Station	Quantity (Each)
10+29.76-1.2'R	1
Total:	1



**TABLE OF JUNCTION BOXES AND QUANTITIES**

Station	L/R	Junction Box Size	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Grate Type
10+29.76	1.2' R	4'x4'	2.9	454	Neenah R-1720-A or Engineer Approved Equal (Type A8)
11+21.11	12.8'R	4'x4'	1.7	288	Neenah R-2560-E1 or Engineer Approved Equal (Special)
Totals:			3.6	742	2

**CORRUGATED METAL PIPE**

Corrugated Metal Pipes shall have 2 3/8-inch X 1/2-inch corrugations. Connection bands shall be in conformance with AASHTO M36 and shall be 24 inches wide. Corrugated Metal Pipe shall be installed in accordance with Standard Detail 450.09 and the manufacturer's recommendations.

**FLAP GATE**

The 36" Flap Gate shall be a Spigotback 36 inch Model F-10 from Waterman Industries or an Engineer approved equal. The flap gate shall be installed according to manufacturer's recommendations.

Product	Manufacturer
Spigotback 36" Model F-10	Waterman Industries Exeter, CA 93221 Phone: 1-559-562-4000 watermanusa.com

**TABLE OF PIPE CULVERT UNDERCUT**

The Table of Pipe Culvert Undercut is intended to be used to establish an estimated quantity of Pipe Culvert Undercut for bidding purposes only. The table includes undercut for 24" and 36" pipe culverts. The depth of undercut is an estimate and the actual depth necessary shall be determined during construction. Pipes shown may or may not require undercutting and pipes not shown may require undercutting. The Engineer will determine which pipe shall be undercut in accordance with Section 421 of the Specifications.

Station	Undercut Depth (Ft)	Length (Ft)	Quantity (CuYd)
10+10	1	20	5
10+30	1	80	19
11+15	1	47	11
26+45	1	35	10
Total:			45

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

Storm sewer and approach pipes do not require undercutting unless specified otherwise in these plans.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1' Depth (CuYd/Ft)
24	0.2407
36	0.2840

**TABLE OF RIPRAP AND DRAINAGE FABRIC**

Station	Class A Riprap (Ton)	Class B Riprap (Ton)	Type B Drainage Fabric (SqYd)
11+62.91-22.6'R		15.6	17
15+41.97-35.0'R	23.0		33
17+79.73-20.0'R	32.6		47
26+46.50-24.7'R		10.4	11
Total:	55.6	26.0	108

**CONCRETE**

All concrete used shall be Class M-6.

**CLEAR AND GRUB TREE**

The unit price for "Clear and Grub Tree" will be full compensation for all removal and disposal of trees. The Engineer will establish right-of-way lines and construction lines prior to the start of clearing and grubbing operations. Locations for removal of trees are identified on plan sheets.

**TABLE OF TREE REMOVAL**

Station	L/R	Quantity (Each)
18+17.39	35.9'R	1
18+87.04	33.3'R	1
19+43.60	20.5'R	1
19+33.96	12.1'R	1
19+54.17	12.4'R	1
22+55.60	9.9'R	1
22+62.14	8.6'R	1
22+61.35	11.3'R	1
22+63.95	9.9'R	1
22+63.48	11.4'R	1
23+10.33	10.2'R	1
23+61.86	5.9'R	1
23+78.24	9.2'R	1
24+08.45	10.2'R	1
24+25.85	8.6'R	1
24+36.26	9.1'R	1
24+42.47	8.9'R	1
24+57.65	8.0'R	1
24+58.55	3.0'R	1
24+74.21	8.5'R	1
24+77.64	5.7'R	1
24+83.19	6.0'R	1
24+88.32	2.7'R	1
24+90.84	7.6'R	1
25+10.09	8.7'R	1
25+22.60	8.8'R	1
25+38.81	8.5'R	1
25+58.30	6.6'R	1
25+61.80	2.2'R	1
25+95.39	5.5'R	1
26+03.09	4.1'R	1
26+12.59	2.7'R	1
26+31.65	0.9'R	1
26+56.52	5.5'R	1
26+63.02	3.7'R	1
26+64.94	0.9'L	1
26+92.31	0.0'R	1
27+24.97	2.5'R	1
Total:		38

**GENERAL MAINTENANCE OF TRAFFIC**

One (1) R9-9 "Sidewalk Closed" sign is included in the plans and shall be used when connecting to the existing path.

Two (2) W3-4 "Be Prepared to Stop" signs and two (2) W20-7 "Flagger" signs are included in the plans and shall be used when flagging is required and as per standard plate 634.30.

All paved streets adjacent to the project are to be swept at the end of each working day.

The Contractor or designated traffic control subcontractor shall ensure the adequacy, legibility, and reflectivity of each sign and device. Sign washing shall be considered incidental to the contract lump sum price for "Traffic Control, Miscellaneous" and required as directed by the Engineer.

**PEDESTRIAN TRAFFIC**

The Contractor shall protect all work areas for the safety of pedestrians. Safety fence shall be installed around all work areas that are adjacent to pedestrian walkways and at other locations as designated by the Engineer. Payment for all work and associated materials shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

**FURNISH AND INSTALL TRAFFIC SIGNS**

The signs listed on the Permanent Sign Table in the plans as new installations shall be provided for the locations specified.

**SIGN LEGEND, BORDER AND BACKGROUND**

All sign legend, border, and background sheeting material shall be Type IV (ASTM D4956). All upper case letters, lower cases letters, and numerals shall be Series "E" Modified unless otherwise shown on the plans.

The corner radii on all signs 3 ft. or less in height shall be 3 inches. The corner radii on all signs greater than 3 ft. and less than 6 ft. in height shall be 6 inches. The sign height, sign width, length, height, and symbol sizes are specified herein.

**HARDWARE**

The Contractor shall use 5/16" stainless steel machine sign bolts, stainless steel flat metal washers, nylon washers (against the sign sheeting), and Nylock nuts to fasten the sign to the perforated tube post. A minimum of two bolts shall extend through the post.

The cost for all hardware items shall be incidental to the contract unit price for each type of sign based on sheeting requirements per square foot of sign.

**SIGN POSTS**

The plan post lengths shall be field verified by the Contractor prior to installation.

The Contractor shall provide Perforated Tube Post sign supports for each sign as listed in the Permanent Sign Table in these plans. The Contractor shall utilize 2" sign posts with a 2 1/4" base section and a 2 1/2" collar section for all new and reset sign installations. See Special Detail L21 for 2" sign post base details. 2" and 2 1/4" square perforated tube post shall be fabricated from 12 gauge galvanized steel. 2 1/2" square perforated tube post shall be fabricated from 10 gauge galvanized steel. Heavy gauge galvanized steel anchor stub posts that do not require stiffener sleeves may be required by the manufacturer for 2 1/2" square perforated tube direct drive anchor post installations. Anchor wings are required for anchor posts with signs greater than 7 sq. ft. in total size. Anchor posts shall be 4 ft. in length.

Perforated square sign supports shall be required for each sign. These supports shall be new and provided by the Contractor. Sign posts shall be of length adequate to provide the proper height above the roadway and to extend to the top of the sign. The signpost shall not extend past the top of the sign.

The cost for anchor and stub posts shall be incidental to the respective contract unit price per foot for the post size indicated, and are not included in the estimate of quantities



**DATE DECAL**

The Contractor shall affix a date decal to each new sign installed. Each decal is a self-adhesive sticker approximately 2" X 2" with removable paper backing and black numerals on a white background.

All costs for furnishing and installing of date decals on new signs shall be incidental to the contract unit price for the various signing bid items.

**SIGN PLACEMENT**

The clearance to the bottom of the sign shall be 7' to 7 1/2' for all roadway signs. The clearance to the bottom of the signs shall be 4' for all shared path signs. The height to the bottom of a secondary sign mounted below another sign may be 1' less than the appropriate height specified above.

Generally, all signs shall be placed as located on the plans. In no case shall a sign be placed closer to the roadway than the distance specified in the standard plate.

All signs shall be installed facing traffic at a 90 degree angle to the direction of travel.

**REMOVE, SALVAGE, RELOCATE, AND RESET TRAFFIC SIGN**

The Contractor shall neatly stockpile salvaged signs, posts, and related hardware at the Centerville Maintenance Facility. The Contractor shall remove the sign(s) first and remove the post(s) and footings (if present) separate. Signs, reusable posts, and hardware damaged or lost due to carelessness shall be replaced in kind at the contractor's expense. All nuts, bolts, and miscellaneous mounting hardware salvaged from existing signs shall not be reused.

The existing footings for fixed base sign posts shall be removed entirely or broken down a minimum of 1 foot below the surface of the final grade at topsoil elevation.

The cost for removal and salvage of flat aluminum sign assemblies, including post and footing, utility or light pole mounted signs, and miscellaneous hardware shall be incidental to the contract unit price per each for "Remove, Salvage, Relocate, and Reset Traffic Sign". When multiple signs are on the same post, they shall be measured and paid as one.

All costs required including labor, equipment, and materials to mount salvaged signs, shall be paid under the contract unit price per each for "Remove, Salvage, Relocate, and Reset Traffic Sign". New signs installed are incidental to the contract unit price for each type of sign based on sheeting requirements per square foot of sign. When multiple signs are on the same post, or several signs are on two posts, payment will be made only once for each sign assembly installed.

**TABLE OF SIGN REMOVAL**

Station	Type	L/R	Qty
11+62.60	Speed Limit	1.1'R	1
15+33.22	Type 3 Object Marker	2.5'L	1
15+33.22	Type 3 Object Marker	33.9'L	1
17+92.15	Type 3 Object Marker	1.4'L	1
17+92.15	Type 3 Object Marker	32.5'L	1
18+45.24	Path Stop Sign	8.3'R	1
Total:			6

**TABLE OF SIGN REMOVAL FOR RESET**

Station	Type	L/R	Qty
9+92.35	No Motor Vehicles	4.6'L	1
14+63.78	Curve Ahead Speed Limit	0.8'R	1
Total:			2

- 13+75.9 – 1.4'R Yellow Post - Verify with Engineer in field.
- 19+38 – 4.4'L Yellow Post – Verify with Engineer in field.

**TABLE OF DELINEATOR REMOVAL**

Station	L/R	Qty
13+33.11	0.4'L	1
13+82.97	0.2'L	1
14+32.75	0.2'L	1
14+82.75	4.1'L	1
Total:		4

**REMOVE AND RESET DELINEATOR**

All costs for removal, salvage, and reset of delineators including labor, equipment, and materials shall be incidental to the bid item "Reset Delineator." All reset delineators shall be installed on new posts.

**TABLE OF DELINEATOR REMOVAL FOR RESET**

Station	L/R	Qty
18+43.48	1.2'L	1
Total:		1

**TABLE OF SIGN INSTALLATION**

Station	Description	Sign Code	Sign size (Ft)	Sign Area (SqFt)	Post Lengths (Ft, above ground)
9+92 – 11.0'R	No Motor Vehicles	Reset			9.5
11+63 – 7.5'L	*Speed Limit	R2-1.25	2 X 2.5	5.0	9.5
13+00 – 7.5'L	Flexible Delineator				
13+50 – 7.5'L	Flexible Delineator				
14+00 – 7.5'L	Flexible Delineator				
14+50 – 7.5'L	Flexible Delineator				
14+64 – 7.0'L	Curve Ahead 20 MPH	Reset			9.5
15+08 – 7.0'R	Walk Bikes Across Bridge	SPECIAL	1.5 X 2	3.0	4.5
18+26 – 7.0'R	Walk Bikes Across Bridge	SPECIAL	1.5 X 2	3.0	4.5
18+50 – 10.2'L	Delineator – 4"x4"	Reset			6
29+02-130.6'L	*Speed Limit	R2-1.25	2 X 2.5	5.0	9.5
29+95 – 11.0'L	*No Motor Vehicles	R5-3	2 X 2	4.0	9.5
<b>Totals</b>				<b>20.0</b>	<b>62.5</b>

**TABLE OF TYPE 2 OBJECT MARKERS**

Station	L/R	Qty
15+14	6.4'L	1
15+14	34.0'L	1
18+33	5.9'L	1
18+33	34.0'L	1
Total:		4

**FLEXIBLE DELINEATOR**

Flexible delineators shall be installed at the locations shown in the plans. Delineators shall be Type 2 guide posts with 18" closed end soil anchors, the post shall be white in color with standard high intensity silver reflective sheeting, 48" high, as manufactured by:

Safe-Hit  
35 East Wacker Drive  
Chicago, IL 60601  
Tel: (800) 537-8958  
[www.quixtrans.com](http://www.quixtrans.com)

or Engineer Approved Equal. The contract unit price per each for "Flexible Delineator" shall be full compensation for all items necessary to furnish and install the delineators.

**PAVEMENT MARKING PAINT**

Pavement marking paint shall conform to the requirements and approved products outlined in Section 980 of the SDDOT Standard Specifications.

**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)
9+90		15+40	225
Subtotal:			225

**CONTRACTOR FURNISHED TOPSOIL**

It is anticipated that a larger volume of topsoil will be needed for the new grade than can be salvaged from the existing grade. The Contractor will be required to furnish and place 4 inches within the project limits.

Station	to	Station	Topsoil (CuYd)
9+90		15+40	10
17+82		29+99	197
Subtotal:			207

All costs to furnish and place the topsoil shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Topsoil".

**MYCORRHIZAL INOCULUM**

Mycorrhizal inoculum shall 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 shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

- Glomus intraradices* 25%
- Glomus aggregatu* 25%
- Glomus mosseae* 25%
- Glomus etunicatum* 25%

All seed shall 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 shall be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

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

Product	Manufacturer
MycosApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 <a href="http://www.mycorrhizae.com/">http://www.mycorrhizae.com/</a>



**FERTILIZING**

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer shall have a minimum guaranteed analysis of 4-6-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 3.2%, a minimum of 6% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer shall be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer shall have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer shall also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The all-natural slow release fertilizer shall be applied according to the manufacturer's application recommendations.

The application rate is 1,000 pounds per acre.

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

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 <a href="http://www.sustane.com/">http://www.sustane.com/</a>

**PERMANENT SEEDING**

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

Type B Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
Canada Wildrye	Mandan	2
Total:		18

**MULCHING (GRASS HAY OR STRAW)**

All newly seeded areas shall be covered with straw mulch.

**LOW FLOW SILT FENCE**

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

<http://sddot.com/business/certification/products/Default.aspx>

Low flow silt fence shall 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 734.04 for details.

**TABLE OF LOW FLOW SILT FENCE**

Station	L/R	Location	Quantity (Ft)
10+26.32 to 11+28.56	R	DITCH	105
11+45.81 to 15+03.99	R	DITCH	286
15+03.85 to 15+62.27	R	DTICH	72
17+76.91 to 20+00.00	R	DITCH	192
20+00.00 to 25+00.00	R	DITCH	500
25+00.00 to 29+99.00	R	DITCH	517
Additional Quantity:			50
Total:			1722

**INTERIM SEDIMENT CONTROL AT INLETS, MANHOLES, AND JUNCTION BOXES AFTER SURFACING REMOVAL AND BEFORE PLACEMENT OF SURFACING**

Refer to Standard Plate 734.05 for details of installation of low flow silt fence at drop inlets, manholes, and junction boxes.

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

<http://sddot.com/business/certification/products/Default.aspx>

In addition, the Contractor shall do the following for this installation:

- A space of at least 1' shall be provided between the silt fence installation and the inlet. This space shall be filled completely with a 2" depth of aggregate, 2" minus or smaller.
- The top elevation of the silt fence shall be such that a 12" horizontal flap of silt fence will remain at the bottom.
- The base of the silt fence shall conform to the natural ground profile but does not need to be trenched in at the bottom.
- The extra 12" of the silt fence material may be cut so that the material will lay flat upon the subgrade.
- Sediment filter bags shall be placed on the 12" flap around the perimeter of the silt fence installation. The sediment filter bags shall overlap 6" at the ends and be placed tightly together.
- The sediment filter bags shall be filled with clean aggregate 2" minus or smaller.

**Sediment Filter Bag**

Product	Manufacturer
Snake Bag	Sacramento Bag Manufacturing Co. Sacramento, CA Phone: 1-800-287-2247 <a href="http://www.sacbag.com">www.sacbag.com</a>

The sediment filter bag shall be the Snake Bag from Sacramento Bag Manufacturing Company or an approved equal.

All costs for furnishing, installing, and removing the 2" depth of aggregate shall be incidental to other erosion and sediment control items.

All costs for removing and disposing of sediment collected by the sediment control device shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

The removed sediment shall be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

The Contractor and Engineer shall inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event greater than 1/2".

**TABLE OF INTERIM SEDIMENT CONTROL AT INLETS, MANHOLES, AND JUNCTION BOXES AFTER SURFACING REMOVAL AND BEFORE PLACEMENT OF SURFACING**

Station	L/R	High Flow Silt Fence (Ft)	Sediment Filter Bag (Ft)	Remove Sediment (CuYd)
10+29.76	R	18	18	0.3
11+12.11	R	18	18	0.3
Totals:		36	36	0.6

**STREET SWEEPING**

Vehicle tracking of sediment from the construction site shall be minimized. Street sweeping shall be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto the street.

The Contractor shall use a broom to sweep material back into the work area.

At a minimum, sweeping will be required:

1. When sediment is present on the roadway
2. Prior to opening any segment or roadway to traffic.

All costs for cleaning the roadway with a pickup broom shall be incidental to the contract unit price per hour for "Sweeping".

**CONCRETE WASHOUT AREA**

A concrete washout area shall be installed on the project site at a location approved by the Engineer if concrete trucks deliver concrete to the site. No washout area is necessary if all concrete trucks are going to wash out at an approved site constructed by the concrete supplier. The concrete washout area must be kept in a condition to maintain the capacity for all wasted concrete and washout water on the project.

Concrete washout will only be measured if the corresponding bid item has been included in the plans and a concrete washout area has been constructed on the project site. Measurement for the concrete washout area will be per each.

Payment for the concrete washout area will be at the contract unit price per each if specified. Payment shall be full compensation for all materials, labor, equipment, and incidentals required to install, maintain, and remove the concrete washout area.



**TABLE OF PIPE QUANTITIES**

Station-Offset to Station-Offset	24" HDPE Pipe Reset Ft	24" HDPE Pipe End Section Reset Ft	24" HDPE Bend Each	24" HDPE Pipe Ft	36" Flap Gate Each	36" CMP Pipe Ft	Remove Storm Sewer Pipe - PVC Ft	Remove Storm Sewer Pipe - CMP Ft	Remove Pipe for Reset Ft	Remove Flap Gate (Incidental Work) LS	Remove 24" HDPE End Section for Reset Each
10+09.80-5.4'R to 10+29.76-1.2'R									20		
10+09.80-5.4'R to 10+29.76-1.2'R	20										1
10+09.80-1.2'R			1 (11 deg)								
10+29.76-1.2'R to 11+14.67-13.2'R				80							
11+14.67-13.2'R to 11+62.91-22.6'R		1		47							
10+92.23-5.8'R to 11+12.11-12.8'R							25				
11+16.08-13.6'R to 11+59.99-22.0'R								45			
26+45.06-10.2'L										1 (LS)	
26+45.06-10.2'L to 26+46.50-25.8'R						36					
26+46.50-25.8'R					1						
<b>Subtotal</b>	<b>20</b>	<b>1</b>	<b>1</b>	<b>127</b>	<b>1</b>	<b>36</b>	<b>25</b>	<b>45</b>	<b>20</b>	<b>LS</b>	<b>1</b>

**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R9-9	SIDEWALK CLOSED	1	24" x 12"	2	2
W3-4	BE PREPARED TO STOP	2	48" x 48"	16	32
W20-1	ROAD WORK AHEAD	2	48" x 48"	16	32
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	2	48" x 48"	16	32
W21-5	SHOULDER WORK	2	48" x 48"	16	32
G20-2	END ROAD WORK	2	36" x 18"	5	10
<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT</b>					<b>172</b>



**STORM WATER POLLUTION PREVENTION PLAN CHECKLIST**

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

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - Clearing and grubbing
  - Excavation/borrow
  - Grading and shaping
  - Filling
  - Cutting and filling
  - Other (describe): Concrete trail installation.
- **Total Project Area** 1.1 acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 1.1 acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 95%
- **Soil Properties:** USDA Cc and Ro Classification **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Vermillion River **(4.2 1.e.)**

❖ **ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)**

- (Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)
- **Install erosion control devices.**
  - **Clearing and grubbing.**
  - **Remove and store topsoil.**
  - **Install concrete trail.**
  - **Install topsoil and complete final grading.**
  - **Reseed areas disturbed by construction activities.**

❖ **EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))**

- (Check all that apply)
- **Stabilization Practices (See Detail Plan Sheets)**
    - Temporary Seeding (Cover Crop Seeding)
    - Permanent Seeding
    - Sodding
    - Planting (Woody Vegetation for Soil Stabilization)
    - Mulching (Grass Hay or Straw)
    - Hydraulic Mulch (Wood Fiber Mulch)
    - Soil Stabilizer
    - Bonded Fiber Matrix
    - Erosion Control Blankets or Mats
    - Vegetation Buffer Strips
    - Roughened Surface (e.g. tracking)
    - Dust Control
    - Other:
  - **Structural Temporary Erosion and Sediment Controls**
    - Silt Fence
    - Floating Silt Curtain
    - Straw Bale Check
    - Temporary Berm
    - Temporary Slope Drain
    - Straw Wattles or Rolls
    - Turf Reinforcement Mat
    - Rip Rap
    - Gabions
    - Rock Check Dams
    - Sediment Traps/Basins
    - Inlet Protection
    - Outlet Protection
    - Surface Inlet Protection (Area Drain)
    - Curb Inlet Protection
    - Stabilized Construction Entrances
    - Entrance/Exit Equipment Tire Wash
    - Interceptor Ditch
    - Concrete Washout Area
    - Temporary Diversion Channel
    - Work Platform
    - Temporary Water Barrier
    - Temporary Water Crossing
    - 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.

➤ **Storm Water Management (4.2 2.b., (1) and (2))**

Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.

➤ **Other Storm Water Controls (4.2 2.c., (1) and (2))**

- **Waste Disposal**  
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. 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 in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing 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 individual designated as the contractor's on-site representative 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 in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ **Maintenance and Inspection (4.2 3. and 4.2 4.)**

- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - 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 in order 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 site superintendent are responsible for inspections. Maintenance, 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.

❖ **Non-Storm Water Discharges (3.0)**

The following non-storm water 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.

❖ **Materials Inventory (4.2. 2.c.(2))**

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 headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

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

❖ **Spill Prevention (4.2 2.c.(2))**

- **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 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.
    - Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.
  - **Hazardous Materials**
    - Products will be kept in original containers unless the container is not resealable.
    - 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 storm water system or storm water 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 storm water runoff.



➤ **Product Specific Practices (6.8)**

- **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 storm water. 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 areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

➤ **Spill Control Practices (4.2 2 c.(2))**

- 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 clean up 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 clean up 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. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➤ **Spill Response (4.2 2 c.(2))**

- The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water 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 SD DENR.
  - Personnel with primary responsibility for spill response and clean up 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.

❖ **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 DENR immediately **if any one of the following** conditions exists:
  - The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
  - The discharge causes an immediate danger to human health or safety.
  - The discharge exceeds 25 gallons.
  - The discharge causes a sheen on surface water.
  - The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
  - The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
  - The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
  - The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ **Construction Changes (4.4)**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.

❖ **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 6.7.1.C.)

➤ **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**

➤ **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: \_\_\_\_\_

➤ **SD DENR Contact Spill Reporting**

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

➤ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.



### ALIGNMENT TABLE

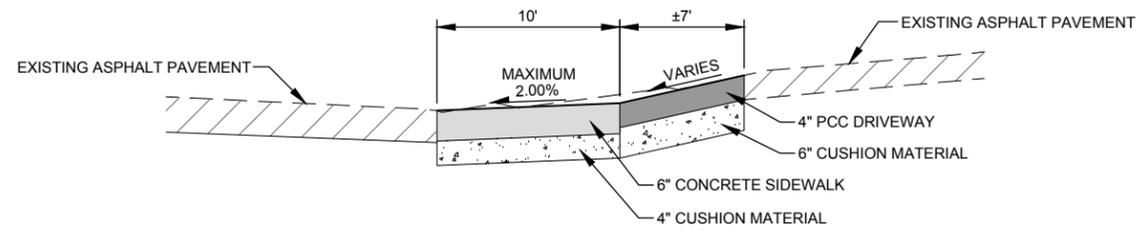
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Circular Curve Data			
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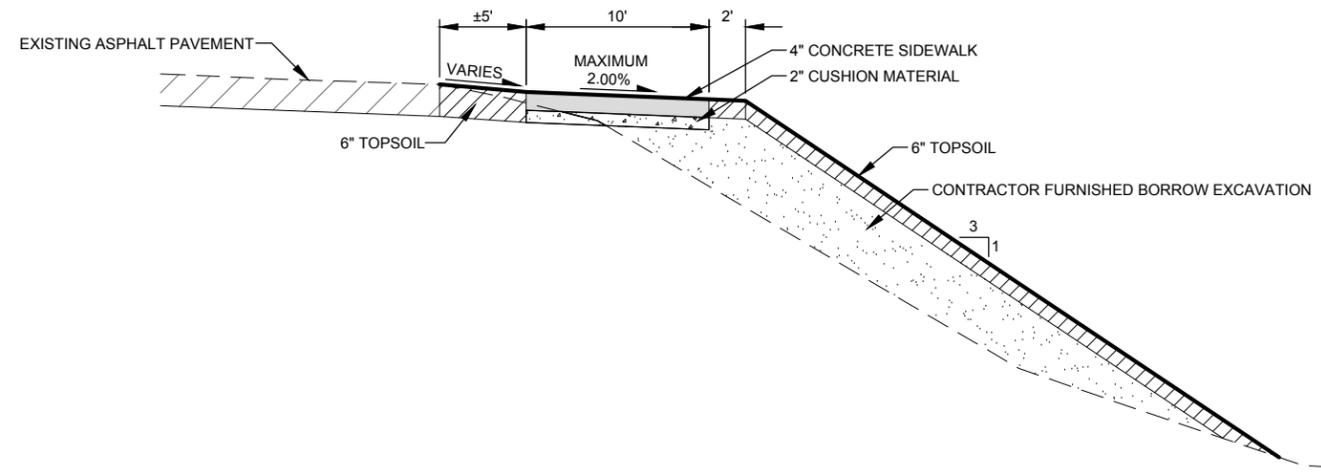
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6	307123.541	2867196.971	1205.011	29+43.54	117.4' R	IDG CAP
7	306037.685	2867150.847	1210.338	18+11.05	55.0' L	IDG CAP
8	306038.608	2867483.536	1211.741	14+86.10	42.2' L	IDG CAP

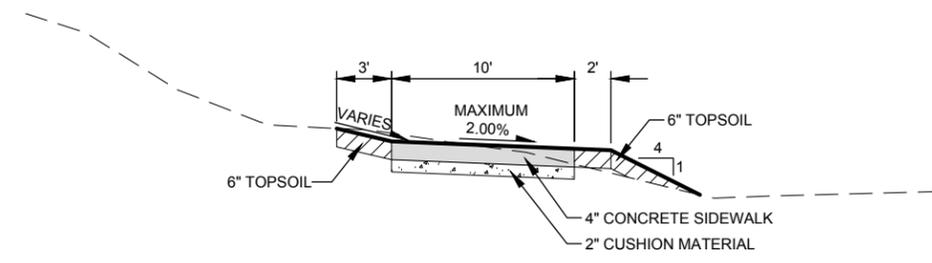




TYPICAL SECTION - PCC DRIVEWAY APPROACH



TYPICAL SECTION - 9+89 TO 15+43 (EXCEPTION OF APPROACHES)



TYPICAL SECTION - 17+83 TO 29+98



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# TRAFFIC CONTROL PLAN

FOR WORK FROM STA 9+90 TO STA 17+83

FOR BIDDING PURPOSES ONLY

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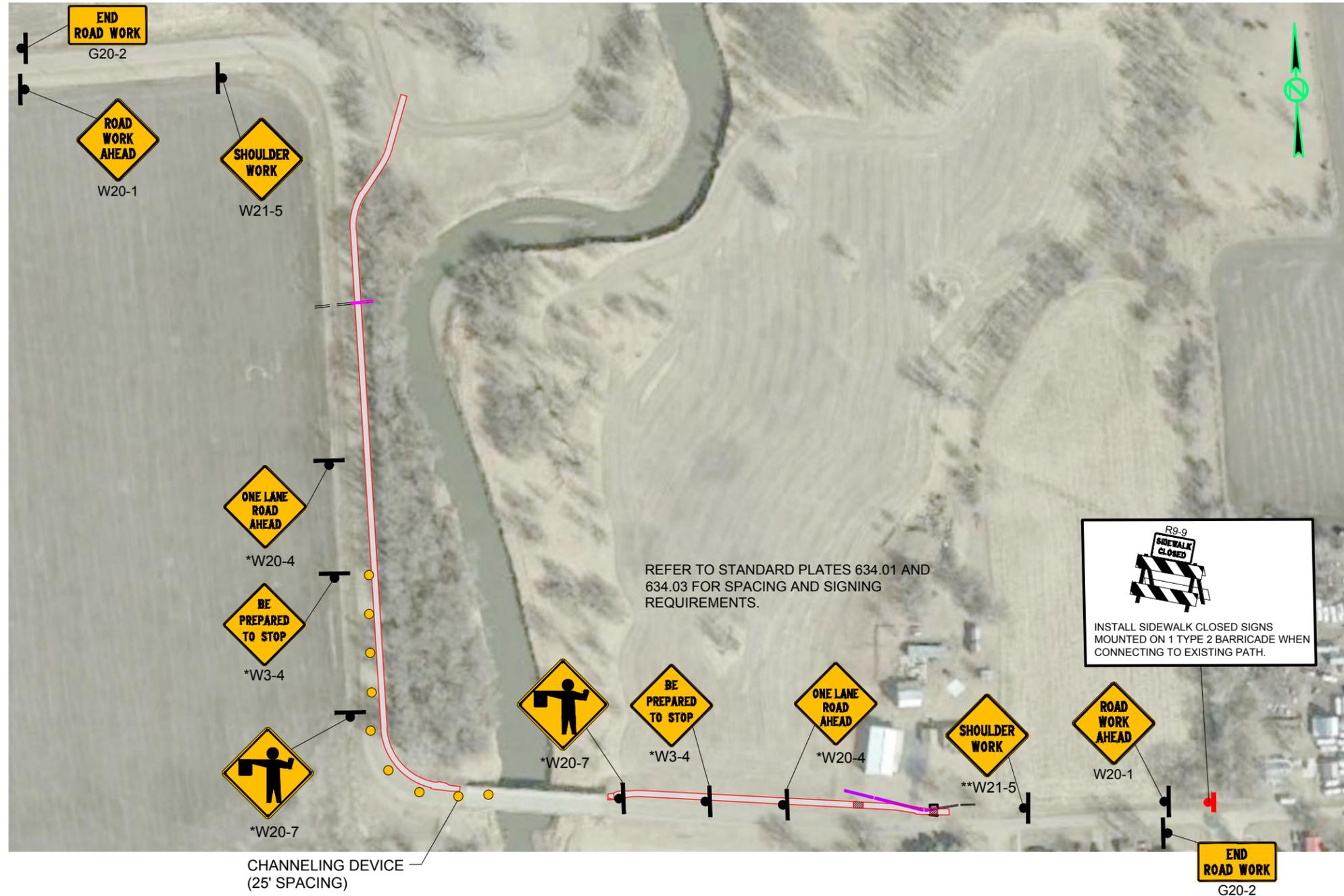


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FOR BIDDING PURPOSES ONLY

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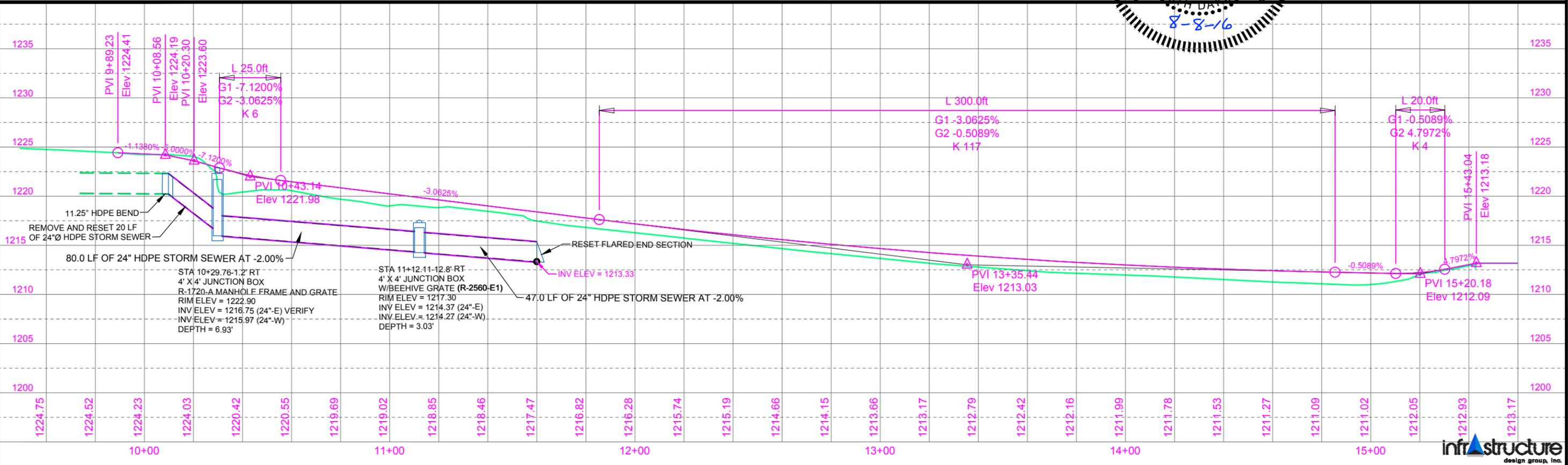
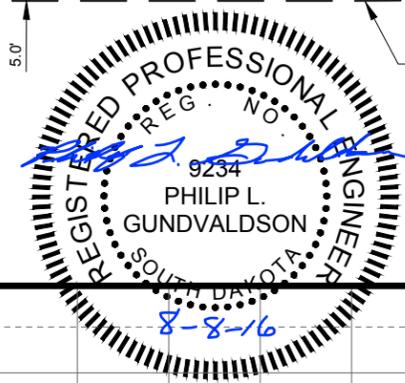
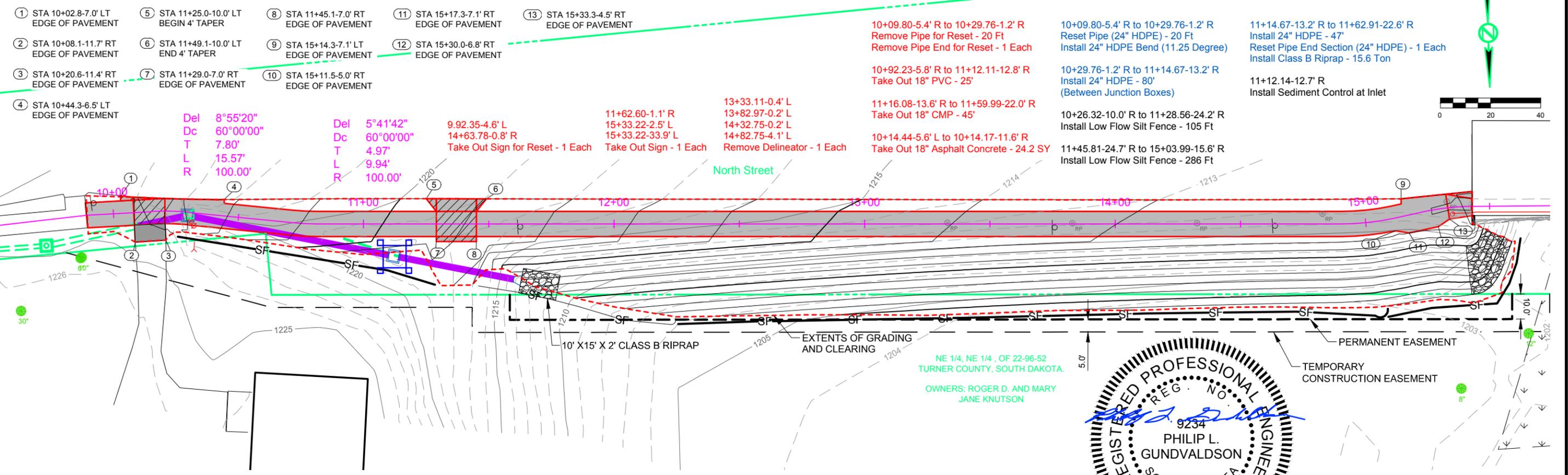
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- \*\* USED WHEN FLAGGING SIGNS ARE NOT IN PLACE



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4" CONCRETE TRAIL    
  6" CONCRETE TRAIL    
  4" CONCRETE DRIVEWAY    
 —SF— LOW FLOW SILT FENCE    
   SEDIMENT CONTROL AT INLET

