SD DOT	PROJECT	SECTION	SHEET
Plotting Date: 2/17/2026	PH 0040(346)	Non	1/104

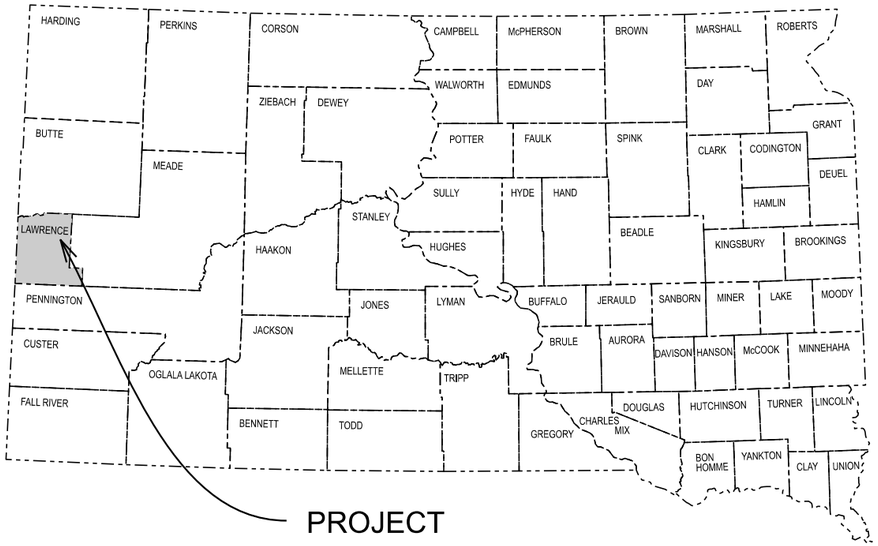
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT PH 0040(346)
INTERSTATE 90
LAWRENCE COUNTY

GRADING & GUARDRAIL ELIMINATION

PCN 089U

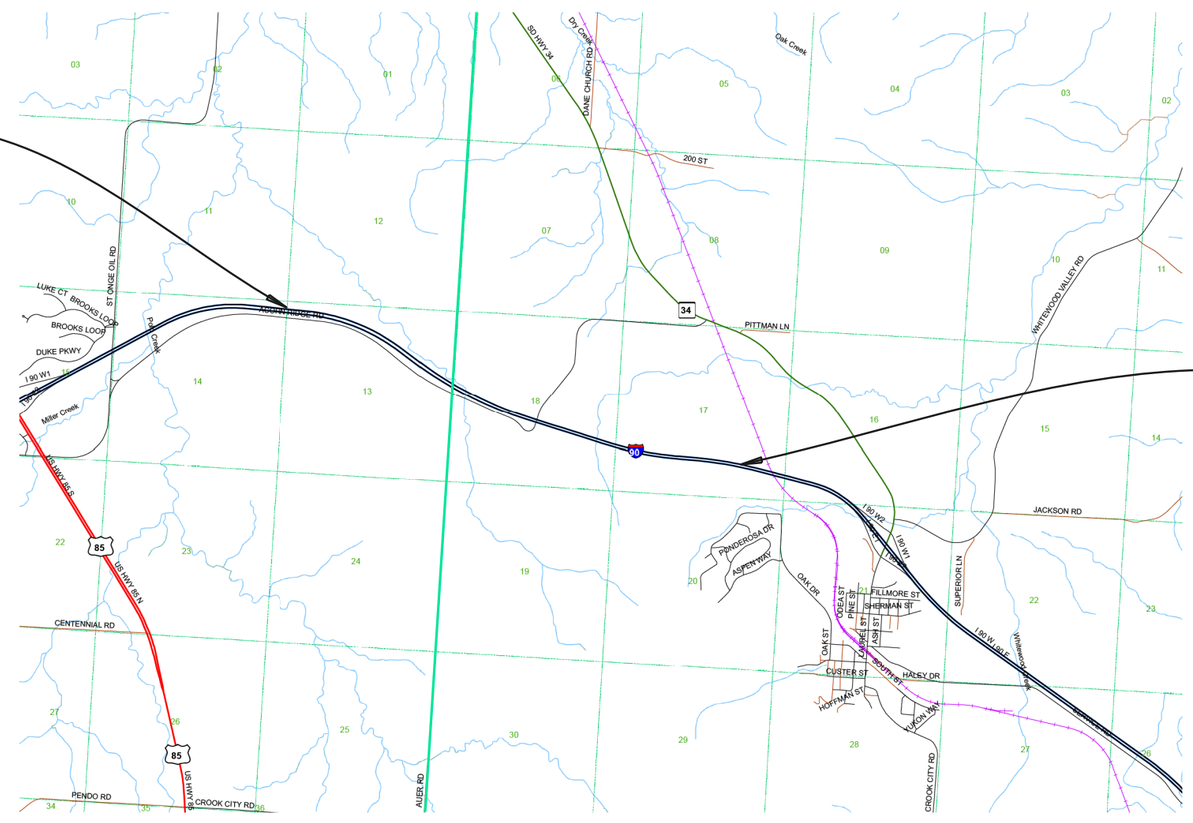


INDEX OF SHEETS

R 3 E

R 4 E

Begin Project
Station 120+50 WB
Station 153+85 EB
MRM 20.0+0.320 WB
MRM 20.0+0.945 EB



End Project
Station 235+50 WB
Station 231+00 EB
MRM 22.0+0.475 WB
MRM 22.0+0.375 EB

T 6 N

I90 WESTBOUND
DESIGN DESIGNATION

ADT (2020)	6385
ADT (2040)	10682
DHV	1569
D	51%
T DHV	6.1%
T ADT	13.5%
V	75 MPH

I90 EASTBOUND
DESIGN DESIGNATION

ADT (2020)	6385
ADT (2040)	10682
DHV	1569
D	51%
T DHV	6.1%
T ADT	13.5%
V	75 MPH

STORM WATER PERMIT

Major Receiving
Body of Water: Tributaries of Whitewood Creek
and False Bottom Creek
Area Disturbed: 32.8 ac
Total Project Area: 43 ac
Approx. Begin Lat,Long: 44.48676, -103.69930

March 18, 2026

Revised: 2-13-26

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	54	Each
009E3250	Miscellaneous Staking	2.263	Mile
009E3280	Slope Staking	2.263	Mile
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0600	Remove Fence	2,568	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	12	Each
110E0745	Remove 3 Cable Guardrail Slip Base Anchor Assembly	16	Each
110E1010	Remove Asphalt Concrete Pavement	3,063.0	SqYd
110E1690	Remove Sediment	64.0	CuYd
110E1700	Remove Silt Fence	336	Ft
110E4100	Salvage 3 Cable Guardrail	9,662	Ft
110E7150	Remove Sign for Reset	3	Each
110E7152	Remove Delineator for Reset	11	Each
110E7510	Remove Pipe End Section for Reset	6	Each
110E7802	Remove Fence for Reset	270	Ft
120E0600	Contractor Furnished Borrow	127,364	CuYd
120E1100	Unclassified/Rock Excavation	77,742	CuYd
120E6100	Water for Embankment	1,822.4	MGal
230E0010	Placing Topsoil	14,590	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	160.2	Ton
320E1200	Asphalt Concrete Composite	697.7	Ton
420E0200	Structure Excavation, Box Culvert	45	CuYd
421E0100	Pipe Culvert Undercut	99	CuYd
421E0200	Box Culvert Undercut	67	CuYd
450E0123	18" RCP Class 3, Furnish	34	Ft
450E0130	18" RCP, Install	34	Ft
450E0203	48" RCP Class 3, Furnish	92	Ft
450E0210	48" RCP, Install	92	Ft
450E0213	54" RCP Class 3, Furnish	20	Ft
450E0220	54" RCP, Install	20	Ft
450E0243	72" RCP Class 3, Furnish	52	Ft
450E0250	72" RCP, Install	52	Ft
450E0436	48" RCP Bend, Furnish	1	Each
450E0437	48" RCP Bend, Install	1	Each
450E0452	72" RCP Bend, Furnish	4	Each
450E0453	72" RCP Bend, Install	4	Each
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
450E2040	54" RCP Flared End, Furnish	2	Each

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E2041	54" RCP Flared End, Install	2	Each
450E2052	72" RCP Flared End, Furnish	1	Each
450E2053	72" RCP Flared End, Install	1	Each
450E4759	18" CMP 16 Gauge, Furnish	30	Ft
450E4760	18" CMP, Install	30	Ft
450E4769	24" CMP 16 Gauge, Furnish	56	Ft
450E4770	24" CMP, Install	56	Ft
450E4789	36" CMP 16 Gauge, Furnish	18	Ft
450E4790	36" CMP, Install	18	Ft
450E4849	72" CMP 14 Gauge, Furnish	80	Ft
450E4850	72" CMP, Install	80	Ft
450E5211	18" CMP Flared End, Furnish	2	Each
450E5212	18" CMP Flared End, Install	2	Each
450E5215	24" CMP Flared End, Furnish	2	Each
450E5216	24" CMP Flared End, Install	2	Each
450E5223	36" CMP Flared End, Furnish	1	Each
450E5224	36" CMP Flared End, Install	1	Each
450E8054	72" RCP to CMP Transition, Furnish	1	Each
450E8055	72" Pipe Transition, Install	1	Each
450E9001	Reset Pipe End Section	6	Each
460E0120	Class A45 Concrete, Box Culvert	89.1	CuYd
460E0300	Breakout Structural Concrete	53.6	CuYd
460E0380	Install Dowel in Concrete	44	Each
480E0100	Reinforcing Steel	10,099	Lb
620E0030	Type 3 Right-of-Way Fence	2,514	Ft
620E0520	Type 2 Temporary Fence	2,523	Ft
620E1020	2 Post Panel	17	Each
620E1030	3 Post Panel	7	Each
620E4100	Reset Fence	270	Ft
632E2100	Reset Delineator	11	Each
632E3500	Reset Sign	3	Each
634E0010	Flagging	1,200.0	Hour
634E0110	Traffic Control Signs	512.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	16	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E1255	Contractor Furnished Speed Monitoring Radar Trailer	2	Each
680E0324	4" Dual Wall HDPE Pipe	40	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	370	Ft
680E2500	Porous Backfill	156.0	Ton
700E0310	Class C Riprap	4,802.0	Ton
720E1015	Bank and Channel Protection Gabion	54.0	CuYd
730E0100	Cover Crop Seeding	32.8	Bu

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
730E0210	Type F Permanent Seed Mixture	852	Lb
731E0200	Fertilizing	24.60	Ton
732E0100	Mulching	70.6	Ton
734E0103	Type 3 Erosion Control Blanket	4,198	SqYd
734E0154	12" Diameter Erosion Control Wattle	27,750	Ft
734E0400	Rock Check Dam	5.6	CuYd
734E0510	Shaping for Erosion Control Blanket	1,629	Ft
734E0604	High Flow Silt Fence	1,235	Ft
734E0610	Mucking Silt Fence	93	CuYd
734E0620	Repair Silt Fence	336	Ft
734E0640	Silt Trap	4	CuYd
831E0110	Type B Drainage Fabric	5,370	SqYd

ENVIRONMENTAL COMMITMENTS

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

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

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

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

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.56 acres of wetlands (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted wetlands.

COMMITMENT A1: WETLANDS: CONTINUED

Table of Impacted Wetlands

Wetland No.	Station	Temp. Impact (Acres)	Perm Impact (Acres)	Total Impact (Acres)
WL 1	WB 121+00 - 123+50 L	0.28	0.00	0.28
WL 2	WB 128+00 - 128+75 L	0.02	0.00	0.02
WL 3	WB 129+50 - 130+50 L	0.00	0.00	0.00
WL 4	WB 140+00 - 148+25 L	0.24	0.02	0.26
WL 5	EB 180+50 - 185+25 R	0.00	0.00	0.00

Action Taken/Required:

Mitigation is required in accordance with the "*Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2018)*". Replacement of 0.02 acres of permanent wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

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

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

COMMITMENT A2: STREAMS

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 0.28 acres of stream (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted streams.

Table of Impacted Streams

Stream Name	Station	Temp. Impact (Acres)	Perm. Impact (Acres)	Total Impact (Acres)
OW 1	WB 140+50 - 163+00L	0.22	0.00	0.22
OW 2	WB 205+00 - 207+00L	0.02	0.04	0.06

Action Taken/Required:

SDDOT will acquire 0.8 credits from the SDDOT BCB1 mitigation bank site to mitigate permanent impacts.

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B5: NORTHERN LONG-EARED BAT

This project is within the range of suitable habitat for the Northern Long-Eared Bat (NLEB) and project work will avoid conflicts with NLEB roosting habitat.

Action Taken/Required:

Project activities that include tree removal should not occur within the location(s) listed below during the NLEB seasonal work restriction timeframe without approval from the SDDOT Environmental Office.

Station	NLEB Seasonal Work Restriction
Project Limits	May 1 to September 30

Tree removal will occur between October 1st and April 30th.

The following avoidance, minimization, and mitigation measures are required:

GAMM1
Ensure all operators, employees, and contractors working in areas of Indiana bat, NLEB, or TCB suitable habitat are aware of all Transportation Agency environmental commitments, including all applicable AMMs.

COMMITMENT C: WATER SOURCE

If a Contractor needs access to state waters for extraction, the Contractor must obtain a water right, through the application of a Temporary Permit to Use Public Waters before work begins.

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

Action Taken/Required:

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

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< https://sdleastwanted.sd.gov/maps/default.aspx >

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY.

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

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

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

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

Action Taken/Required:

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the SDDANR using the following form:
< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_AddTempInfoFillable.pdf >

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

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx >

COMMITMENT E: STORM WATER

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

Action Taken/Required:

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

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

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

The form can be found at:
< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppendixCCA2023Fillable.pdf >

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

Storm Water Pollution Prevention Plan

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

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

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

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

SDDOT: < https://dot.sd.gov/doing-business/environmental/stormwater >

DANR:< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx >

EPA: < https://www.epa.gov/npdes >

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Agriculture and Natural Resources.

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

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

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

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

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.
Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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

COMMITMENT M: SECTION 4(f)/6(f) RESOURCES

COMMITMENT M1: SECTION 4(f) PROPERTY

Table of Adjacent Section 4(f) Property

Station	Section 4(f) Property
WB 171+50 – 184+50 L EB 170+50 – 183+50 R	ESS 1
WB 120+00 – 211+75 L EB 119+00 – 211+00 R	ESS 2 (Frawley Ranch National Historic Landmark (NHL))

Action Taken/Required:

The following measures are required to minimize harm to the above Section 4(f) property:

- Work must remain within the current plans

The contractor will notify the Project Engineer if additional temporary or permanent easement is necessary to construct the project. Temporary occupancy and permanent incorporation of, and restriction of access to, the Section 4(f) property must be avoided unless there are no feasible or prudent alternatives to use of the land and the action includes all possible planning to minimize harm to the property. The Project Engineer will notify the Environmental Office as Section 4(f) use must be approved by the Federal Highway Administration.

The Contractor is not permitted to stage equipment or materials within ESS-1 or Frawley Ranch NHL. The Contractor will notify the Project Engineer if additional easement is needed to complete the work adjacent to any Section 4(f) property. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any Section 4(f) property.

COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

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

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

COMMITMENT Q: ARCHAEOLOGICAL COORDINATION

As a result of a Cultural Resources Survey, historic properties have been identified within and/or adjacent to the project rights-of-way.

The following historic properties have been identified that require avoidance of construction activities:

Table of Historic Properties

Station	Offset (Ft.)	L/R	Environmental Sensitive Site	Action
WB 171+50 – 184+50 EB 170+50 – 183+50	N/A	L&R	ESS 1	Avoidance
WB 120+00 – 211+75 EB 119+00 – 211+00	N/A	L&R	ESS 2	No Work Outside of Plans within the NHL Boundary

The locations and boundaries of the site(s) for avoidance are shown in the nonsection plans.

Action Taken/Required:

If evidence for cultural resources is uncovered during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will consult with the Archaeological Research Center (ARC), SHPO, and FHWA, to determine the appropriate course of action.

All artifacts, features, or other items of interest uncovered by project construction activities will not be displaced unless the landowner and the SHPO consent to it.

MACHINE CONTROL GRADING & MODEL INFORMATION

Electronic design files are made available by the SDDOT Bid Letting Office through the SDDOT's SharePoint Directory for Contractors.

These files are provided for informational purposes only. The information shown in the plans will govern over the provided electronic information. The Contractor assumes the risk of error if the information is used for any purposes for which the information was not intended. The Contractor assumes all risk of any assumptions or manipulations made of the electronic information.

SHRINKAGE FACTOR: Westbound: +15%
Eastbound: +20%

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Westbound

Station to	Station	Excavation (CuYd)	* Contractor Furnished Borrow Exc. (CuYd)	Total Excavation (CuYd)	** Embankment (CuYd)
120+50	166+50	7222	15298	22520	22520
190+00	212+25	840	111645	112485	112485
232+50	235+50	0	421	421	421
	Totals:	8062	127364	135426	135426

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

Eastbound

Station to	Station	Excavation (CuYd)	** Embankment (CuYd)	** Waste (CuYd)
155+00	169+50	0	5888	0
192+50	214+00	46842	40160	29
226+50	231+00	0	765	0
	Totals:	46842	46813	29

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

TABLE OF UNCLASSIFIED/ROCK EXCAVATION

	(CuYd)
Excavation	54904
Topsoil	14590
Unstable Material Excavation	8248
Total:	77742

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste.

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

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

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

Moisture content of materials will be determined with portable equipment on site. A field lab will not be needed on this project.

UTILITIES

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

The Contractor will coordinate with Butte Electric to remove the trees required for the relocation of the existing overhead utility.

The Contractor will coordinate construction activities so that the underground fiber optic communication utility placement is performed prior to placement of topsoil. The Contractor will contact these utility companies 1 week prior to this work.

CLEARING OF AND DISPOSAL OF TIMBER

The Contractor will only remove the trees necessary for the construction of the project and relocation of utilities. All costs associated with the removal of trees will be paid for using the “Clearing” bid item.

EMBANKMENT CONSTRUCTION

Embankment construction will not begin until all unstable compressible materials have been excavated from the embankment footprint to the satisfaction of the Engineer. A suitable embankment foundation consists of compacted soil which does not pump, rut, or otherwise displace when traveled over with construction equipment. Each embankment will be benched into the existing slopes in accordance with Section 120.3.B.2 of the Specifications. Deep benching is required as shown in the plans at the following locations:

WBL - Station 192+00± to Station 194+00±, Lt. (10’ width min.)
WBL - Station 202+50± to Station 203+50±, Lt. (10’ width min.)
EBL - Station 229+00± to Station 230+00±, Rt. (10’ width min.)

OVERSIZE EMBANKMENT MATERIALS

Material produced from cuts within the project limits may include large blocks of sandstone, siltstone, and claystone. Large boulders, 3 feet in diameter and larger, will be placed at the base of large embankments and covered with a minimum of 5 feet of embankment material. Embankment material will consist of a well-blended combination of rock and soil to provide adequate compaction. Oversize material will not be allowed within narrow side-hill fills.

PROCEDURES FOR DETERMINING UNCLASSIFIED/ROCK EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil and salvaged surfacing items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The Unstable Material Excavation quantity is included in the Excavation quantity listed in the Table of Unclassified Excavation. When finaling a project, the Unstable Material Excavation quantity will be added to the Excavation quantity to compute the Unclassified Excavation quantity.

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

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed and/or salvaged.

GENERAL GEOLOGY

The Lakota, Fall River, Morrison, Sundance, Gypsum Spring, and Spearfish Formations may be encountered within the project limits. In some areas, these formations are covered by a varying thickness of Quaternary Alluvium. In some cut sections, the underlying in-place formations may not be encountered at all. The South Dakota Geological Survey describes the deposits/formations that will be encountered on the project as outlined below:

Quaternary Alluvium consists of clay to boulder-sized clasts with locally abundant organic material. *Alluvium* covers the Spearfish, Gypsum Spring and Sundance Formations from Station 135+00±, Westbound to Station 170+00±, Eastbound. Additional small alluvial deposits may be encountered sporadically throughout the project in local drainages.

The *Inyan Kara Group* is comprised of the *Lakota Formation* and the *Fall River Formation*; The *Lakota Formation* consists of yellow, brown, red, and gray to black claystone, silty pebble conglomerate, and massive to thin-bedded, cross-bedded sandstone. Locally interbedded with fresh-water limestone and bituminous coal beds. The *Fall River Formation* consists of variegated brown, red, and gray to purple, calcareous, well-sorted, fine-grained sandstone, siltstone, and shale containing mica. The formations of the *Inyan Kara Group* may be encountered in cut sections from Station 191+00±, Westbound to Station 235+00±, Eastbound.

The *Morrison* and *Sundance Formations* are mapped together in the project area. The *Morrison Formation* consists of light gray to green and variegated red, brown, yellow, or lavender, siliceous claystone, shale, and siltstone containing interbedded sandstone and fresh-water limestone lenses. The *Sundance Formation* consists of greenish-gray, yellow, tan, red to orange, and white variegated, interbedded, fine to coarse grained sandstone, siltstone, clay, and limestone. These formations may be encountered from Station 165+00±, Westbound to Station 170+00±, Eastbound.

The *Gypsum Spring Formation* consists of massive white gypsum and minor maroon siltstone and shale. Outcrops of massive gypsum were not noted within the project area. The formation may be covered by a varying thickness of alluvium and could be encountered at depth from Station 135+00±, Westbound and Station 170+00±, Eastbound.

The *Spearfish Formation* consists of red sandy shale, siltstone, and sandstone with interbedded white gypsum and minor limestone. The Spearfish formation will be encountered from Station 121+00± to Station 132+00±, Westbound and at depth below a varying thickness of alluvium from Station 135+00±, Westbound to Station 170+00±, Eastbound.

CLASSIFICATION OF EXCAVATION

Some excavations may encounter thicker beds of gypsum, sandstone, siltstone, and claystone interbedded with shale and coal. The durability of these rock units can vary with thickness and degree of fracturing. Extra effort will be required to excavate thicker beds of sandstone and gypsum. Blasting and other techniques associated with Unclassified/Rock Excavation may be necessary to complete the required grading.

WASTE EXCAVATION

The quantity of waste in the Table of Excavation Quantities by Balances that is muck excavation or excess excavation material will be disposed of at a Contractor furnished site acceptable to the Engineer

UNSTABLE MATERIAL EXCAVATION

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 2 feet. The estimated quantity of 8248 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for “Unclassified Excavation”.

All areas designated as Unstable will be excavated. The unstable material excavated on this project will be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil.

Field measurement of unstable material excavation will not be made. However, if there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

TABLE OF UNSTABLE MATERIAL EXCAVATION

Station	to Station	L/R	Depth (Ft)	Quantity (CuYd)
Westbound				
141+00	148+00	L	2	1097
155+50	157+75	L	2	117
159+00	163+00	L	2	381
192+00	194+00	L	2	588
198+00	207+50	L	2	3860
Eastbound				
197+00	198+50	R	2	564
205+00	207+00	R	2	1121
229+00	230+00	R	2	520
			Total:	8248

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site.

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

The Contractor furnished borrow excavation material will be uniform in texture and free from organic material. The liquid limit will not exceed 45 and the plastic index will not exceed 25.

The Contractor will be responsible for the following minimum testing prior to use of each borrow site:

A minimum of one test for liquid limit and plastic index for each location and soil type, with samples obtained according to SD201.

PIPE CULVERT UNDERCUT

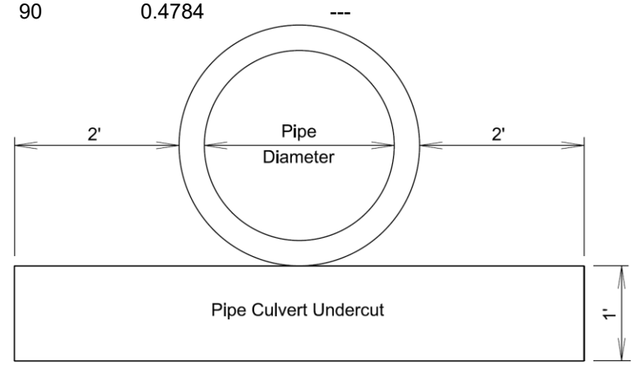
The table includes undercut for 36 inch and larger pipe culverts. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. Pipes listed may or may not require undercutting and pipes not listed may require undercutting. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

Westbound Station	Undercut Depth (Ft)	Pipe Culvert Undercut (CuYd)
145+36	1	7
157+73	1	5
191+54	1	1
199+23	1	31
206+51	1	55
	Total:	99

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

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)	Arch Pipe Undercut Rate for 1’ Depth (CuYd/Ft)
24	0.2407	0.2577
30	0.2623	0.2847
36	0.2840	0.3110
42	0.3056	0.3337
48	0.3272	0.3596
54	0.3488	0.3827
60	0.3704	0.4105
66	0.3920	---
72	0.4136	0.4630
78	0.4352	---
84	0.4568	0.5123
90	0.4784	---



SEISMIC DATA

The seismic data, as shown on the cross sections, are the results of seismic refraction surveys conducted using a multi-channel (ES-3000, 24 CH) seismograph. Survey spreads were run on representative segments of the excavation sections to estimate subsurface conditions and augment surface observations. Surveys were conducted in areas where conditions and terrain would permit. The spreads ranged from 110 to 230 feet in length with an average geophone spacing of 10 feet. Each individual spread represents only subsurface conditions directly below the middle two-thirds of each spread. Velocities are averaged over the entire survey. Estimated depths of change in velocity shown on the cross sections were calculated at the location of the nearest geophone. The calculated depths cannot be assumed to parallel the ground surface, nor can the interpretations be projected laterally with a high degree of reliability. The interpretations are subject to as much as 15 percent deviation in actual depths and 20 percent deviations in velocities. Correlation between seismic velocity and difficulty of excavation for soil and rock based on seismic velocity alone can be quite variable. Rippability can vary with other factors, such as orientation of bedding and/or jointing in bedrock; size, type, and conditions of equipment; and skill of equipment operator.

BLASTING OPERATIONS

(See Special Provision for Blasting Operations)

INCIDENTAL WORK, GRADING

Station	L/R	*Remarks*
Westbound		
129+50	L	Take Out 1 Flared End
145+36	L	Take Out 1 Flared End
148+49	L	Take Out 1 Flared End
156+87	L	Take Out 1 Flared End
157+73		Take Out 2 Flared Ends
163+27 to 164+78	100’ to 67 ’L	Take Out 36” – 154’ CMP
164+18	R	Take Out 10’x7’9”
204+40	295’ L	Exhume Underdrain Headwall and Remove for Reset
206+40	375’ R	Reset Underdrain Headwall
207+54	226’ L	Exhume Underdrain Headwall and Remove for Reset
206+60	380’ L	Reset Underdrain Headwall
206+51	R	Take Out 1 Sloped End
Eastbound		
195+98 to 196+81	64’ to 172’ R	Take Out 18” – 142’ CMP & 2 Flared Ends
196+17 to 196+17	264’ to 202’ R	Take Out 24” – 72’ CMP
202+08 to 202+89	67’ to 107’ R	Take Out 18” – 92’ CMP & 2 Flared Ends
203+98 to 205+31	117’ to 215’ R	Take Out18” – 170’ CMP & 2 Flared Ends
206+17 to 208+03	229’ to 54’ R	Take Out 18” – 250’ RCP & 2 Flared Ends

Revised: 1-12-26

TYPICAL UNDERDRAIN INSTALLATION

EXISTING DRAIN SYSTEM

Existing drain systems will be extended during construction activities.
Existing underdrain outlets have been identified at the following locations:

Station	204+40±,	295	Lt.
Station	207+54±,	226	Lt.

The exact location and extent of these existing drain systems are not known. Underlying information suggests that the drains were installed near the toe of the existing inslopes from Station 202+60± to Station 204+40±, Lt. and from Station 207+54± to Station 210+40±, Lt. An unknown number of laterals are teed into the main drain systems and extend into the embankment at an unknown depth. Should an unidentified drain system be encountered within the excavation limits during construction, it will be removed, repaired in place, incorporated into a proposed underdrain system, or outlet at a headwall. Modifications to existing drains must ensure that the drain system remains functional in accordance with standard underdrain construction requirements.

UNDERDRAINS

Existing underdrains installed to capture seepage from spring areas identified with past landslide repairs will be modified to ensure both drain systems remain functional. Underdrains shall be installed as per the following:

Westbound - Station 204+40± to Station 206+40±
Exhume the existing underdrain outlet at Station 204+40±, 295' Lt. Salvage the existing headwall for reset. After unstable material is excavated from the proposed embankment footprint, connect slotted drainage tubing to the existing underdrain and extend the drain to the toe of the proposed inslope at Station 206+40±, 375', Lt. The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain will outlet through 20 feet of 4" Dual Wall HDPE Pipe placed in a 2-foot-wide trench of variable depth backfilled with compacted soil. The underdrain outlet pipe will daylight via the reset salvaged Outlet Headwall at approximately Station 206+40±, 375' Lt. as directed by the Engineer. The Outlet Headwall will be installed near the mainline pipe outlet at the toe of the proposed inslope.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	200 feet
4" Dual Wall HDPE Pipe	20 feet
Porous Backfill	84 tons

Westbound – Station 206+60± to Station 207+54±
Exhume the existing underdrain outlet at Station 207+54±, 226' Lt. Salvage the existing headwall for reset. After unstable material is excavated from the proposed embankment footprint, connect slotted drainage tubing to the existing underdrain and extend the drain to the toe of the proposed inslope at Station 206+60±, 380', Lt. The underdrain will consist of 4-inch Slotted Corrugated Polyethylene Tubing placed in a 2-foot wide by 3-foot-deep trench backfilled with 3 feet of Porous Backfill. The underdrain will outlet through 20 feet of 4" Dual Wall HDPE Pipe placed in a 2-foot-wide trench of variable depth backfilled with soil. The underdrain outlet pipe will daylight at an Outlet Headwall at approximately Station 206+60±, 380' Lt. as directed by the Engineer. The Outlet Headwall will be installed adjacent to the mainline pipe and downspout outlet at the toe of the proposed inslope.

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	170 feet
4" Dual Wall HDPE Pipe	20 feet
Porous Backfill	72 tons

GENERAL UNDERDRAIN NOTES

Dual Wall HDPE Pipe and Perforated Dual Wall HDPE Pipe conform to the requirements of ASTM D3350 and AASHTO M252, Type S or Type SP.

All labor, tools, equipment, and incidentals necessary for the installation of the HDPE Pipe will be incidental to the contract unit price per foot for each pipe type.

Care will be taken to ensure that the underdrain tubing and outlet pipe are not damaged during construction. Sufficient cover material is to be placed over the pipe before compaction equipment is allowed over the drain system. Damaged pipe will be replaced by the Contractor at no additional cost to the Department.

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

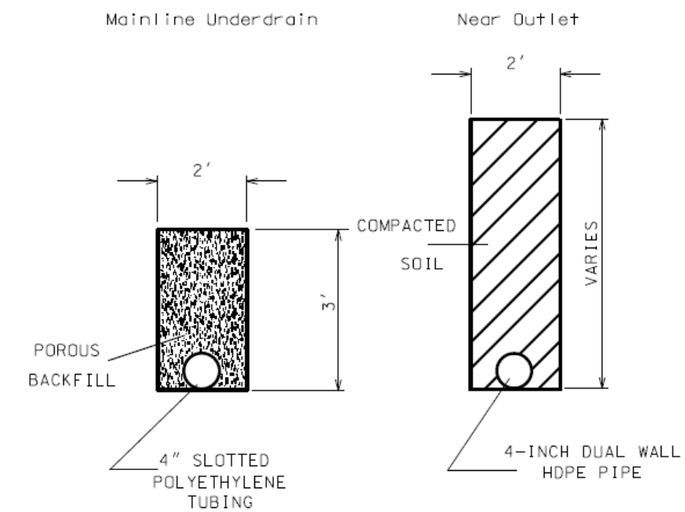
Underdrain trenches will be graded to maintain a minimum of .01ft/ft. or 1% drop from beginning to outlet. The Contractor will ensure all segments of outlet pipe are positively connected and remain soil tight during installation of the drain system. The outlet headwall shall be placed to blend in with the surrounding topography with the outlet pipe placed above the bottom of the drainage to permit proper flow from the outlet.

Outlet headwalls will be cleared of topsoil, straw, or other debris after seeding operations have been completed. The as built headwall location will be recorded and submitted to the Engineer. Each headwall location will be identified by GPS coordinates and station and offset. The headwall locations will be cataloged in the Rapid City Area office for reference in post construction maintenance.

The total project underdrain quantities are summarized below:

Estimate of Quantities:

4-inch Corrugated Slotted Polyethylene Tubing	370 feet
4" Dual Wall HDPE Pipe	40 feet
Porous Backfill	156 tons



UNDERDRAINS WILL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 680 OF THE SPECIFICATONS

CORRUGATED METAL PIPE

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

The gauge of the corrugated metal elbows, tees, crosses, wyes, and ends will match the thickest gauge of corrugated metal pipe it is connected to.

PIPE EXTENSIONS

For pipe extensions that are outside the surfaced shoulder as shown in the typical sections, acceptance tests in the lower one-half and upper one-half of pipe 48" or less in diameter may be performed by visual inspection to the satisfaction of the Engineer. All other MSTR pipe density testing requirements will apply.

REMOVE & RESET OBJECT MARKERS

Remove and reset object markers at the ends of the pipe and RCBC. All costs for removing and resetting the object markers will be incidental to the corresponding pipe end section bid item.

PIPE QUANTITIES

					Corrugated Metal							Reinforced Concrete									
					Flared End			Circular Pipe				Flared End			Circular Pipe				Short Radius Bend		RCP to CMP Transition
					18"	24"	36"	18"	24"	36"	72"	18"	54"	72"	18"	48"	54"	72"	48"	72"	72"
			Remove Pipe End Section for Reset	Reset Pipe End Section																	
Station (MRM)		Offset (L/R)	Each	Each	Each	Each	Each	Ft	Ft	Ft	Ft	Each	Each	Each	Ft	Ft	Ft	Ft	Each	Each	Each
Westbound																					
129+50 (20+0.479)		L										1			8						
145+36 (20+0.760)		L					1			18											
148+49 (20+0.837)		L			1			18													
156+87 (20+0.995)		L			1			12													
157+73 (20+1.002)		L											1				16				
		R											1				4				
199+23 (21.56+0.225)		L	1	1												62					
		R	1	1												30			1		
206+51 (21.56+0.370)		L	1	1							80										
		R												1				52		4	1
Eastbound																					
193+02 (21.56+0.132)		R	1	1											6						
195+83 to 196+15 (21.56+0.197)		R				2			56												
201+43 (21.56+0.289)		R	1	1											10						
208+92 (21.56+0.433)		R	1	1											10						
		Totals:	6	6	2	2	1	30	56	18	80	1	2	1	34	92	20	52	1	4	1

MILEAGE REFERENCE MARKERS

Mileage Reference Markers (MRMs) are not to be disturbed. If an MRM is located in a grading area and must be removed, the Contractor will mark and replace after grading operations are complete. If an MRM is attached to a sign listed for replacement it will be salvaged and reattached to the new sign in the same location. Payment for this work will be incidental to the "Remove Sign for Reset" and "Reset Sign" bid items.

TABLE OF MILEAGE REFERENCE MARKERS

Station	Remove Sign for Reset (Ea)	Reset Sign (Ea)	Description
Westbound			
157+91 L	1	1	MRM 21
211+35 L	1	1	MRM 22
Eastbound			
156+60 R	1	1	MRM 21
Totals:	3	3	

ASPHALT SHOULDER REPAIR

Included in the estimate of quantities are Asphalt Concrete Removal, Asphalt Concrete Composite, and Base Course for shoulder repair. Asphalt Concrete Composite will be 3" x 8'.

TABLE OF ASPHALT SHOULDER REPAIR

Station to	Station	Length Ft	Width Ft	Asphalt Concrete Removal SqYd	Asphalt Concrete Composite Tons	Base Course Tons
Eastbound						
153+85	170+79	1694	8	1506	343.0	78.7
192+85	206+80	1395	8	1240	282.4	64.8
226+72	230+29	357	8	317	72.3	16.6
			Totals:	3063	697.7	160.2

TABLE OF RIPRAP, GABION BASKET AND DRAINAGE FABRIC

Station	L/R	Class C Riprap (Ton)	Bank and Channel Protection Gabions (CY)	Type B Drainage Fabric (SqYd)
Westbound				
129+50	L		4.5	15
145+36	L		6	19
148+49	L		4.5	15
156+52	L		4.5	15
157+73	L		12	34
163+98 to 166+24	L	475		550
196+70 to 201+50	L	844		970
205+85 to 207+00	L	1014		850
207+00 to 207+90	L	132		166
233+75 to 235+00	L	305		308
Eastbound				
193+15	R		16.5	60
194+25 to 201+50	R	496		573
198+40 to 200+70	R	426		493
201+53	R		6	19
203+25 to 206+90	R	675		779
207+55 to 209+30	R	435		504
	Totals:	4802	54	5370

TEMPORARY FENCE

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

TABLE OF FENCING QUANTITIES

Station to	Station	Side (L/R)	Remove for Reset (Ft)	Reset Fence (Ft)	Type 3 Right-of-Way Fence (Ft)	Type 2 Temporary Fence (Ft)	2 Post Panel (Each)	3 Post Panel (Each)	(Informational puposes only) 24" Barbed Wire Gate (Each)	Remove Fence (Ft)
Westbound										
162+65	162+75	L			90		2			106
163+25	163+30	L			84		2			122
198+10	211+14	L			1014	1398	9	1	2	1014
Eastbound										
163+10	168+20	R			512			2		512
192+70	198+00	R	270	270	550	815	2	2	1	550
205+20	207+73	R			264	310	2	2	1	264
		Totals:	270	270	2514	2523	17	7	4	2568

SALVAGE 3 CABLE GUARDRAIL

The posts will become the property of the State and will be removed, hauled, and neatly stacked at the SDDOT Sturgis Maintenance Yard as approved by the Engineer. Cables, anchor assemblies, and hardware items will become the property of the Contractor and will be removed from the project limits.

Payment for removing, hauling, and stacking the salvaged guardrail items except for the anchor assemblies will be incidental to the contract unit price per foot for “Salvage 3 Cable Guardrail”.

TABLE OF GUARDRAIL

Location **Westbound**	Remove 3 Cable Guardrail Anchor Assembly (Each)	Remove 3 Cable Guardrail Slip Base Anchor Assembly (Each)	Salvage 3 Cable Guardrail (Ft)
Sta. 120+98 to Sta. 123+72 L		2	276
Sta. 127+89 to Sta. 133+98 L		2	612
Sta. 140+33 to Sta. 167+07 L	4	2	2674
Sta. 190+89 to Sta. 213+49 L	4	2	2260
Sta. 233+61 to Sta. 236+70 L		2	309
Eastbound			
Sta. 153+85 to Sta. 170+79 R	2	2	1778
Sta. 192+85 to Sta. 206+80 R	2	2	1395
Sta. 226+72 to Sta. 230+29 R		2	358
Totals:	12	16	9662

PUBLIC LANDS SURVEY SYSTEM, RIGHT OF WAY, AND PROPERTY CORNERS

The Contractor will have a Land Surveyor, licensed in the State of South Dakota, to set, reestablish or verify public land survey system (PLSS) corners, right of way (ROW) corners, and property corners as directed by the appropriate SDDOT Region Land Surveyor. It is estimated that 0 PLSS corners and 54 ROW and property corners will be set, reestablished, or verified for this project. The Contractor’s Land Surveyor will contact the Region Land Surveyor for files and under the direction of the Region Land Surveyor, will set, reestablish, or verify all corner monuments after surfacing and fencing operations are completed in accordance with the PUBLIC LANDS SURVEY SYSTEM CORNERS section and the RIGHT OF WAY AND PROPERTY CORNERS section in Chapter 8 of the SDDOT Survey Manual.

https://dot.sd.gov/doing-business/engineering-design-services/surveyors/

All costs associated with furnishing and installing PLSS caps, rebar, and all other materials associated with setting, reestablishing, or verifying PLSS, ROW corners, and property corners in accordance with the SDDOT Survey Manual will be incidental to the contract unit price per each for “Reestablish Public Land Survey System Corner” and/or “Reestablish Right-of-Way and Property Corner”.

TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Length (Ft)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)
I90 Westbound	120+50	166+50	4600	0.871	0.871
I90 Westbound	190+00	220+00	3000	0.568	0.568
I90 Westbound	232+50	235+50	300	0.057	0.057
I90 Eastbound	155+00	169+50	1450	0.275	0.275
I90 Eastbound	192+50	214+00	2150	0.407	0.407
I90 Eastbound	226+50	231+00	450	0.085	0.085
			Totals:	2.263	2.263

PLACING TOPSOIL

The thickness will be approximately 4 inches. The topsoil thickness for the option borrow pits will be as stated on the option borrow pit sheets.

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

Station	to Station	Topsoil (CuYd)
Westbound		
121+00	123+50	115
126+70	131+50	336
137+50	165+82	3690
190+96	195+50	424
196+33	219+80	4351
233+00	235+75	139
Eastbound		
155+50	169+00	1054
192+35	213+75	4176
227+00	230+75	305
	Total:	14590

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The Mycorrhizal Inoculum provided will be from the approved product list. The approved product list may be viewed at the following internet site:

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

FERTILIZING

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The

fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.
The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer's recommended method of application.

The Fertilizer provided will be from the approved product list. The approved product list may be viewed at the following internet site:

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

PERMANENT SEEDING

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

Type F Permanent Seed Mixture will consist of the following:

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

COVER CROP SEEDING

Cover crop seeding may be used on this project as a temporary erosion control measure. The actual limits and use of cover crop seeding will be determined by the Engineer during construction.

MULCHING (GRASS HAY OR STRAW) FOR TEMPORARY STABILIZATION

An additional 5 tons of Grass Hay or Straw Mulch has been added to the Estimate of Quantities for temporary erosion control on areas determined by the Engineer during construction.

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

EROSION CONTROL WATTLE

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

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

Erosion control wattles will remain on the project to decompose.

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

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

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

TABLE OF EROSION CONTROL WATTLE

Station	Location	Diameter (Inch)	Quantity (Ft)
Westbound			
121+00 to 122+75 L	Perimeter Control	12	175
127+20 to 129+20 L	Inslope (30 Ft spacing)	12	300
127+75 to 129+10 L	Perimeter Control	12	140
129+50 to 131+00 L	Perimeter Control	12	150
137+50 to 164+60 L	Inslope (30 Ft spacing)	12	6100
138+00 to 140+75 L	Perimeter Control	12	275
142+50 to 145+40 L	Bottom of Backslope	12	290
148+60 to 157+60 L	Perimeter Control	12	900
157+80 to 159+40 L	Perimeter Control	12	160
191+60 to 195+25 L	Inslope (30 Ft spacing)	12	640
197+00 to 211+50 L	Inslope (40 Ft spacing)	12	7150
204+80 to 205+60 L	Perimeter Control	12	80
233+00 to 233+75 L	Perimeter Control	12	75
235+00 to 235+75 L	Perimeter Control	12	75
Eastbound			
156+00 to 168+25 R	Inslope (30 Ft spacing)	12	1825
156+00 to 168+25 R	Ditch Bottom (100 Ft spacing)	12	390
192+35 to 195+35 R	Backslope (30 Ft spacing)	12	610
193+75 to 199+60 R	Inslope (40 Ft spacing)	12	1730
199+50 to 202+00 R	Backslope (30 Ft spacing)	12	610
202+25 to 207+75 R	Inslope (40 Ft spacing)	12	1900
208+50 to 213+75 R	Backslope (30 Ft spacing)	12	1300
227+75 to 230+75 R	Inslope (30 Ft spacing)	12	375
	Additional Quantity:	12	2500
		Total:	27750

HIGH FLOW SILT FENCE

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

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

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

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

TABLE OF HIGH FLOW SILT FENCE

Eastbound Station	Location	Quantity (Ft)
156+43 R	Across ditch at inlet end of pipe (30 Ft each end)	60
195+85 R	Pipe Inlet	30
197+40 R	Pipe Inlet	45
205+70 R	Across ditch at inlet end of pipe (25 Ft each end)	50
230+30 R	Across ditch at inlet end of pipe (25 Ft each end)	50
	Additional Quantity:	1000
	Total:	1235

EROSION CONTROL BLANKET

Erosion control blanket will be installed 16 feet wide at the locations noted in the table and at locations determined by the Engineer during construction.

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

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

An additional quantity of Type 3 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

TABLE OF EROSION CONTROL BLANKET

Station	Location	Type	Quantity (SqYd)
Westbound			
120+57 to 121+60 L	Ditch Bottom	3	200
125+75 to 128+00 L	Ditch Bottom	3	426
128+60 to 129+50 L	Ditch Bottom	3	195
130+65 to 132+40 L	Ditch Bottom	3	340
136+75 to 138+55 L	Erosion Channel	3	391
142+50 to 145+40 L	Ditch Bottom	3	515
159+55 to 162+77 L	Ditch Bottom	3	575
Eastbound			
160+82 to 166+38 R	Ditch Bottom	3	995
228+16 to 229+90 R	Ditch Bottom	3	311
	Additional Quantity:	3	250
	Total Type 3 Erosion Control Blanket:		4198

SHAPING FOR EROSION CONTROL BLANKET

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

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

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

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☒ Filling
  - ☐ Other (describe):
- **5.3 (3b): Total Project Area** 43 ac.
- **5.3 (3b): Total Area to be Disturbed** 32.8 ac
- **5.3 (3c): Maximum Area Disturbed at One Time** 13.7 ac
- **5.3 (3d): Existing Vegetative Cover (%)**
- **5.3 (3d): Description of Vegetative Cover**

- **5.3 (3e): Soil Properties:** A-4, A-6, A-8
- **5.3 (3f): Name of Receiving Water Body/Bodies** Tributaries of Whitewood Creek and False Bottom Creek
- **5.3 (3g): Location of Construction Support Activity Areas**

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

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

The Contractor will enter the Estimated Start Date.

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

5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES
All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

Perimeter Controls (See Detail Plan Sheets)

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

Structural Erosion and Sediment Controls

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

Dust Controls

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

Dewatering BMPs

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

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

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

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

5.3 (6): PROCEDURES FOR INSPECTIONS

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

5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

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

5.3 (8): POLLUTION PREVENTION PROCEDURES

5.3 (8a): Spill Prevention and Response Procedures

- **Material Management**
  - Housekeeping
    - Only needed products will be stored on-site by the Contractor.
    - Except for bulk materials the contractor will store all materials under cover and/or in appropriate containers.
    - Products must be stored in original containers and labeled.
    - Material mixing will be conducted in accordance with the manufacturer's recommendations.
    - When possible, all products will be completely used before properly disposing of the container off-site.
    - The manufacturer's directions for disposal of materials and containers will be followed.
    - The Contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
    - Dust generated will be controlled in an environmentally safe manner.
  - Hazardous Materials
    - Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
    - Original labels and material safety data sheets will be retained in a safe place to relay important product information.
    - If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
    - Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
    - Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any stormwater system or stormwater treatment system.
    - Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of stormwater runoff.

- **Spill Control Practices**

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

- **Spill Response**

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

5.3 (8b): WASTE MANAGEMENT PROCEDURES

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

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

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

5.3 (9): CONSTRUCTION SITE POLLUTANTS

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

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

Product Specific Practices

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

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

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

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

5.3 (10): NON-STORMWATER DISCHARGES

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

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

5.3 (11): INFEASIBILITY DOCUMENTATION

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

7.0: SPILL NOTIFICATION

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

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

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

5.4: SWPPP CERTIFICATIONS

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

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

- **South Dakota Department of Transportation**

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

_____

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

- **Prime Contractor**

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

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

_____

Authorized Signature

CONTACT INFORMATION

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

- **Contractor Information**:
  - Prime Contractor Name: _____
  - Contractor Contact Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **Erosion Control Supervisor**
  - Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SDDOT Project Engineer**
  - Name: _____
  - Business Address: _____
  - Job Office Location: _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SDDANR Contact Spill Reporting**
  - Business Hours Monday-Friday (605) 773-3296
  - Nights and Weekends (605) 773-3231
- **SDDANR Contact for Hazardous Materials.**
  - (605) 773-3153
- **National Response Center Hotline**
  - (800) 424-8802.
- **SDDANR Stormwater Contact Information**
  - SDDANR Stormwater (800) 737-8676
  - Surface Water Quality Program (605) 773-3351

5.5: REQUIRED SWPPP MODIFICATIONS

- **5.5 (1): Conditions Requiring SWPPP Modification**
  The SWPPP must be modified, including the site map(s), in response to any of the following conditions:
  - When a new operator responsible for implementation of any part the SWPPP begins work on the site.
  - When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
  - To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
  - If inspections by site staff, local officials, SDDANR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
  - To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
  - If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.
- **5.5 (2): Deadlines for SWPPP Modification**
  Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.
- **5.5 (3): Documentation of Modifications to the Plan**
  All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.
- **5.5 (4): Certification Requirements**
  All modifications made to the SWPPP must be signed and certified as required in Section 7.4.
- **5.5 (5): Required Notice to Other Operators**
  If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

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

SEQUENCE OF OPERATIONS

The Contractor will utilize Standard Plate 634.03 to close the shoulder in both the eastbound and westbound directions to perform the work. The Contractor may utilize Standard Plate 634.63 to close the driving lane in both the eastbound and westbound directions in accordance with the Special Provision for Contract Time. The Contractor will perform the necessary work and have the required materials delivered to the project when the driving lanes are closed to allow for the remaining work to be performed under the shoulder closures.

All existing guardrails will remain in place until the pipe and grading work is completed to flatten the inslopes, as designed.

The Contractor will utilize Exits 17 and 23 for the out of balance haul from the westbound source to the eastbound fill locations.

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

GENERAL TRAFFIC CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

LANE CLOSURES

Interstate lane closures will be removed when work will not be occurring for a period of 3 or more calendar days. Activities that do not involve workers being present, such as curing time for concrete, constitute work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

WORK ZONE SPEED REDUCTION

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

CONTRACTOR FURNISHED SPEED MONITORING RADAR TRAILER

The Contractor will provide 2 radar speed feedback trailers to monitor traffic speeds on designated routes at locations specified in the field by the Engineer.

The radar speed feedback sign assembly will include a speed limit sign mounted in conjunction with the radar speed feedback display. The speed display will not flash vehicle speeds exceeding the speed limit or any other messages.

All costs associated with furnishing, maintaining, transporting, relocating if necessary, and removing the radar speed feedback trailers from locations specified by the Engineer will be incidental to the contract unit price per each for "Contractor Furnished Speed Monitoring Radar Trailer".

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations approved by the Engineer to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages as directed by the Engineer.