FOR BIDDING PURPOSES ONLY



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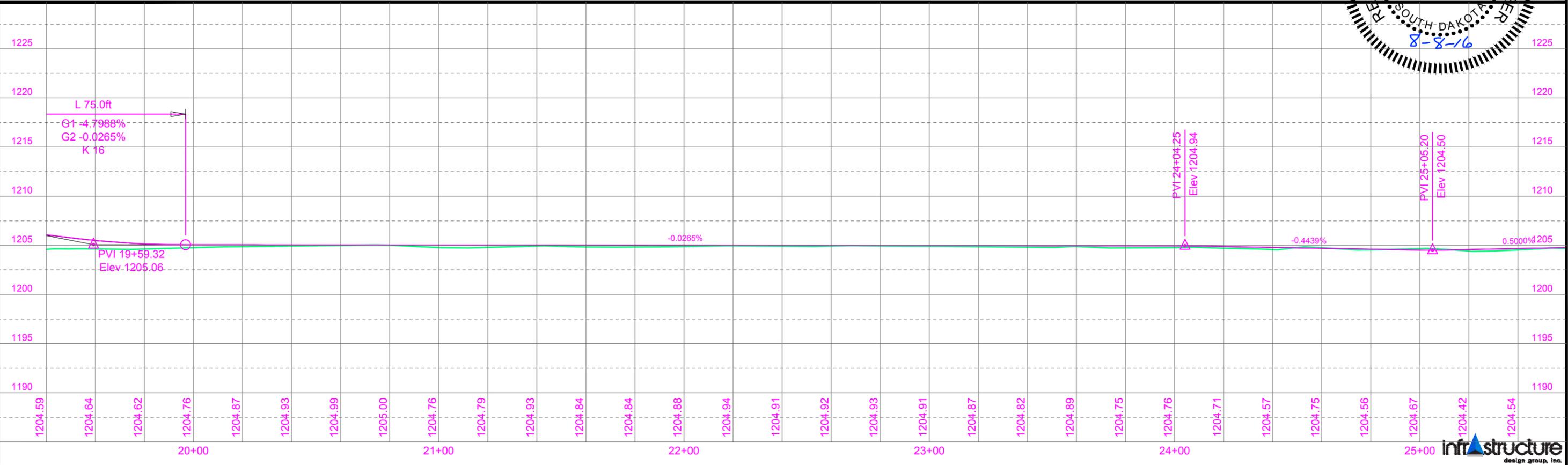
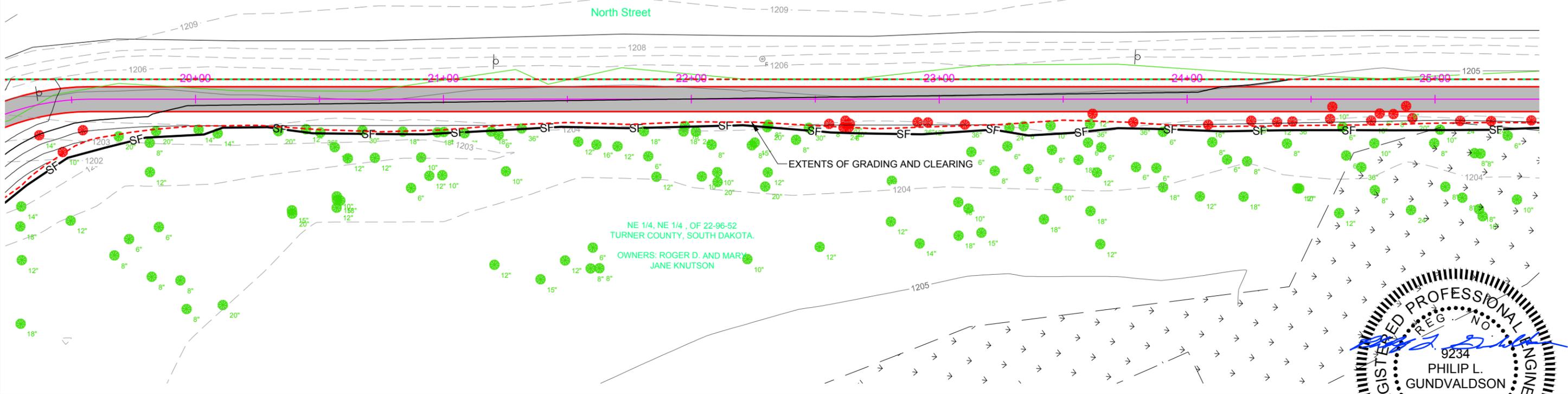
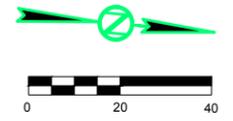


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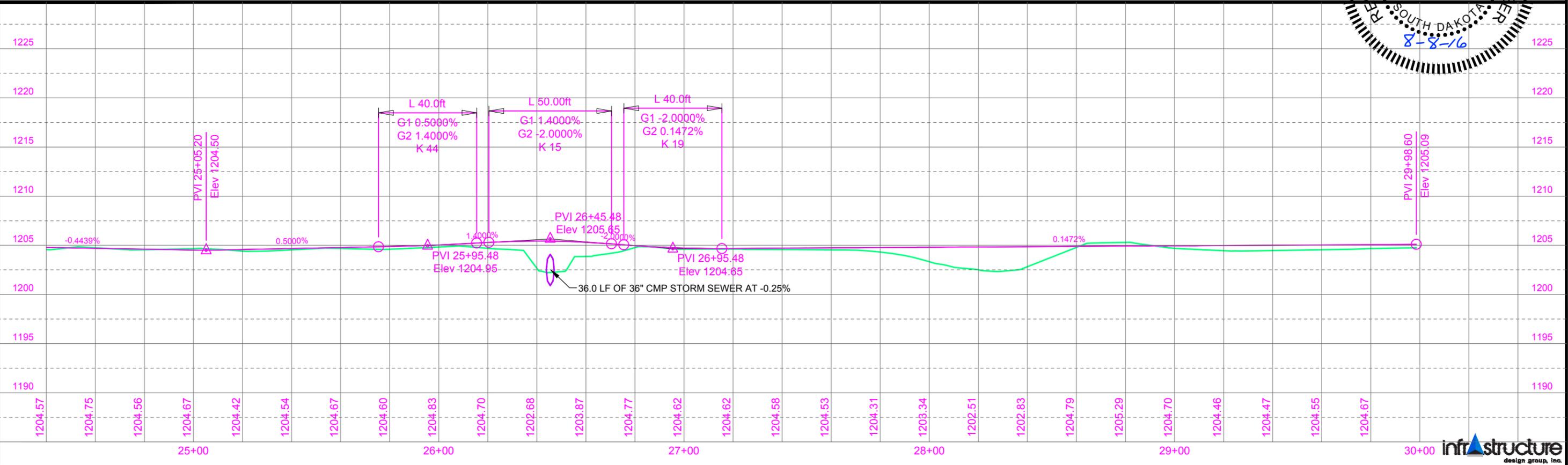
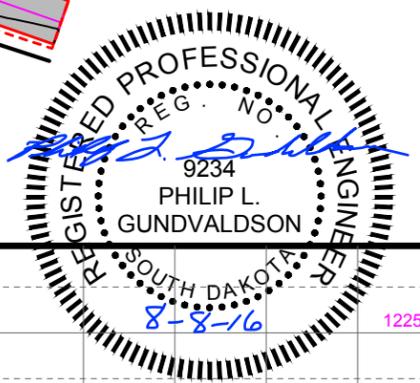
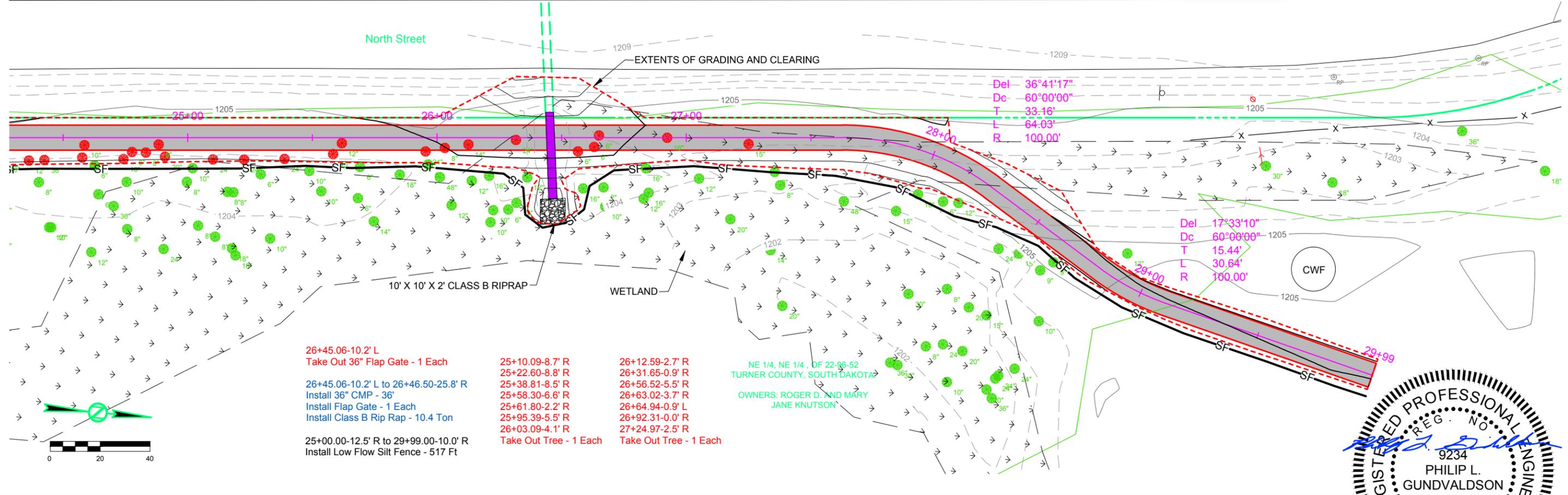
STATE OF SOUTH DAKOTA	PROJECT P TAPR(05)	SHEET 17	TOTAL SHEETS 48
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 4" CONCRETE TRAIL	 6" CONCRETE TRAIL	 4" CONCRETE DRIVEWAY	 SF LOW FLOW SILT FENCE	 WETLAND AREA
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- 22+55.60-9.9' R
- 22+62.14-8.6' R
- 22+61.35-11.3' R
- 22+63.95-9.9' R
- 22+63.48-11.4' R
- Take Out Tree - 1 Each
- 23+10.33-10.2' R
- 23+61.86-5.9' R
- 23+78.24-9.2' R
- 24+08.45-10.2' R
- 24+25.85-8.6' R
- Take Out Tree - 1 Each
- 24+36.26-9.1' R
- 24+42.47-8.9' R
- 24+57.65-8.0' R
- 24+58.55-3.0' R
- 24+74.21-8.5' R
- Take Out Tree - 1 Each
- 24+77.64-5.7' R
- 24+83.19-6.0' R
- 24+88.32-2.7' R
- 24+90.84-7.6' R
- Take Out Tree - 1 Each
- 20+00.00-14.5' R to 25+00.00-12.5' R
- Install Low Flow Silt Fence - 500 Ft



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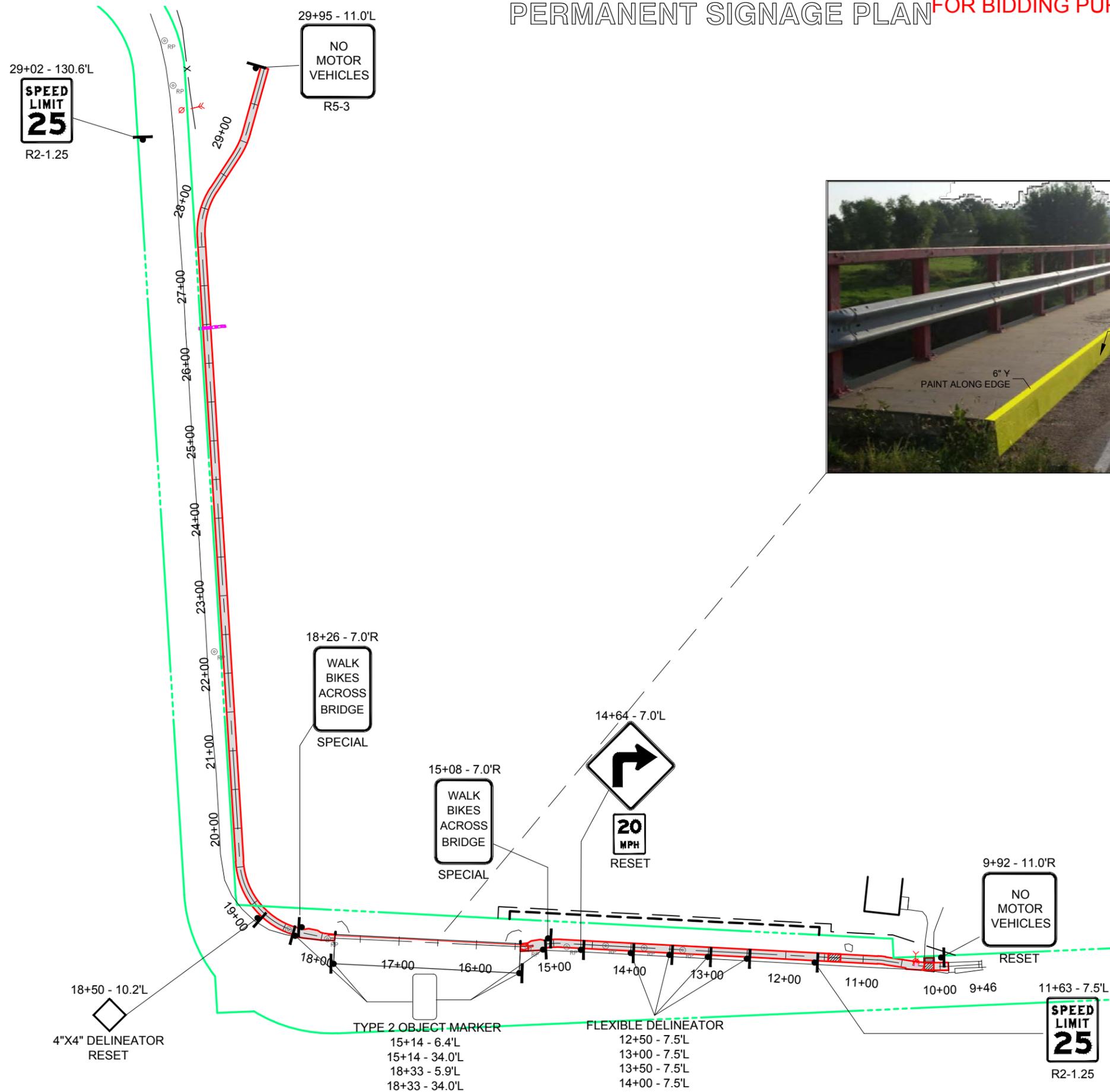


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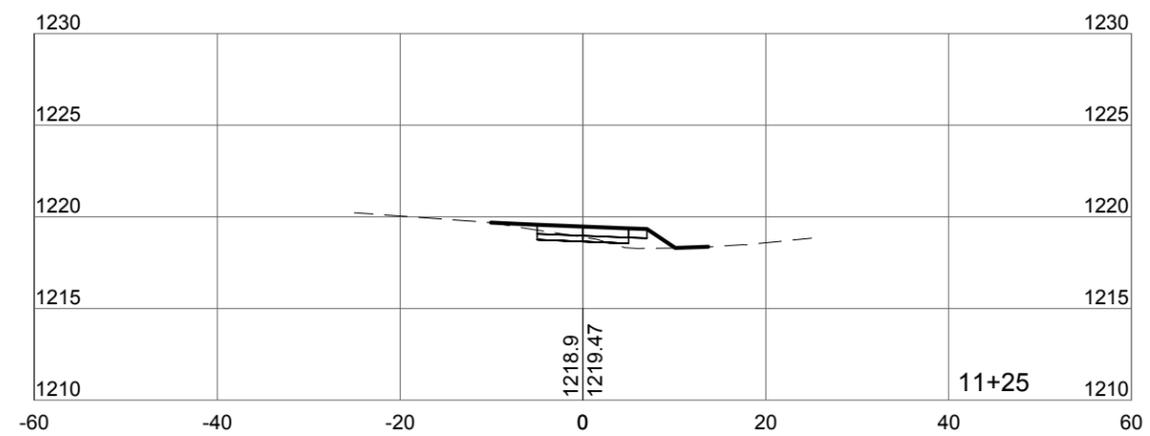
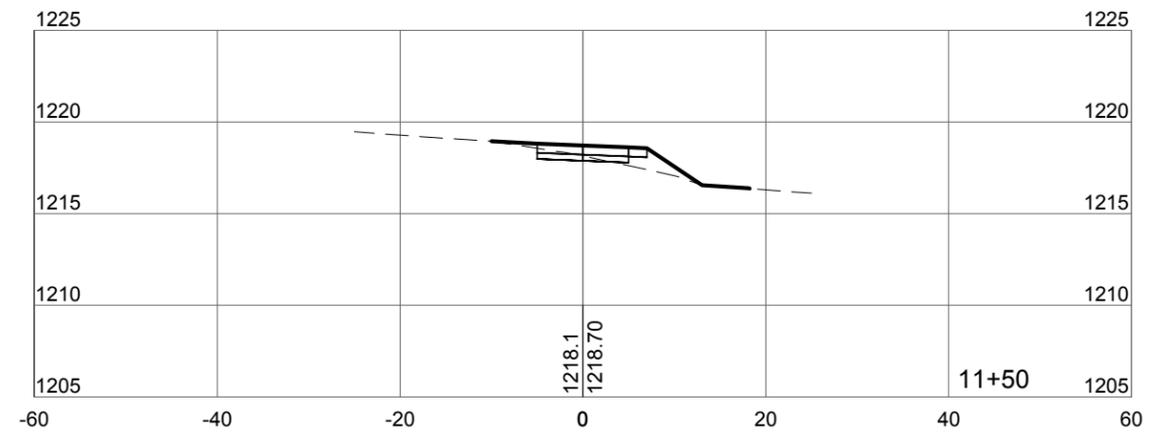
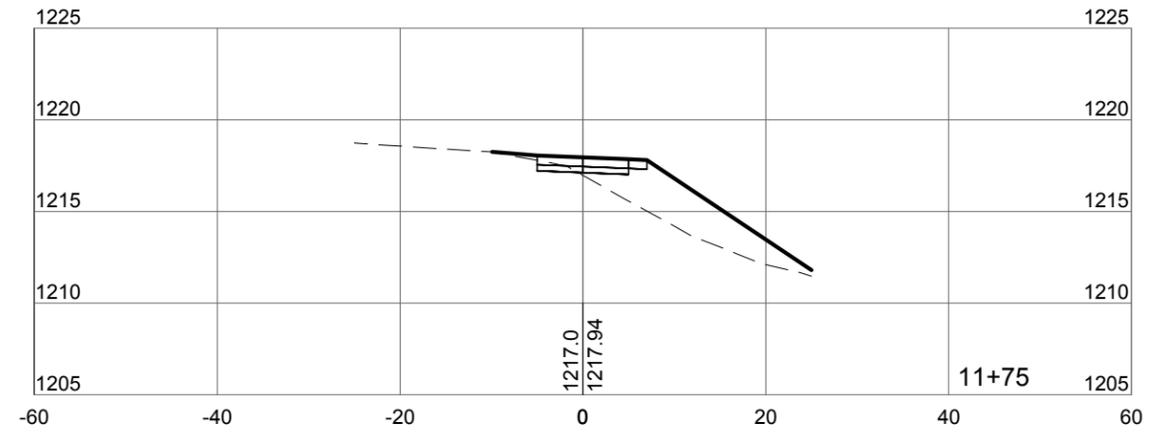
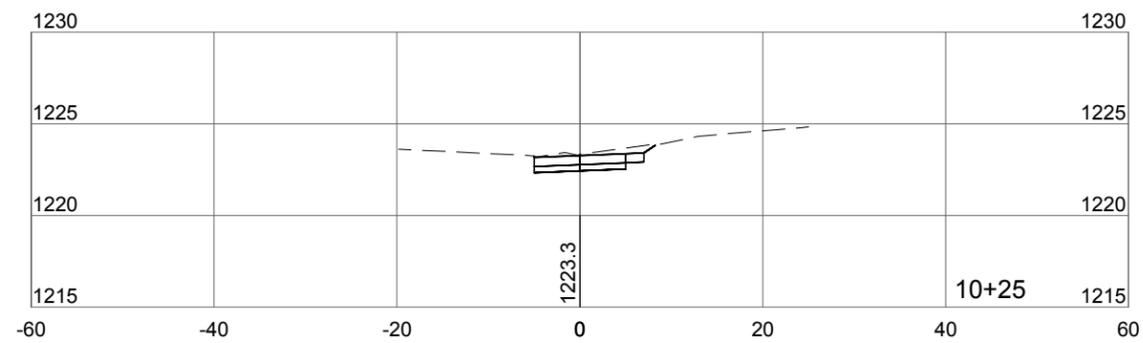
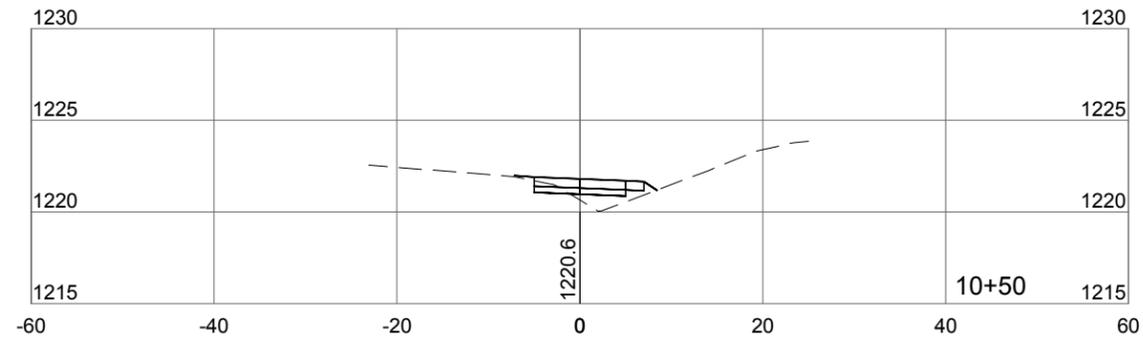
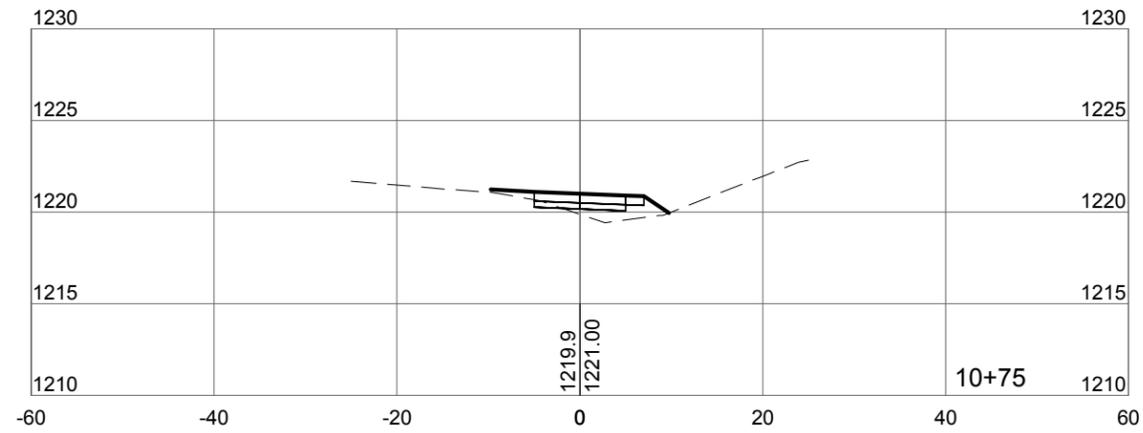
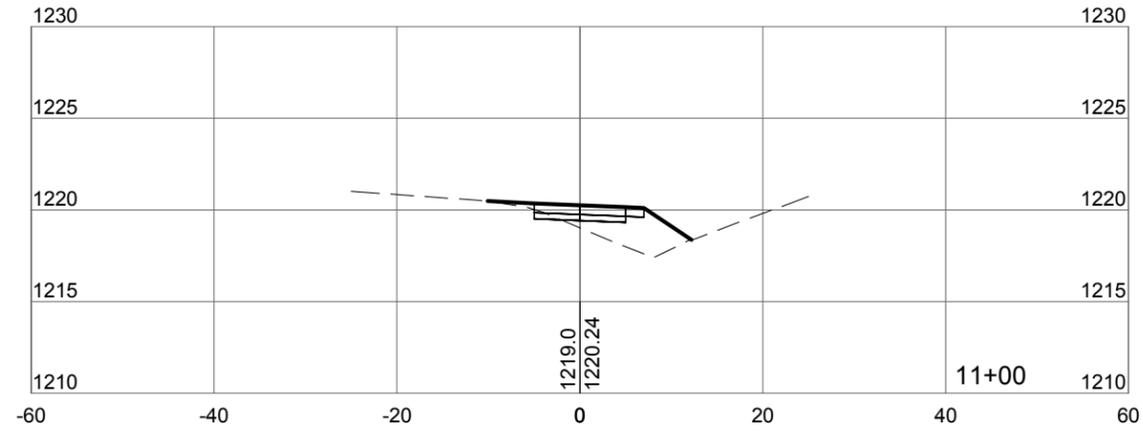
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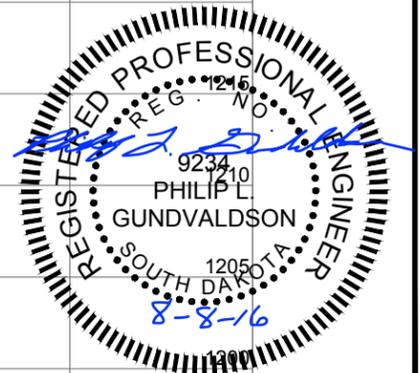
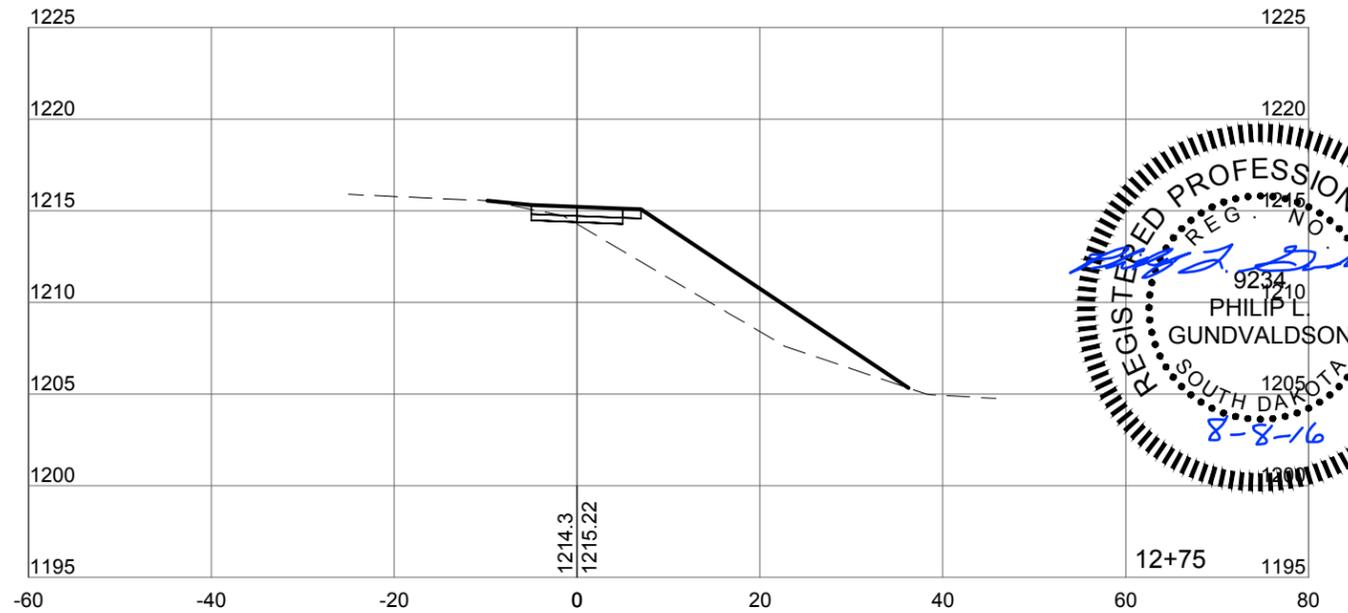
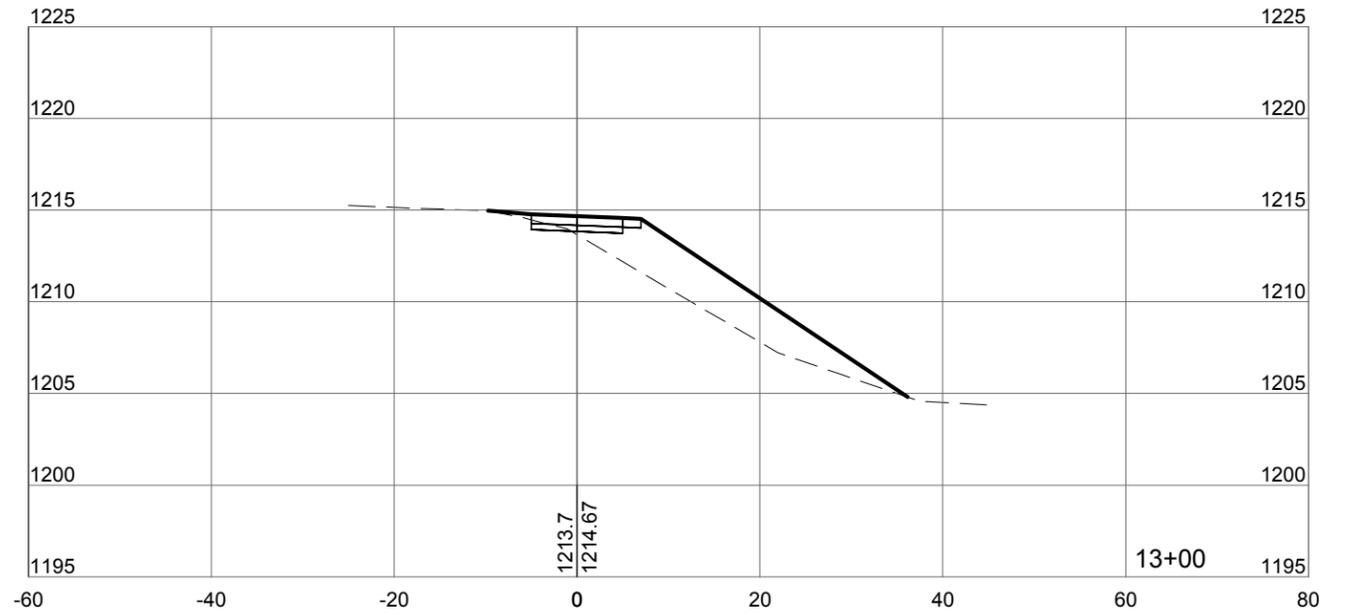
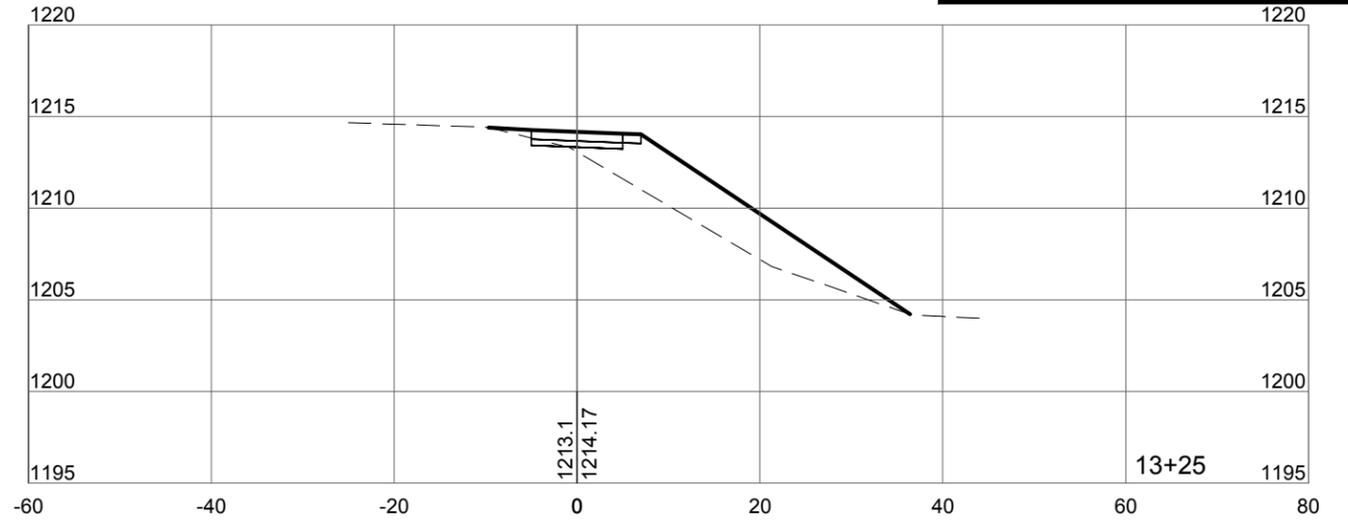
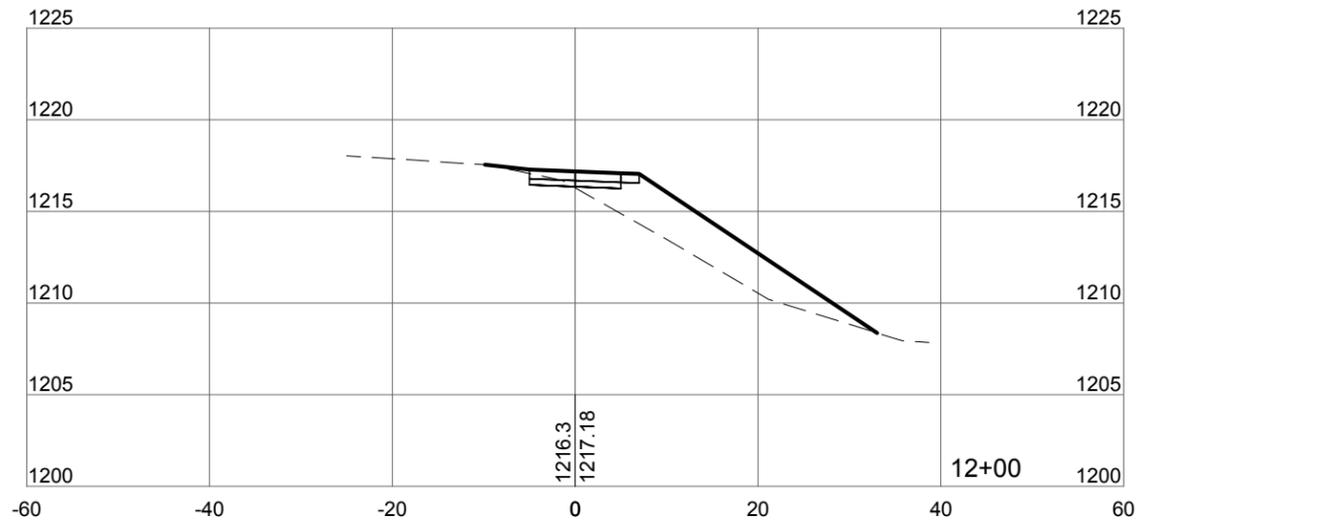
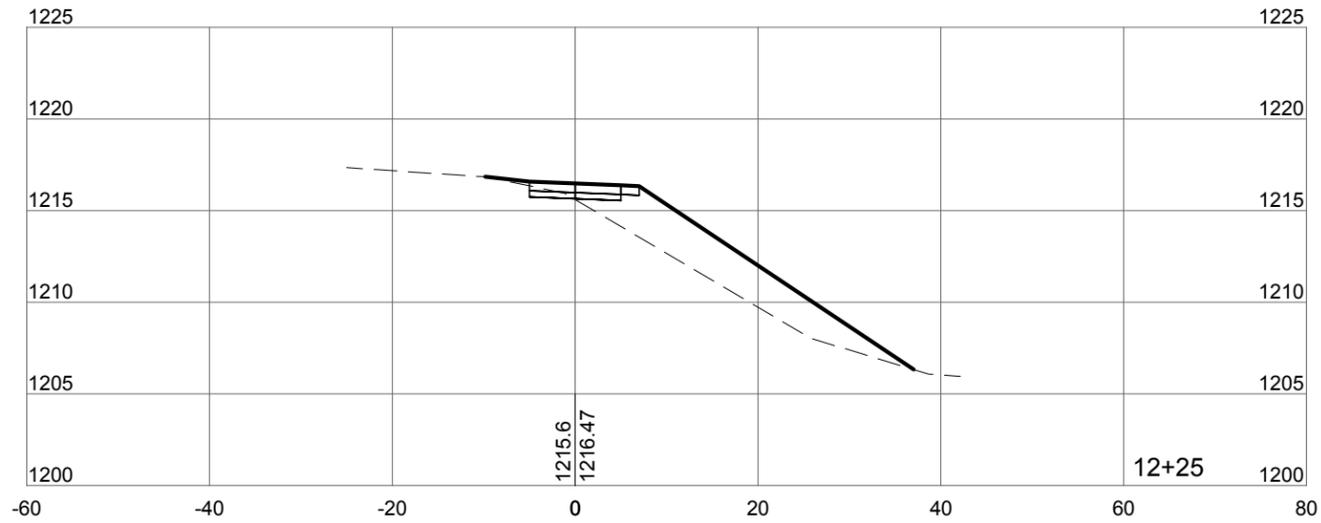
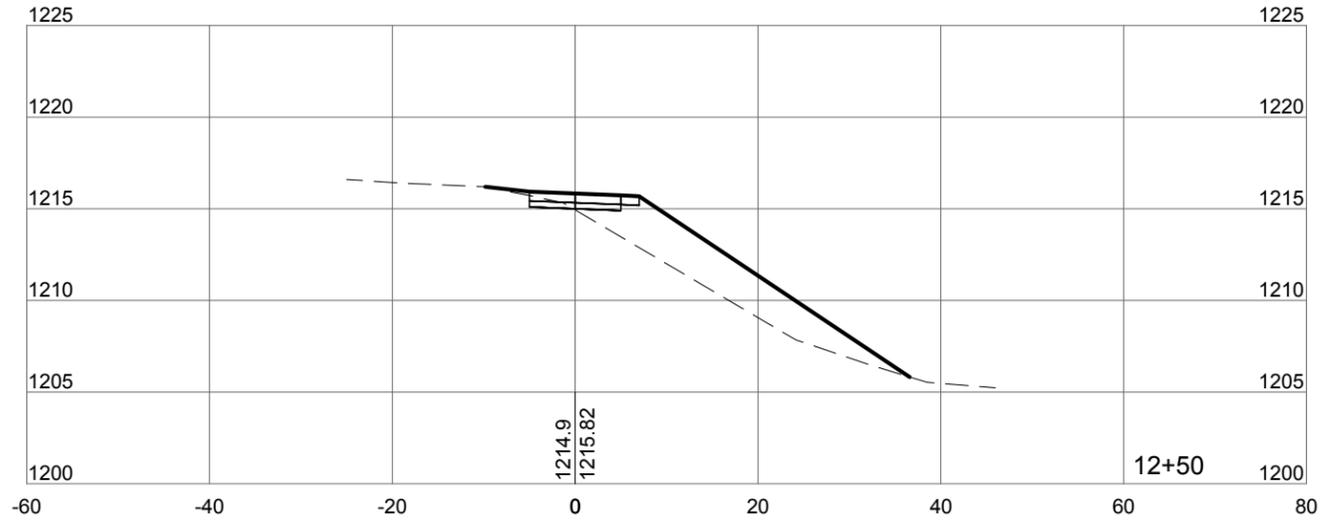
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P TAPR(05)	SHEET 20	TOTAL SHEETS 48
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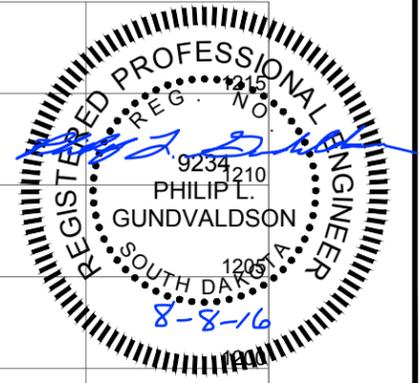
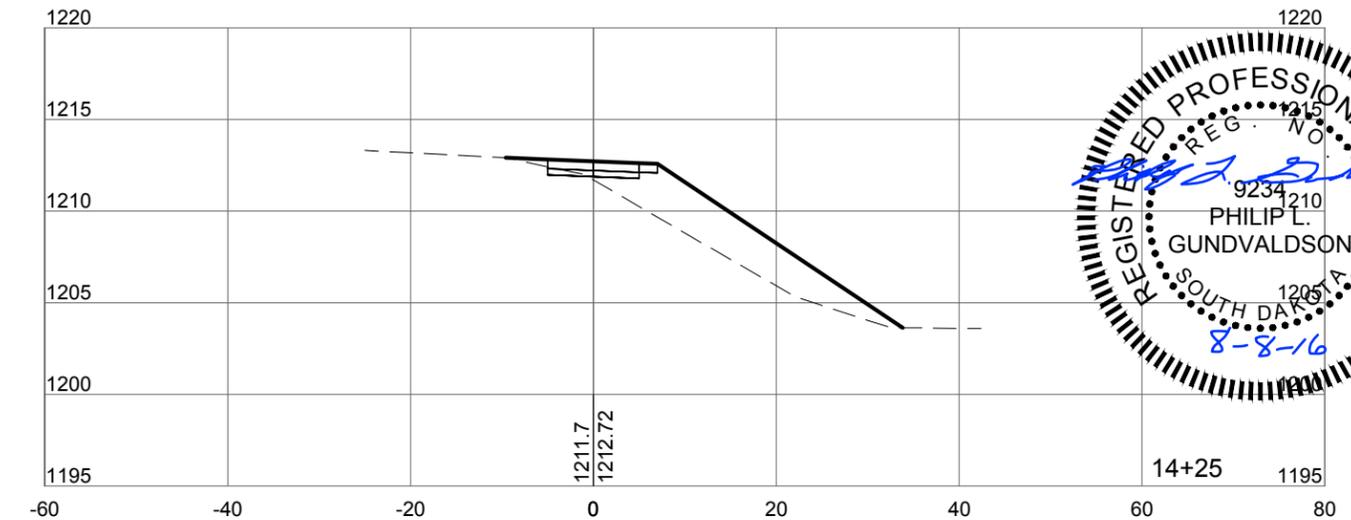
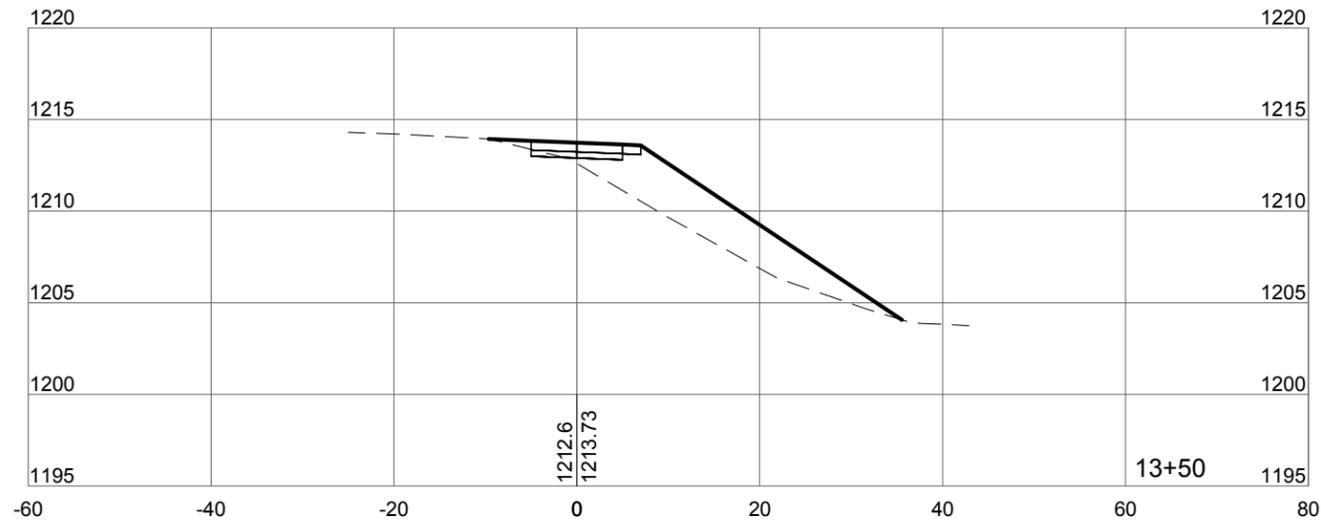
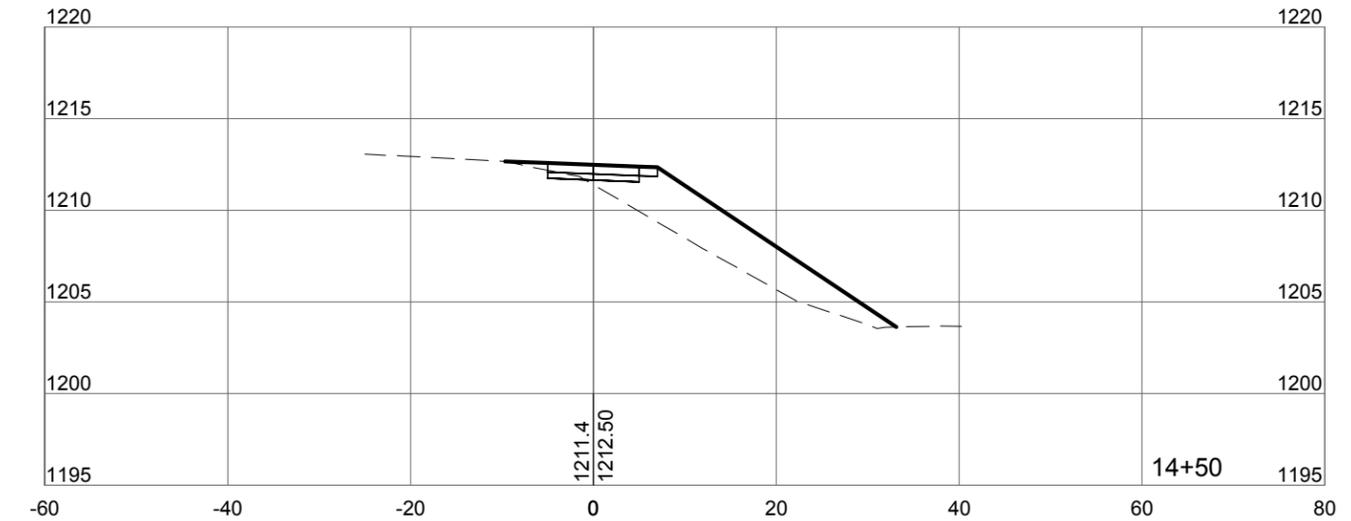
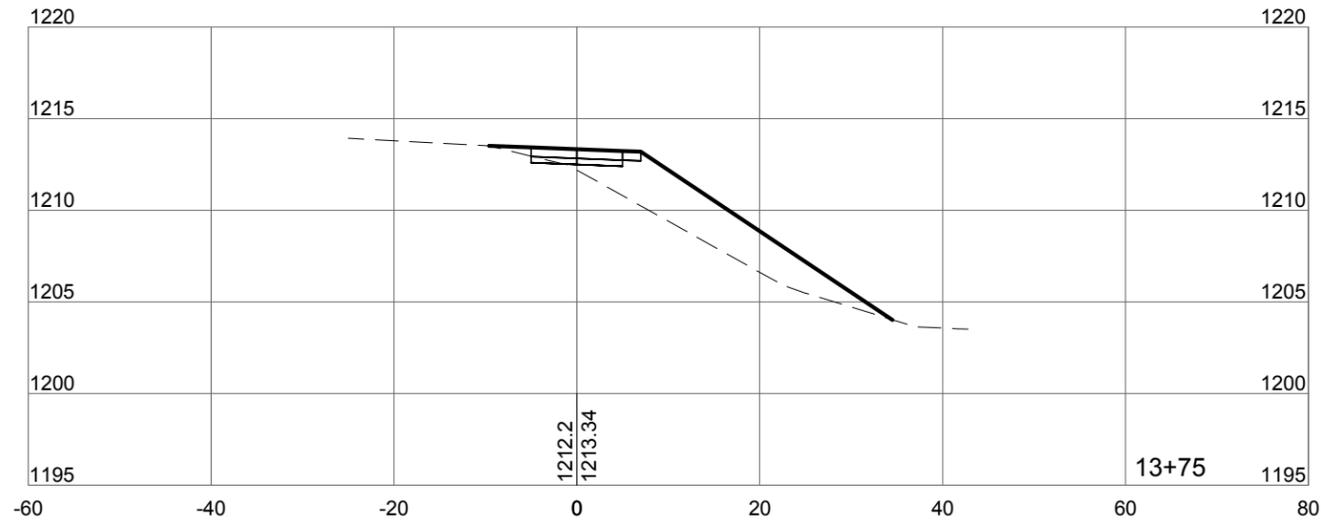
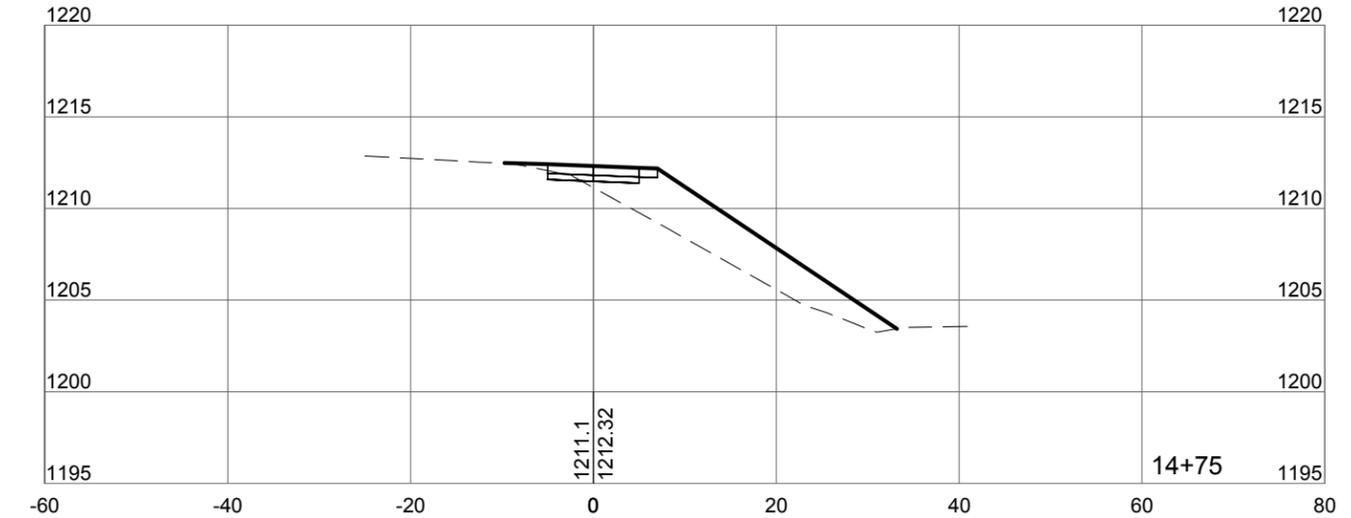
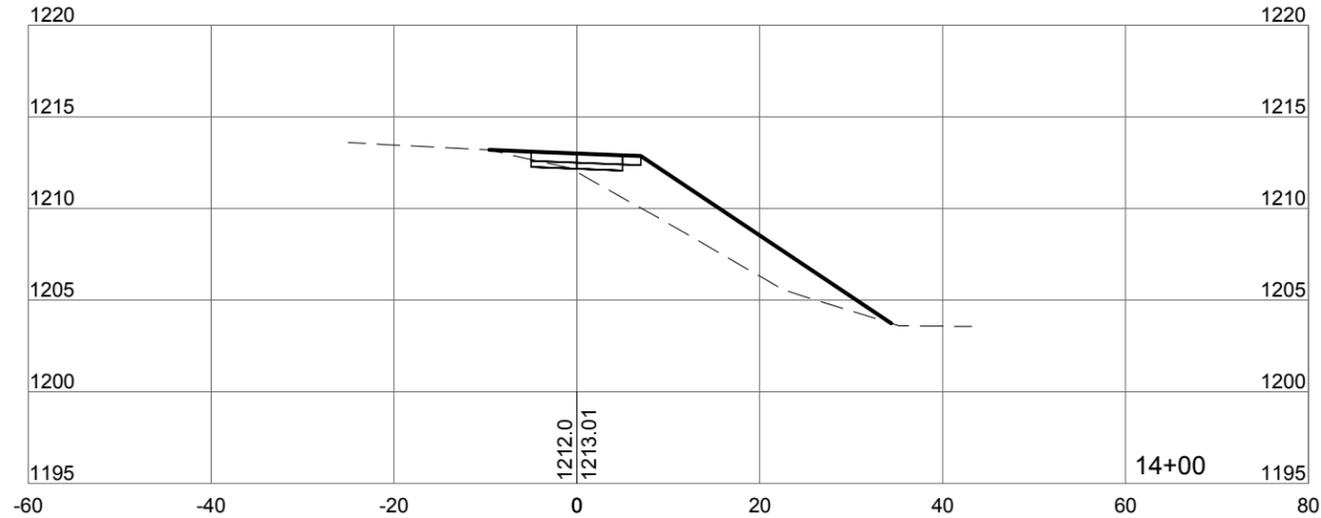
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	21	48