INCIDENTS

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

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

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

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

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

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

PRESS RELEASE ANNOUNCEMENTS

The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		EXPRESSWAY/INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	Road Work Ahead	4	48" x 48"	16.0	64.0
W3-5	Reduced Speed Ahead 65	4	48" x 48"	16.0	64.0
W20-5	Right Lane Closed Ahead	4	48" x 48"	16.0	64.0
R2-1	Speed Limit 65	6	36" x 48"	12.0	72.0
W4-2R	Right Lane Ends (symbol)	4	48" x 48"	16.0	64.0
W20-7	Flagger	2	48" x 48"	16.0	32.0
W3-5	Reduced Speed Ahead 45	2	48" x 48"	16.0	32.0
R2-1	Speed Limit 45	4	36" x 48"	12.0	48.0
W21-5	Shoulder Work	2	48" x 48"	16.0	32.0
R2-1	Speed Limit 75	2	36" x 48"	12.0	24.0
G20-2	End Road Work	2	48" x 24"	8.0	16.0
		TRAFFIC CONTROL SIGNS SQFT			512.0

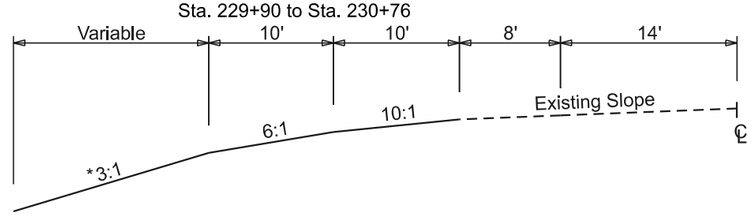
TYPICAL GRADING SECTION

PROJECT	SECTION	SHEET
PH 0040(346)	Non	20/104

Plotting Date: 1/9/2026

Westbound
Sta. 121+00 to Sta. 123+50
Sta. 126+71 to Sta. 131+50
Sta. 137+50 to Sta. 142+50
Sta. 145+75 to Sta. 159+52
Sta. 190+97 to Sta. 195+50
Sta. 201+50 to Sta. 206+56
Sta. 207+89 to Sta. 212+25
Sta. 233+00 to Sta. 233+75
Sta. 235+00 to Sta. 235+75

Eastbound (reversed)
Sta. 155+50 to Sta. 169+00
Sta. 205+75 o Sta. 206+50
Sta. 227+00 to Sta. 228+17
Sta. 229+90 to Sta. 230+76

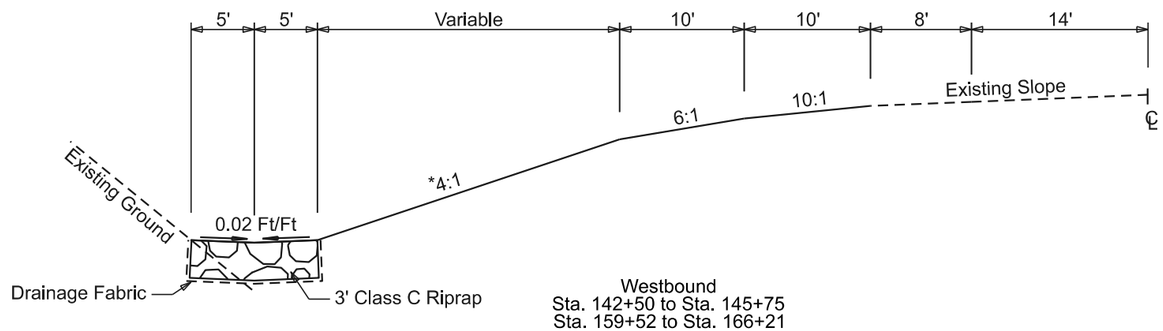


Transitions:

Westbound
*4:1, Sta. 201+50 to Sta. 206+56
Sta. 207+89 to Sta. 211+00

Westbound
Sta. 196+33 to Sta. 201+50
Sta. 207+01 to Sta. 207+89

Eastbound (reversed)
Sta. 197+33 to Sta. 199+48
Sta. 202+14 to Sta. 205+75
Sta. 206+50 to Sta. 208+07
Sta. 228+17 to Sta. 229+90

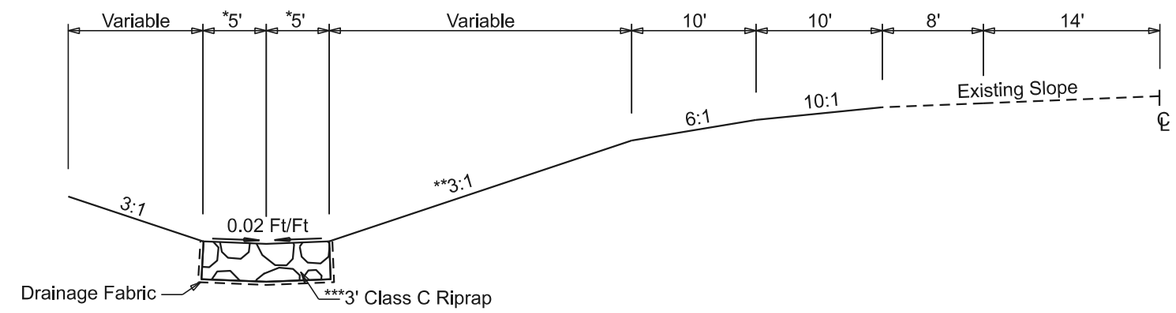


Transitions:

Eastbound
*3:1, Sta. 228+17 to Sta. 229+90

Westbound
Sta. 142+50 to Sta. 145+75
Sta. 159+52 to Sta. 166+21

Eastbound (reversed)
Sta. 192+35 to Sta. 197+33
Sta. 202+14 to Sta. 208+25
Sta. 228+17 to Sta. 229+90



Transitions:

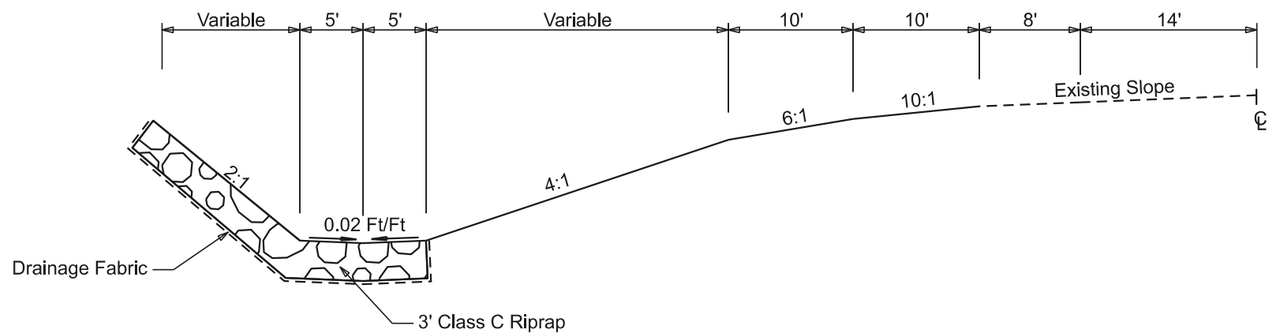
Westbound
*7.5', Sta. 159+52 to Sta. 162+78

Eastbound
**4:1, Sta. 192+35 to Sta. 197+33

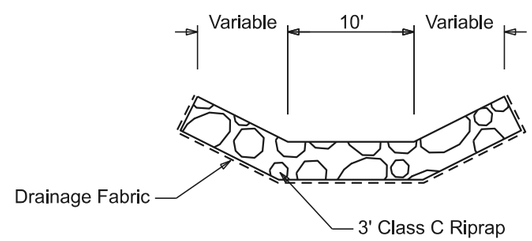
Exclusions:

Westbound
*** No Riprap and Drainage Fabric Installation,
Sta. 142+50 to 145+75

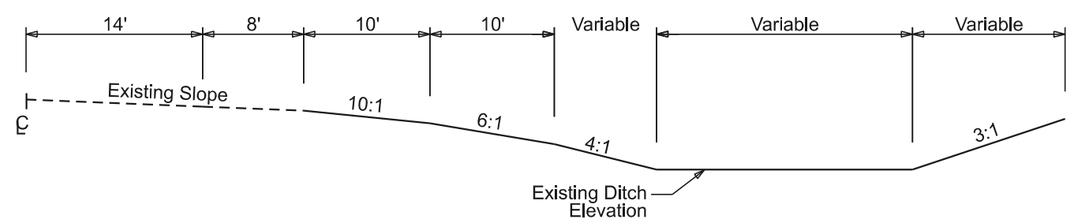
Westbound
Sta. 206+56 to Sta. 207+01



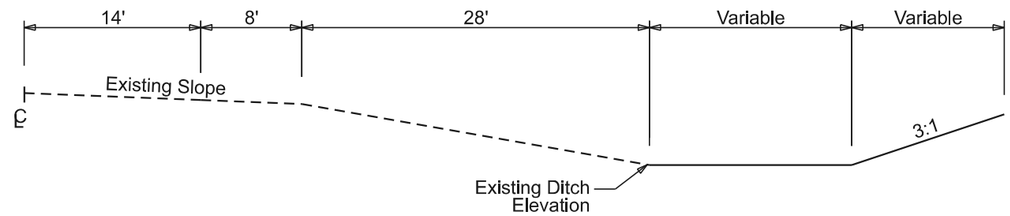
Riprap Channel
Westbound
Sta. 205+85 - 435' R to
Sta. 206+56 - 382'R



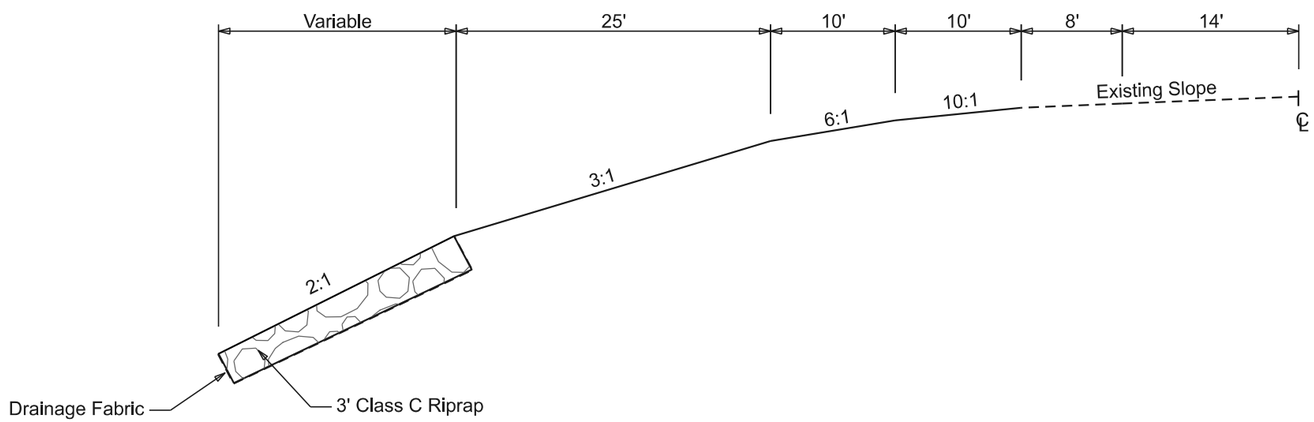
Eastbound
Sta. 199+48 to Sta. 202+14
Sta. 208+07 to Sta. 209+42



Eastbound
Sta. 209+42 to Sta. 214+00



Westbound
Sta. 233+75 to Sta. 235+00



HORIZONTAL ALIGNMENT AND CONTROL DATA

Interstate 90 Westbound

Type	Station			Northing	Easting
POB	93+66.750			260912.522	1000079.593
		TL= 1406.842	N84°48'24"W		
PC	107+73.592			260785.177	1001480.659
PI	123+75.693	R = 5762.241	Delta = 31°04'32" R	260640.158	1003076.183
PT	138+98.859			259692.394	1004367.876
		TL= 704.190	N53°43'52"W		
PC	146+03.049			259275.811	1004935.629
PI	165+60.791	R = 11465.522	Delta = 19°22'47" L	258117.659	1006514.056
PT	184+81.132			257548.889	1008387.356
		TL= 2515.513	N73°06'39"W		
PC	209+96.644			256818.074	1010794.370
PI	220+81.366	R = 9697.962	Delta = 12°45'51" L	256502.938	1011832.306
PT	231+57.108			256424.907	1012914.217
		TL= 571.286	N85°52'29"W		
PC	237+28.395			256383.810	1013484.023
PI	247+18.531	R = 11500.000	Delta = 09°50'31" R	256312.584	1014471.595
PT	257+03.796			256073.599	1015432.457
		TL= 810.552	N76°01'58"W		
POE	265+14.348			255877.960	1016219.045

Interstate 90 Eastbound

Type	Station			Northing	Easting
POB	93+66.750			260912.522	1000079.593
		TL= 1406.842	N84°48'24"W		
PC	107+73.592			260785.177	1001480.659
PI	123+75.693	R = 5762.241	Delta = 31°04'32" R	260640.158	1003076.183
PT	138+98.859			259692.394	1004367.876
		TL= 704.190	N53°43'52"W		
PC	146+03.049			259275.811	1004935.629
PI	165+60.791	R = 11465.522	Delta = 19°22'47" L	258117.659	1006514.056
PT	184+81.132			257548.889	1008387.356
		TL= 2515.513	N73°06'39"W		
PC	209+96.644			256818.074	1010794.370
PI	220+81.366	R = 9697.962	Delta = 12°45'51" L	256502.938	1011832.306
PT	231+57.108			256424.907	1012914.217
		TL= 571.286	N85°52'29"W		
PC	237+28.395			256383.810	1013484.023
PI	247+18.531	R = 11500.000	Delta = 09°50'31" R	256312.584	1014471.595
PT	257+03.796			256073.599	1015432.457
		TL= 810.552	N76°01'58"W		
POE	265+14.348			255877.960	1016219.045

Control Data

POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
I90 019.58	REFMRK – NGS MARK PID: PU2616 SEE NGS DATA SHEET FOR LOCATION AND DESCRIPTION	261077.155	998984.374	3694.348
I90 022.79	REFMRK - NGS MARK PID: PU2611 SEE NGS DATA SHEET FOR LOCATION AND DESCRIPTION	256185.736	1015565.583	3691.694

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate system. NAD83(2011) - North Zone 4001; Geoid 12A; CSF=0.99980665. The elevations shown on this sheet are based on NAVD88.

LEGEND

PROJECT	SECTION	SHEET
PH 0040(346)	Non	24/104

Plotting Date: 1/8/2026

Anchor
Antenna
Approach
Assumed Corner
Azimuth Marker
BBQ Grill/ Fireplace
Bearing Tree
Bench Mark
Box Culvert
Bridge
Brush
Buildings
Bulk Tank
Cattle Guard
Cemetery
Centerline
Cistern
Clothes Line
Control Point
Commercial Sign Double Face
Commercial Sign One Post
Commercial Sign Overhead
Commercial Sign Two Post
Concrete Symbol
Creek Edge
Curb/Gutter
Curb
Dam Grade/Dike/Levee
Deck Edge
Ditch Block
Doorway Threshold
Drainage Profile
Drop Inlet
Edge Of Asphalt
Edge Of Concrete
Edge Of Gravel
Edge Of Other
Edge Of Shoulder
Elec. Trans./Power Jct. Box
Fence Barbwire
Fence Chainlink
Fence Electric
Fence Misc.
Fence Rock
Fence Snow
Fence Wood
Fence Woven
Fire Hydrant
Flag Pole
Flower Bed
Gas Valve Or Meter
Gas Pump Island
Grain Bin
Guardrail
Guide Sign One Post
Guide Sign Two Post
Gutter
Guy Pole
Haystack

Hedge
Highway ROW Marker
Interstate Close Gate
Iron Pin
Irrigation Ditch
Lake Edge
Lawn Sprinkler
Mailbox
Manhole Electric
Manhole Gas
Manhole Misc
Manhole Sanitary Sewer
Manhole Storm Sewer
Manhole Telephone
Manhole Water
Merry-Go-Round
Microwave Radio Tower
Misc. Line
Misc. Property Corner
Misc. Post
Overhang Or Encroachment
Overhead Utility Line — OH —
Parking Meter
Pedestrian Push Button Pole
Pipe With End Section
Pipe With Headwall
Pipe Without End Section
Playground Slide
Playground Swing
Power And Light Pole
Power And Telephone Pole
Power Meter
Power Pole
Power Pole And Transformer
Power Tower Structure
Propane Tank
Property Pipe
Property Pipe With Cap
Property Stone
Public Telephone
Railroad Crossing Signal
Railroad Milepost Marker
Railroad Profile
Railroad R.O.W. Marker
Railroad Signs
Railroad Switch
Railroad Track
Railroad Trestle
Rebar
Rebar With Cap
Reference Mark
Regulatory Sign One Post
Regulatory Sign Two Post
Retaining Wall
Riprap
River Edge
Rock And Wire Baskets
Rockpiles
Satellite Dish

Septic Tank
Shrub Tree
Sidewalk
Sign Face
Sign Post
Slough Or Marsh
Spring
Stream Gauge
Street Marker
Subsurface Utility Exploration Test Hole
Telephone Fiber Optics — T/F —
Telephone Junction Box
Telephone Pole
Television Cable Jct Box
Television Tower
Test Wells/Bore Holes
Traffic Signal
Trash Barrel
Tree Belt
Tree Coniferous
Tree Deciduous
Tree Stumps
Triangulation Station
Underground Electric Line — P —
Underground Gas Line — G —
Underground High Pressure Gas Line — HG —
Underground Sanitary Sewer — S —
Underground Storm Sewer — S —
Underground Tank
Underground Telephone Line — T —
Underground Television Cable — TV —
Underground Water Line — W —
Warning Sign One Post
Warning Sign Two Post
Water Fountain
Water Hydrant
Water Meter
Water Tower
Water Valve
Water Well
Weir Rock
Windmill
Wingwall
Witness Corner

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

Drainage Arrow

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

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

Salvage Cable Guardrail Posts
at the following locations:
Westbound 120+98 to 123+72 L - 276'
Westbound 127+89 to 133+98 L - 612'
Westbound 140+33 to 150+00 L - 967'

Westbound 129+50
Retain 18" - 60' RCP
& 1 Flared End (R)

Westbound 129+50 - L
Take Out 1 Flared End
(Incidental Work, Grading)

Westbound 129+50 - L
Install 18" - 8' RCP
& 1 Flared End

Westbound 129+50 L
Install Bank and Channel
Protection Gabions
(4.5 CY)

Westbound 145+36
Retain 36" - 278' CMP (16', 78', & 178')
And 2 - 20.0° Elbows
& 1 CMP Flared End (R)

Westbound 145+36 - L
Take Out 1 Flared End
(Incidental Work, Grading)

Westbound 145+36 - L
Install 36" - 18' CMP
& 1 CMP Flared End

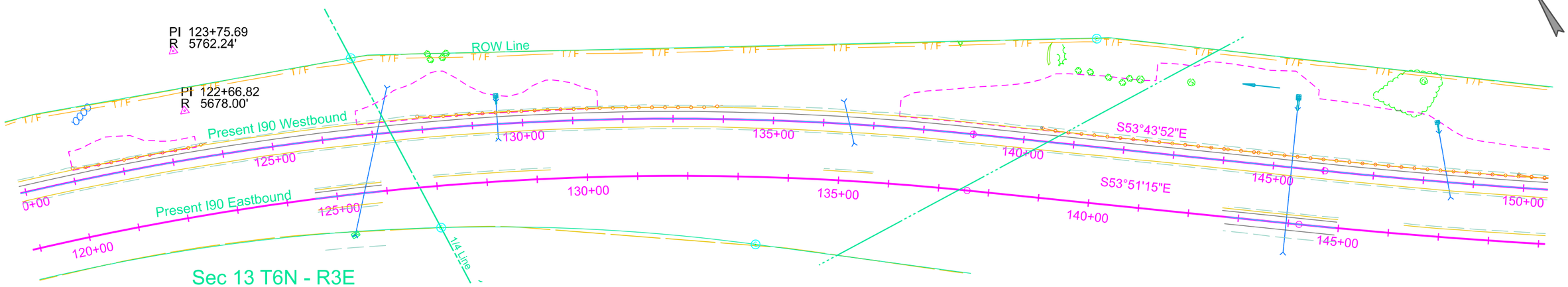
Westbound 145+36 L
Install Bank and Channel
Protection Gabions
(6 CY)

Westbound 148+49
Retain 18" - 132' CMP (50' & 74' & 8')
Skewed 15° RHF
And 2 - 17.5° Elbows
& 1 CMP Flared End (R)

Westbound 148+49 - L
Skewed 15° RHF
Take Out 1 Flared End
(Incidental Work, Grading)

Westbound 148+49 - L
Skewed 15° RHF
Install 18" - 18' CMP
& 1 CMP Flared End

Westbound 148+18 L
Install Bank and Channel
Protection Gabions
(4.5 CY)



STATE OF SOUTH DAKOTA	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	26/104

Plotting Date: 2/13/2026

Salvage Cable Guardrail Posts
at the following locations:
Westbound 150+00 to 167+07 L - 1707'
Eastbound 153+85 to 170+79 R - 1778'

Westbound 156+87
Retain 18" - 148' CMP (54' & 86' & 8')
Skewed 16° RHF
& 2 - 20° Elbows
& 1 CMP Flared End (R)

Westbound 156+87 - L
Skewed 16° RHF
Take Out 1 CMP Flared End
(Incidental Work, Grading)

Westbound 156+87 - L
Skewed 16° RHF
Install 18" - 12' CMP
& 1 CMP Flared End

Westbound 156+52 L
Install Bank and Channel
Protection Gabions
(4.5 CY)

Westbound 157+73
Retain 54" - 274' RCP

Westbound 157+73
Take Out 2 Flared Ends
(Incidental Work, Grading)

Westbound 157+73 L
Install 54" - 16' RCP
& 1 Flared End

Westbound 157+73 R
Install 54" - 4' RCP
& 1 Flared End

Westbound 157+73 L
Install Bank and Channel
Protection Gabions
(12.0 CY)

Westbound 163+50
Retain 12' x 12' RCBC
Skewed 20° RHF

Westbound 163+50 - L
Skewed 20° RHF
Remove RCBC Apron and Wing Walls
(See Special 12'x12' Box Culvert Extension Sheets)

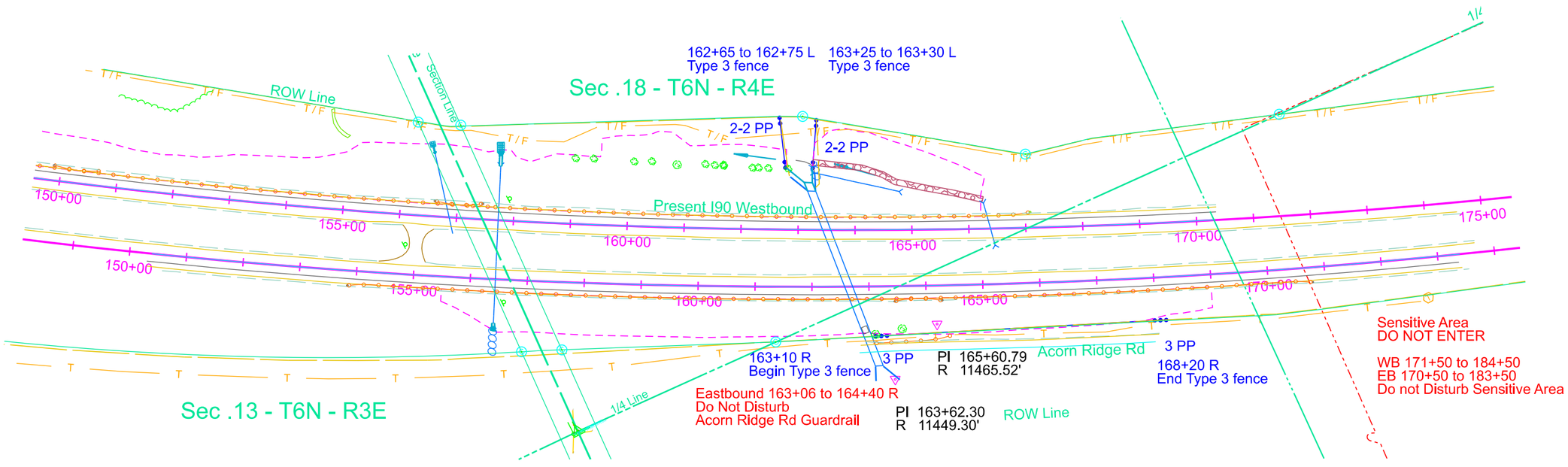
Westbound 163+50 - L
Extend 15'-0" - 12'x12' RCBC
Skewed 20° RHF
(See Special 12'x12' Box Culvert Extension Sheets)

Westbound 164+18 - 174' R
Install Permanent Cattle Guard Cover
(See Special 12'x12' Box Culvert Extension Sheets)

Westbound 163+27-100' L to 164+78-67' L
Take Out 36" - 154' CMP
(Incidental Work, Grading)

Install Class C Riprap 3' thick
and Drainage Fabric at the following location:

Westbound 163+98 to 166+24 L, Across Ditch Bottom (475 Tons)



STATE OF SOUTH DAKOTA	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	27/104

Plotting Date: 2/13/2026

Salvage Cable Guardrail Posts
at the following Locations:
Westbound 190+89 to 213+49 L - 2260'
Eastbound 192+85 to 206+80 R - 1395'

Eastbound 193+02
Retain 18" - 76' RCP
Skewed 20° RHF
& 1 Sloped End (L)

Eastbound 193+02 - R
Skewed 20° RHF
Remove for Reset 1 Sloped End

Eastbound 193+02 - R
Install 18" - 6' RCP
Skewed 20° RHF
& Reset 1 Sloped End

Eastbound 193+15 - R
Install Bank and Channel
Protection Gabions
(16.5 CY)

Eastbound 195+98 - 64' R
to 196+81 - 172' R
Take Out 18" - 142' CMP
& 2 Flared Ends
(Incidental Work, Grading)

Eastbound 195+80 - 264' R
to 196+17 - 202' R
Take Out 24" - 72' CMP
(Incidental Work, Grading)

Eastbound 195+83 - 259' R
to 196+15 - 205' R
Install 24" - 56' CMP
& 2 CMP Flared End

Westbound 194+88 - 269' R
196+73 - 289' R
Remove Fence for Reset

Westbound 194+88 - 269' R
196+73 - 289' R
Reset Fence

Westbound 197+78 - 199' R
197+82 - 281' R
Remove Fence for Reset

Westbound 197+78 - 199' R
197+82 - 281' R
Reset Fence

Westbound 199+23
Retain 48" - 446' RCP
Skewed 15° LHF

Westbound 199+23
Skewed 15° LHF
Remove for Reset 2 Flared Ends

Westbound 199+23 - L
Install 48" - 62' RCP
Skewed 15° LHF
& Reset 1 Flared End

Westbound 199+23 - R
Install 48" - 30' RCP
Skewed 15° LHF
& Short Radius Bend (7.5°)
& Reset 1 Flared End

Eastbound 201+43
Retain 18" - 70' RCP
Skewed 20° RHF
& 1 Safety End (L)

Eastbound 201+43 R
Skewed 20° RHF
Remove for Reset 1 Sloped End

Eastbound 201+43 R
Install 18" - 10' RCP
Skewed 20° RHF
& Reset 1 RCP Sloped End

Eastbound 201+53 R
Install Bank and Channel
Protection Gabions
(6 CY)

Eastbound 202+08 - 67' R
to 202+89 - 107' R
Take Out 18" - 92' CMP
& 2 Flared Ends
(Incidental Work, Grading)

Eastbound 203+98 - 117' R
to 205+31 - 215' R
Take Out 18" - 170' CMP
& 2 Flared Ends
(Incidental Work, Grading)

Eastbound 206+17 - 229' R
to 208+03 - 54' R
Take Out 18" - 250' RCP
& 2 Flared Ends
(Incidental Work, Grading)

Westbound 204+40 - 295' L
Exhume Underdrain Headwall
and Remove for Reset
(Incidental Work, Grading)

Westbound 204+40 - 295' L
Install 4" - 100' Underdrain Pipe

Westbound 206+40 - 375' L
Install Concrete Headwall
for Underdrain

Westbound 207+54 - 226' L
Exhume Underdrain Headwall
and Remove for Reset
(Incidental Work, Grading)

Westbound 207+54 - 226' L
Install 4" - 100' Underdrain Pipe

Westbound 206+60 - 380' L
Install Concrete Headwall
for Underdrain

Westbound 206+51
Retain 554' - 72" CMP

Westbound 206+51 L
Remove for Reset 1 Sloped End

Westbound 206+51 R
Take Out 1 Sloped End
(Incidental Work, Grading)

Westbound 206+51 L
Install 72" - 80' CMP
& Reset 1 Sloped End

Westbound 206+51 R
Install 72" - 52' RCP
& 72" RCP to CMP Transition
& 4 Short Radius Bends (30°)
& 1 Flared End

Eastbound 208+92
Retain 18" - 64' RCP
& 1 Sloped End (L)

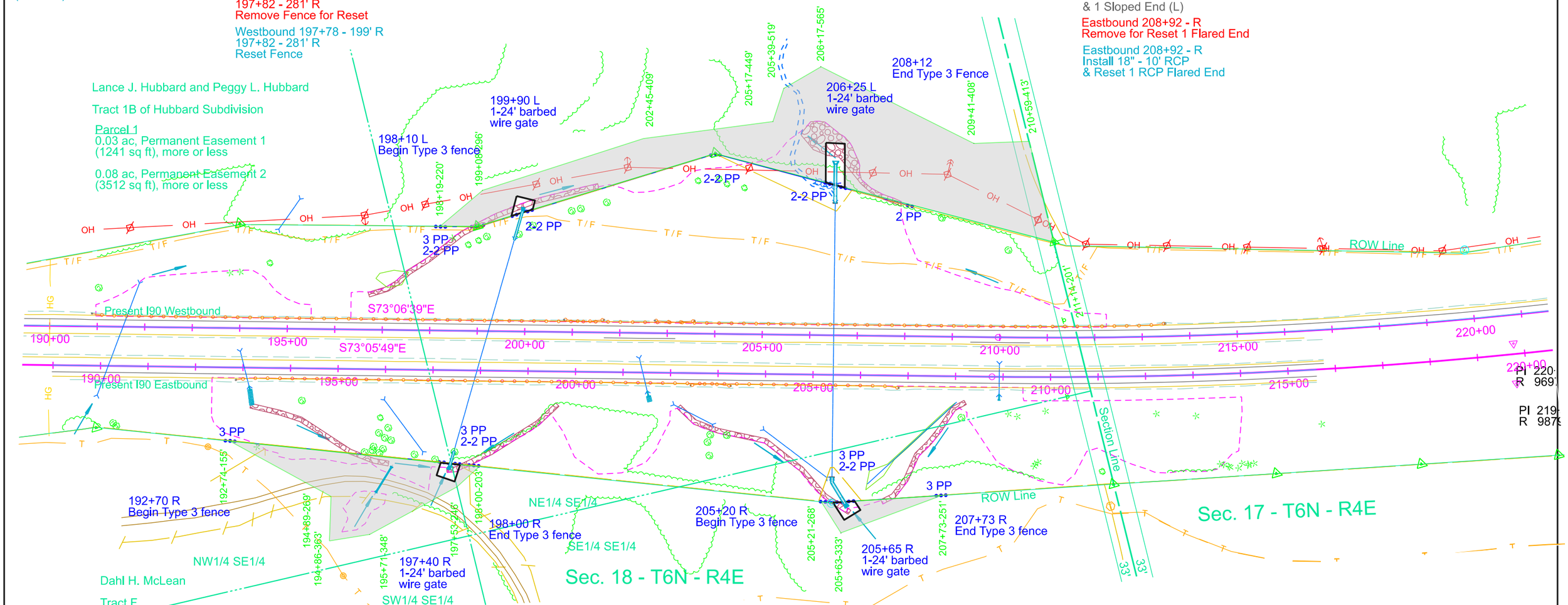
Eastbound 208+92 - R
Remove for Reset 1 Flared End

Eastbound 208+92 - R
Install 18" - 10' RCP
& Reset 1 RCP Flared End

Install Class C Riprap 3' thick
and Drainage Fabric at the following locations:

Westbound
196+70 to 201+50 L, Across Ditch Bottom (844 Tons)
205+85 to 207+00 L, Across Ditch Bottom, Cut Slopes,
and from Pipe Outlet to Existing Channel (1014Tons)
207+00 to 207+90 L, Across Ditch Bottom (132 Tons)

Eastbound
194+25 to 197+16 R, Across Ditch Bottom (496 Tons)
198+40 to 200+70 R, Across Ditch Bottom (426 Tons)
203+25 to 206+90 R, Across Ditch Bottom (675 Tons)
207+55 to 209+30 R, Across Ditch Bottom (435 Tons)



Parcel 1
WB Sta. 198+19 to 211+14 L
Temporary Easement Containing
3.5 ac, more or less

Parcel 2
EB Sta. 192+74 to 198+00 R
Temporary Easement Containing
1.0 ac, more or less

EB Sta. 205+21 to 207+73 R
Temporary Easement Containing
0.2 ac, more or less

STATE OF SOUTH DAKOTA	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	28/104

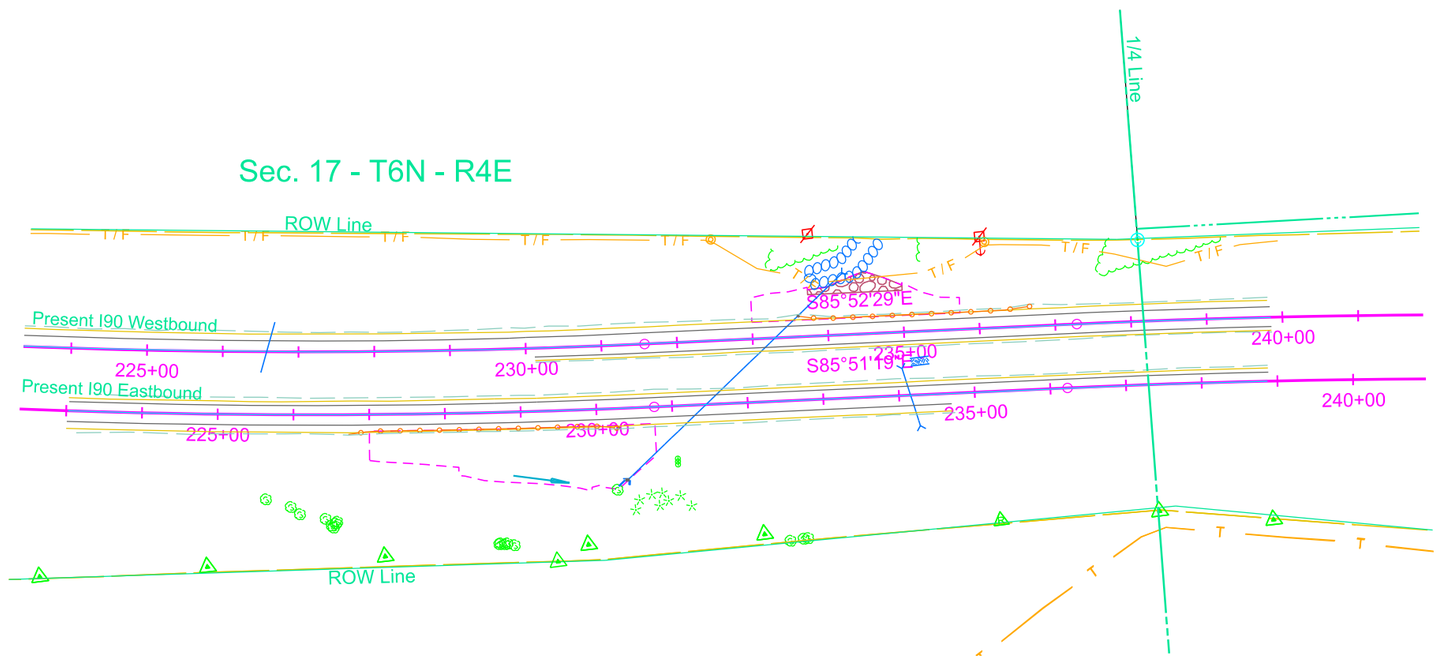
Plotting Date: 2/13/2026

Salvage Cable Guardrail Posts
at the following locations:
Westbound 233+61 to 236+70 L - 309
Eastbound 226+72 to 230+29 R - 358'

Westbound 233+29
Retain 48" - 398' RCP
Skewed 48.5° LHF
& 1 Headwall
& 1 Flared End

Install Class C Riprap 3' thick
and Drainage Fabric at the following locations:

Westbound 233+75 to 235+00 L, Fill slope tie-in (285 Tons)



EROSION AND SEDIMENT CONTROL LEGEND

- Silt Fence J-Hooks
- Low Flow Silt Fence
- High Flow Silt Fence
- High Flow Silt Fence at Pipe
- Sediment Control at Inlet After Placement of Surfacing
- Sediment Control at Inlet Before Placement of Surfacing
- Temporary Sediment Barrier
- Temporary Water Barrier
- Floating Silt Curtain
- Sediment Filter Bags
- Triangular Silt Barriers
- Erosion Control Wattles on Slopes
- Erosion Control Wattles at Inlets
- Erosion Control Wattles in Ditches
- Erosion Bales
- Surfacing Roughening
- Temporary Grass Hay or Straw Mulch/ Soil Stabilizer
- Cut Interceptor Ditch
- Temporary Slope Drain
- Bonded Fiber Matrix/ Fiber Reinforced Matrix
- Rock Check Dam
- Type 1 Erosion Control Blanket
- Type 2 Erosion Control Blanket
- Type 3 Erosion Control Blanket
- Type 4 Erosion Control Blanket
- Type 1 Turf Reinforcement Mat
- Type 2 Turf Reinforcement Mat
- Type 3 Turf Reinforcement Mat
- Transition Mat
- Articulated Concrete Matress
- Silt Trap (See Standard Plate 734.04)

BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are split into three categories and are to be used throughout construction.

INITIAL PHASE

BMPs from the Legend shown as Orange Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Initial Phase prior to earth disturbing activities and remain in place for the Intermediate Phase for temporary stabilization and in the Final Phase to achieve final stabilization.

INTERMEDIATE PHASE

BMPs from the Legend shown as Blue Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Intermediate Phase for temporary stabilization and remain in place in the Final Phase to achieve final stabilization.

FINAL PHASE

BMPs from the Legend shown as Green Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Final Phase to achieve final stabilization.

If these items are applicable they are to be shown in the updated SWPPP using the Symbols given.

- TS — Topsoil Stockpile
- B — Borrow Area
- CE — Stabilized Construction Entrance
- VB — Vegetated Buffer Strip
- CW — Concrete Washout
- AP — Asphalt Plant Site
- CP — Concrete Plant Site
- V — Vehicle and Equipment Parking Area, Fueling Area, or Maintenance Area
- D — Dumpster or other Trash and Debris Containers
- M — On-Site Construction Material Storage Area
- SK — Spill Kit
- WP — Work Platform
- CC — Cover Crop Seeding
- PT — Portable Toilet

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	30/104

Plotting Date: 1/8/2026

EROSION CONTROL PLAN

Shaping for Erosion Control Blanket along cut/fill transitions at the following locations:

Westbound:
Sta. 120+60 L to 121+60 L (112 Ft)
Sta. 125+75 L to 128+00 L (240 Ft)
Sta. 128+60 L to 129+50 L (110 Ft)
Sta. 130+65 L to 132+40 L (220 Ft)
Sta. 136+75 L to 138+55 L (212 Ft)

Install Type 2 Erosion Control Blanket along cut/fill transitions at the following locations:

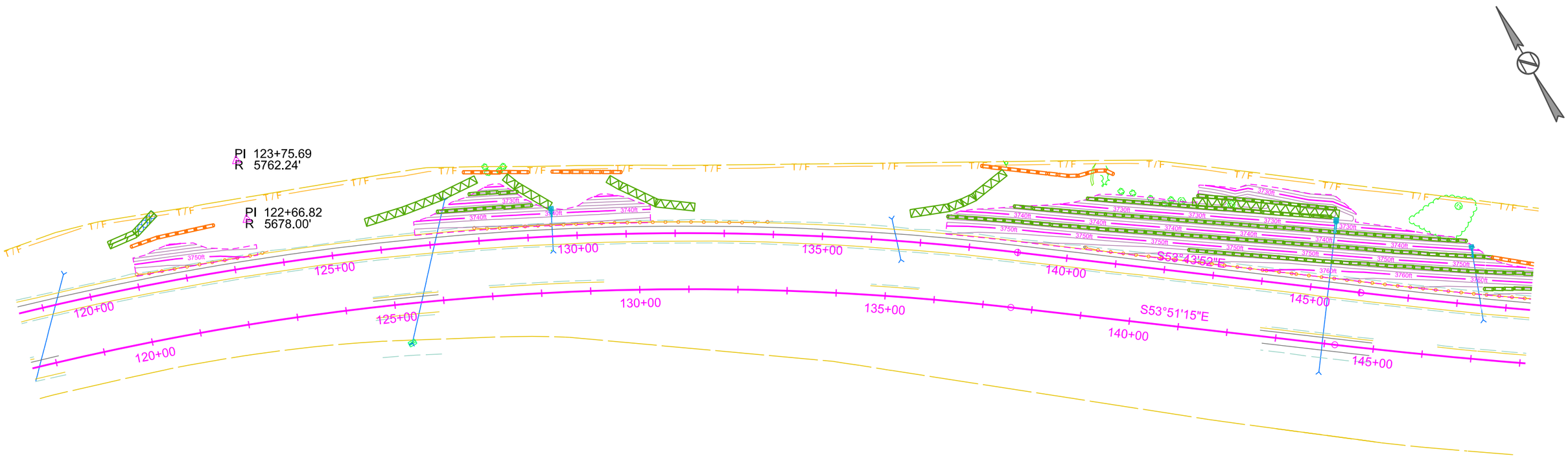
Westbound:
Sta. 120+60 L to 121+60 L (200 SqYd)
Sta. 125+75 L to 128+00 L (426 SqYd)
Sta. 128+60 L to 129+50 L (195 SqYd)
Sta. 130+65 L to 132+40 L (340 SqYd)
Sta. 136+75 L to 138+55 L (391 SqYd)

Install 12" Diameter Erosion Control Wattles at the following locations:

Westbound:
121+00 to 122+75 L Perimeter Control (175 ft)
127+75 to 129+10 L Perimeter Control (140 ft)
129+50 to 131+00 L Perimeter Control (150 ft)
138+00 to 140+75 L Perimeter Control (275 ft)

Install 12" Diameter Erosion Control Wattles on slope spaced 30':

Westbound:
127+20 to 129+20 L Inslope (300 ft)
137+50 to 164+60 L Inslope (6100 ft)
142+50 to 145+40 L Backslope (290 ft)



EROSION CONTROL PLAN

PROJECT	SECTION	SHEET
PH 0040(346)	Non	31/104

Plotting Date: 1/8/2026

Install 12" Diameter Erosion Control Wattles at the following locations:

Westbound:
148+60 to 157+60 L Perimeter Control (900 ft)

Install High Flow Silt Fence at the following locations:

Eastbound
156+43 R Across ditch at inlet end of pipe (60 ft)

Install 12" Diameter Erosion Control Wattles on slope spaced 30':

Eastbound:
156+00 to 168+25 R Inslope (1825 ft)

Install 12" Diameter Erosion Control Wattles spaced 100' in Highway Ditch Channel Bottom at the following locations:

Eastbound:
156+00 to 168+25 R (390 ft)

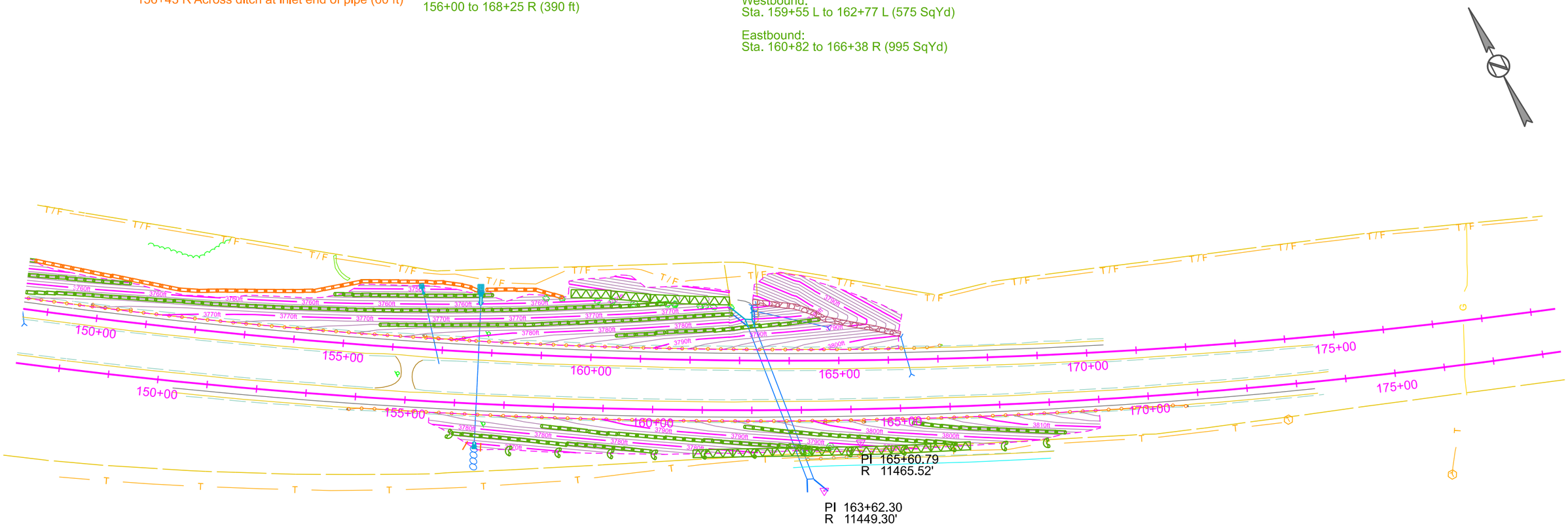
Shaping for Erosion Control Blanket in highway ditch channel bottom at the following locations:

Eastbound:
Sta. 160+82 to 166+38 R (560 Ft)

Install Type 3 Erosion Control Blanket in highway ditch channel bottom at the following locations:

Westbound:
Sta. 159+55 L to 162+77 L (575 SqYd)

Eastbound:
Sta. 160+82 to 166+38 R (995 SqYd)



SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	32/104

Plotting Date: 1/8/2026

EROSION CONTROL PLAN

Install 12" Diameter Erosion Control Wattles at the following locations:

Westbound
191+60 to 195+25 L Inslope spaced 30' (640 ft)
197+00 to 211+50 L Inslope spaced 40' (7150 ft)

Eastbound:
192+35 to 195+35 R Backslope spaced 30' (610 ft)
193+75 to 199+60 R Inslope spaced 40' (1730 ft)
199+50 to 202+00 R Backslope spaced 30' (610 ft)
202+25 to 207+75 R Inslope spaced 40' (1900 ft)
208+50 to 213+75 R Backslope spaced 30' (1300 ft)

Install Rock Check Dam and Sediment Trap at the following location:

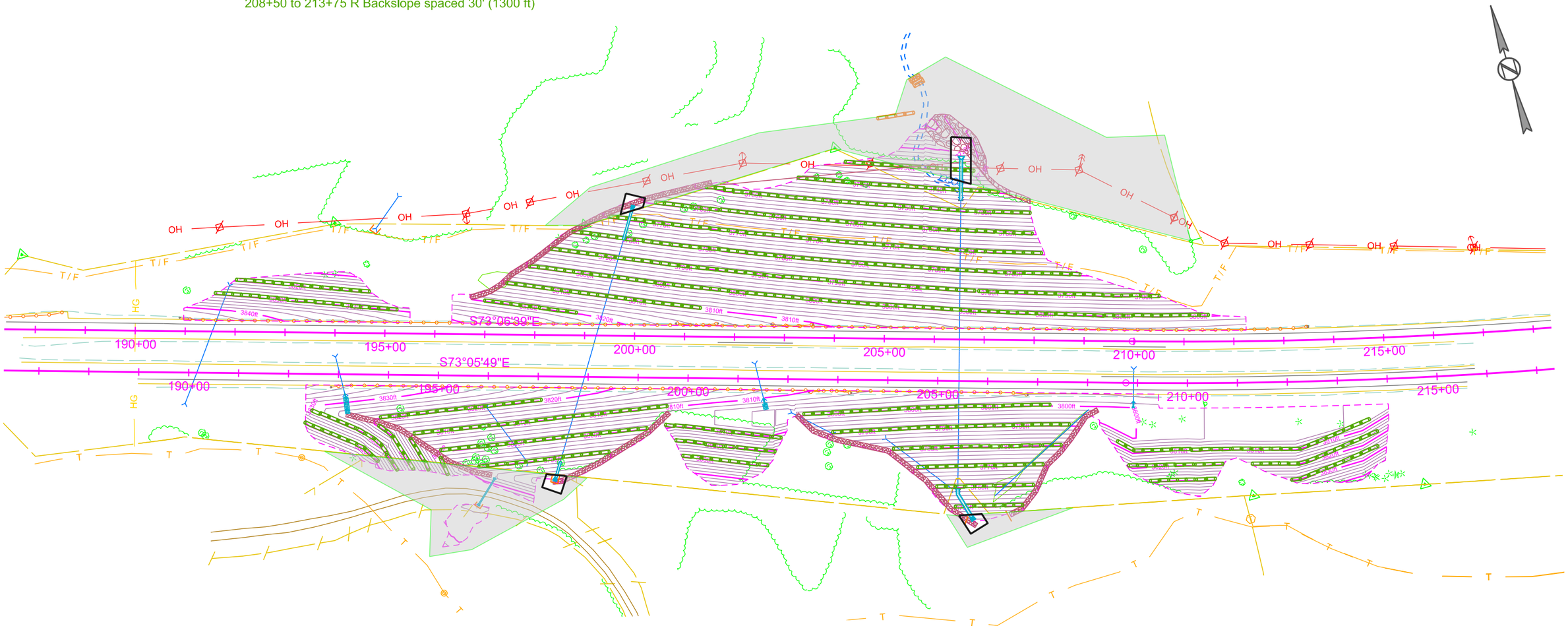
Westbound
205+55 - 516' L

Install 12" Diameter Erosion Control Wattles at the following locations:

Westbound:
204+80 to 205+60 L Perimeter Control (80 ft)

Install High Flow Silt Fence at the following locations:

Eastbound
195+85 R Pipe Inlet (30 ft)
197+40 R Pipe Inlet (45 ft)
205+70 R Across ditch at inlet end of pipe (50 ft)



EROSION CONTROL PLAN

PROJECT	SECTION	SHEET
PH 0040(346)	Non	33/104

Plotting Date: 1/8/2026

Install 12" Diameter Erosion Control Wattles on slope spaced 30':

Eastbound:
227+75 to 230+75 R Inslope (375 ft)

Install High Flow Silt Fence at the following locations:

Eastbound
230+30 R Across ditch at inlet end of pipe (50 ft)

Shaping for Erosion Control Blanket in highway ditch channel bottom at the following locations:

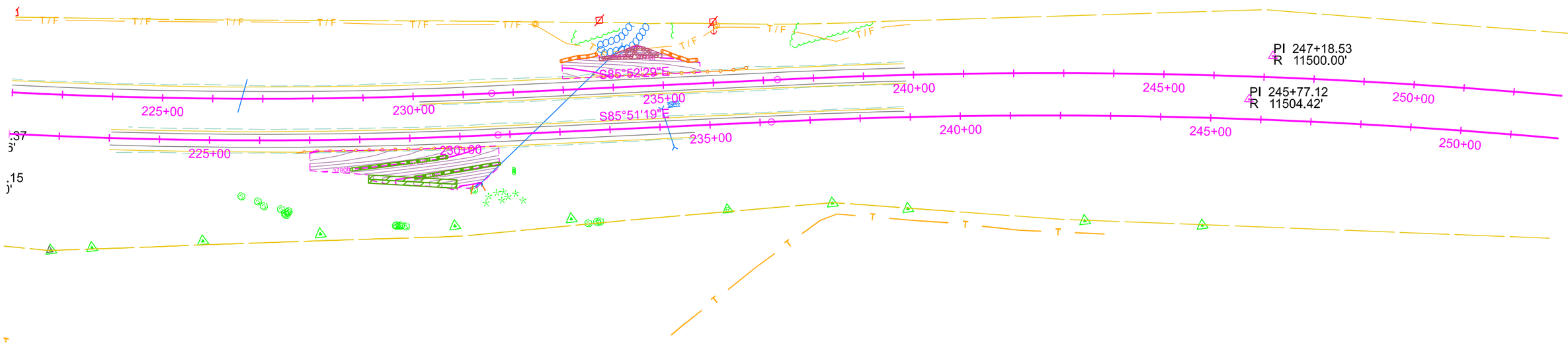
Eastbound:
Sta. 228+16 R to 229+90 R (175 Ft)

Install Type 2 Erosion Control Blanket in highway ditch channel bottom at the following locations:

Eastbound:
Sta. 228+16 R to 229+90 R (311 SqYd)

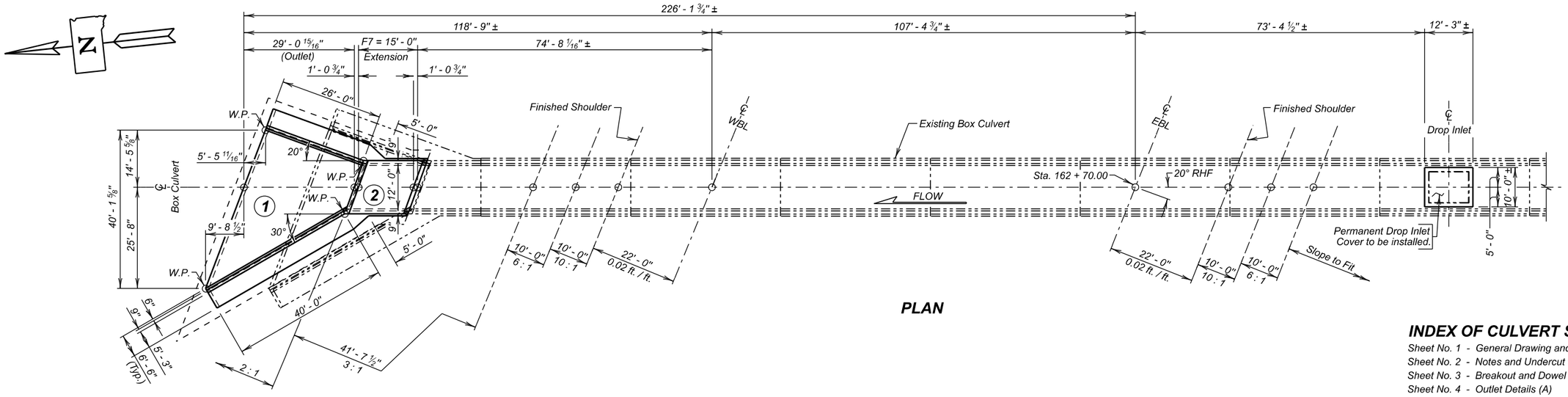
Install 12" Diameter Erosion Control Wattles at the following locations:

Westbound:
233+00 to 233+75 L Perimeter Control (75 ft)
235+00 to 235+75 L Perimeter Control (75 ft)



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

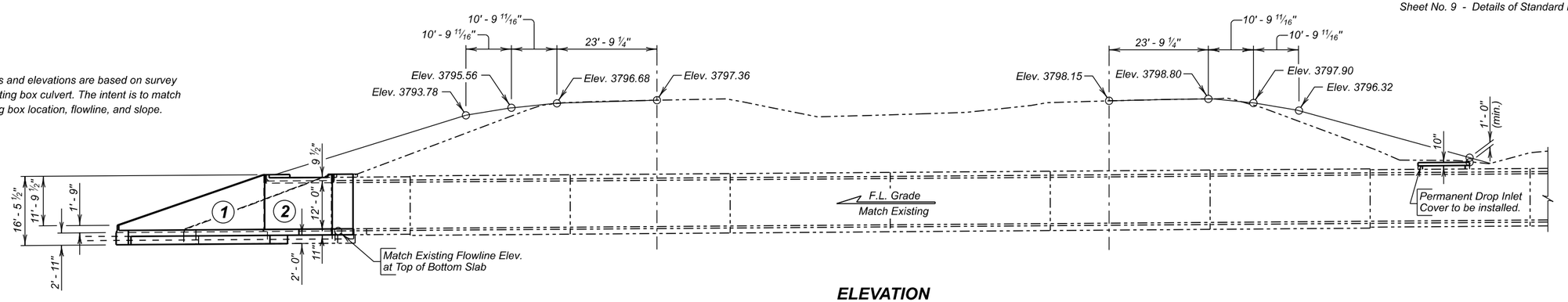
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	34	104



PLAN

INDEX OF CULVERT SHEETS-

NOTE: All stations and elevations are based on survey of the existing box culvert. The intent is to match the existing box location, flowline, and slope.



ELEVATION

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	89.1
Reinforcing Steel	Lb.	10099
Structure Excavation, Box Culvert	Cu. Yd.	45.4
Box Culvert Undercut	Cu. Yd.	67.2
Breakout Structural Concrete	Cu. Yd.	53.6
Install Dowel in Concrete	Each	44

GENERAL DRAWING AND QUANTITIES

FOR

SPECIAL 12' X 12' BOX CULVERT EXTENSION

OVER CREEK — 20° RHF SKEW
STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E
STR. NO. 41-185-086 — PH 0040(346)
PCN 089U — HL-93

LAWRENCE COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2024

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson
LAWR089U	089UTA01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	35	104

SPECIFICATIONS

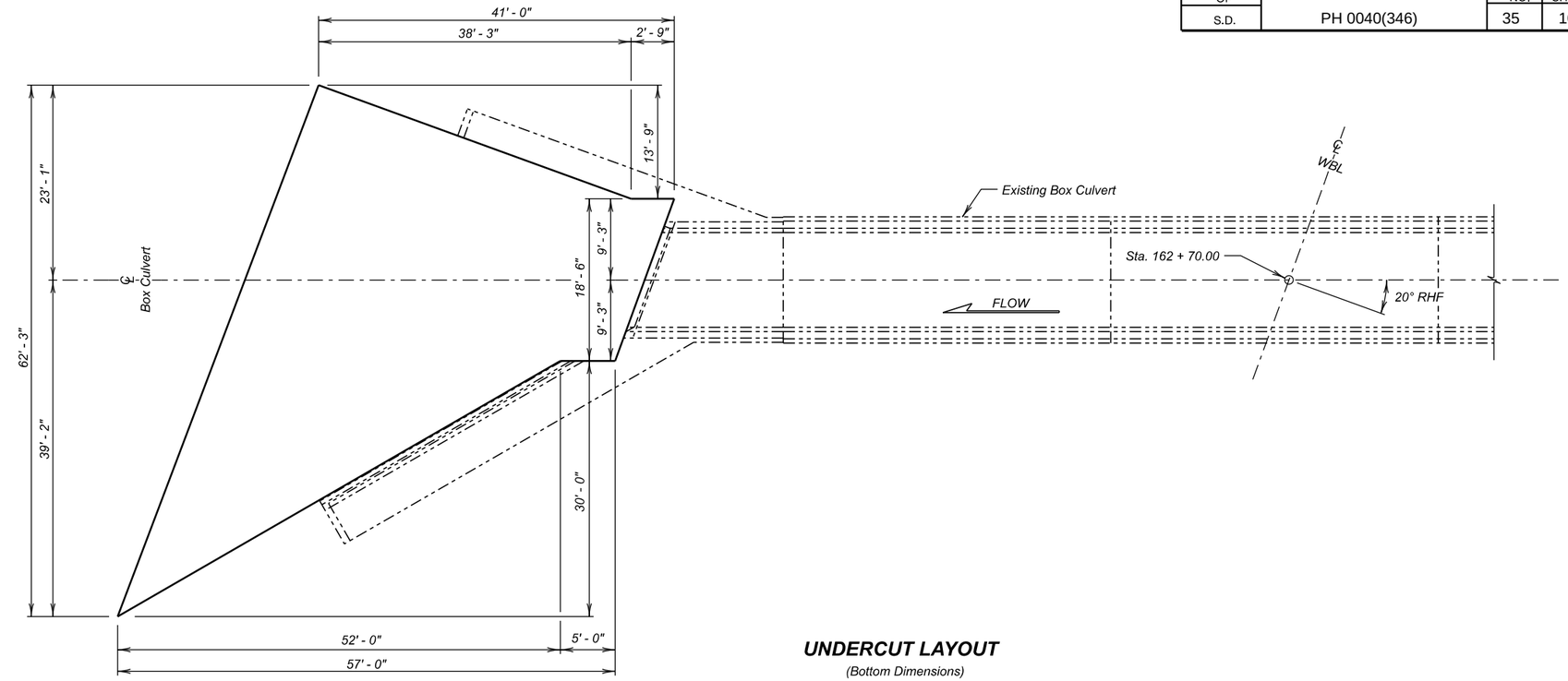
1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 10th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at: https://dot.sd.gov/doing-business/contractors/standard-specifications

GENERAL NOTES

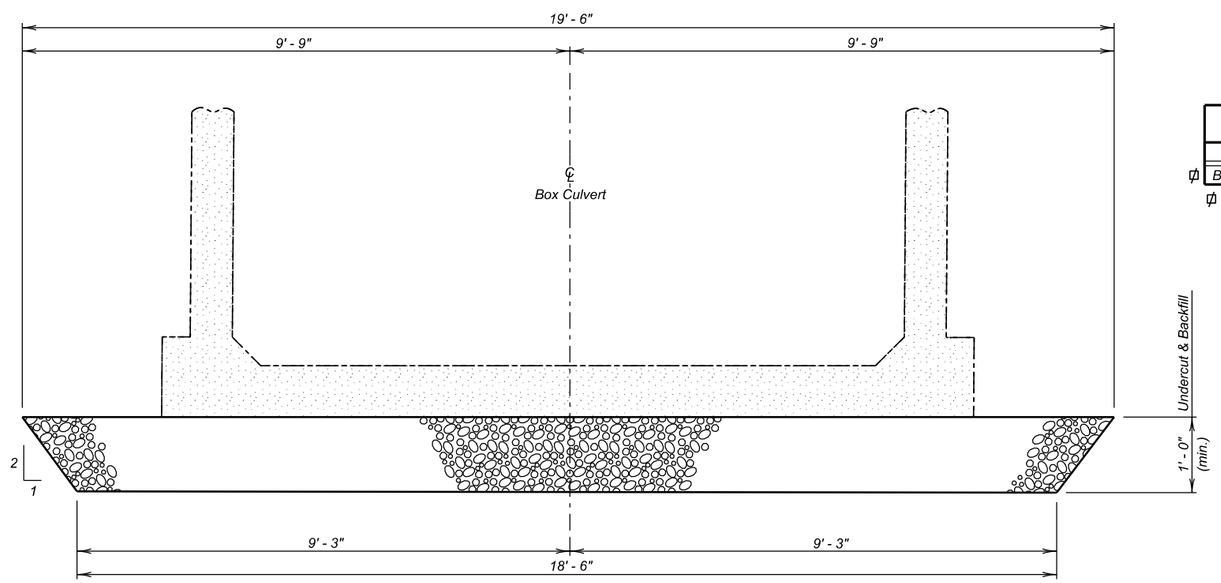
1. Design Live Load: HL-93. No construction loading in excess of legal load was considered.
2. The design of the barrel section is based on a minimum fill height of one foot and includes all subsequent fill heights up to and including the maximum fill height of 7 feet (F7).
3. Design Material Strengths: Concrete f'c = 4500 p.s.i.
   Reinforcing Steel fy = 60000 p.s.i.
4. All concrete will be Class A45 Concrete, Box Culvert conforming to Section 460 of the construction specifications.
5. All reinforcing steel will conform to ASTM A615 Grade 60.
6. All lap splices shown are contact lap splices unless noted otherwise.
7. All exposed concrete corners and edges will be chamfered 3/4 inch unless noted otherwise in plans. Match the existing chamfer if the existing chamfer differs.
8. Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
9. The Contractor will imprint on the structure the date of the existing box culvert construction as well as the date of new construction as specified and detailed on Standard Plate No. 460.03.
10. Care will be taken to establish Working Points (W.P.) as shown on the wings.
11. Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).
12. Cost of Preformed Expansion Joint Filler used in apron construction will be incidental to the other contract items.
13. Dewatering may be required to construct the box culvert. All cost incurred for dewatering will be incidental to other contract items.

DIMENSIONS OF EXISTING BOX CULVERT

All details and dimensions of the Existing Box Culvert, contained in these plans, are based on the original construction plans and are information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project. Original construction plans can be obtained from the Office of Bridge Design.



UNDERCUT LAYOUT
(Bottom Dimensions)



TYPICAL SECTION
(For Limits of Undercut)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
¢ Box Culvert Undercut	Cu. Yd.	67.2

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

NOTES AND UNDERCUT DETAILS

FOR

SPECIAL 12' X 12' BOX CULVERT EXTENSION

OVER CREEK — 20° RHF SKEW
STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E
STR. NO. 41-185-086 — PH 0040(246)
HL-93

LAWRENCE COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2024

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson BRIDGE ENGINEER
LAWR089U	089UTA02		

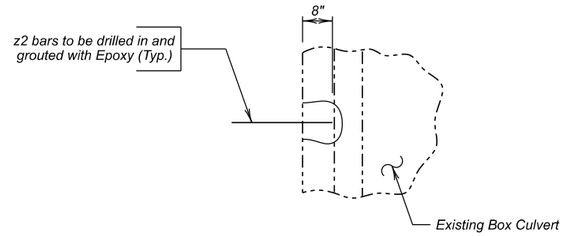
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	36	104

BREAKOUT STRUCTURAL CONCRETE

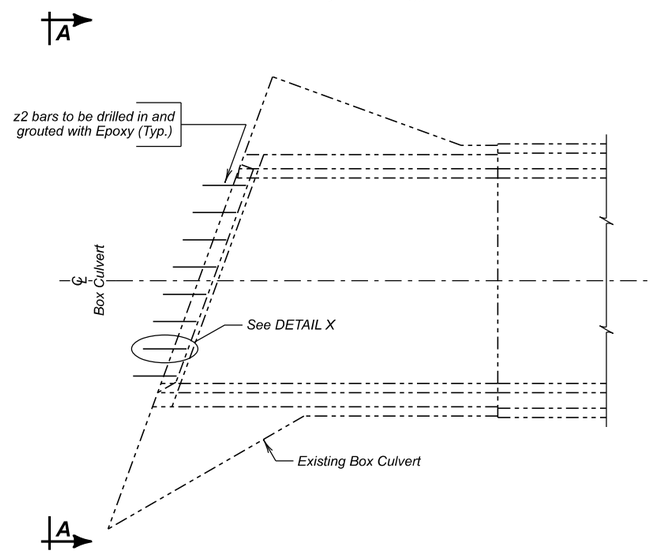
1. This work will consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material will be disposed of in accordance with the Waste Disposal Site Notes found in the Environmental Commitment notes found elsewhere in the plans.
2. Define the breakout limits with 3/4 inch deep saw cuts.
3. Any additional breakout required due to spalling or cracking of the existing structure will be determined by the Engineer. Where additional breakout in the barrel section of the existing structure is required, care will be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
4. Additional breakout in existing walls or top slab will require shoring up of the parapet and top slab, as directed by the Engineer.
5. Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out, unless measurement is ordered by the Engineer. If the Engineer orders breakout beyond the limits shown, this additional breakout will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. If additional breakout is caused by the Contractor's operations, no additional payment will be made.
6. Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, sawcutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.

INSTALLING DOWELS IN CONCRETE

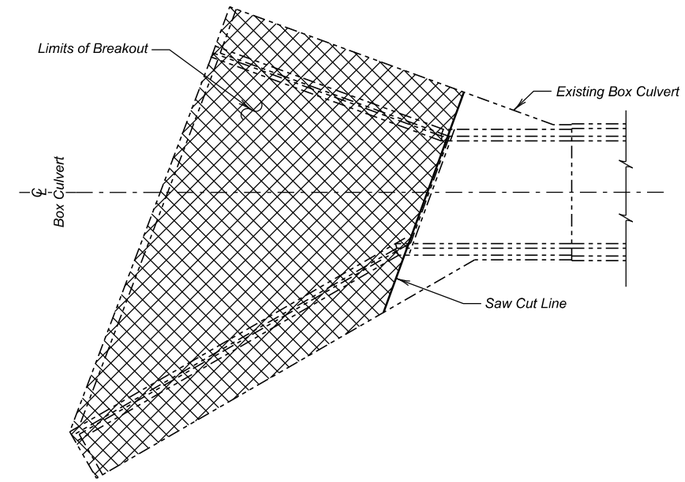
1. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).
2. The diameter of the drilled holes will not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. Holes will not be drilled using core bits. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
3. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
4. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
5. Embed z2 dowels 8" into existing concrete.
6. z2 dowel bars will be #6 deformed bars conforming to ASTM A615 Grade 60.
7. The cost of drilling holes, epoxy resin, dowels, installation and other incidental items will be included in the contract unit price per each for Install Dowel in Concrete.



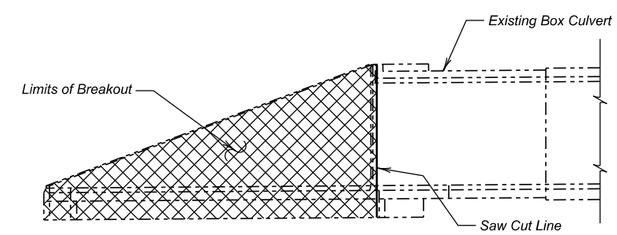
DETAIL "X"



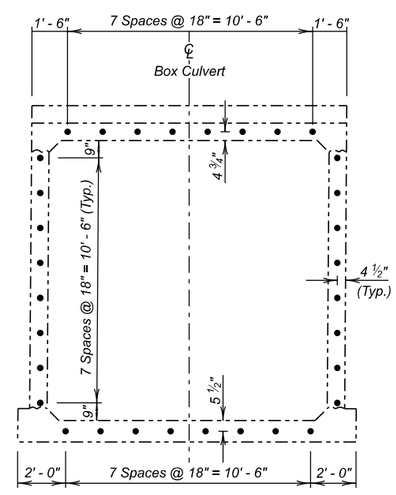
PLAN - DOWEL DETAILS



PLAN - BREAKOUT DETAILS



ELEVATION - BREAKOUT DETAILS



VIEW A - A
(Dowel Locations)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	53.6
Install Dowel in Concrete	Each	32

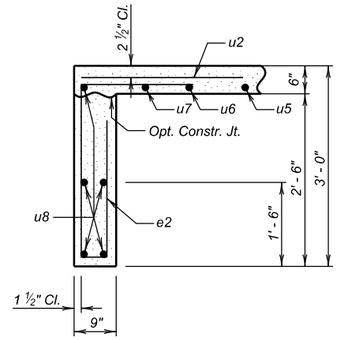
BREAKOUT AND DOWEL PLACEMENT DETAILS
FOR
SPECIAL 12' X 12' BOX CULVERT EXTENSION

OVER CREEK — 20° RHF SKEW
STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E
STR. NO. 41-185-086 — PH 0040(346)
HL-93

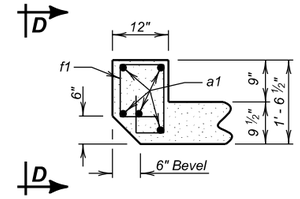
LAWRENCE COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2024

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson
LAWR089U	089UTA03		BRIDGE ENGINEER

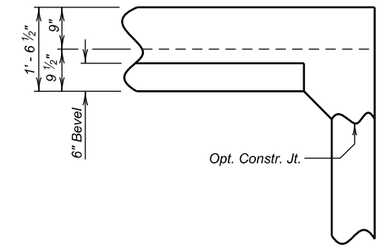
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	37	104



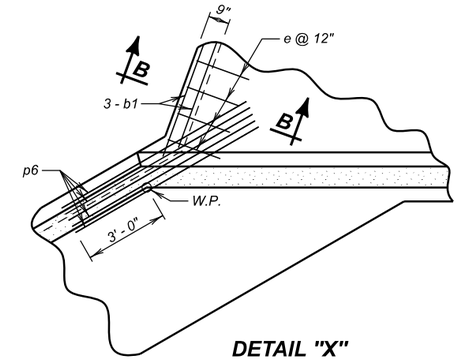
SECTION G - G



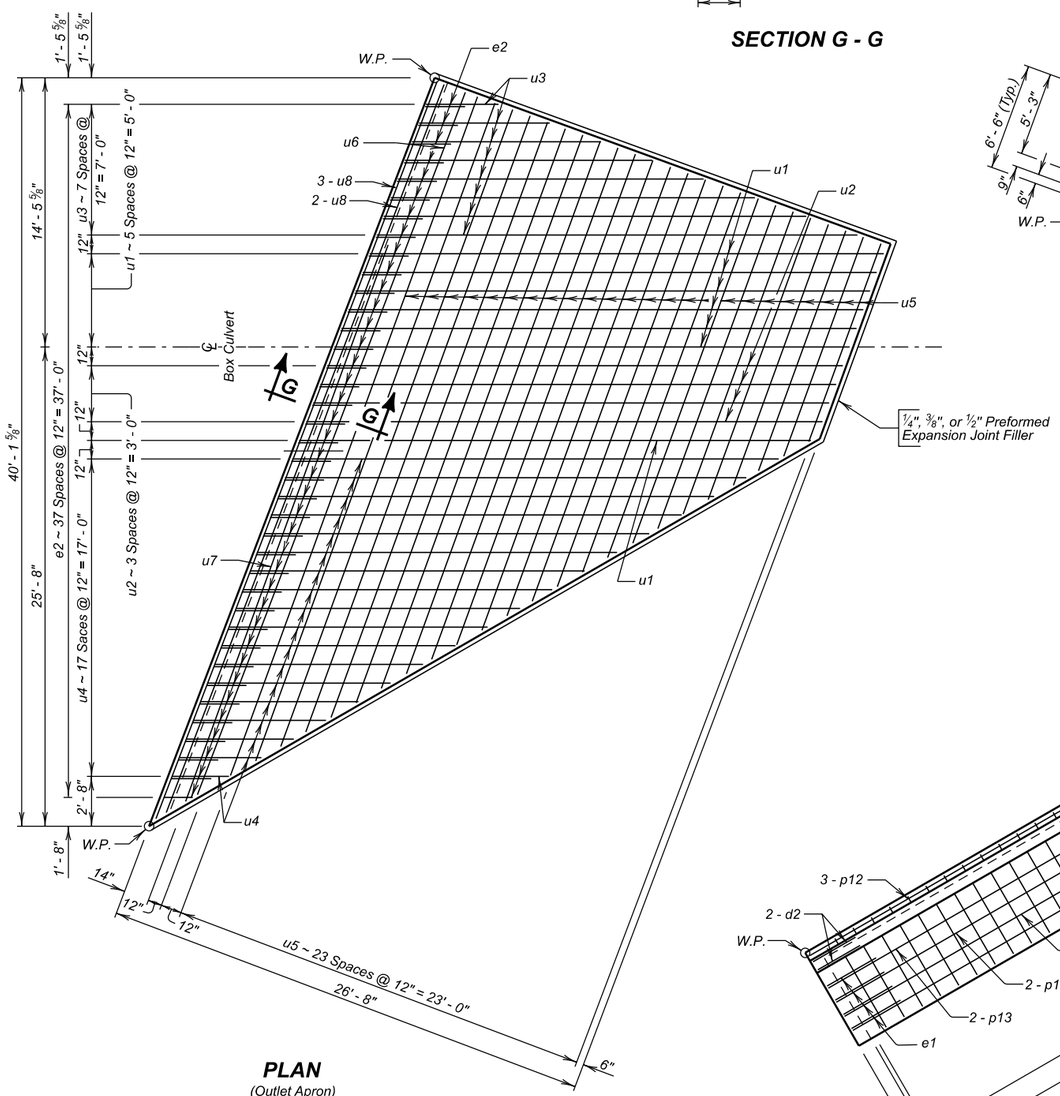
SECTION A - A
(At Top Slab)



VIEW D - D
(At Exterior Wall)

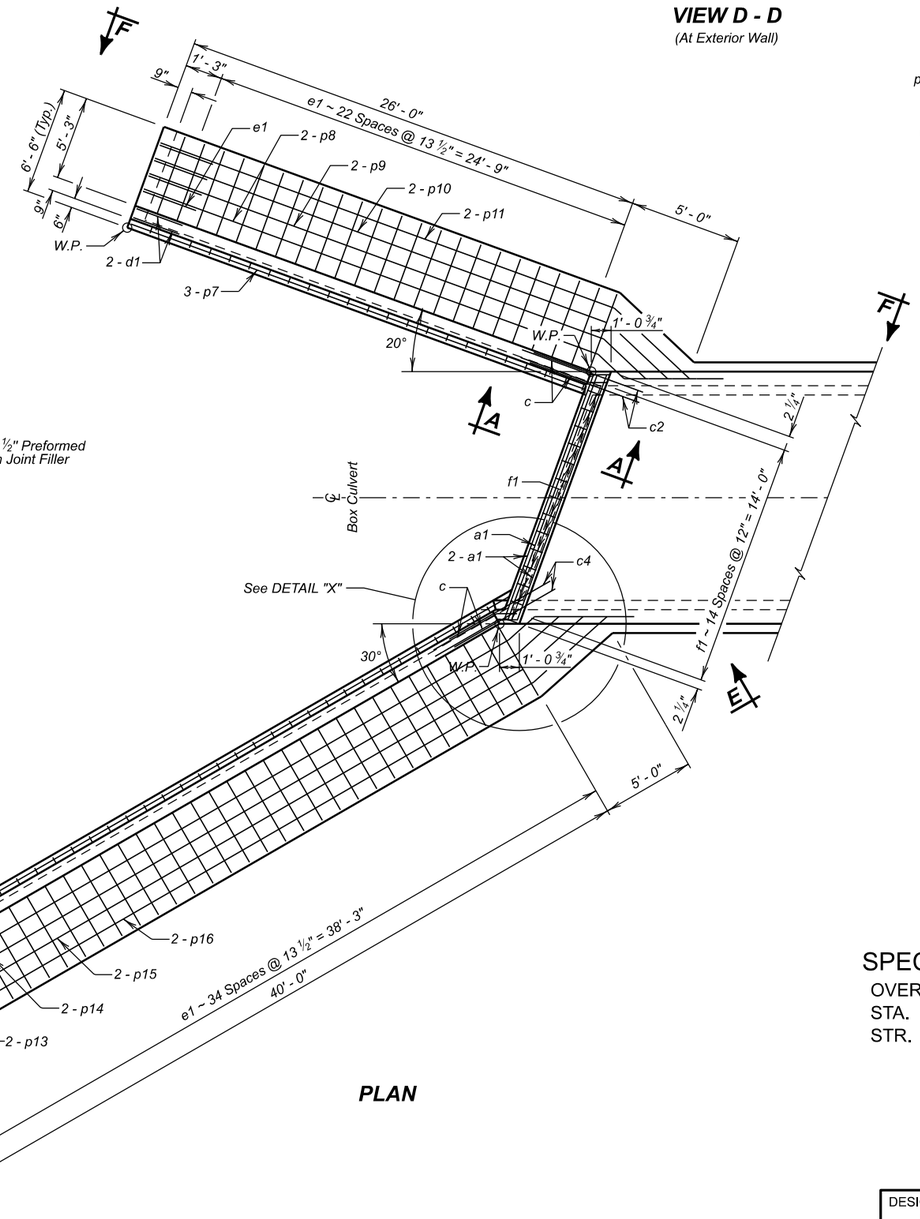


DETAIL "X"
(At Bottom Slab)

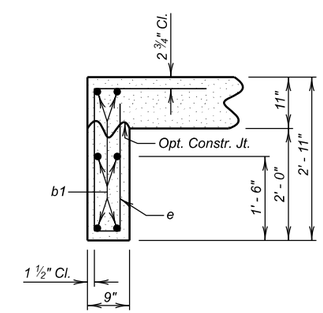


PLAN
(Outlet Apron)

NOTE:
Apron shall NOT be built monolithic with the Box Culvert.



PLAN



SECTION B - B

OUTLET DETAILS (A)
FOR
SPECIAL 12' X 12' BOX CULVERT EXTENSION

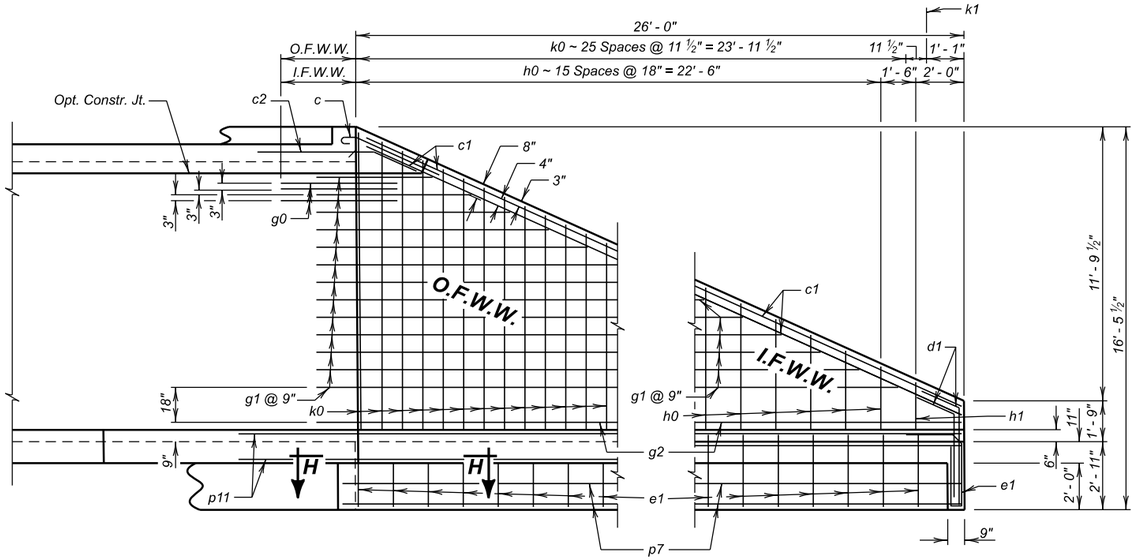
OVER CREEK — 20° RHF SKEW
STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E
STR. NO. 41-185-086 — PH 0040(346)
HL-93

LAWRENCE COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2024

4 OF 9

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson BRIDGE ENGINEER
LAWR089U	089UTA04		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	38	104



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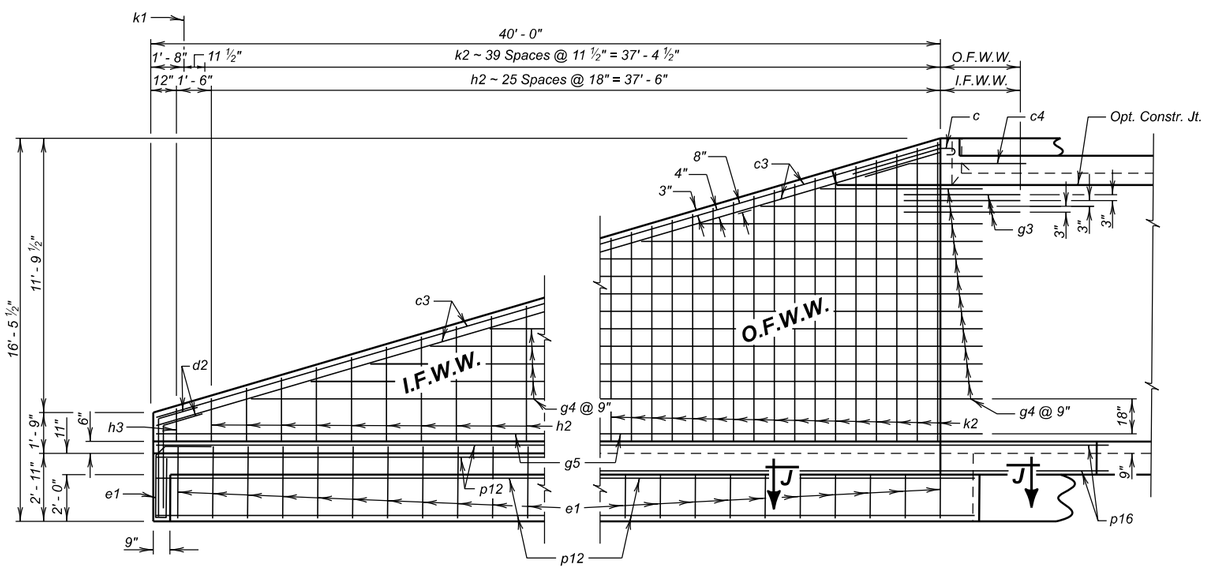

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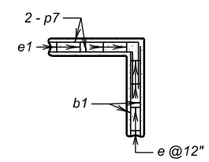
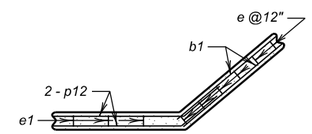
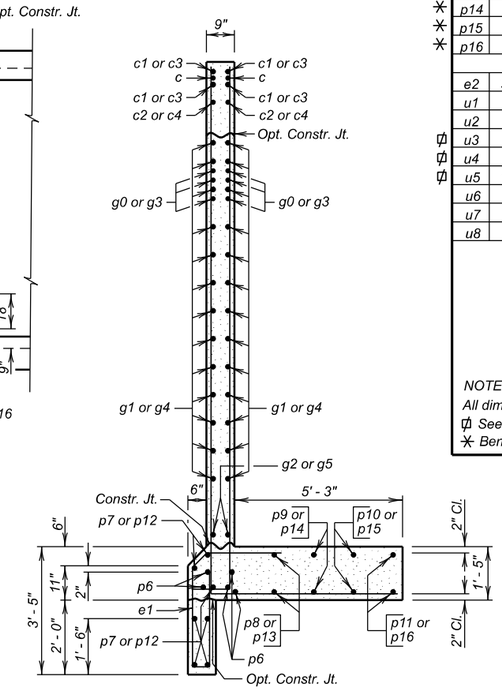


SECTION H - H



SECTION J - J

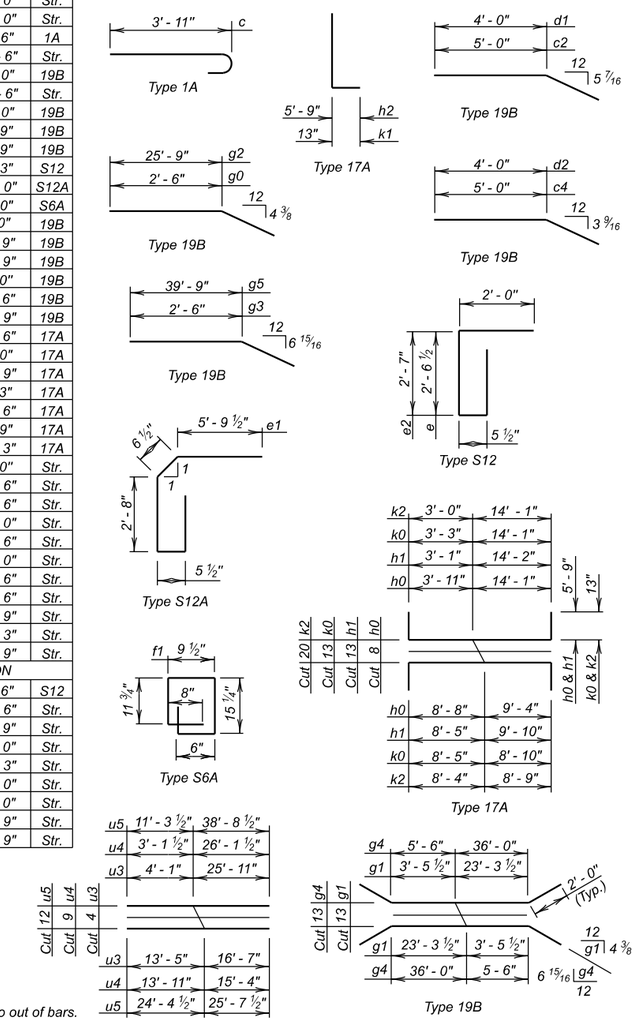


SECTION C - C

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	a1	5	6	14' - 0"	Str.
	b1	6	6	12' - 0"	Str.
✳	c	4	5	4' - 6"	1A
	c1	4	5	28' - 6"	Str.
	c2	2	5	7' - 0"	19B
	c3	4	5	41' - 6"	Str.
	c4	2	5	7' - 0"	19B
	d1	4	5	5' - 9"	19B
	d2	4	5	5' - 9"	19B
	e	13	4	7' - 3"	S12
	e1	66	5	12' - 0"	S12A
	f1	15	4	5' - 0"	S6A
	g0	6	5	5' - 0"	19B
✱	g1	13	4	30' - 9"	19B
	g2	2	4	27' - 9"	19B
	g3	6	5	5' - 0"	19B
✱	g4	13	4	45' - 6"	19B
	g5	2	4	41' - 9"	19B
✱	h0	8	4	29' - 6"	17A
	h1	1	4	9' - 0"	17A
✱	h2	13	4	28' - 9"	17A
	h3	1	4	8' - 3"	17A
✱	k0	13	5	19' - 6"	17A
	k1	2	5	3' - 9"	17A
✱	k2	20	5	19' - 3"	17A
	p6	10	6	7' - 0"	Str.
✳	p7	7	4	28' - 6"	Str.
✳	p8	2	4	29' - 6"	Str.
✳	p9	2	4	31' - 0"	Str.
✳	p10	2	4	32' - 6"	Str.
✳	p11	2	4	34' - 0"	Str.
✳	p12	7	4	42' - 6"	Str.
✳	p13	2	4	43' - 6"	Str.
✳	p14	2	4	44' - 9"	Str.
✳	p15	2	4	46' - 3"	Str.
✳	p16	2	4	47' - 9"	Str.
	OUTLET APRON				
	e2	38	4	7' - 6"	S12
	u1	7	4	27' - 6"	Str.
	u2	4	4	27' - 9"	Str.
✱	u3	4	4	30' - 0"	Str.
✱	u4	9	4	29' - 3"	Str.
✱	u5	12	4	50' - 0"	Str.
	u6	1	4	40' - 0"	Str.
	u7	1	4	31' - 9"	Str.
	u8	5	4	41' - 9"	Str.

Bending Details



NOTES:
All dimensions are out to out of bars.
✱ See cutting diagram.
✳ Bend in field as necessary to fit.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete Box Culvert	Reinforcing Steel	Structure Excavation Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Outlet	44.1	4301	21.1
Outlet Apron	16.9	1237	16.9

LEGEND FOR PLACING RE-STEEL

O. F. W. W. - Outside Face of Wing Wall
I. F. W. W. - Inside Face of Wing Wall

OUTLET DETAILS (B)

FOR

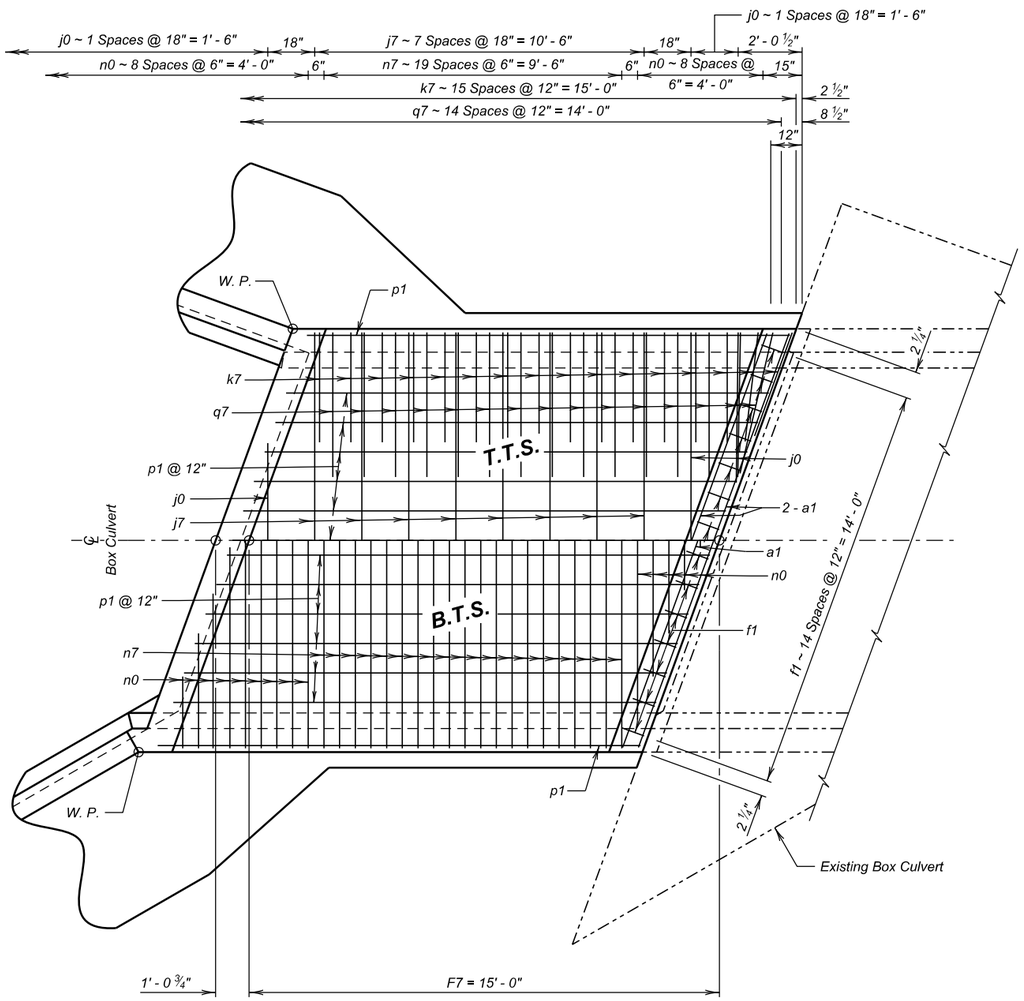
SPECIAL 12' X 12' BOX CULVERT EXTENSION

OVER CREEK — 20° RHF SKEW
STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E
STR. NO. 41-185-086 — PH 0040(346)
HL-93

LAWRENCE COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2024

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson BRIDGE ENGINEER
LAWR089U	089UTA05		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	39	104



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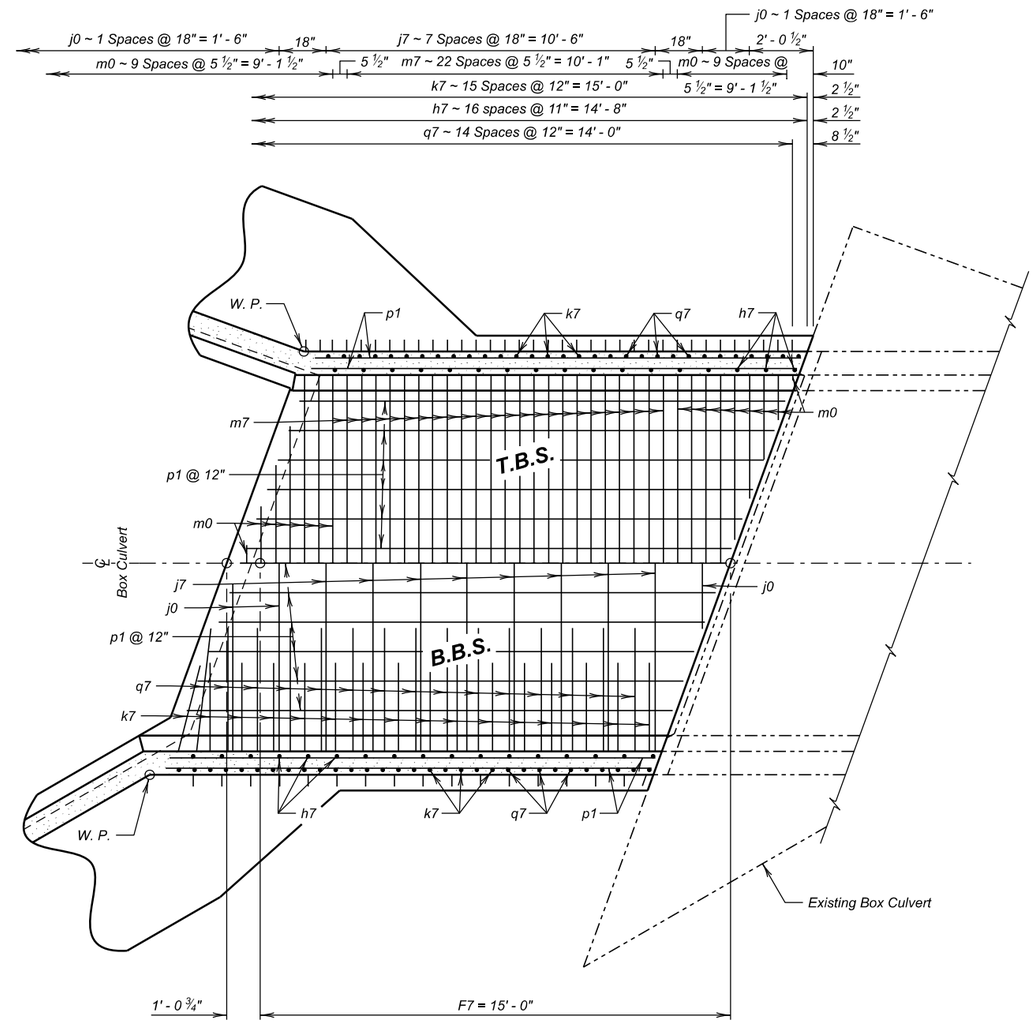


PLAN

F7 BARREL END SECTION DETAILS (15' - 0")(A)

FOR

SPECIAL 12' X 12' BOX CULTERT EXTENSION

OVER CREEK — 20° RHF SKEW

STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E

STR. NO. 41-185-086 — PH 0040(346)

HL-93

LEGEND FOR PLACING RE-STEEL
T.T.S. - Top of Top Slab
B.T.S. - Bottom of Top Slab
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab

LAWRENCE COUNTY

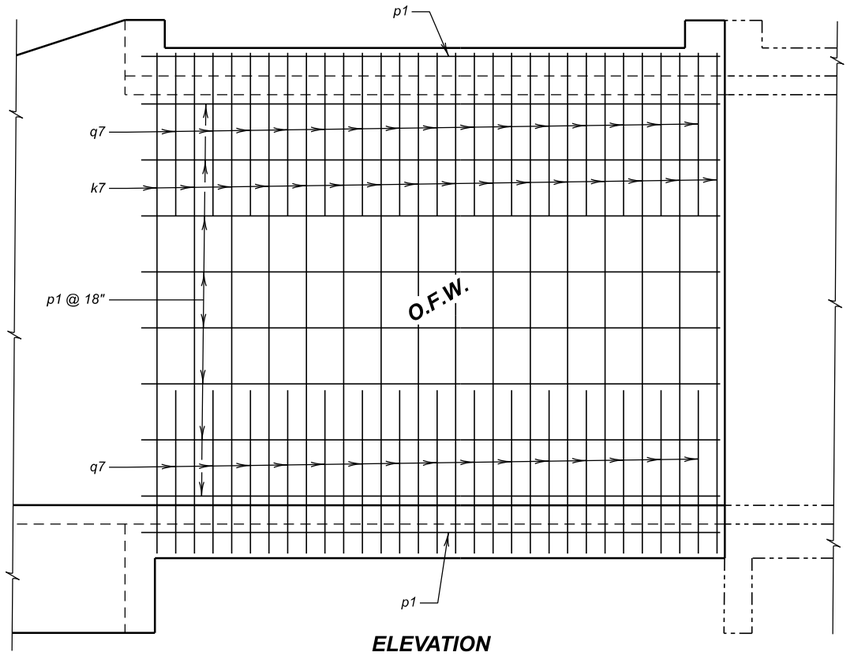
S. D. DEPT. OF TRANSPORTATION

OCTOBER 2024

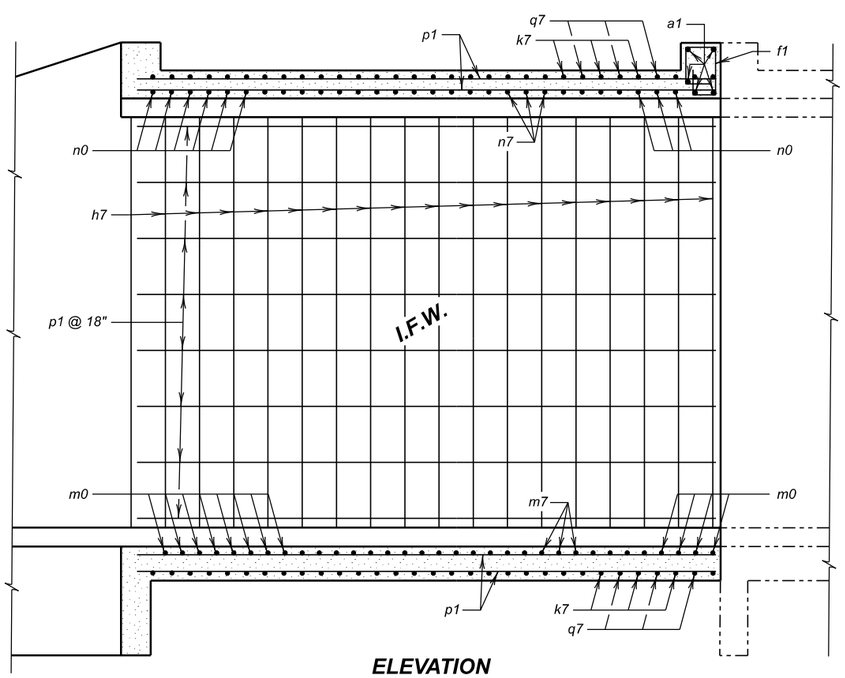
6 OF 9

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A. Johnson
LAWR089U	089UTA06		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	40	104



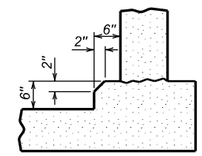
ELEVATION



ELEVATION

LEGEND FOR PLACING RE-STEEL

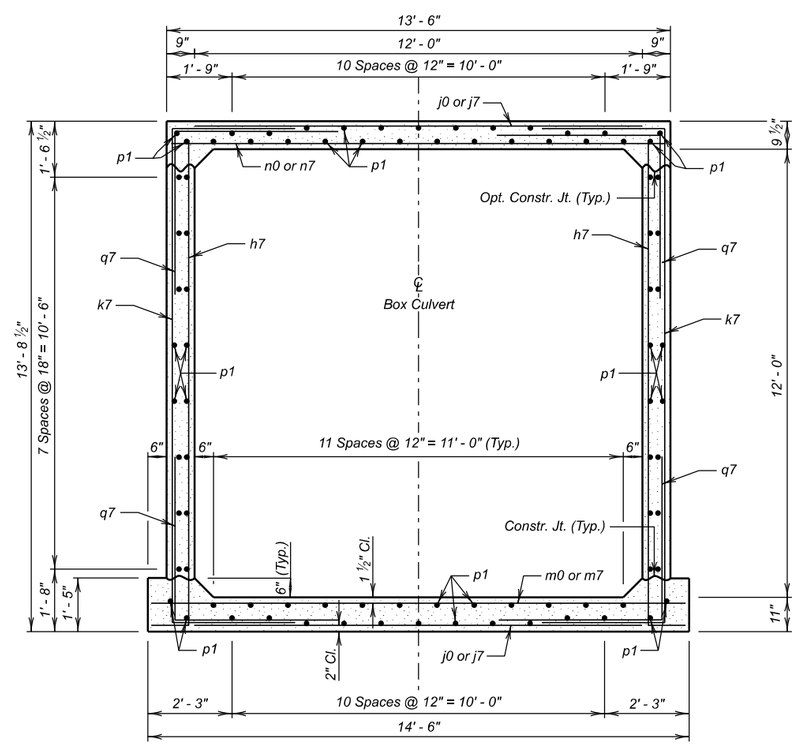
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall



OPTIONAL FILLET DETAIL

(At Bottom Slab)

NOTE: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.



F7 BARREL SECTION

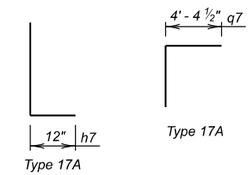
(7' - 0" Maximum Fill)

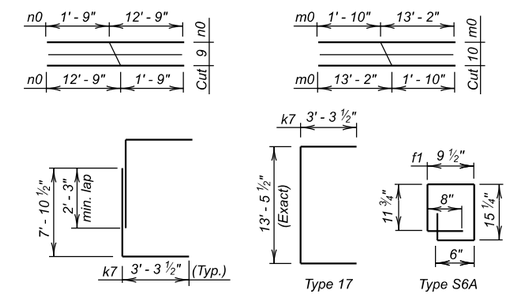
REINFORCING SCHEDULE

(For 1 - F7 Barrel End Section)

Mk.	No.	Size	Length	Type
a1	5	6	14' - 0"	STR
f1	15	4	5' - 0"	S6A
h7	36	5	14' - 0"	17A
j0	4	4	10' - 0"	Str.
j7	16	4	12' - 0"	Str.
k7	32	5	20' - 0"	17
m0	10	6	15' - 0"	Str.
m7	23	6	14' - 3"	Str.
n0	9	6	14' - 6"	Str.
n7	20	6	13' - 3"	Str.
q7	60	5	8' - 9"	17A
p1	86	4	15' - 3"	Str.
* z2	32	6	2' - 3"	Str.

Bending Details





OPTIONAL k7 SPLICE DETAIL

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

NOTES:

All dimensions are out to out of bars.

Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
1 - F7 Barrel End Section @ 15' - 0"	24.3	4239	7.4

F7 BARREL END SECTION DETAILS (15' - 0")(B)

FOR

SPECIAL 12' X 12' BOX CULVERT EXTENSION

OVER CREEK — 20° RHF SKEW

STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E

STR. NO. 41-185-086 — PH 0040(346)

HL-93

LAWRENCE COUNTY

S. D. DEPT. OF TRANSPORTATION

OCTOBER 2024

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson BRIDGE ENGINEER
LAWR089U	089UTA07		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0040(346)	41	104

GENERAL NOTES

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

Use 1 ½ inch clear cover on all reinforcing steel except as shown.