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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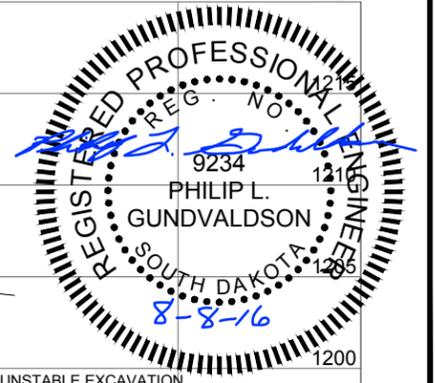
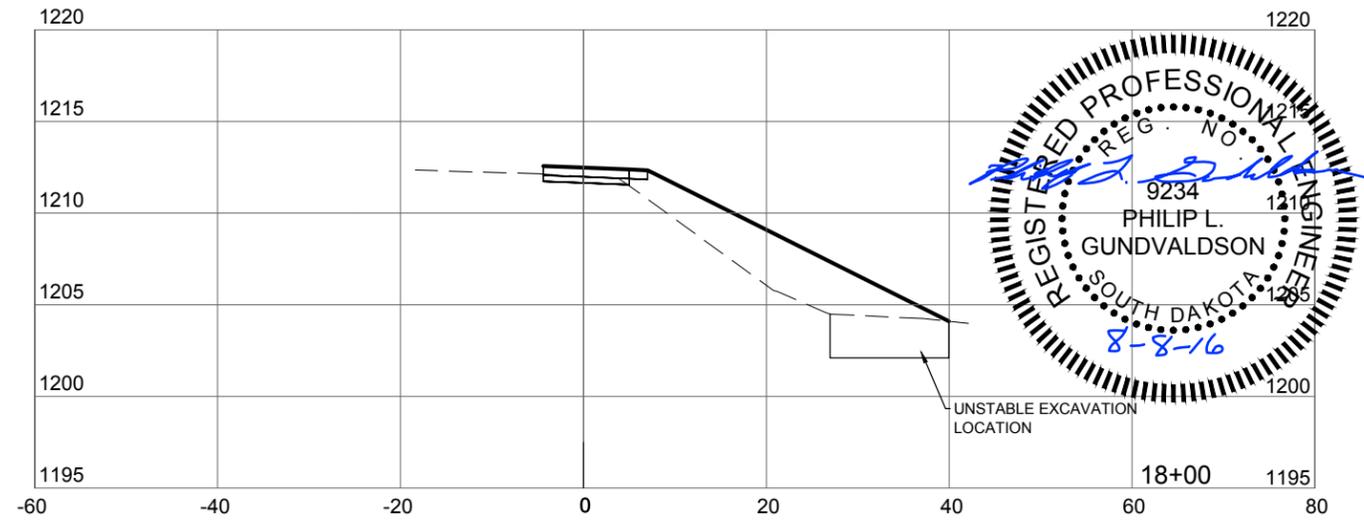
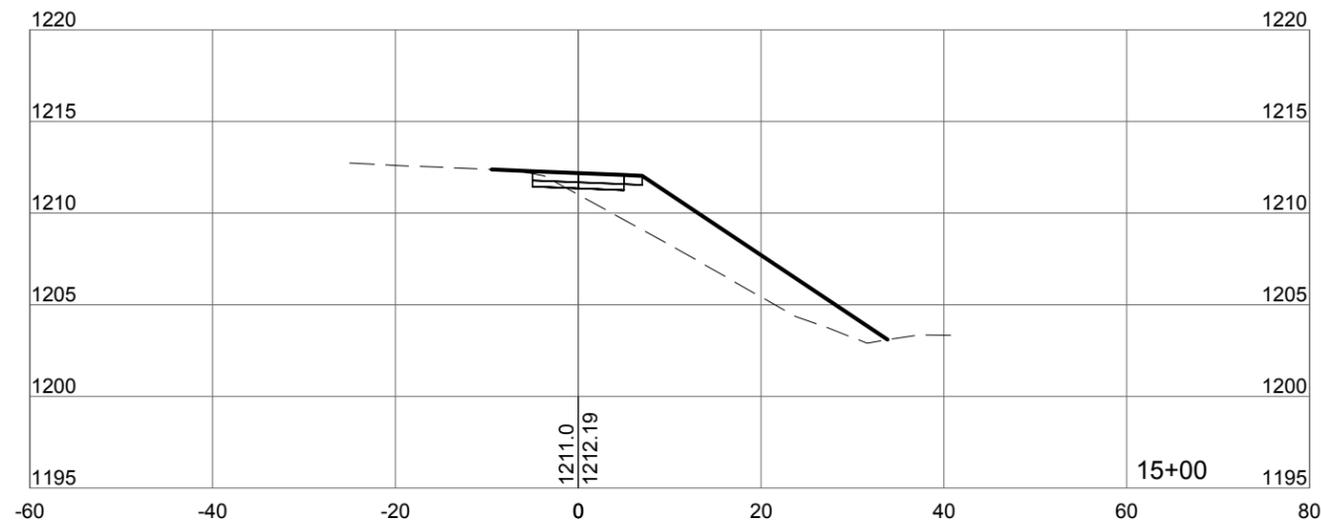
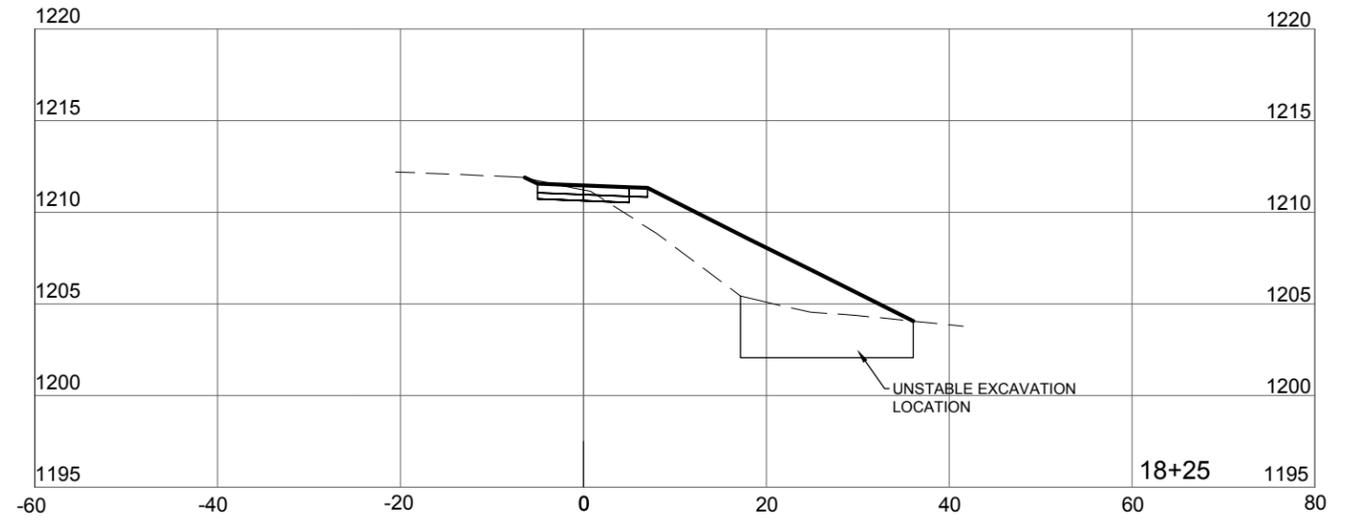
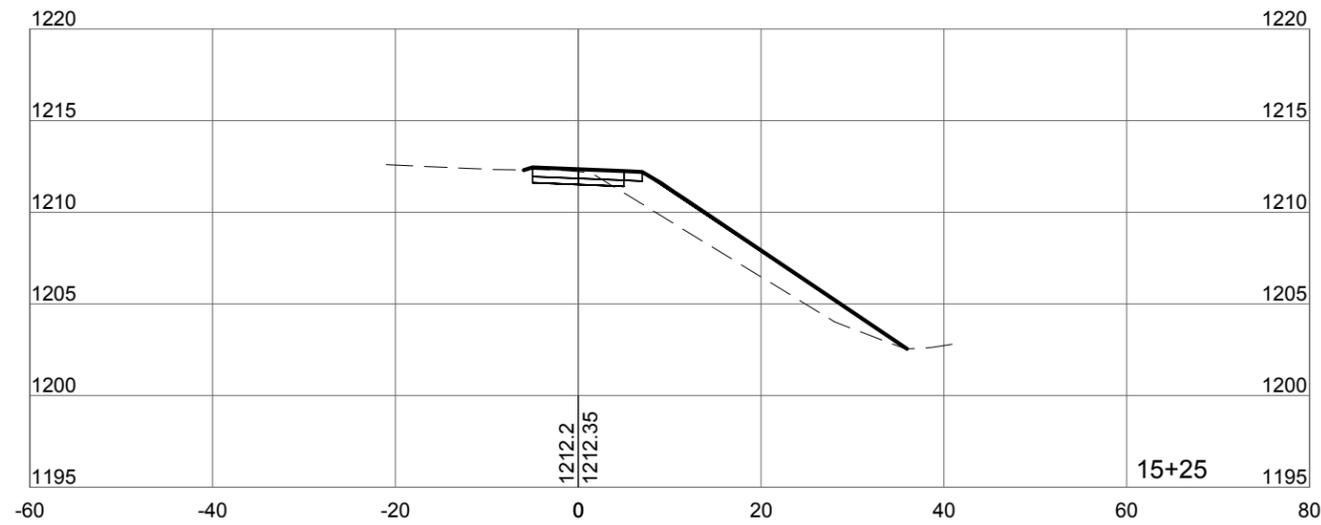
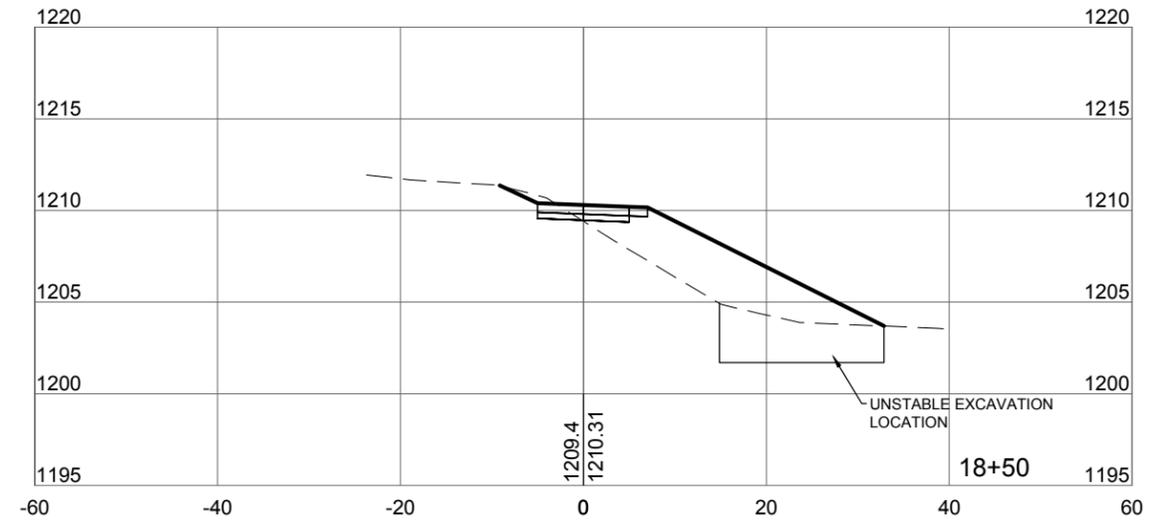
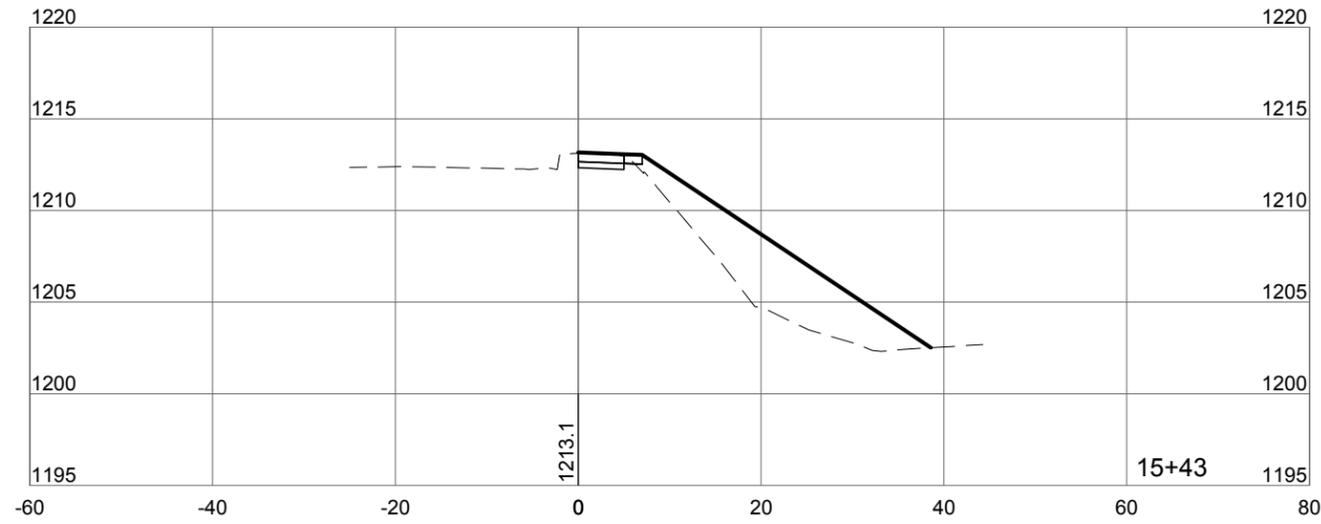


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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	23	48

Revised 08/08/16

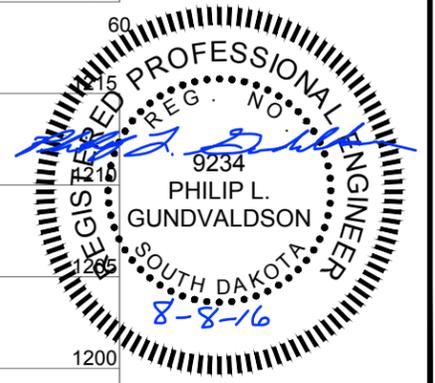
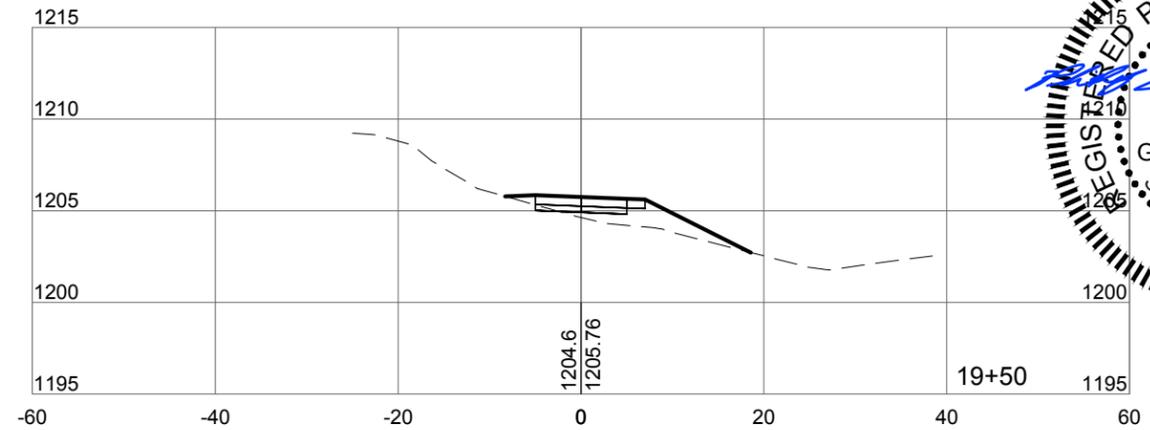
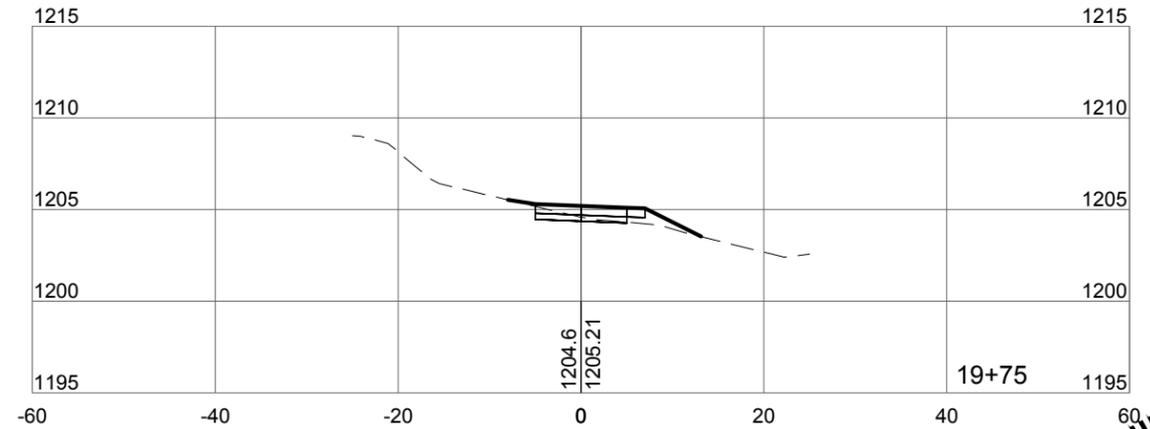
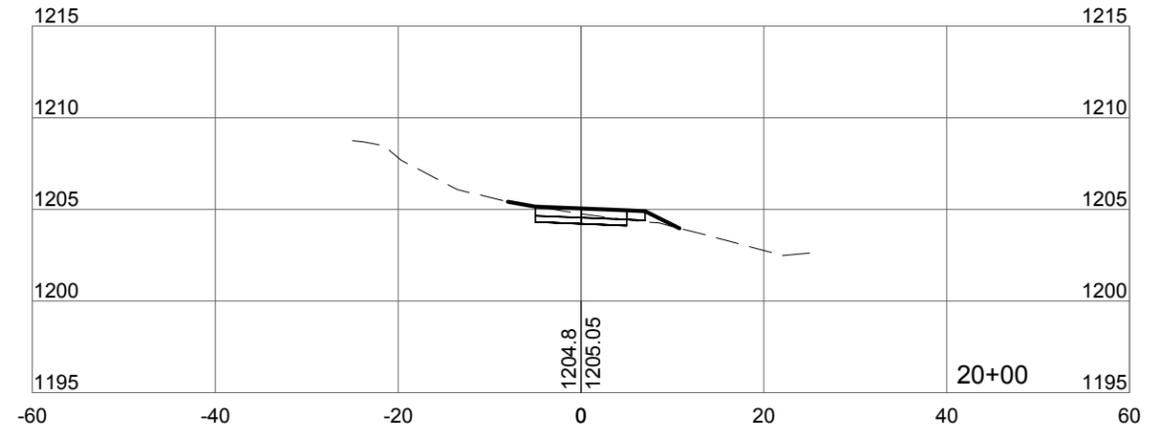
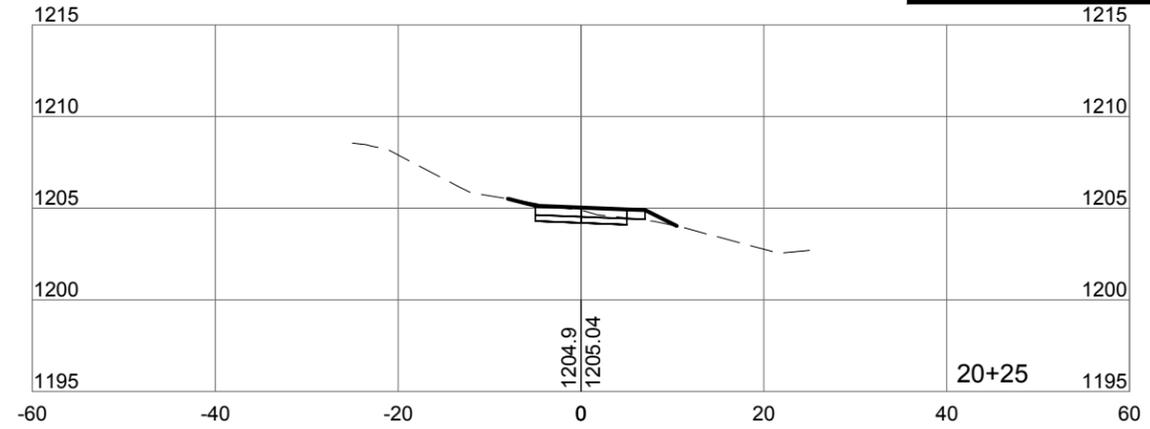
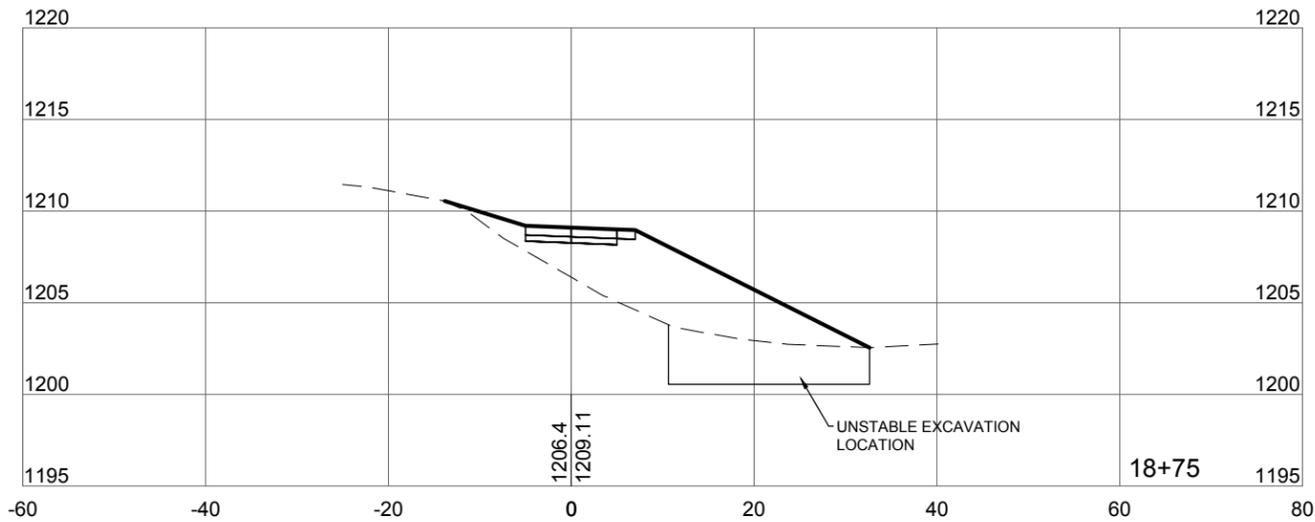
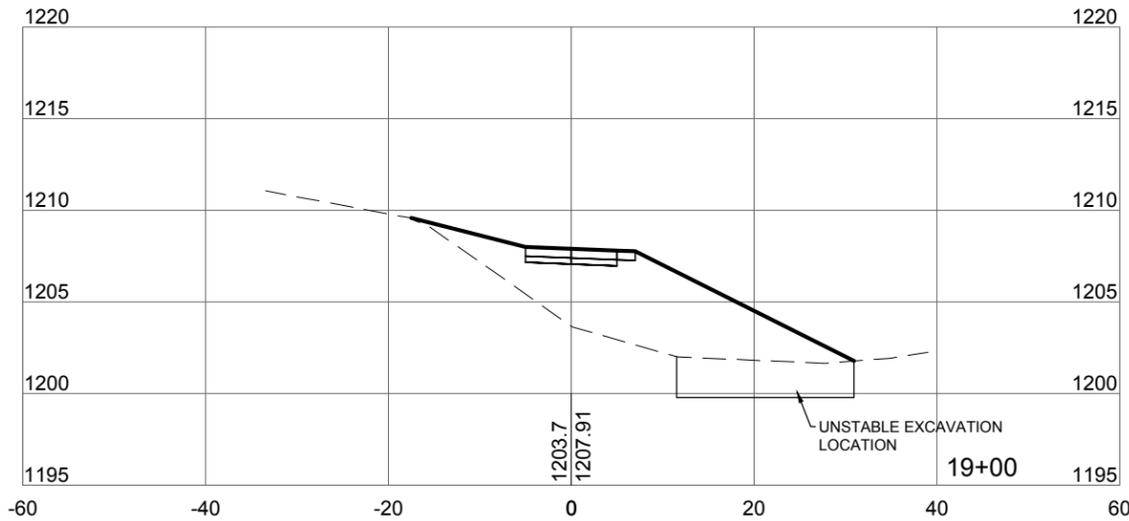
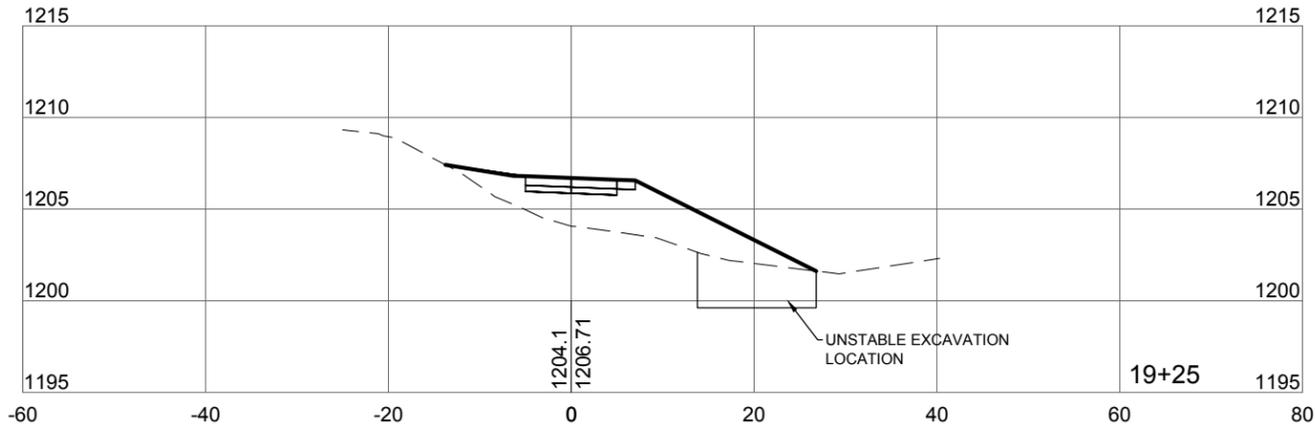


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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	24	48

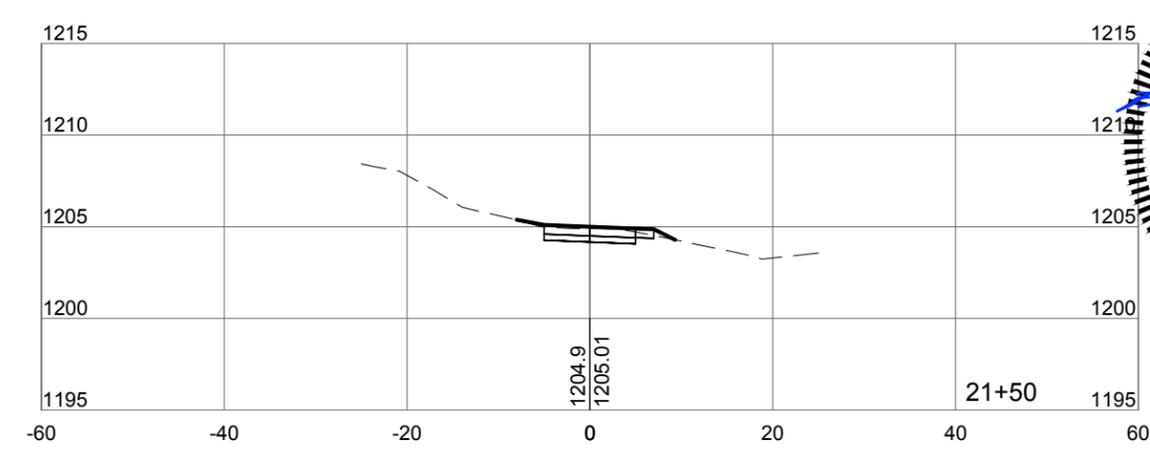
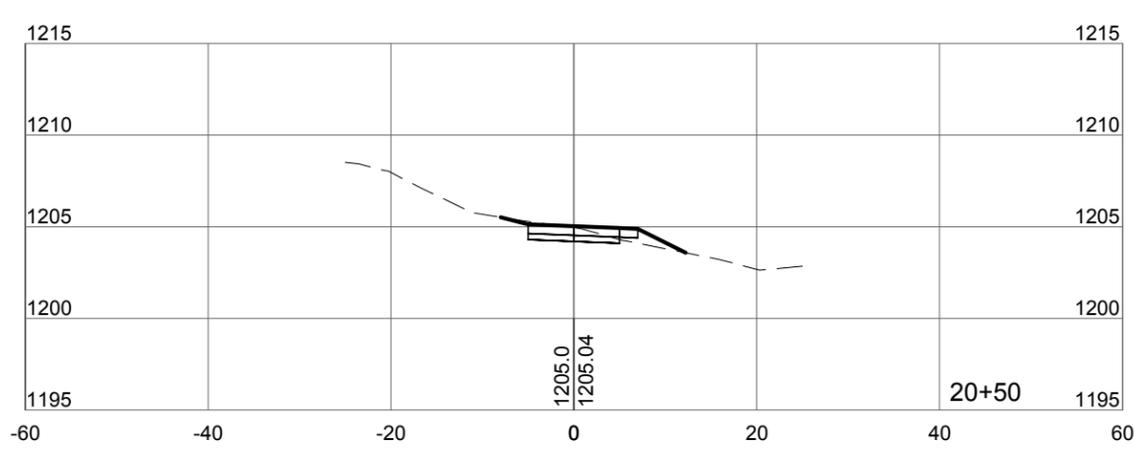
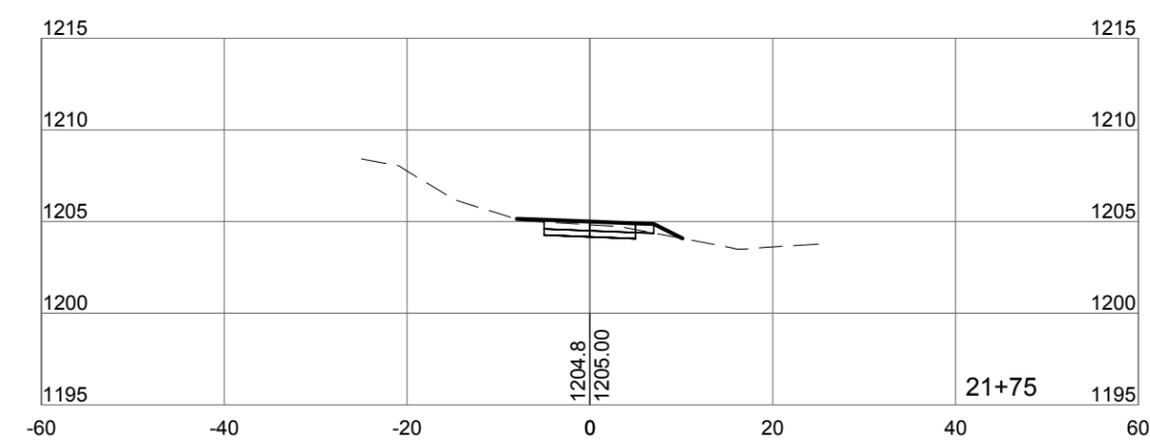
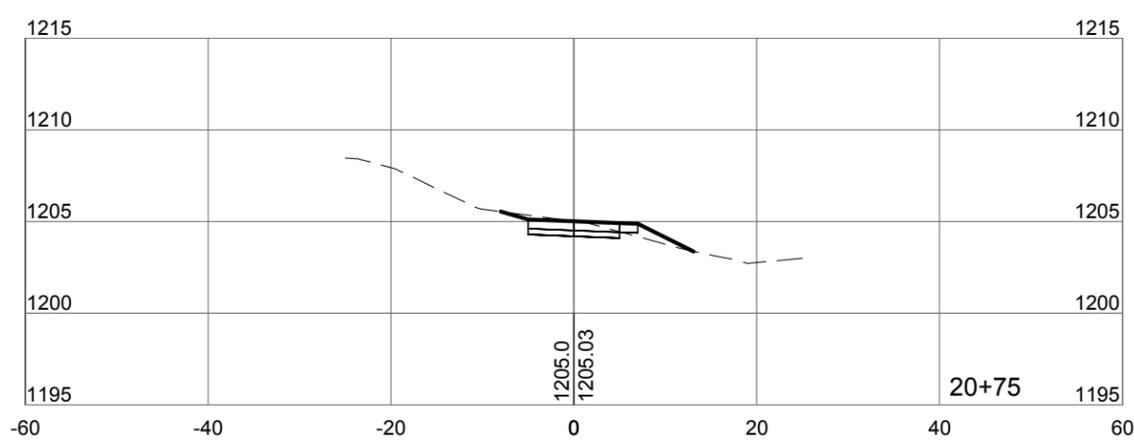
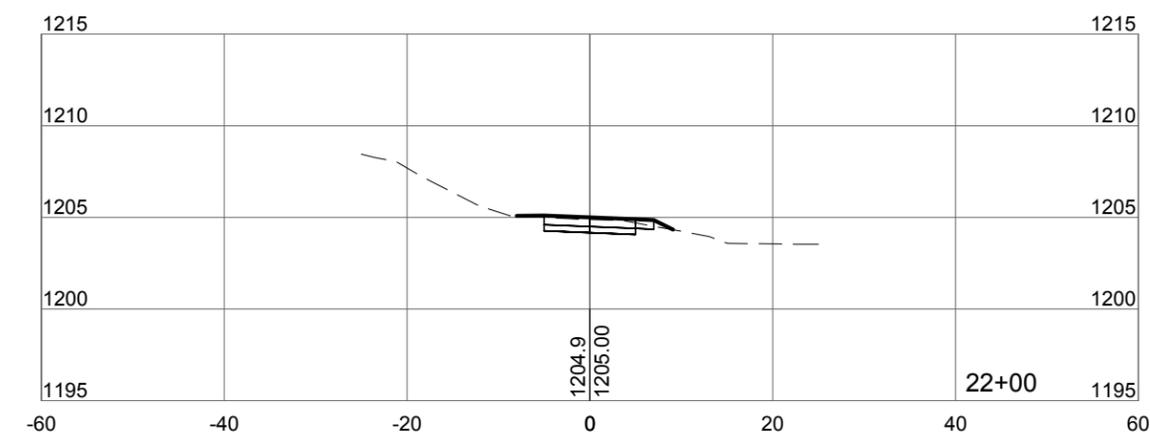
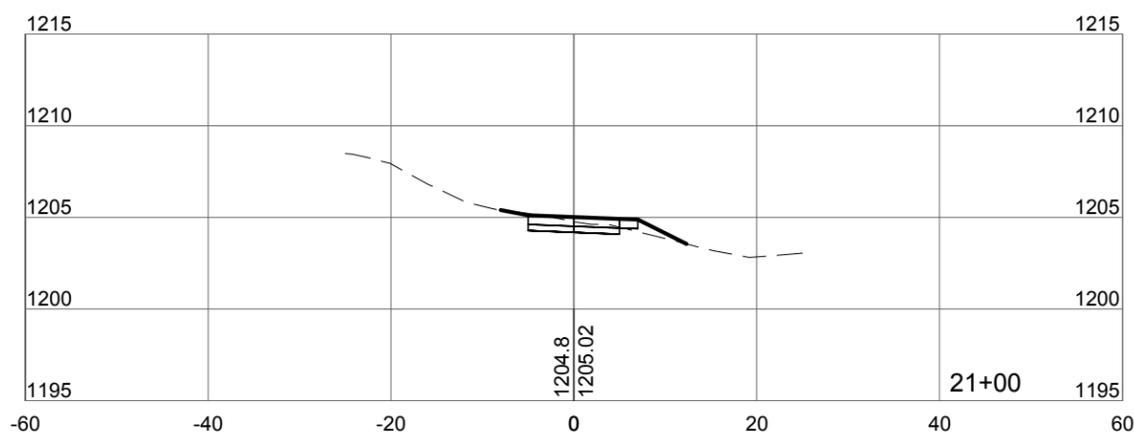
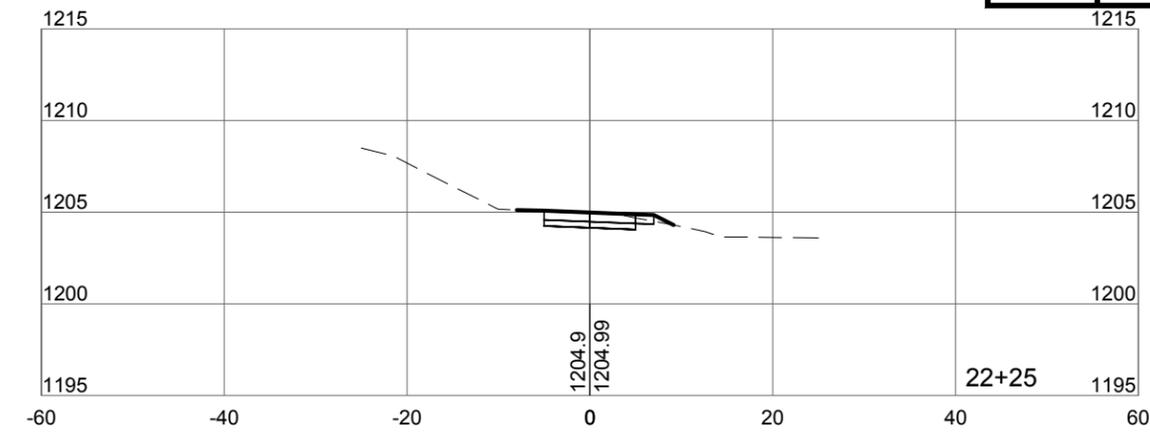
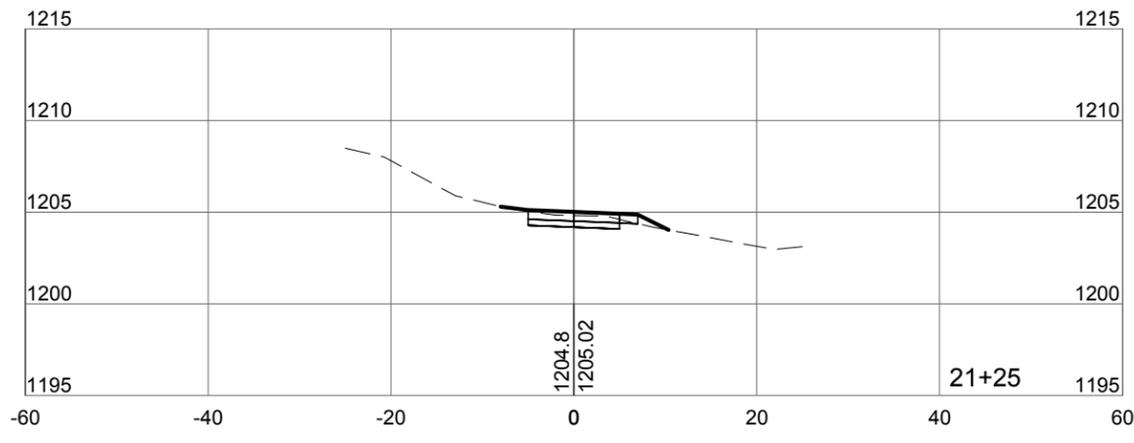
Revised 08/08/16



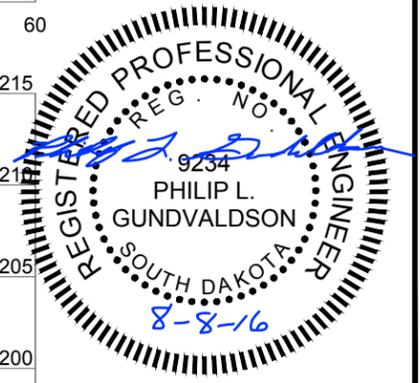
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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	25	48

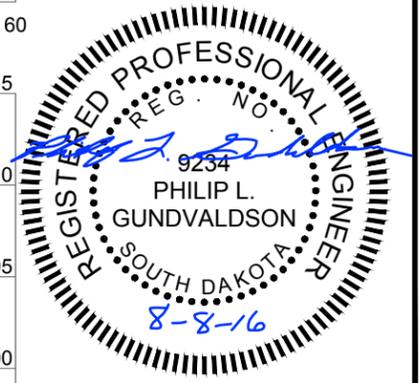
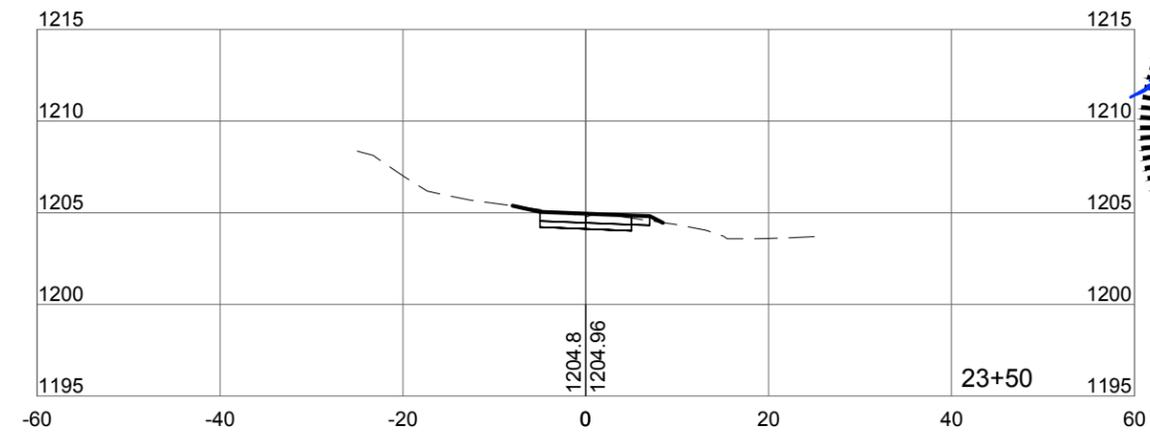
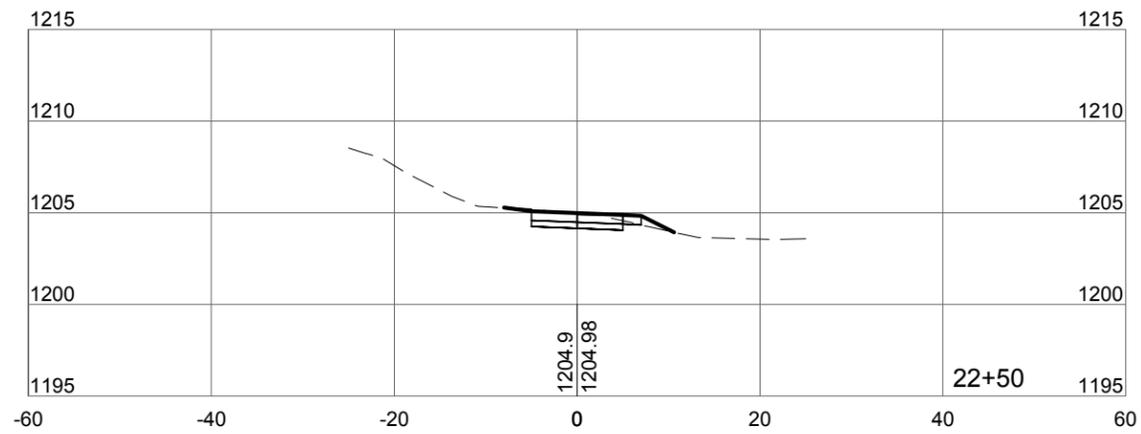
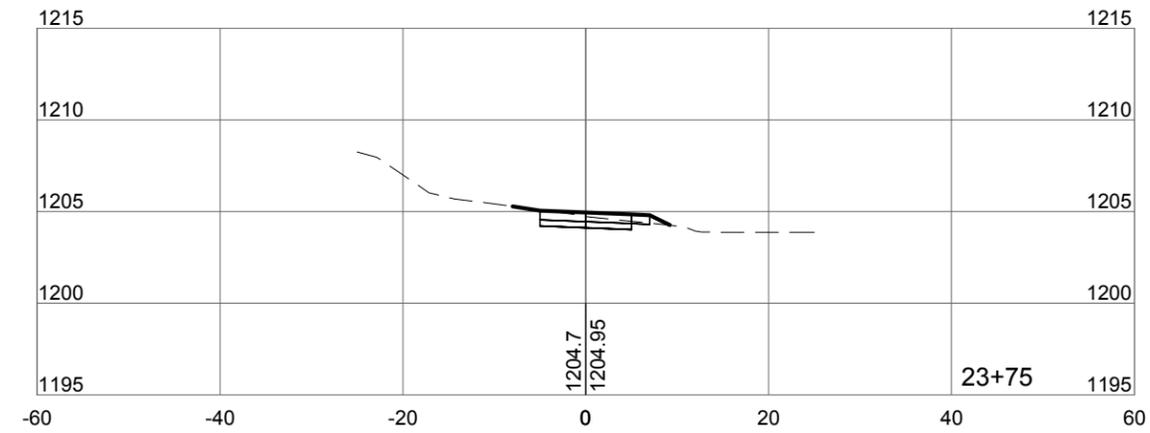
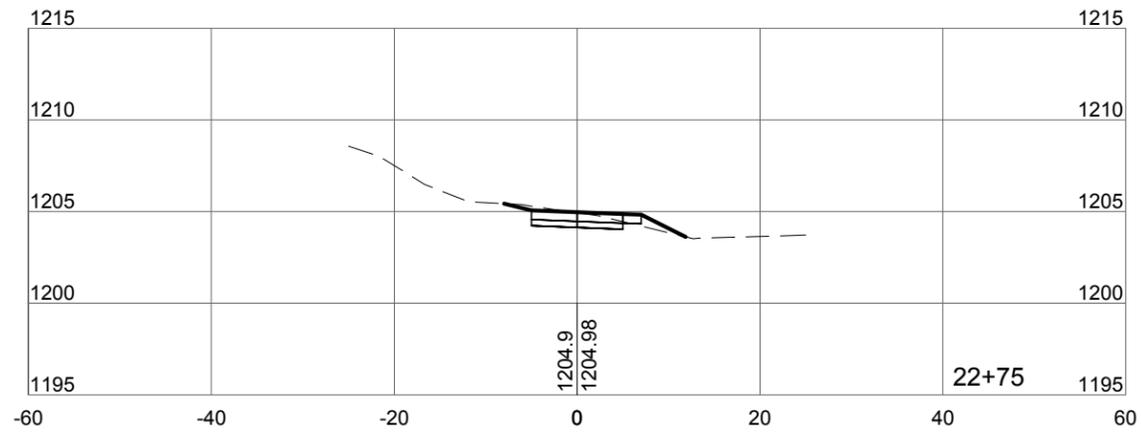
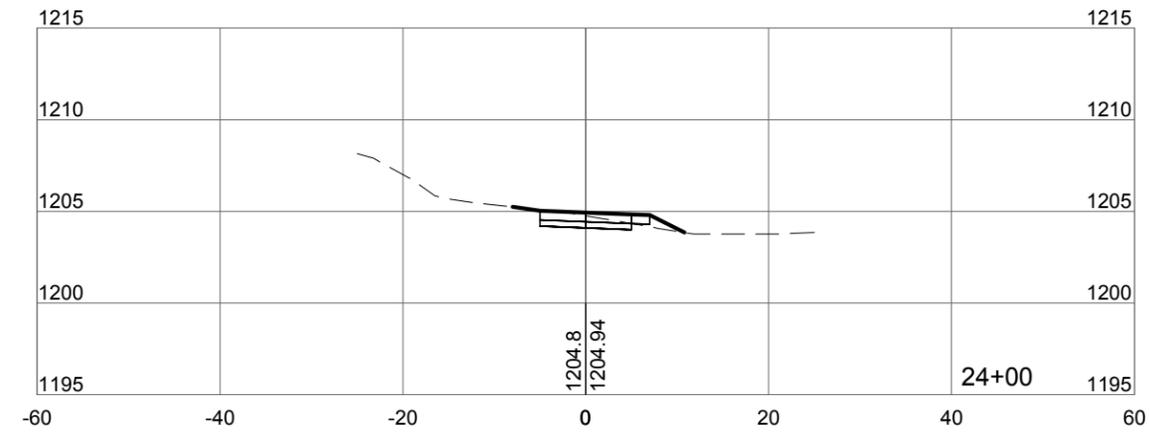
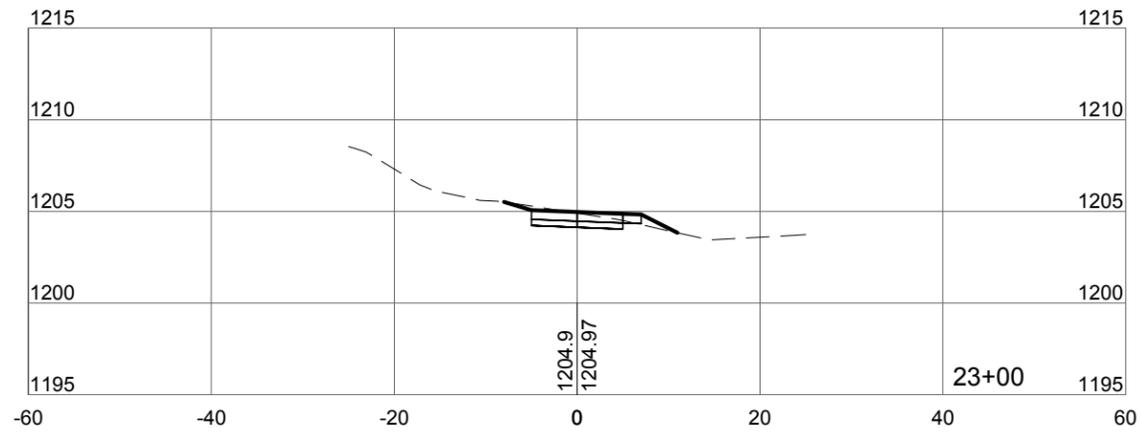
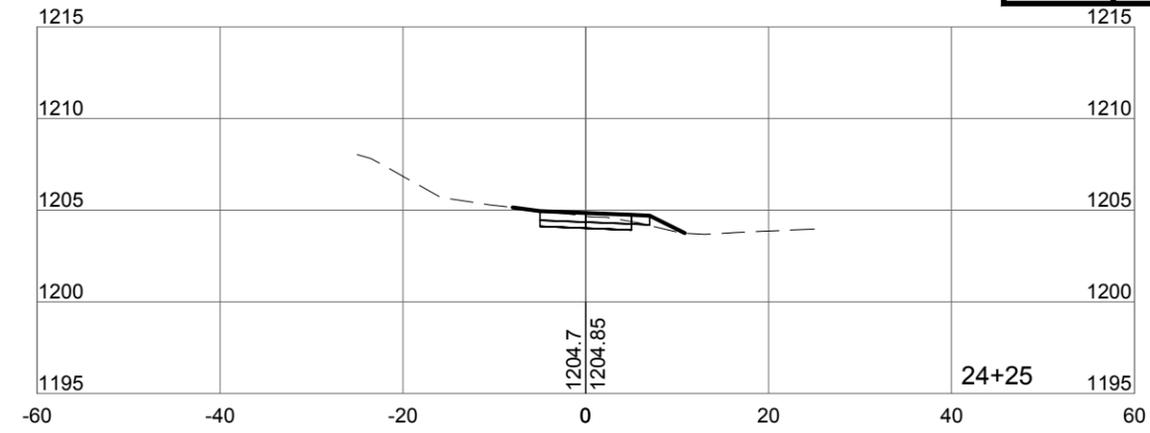
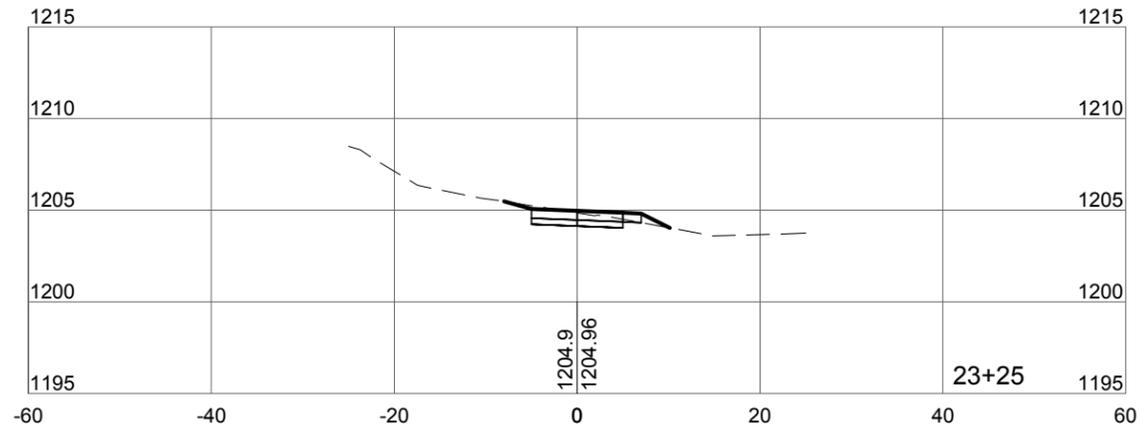