Maximum fill over cover will be 3 feet.

Apply a thin layer of grout between box culvert and cover to ensure uniform bearing. Grout will conform to Section 460.2 K.

INSTALLING DOWELS IN CONCRETE

Holes drilled in the existing concrete will be true and normal or as shown in the plans. Care will be taken not to damage the existing reinforcing steel shown in the oiginal construction plans may have been placed out of position during original construction. Therefore, prior to drilling holes in the concrete, an effort will be made by the Department forces to mark locations of the in place reinforcing steel on the concrete surface. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel.

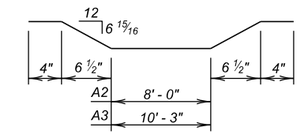
Embed z3 dowels 9 inches into existing concrete.

REINFORCING SCHEDULE
(For One Cover)

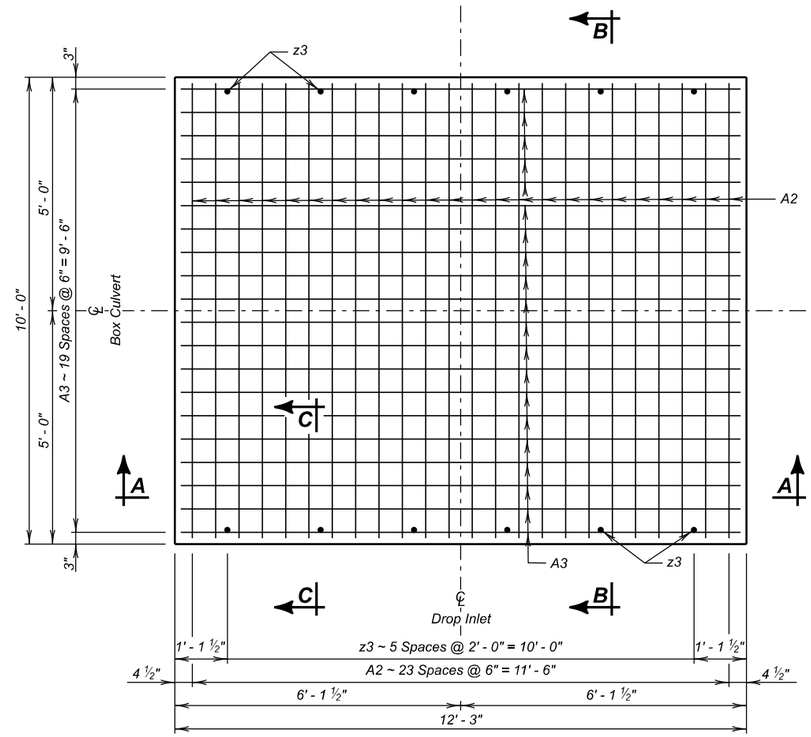
Mk.	No.	Size	Length	Type
A2	24	4	9' - 11"	14A
A3	20	4	12' - 2"	14A
✳ z3	12	4	1' - 3"	Str.

✳ Dowel Bar

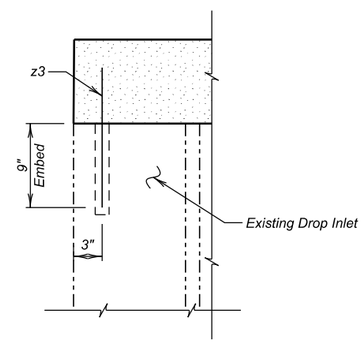
Bending Details



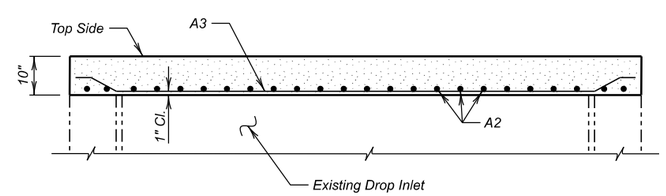
Type 14A



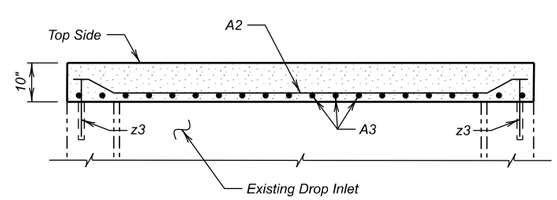
PLAN



SECTION C - C



SECTION A - A



SECION B - B

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	3.8
✳ Reinforcing Steel	Lb.	322
Install Dowel in Concrete	Each	12

✳ Quantity of z3 Dowel Bars is not included in Reinforcing Steel

PERMANENT 10' X 12.25' DROP INLET COVER

FOR

SPECIAL 12' X 12' BOX CULVERT EXTENSION

OVER CREEK — 20° RHF SKEW

STA. 162 + 70.00 EBL — SEC. 18-T6N-R4E

STR. NO. 41-185-086 — PH 0040(346)

HL-93

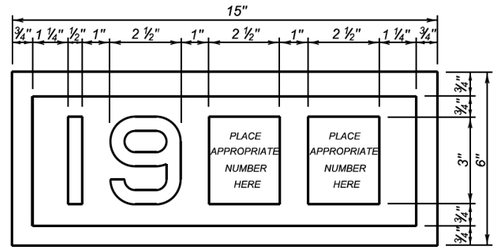
LAWRENCE COUNTY

S. D. DEPT. OF TRANSPORTATION

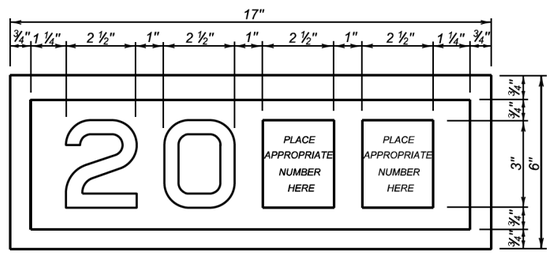
OCTOBER 2024

DESIGNED BY	CHECKED BY	DRAWN BY	
ER	SD	CK	Steve A Johnson BRIDGE ENGINEER
LAWR089U	089UTA08		

YEAR PLATE DETAILS FOR ORIGINAL CONSTRUCTION

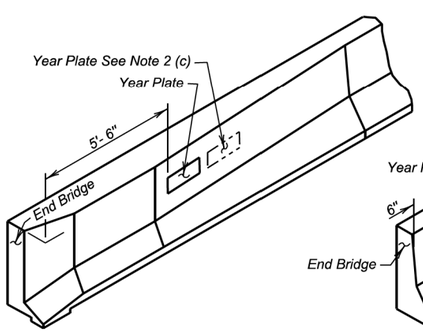


YEAR PLATE DETAILS FOR NEW CONSTRUCTION

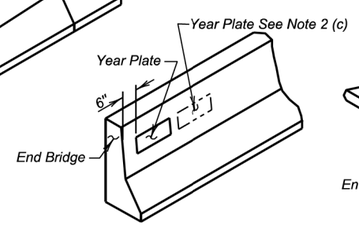


GENERAL NOTES:

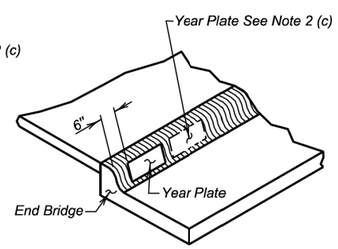
1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (½) inch in depth.
2. Year plates shall be located on structure(s) as follows:
   a. On cast-in-place box culverts the year plates shall be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
   b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'- 6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



JERSEY BARRIER
(With Endblock)



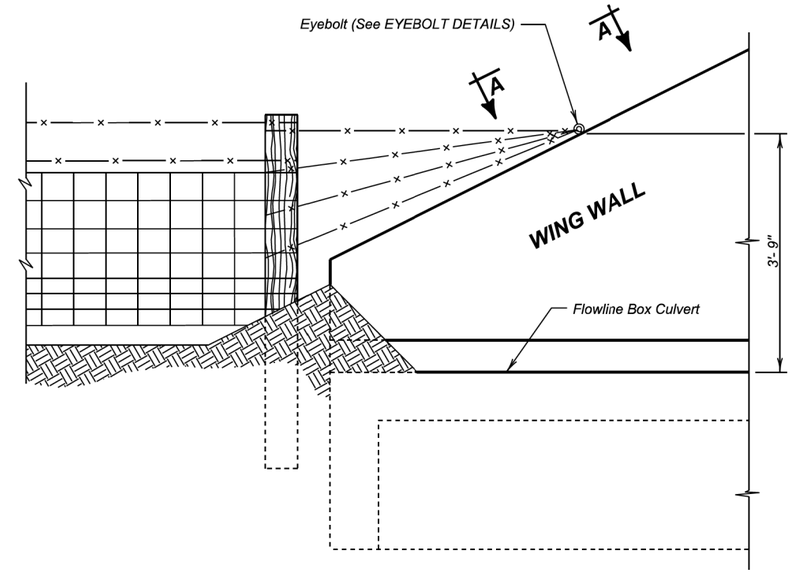
JERSEY BARRIER



TYPE B CURB

June 26, 2012

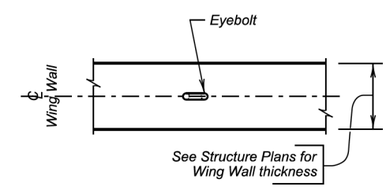
Published Date: 2026	SDDOT	DUAL DATE YEAR PLATE DETAILS	PLATE NUMBER 460.03
			Sheet 1 of 1



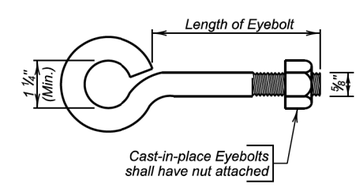
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be ⅝ inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 ½ inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the ⅝ inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



EYEBOLT DETAILS

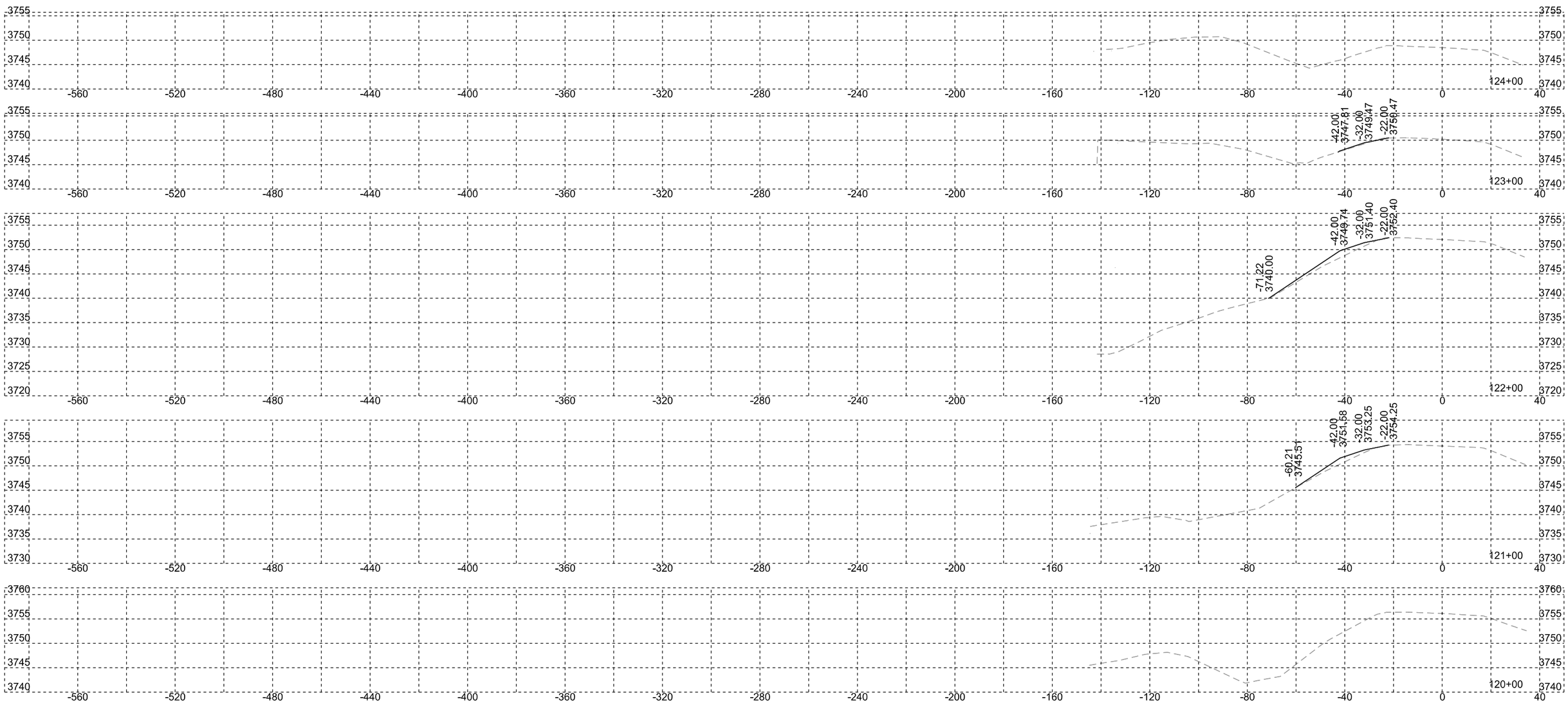
December 23, 2012

Published Date: 2026	SDDOT	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1

Westbound

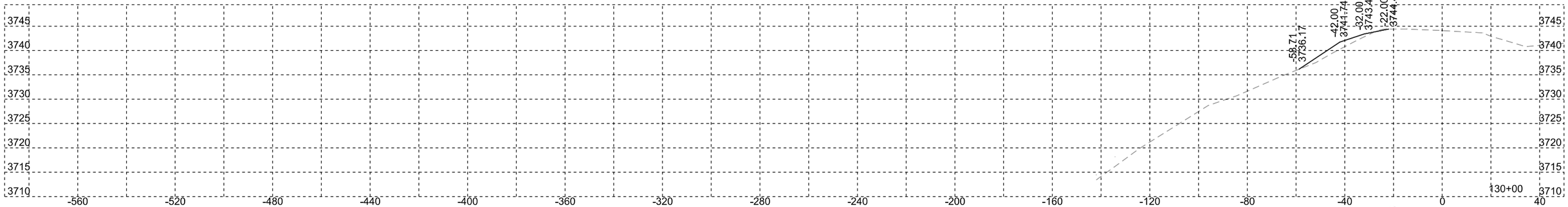
SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	43/104

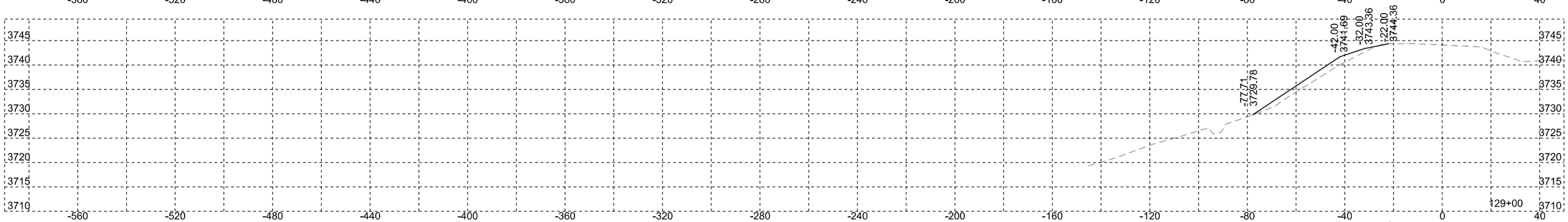
Plotting Date: 1/8/2026

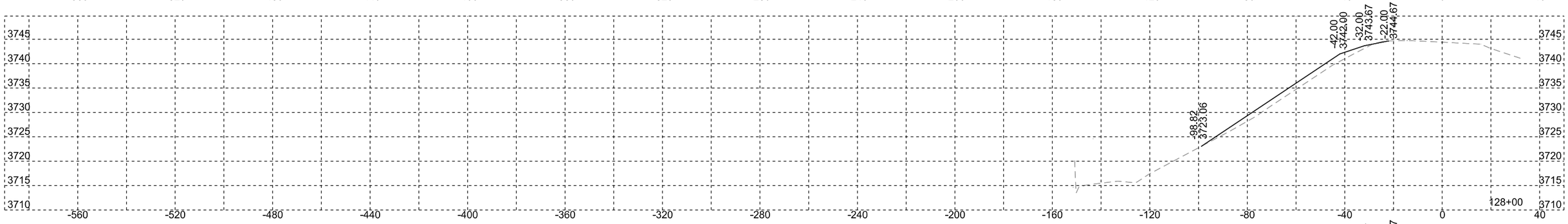


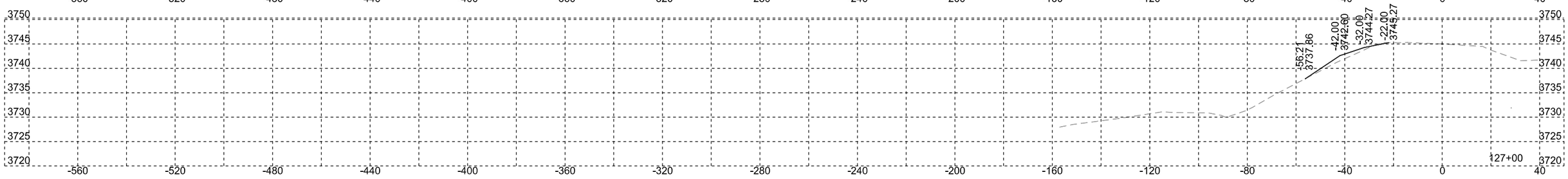
Westbound

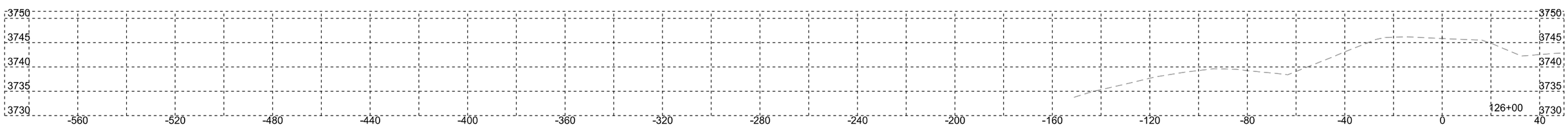
SD DOT	PROJECT	SECTION	SHEET
Plotting Date: 1/8/2026	PH 0040(346)	Non	44/104



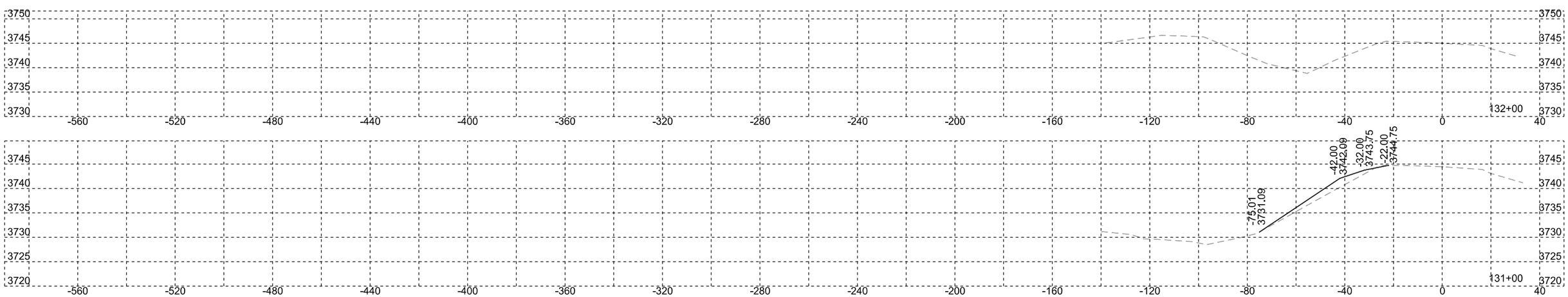








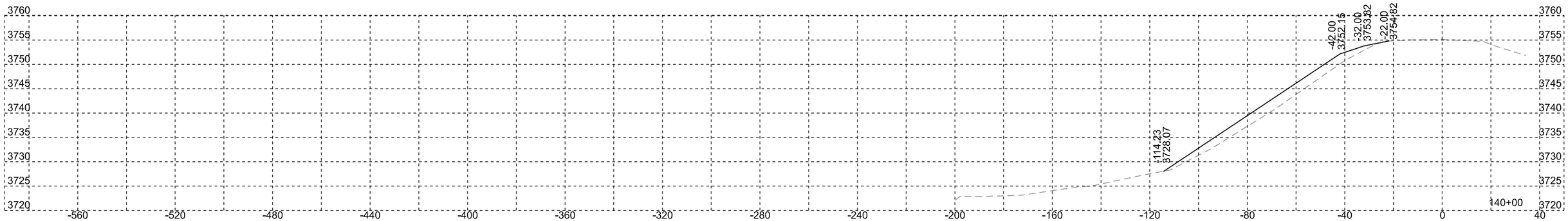
Westbound

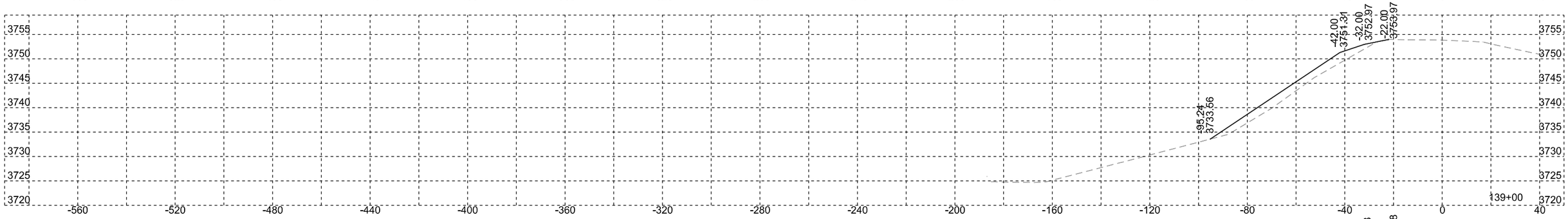

3750
3745
3740
3735
3730
-560
-520
-480
-440
-400
-360
-320
-280
-240
-200
-160
-120
-80
-40
0
40
132+00
3745
3740
3735
3730
3725
3720
-75.01
3731.09
-42.00
3742.09
-32.00
3743.75
-22.00
3744.75
131+00

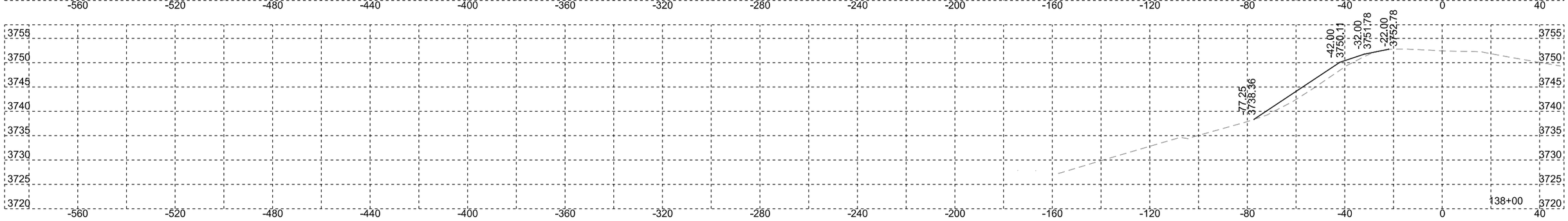
Westbound

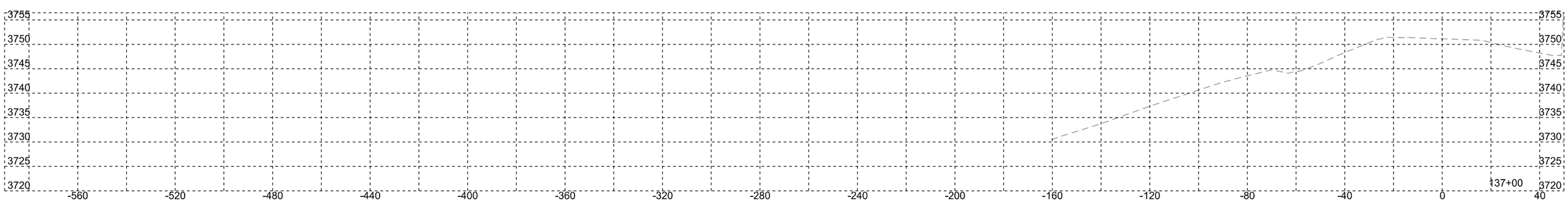
SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	46/104

Plotting Date: 1/8/2026





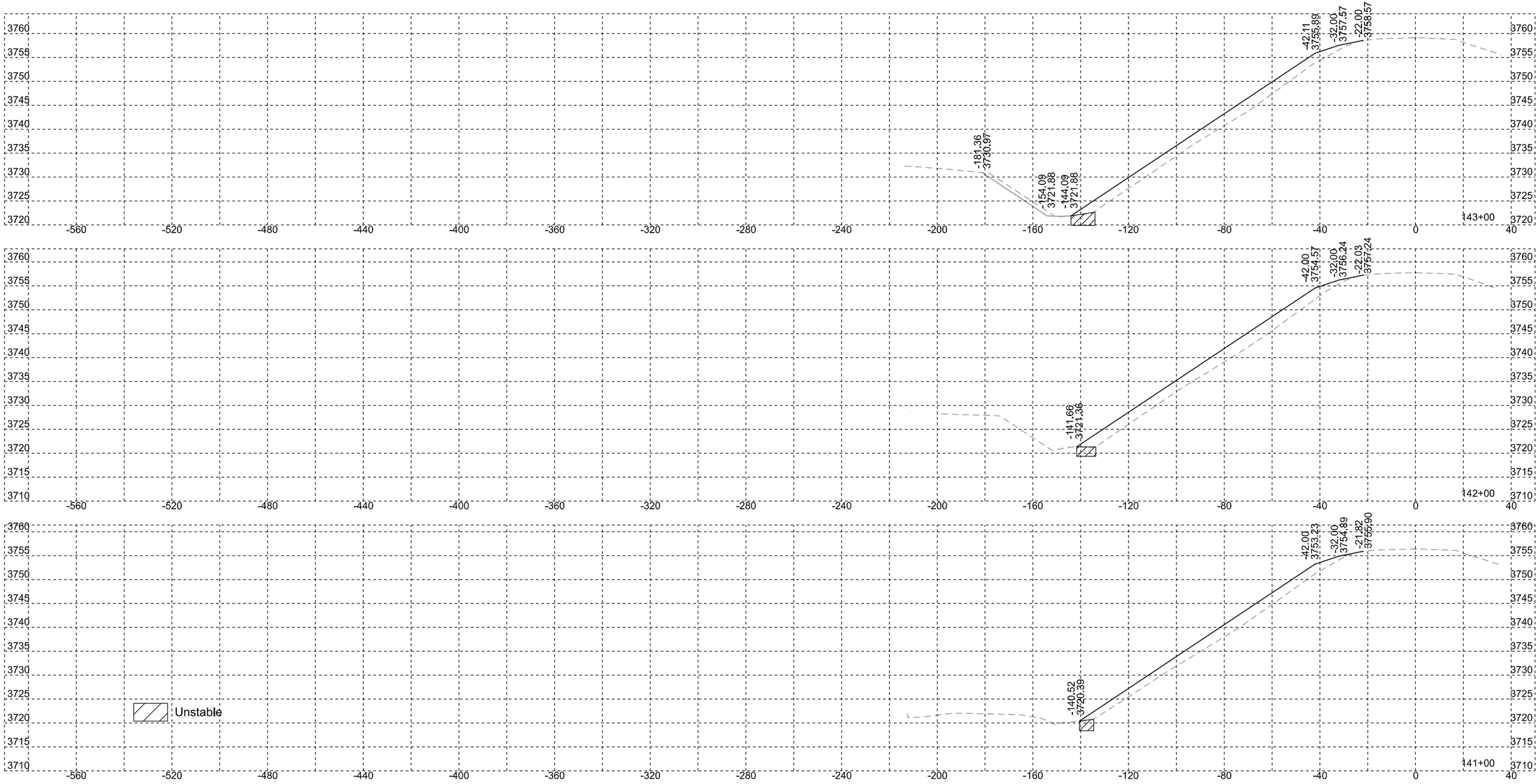




Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	47/104

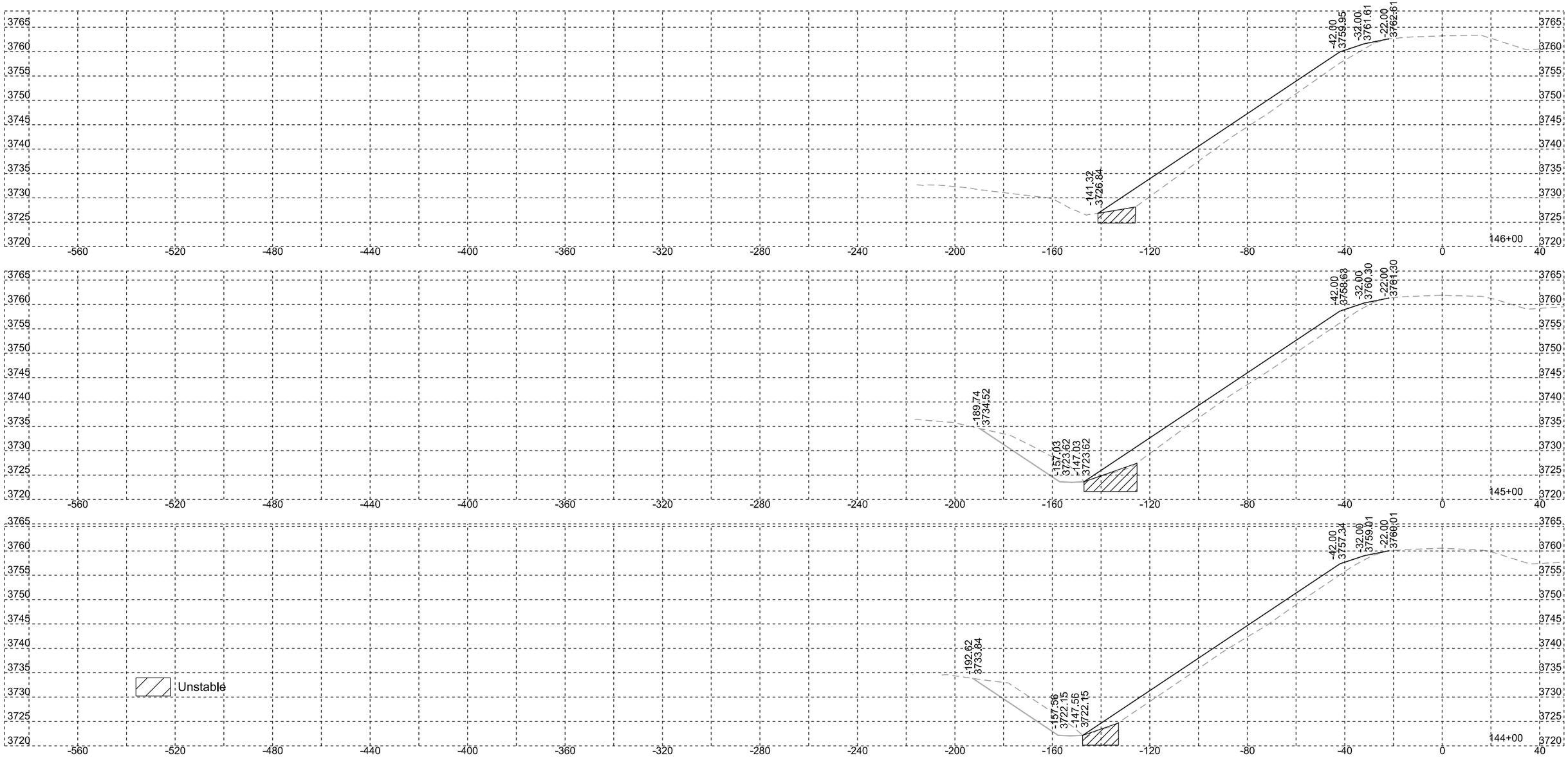
Plotting Date: 1/8/2026



Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	48/104

Plotting Date: 1/8/2026

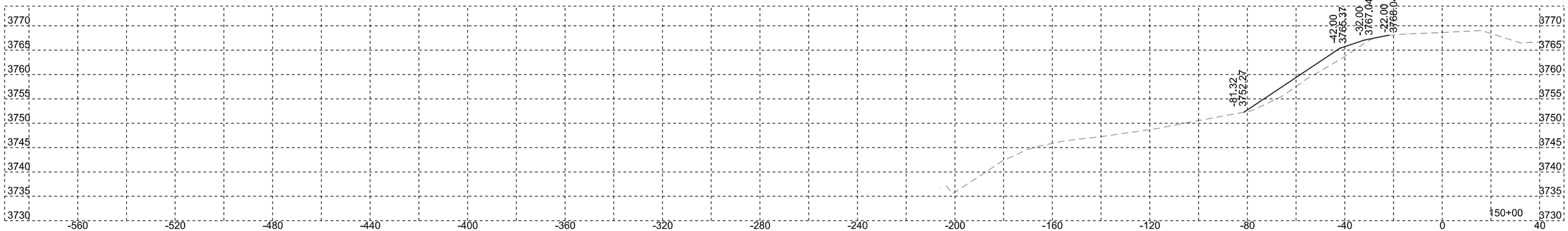


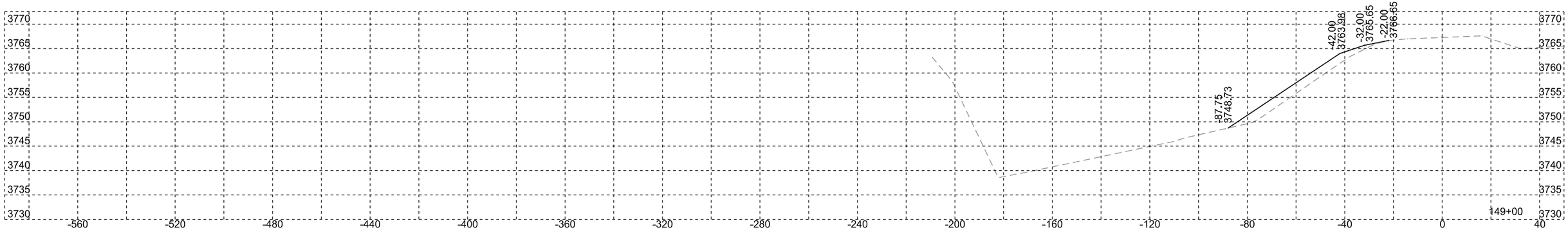
Plotted From - TRRC11610 File - ...\Open Roads\089U_XS.dgn

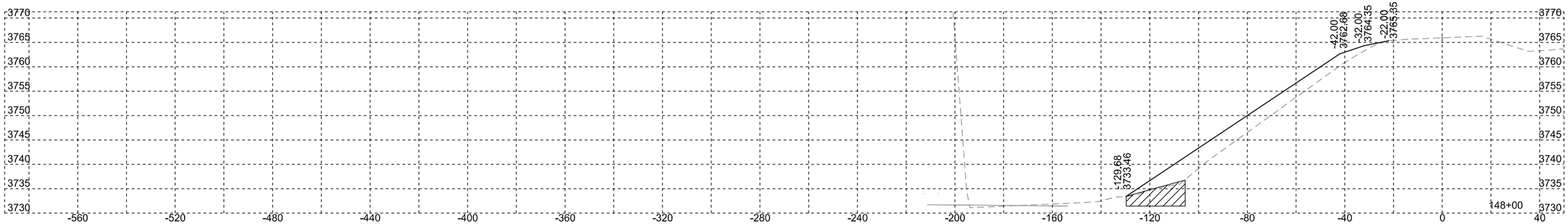
Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	49/104

Plotting Date: 1/8/2026



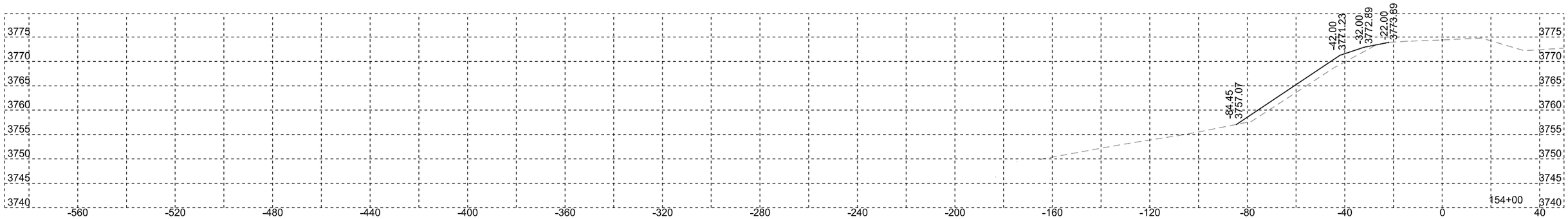


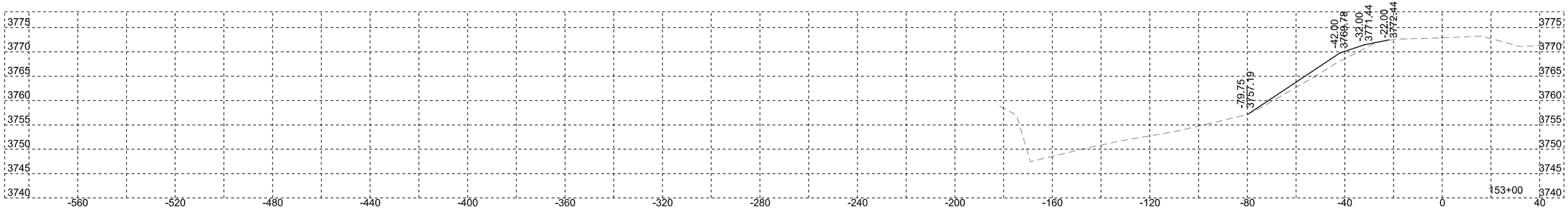


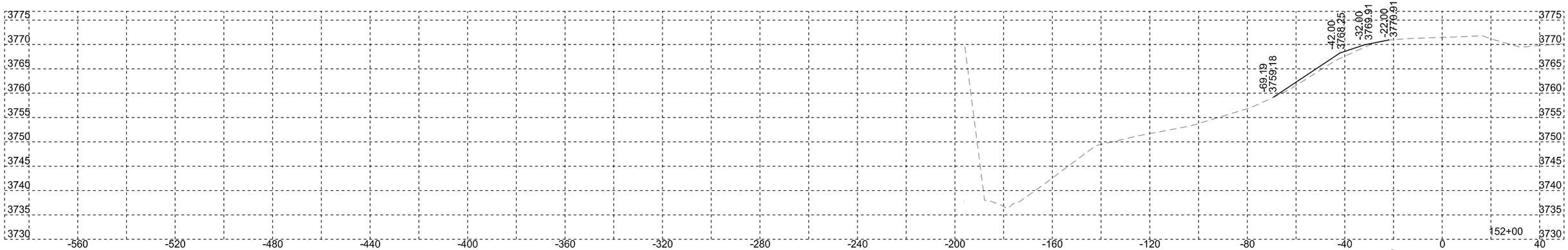
Westbound

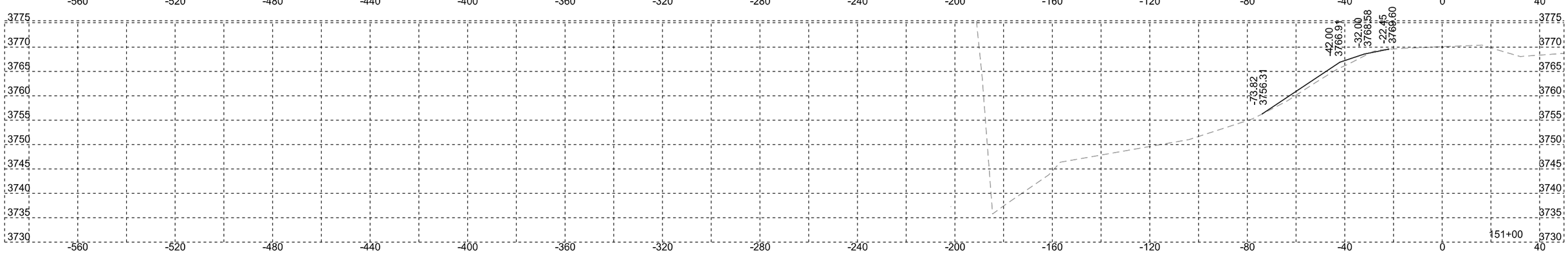
SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	50/104

Plotting Date: 1/8/2026





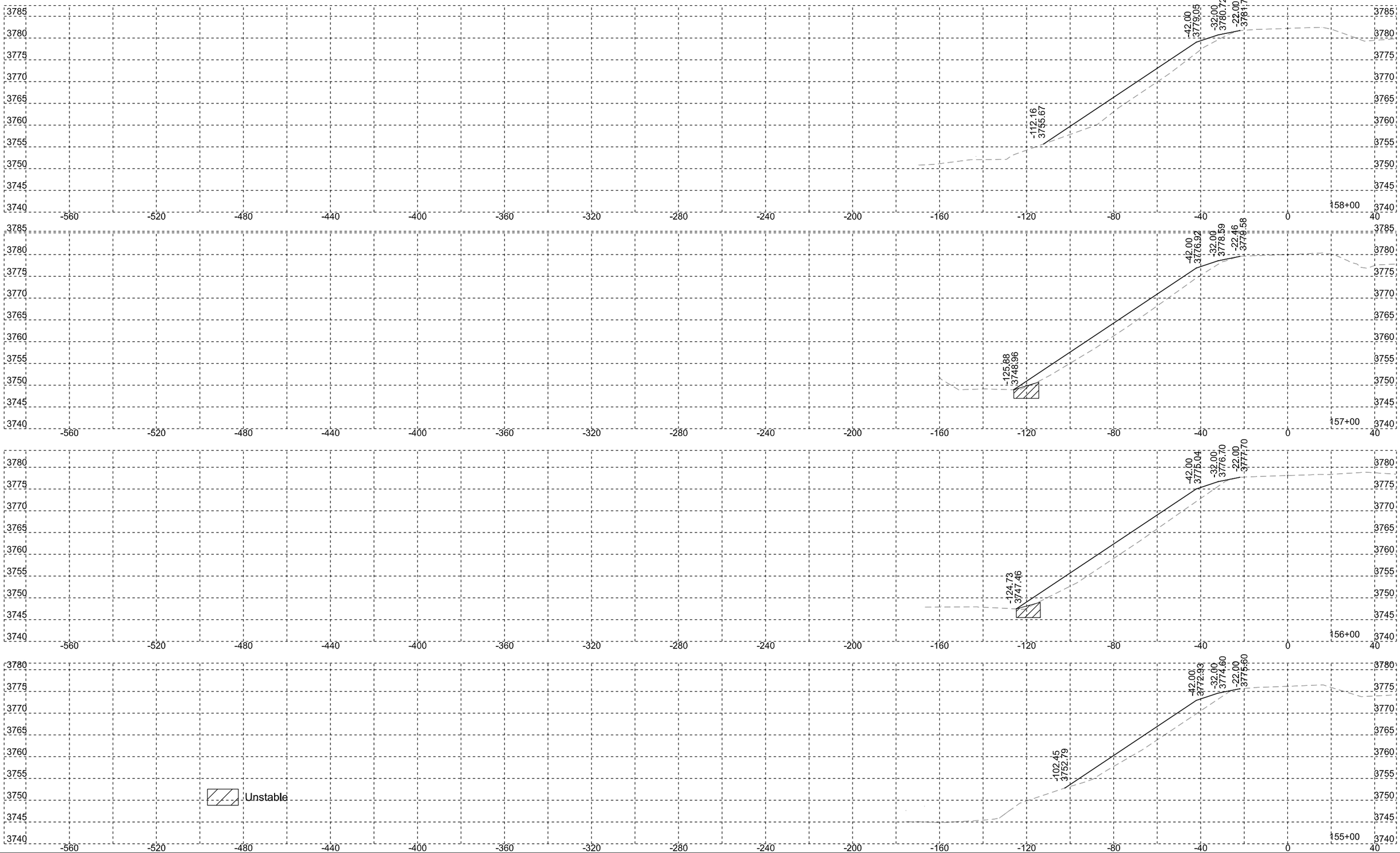




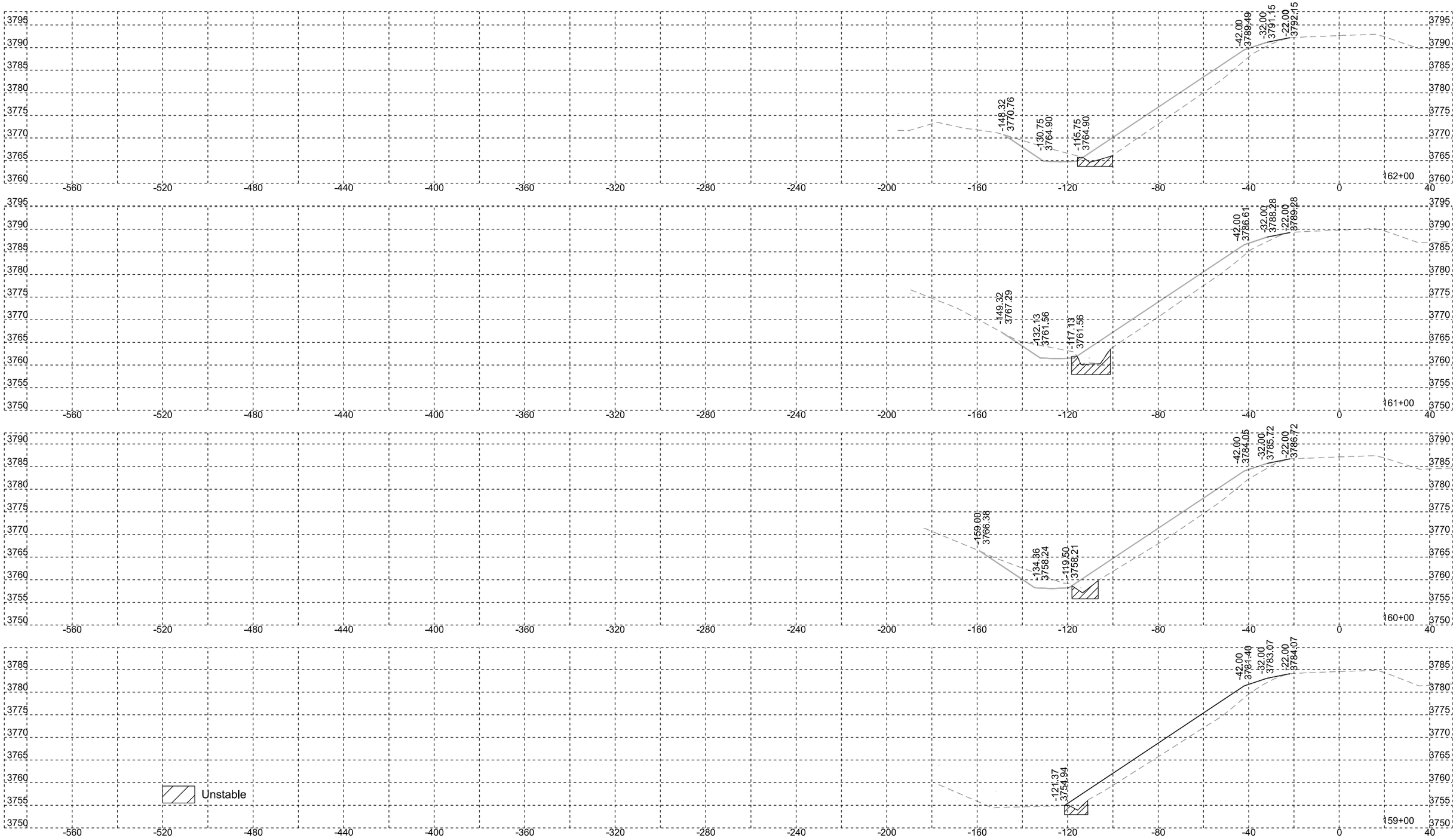
Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	51/104

Plotting Date: 1/8/2026



Westbound


-148.32
3770.76
-130.75
3764.90
-115.75
3764.90
-42.00
3789.49
-32.00
3791.15
-22.00
3792.15
162+00
-149.32
3767.29
-132.13
3761.56
-117.13
3761.56
-42.00
3786.61
-32.00
3788.28
-22.00
3789.28
161+00
-159.00
3766.38
-134.36
3758.24
-119.50
3758.21
-42.00
3784.05
-32.00
3785.72
-22.00
3786.72
160+00
-121.37
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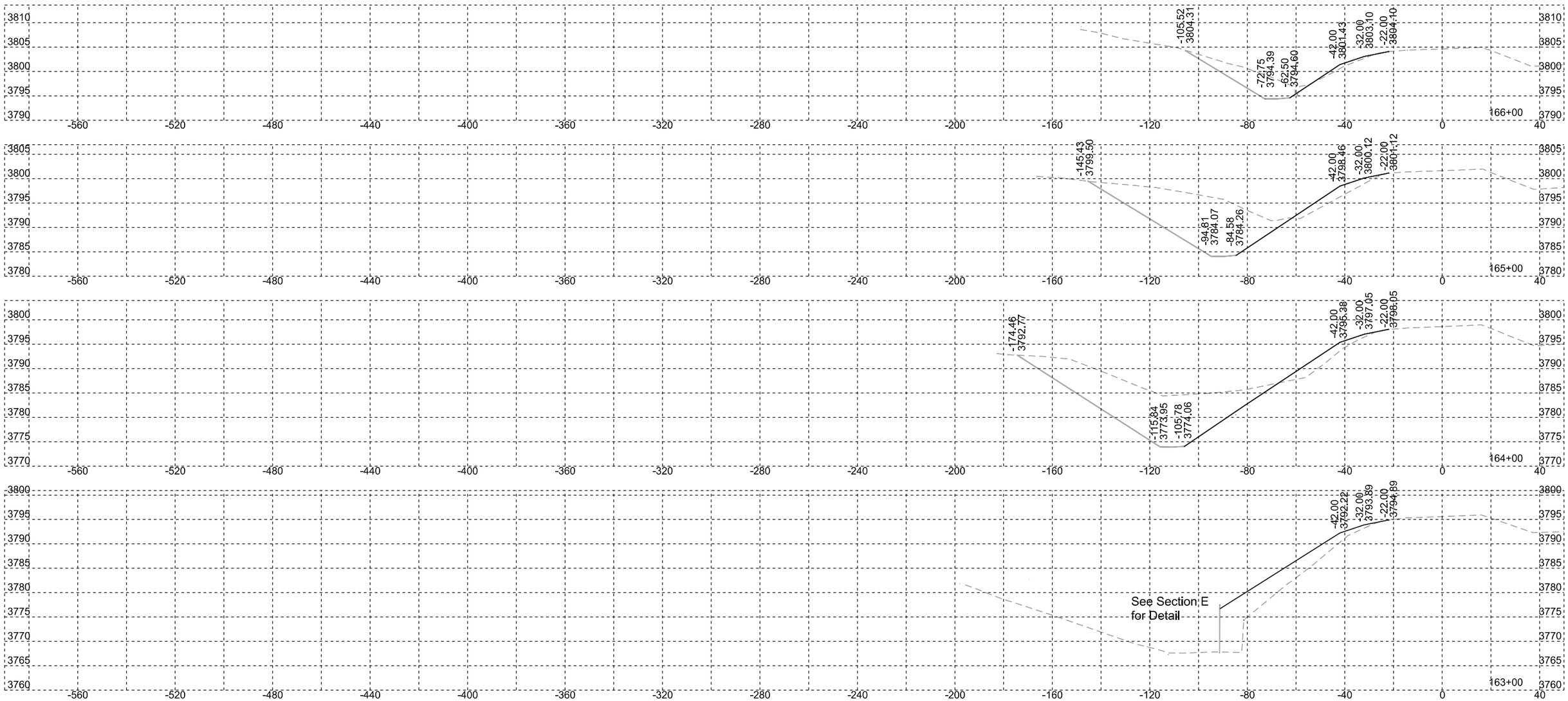
-42.00
3781.40
-32.00
3783.07
-22.00
3784.07
159+00
Unstable