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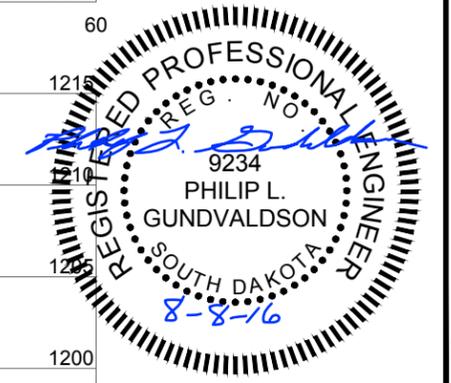
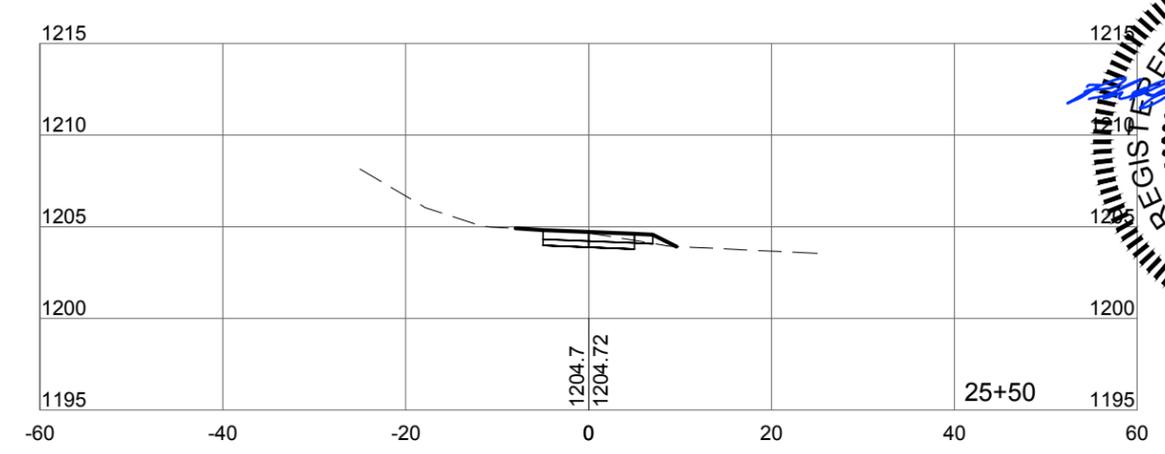
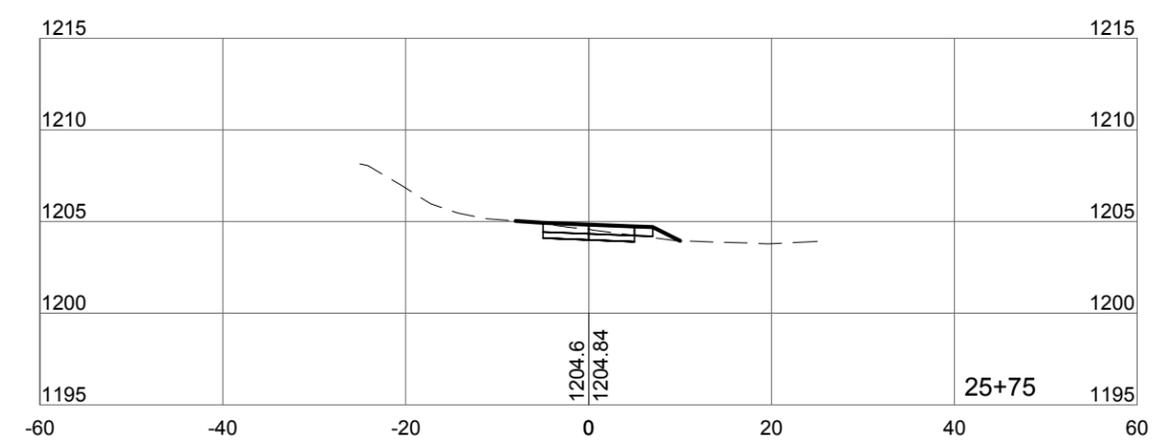
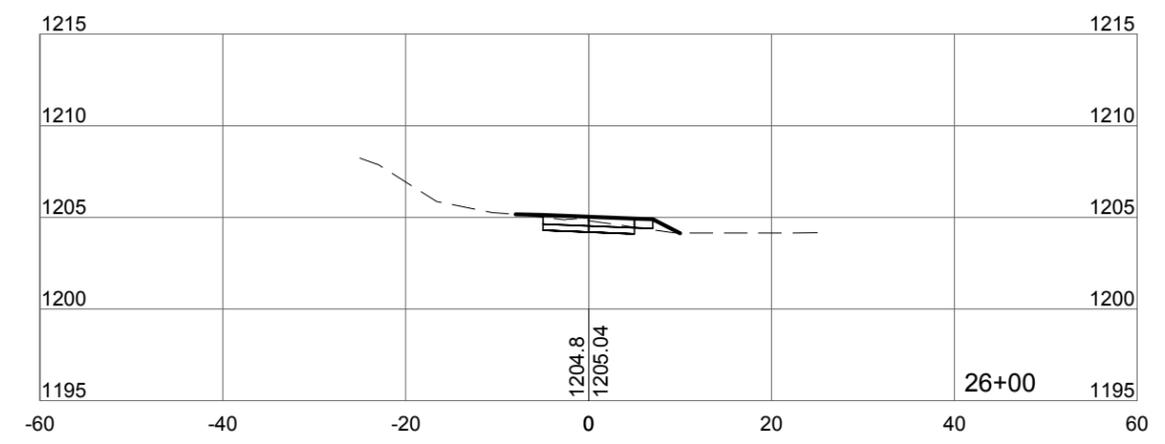
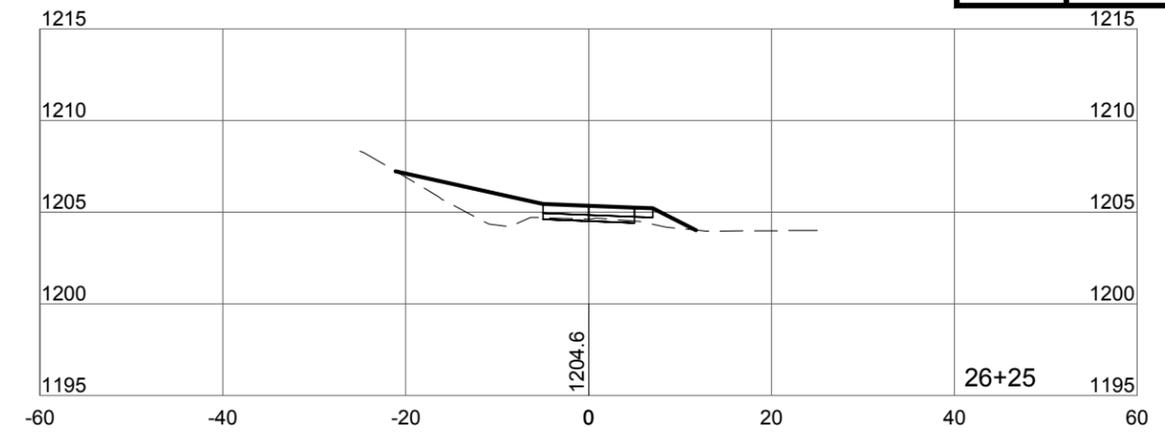
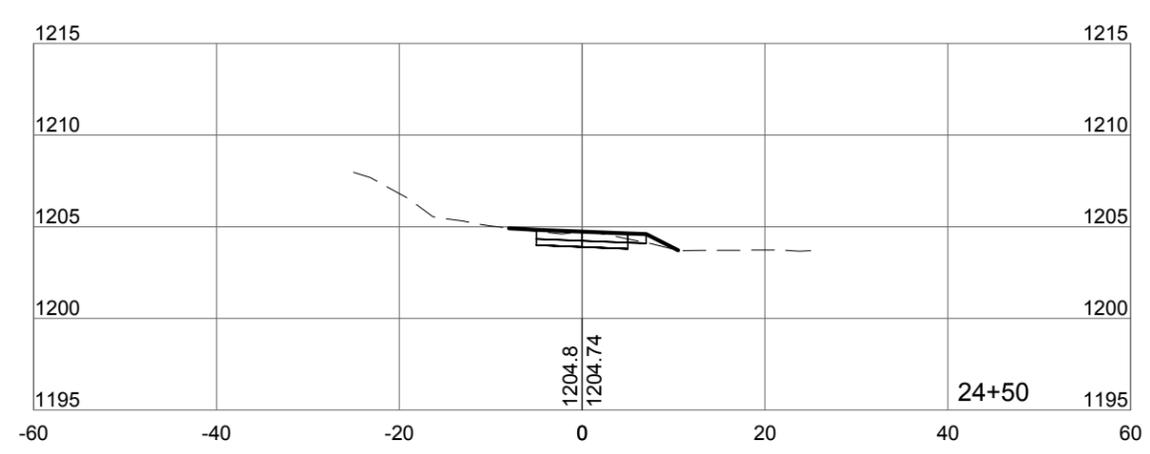
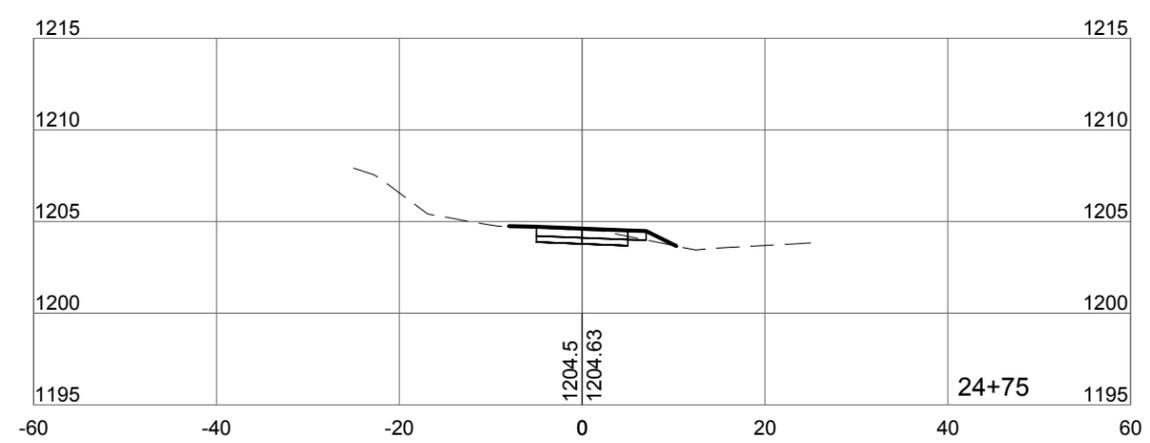
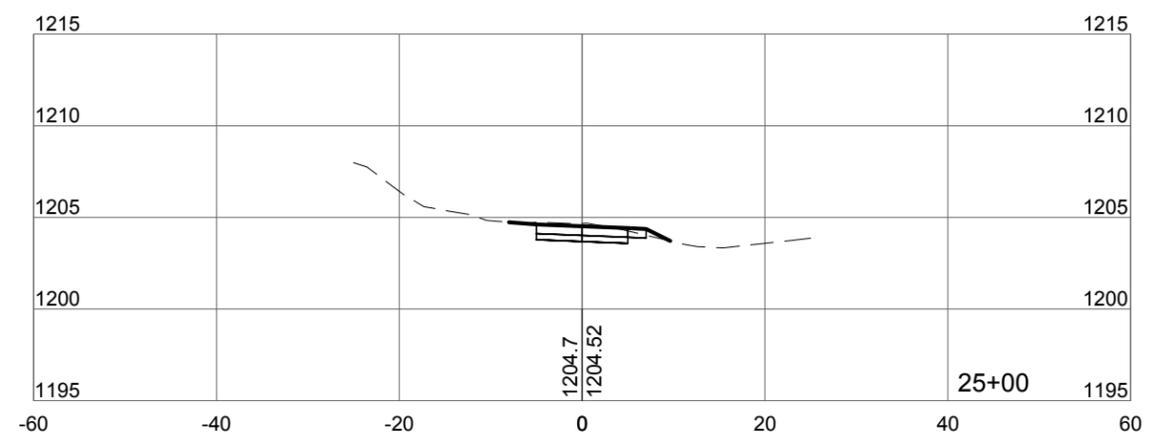
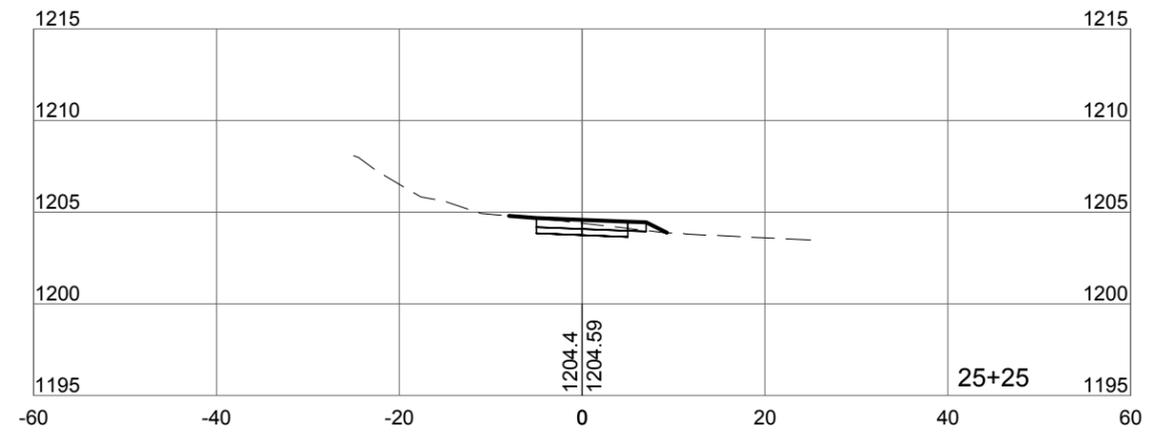
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	26	48



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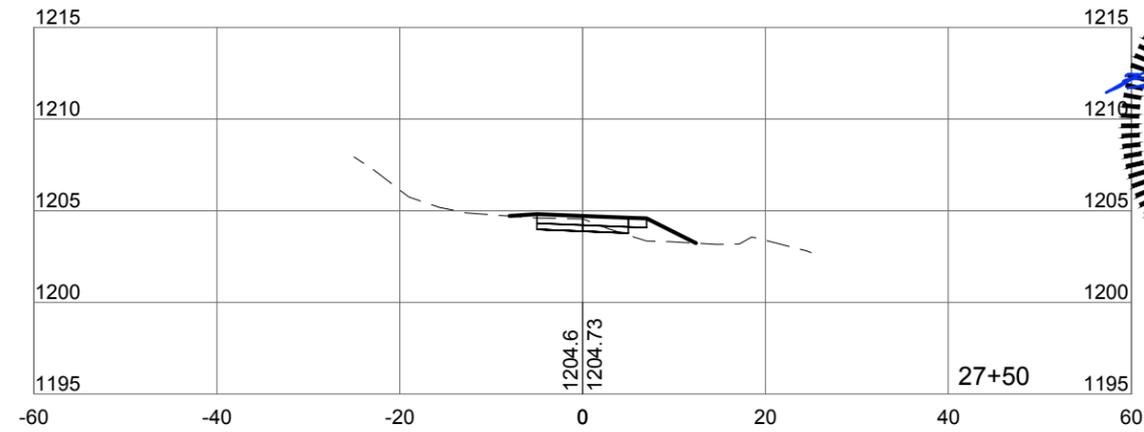
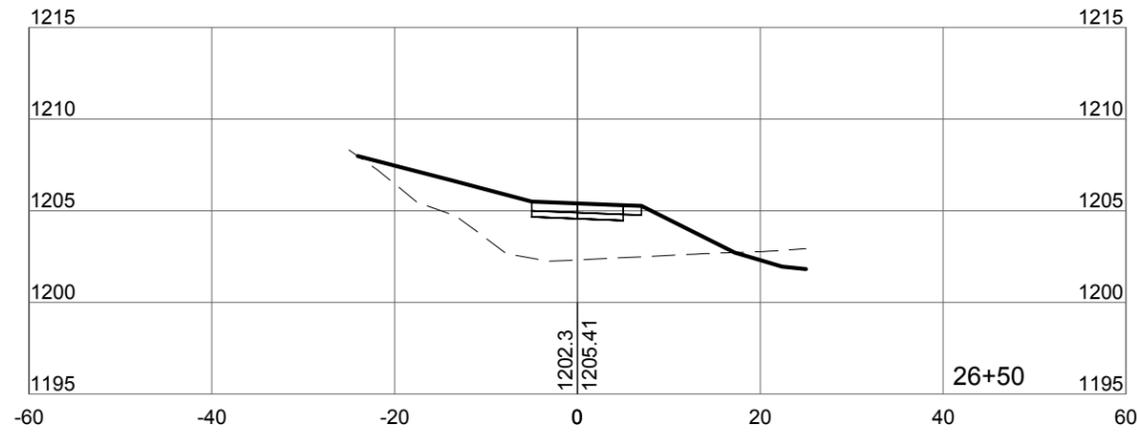
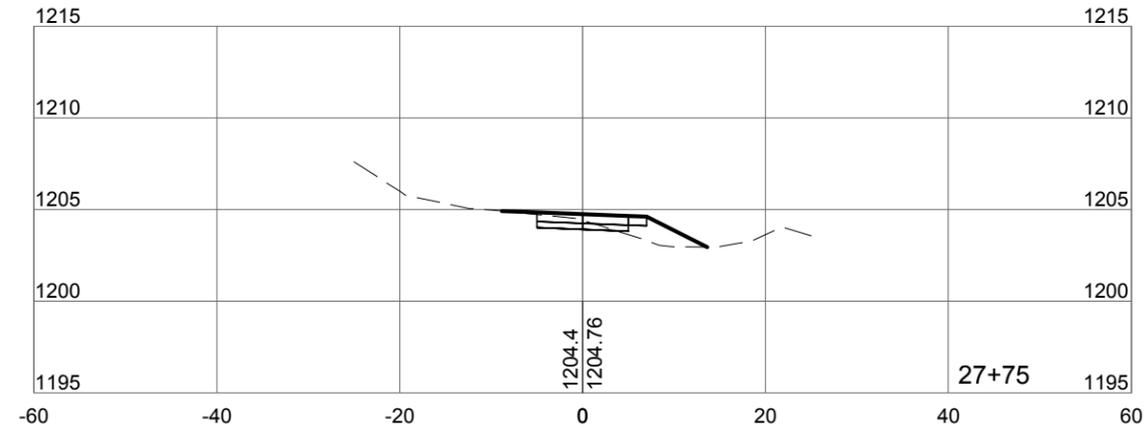
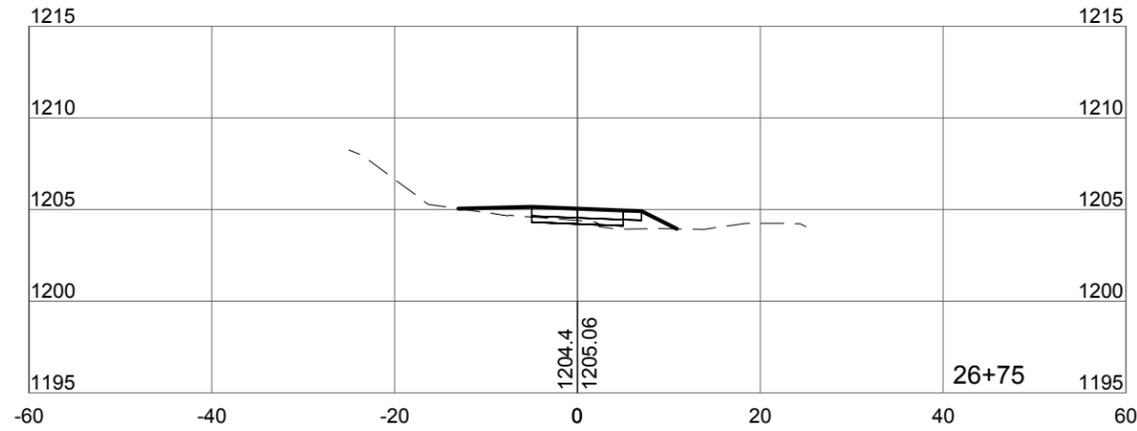
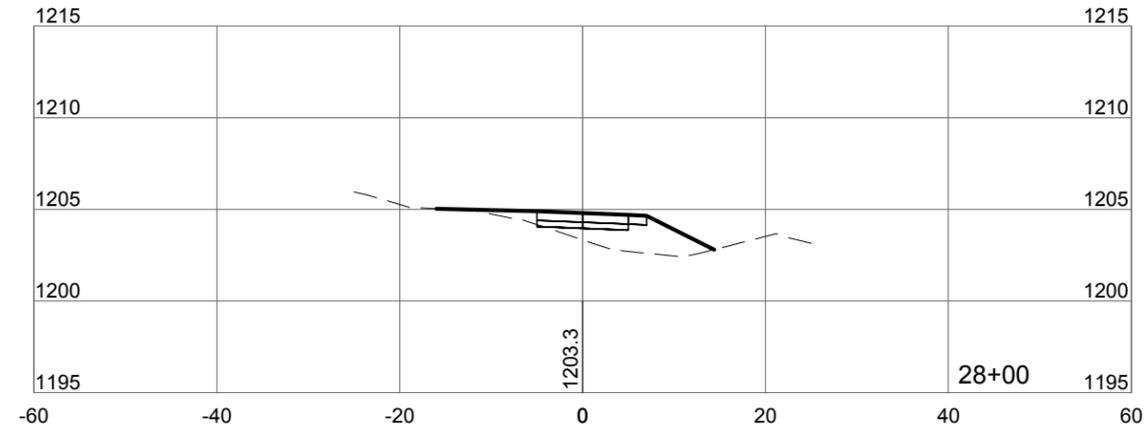
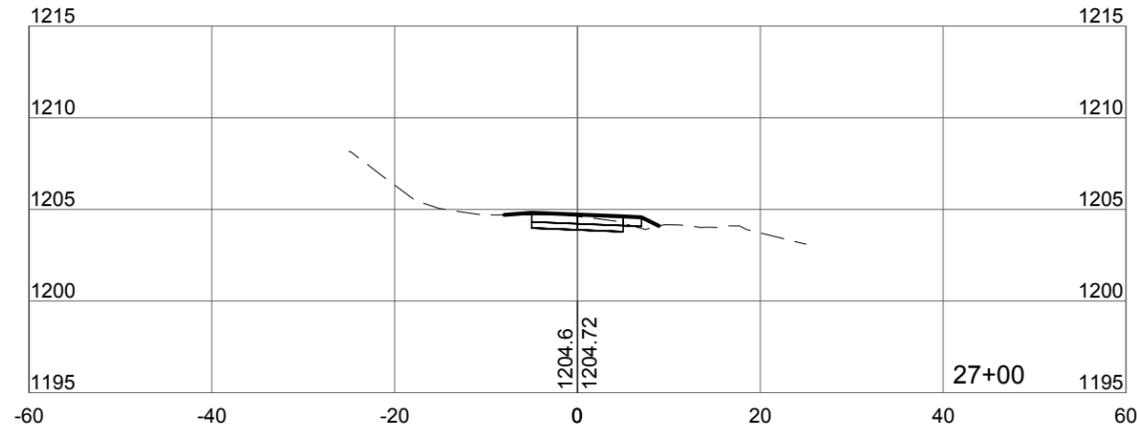
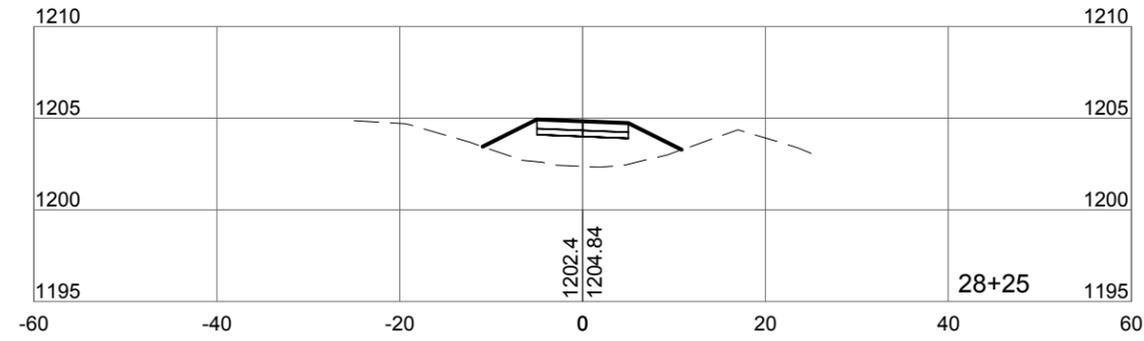
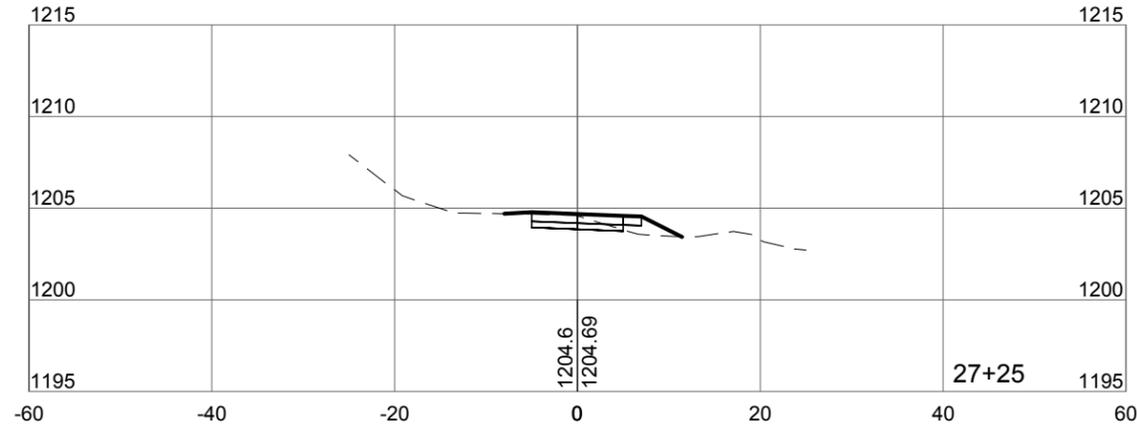
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	27	48

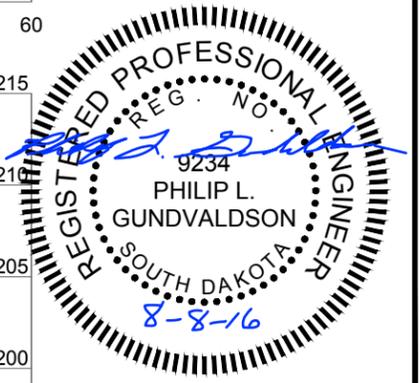


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P TAPR(05)	SHEET 28	TOTAL SHEETS 48
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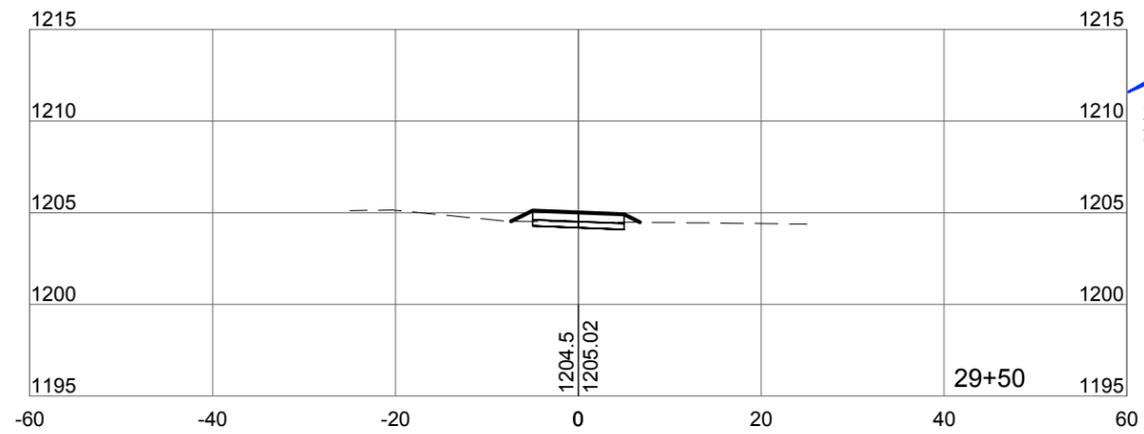
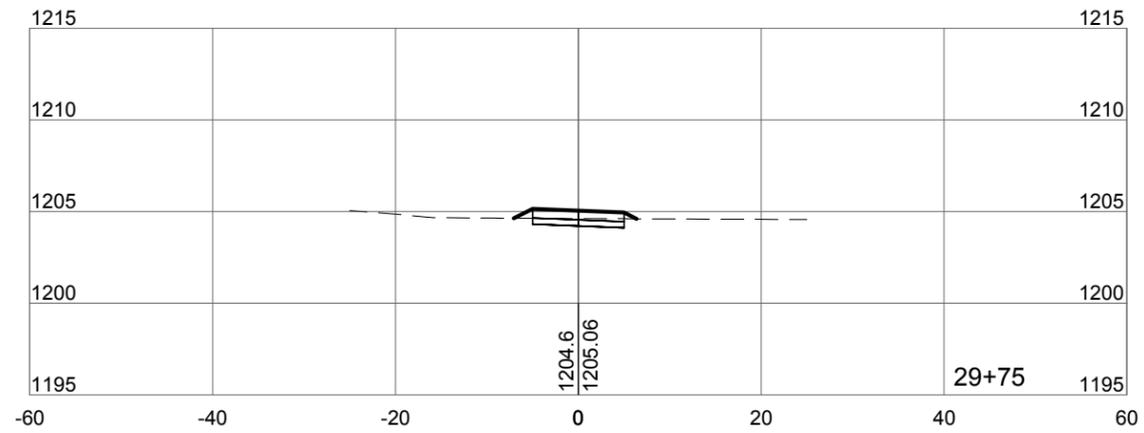
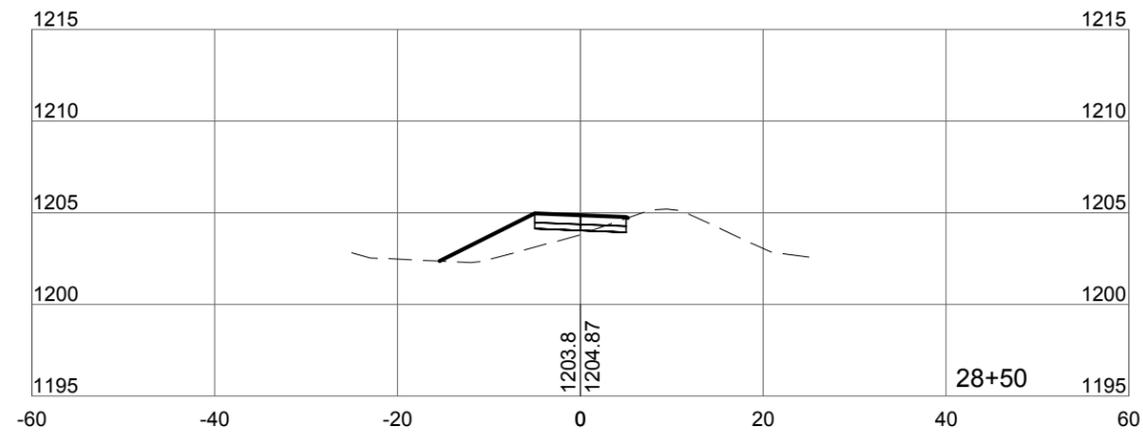
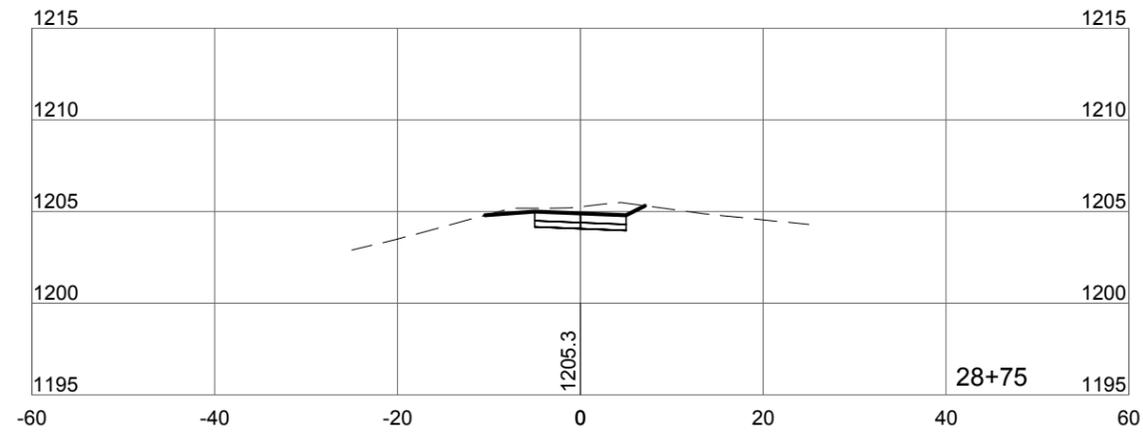
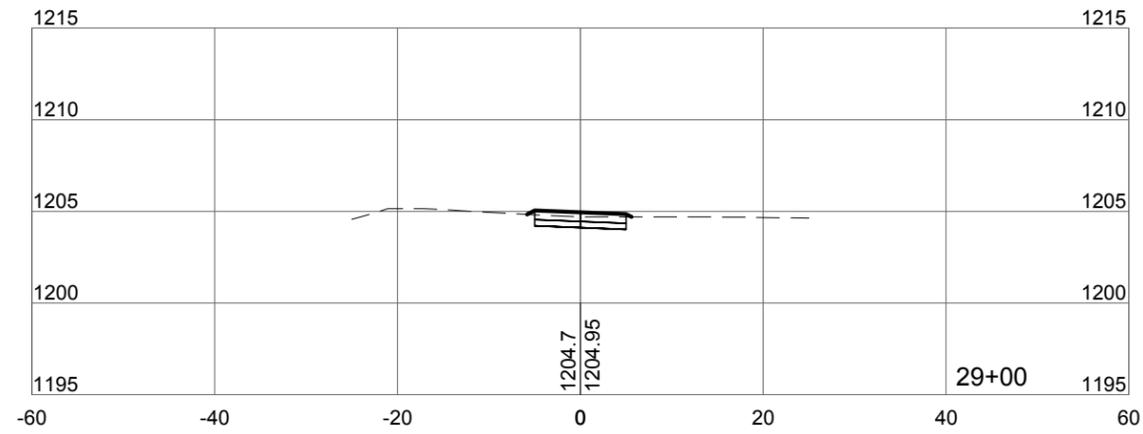
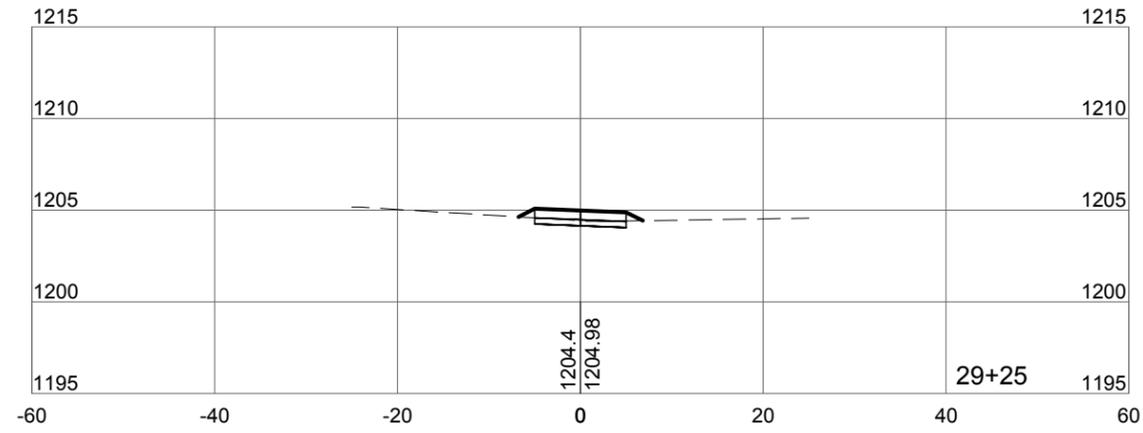


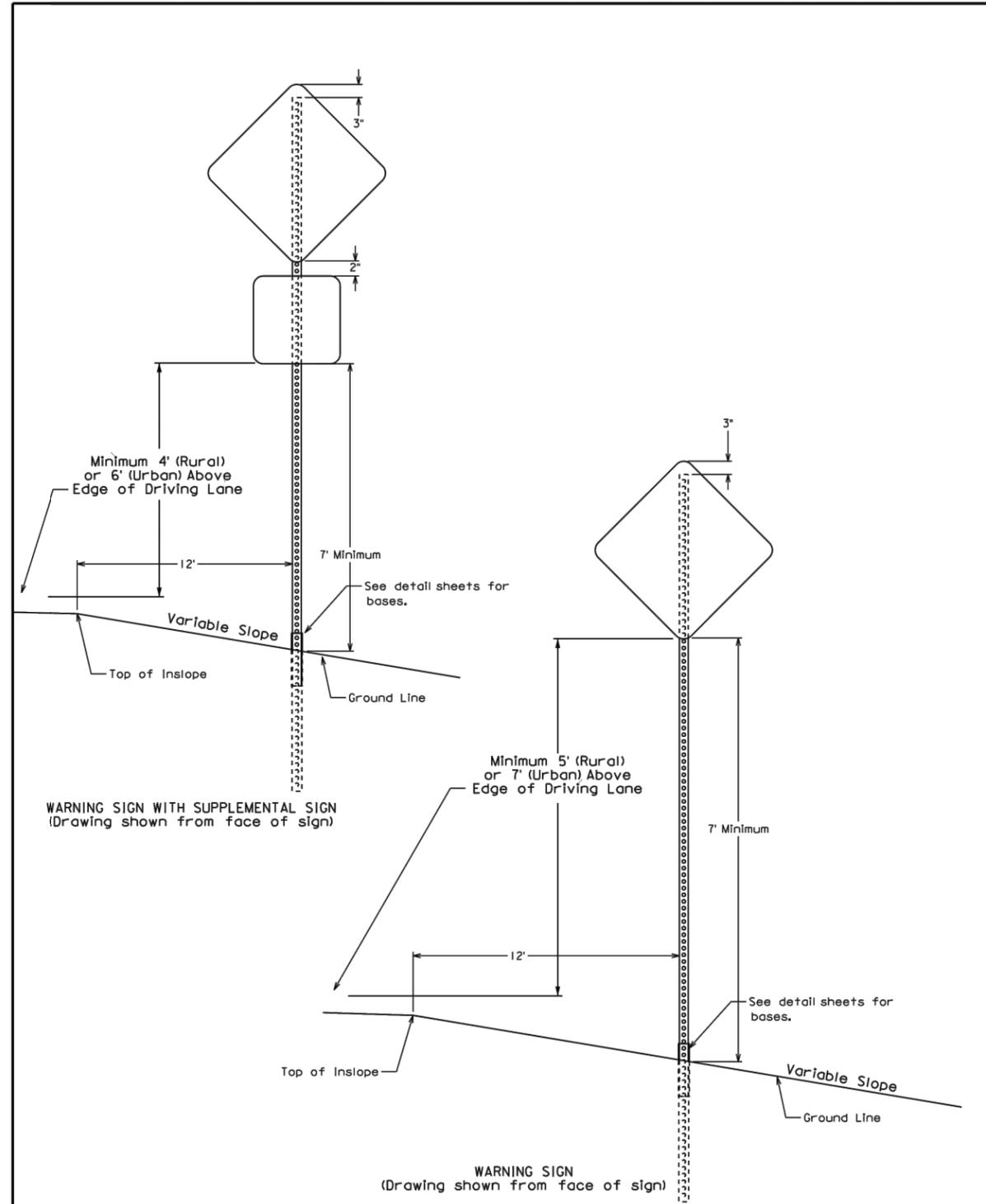
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FOR BIDDING PURPOSES ONLY

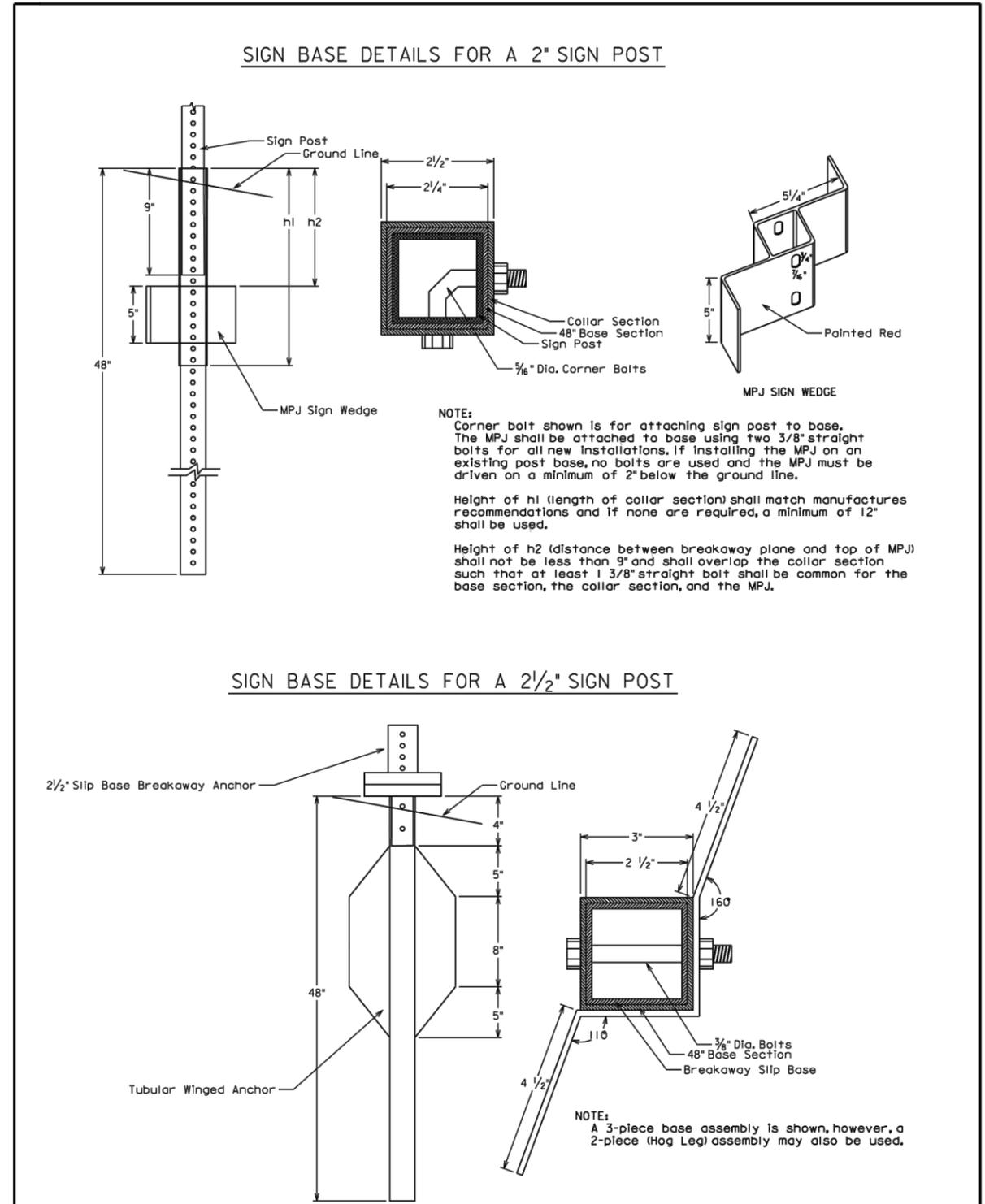
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P TAPR(05)	29	48





July 24, 2012

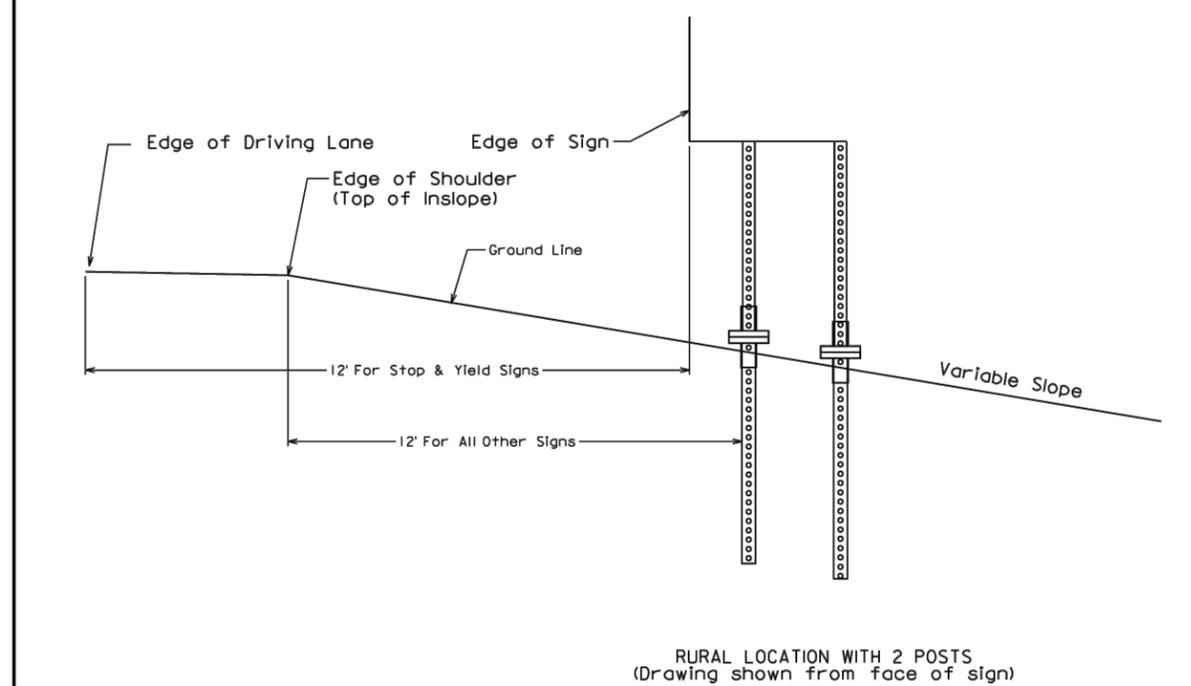
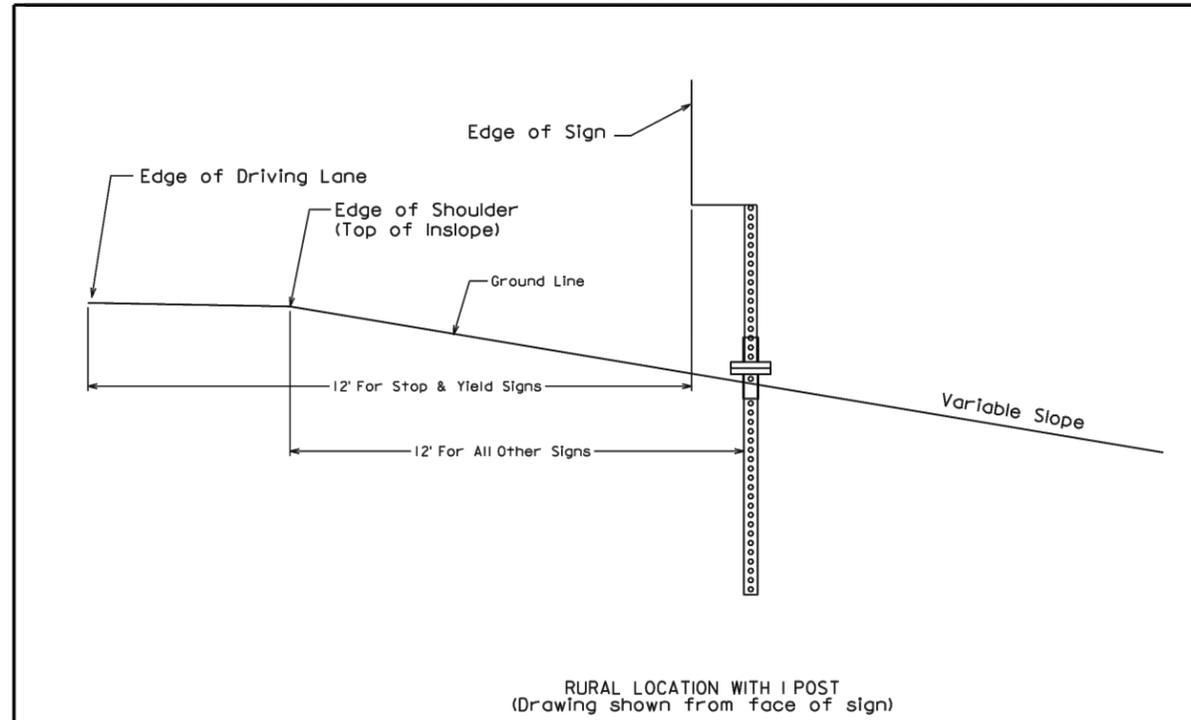
<b>S D D O T</b>	<b>30" WARNING SIGNS (Typical Sign Detail)</b>	<b>SPECIAL DETAIL LO1</b>
		Sheet 1 of 1



July 16, 2013

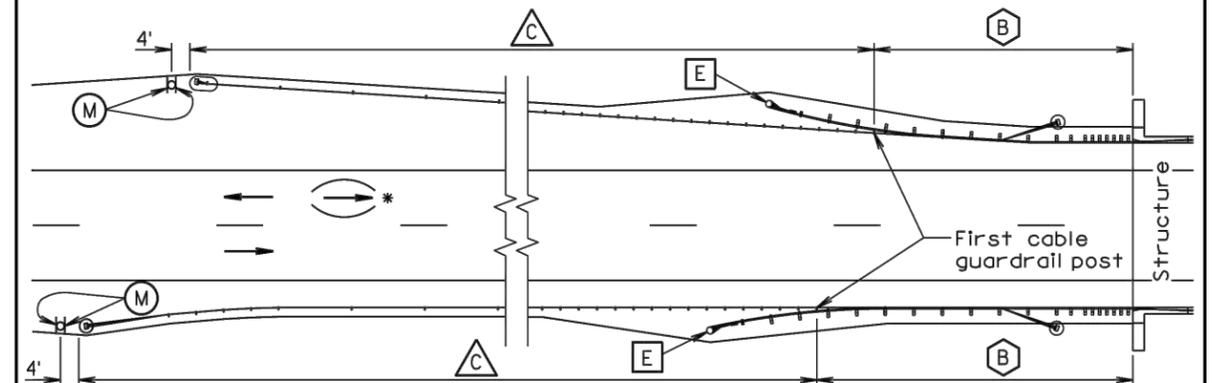
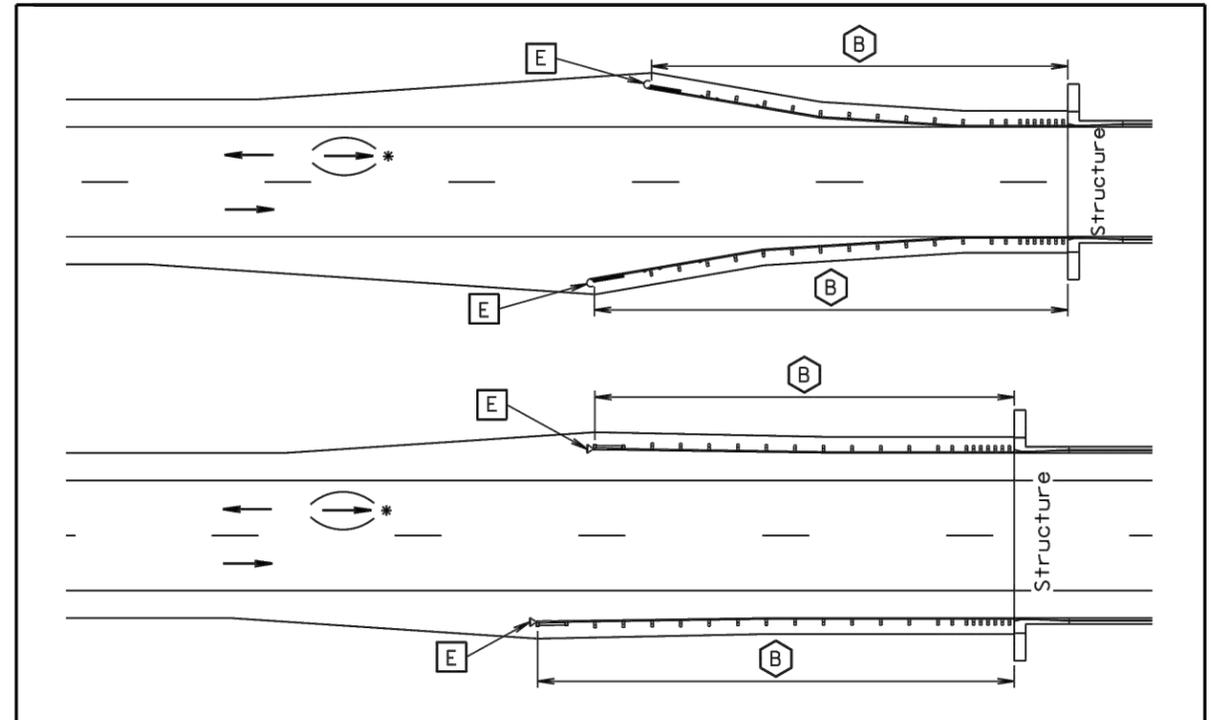
<b>S D D O T</b>	<b>TUBULAR POST BASE DETAILS (Typical Soil Installation)</b>	<b>SPECIAL DETAIL L21</b>
		Sheet 1 of 1

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June 10, 2013

<b>S D D O T</b>	<b>LATERAL OFFSET</b> <i>(Typical Rural Sign Installations)</i>	SPECIAL DETAIL <b>L23</b>
		Sheet 1 of 1



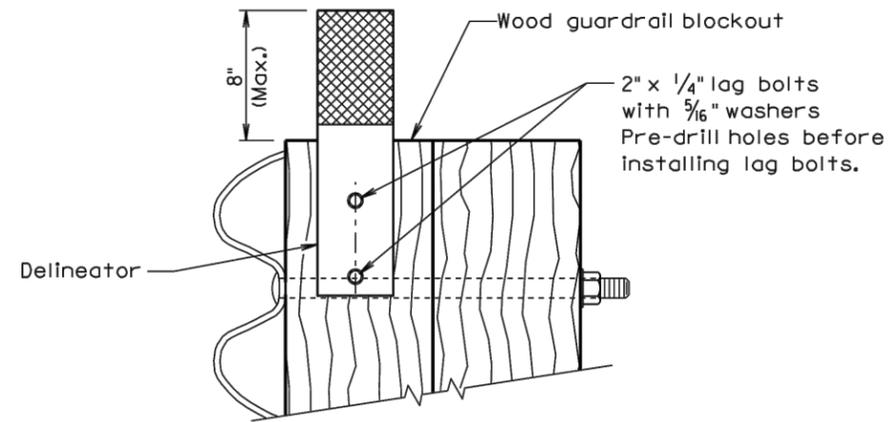
TYPICAL GUARDRAIL LAYOUTS

- ⬡ Steel Beam Guardrail Delineation
- ⬢ Guardrail Terminal End Object Marker
- ⬠ 3 Cable Guardrail Delineation
- Ⓜ Type 2 Object Marker

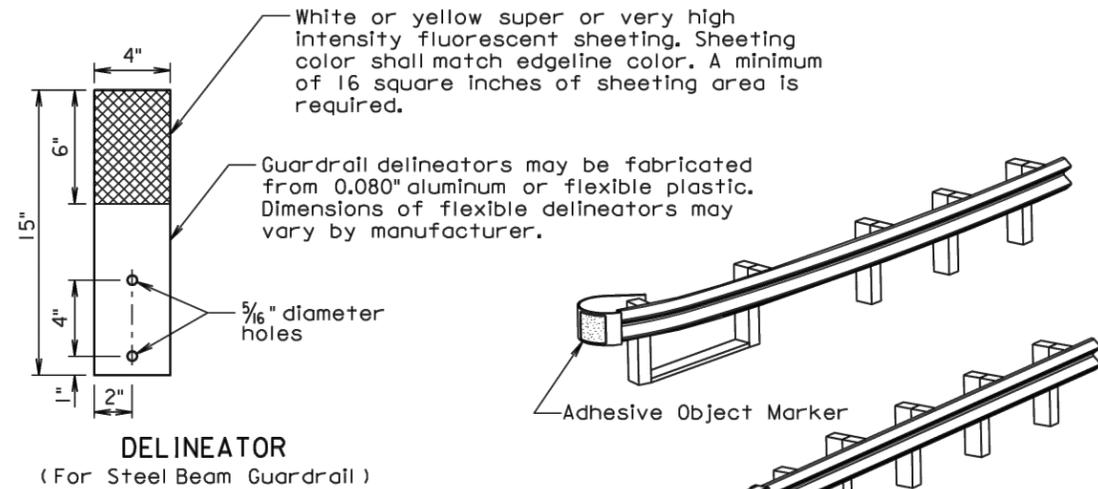
\* For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

June 26, 2011

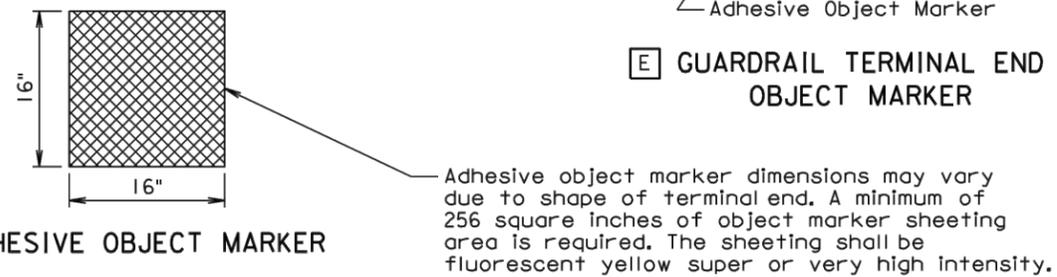
<b>S D D O T</b>	<b>DELINEATION OF GUARDRAIL AT BRIDGES</b>	PLATE NUMBER <b>632.40</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 4



**B STEEL BEAM GUARDRAIL DELINEATION**



**DELINEATOR**  
(For Steel Beam Guardrail)

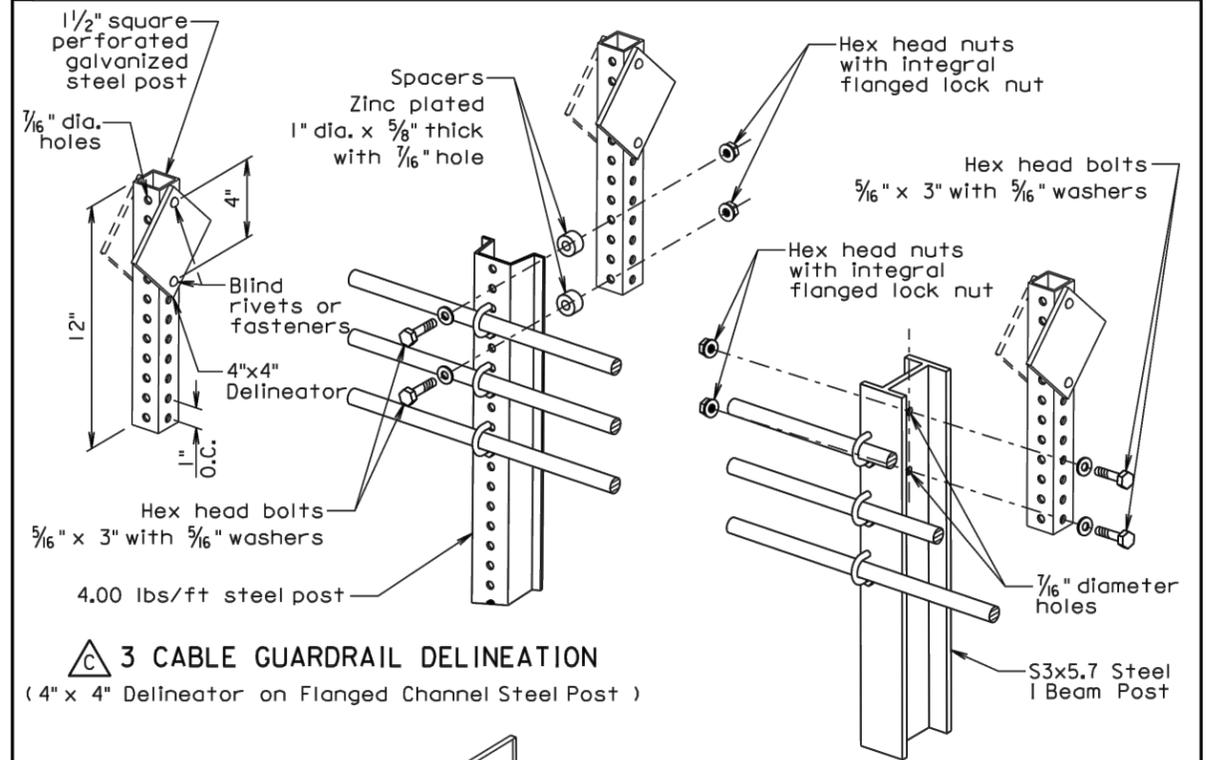


**ADHESIVE OBJECT MARKER**

**E GUARDRAIL TERMINAL END OBJECT MARKER**

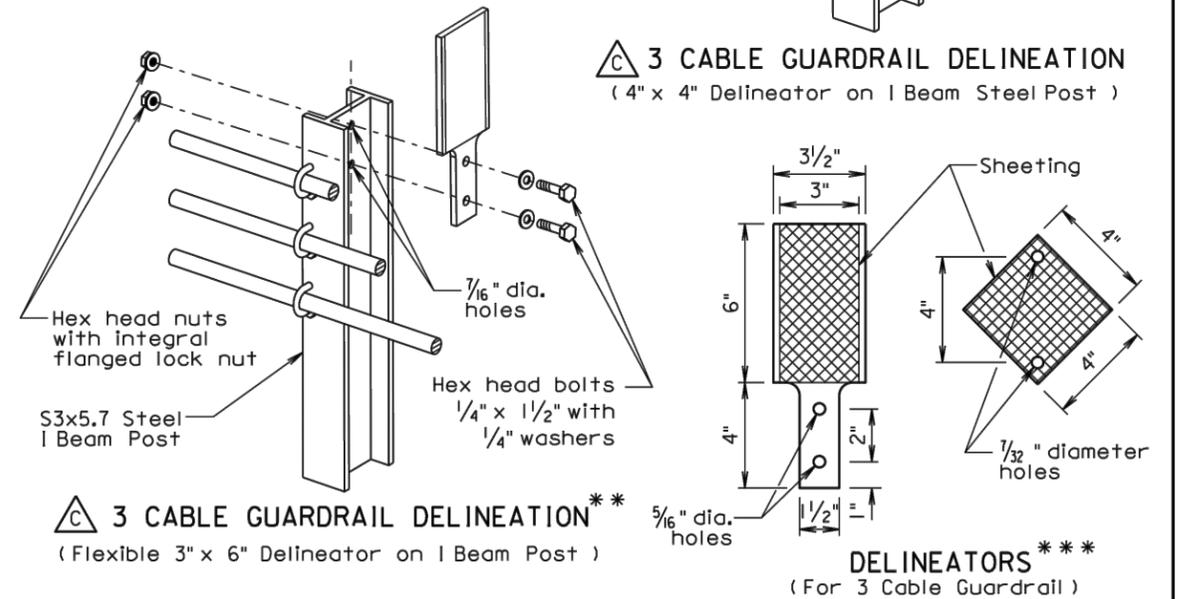
June 26, 2011

<b>SDDOT</b>	<b>DELINEATION OF GUARDRAIL AT BRIDGES</b>	PLATE NUMBER <b>632.40</b>
	Published Date: 2nd Qtr. 2016	Sheet 2 of 4



**C 3 CABLE GUARDRAIL DELINEATION**  
(4" x 4" Delineator on Flanged Channel Steel Post)

**C 3 CABLE GUARDRAIL DELINEATION**  
(4" x 4" Delineator on I Beam Steel Post)



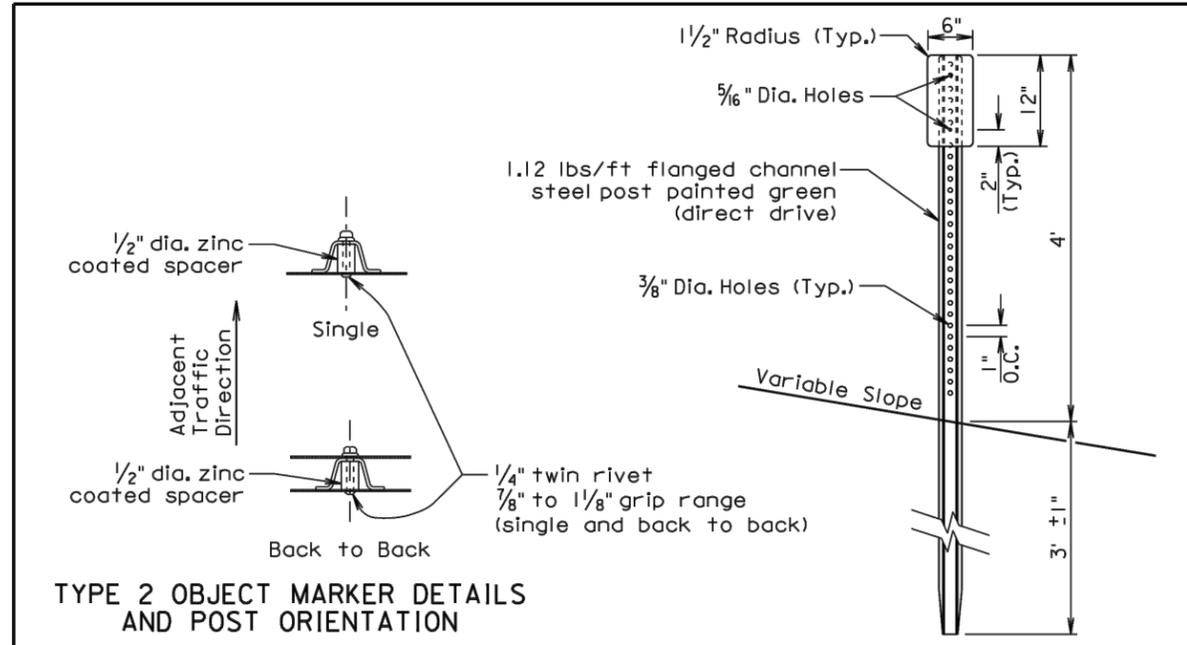
**C 3 CABLE GUARDRAIL DELINEATION\*\***  
(Flexible 3" x 6" Delineator on I Beam Post)

**DELINEATORS\*\*\***  
(For 3 Cable Guardrail)

- \*\* Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.
- \*\*\* Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

June 26, 2011

<b>SDDOT</b>	<b>DELINEATION OF GUARDRAIL AT BRIDGES</b>	PLATE NUMBER <b>632.40</b>
	Published Date: 2nd Qtr. 2016	Sheet 3 of 4



**TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION**

**(M) TYPE 2 OBJECT MARKER**  
(For Marking 3 Cable Guardrail Anchor)

**GENERAL NOTES:**

The delineators shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be of either very high intensity or super high intensity material. For bridges along two-way roadways the sheeting shall be on both sides of the delineator and shall be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

The first delineator shall be attached to the post nearest the bridge with additional delineators spaced in advance of the bridge at approximately 50 foot intervals. At bridges with short lengths of guardrail, less than 200 feet, a minimum of 4 delineators shall be placed in addition to the yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail. This will provide for a shorter spacing. At bridges with longer lengths of guardrail, greater than 200 feet, including bridges that have cable guardrail transitioning into the steel beam guardrail, the delineators will be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation shall be included in the contract unit price per each for "Guardrail Delineator".

An adhesive object marker shall be placed on the end of the W beam guardrail end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have a fluorescent yellow very high or super high intensity reflective sheeting. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

June 26, 2011

<b>SD DOT</b>	<b>DELINEATION OF GUARDRAIL AT BRIDGES</b>	PLATE NUMBER <b>632.40</b>
		Sheet 4 of 4

Published Date: 2nd Qtr. 2016

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

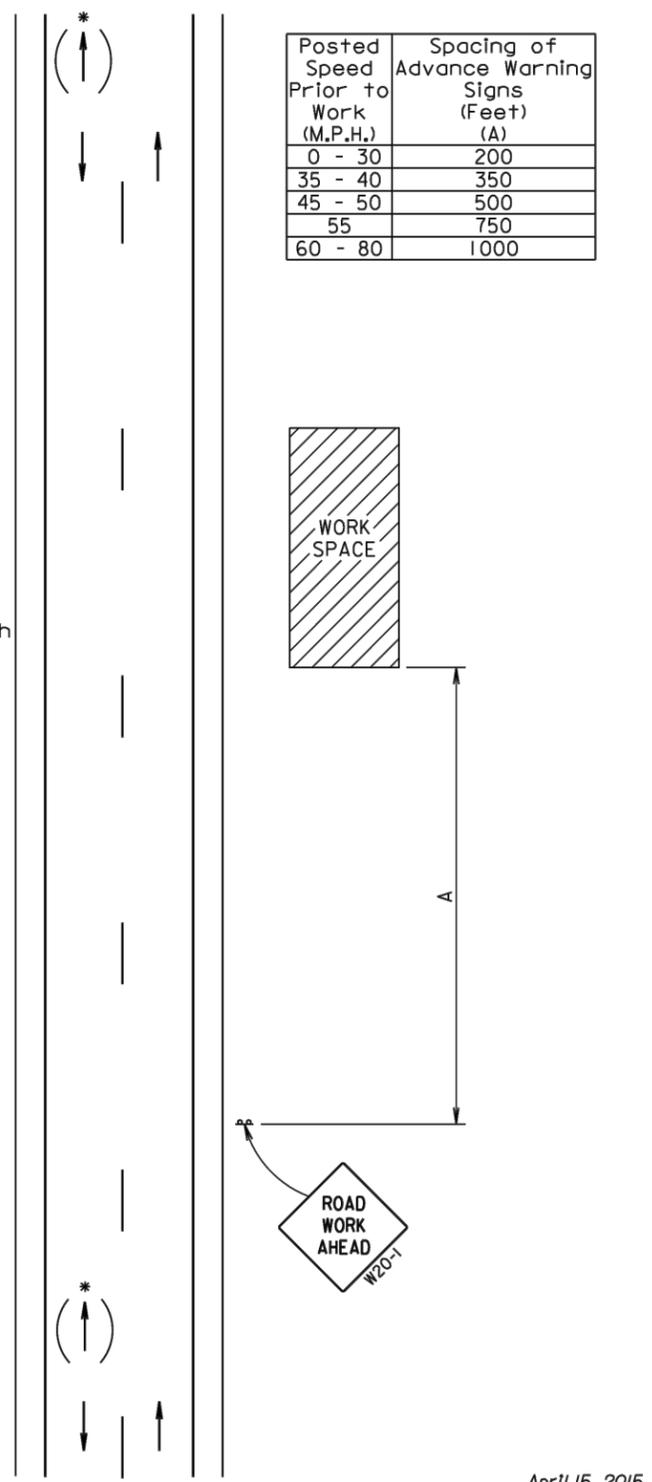
The signs illustrated shall be used where there are distracting situations, such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

\* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

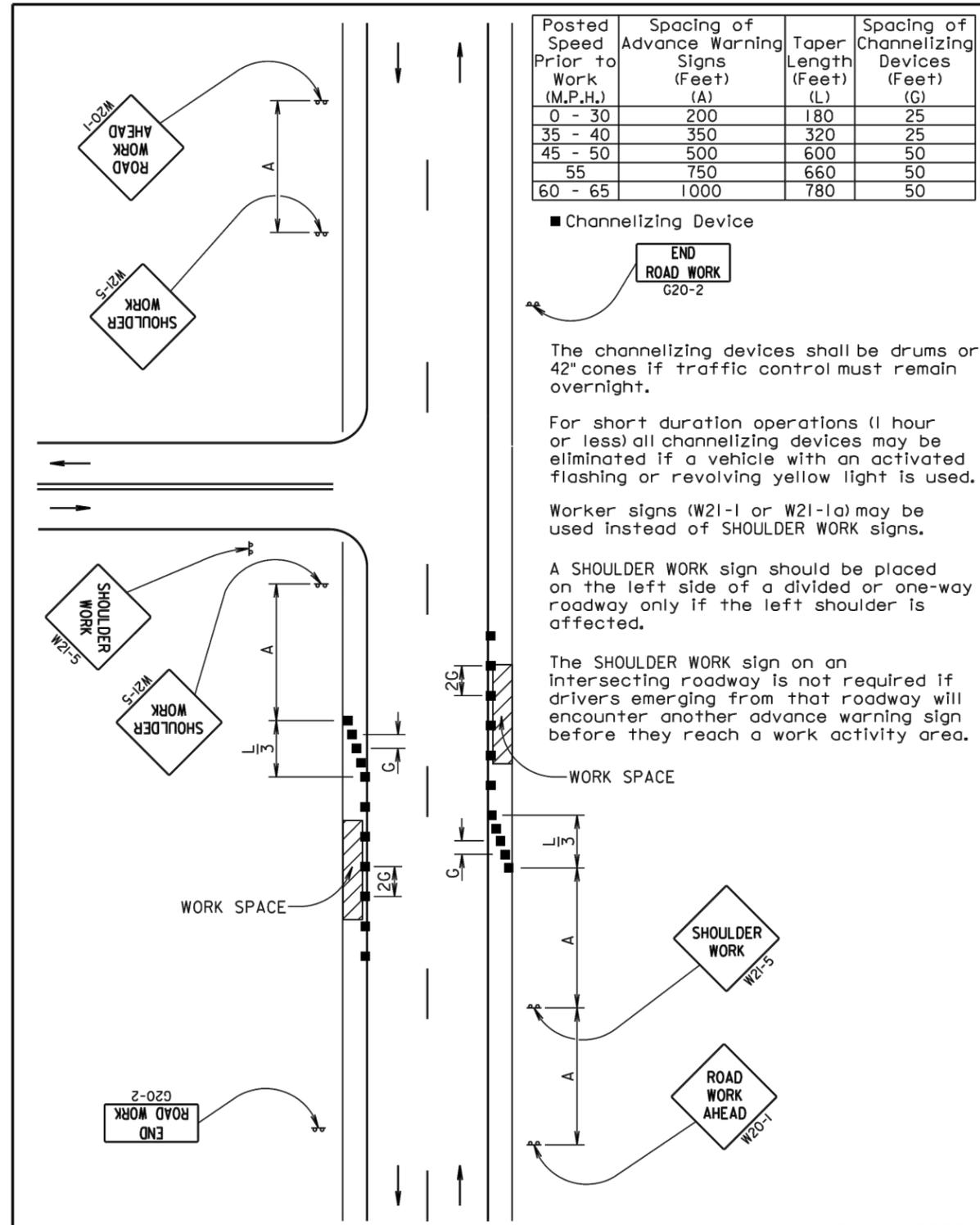
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000



April 15, 2015

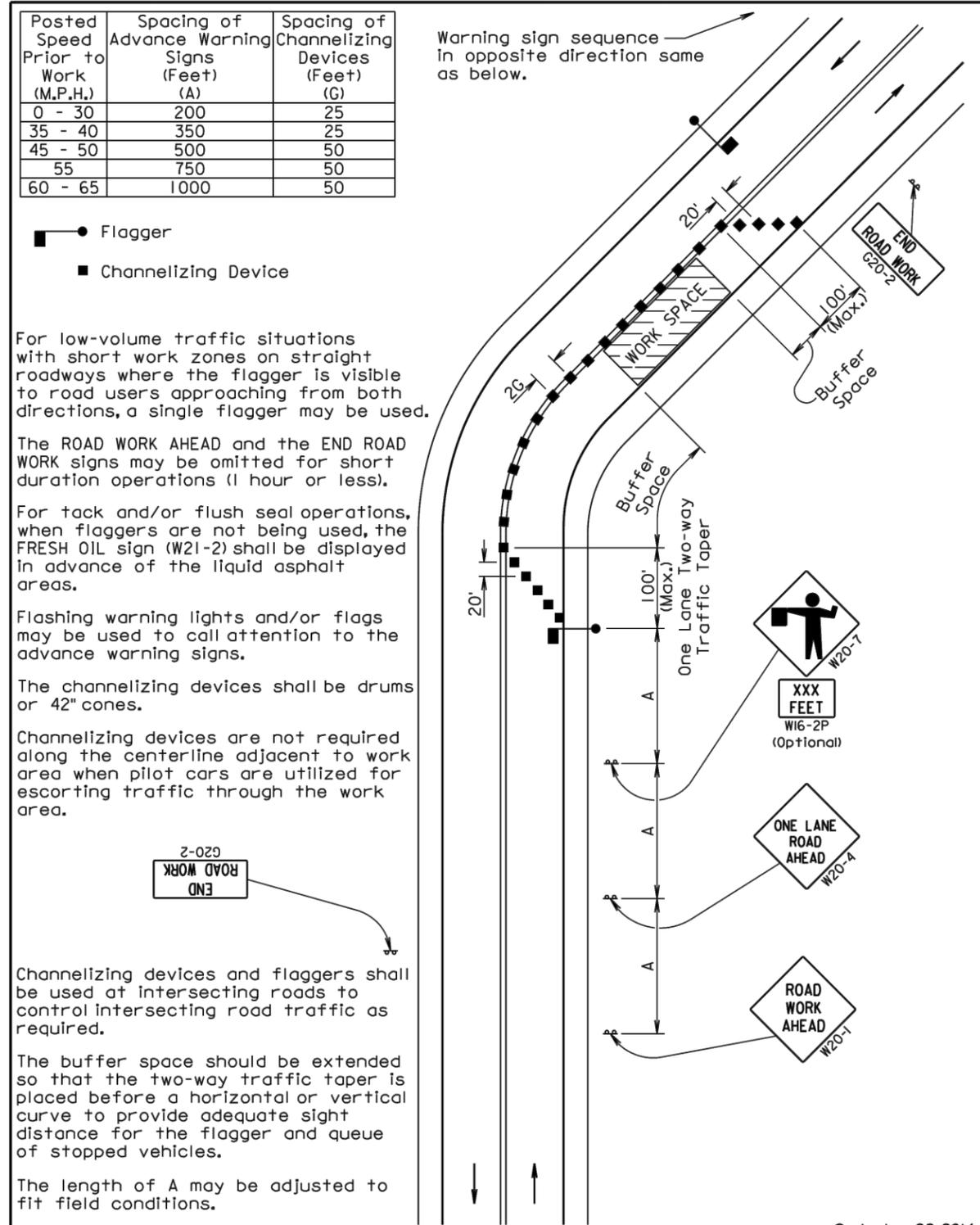
<b>SD DOT</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK BEYOND THE SHOULDER</b>	PLATE NUMBER <b>634.01</b>
		Sheet 1 Of 1