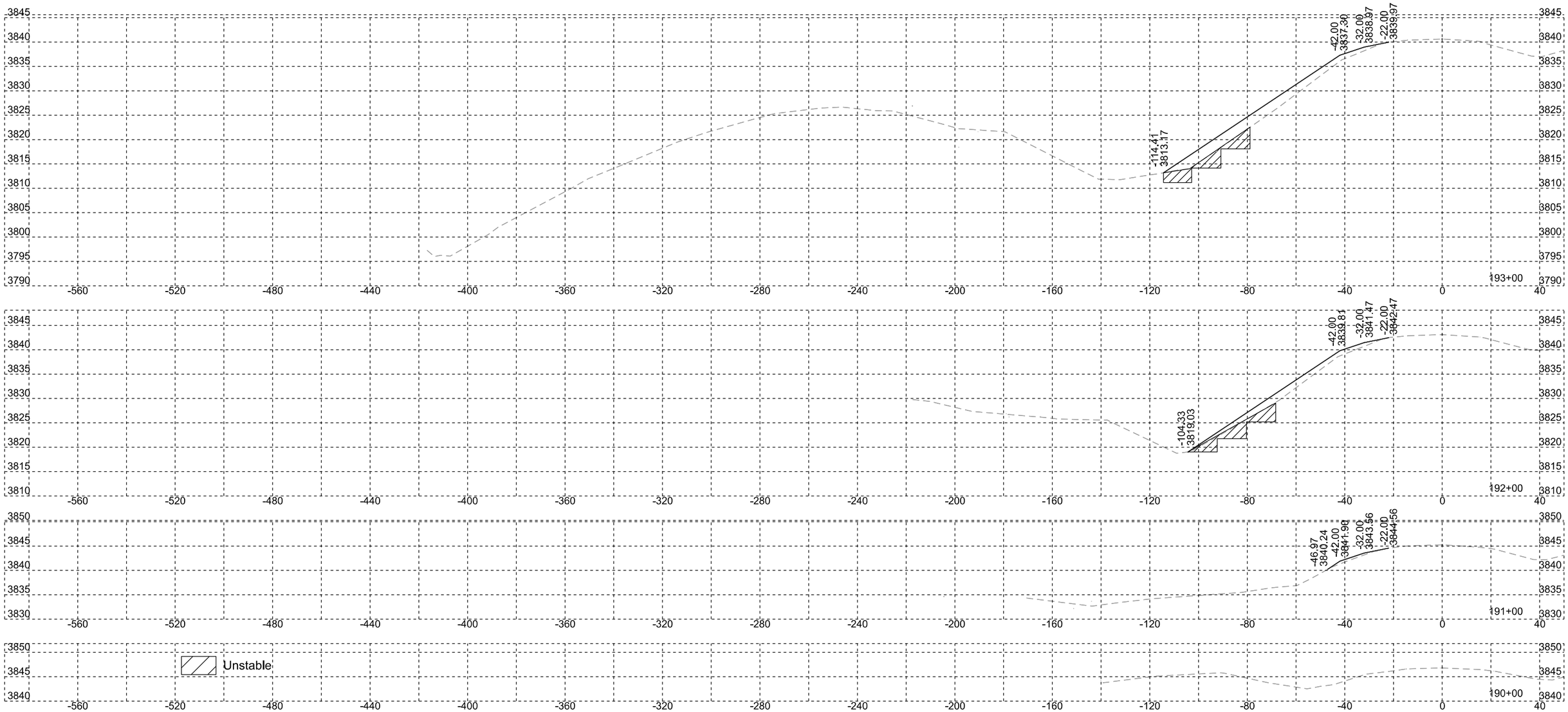
Westbound


-105.52
3804.31
-72.75
3794.39
-62.50
3794.60
-42.00
3801.43
-32.00
3803.10
-22.00
3804.10
166+00
-145.43
3799.50
-94.81
3784.07
-84.58
3784.26
-42.00
3798.46
-32.00
3800.12
-22.00
3801.12
165+00
-174.46
3792.77
-115.84
3773.95
-105.78
3774.06
-42.00
3796.38
-32.00
3797.05
-22.00
3798.05
164+00
-42.00
3792.22
-32.00
3793.89
-22.00
3794.89
See Section E
for Detail
163+00

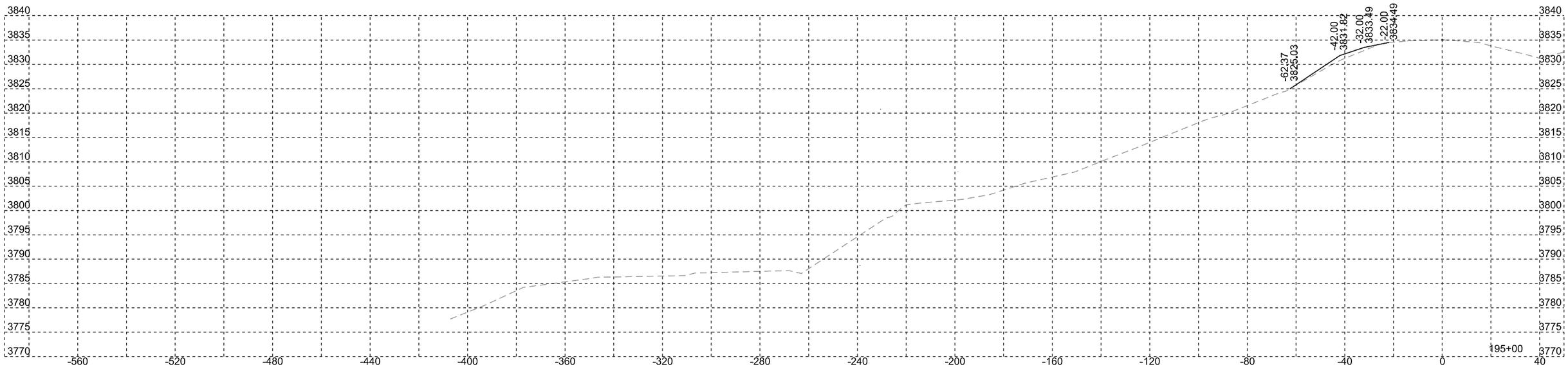
Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	54/104

Plotting Date: 1/8/2026



Westbound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3780
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3770
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-520
-480
-440
-400
-360
-320
-280
-240
-200
-160
-120
-80
-40
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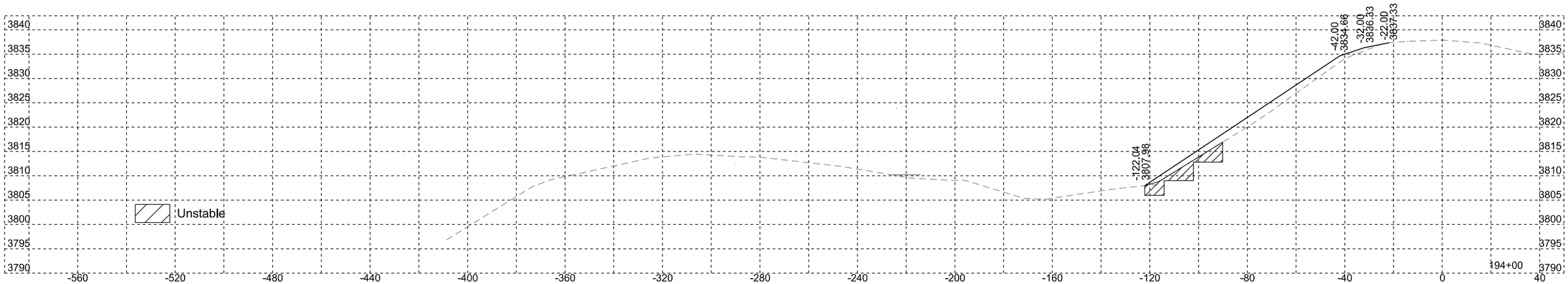
-22.00
3834.49
195+00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3805
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-560
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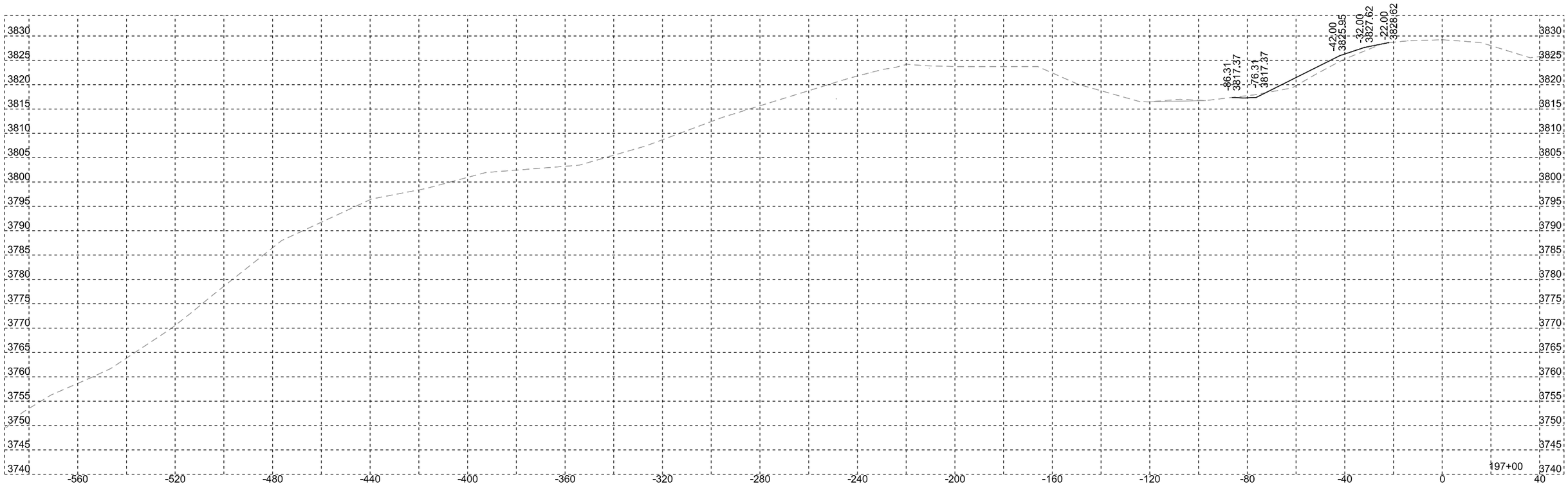
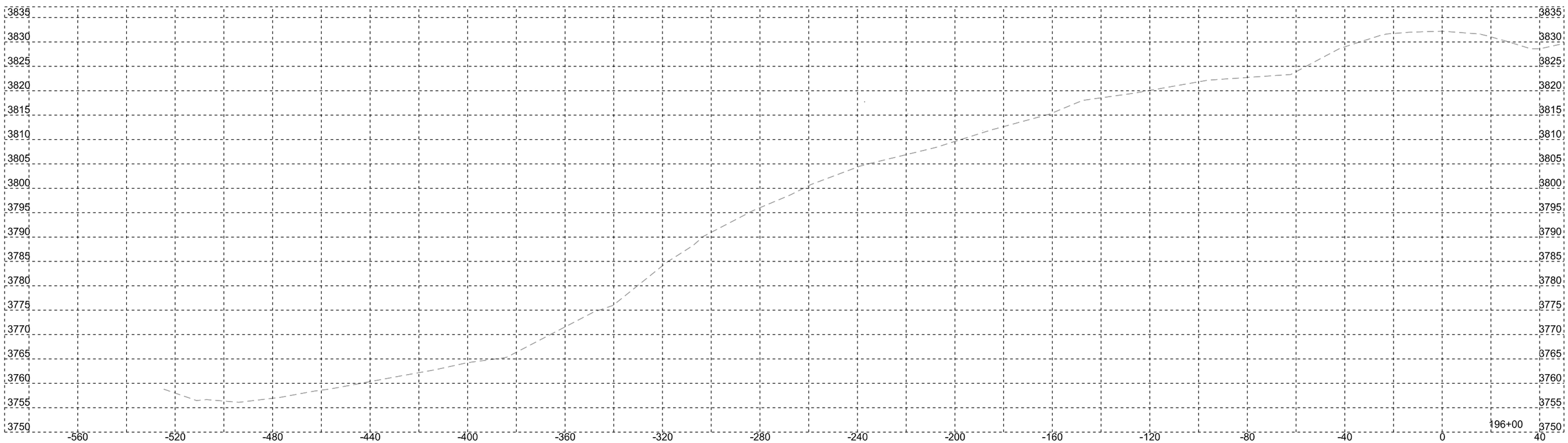
-40
0
40
-122.04
3807.98
-42.00
3834.66
-32.00
3836.33
-22.00
3837.33
194+00
Unstable

Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	56/104

Plotting Date: 1/8/2026

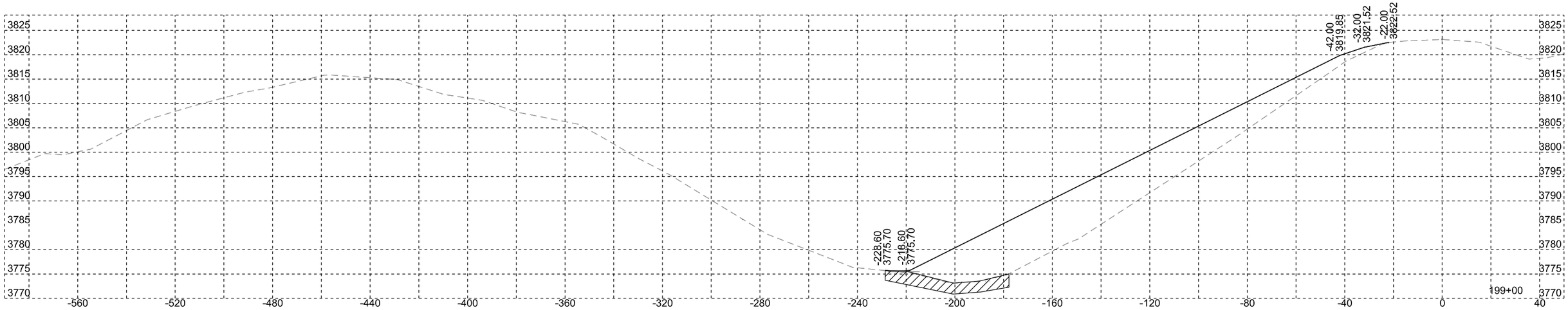


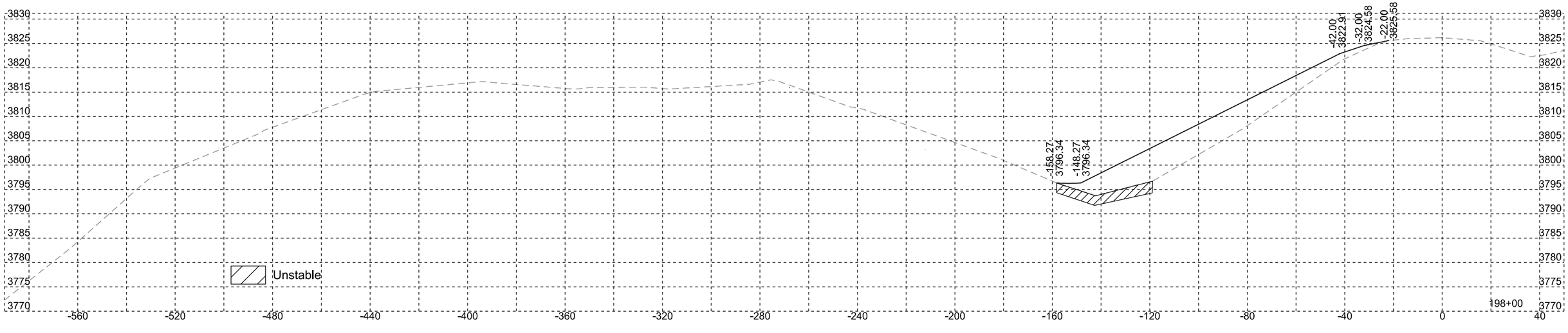


SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	57/104

Plotting Date: 1/8/2026

Westbound

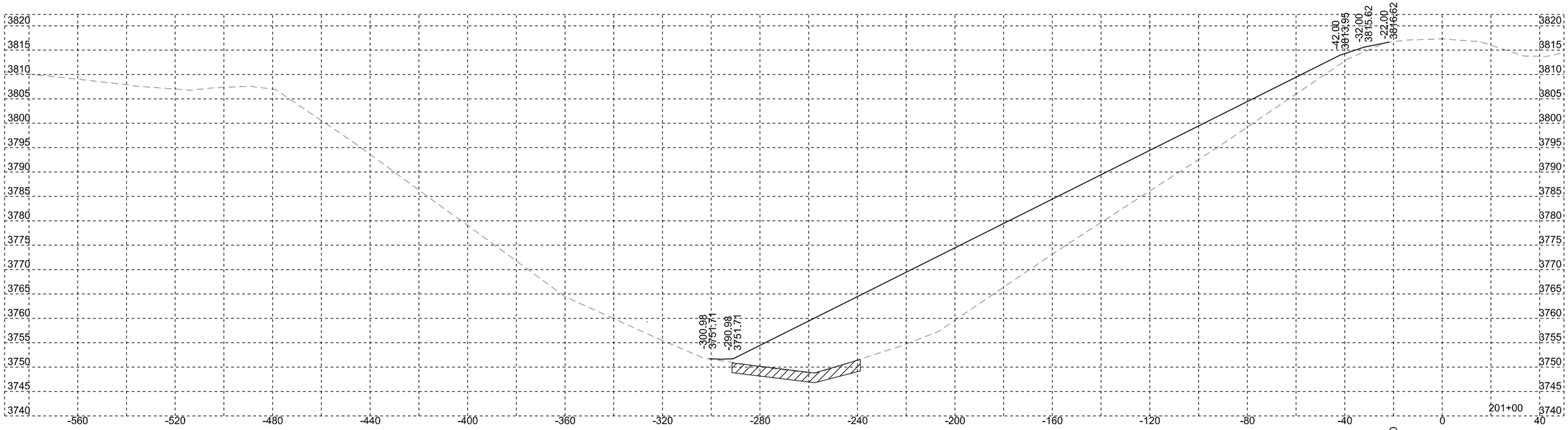


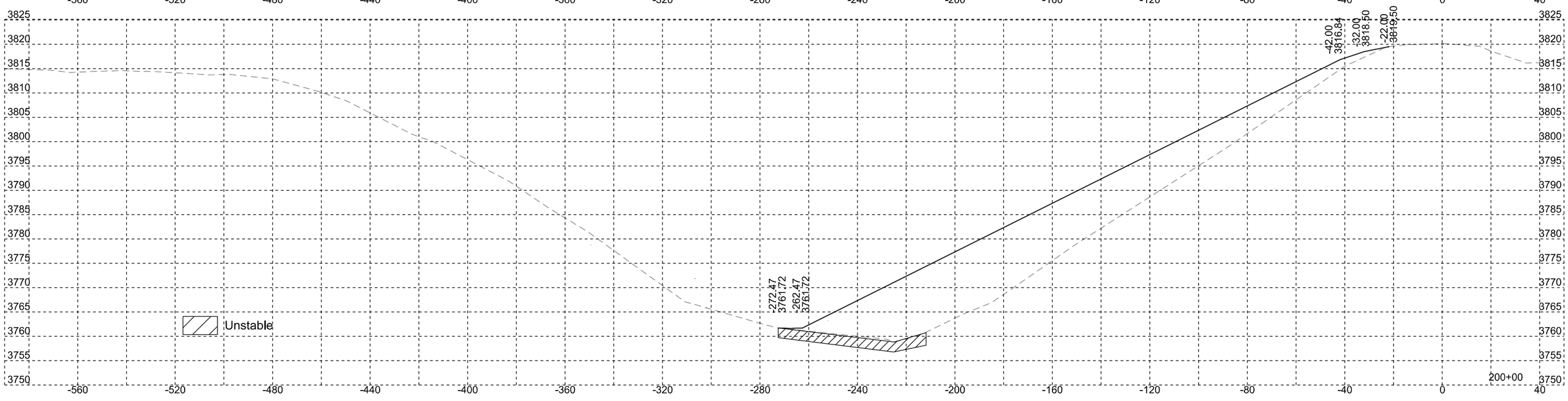


Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	58/104

Plotting Date: 1/8/2026

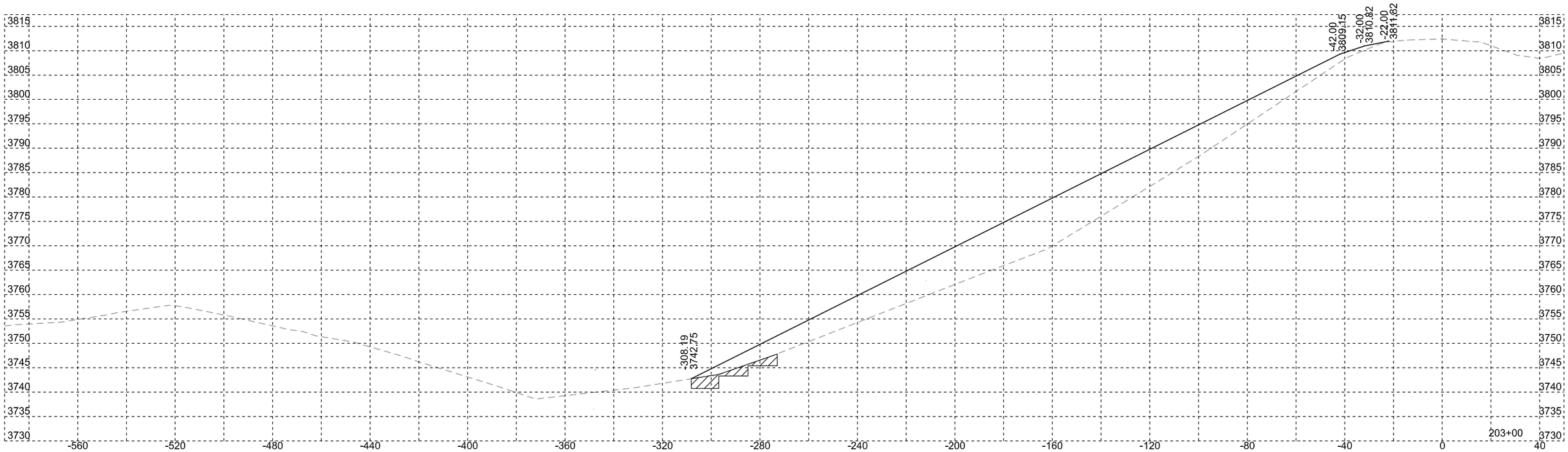


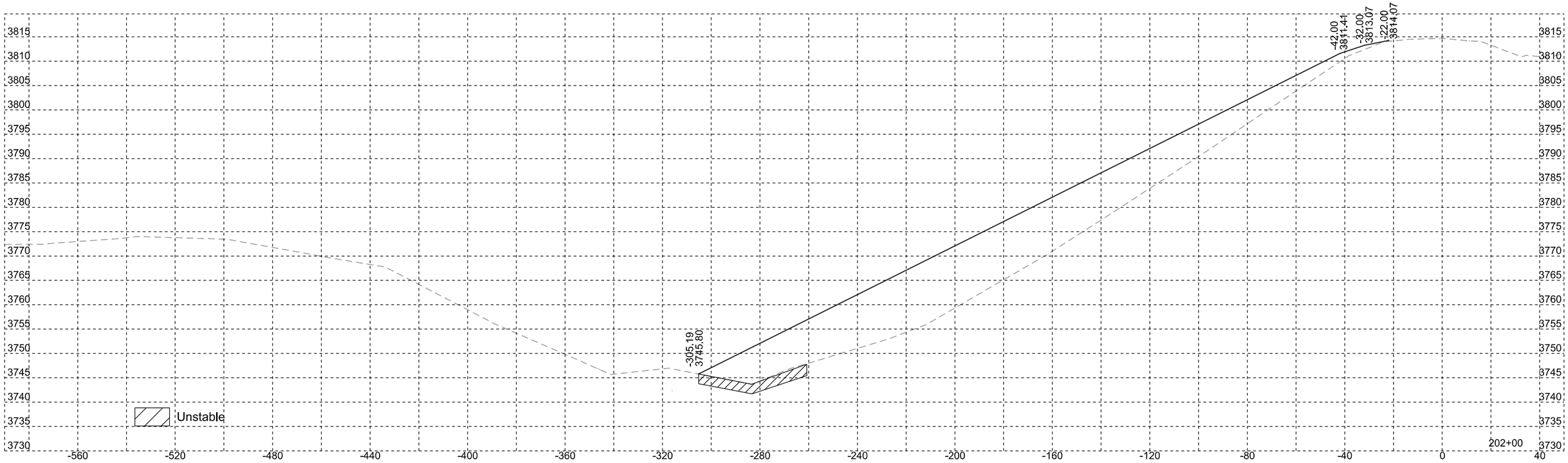


SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	59/104

Plotting Date: 1/8/2026

Westbound

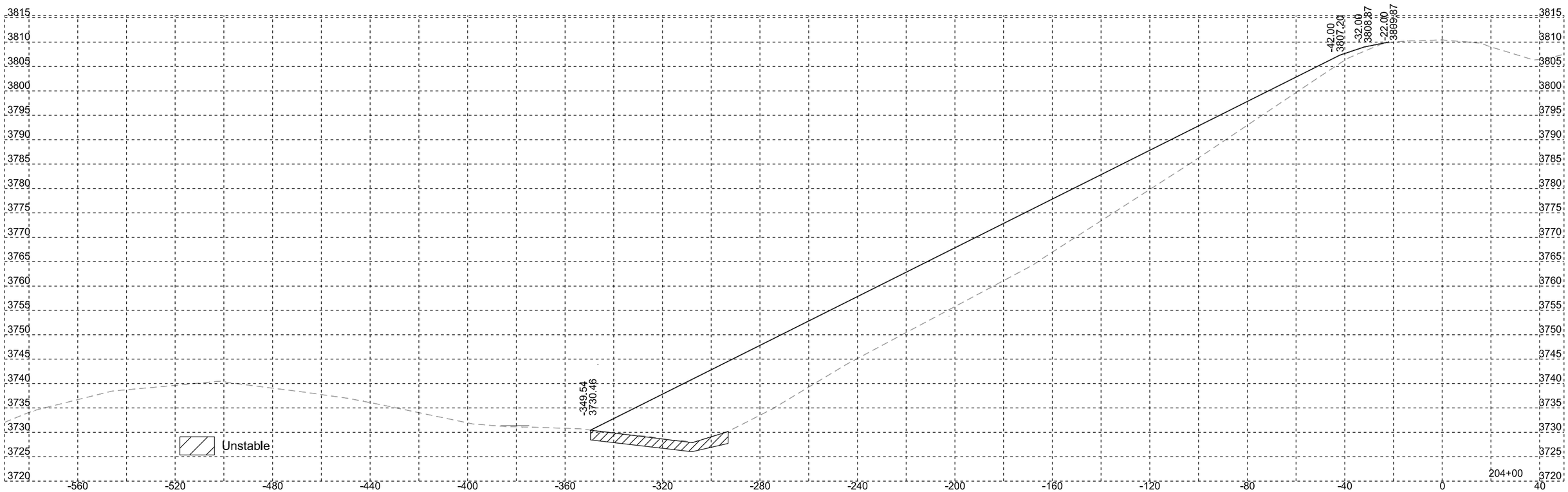




SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	60/104

Plotting Date: 1/8/2026

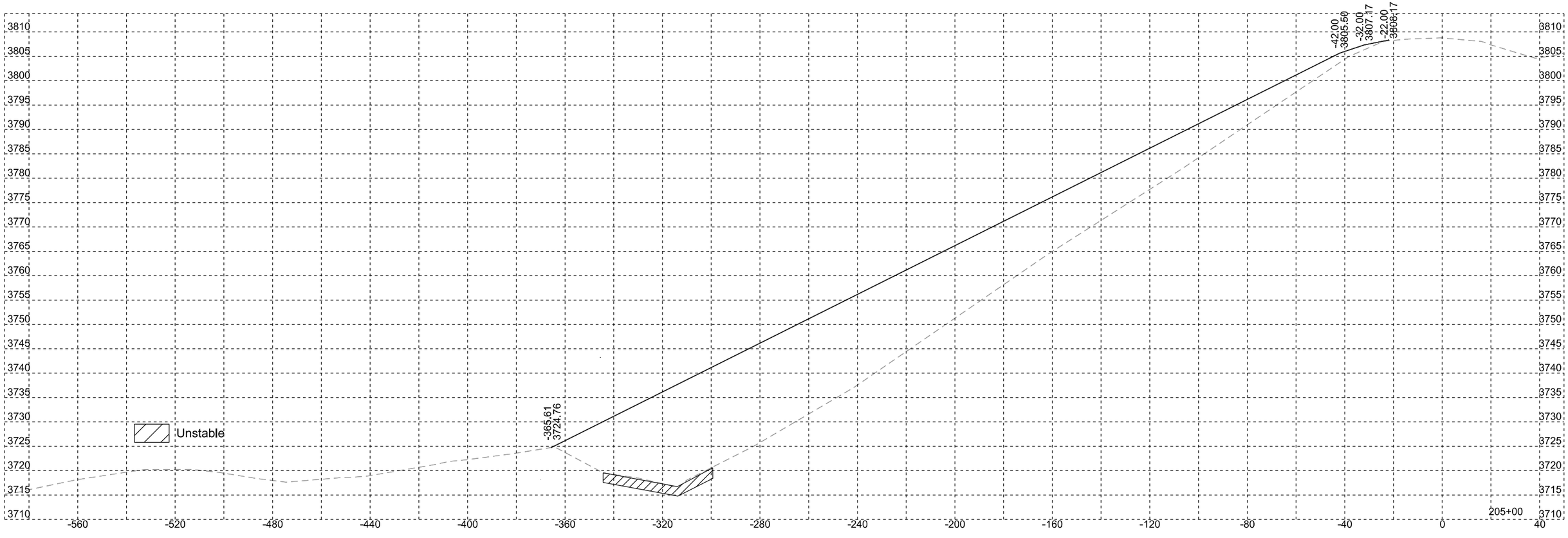
Westbound



SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	61/104

Plotting Date: 1/8/2026

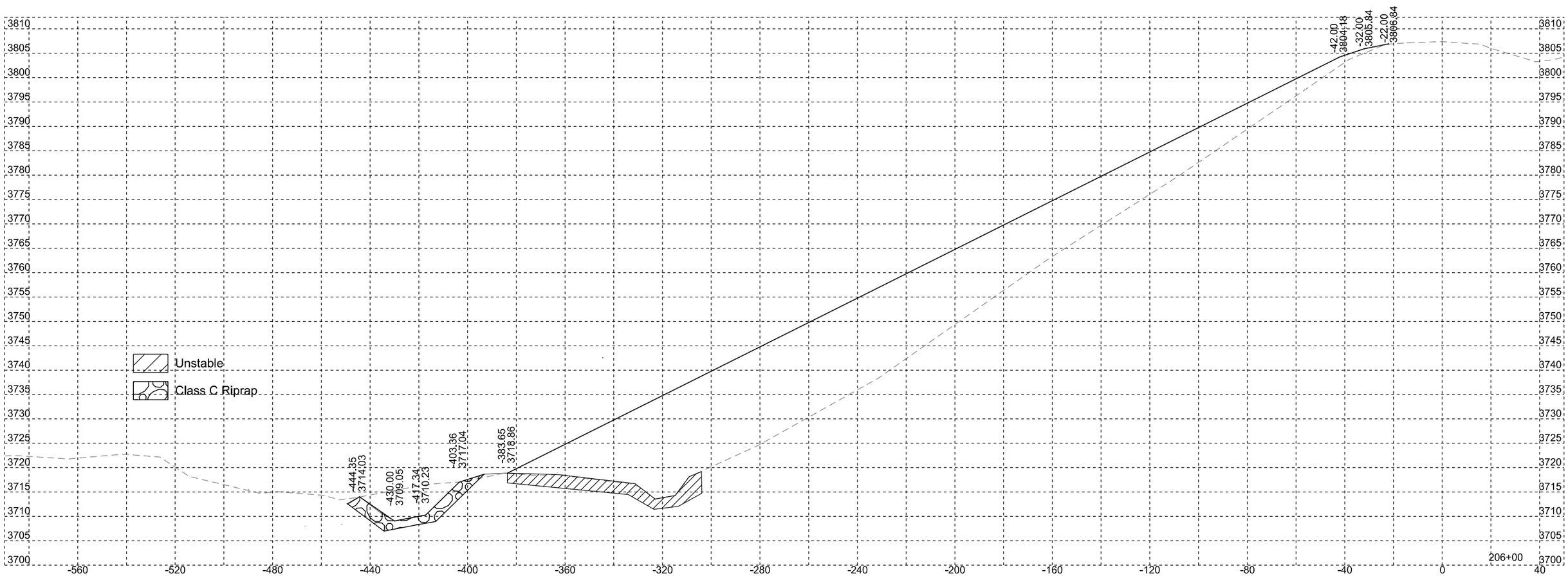
Westbound



Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	62/104

Plotting Date: 1/8/2026

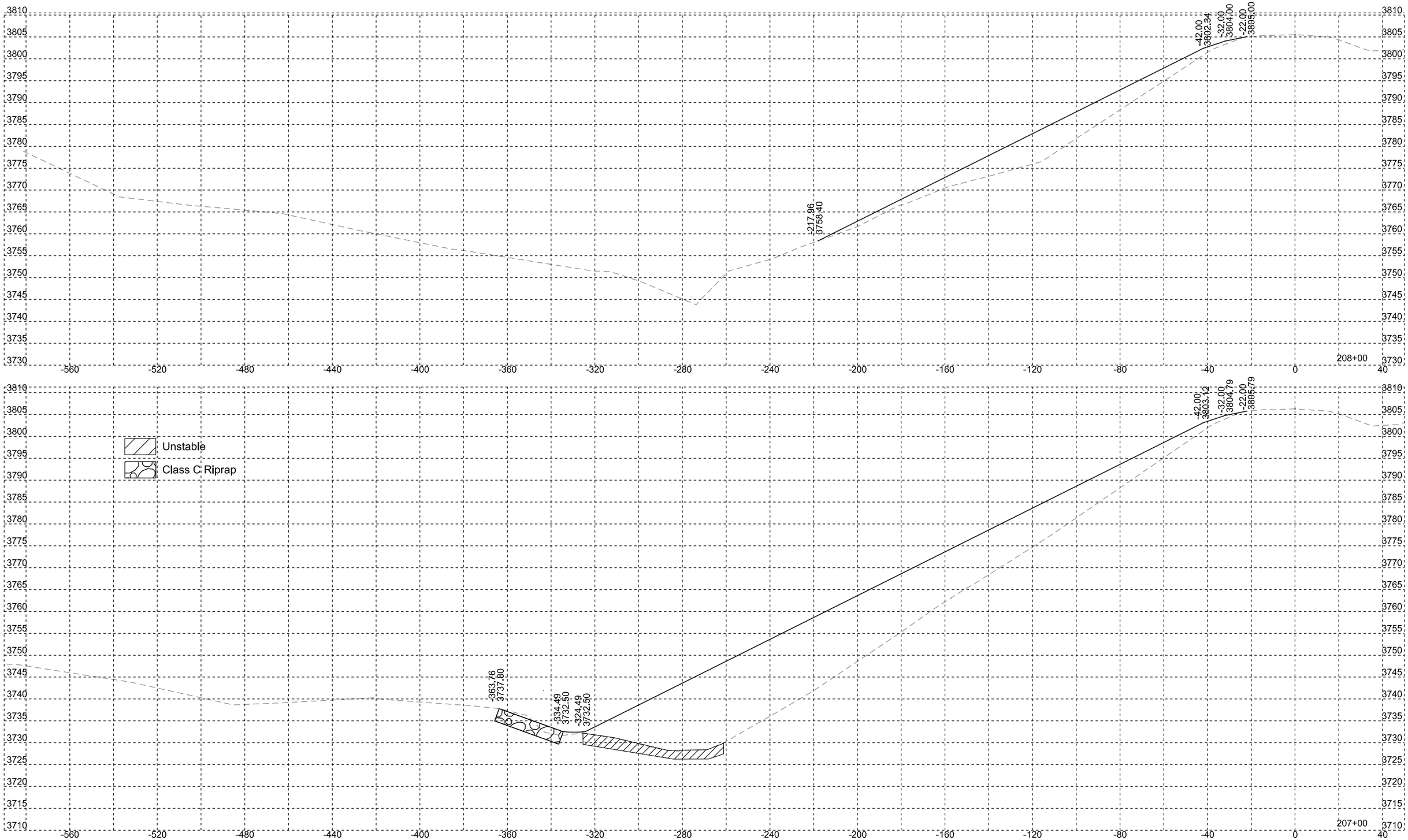


Plotted From - TRRC11610 File - ...\Open Roads\089U_XS.dgn

Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	63/104

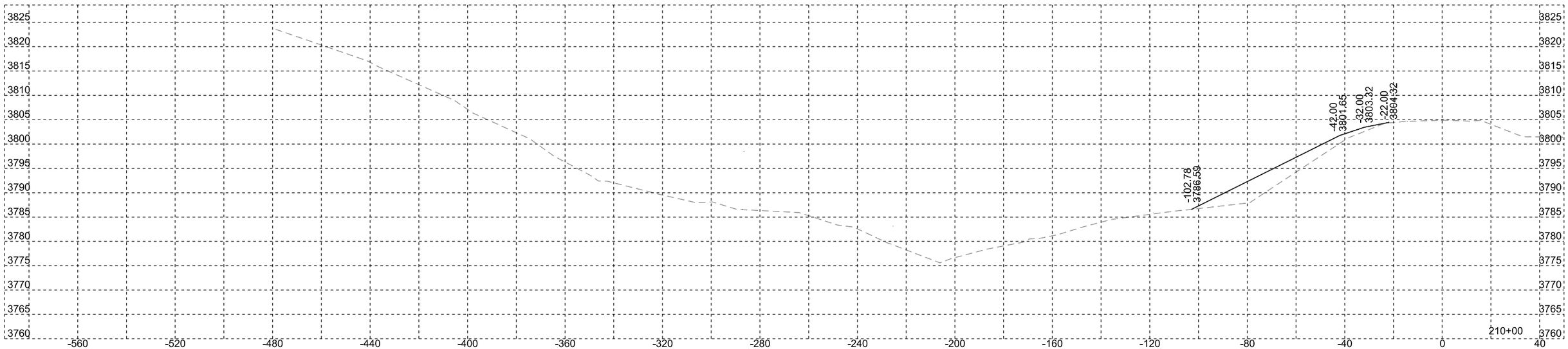
Plotting Date: 1/8/2026

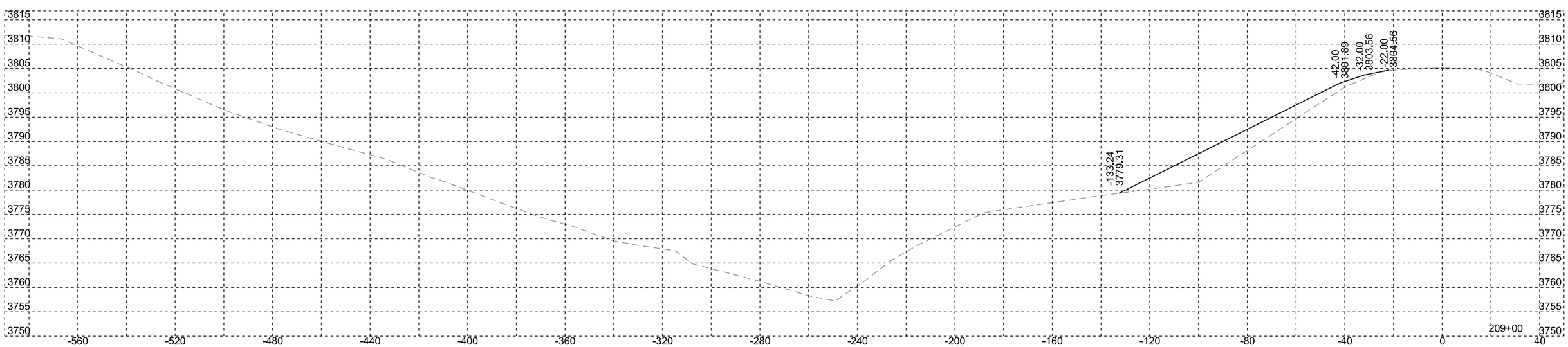


Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	64/104

Plotting Date: 1/8/2026





Plotted From - TRRC11610 File - ...\Open Roads\089U_XS.dgn

Westbound


3835
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3810
3805
3800
3795
3790
3785
3780
3775
3770
-560
-520
-480
-440
-400
-360
-320
-280
-240
-200
-160
-120
-80
-40
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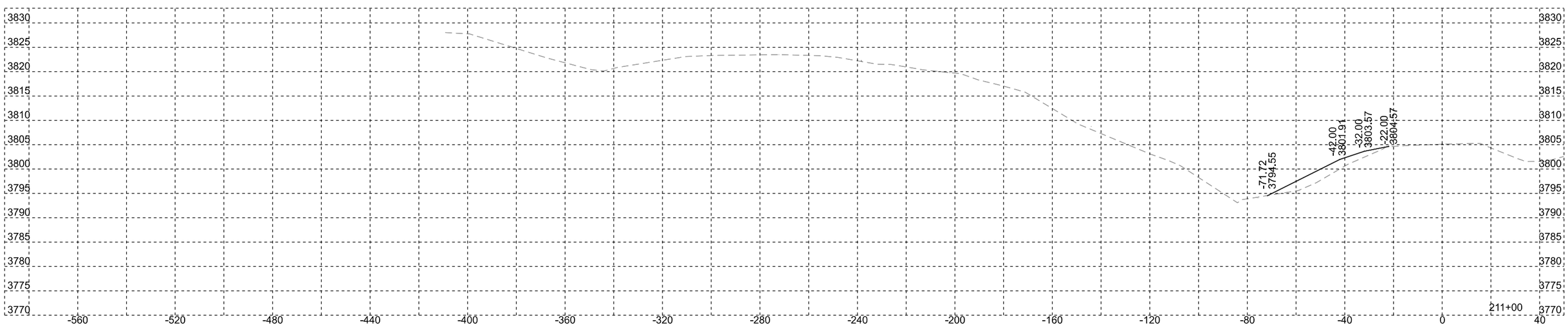
-42.00
3802.35
-32.00
3804.01
-22.00
3805.01
212+00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-240
-200
-160
-120
-80
-40
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40
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3794.55
-42.00
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-32.00
3803.57
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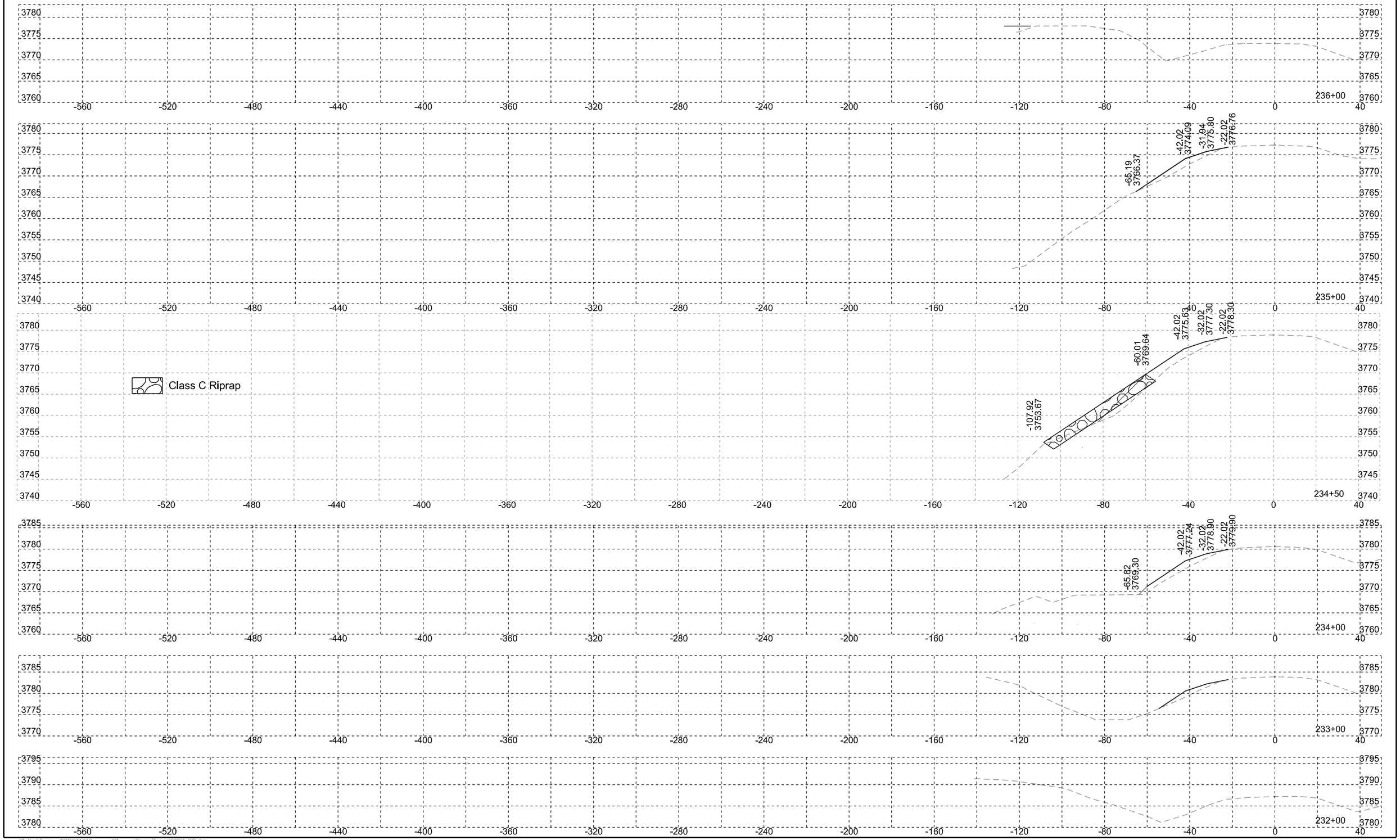
3804.57
211+00

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	66/104

Plotting Date: 1/8/2026

Westbound

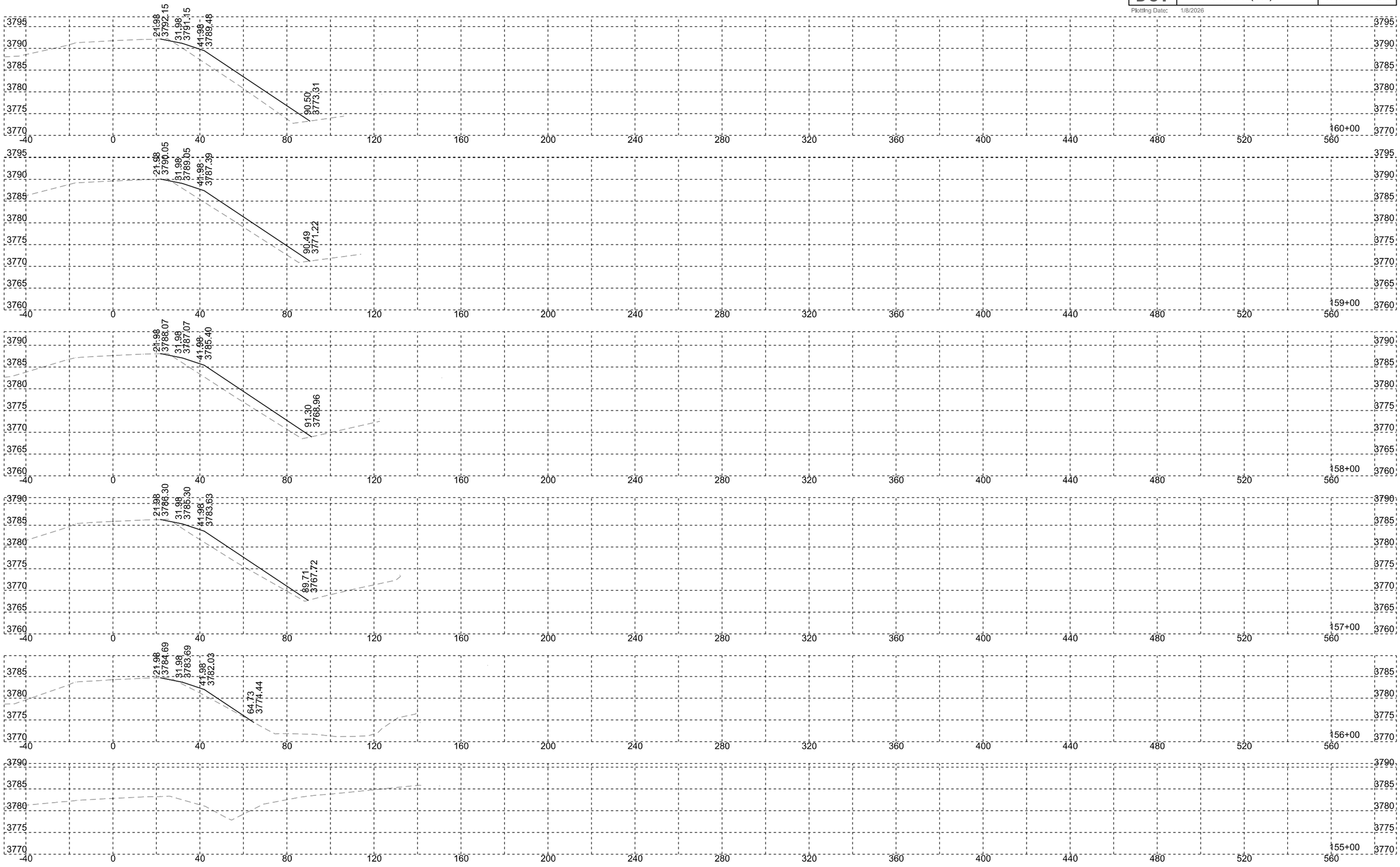


Plotted From - TRRC11610 File - ...\Open Roads\089U_XS.dgn

Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	67/104

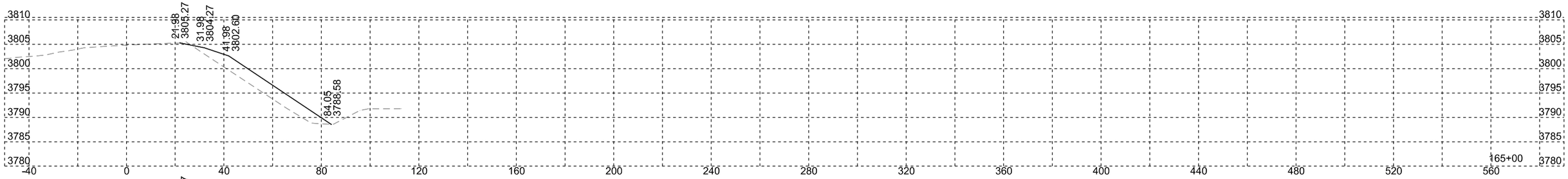
Plotting Date: 1/8/2026

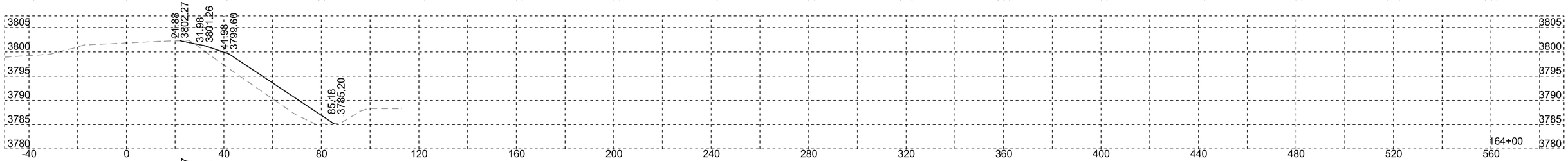


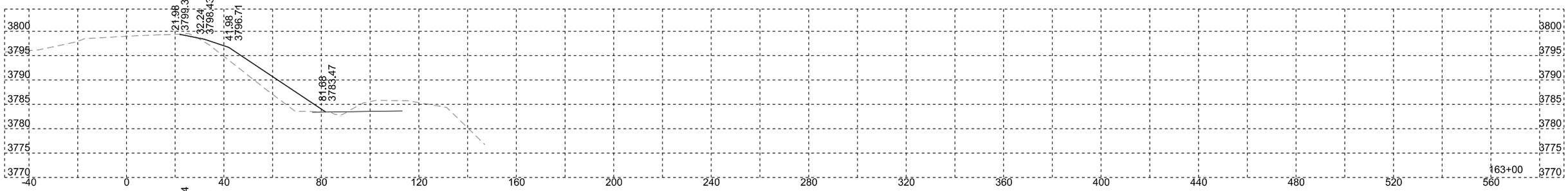
Eastbound

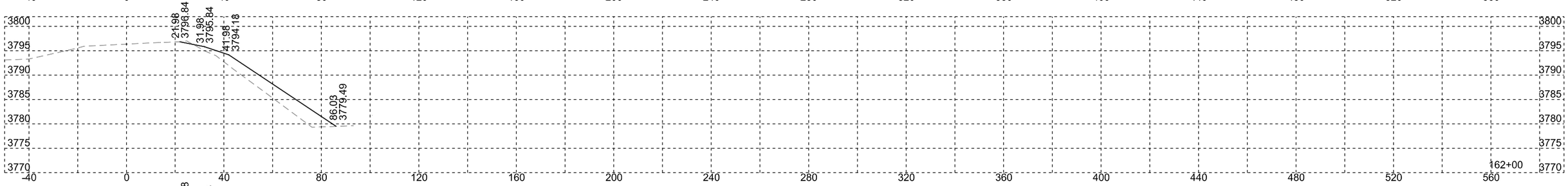
SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	68/104