Published Date: 2nd Qtr. 2016



September 22, 2014

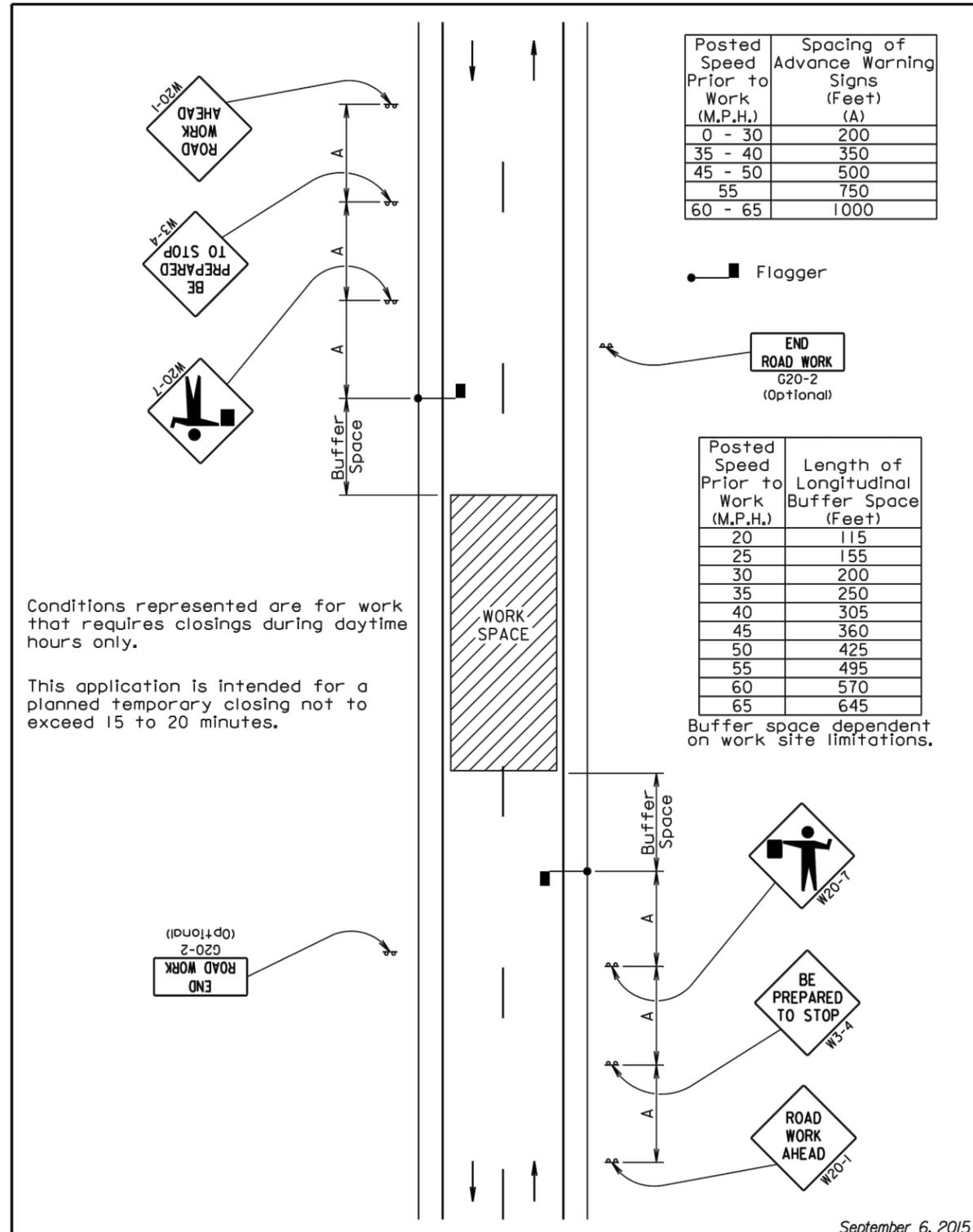
<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS</b>	PLATE NUMBER <b>634.03</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 1



September 22, 2014

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER <b>634.23</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 1

S:\01-2013 Projects\1327-Centerville Trail\Design\CAD\SHHEE\TS\STANDARD PLATES.dwg  
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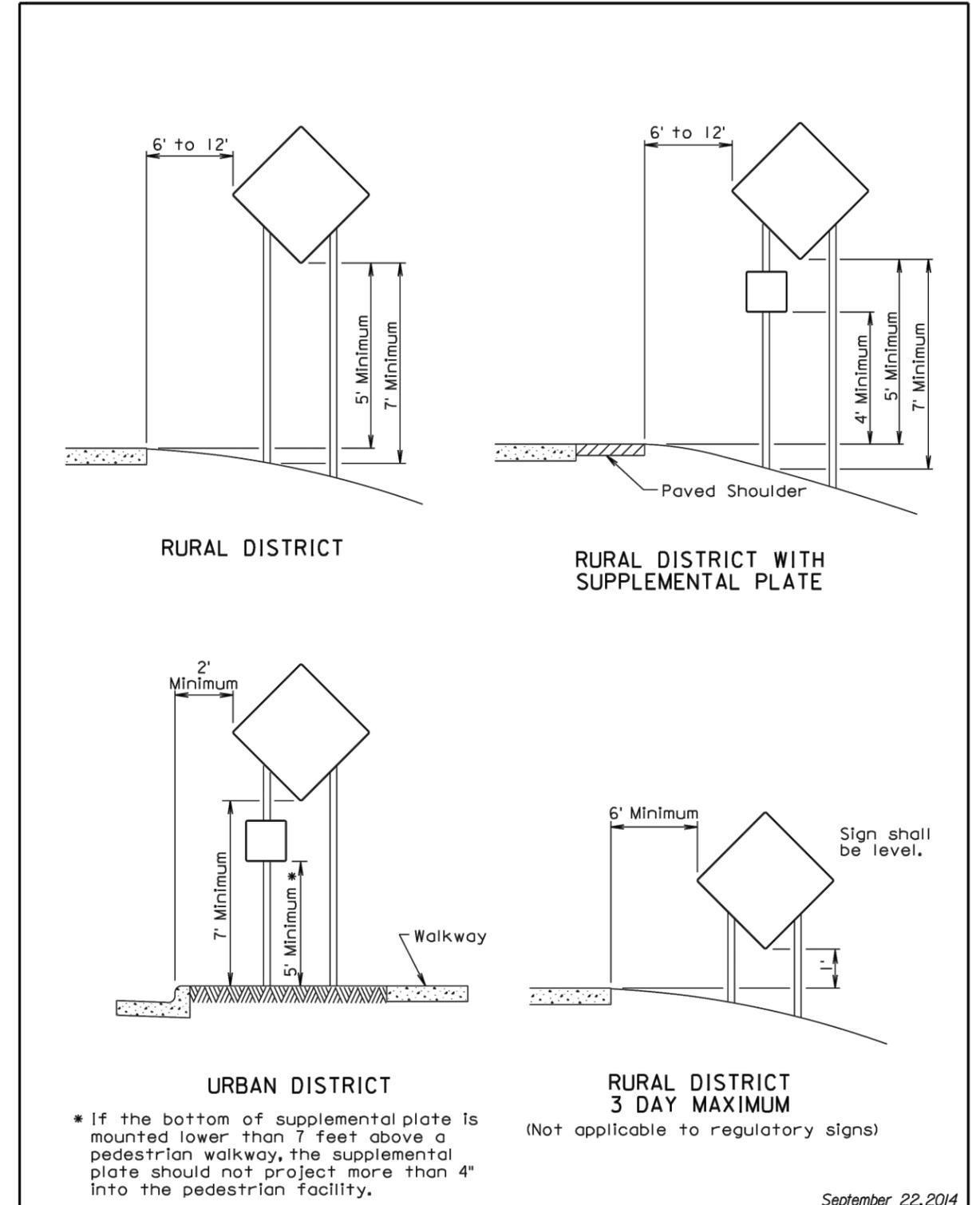


Conditions represented are for work that requires closings during daytime hours only.

This application is intended for a planned temporary closing not to exceed 15 to 20 minutes.

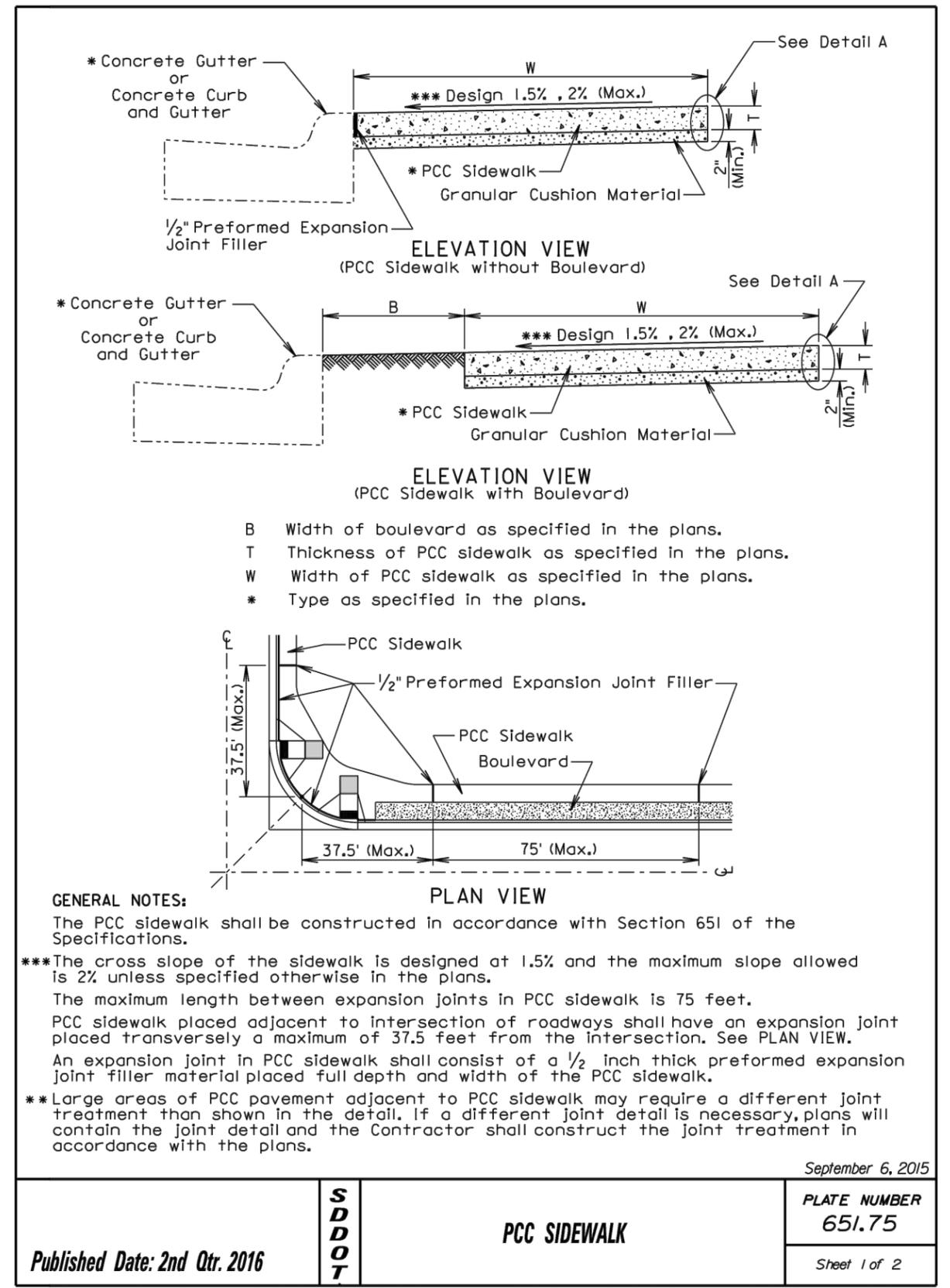
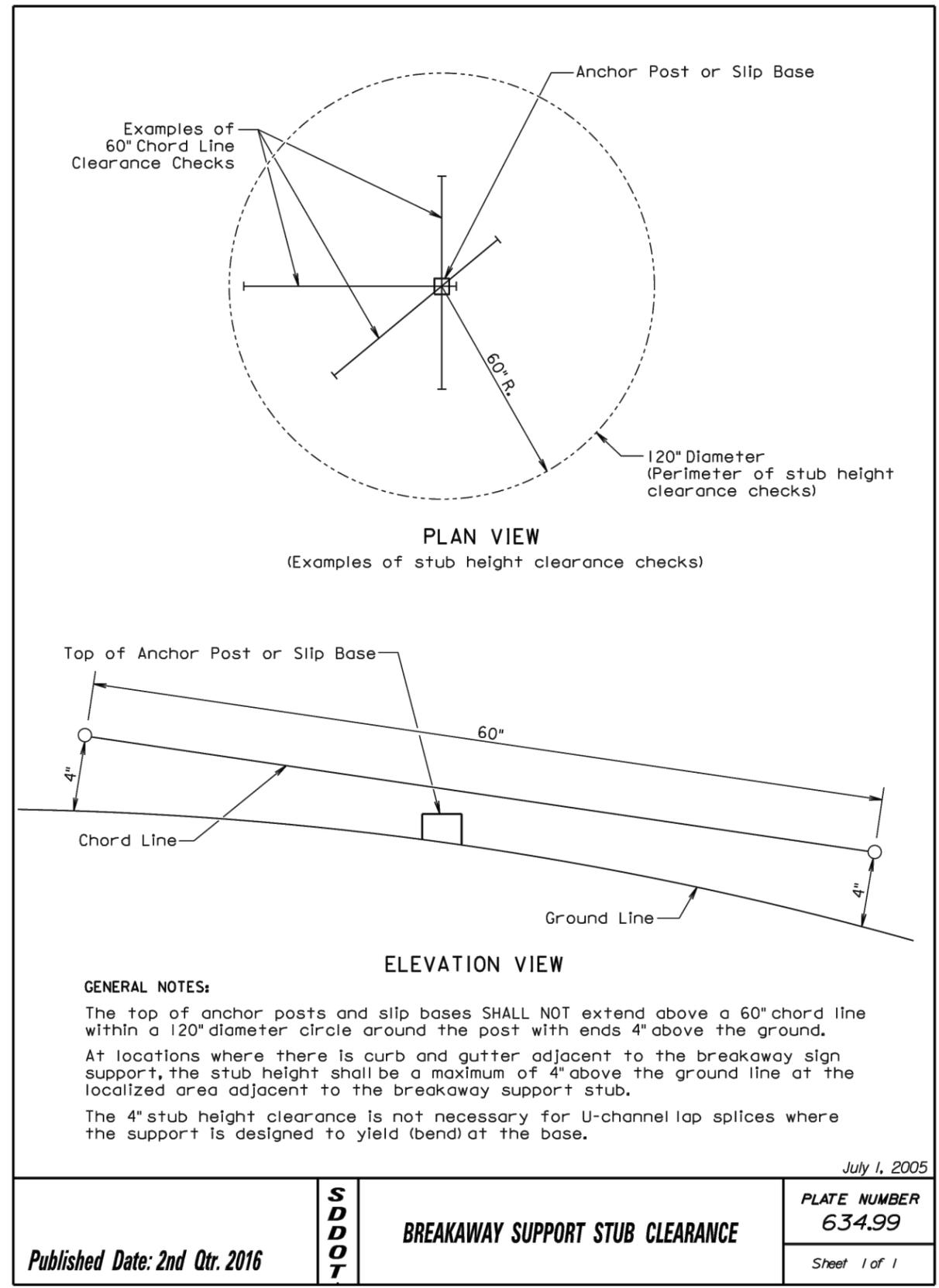
September 6, 2015

<b>S D D O T</b>	<b>GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD WORK</b>	PLATE NUMBER <b>634.30</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 1

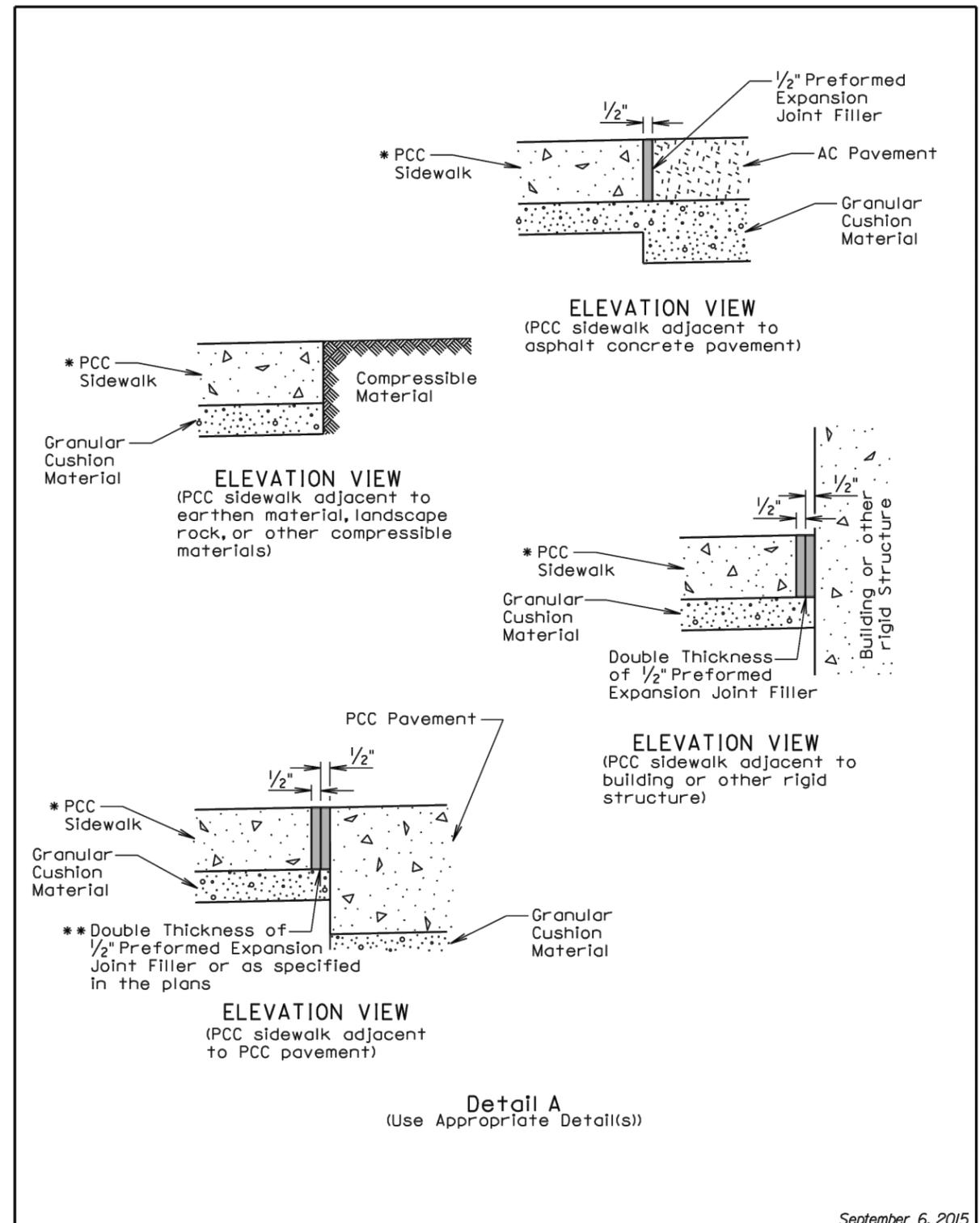


September 22, 2014

<b>S D D O T</b>	<b>CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)</b>	PLATE NUMBER <b>634.85</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 1



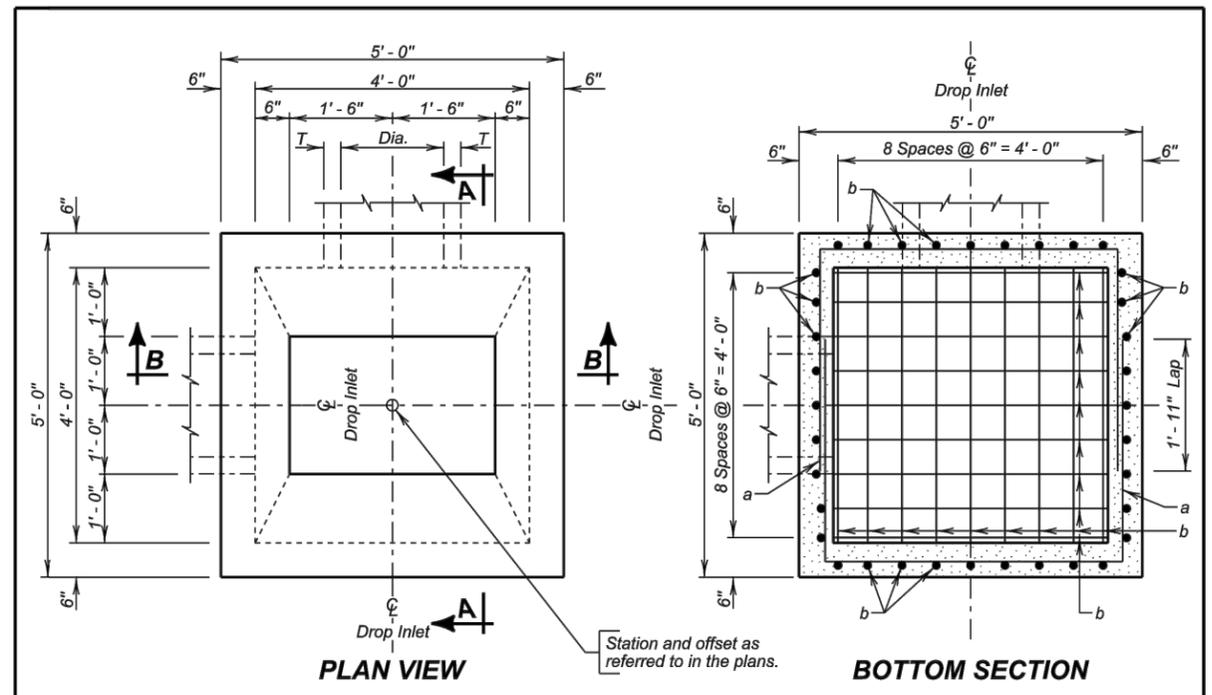
S:\01-2016 Projects\1327-Centerville Trail\Design\CAD\SHHEE\STANDARD PLATES.dwg  
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September 6, 2015

<b>SD DOT</b>	<b>PCC SIDEWALK</b>	PLATE NUMBER <b>651.75</b>
		Sheet 2 of 2

Published Date: 2nd Qtr. 2016



ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	Cu. Yd.	0.98	0.33H
Reinforcing Steel	Lb.	180.69	43.67H
Frame and Grate Assembly	Each	1	—

**DROP INLETS FOR 12" TO 36" DIAMETER PIPE**

**SPECIFICATIONS**

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.  
Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**GENERAL NOTES:**

Design Live Load: HL-93. No construction loading in excess of legal load was considered.

Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12 inches with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.

Drop inlet may be precast. If precast drop inlet details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

\* Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.

Drop inlet shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering drop inlet must fit between the inside face of walls and shall not enter through the corners.

Maximum R.C.P. diameter shall not exceed 36 inches (30 inches for R. C. arch) on the 4-foot wide side of the drop inlet.

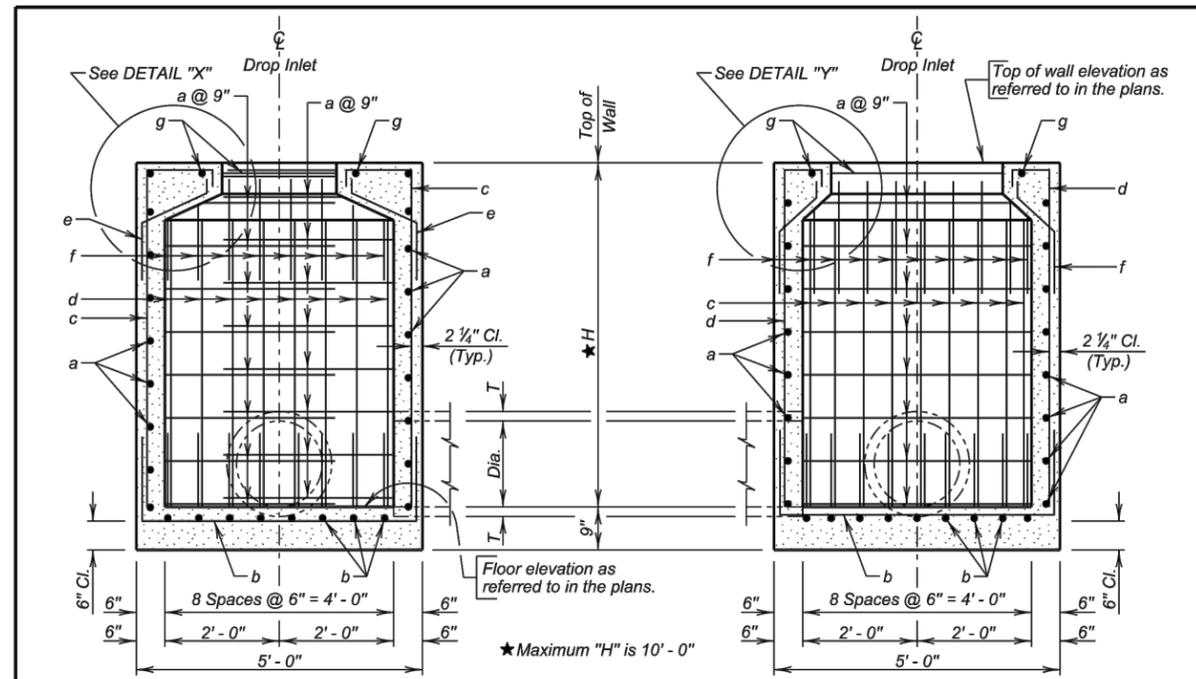
The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS		
Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
12	2	0.03
15	2 1/4	0.04
18	2 1/2	0.05
24	3	0.09
30	3 1/2	0.14
36	4	0.20
18	2 1/2	0.05
24	3 1/2	0.09
30	4	0.14

December 16, 2015

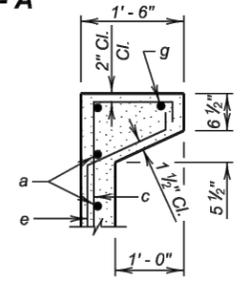
<b>SD DOT</b>	<b>4' X 4' TYPE B REINFORCED CONCRETE DROP INLET</b>	PLATE NUMBER <b>670.04</b>
		Sheet 1 of 2

Published Date: 2nd Qtr. 2016

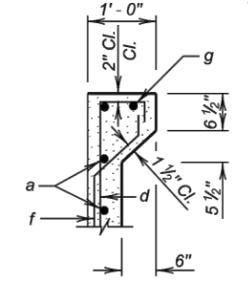


SEC. A - A

SEC. B - B



DETAIL "X"



DETAIL "Y"

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
a	2.67H	4	11'-0"	17
b	18	4	7'-6"	17
c	18	4	H + 15"	S17
d	18	4	H + 9"	S17
e	18	4	2'-6"	S19
f	18	4	2'-3"	S19
g	2	4	7'-0"	17

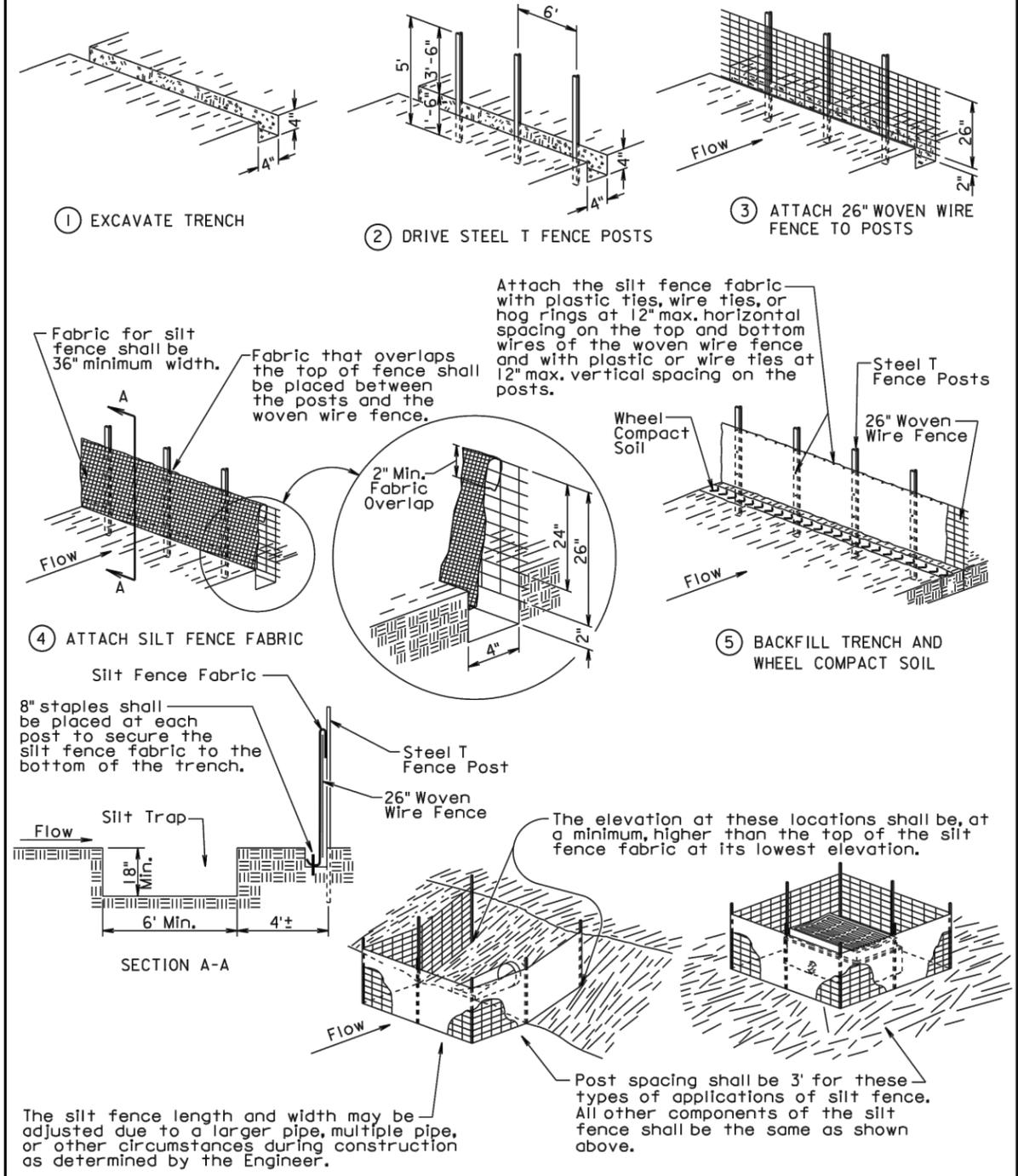
Bending Details	
<p>Type 17</p>	<p>Type S17</p>
<p>Type S19</p>	<p>Type S19</p>

NOTE: All dimensions are out to out of bars.

December 16, 2015

<b>S D D O T</b>	<b>4' X 4' TYPE B REINFORCED CONCRETE DROP INLET</b>	PLATE NUMBER <b>670.04</b>
	Published Date: 2nd Qtr. 2016	Sheet 2 of 2

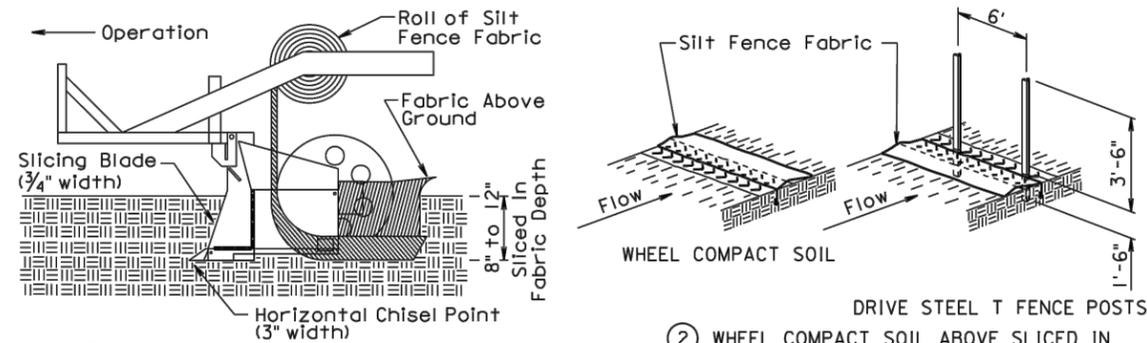
MANUAL LOW FLOW SILT FENCE INSTALLATION



<b>S D D O T</b>	<b>LOW FLOW SILT FENCE AND SILT TRAP</b>	PLATE NUMBER <b>734.04</b>
	Published Date: 2nd Qtr. 2016	Sheet 1 of 2

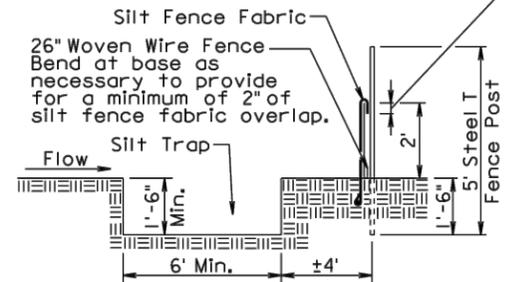
December 23, 2003

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

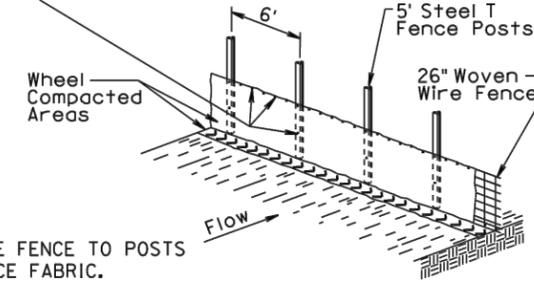
Silt fence fabric shall be overlapped a minimum of 2" at top of woven wire fence.



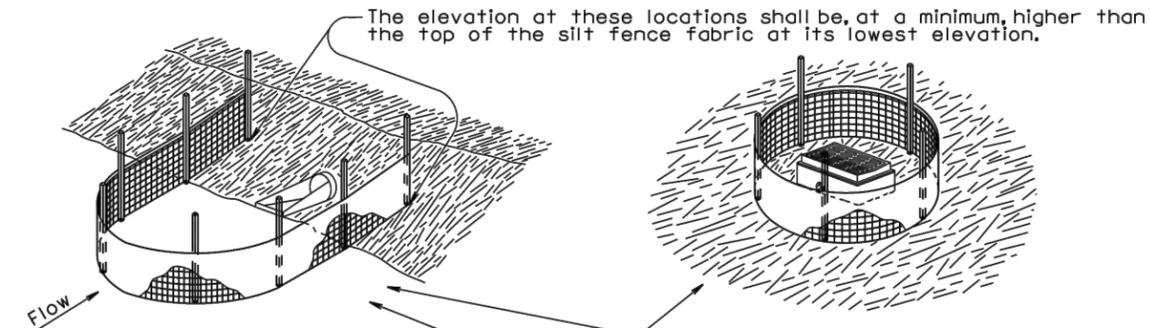
③ ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.

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

Attach the silt fence fabric with plastic ties, wire ties, or hog rings at 12" max. horizontal spacing on the top and bottom wires of the woven wire fence and with plastic or wire ties at 12" max. vertical spacing on the posts.