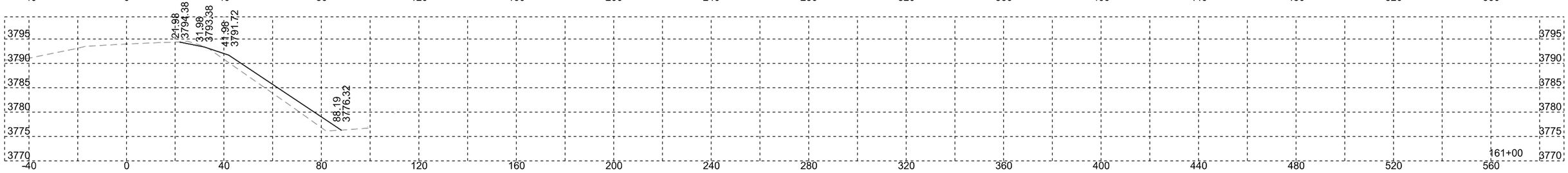
Plotting Date: 1/8/2026







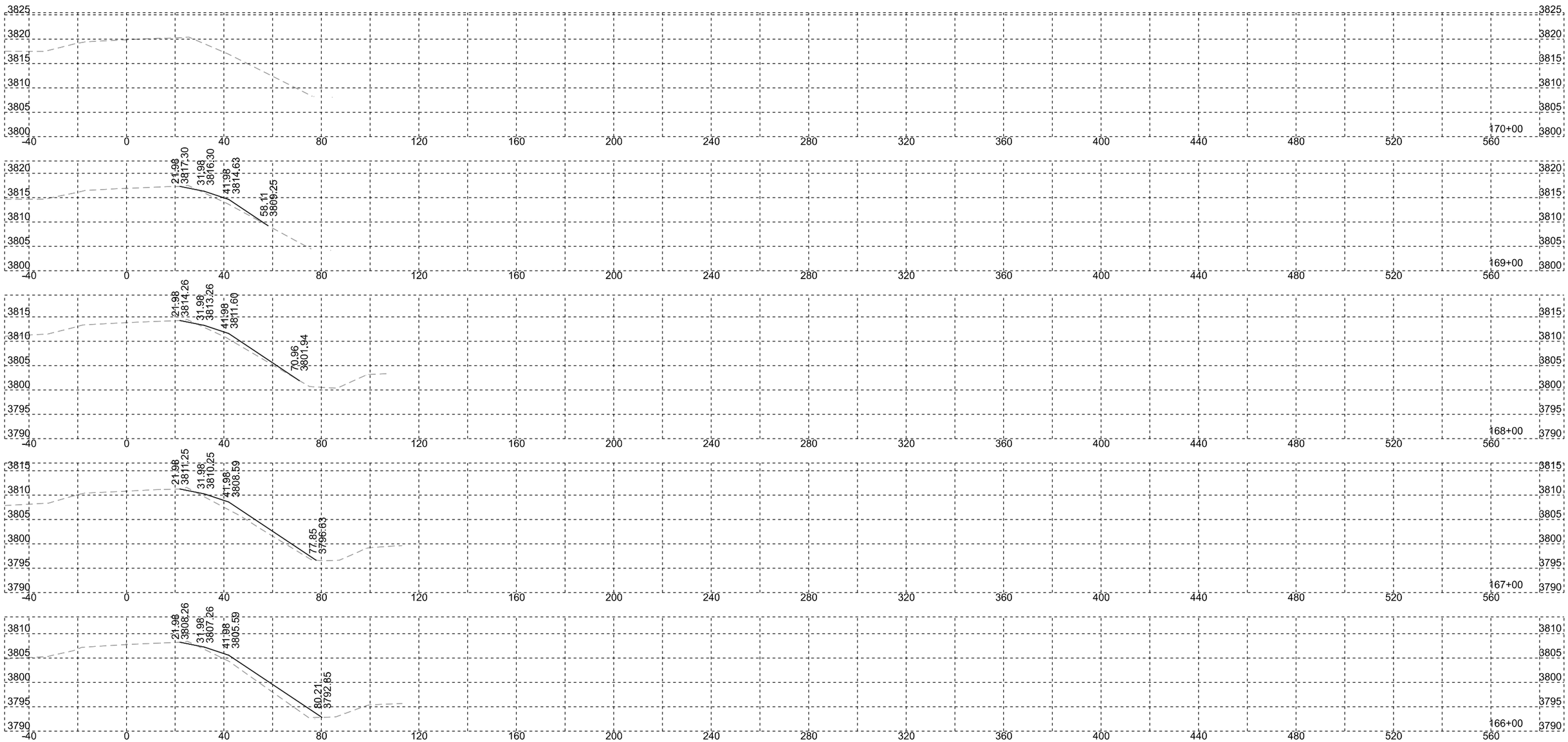




Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	69/104

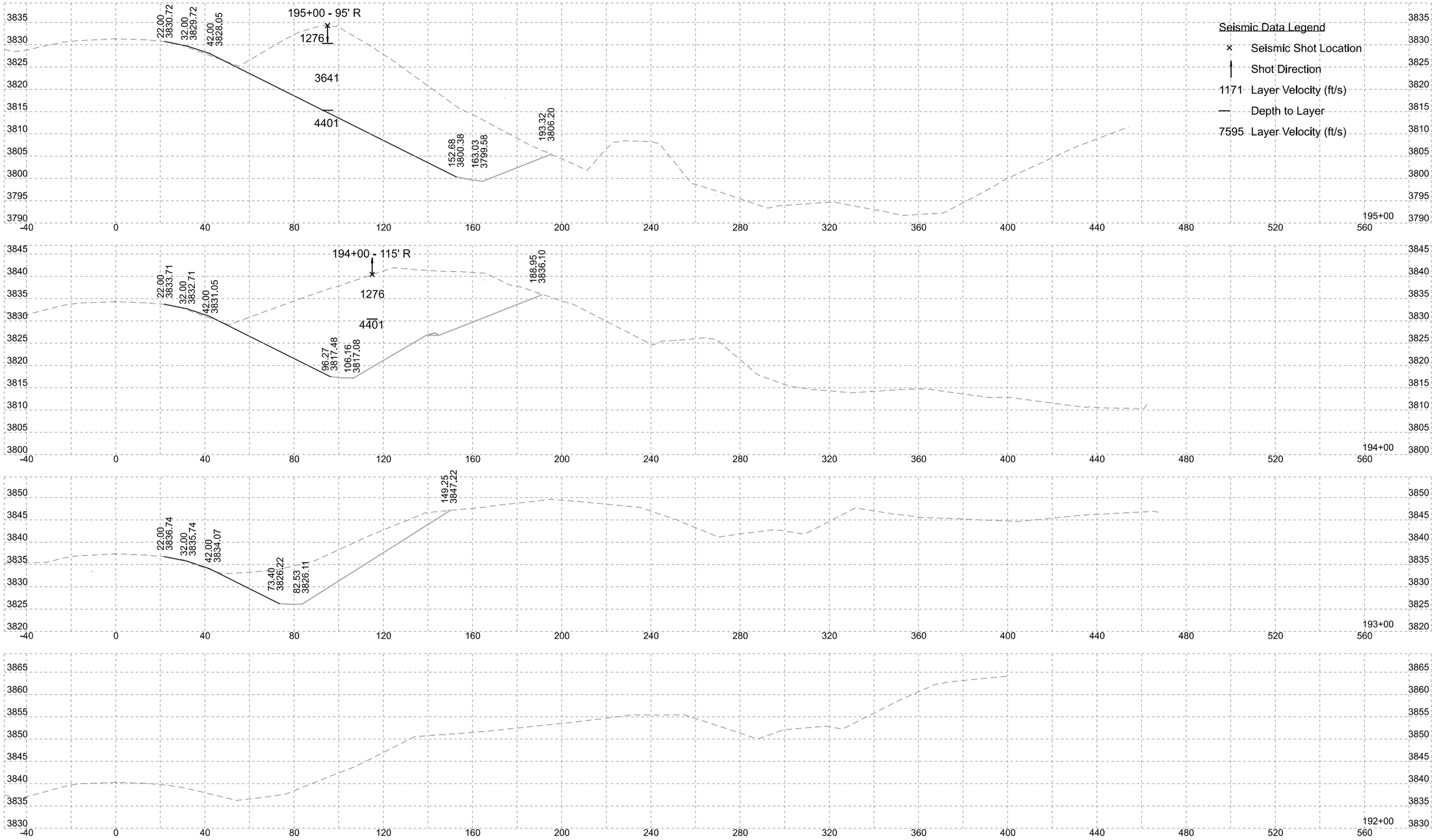
Plotting Date: 1/8/2026



Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	70/104

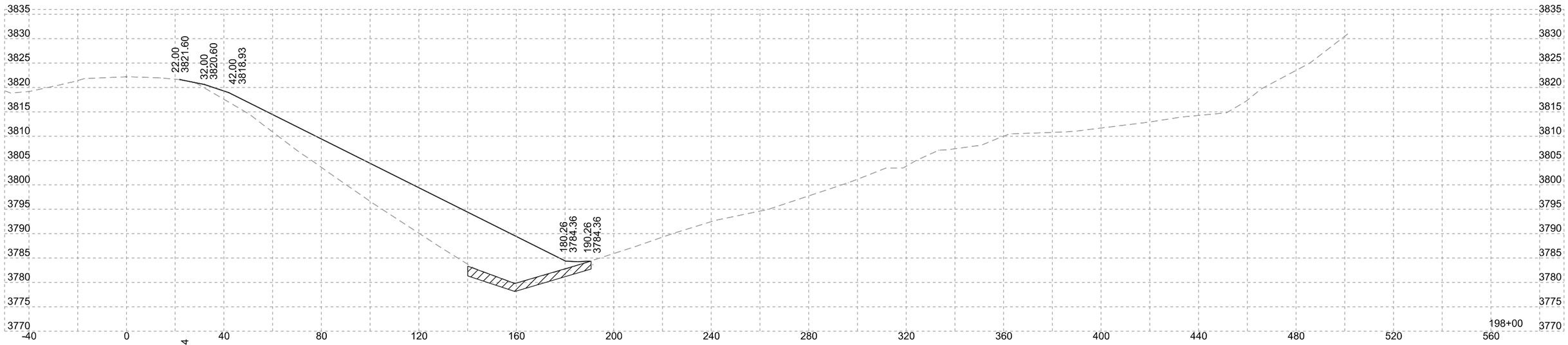
Plotting Date: 1/8/2026

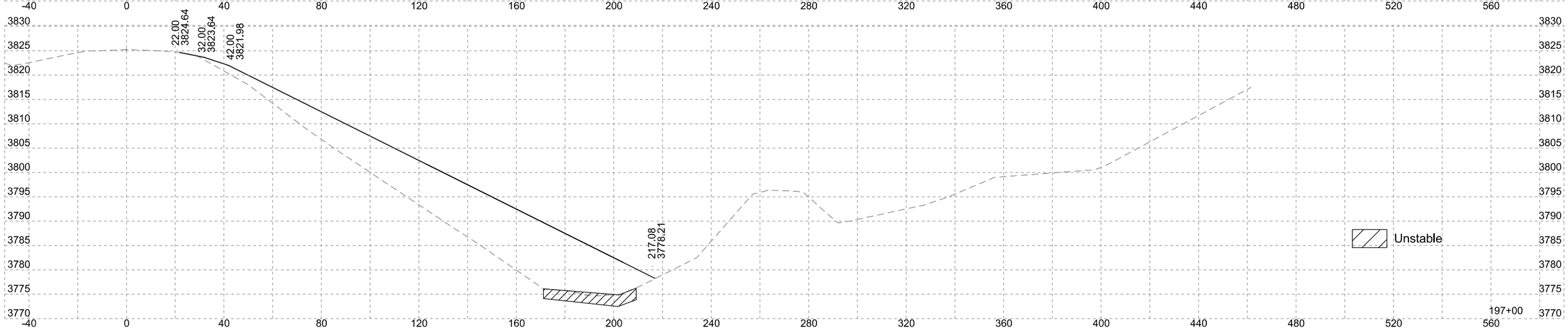


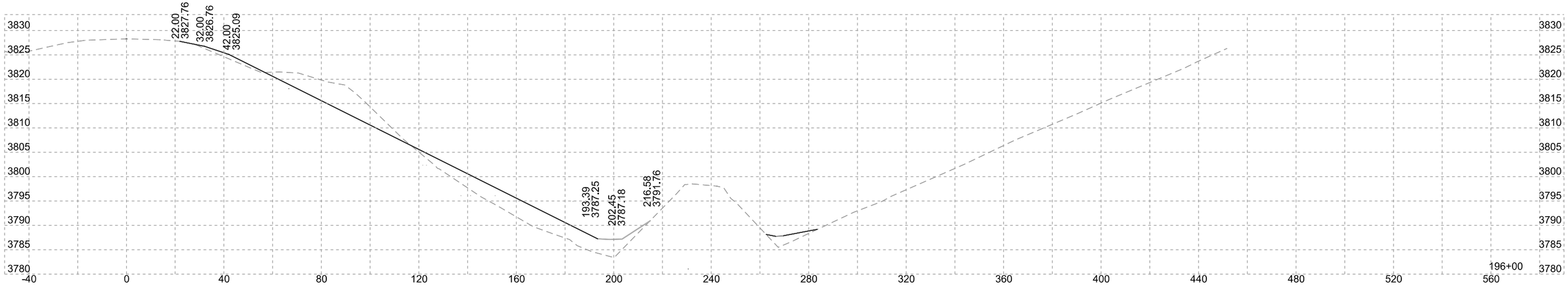
Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	71/104

Plotting Date: 1/8/2026



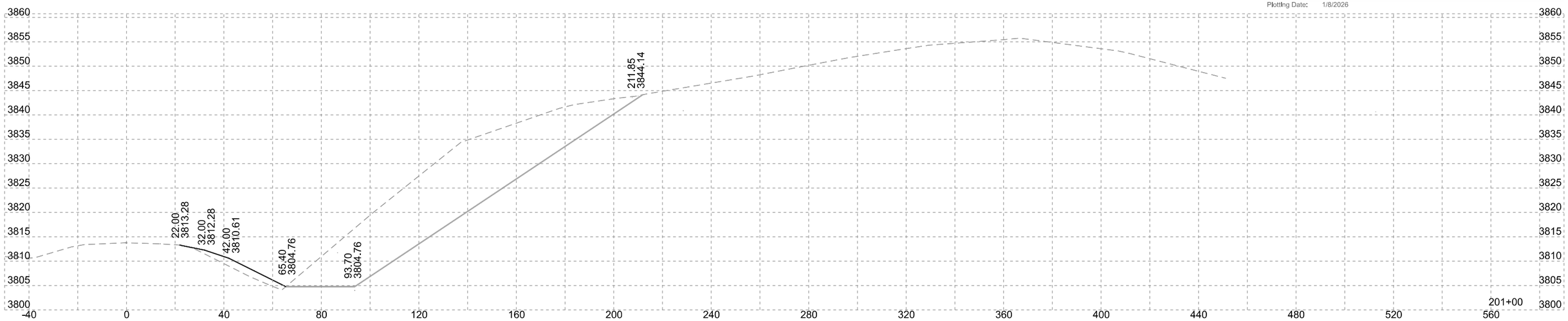


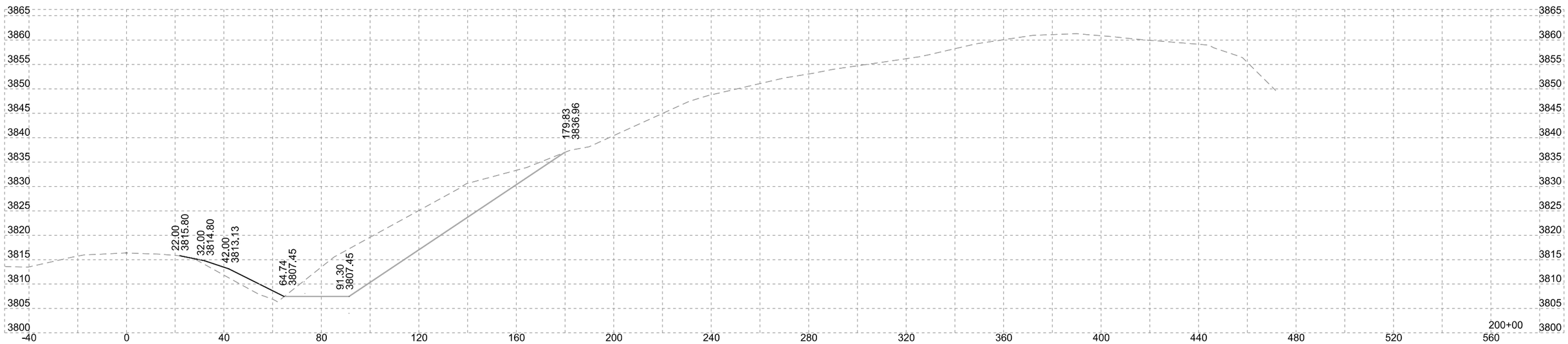


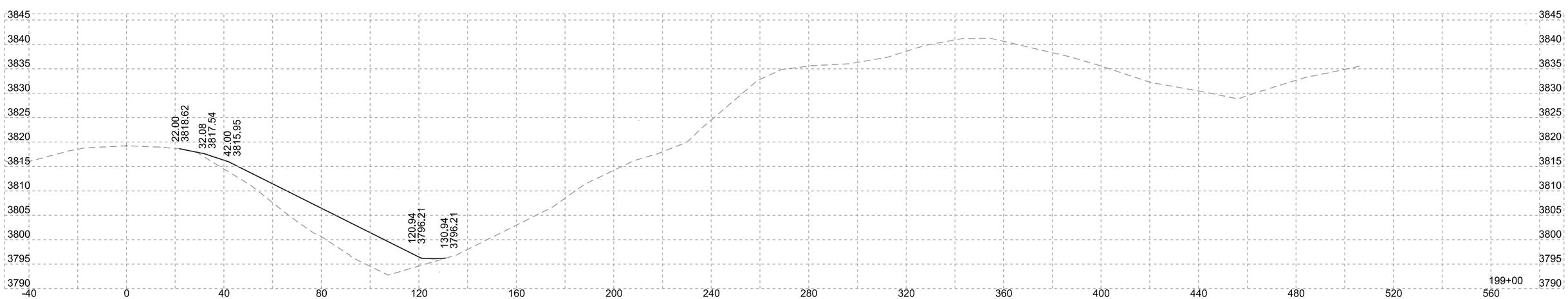
Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	72/104

Plotting Date: 1/8/2026



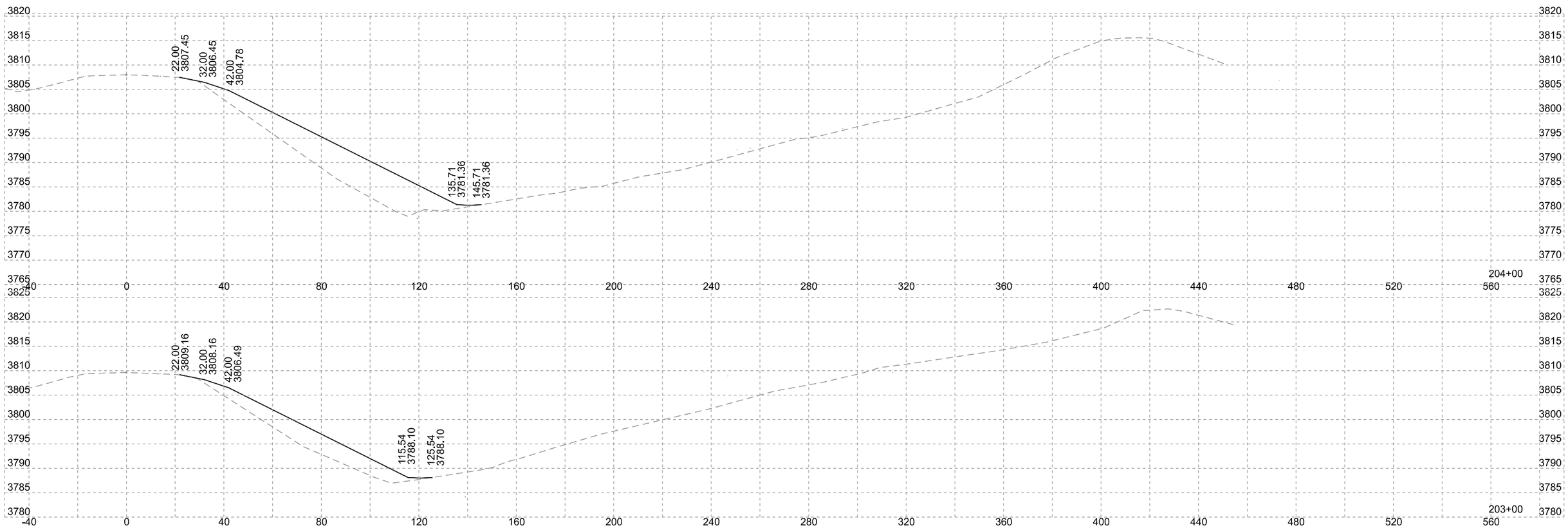


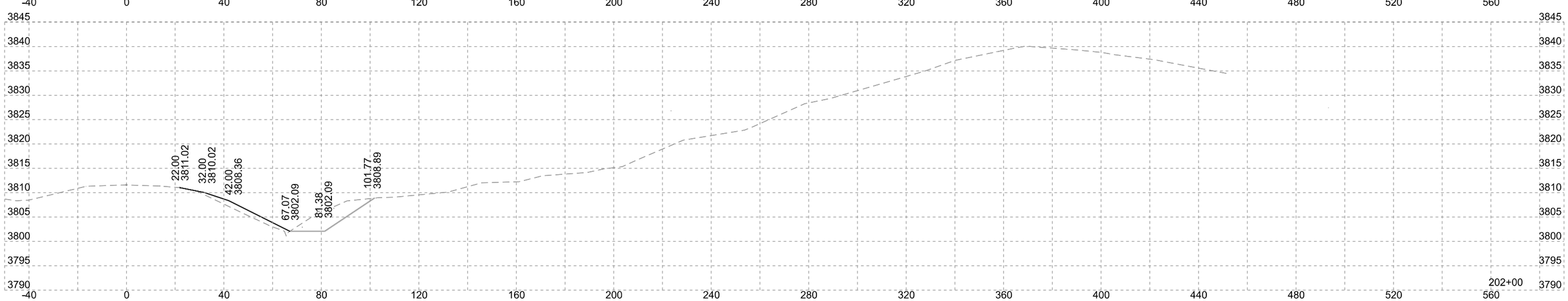


SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	73/104

Plotting Date: 1/8/2026

Eastbound

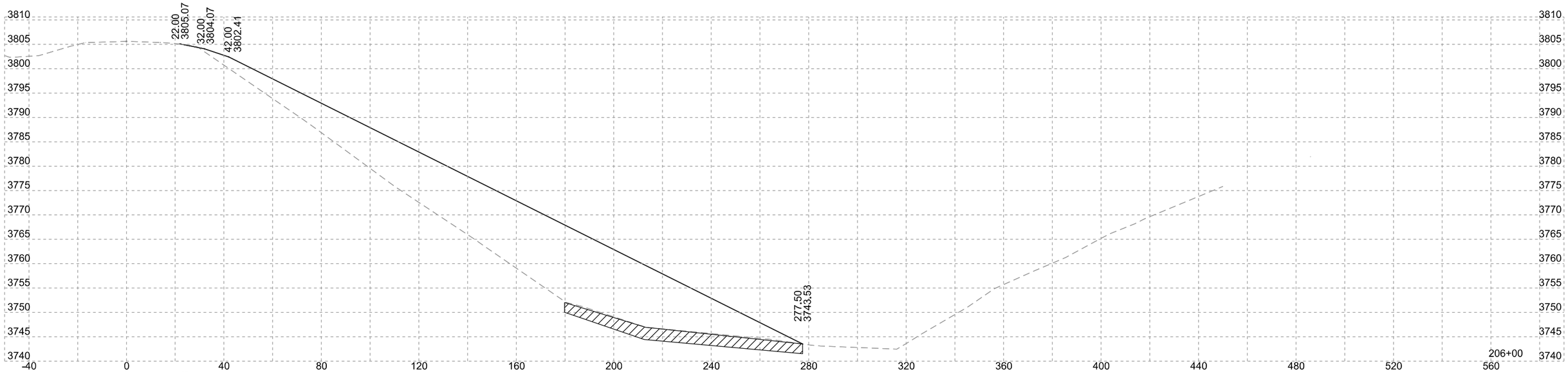


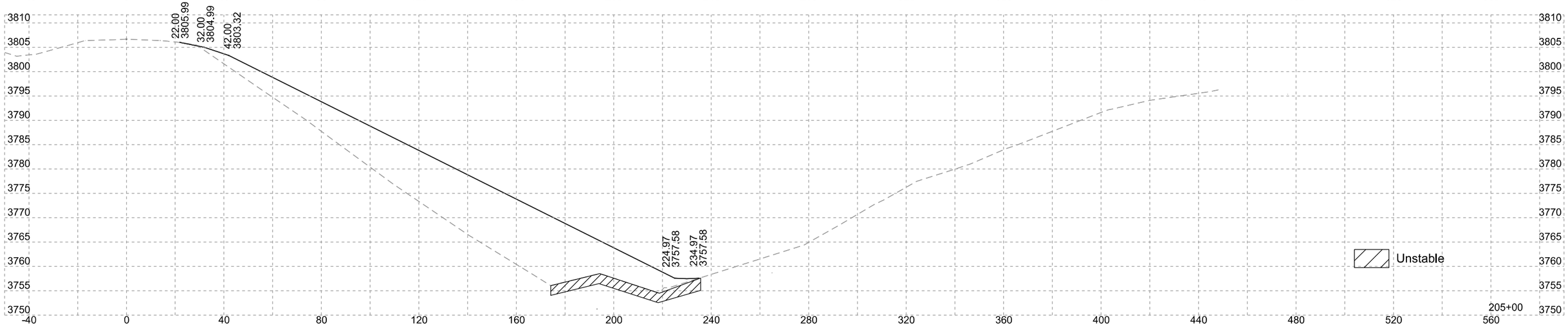


Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	74/104

Plotting Date: 1/8/2026

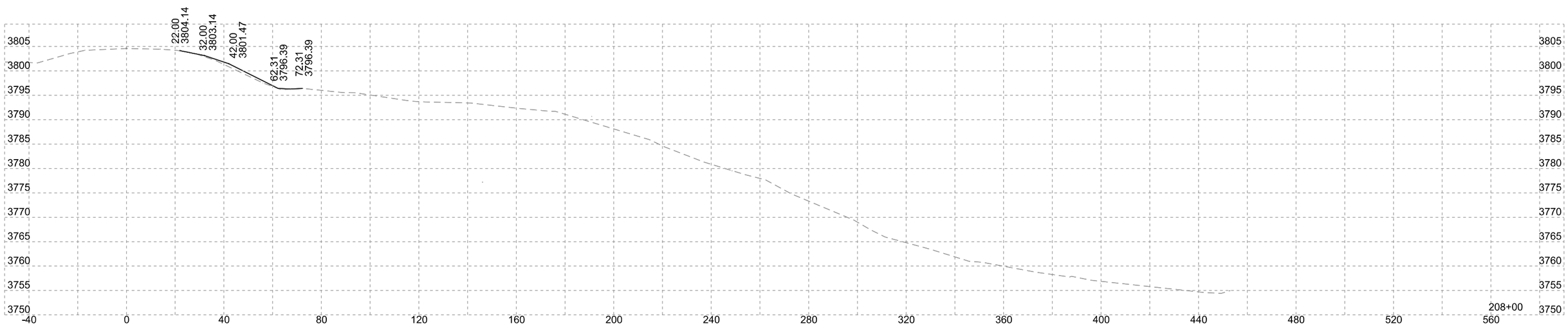


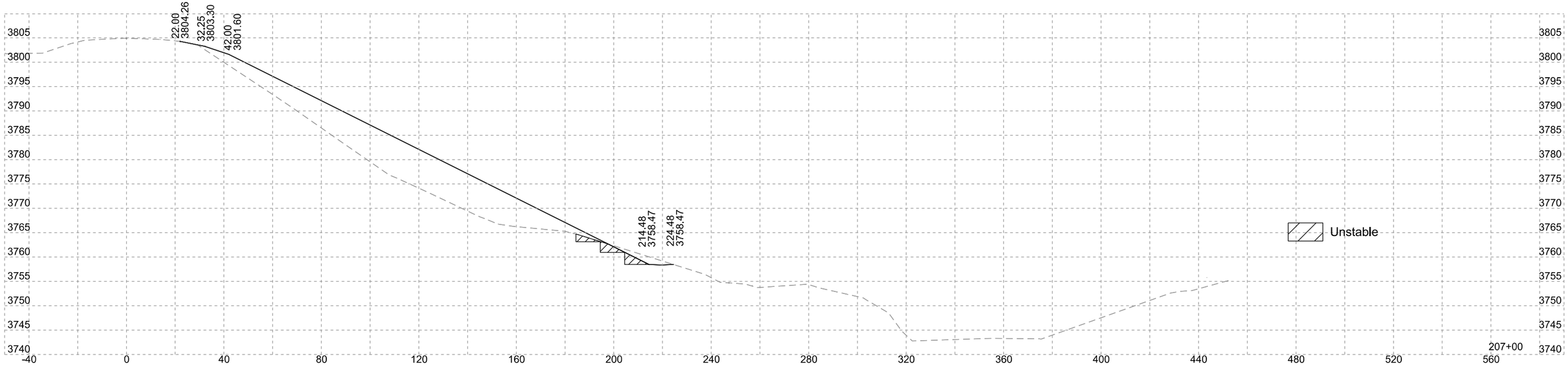


Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	75/104

Plotting Date: 1/8/2026

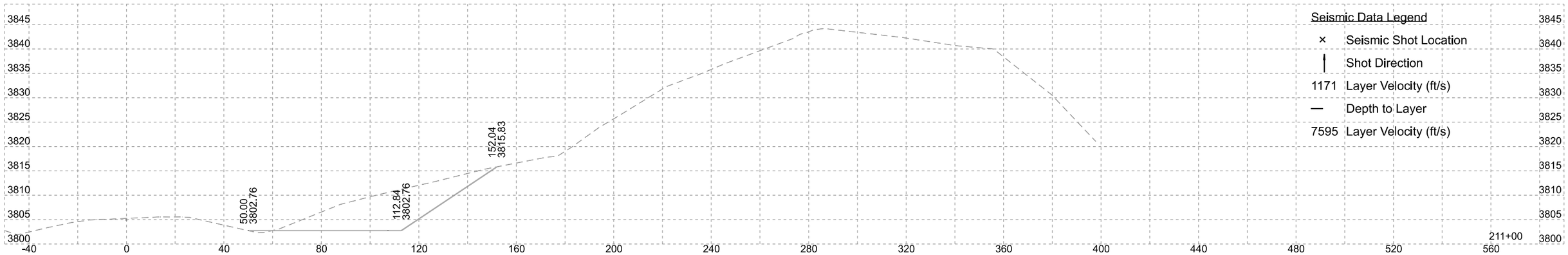


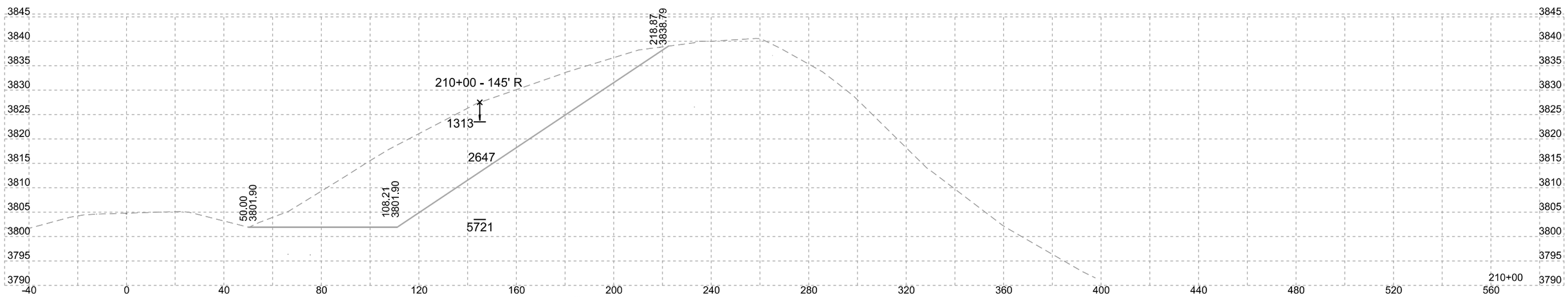


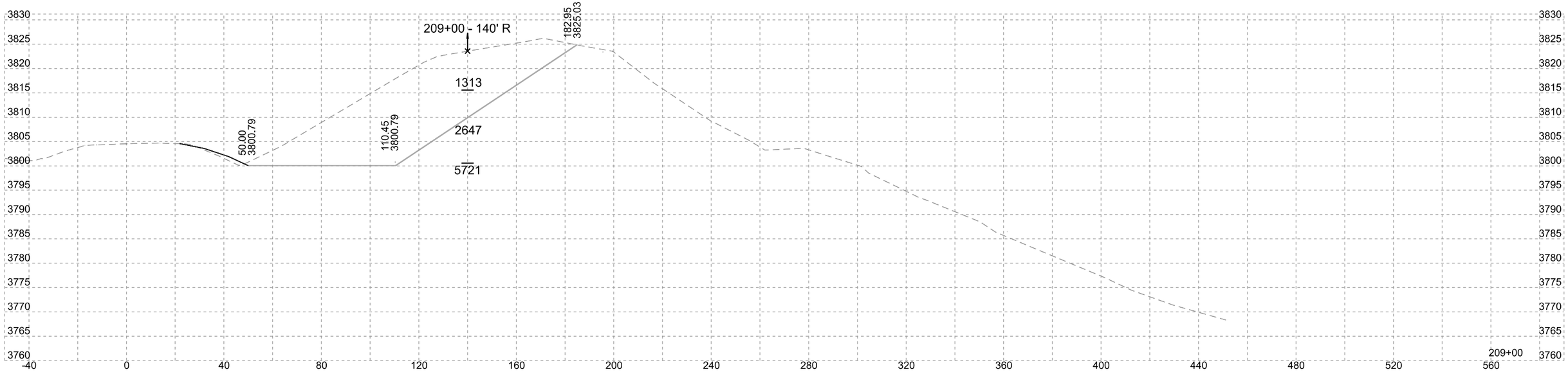
SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	76/104

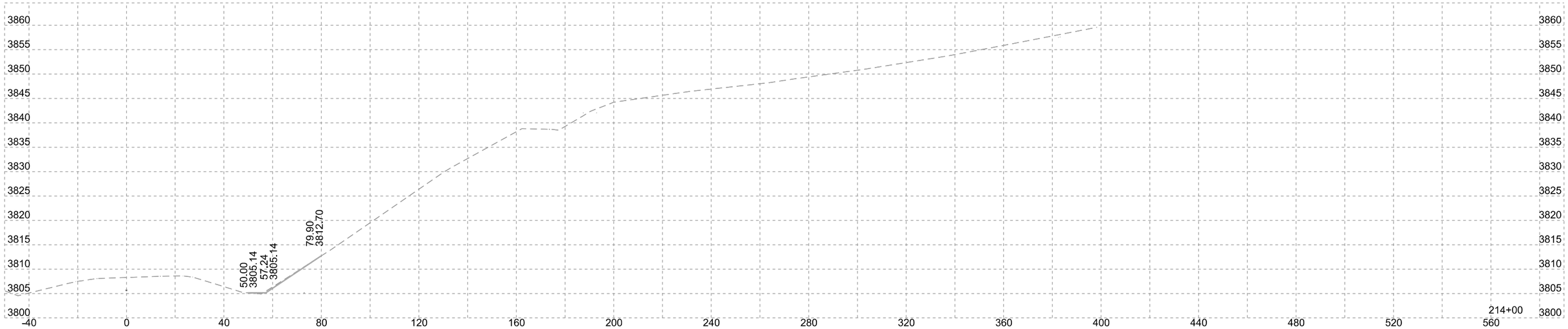
Plotting Date: 1/8/2026

Eastbound





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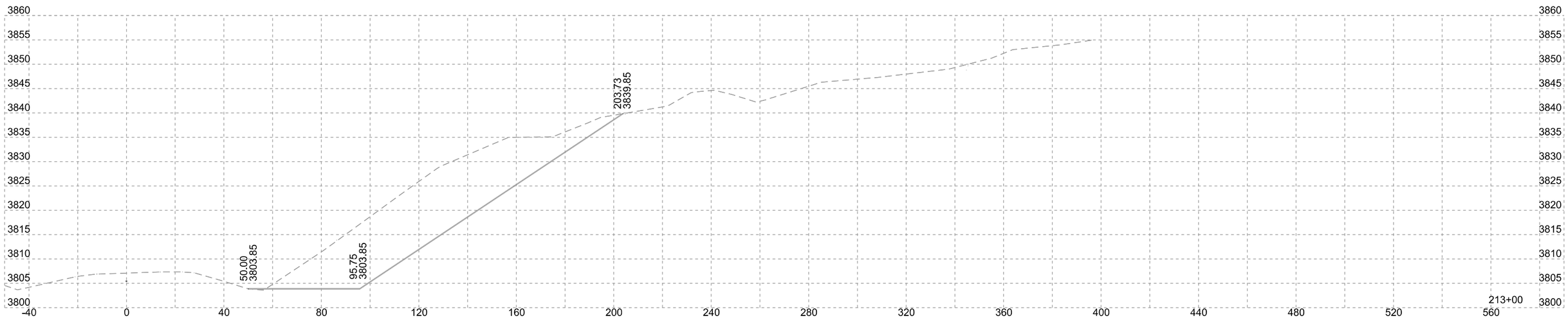
57.24
3805.14
79.90
3812.70
214+00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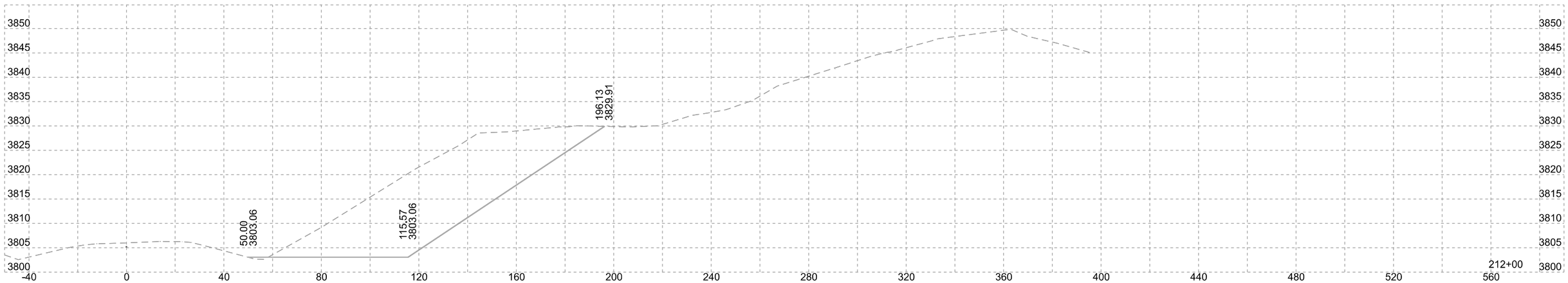
3803.85
95.75
3803.85
203.73
3839.85
213+00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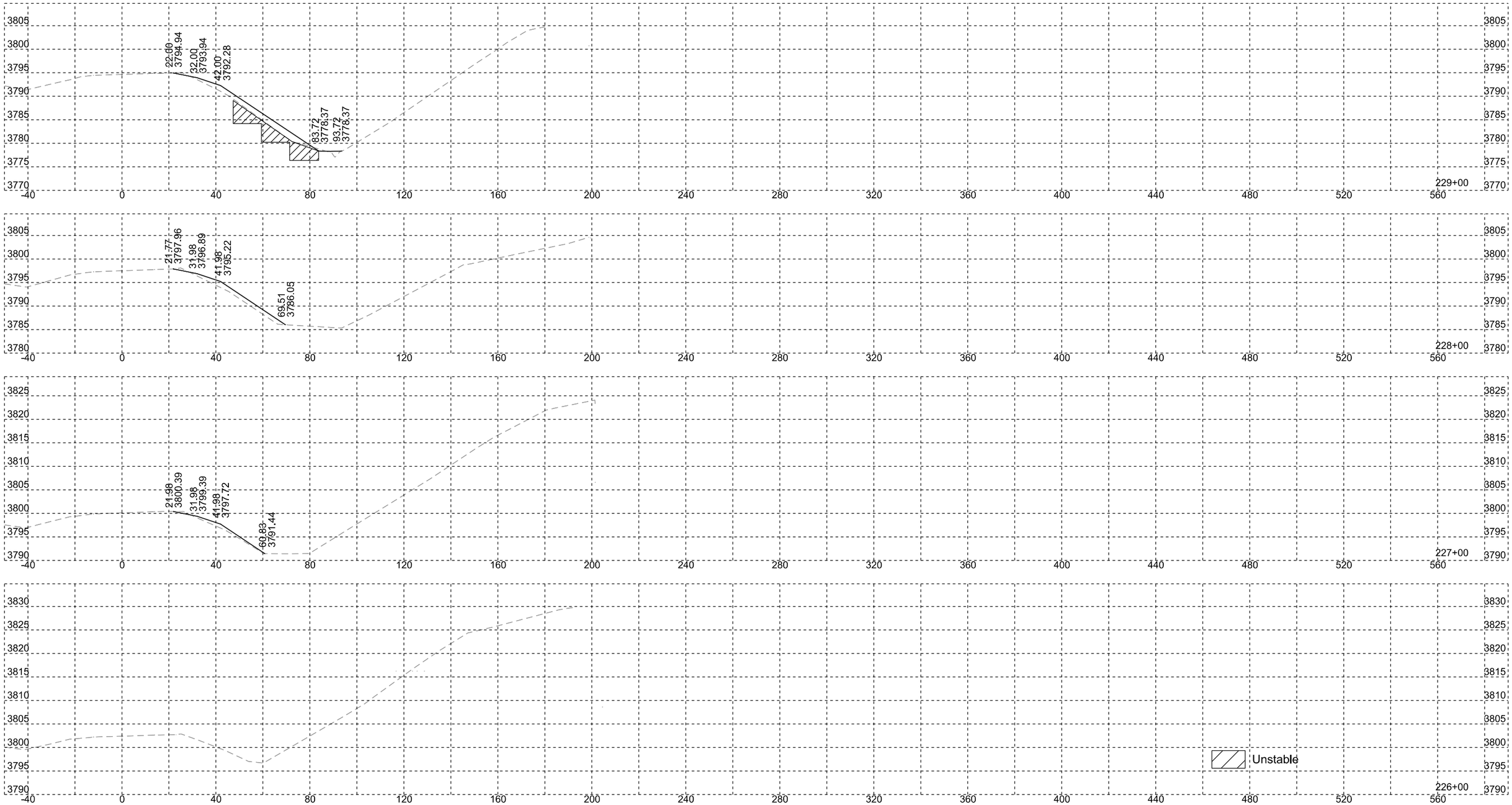
115.57
3803.06
196.13
3829.91
212+00

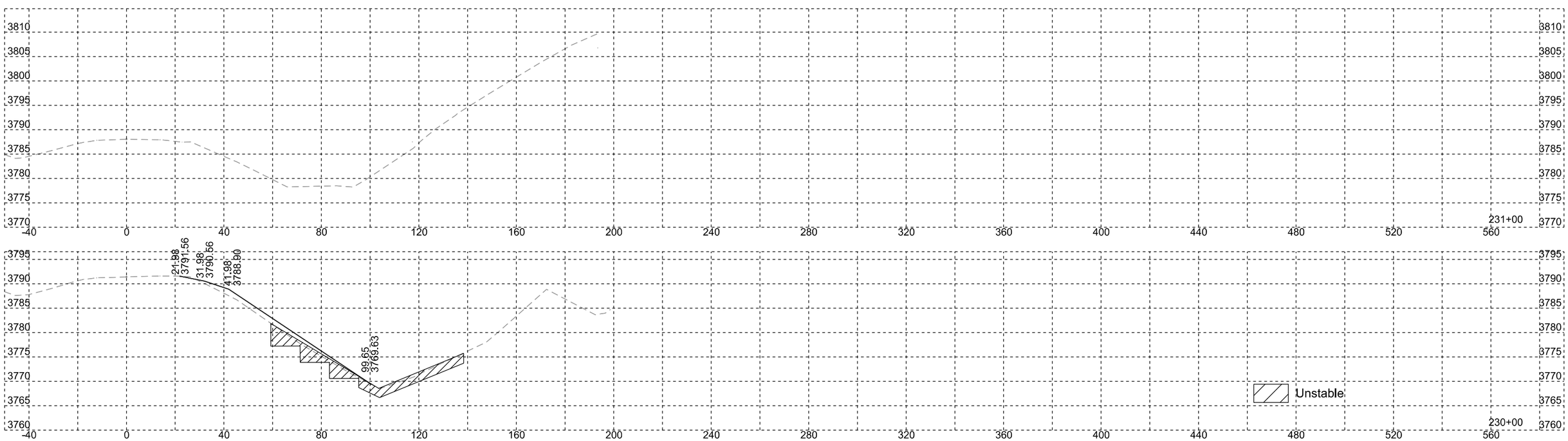
Eastbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	78/104

Plotting Date: 1/8/2026



Eastbound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-40
0
40
80
120
160
200
240
280
320
360
400
440
480
520
560
231+00
3795
3790
3785
3780
3775
3770
3765
3760
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3791.56
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3790.56
41.98
3788.90
99.65
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Unstable
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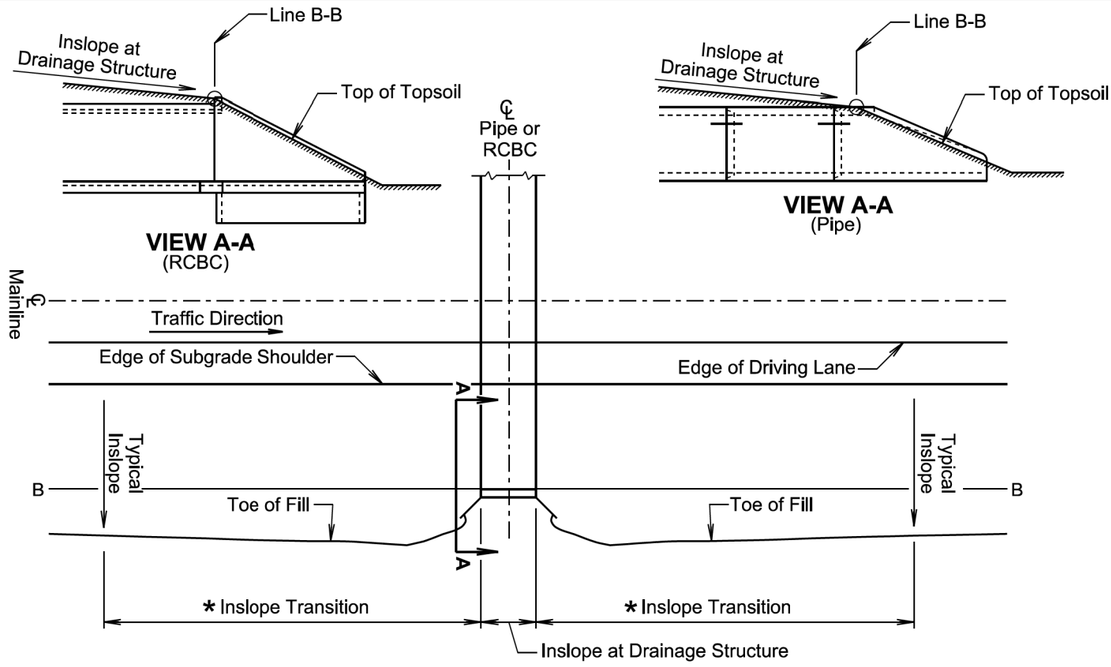


TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

Published Date: 2026

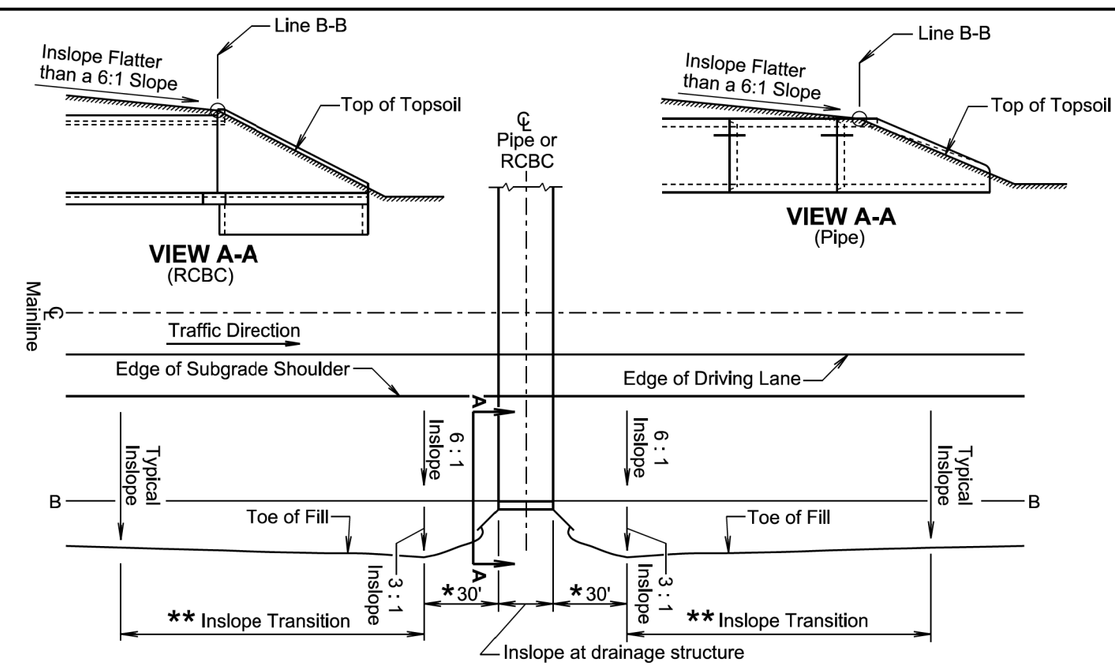
SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 1 of 2

September 14, 2018



TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from Inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope.

** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

Published Date: 2026

SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

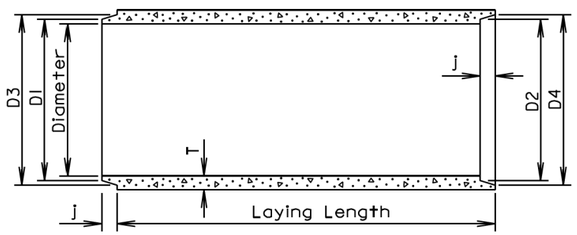
PLATE NUMBER 120.05

Sheet 2 of 2

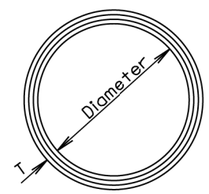
September 14, 2018

TOLERANCES IN DIMENSIONS

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



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

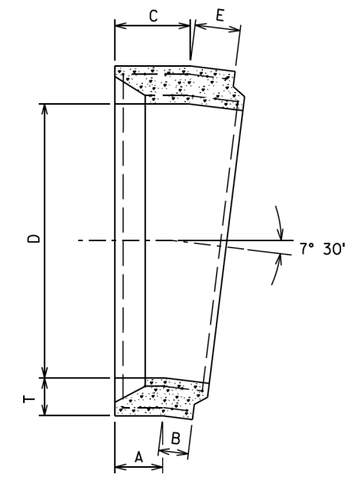
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

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

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

June 26, 2015

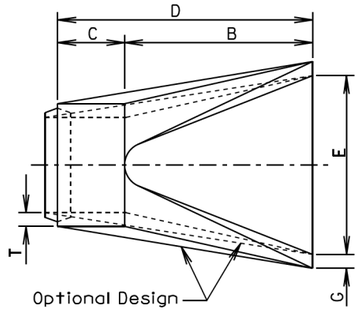
Published Date: 2026 | SDDOT | REINFORCED CONCRETE PIPE | PLATE NUMBER 450.01 | Sheet 1 of 1



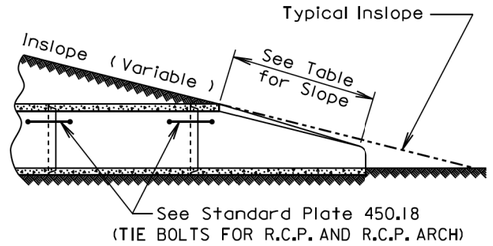
D (in.)	Laying Length at Center of Pipe (in.)	Laying Length at Outside of Curve (in.)	T (in.)	A (in.)	B (in.)	C (in.)	E (in.)	Radius of Curve (ft.)	Weight of Section (lbs.)
12	7 3/4	8	2	4 3/4	2	5 3/4	3	4.9	70
15	11 1/4	12 1/2	2 1/4	5 1/4	4 3/4	6 1/2	6	7.2	120
18	12 1/8	13 5/8	2 1/2	5 1/2	5 1/8	7	6 5/8	7.7	170
21	9 1/2	11 1/4	2 3/4	5 1/2	2 1/4	7 1/4	4	6.1	170
24	9 13/16	11 3/4	3	5 9/16	2 5/8	7 1/2	4 1/4	6.2	215
27	9 11/16	12 1/8	3 1/4	5 7/16	2 5/16	7 5/8	4 1/2	6.2	260
30	10	12 3/8	3 1/2	5 5/16	2 5/16	7 11/16	4 11/16	6.4	320
33	11 3/16	13 7/8	3 3/4	5 15/16	2 9/16	8 5/8	5 1/4	7.1	420
36	12 3/16	15 1/16	4	6 1/2	2 5/16	9 3/8	5 11/16	7.7	530
42	14 1/16	17 1/2	4 1/2	6 13/16	3 13/16	10 5/16	7 3/16	8.9	800
48	16 1/16	20 1/4	5	7 15/16	4 11/16	11 3/4	8 1/2	10.5	1190
54	18 1/16	22 5/16	5 1/2	7 5/8	6 3/16	11 7/8	10 7/16	11.5	1600
60	20 1/2	25 1/4	6	8 5/8	7 1/8	13 3/8	11 7/8	13.0	2210
66	21 5/8	26 15/16	6 1/2	9	7 3/8	14 5/16	12 5/8	13.8	2790
72	22 5/8	28 1/4	7	9 3/8	7 5/8	13 1/4	15	14.4	3420

March 31, 2000

Published Date: 2026 | SDDOT | REINFORCED CONCRETE PIPE SHORT RADIUS BEND | PLATE NUMBER 450.03 | Sheet 1 of 1



TOP VIEW

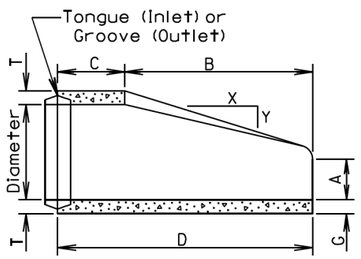


SLOPE DETAIL

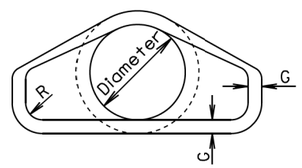
GENERAL NOTES:

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

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



LONGITUDINAL SECTION



END VIEW

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

June 26, 2015

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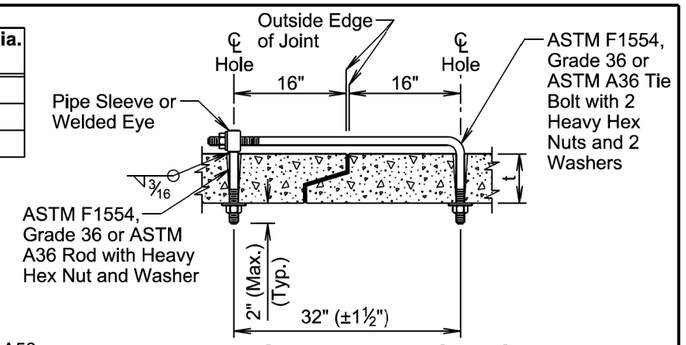
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3 1/4	5/8	3/4
3 1/2-6 1/2	3/4	1
≥ 7	1	1 1/4

GENERAL NOTES:

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

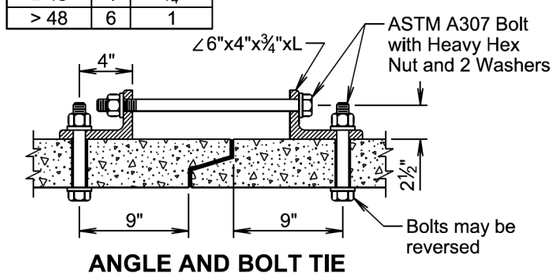
Pipe Sleeve will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

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



ADJUSTABLE EYE BOLT TIE

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



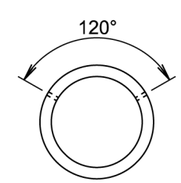
ANGLE AND BOLT TIE

GENERAL NOTES:

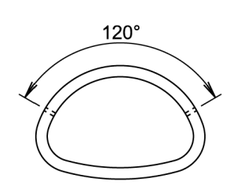
Angles will conform to ASTM A36.

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

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



END VIEW
(Circular)



END VIEW
(Arch)

GENERAL NOTES:

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

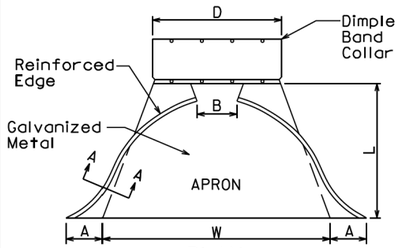
All pipe sections of R.C.P. and R.C.P. Arch will be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manholes, and junction boxes will be tied with tie bolts.

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

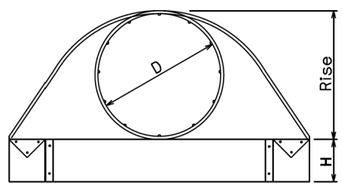
April 8, 2025

Published Date: 2026 | SDDOT | TIE BOLTS FOR R.C.P. AND R.C.P. ARCH | PLATE NUMBER 450.18 | Sheet 1 of 1

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



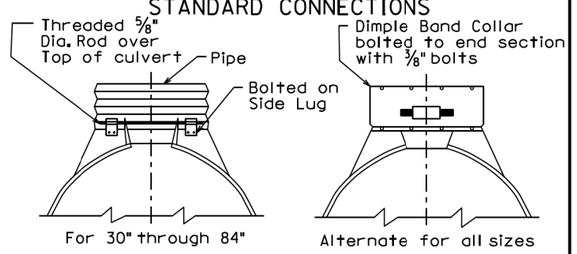
PLAN

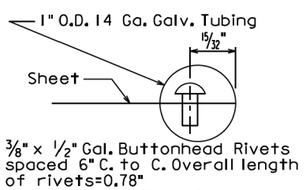


ELEVATION

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

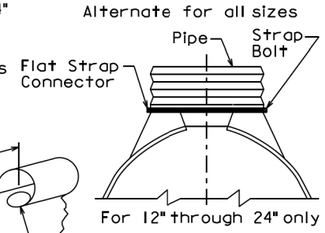
STANDARD CONNECTIONS

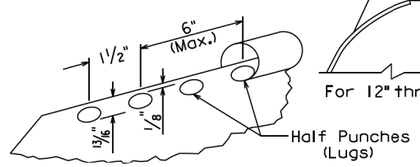




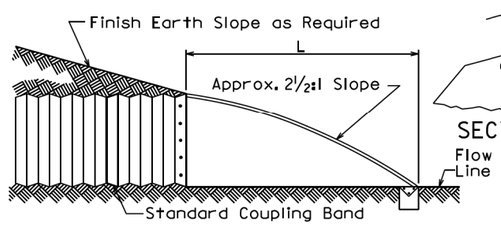
TUBING ATTACHMENT DETAILS
SECTION A-A

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

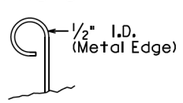




SECTION A-A (alternate)



TYPICAL CROSS-SECTION



SECTION A-A (alternate)

GENERAL NOTES:

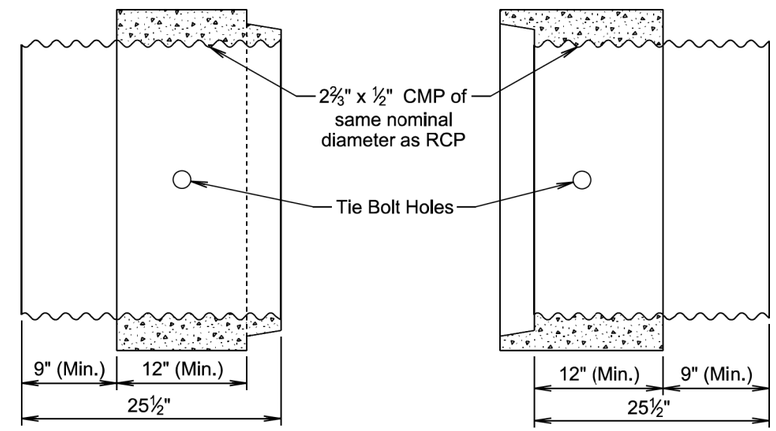
All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by ⅜" Dia. galvanized rivets or bolts.

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

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

March 31, 2000

Published Date: 2026	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35 Sheet 1 of 1



INLET
(CMP to RCP Transition)

OUTLET
(RCP to CMP Transition)

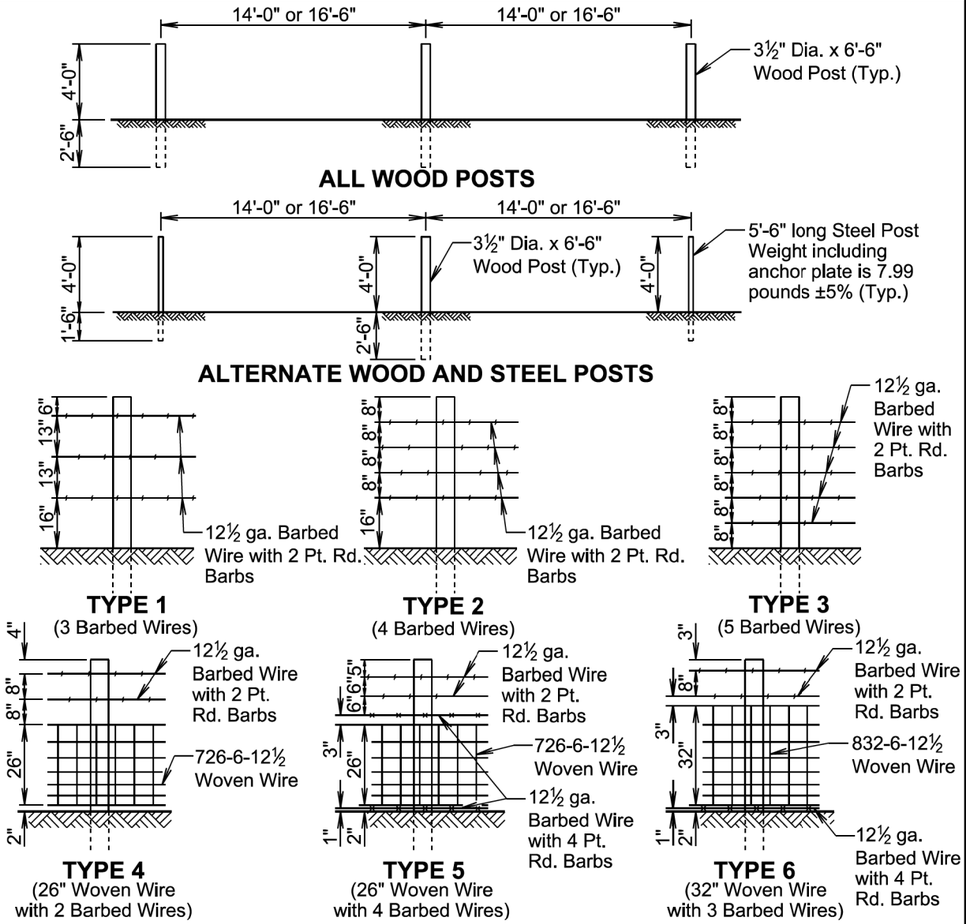
GENERAL NOTE:

Arch pipe transitions will be fabricated similar to the round transition shown above.

All pipe transitions will be precast as shown. Alternate designs other than shown will need to be approved by the Engineer.

November 19, 2022

Published Date: 2026	SDDOT	C.M.P. TO R.C.P. TRANSITION AND R.C.P. TO C.M.P. TRANSITION	PLATE NUMBER 450.50 Sheet 1 of 1



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

GENERAL NOTES:

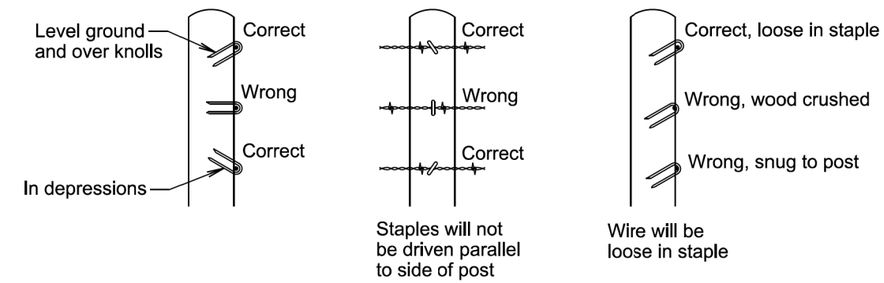
Fence types designated on the plans that are followed by the letter S will have smooth (barbless) wires.

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

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

April 8, 2025

Published Date: 2026 | SDDOT | RIGHT-OF-WAY FENCE | PLATE NUMBER 620.01 | Sheet 1 of 1



STAPLE INSTALLATION

GENERAL NOTES:

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

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

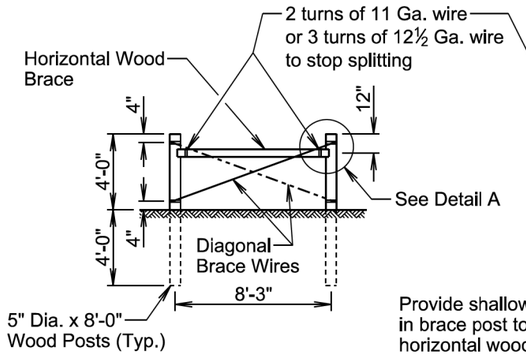
Right-of-Way fence other than on Interstate Projects will be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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

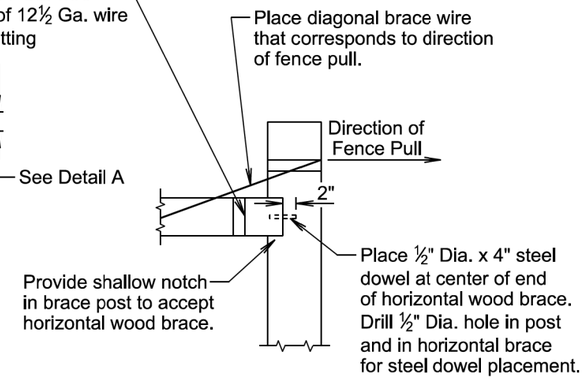
The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts will be as stated in AASHTO M281. Woven wire will conform to design and specifications of ASTM A116 and barbed wire will conform to ASTM A121.

June 26, 2019

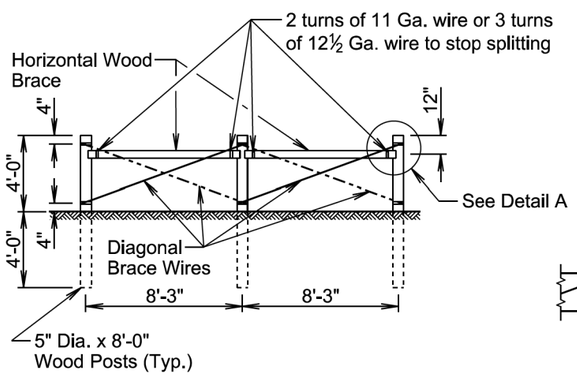
Published Date: 2026 | SDDOT | STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES | PLATE NUMBER 620.02 | Sheet 1 of 1



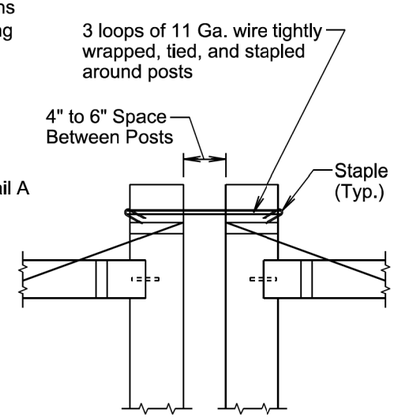
ELEVATION VIEW
(2 Post Panel)



DETAIL A



ELEVATION VIEW
(3 Post Panel)



DETAIL B

GENERAL NOTES:

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

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

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

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

March 31, 2024

Published Date: 2026	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 1 of 3

SPACING OF 2 POST PANELS WITHIN CURVES	
RADIUS OF CURVE	SPACING OF 2 POST PANEL
Greater than 1800 Ft.	** 1320'
Less than 1800 Ft.	** At P.C., P.T., and at every 1320' between P.C. and P.T.

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

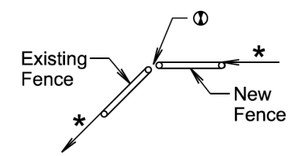
① See Detail B on Sheet 1 of 3.

GENERAL NOTE:

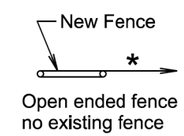
All radius of curvature stated for fence are at centerline of roadway.

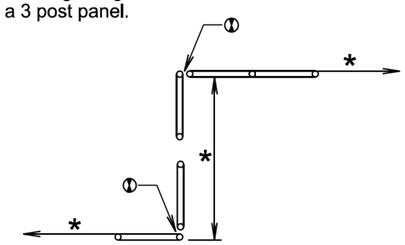
If fence length is less than 600' to next corner use a 2 post panel.

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

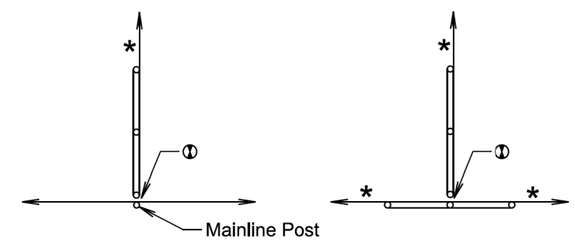


BEGIN OR END FENCE
(Where new fence ties into existing fence)

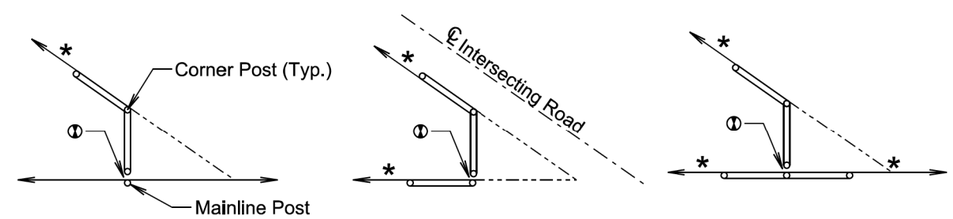




SHORT JOGS IN FENCE



CROSS FENCE



SHARP ANGLES IN CROSS FENCE

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

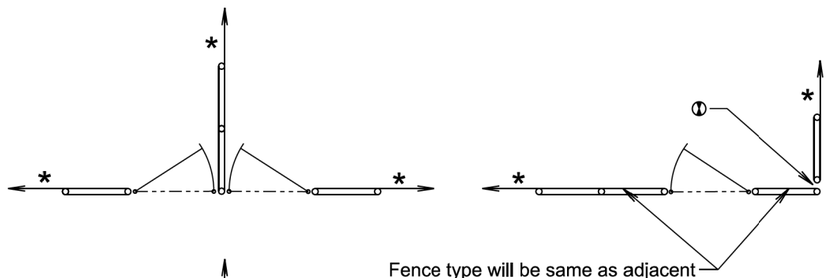
Additional fence panel is required when an angle in the mainline fence is greater than 10°.

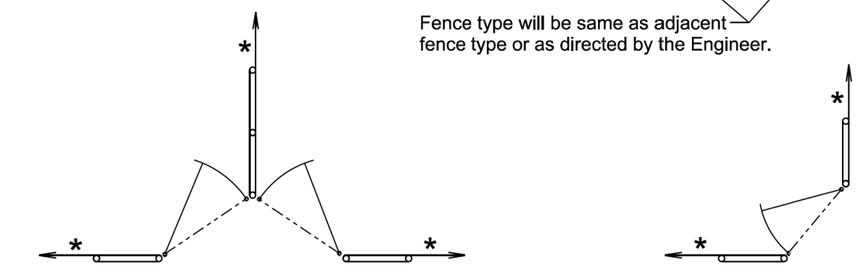
ANGLES IN MAINLINE FENCE

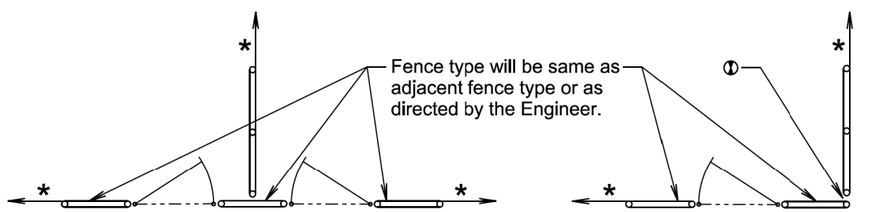
March 31, 2024

Published Date: 2026	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3

ENTRANCE
(Not on corner)







DOUBLE ENTRANCES **ENTRANCES AT CORNERS**

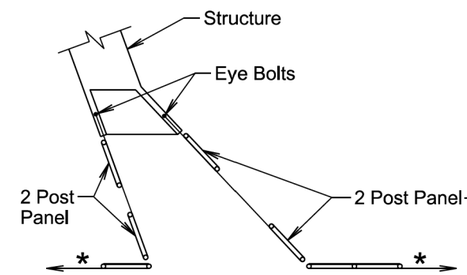
GATES

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

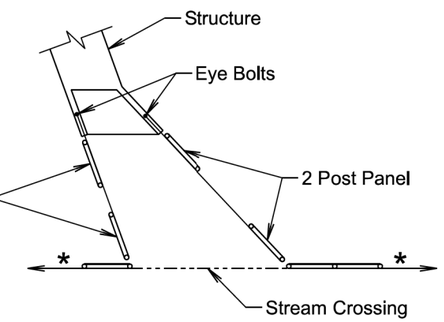
① See Detail B on Sheet 1 of 3.

March 31, 2024

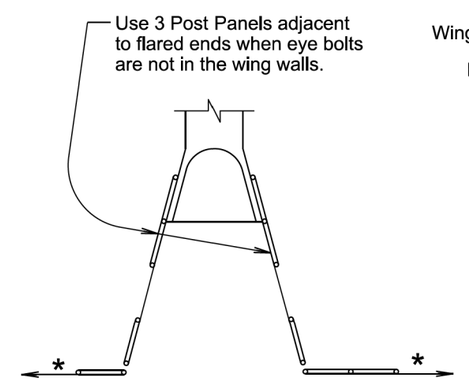
Published Date: 2026	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 3 of 3



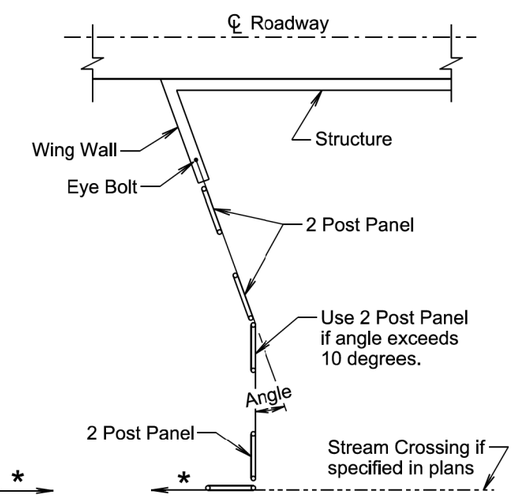
R.C. BOX CULVERT OR CATTLE PASS



STRUCTURE WITH STREAM CROSSING FENCE



R.C. BOX CULVERT OR CATTLE PASS

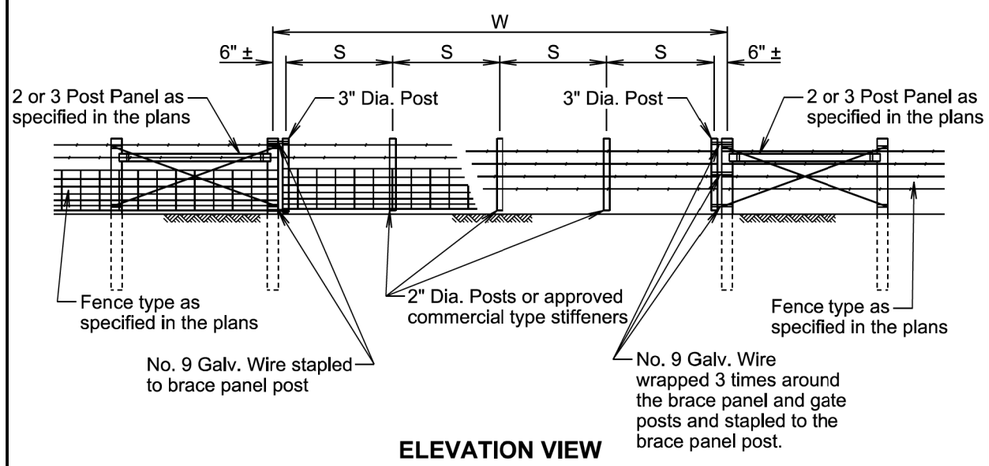


BRIDGE

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

June 26, 2019

Published Date: 2026	SDDOT	BRACE PANEL APPLICATIONS AT STRUCTURES	PLATE NUMBER 620.04
			Sheet 1 of 1



ELEVATION VIEW

W Gate Width (Ft.)	S Post Spacing
16	3 @ 5'-0" ±
20	4 @ 4'-9" ±
24	4 @ 5'-9" ±
30	5 @ 5'-10" ±
40	6 @ 6'-6" ±

GENERAL NOTES:

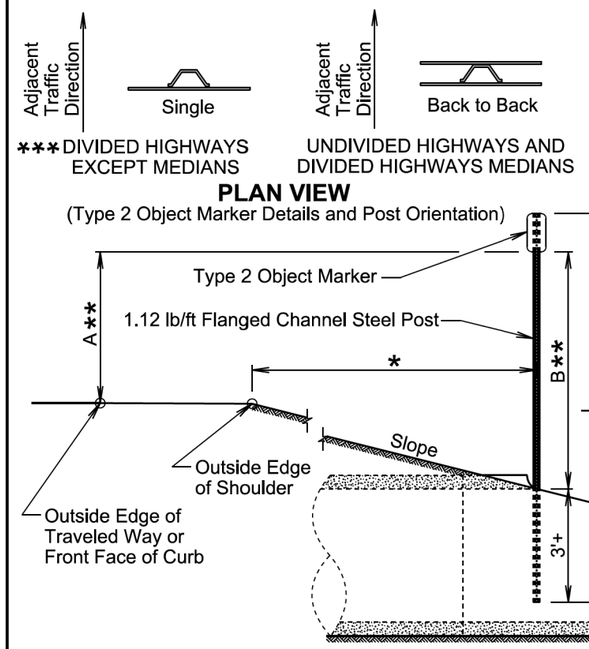
Creosote treatment of the gate posts will not be accepted.

The type of fencing in the gate will be of the same type as specified for the adjacent Right-of-Way fence.

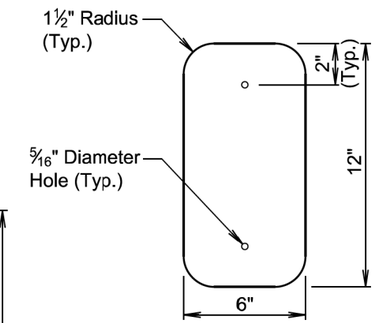
All costs for furnishing and constructing the wire gate(s) will be incidental to the contract unit price per foot for the respective Right-of-Way fence contract item.

June 26, 2019

Published Date: 2026 | SDDOT | **WIRE GATES** | PLATE NUMBER 620.20 | Sheet 1 of 1



PLAN VIEW
(Type 2 Object Marker Details and Post Orientation)



ELEVATION VIEW
(Type 2 Object Marker Detail)
(⅞" to 1⅛" grip range
¼" twin rivet (single and back to back))

ELEVATION VIEW
(Pipe culvert shown for illustrative purpose.)

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

GENERAL NOTES:

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

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

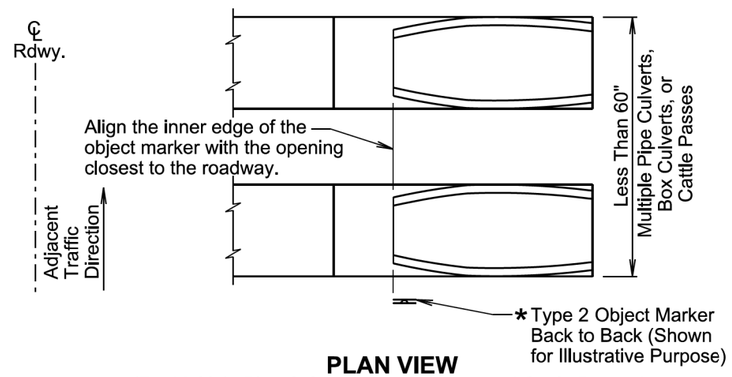
** Dimension A is 4 feet when the Offset * is 8 feet and less. Dimension B is 4 feet when Offset * is greater than 8 feet.

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

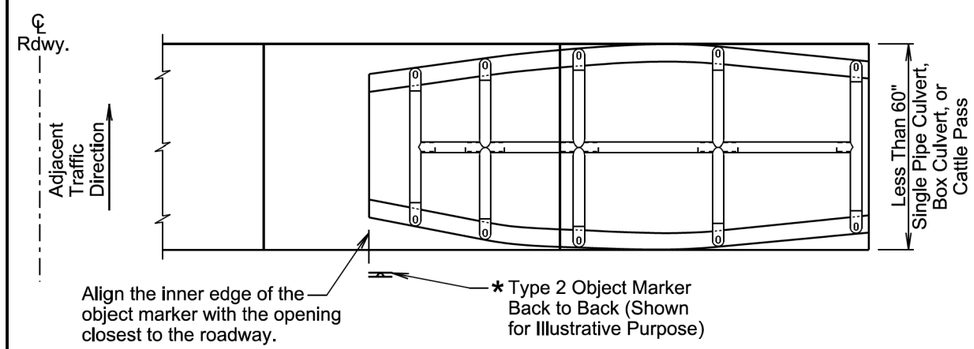
Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

Published Date: 2026 | SDDOT | **TYPE 2 OBJECT MARKER (DIRECT DRIVE)** | PLATE NUMBER 632.01 | Sheet 1 of 1



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



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

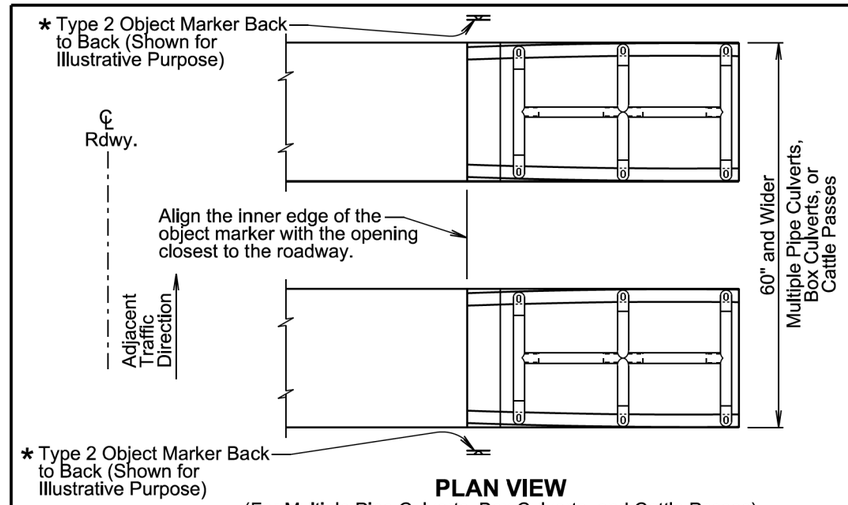
GENERAL NOTES:

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

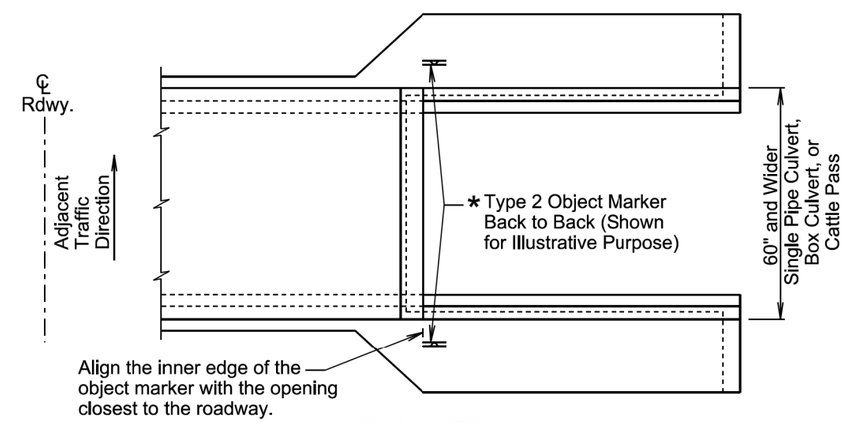
* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)	PLATE NUMBER 632.03 Sheet 1 of 1



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



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

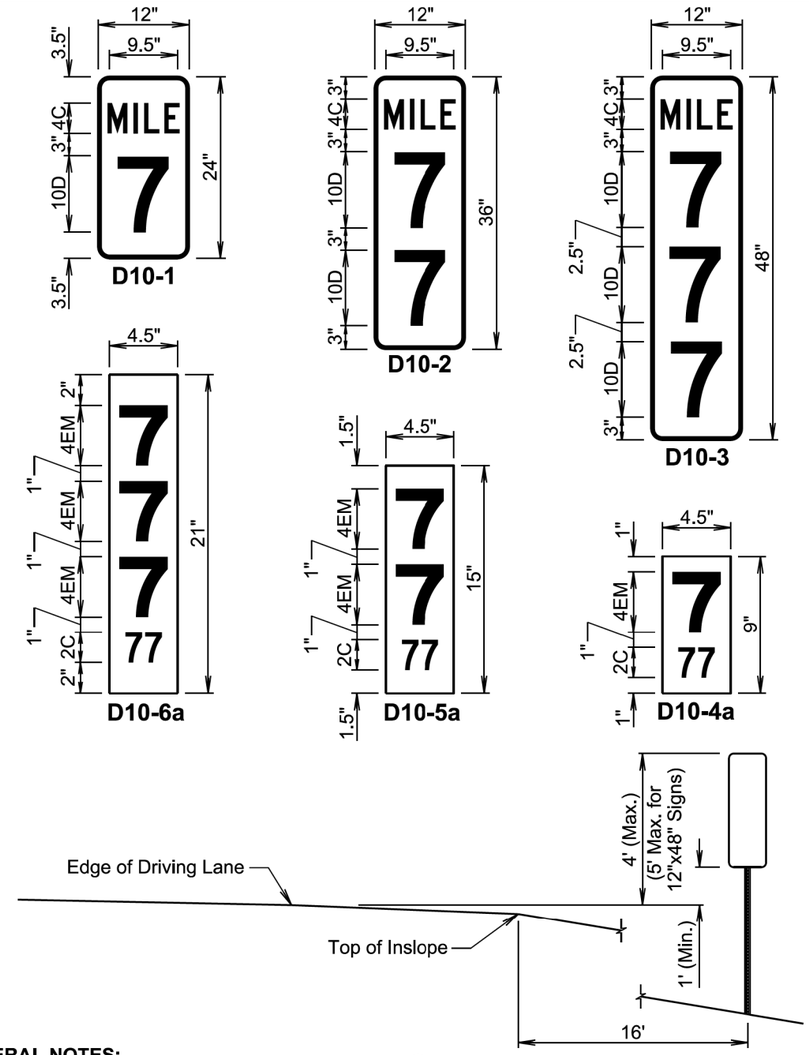
GENERAL NOTES:

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

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

December 23, 2019

Published Date: 2026	SDDOT	TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (60" and Greater Overall Width)	PLATE NUMBER 632.04 Sheet 1 of 1



ELEVATION VIEW

GENERAL NOTES:

Background will be high intensity green.

Legend and border will be high intensity white.

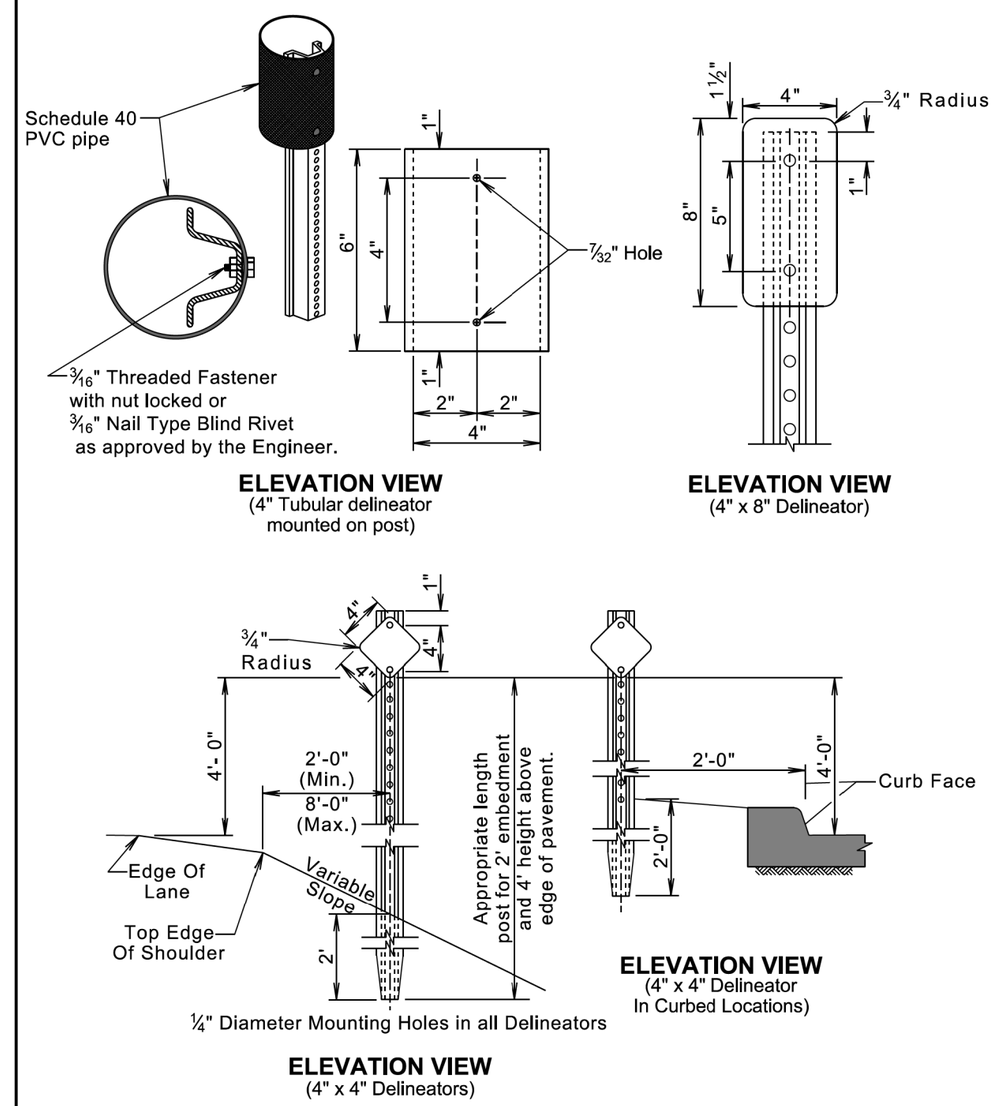
Signs 12 inches wide will have rounded corners (Radius = 1.5 inches) with 0.5 inch wide border.

Signs 4.5 inches wide will have squared corners with no border.

Sign locations will be staked by the Engineer.

December 23, 2019

Published Date: 2026	SDDOT	INTERSTATE MILEAGE REFERENCE MARKERS	PLATE NUMBER 632.31 Sheet 1 of 1

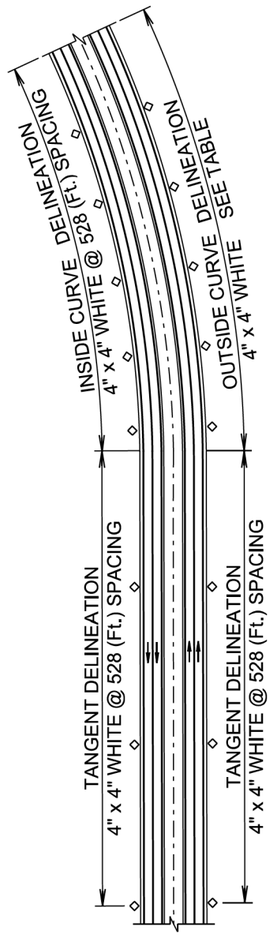


GENERAL NOTES:

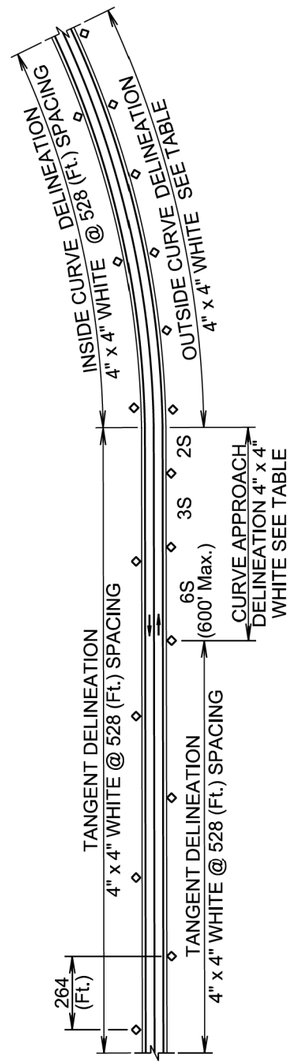
Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

Published Date: 2026	SDDOT	DELINEATOR INSTALLATION DETAIL	PLATE NUMBER 632.42 Sheet 1 of 1



PLAN VIEW
(Divided Roadway)



PLAN VIEW
(Undivided Roadway)

March 31, 2024

Published Date: 2026 | SDDOT | DELINEATOR INSTALLATION SPACING | PLATE NUMBER 632.46 | Sheet 1 of 2

GENERAL NOTES:

Delineators will be located from 2 to 8 feet outside of the outer edge of shoulder. When a roadside barrier or other obstruction intrudes into the space between the pavement edge and the extension of the line of delineators, the delineators should be in line with the barrier or in line with the innermost edge of the obstruction.

When normal spacing is interrupted by driveways, crossroads, or approaches, delineators falling within such areas may be moved in either direction a distance not exceeding one-quarter of the standard spacing. Delineators still falling within such areas should be eliminated.

The spacing for specific radii may be interpolated from the table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away form the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S, but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula $S = 3\sqrt{R - 50}$. The distances for S shown in the table were rounded to the nearest 5 feet.

Curve approach delineation is not required if curve delineation spacing exceeds 100 ft.

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

DELINEATOR SPACING
OUTSIDE CURVE

Radius of Curve (Ft.)	Curve Delineator Spacing (Ft.)	Curve Approach Spacing (Ft.)		
		A	B	C
50	20	40	65	125
115	25	50	75	150
150	30	60	90	180
180	35	70	110	215
250	40	85	125	250
300	45	95	140	285
400	55	110	170	300
500	65	125	190	300
600	70	140	210	300
700	75	150	230	300
800	80	165	245	300
900	85	175	260	300
1000	90	185	275	300

March 31, 2024

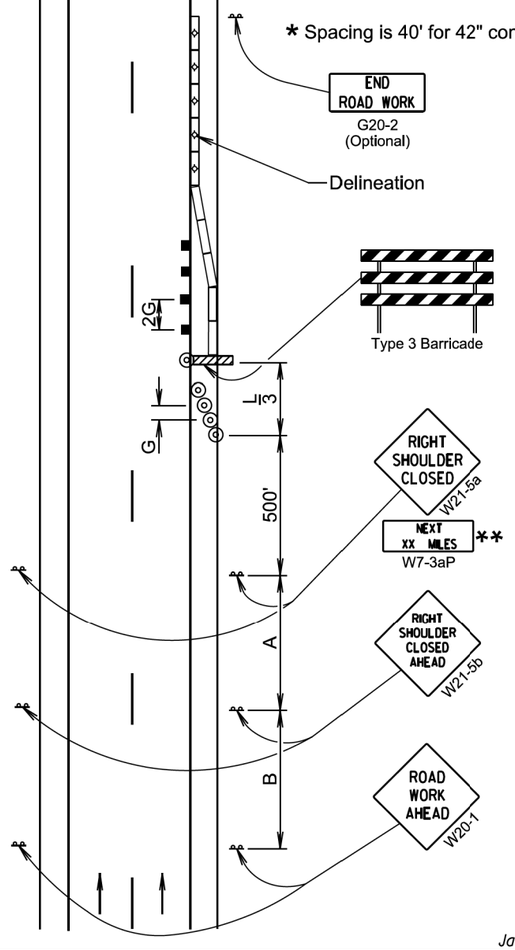
Published Date: 2026 | SDDOT | DELINEATOR INSTALLATION SPACING | PLATE NUMBER 632.46 | Sheet 2 of 2

◎ Reflectorized Drum
■ Channelizing Device
▭ Movable Concrete Barrier
** For distances ½ mile or greater.

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

This standard plate shows one method which may be used to close a shoulder of a roadway for a long term project. The Engineer will determine if the use of barriers is required. If barriers are required, the layout details will be included elsewhere in the plans.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50 *
55	750	660	50 *
60 - 65	1000	780	50 *
	(A) (B)		
70 - 80	1000 1500	1125	50 *



January 22, 2021

Published Date: 2026 | SDDOT | SHOULDER CLOSED | PLATE NUMBER 634.61 | Sheet 1 of 1

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

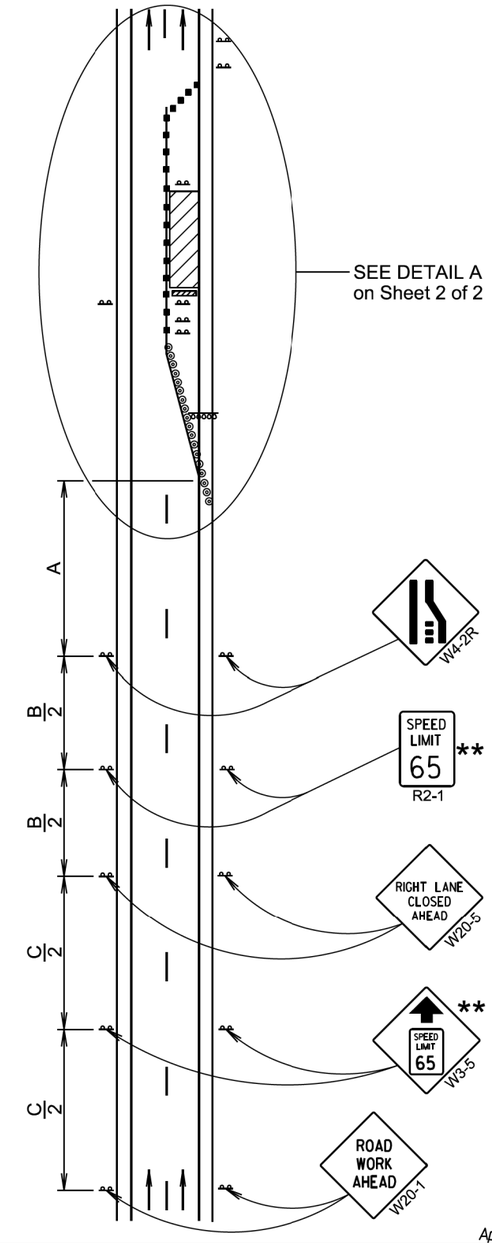
** Speed appropriate for location.

◎ Reflectorized Drum

■ Channelizing Device

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

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



April 8, 2025

Published Date: 2026 | SDDOT | WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS | PLATE NUMBER 634.63 | Sheet 1 of 2

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

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

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

◎ Reflectorized Drum

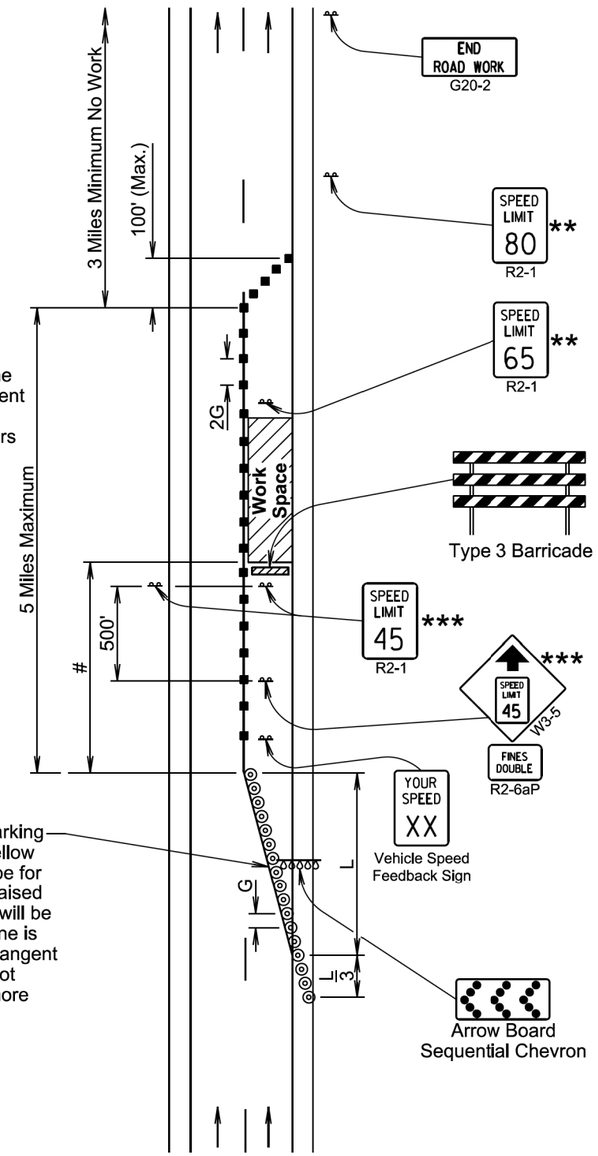
■ Channelizing Device

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

The channelizing devices will be 42" cones or drums.