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

GENERAL NOTES:

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

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

December 23, 2003

SD DOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
		Sheet 2 of 2

Published Date: 2nd Qtr. 2016

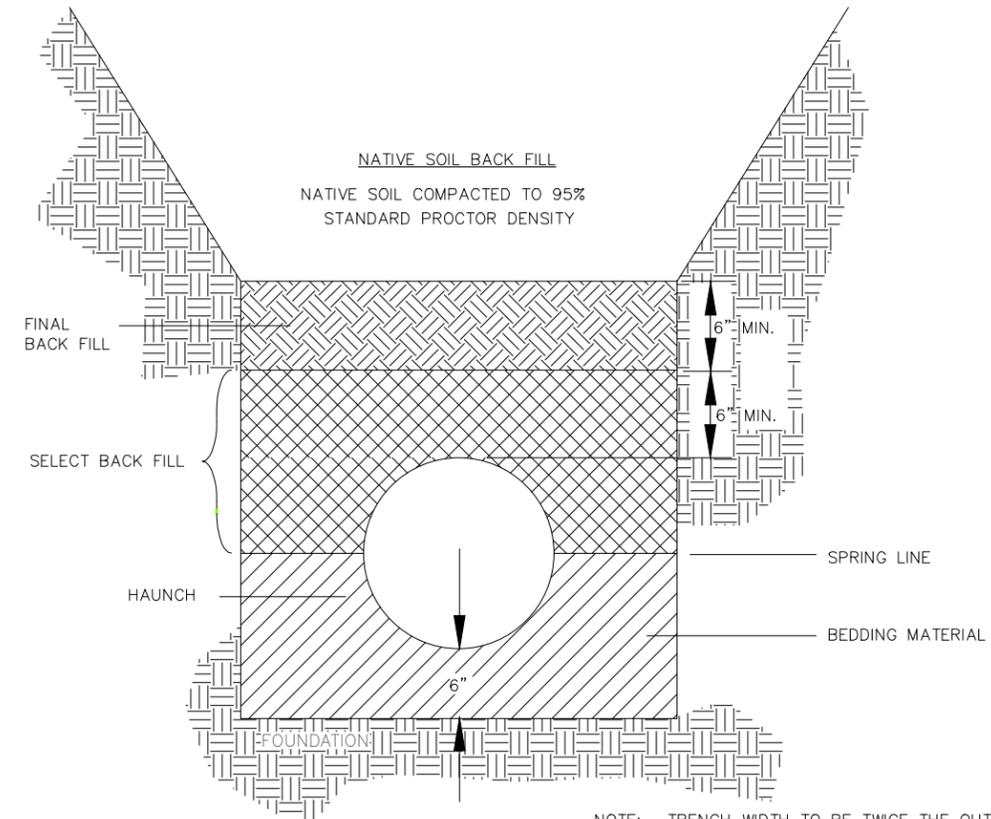
COVER FROM 1.5 TO 10 FEET

SELECT BACK FILL AND BEDDING MATERIAL ARE INCIDENTAL TO CORRESPONDING PIPE INSTALLATION BID ITEMS.

SECTION 421.2A OF SDDOT SPECIFICATIONS

SELECT MATERIAL SHALL BE KNIFED AROUND THE PIPE

SECTION 421.2B OF SDDOT SPECIFICATIONS



NOTE: TRENCH WIDTH TO BE TWICE THE OUTSIDE DIAMETER, OR THE OUTSIDE DIAMETER PLUS TWO FEET, WHICH EVER IS LESS.

ASSUME: 140 LBS. PER CUBIC FOOT  
6" OF SELECT FILL ABOVE PIPE  
6" OF BEDDING MATERIAL BELOW PIPE

QUANTITY ESTIMATE TABLE  
FOR BEDDING MATERIAL

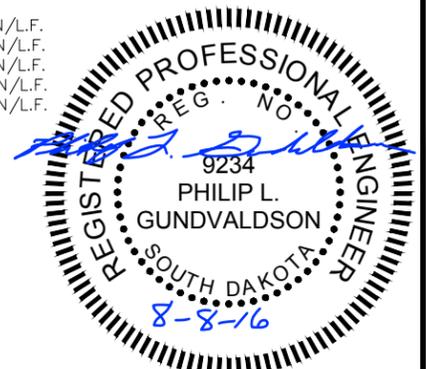
12"	0.14 TON/L.F.
15"	0.20 TON/L.F.
18"	0.25 TON/L.F.
24"	0.36 TON/L.F.
30"	0.45 TON/L.F.

QUANTITY ESTIMATE TABLE  
FOR SELECT FILL MATERIAL

12"	0.14 TON/L.F.
15"	0.20 TON/L.F.
18"	0.25 TON/L.F.
24"	0.36 TON/L.F.
30"	0.45 TON/L.F.

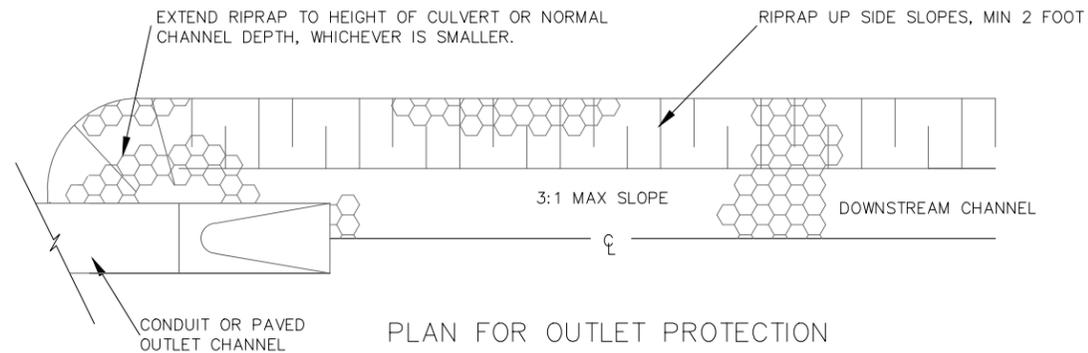
APPLIES TO BOTH SOIL TIGHT AND WATER TIGHT JOINTS

BEDDING AND BACKFILL REQUIREMENTS FOR 12" THRU 30" POLYETHYLENE PIPE



RIPRAP DETAIL AT PIPE OUTLET

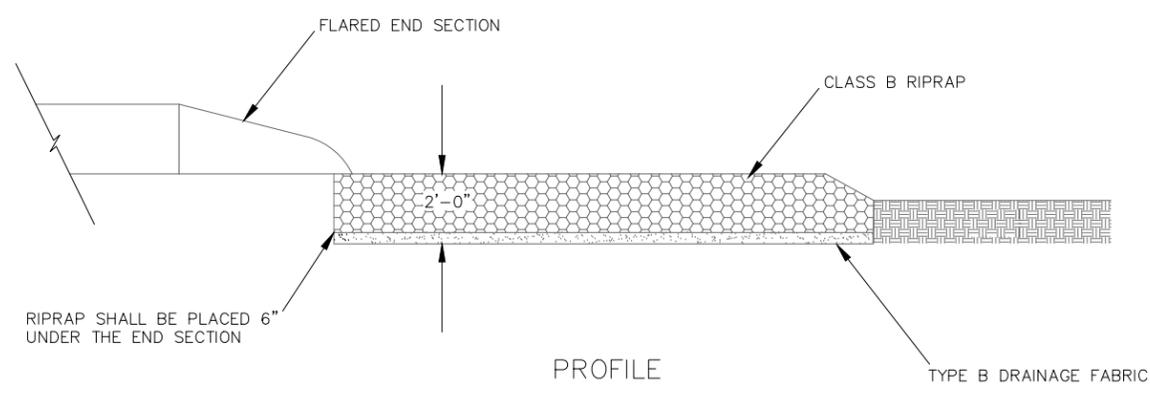
CWF



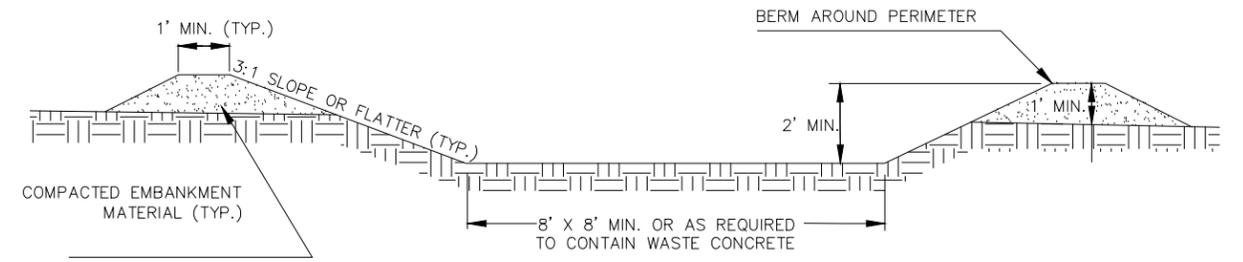
PLAN FOR OUTLET PROTECTION

NOTES:

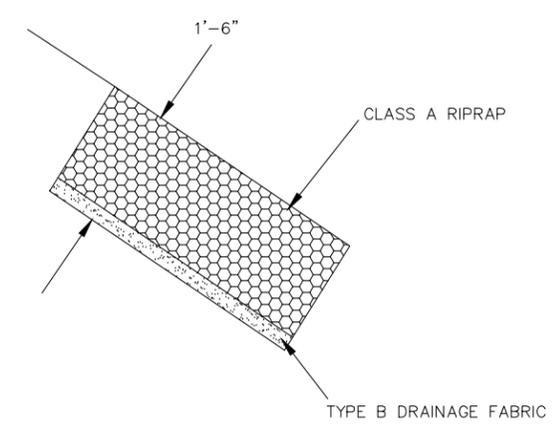
1. CONCRETE WASHOUT FACILITY SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. A SIGN SHALL BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE CWF.
3. THE CONCRETE WASHOUT FACILITY SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
4. WHEN CWF ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE AND MATERIALS USED TO CONSTRUCT THE CWF SHALL BE REMOVED AND DISPOSED OF.
5. WHEN THE CONCRETE WASHOUT FACILITY IS REMOVED, THE HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE SHALL BE BACKFILLED, REPAIRED AND STABILIZED.



PROFILE



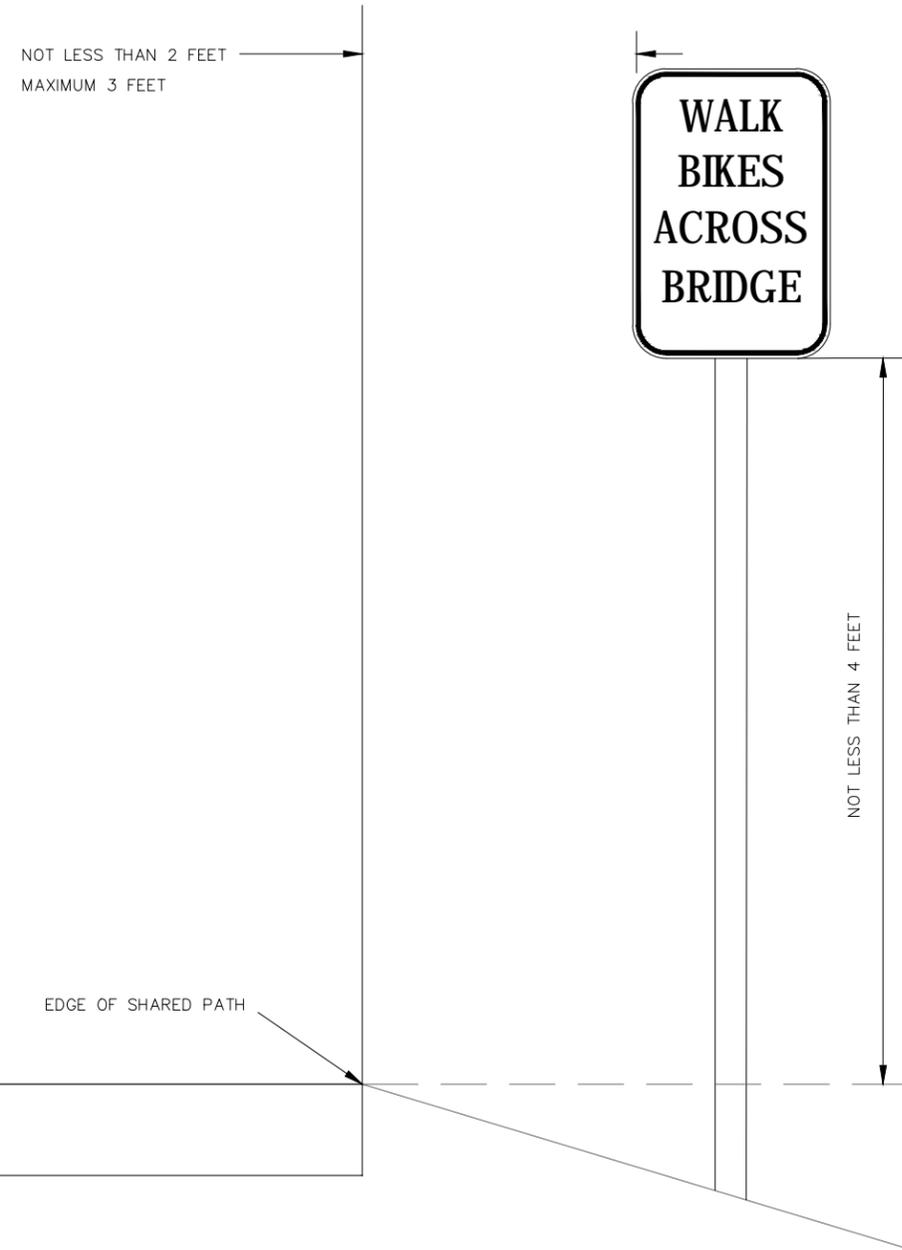
CROSS SECTIONAL VIEW



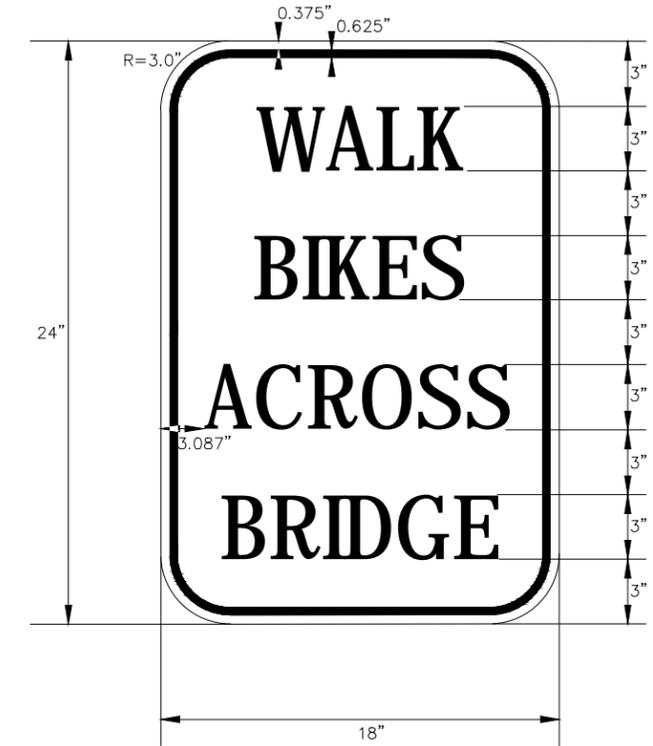
RIPRAP DETAIL FOR BRIDGE EMBANKMENT

CONCRETE WASHOUT FACILITY





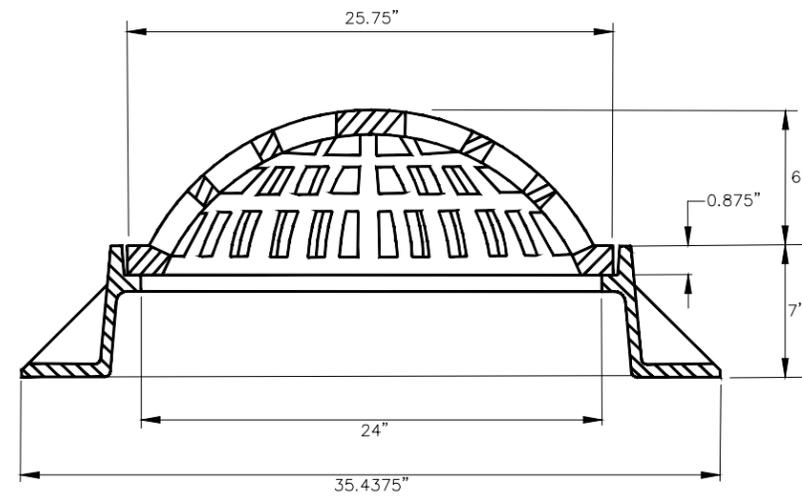
SINGLE SIGN ALONG TRAIL



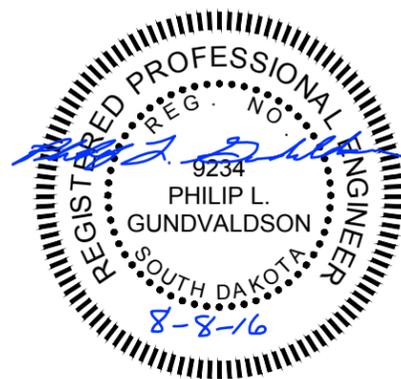
SPECIAL SIGN DETAIL



NOTE:  
THE SPECIAL MANHOLE FRAME AND GRATE SHALL BE A BEEHIVE  
NEENAH R-2560-E1 OR AN ENGINEER APPROVED EQUAL.



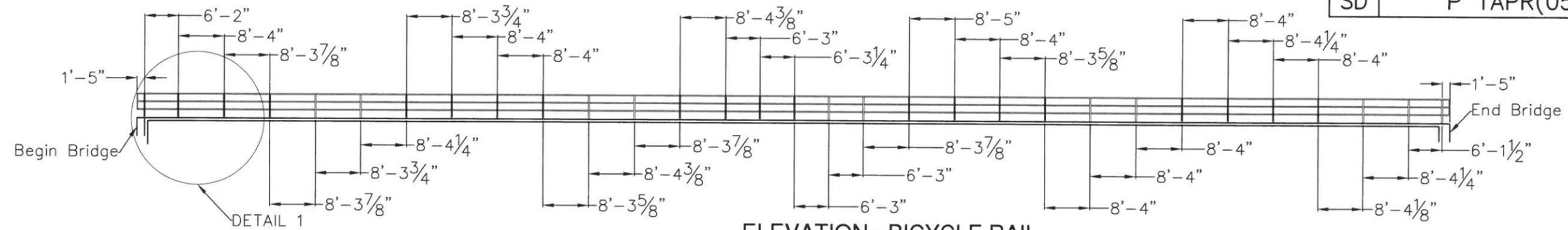
SPECIAL MANHOLE FRAME AND LID DETAIL



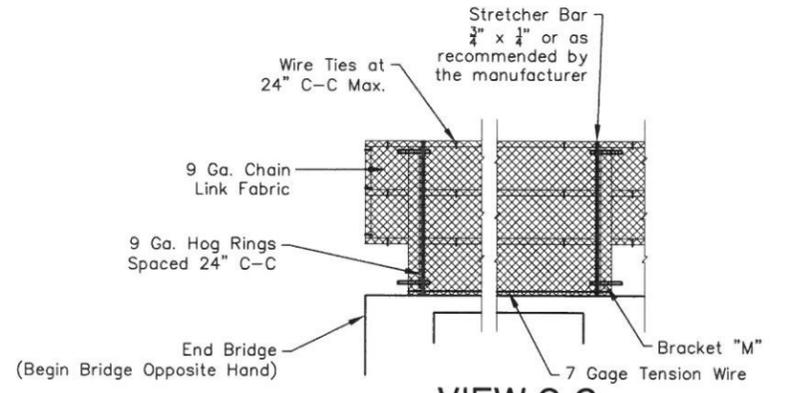
FOR BIDDING PURPOSES ONLY PROJECT NO.

SHEET NO.	TOTAL SHEETS
43	48

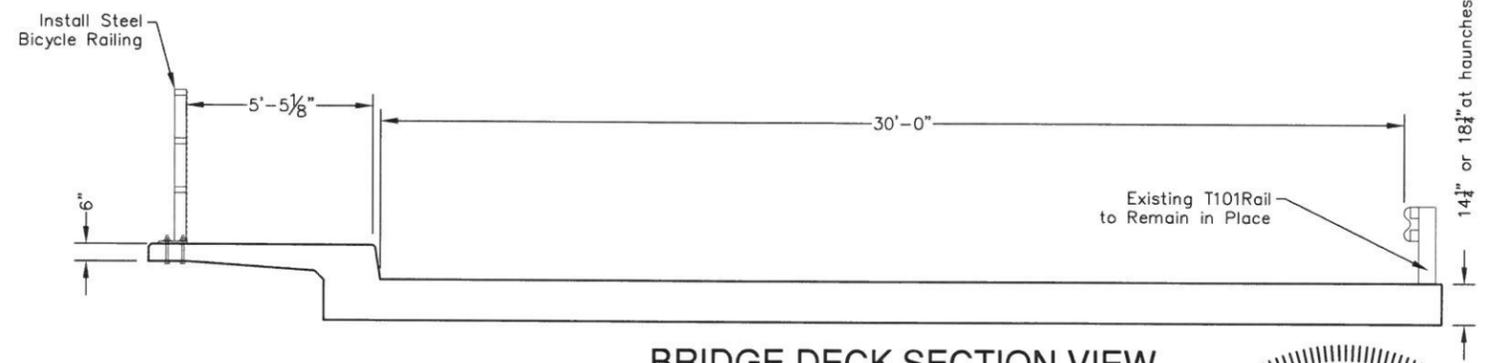
SD P TAPR(05)



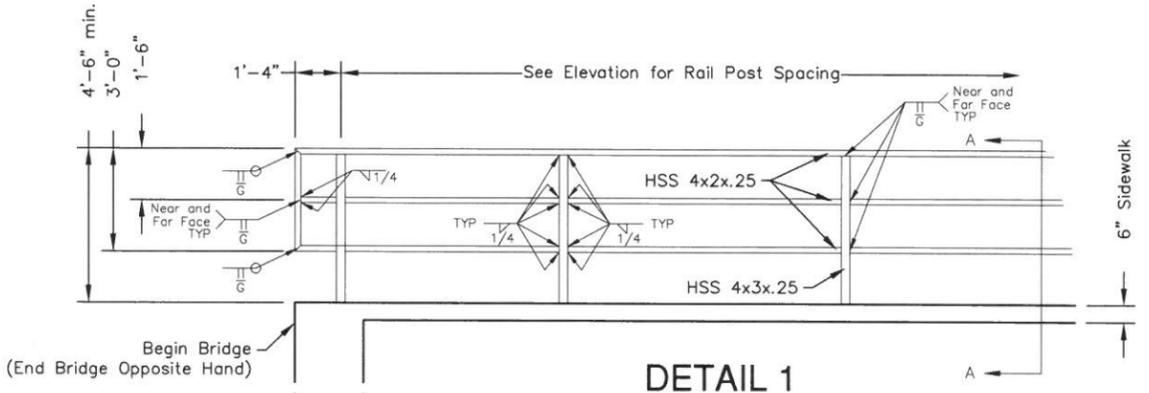
**ELEVATION - BICYCLE RAIL**  
(Chain Link Fabric not shown for clarity)  
(Post Spacing To Match Existing T101 Rail, Field Verify)



**VIEW C-C**  
**CHAIN LINK FABRIC ATTACHMENT**

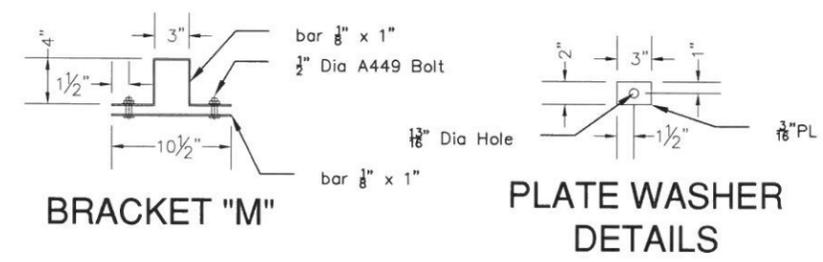


**BRIDGE DECK SECTION VIEW**



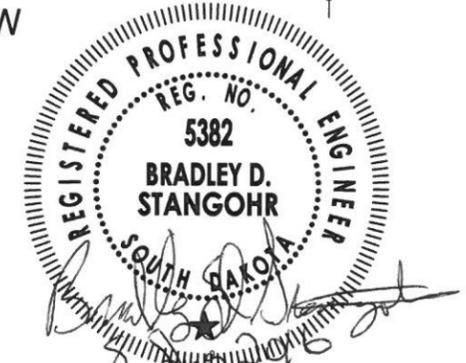
**DETAIL 1**

Chain Link Fabric not shown for clarity

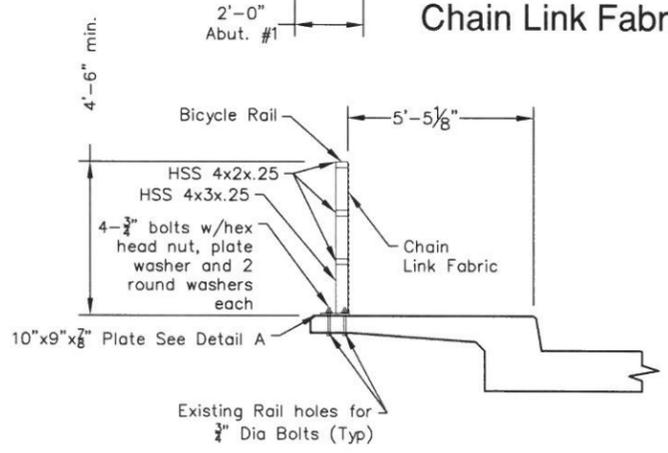


**BRACKET "M"**

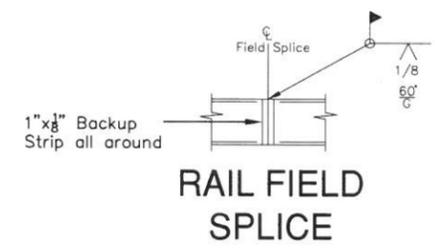
**PLATE WASHER DETAILS**



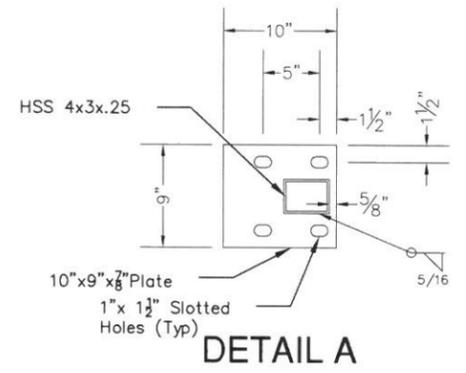
**RAIL DETAILS**  
FOR  
240'-0" CONTINUOUS CONCRETE BRIDGE



**SEC A-A**



**RAIL FIELD SPLICE**



**DETAIL A**

30'-0" ROADWAY  
OVER VERMILLION RIVER  
STR NO 63-218-262

SEC. 22-T96N-R82W  
0° SKEW  
T PATR(05)

TURNER COUNTY  
OCTOBER 2015

-X020-

**ESTIMATED QUANTITIES**

Item	Unit	Superstructure
Remove Bridge Railing	Ft	240
Steel Bicycle Railing	Ft	240

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
BS	BS	CS	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P TAPR(05)	44	48

**SPECIFICATIONS FOR BRIDGE**

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2015 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.

**EXISTING BRIDGE CONSTRUCTION DRAWINGS**

Original construction drawings are included for informational purposes only to aid in understanding the existing bridge, the Contractor shall verify all dimensions before rail fabrication.

**REMOVE BRIDGE RAILING**

- The existing 240' of T101 rail shall be removed from the North side of the bridge. Special care shall be taken to avoid damage to sidewalk or bridge during removal operations. The removal shall consist of all rail components including concrete rail anchors. The bolt studs for the rail posts at the abutments shall remain in place and be reused, special care shall be exercised to avoid damage to the bolts or threads. If studs are damaged they shall be replaced with drilled in ASTM F1554 Anchor Rod, with a minimum embedment of 12", at no additional cost. Anchor Rods shall be installed as per 380.2 C.1. All rail components shall become the property of the Contractor. The basis for payment shall be plans quantity, no separate field measurements shall be made.
- The foregoing is a general description of the in-place bridge rail and should not be construed to be complete in all details. Before preparing the bid it shall be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved.

**NOTICE - LEAD BASED PAINT**

Be advised that the paint on the steel surfaces of the existing structure contains lead. The Contractor should plan his/her operations accordingly, and inform his/her employees of the hazards of lead exposure.

- complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
- No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.

**PAINTING**

All steel railing shall be painted in accordance with section 411 of the Specifications. The color shall be an approved brown (Federal Standard 595B Color 30045). The chain link fabric, tensioning wire, and wire ties shall be PVC coated. The color of the PVC coating shall closely match the painted rail components.

All costs for painting shall be incidental to the contract unit price for that item.

**GENERAL NOTES**

Rail posts shall be built vertical.

All structural steel parts for railing shall conform to ASTM A500, Grade B. Material less than 1/4" thick may be ASTM A1011, Grade 36. Rail post base plates shall conform to ASTM A709, Grade 36.

All anchor bolts and nuts for railing shall conform to ASTM A307. Washers shall conform to ASTM F436 and all components shall be galvanized in accordance with ASTM A153 or ASTM F2329, as applicable. The bolts shall be hex head "structural" type with heavy hex nuts and round washers.

All anchor bolts shall be tightened to a torque of 120 ft.-lbs. (approximated without the use of a calibrated torque wrench).

Rail post spacing shown on sheet 1 for the bicycle rail was field measured. The Contractor shall field verify the post spacing before fabrication of the bicycle rail. All costs to field verify the rail post spacing before fabrication and/or any adjustments in the rail post spacing shall be included in the unit price for Steel Bicycle Railing, no additional payment will be made.

The chain link fence fabric and supports shall conform to Section 930 of the Specifications as modified by the following notes.

The chain link fence fabric, wire ties and miscellaneous hardware shall be galvanized and conform to AASHTO M181. The fence fabric shall be Type IV 9 gauge wire woven in a 2 inch diamond mesh. Knuckled selvage shall be used on the top and bottom of the fence fabric.

A brown (Federal Standard 595B Color 30045) thermally extruded polyvinyl coating shall be applied to the fence fabric, wire ties and all miscellaneous hardware.

The costs of structural steel, welding, weld inspection, painting and galvanizing, chain link fence fabric, wire ties, miscellaneous hardware, painting and welding, all to satisfactorily complete this work shall be incidental to the contract unit price per foot for Steel Bicycle Railing.

**SHOP DRAWINGS**

Shop plans shall be required as specified by the Specifications.

The fabricator shall submit shop plans in accordance with the Specifications. Send shop plan submittals Ulteig Engineers, 5701 S. Corporate Place, Sioux Falls, SD 57107. After review, corrections (if necessary), and approval by Ulteig Engineers, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

**WELDING**

All welding and weld inspection shall be performed in accordance with the latest edition of AWS D1.1 Structural Welding Code-Steel.



NOTES  
FOR

240'-0" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY  
OVER VERMILLION RIVER  
STR NO 63-218-262

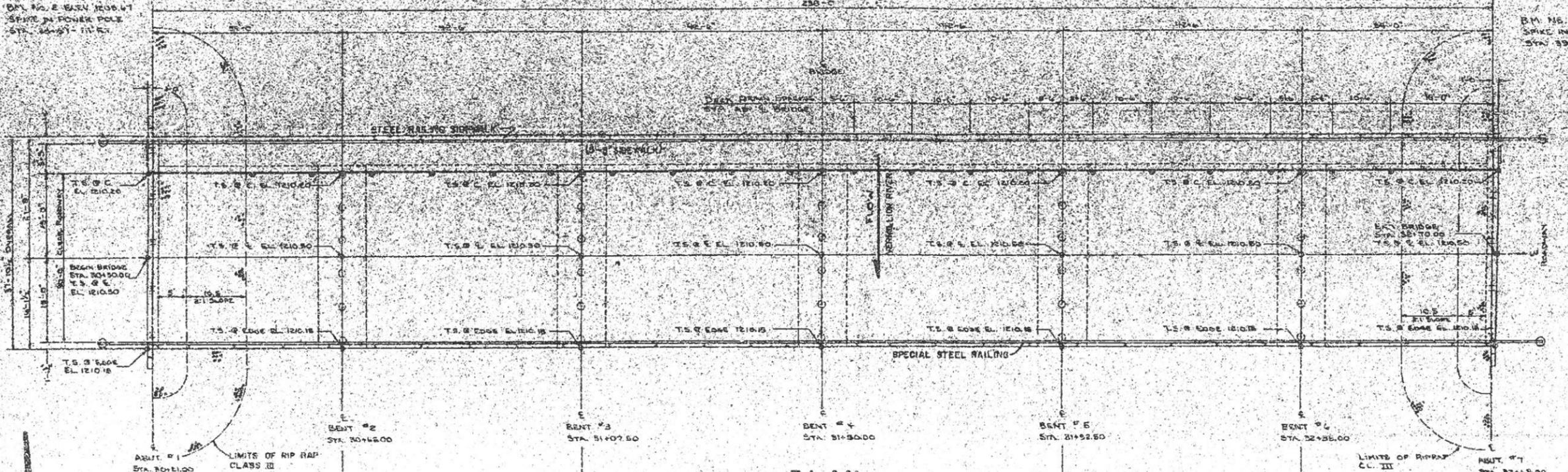
SEC. 22-T96N-R82W  
0° SKEW  
T PATR(05)

TURNER COUNTY  
OCTOBER 2015

-X020-

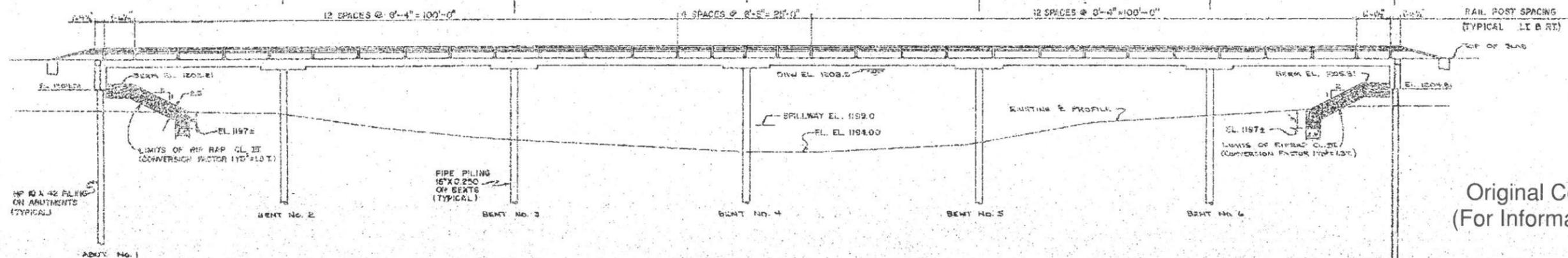
2 of 6

FED. PROJ. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
5	S.D.	P TAPR(05)	45	48



INDEX OF BRIDGE SHEETS

- SHEET NO. 1 GENERAL DRAWING
- ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
- SOIL SURFACE INVESTIGATION
- DETAILS OF ABUTMENTS
- DETAILS OF BENTS
- DETAILS OF SUPERSTRUCTURE
- DETAILS OF CURB AND SIDEWALK
- DETAILS OF SPECIAL STEEL RAILING
- DETAILS OF STEEL RAILING SIDEWALK
- STANDARD SHEET FOR PILE SHOE, PILE CAP AND GRANULAR BRIDGE END BACKFILL
- STANDARD SHEET FOR YEAR PLATE DETAILS AND FENCE ANCHOR FOR BRIDGE ABUTMENTS



CURB & C ELEVATIONS

STATION	EL. 1194.00	EL. 1195.00	EL. 1196.00	EL. 1197.00	EL. 1198.00	EL. 1199.00	EL. 1200.00	EL. 1201.00	EL. 1202.00	EL. 1203.00	EL. 1204.00	EL. 1205.00	EL. 1206.00	EL. 1207.00	EL. 1208.00	EL. 1209.00	EL. 1210.00	EL. 1211.00	EL. 1212.00	EL. 1213.00	EL. 1214.00	EL. 1215.00	EL. 1216.00	EL. 1217.00	EL. 1218.00	EL. 1219.00	EL. 1220.00
30+00	30+10	30+20	30+30	30+40	30+50	30+60	30+70	30+80	30+90	31+00	31+10	31+20	31+30	31+40	31+50	31+60	31+70	31+80	31+90	32+00	32+10	32+20	32+30	32+40	32+50	32+60	32+70

Original Construction Drawings  
(For Informational Purposes Only)

GENERAL DRAWING FOR 240'-0" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY AND 6'-0" SIDEWALK ON LT. SIDE

OVER VERMILION RIVER

STA. 30+30.00 TO 32+00.00  
STR. NO. 83-318-282

SEC. 27 T88N R56W  
BR. 4304UJ  
PCMS 2994

TURNER COUNTY, SOUTH DAKOTA

PREPARED BY: JANTON ENGINEERING CO. JANTON, SOUTH DAKOTA

NS20 14 (6.4.7)

JANUARY, 1986

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Qd	17085 cfs
Ad	1830 sq ft
Vd	9.03 fps
Dv	2837 cfs
Qsup	17063 cfs
Qcrit	8965 cfs

Qd = design discharge for the proposed culvert or bridge based on 100 year frequency, B. 1978.5

Qsup = overflowing discharge and frequency 27 yr. recurrence interval, B. 1978.5 STA. 27+00

Dv = designated peak discharge for the basin approaching proposed project based on 25 yr. frequency.

Qcrit = critical discharge for the basin approaching proposed project based on 100 yr. frequency, B. 1978.5