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

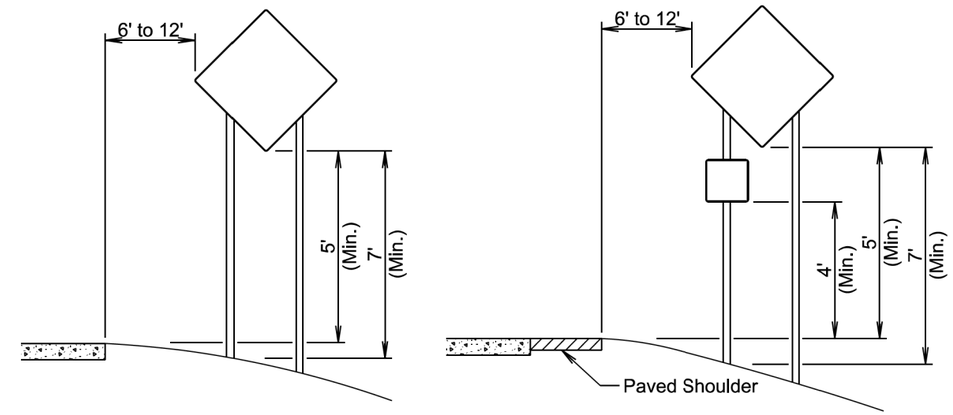
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do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



DETAIL A

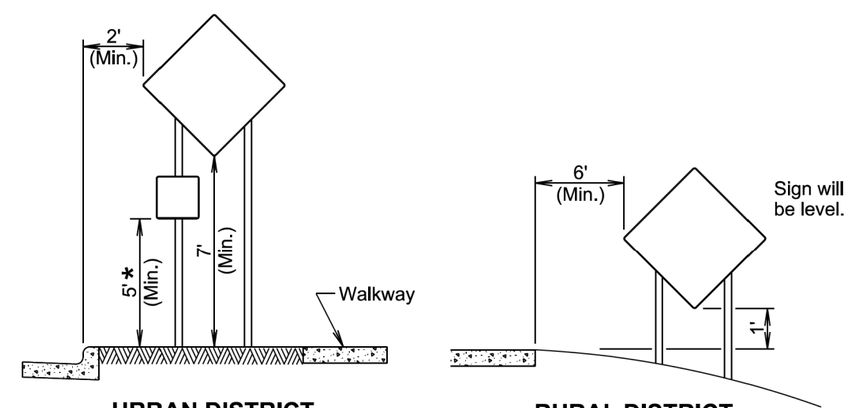
April 8, 2025

Published Date: 2026 | SDDOT | **WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS** | PLATE NUMBER 634.63 | Sheet 2 of 2



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



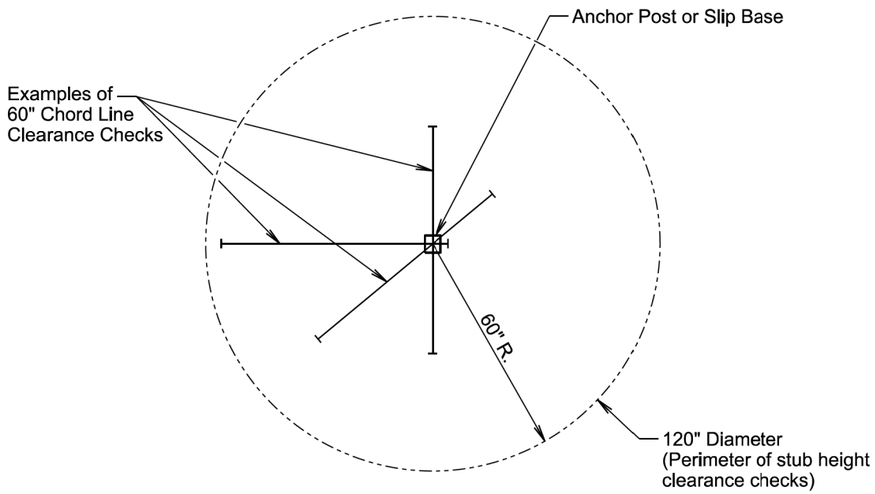
URBAN DISTRICT

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

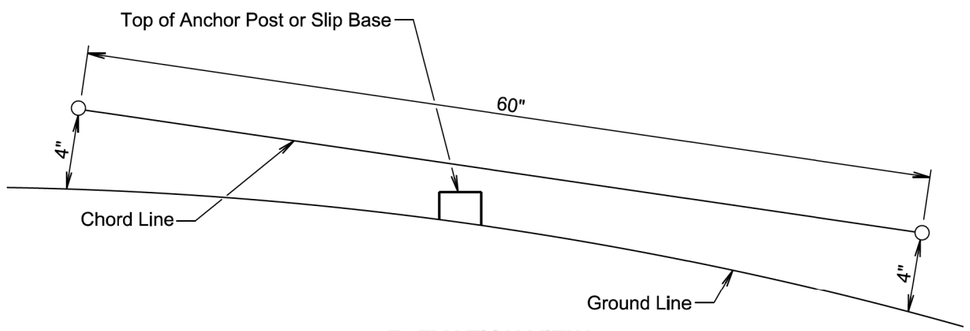
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026 | SDDOT | **CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)** | PLATE NUMBER 634.85 | Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

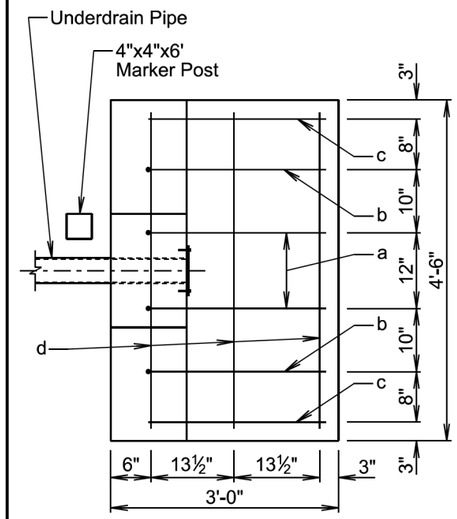
The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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

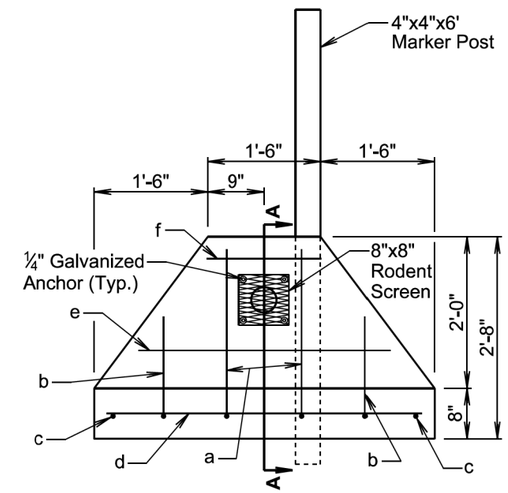
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2026	SDDOT	**BREAKAWAY SUPPORT STUB CLEARANCE**	PLATE NUMBER 634.99
			Sheet 1 of 1



PLAN VIEW



ELEVATION VIEW

GENERAL NOTES:

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

Four cast-in-place or drilled-in ¼" galvanized anchors will be placed in the headwall. Each galvanized anchor will be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.

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

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

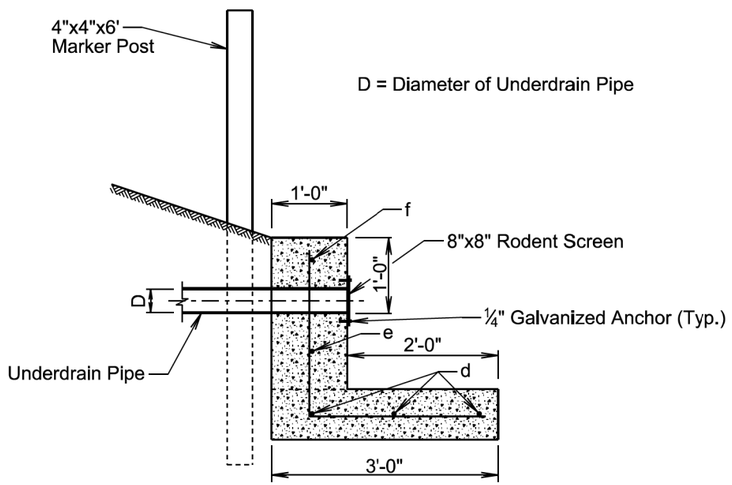
The 8"x8" rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen will be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.

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

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

December 23, 2019

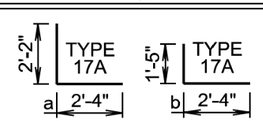
Published Date: 2026	SDDOT	**CONCRETE HEADWALL FOR UNDERDRAIN**	PLATE NUMBER 680.01
			Sheet 1 of 2



SECTION A-A

REINFORCING SCHEDULE

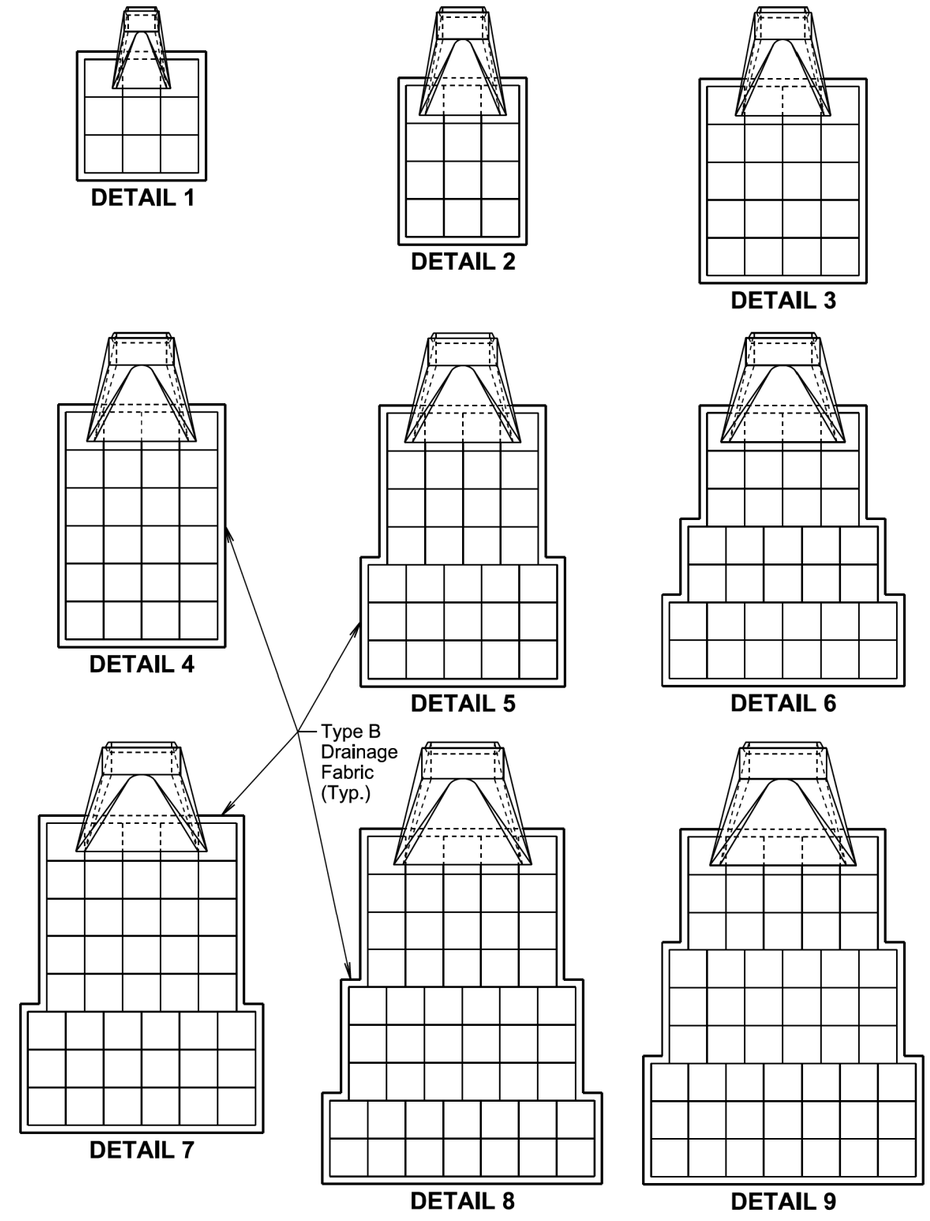
MK.	No.	Size	Length	Type	Bending Details
a	2	4	4'-6"	17A	
b	2	4	3'-9"	17A	
c	2	4	2'-4"	Str.	
d	3	4	4'-2"	Str.	
e	1	4	3'-4"	Str.	
f	1	4	1'-6"	Str.	



NOTE:
All dimensions are out to out of bars.

December 23, 2019

Published Date: 2026 | SDDOT | CONCRETE HEADWALL FOR UNDERDRAIN | PLATE NUMBER 680.01 | Sheet 2 of 2



February 14, 2020

Published Date: 2026 | SDDOT | BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS | PLATE NUMBER 720.03 | Sheet 1 of 2

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

GENERAL NOTES:

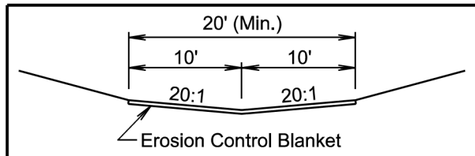
Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

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

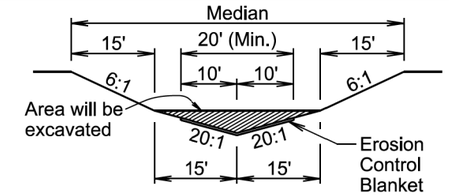
Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance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

February 14, 2020

Published Date: 2026 | SDDOT | BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS | PLATE NUMBER 720.03 | Sheet 2 of 2

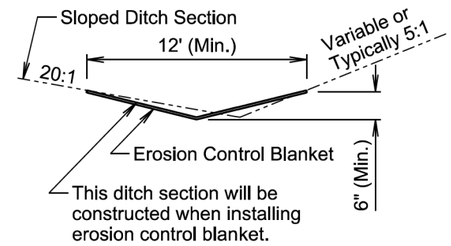


STANDARD DITCH SECTION

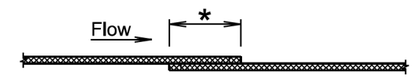


The median will be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



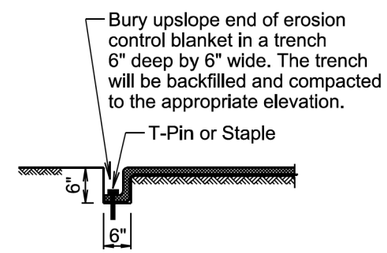
SLOPED DITCH SECTION



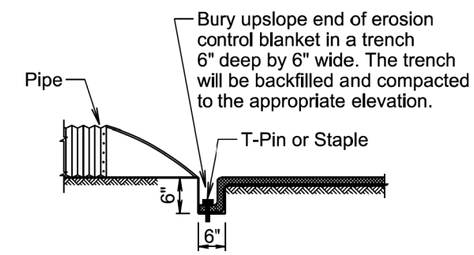
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

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

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

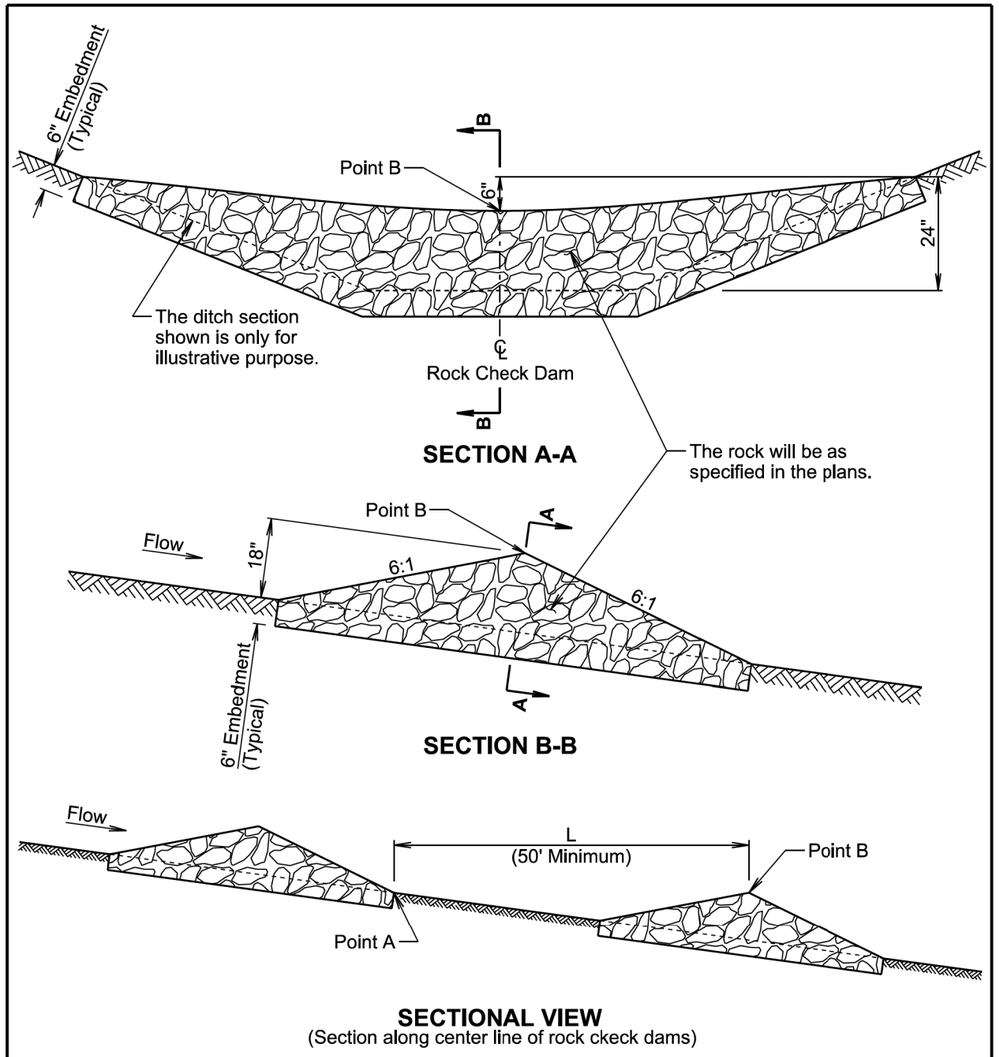
The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

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

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

February 14, 2020

Published Date: 2026 | SDDOT | EROSION CONTROL BLANKET | PLATE NUMBER 734.01 | Sheet 1 of 1



GENERAL NOTES:

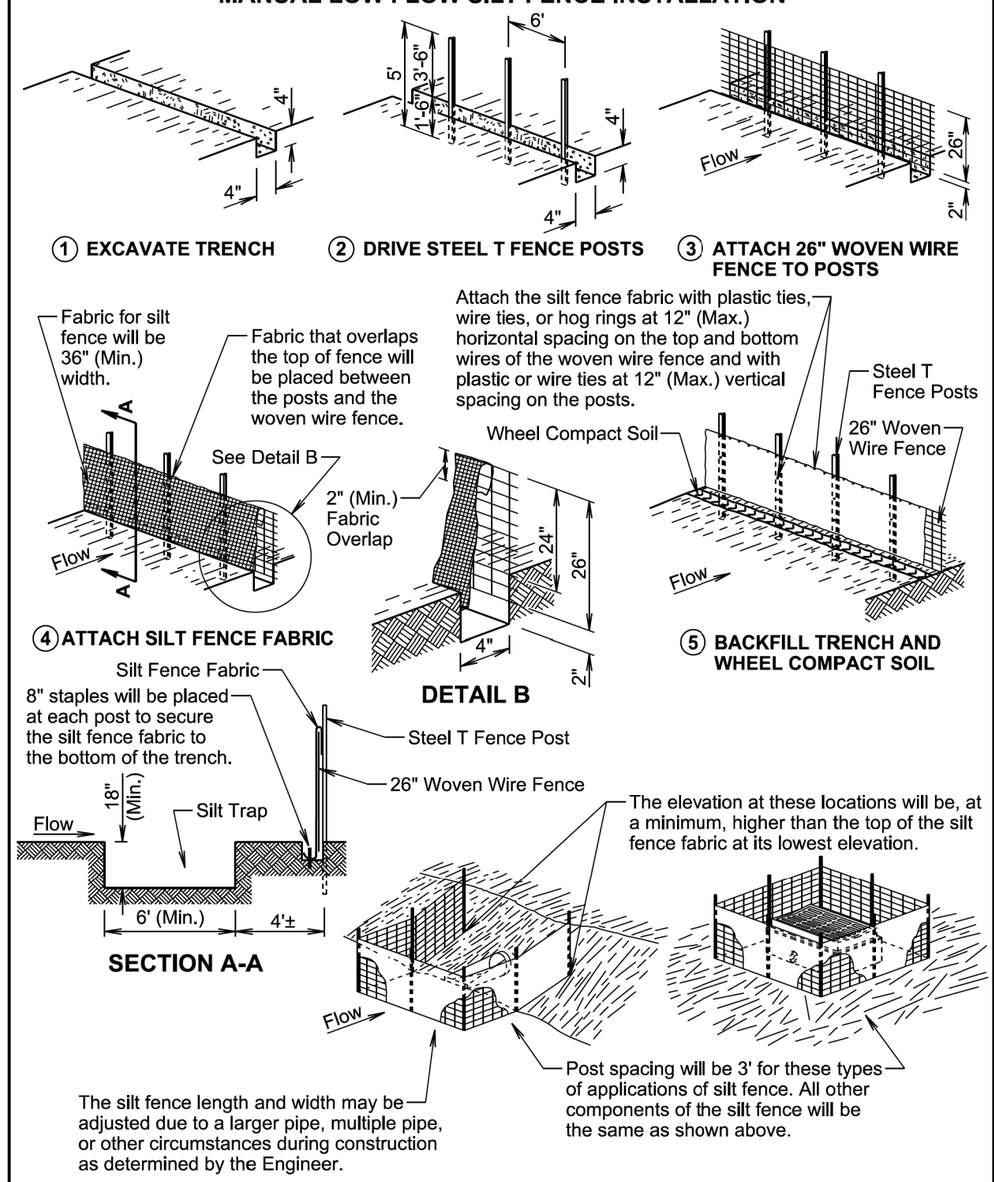
The elevation of Point A and Point B will be the same. The distance L is the distance required such that Point A and Point B are at the same elevation.

All costs for constructing the rock check dam including labor, equipment, excavation, and rock will be incidental to the contract unit price per cubic yard for "Rock Check Dam".

February 14, 2020

Published Date: 2026	SDDOT	ROCK CHECK DAM	PLATE NUMBER 734.03
			Sheet 1 of 1

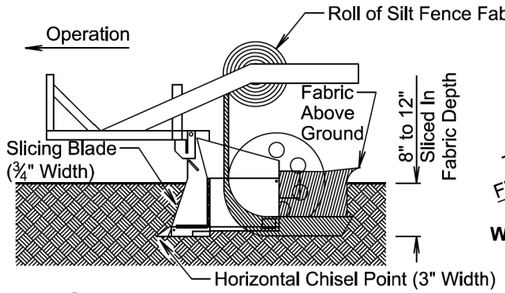
MANUAL LOW FLOW SILT FENCE INSTALLATION



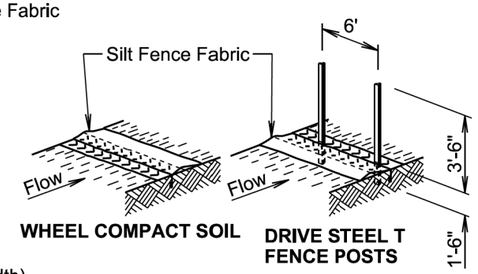
February 14, 2020

Published Date: 2026	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

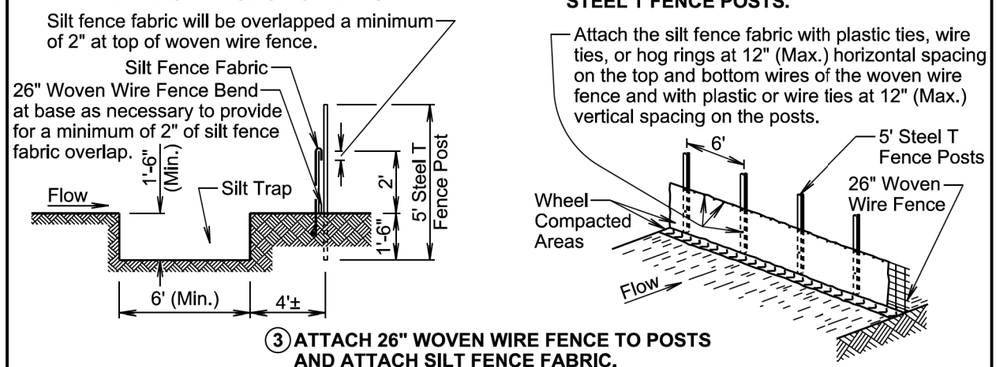
MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



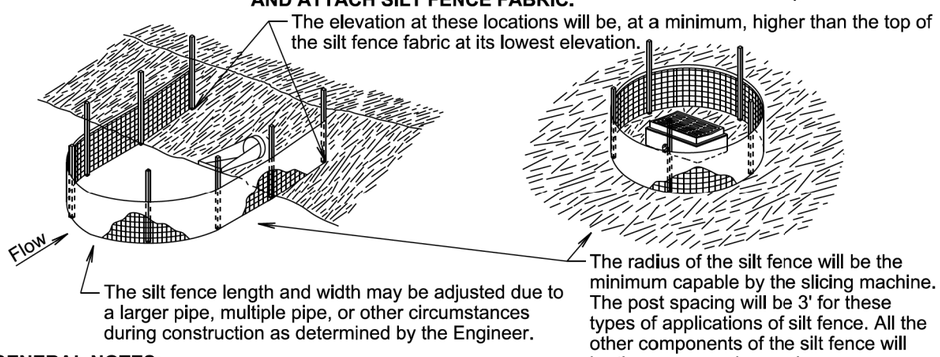
1 INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



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



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



GENERAL NOTES:

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

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

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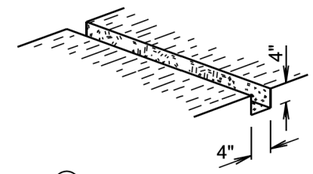
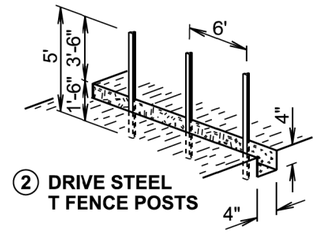
Published Date: 2026	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04 Sheet 2 of 2

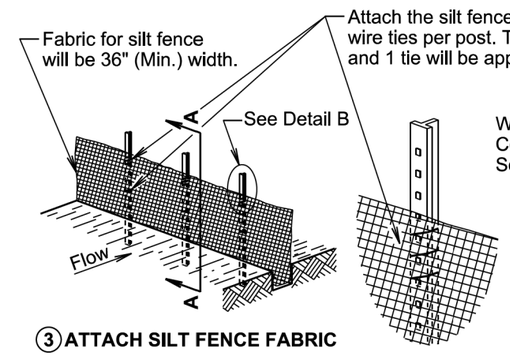
MANUAL HIGH FLOW SILT FENCE INSTALLATION



1 EXCAVATE TRENCH

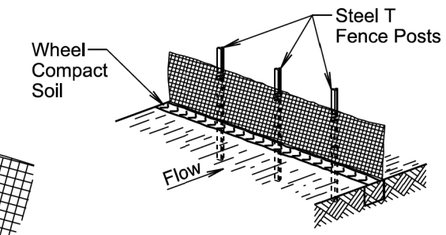


2 DRIVE STEEL T FENCE POSTS

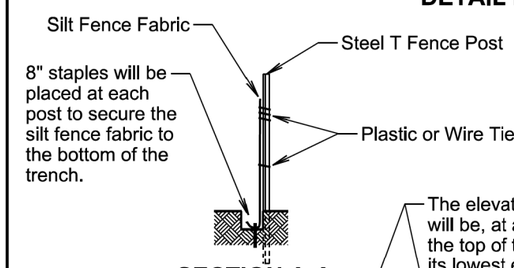


3 ATTACH SILT FENCE FABRIC

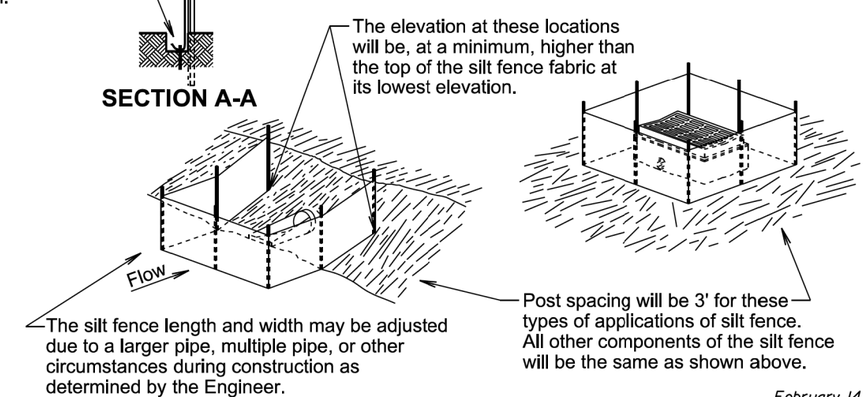
DETAIL B



4 BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A



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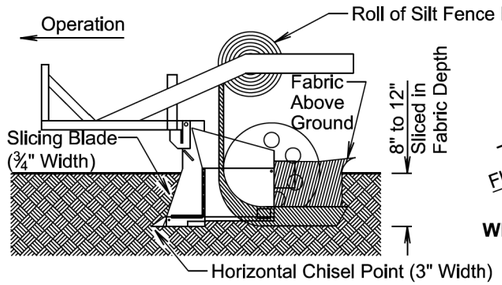
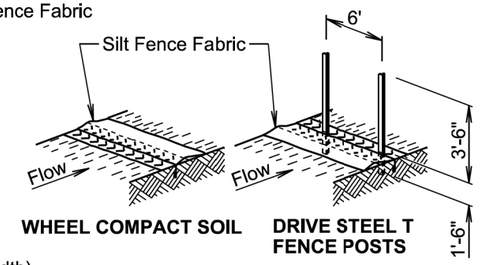
Published Date: 2026	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05 Sheet 1 of 2

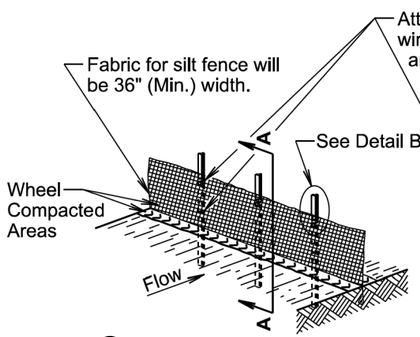
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



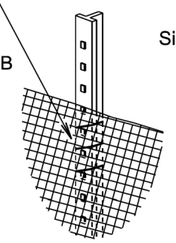
① **INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.**



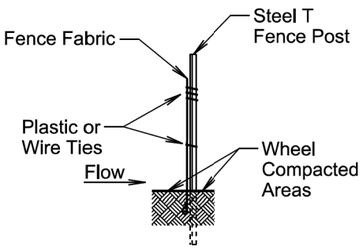
② **WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.**



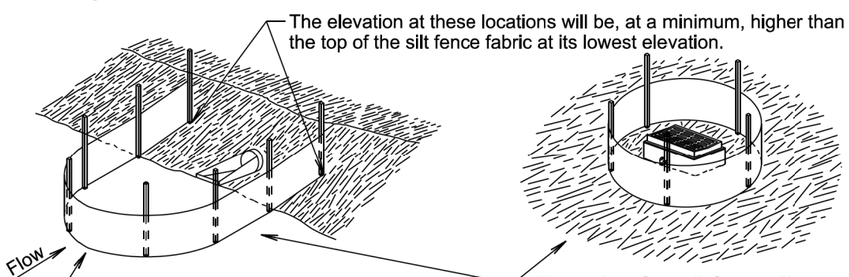
③ **ATTACH SILT FENCE FABRIC**



DETAIL B



SECTION A-A



GENERAL NOTE:

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

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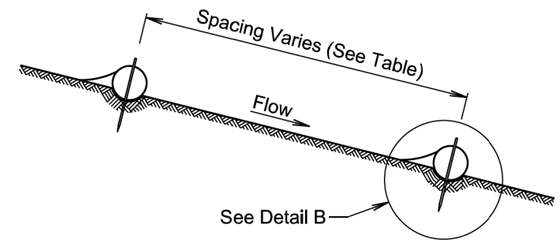
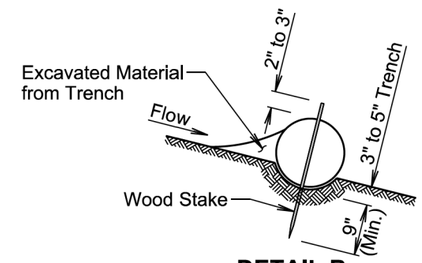
Published Date: 2026	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

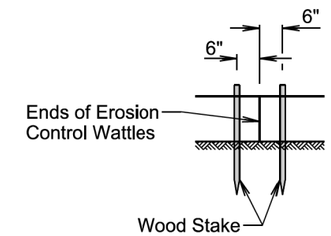


ELEVATION VIEW
(Cut or Fill Slope Installation)

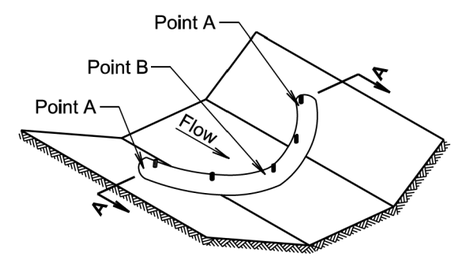
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



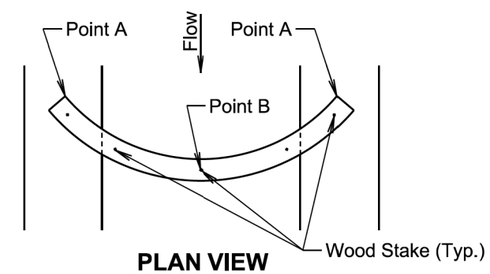
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

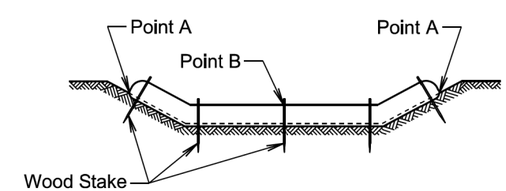


ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)

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



SECTION A-A

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Published Date: 2026	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

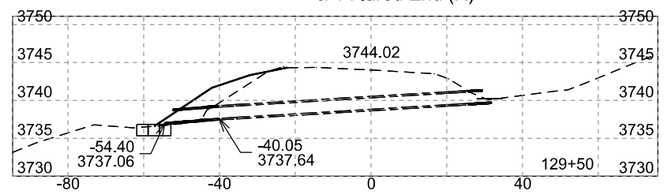
Westbound

Westbound 129+50
Retain 18" - 60' RCP
& 1 Flared End (R)

Westbound 129+50 - L
Take Out 1 Flared End
(Incidental Work, Grading)

Westbound 129+50 - L
Install 18" - 8' RCP
& 1 Flared End

Westbound 129+50 L
Install Bank and Channel
Protection Gabions
(4.5 CY)

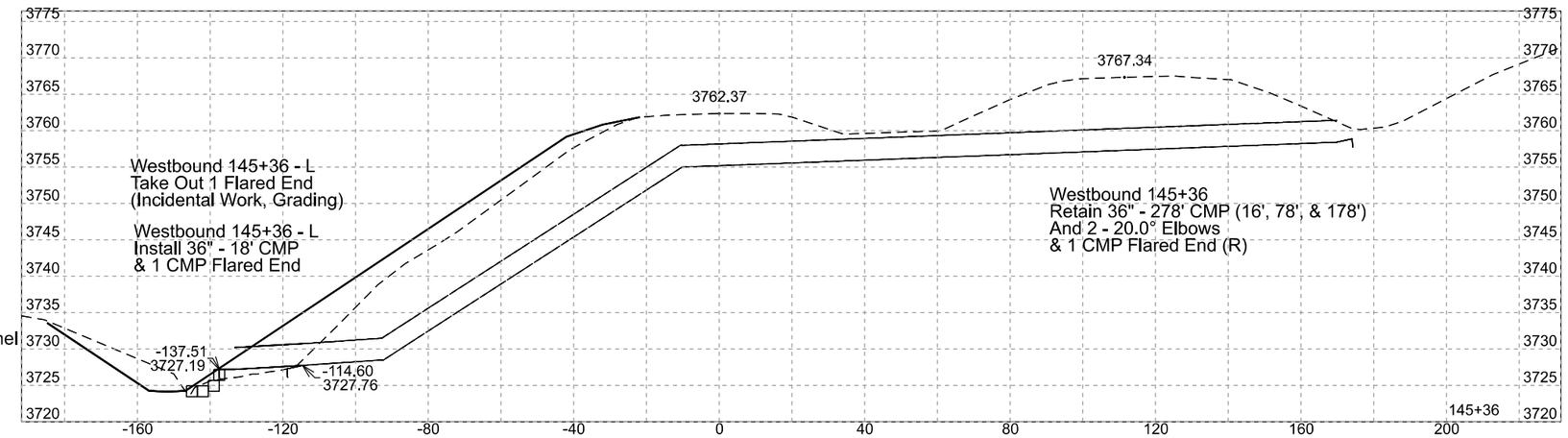


Westbound 145+36 - L
Take Out 1 Flared End
(Incidental Work, Grading)

Westbound 145+36 - L
Install 36" - 18' CMP
& 1 CMP Flared End

Westbound 145+36
Retain 36" - 278' CMP (16', 78', & 178')
And 2 - 20.0° Elbows
& 1 CMP Flared End (R)

Westbound 145+36 L
Install Bank and Channel
Protection Gabions
(6 CY)

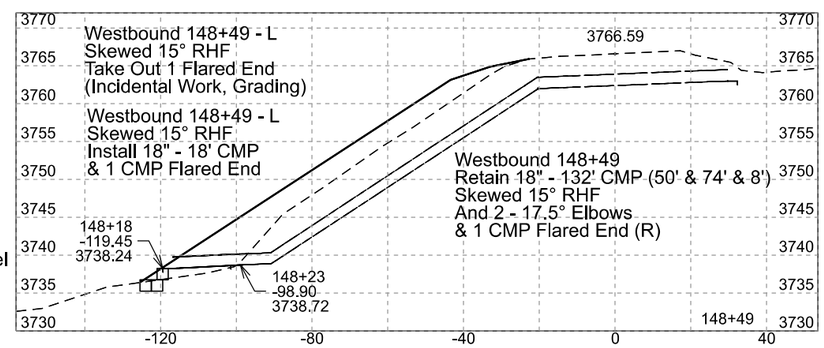


Westbound 148+49 - L
Skewed 15° RHF
Take Out 1 Flared End
(Incidental Work, Grading)

Westbound 148+49 - L
Skewed 15° RHF
Install 18" - 18' CMP
& 1 CMP Flared End

Westbound 148+49
Retain 18" - 132' CMP (50' & 74' & 8')
Skewed 15° RHF
And 2 - 17.5° Elbows
& 1 CMP Flared End (R)

Westbound 148+18 L
Install Bank and Channel
Protection Gabions
(4.5 CY)

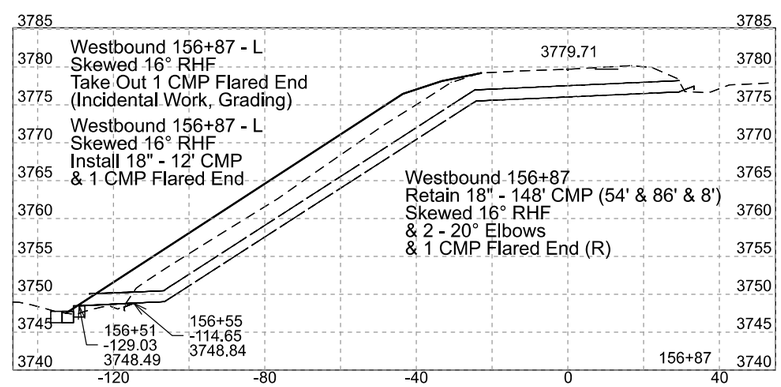


Westbound 156+87 - L
Skewed 16° RHF
Take Out 1 CMP Flared End
(Incidental Work, Grading)

Westbound 156+87 - L
Skewed 16° RHF
Install 18" - 12' CMP
& 1 CMP Flared End

Westbound 156+87
Retain 18" - 148' CMP (54' & 86' & 8')
Skewed 16° RHF
& 2 - 20° Elbows
& 1 CMP Flared End (R)

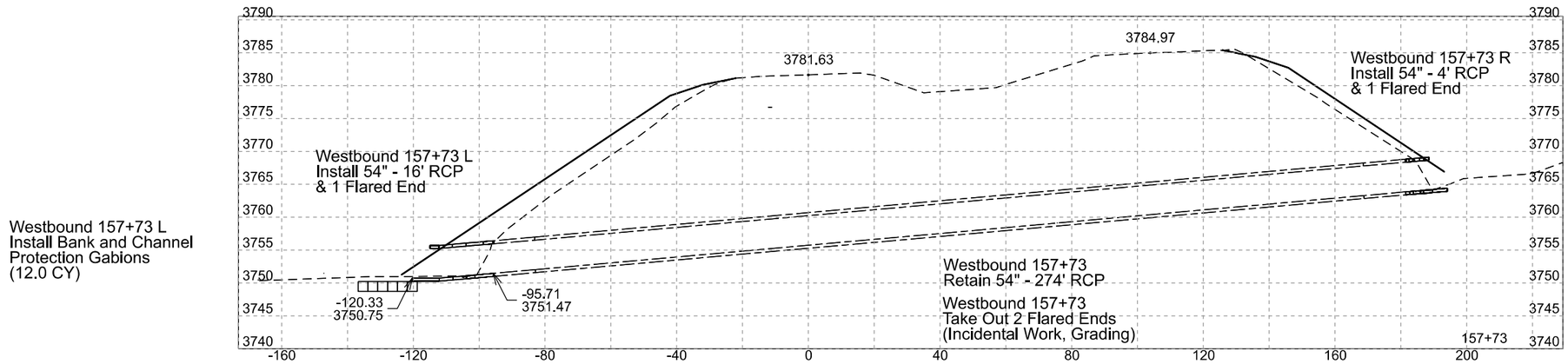
Westbound 156+52 L
Install Bank and Channel
Protection Gabions
(4.5 CY)

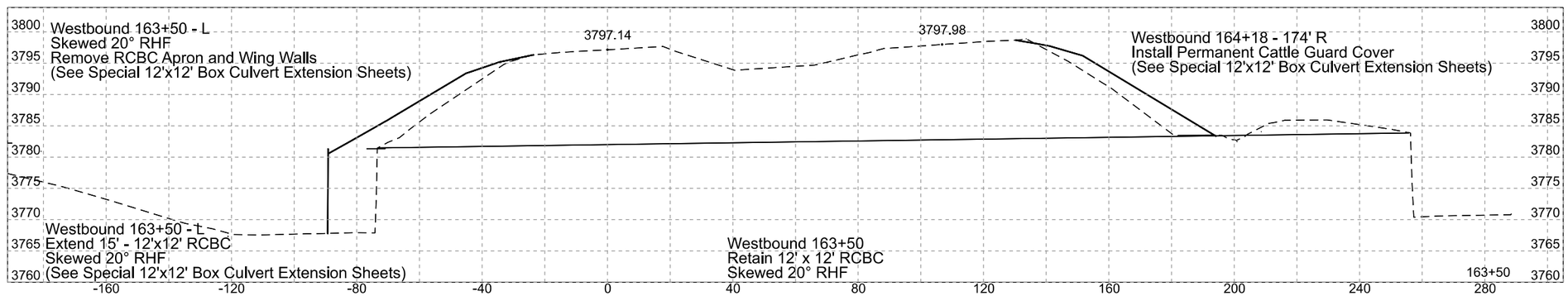


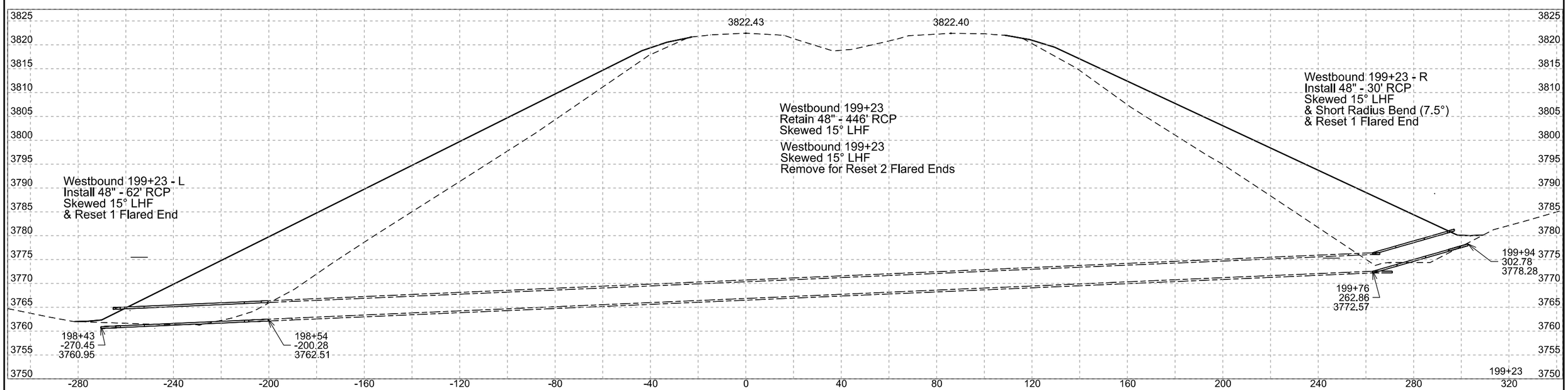
Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	100/104

Plotting Date: 1/8/2026



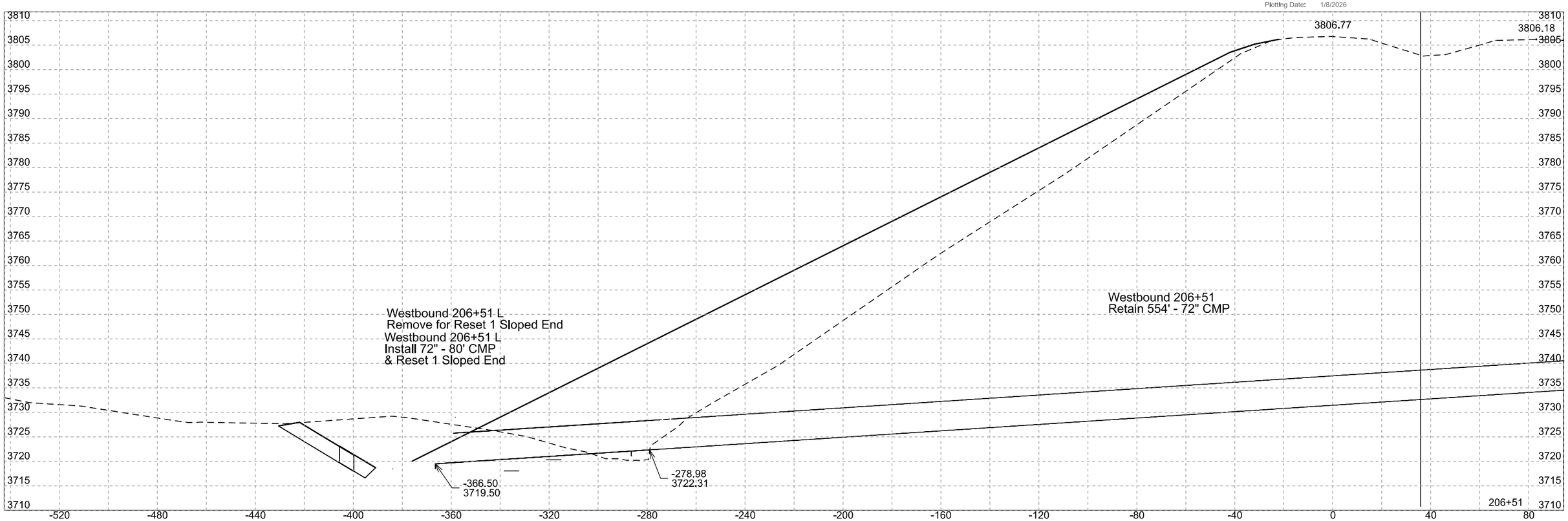




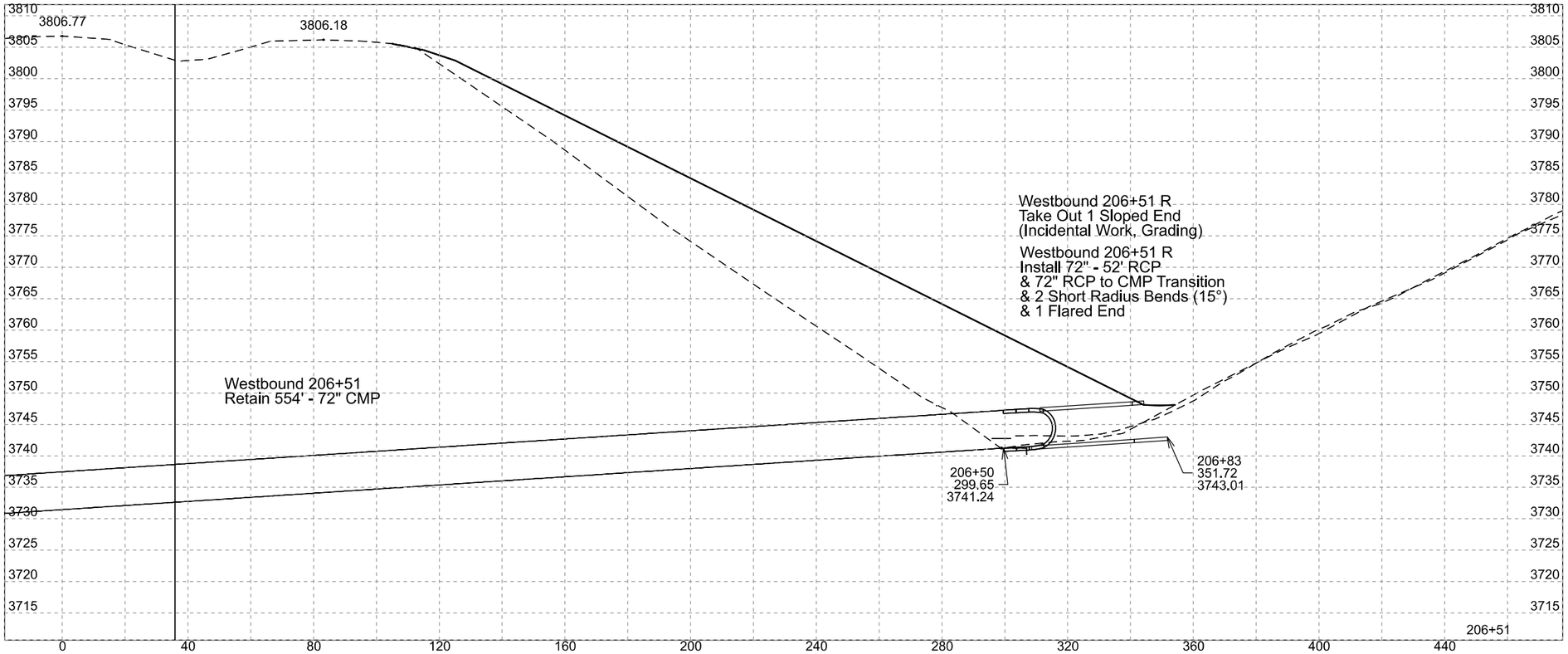
Westbound

SD DOT	PROJECT	SECTION	SHEET
	PH 0040(346)	Non	101/104

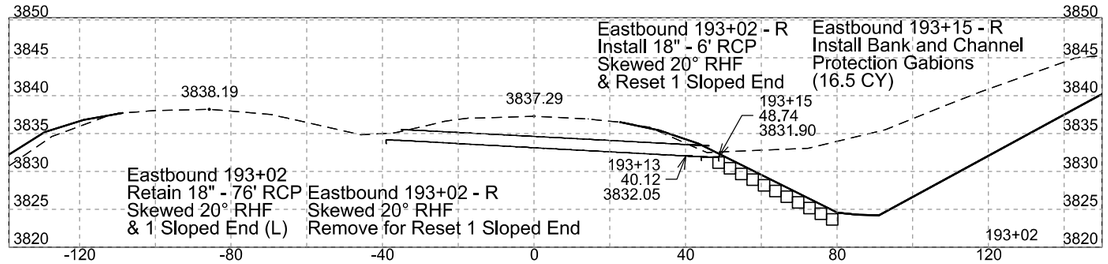
Plotting Date: 1/8/2026

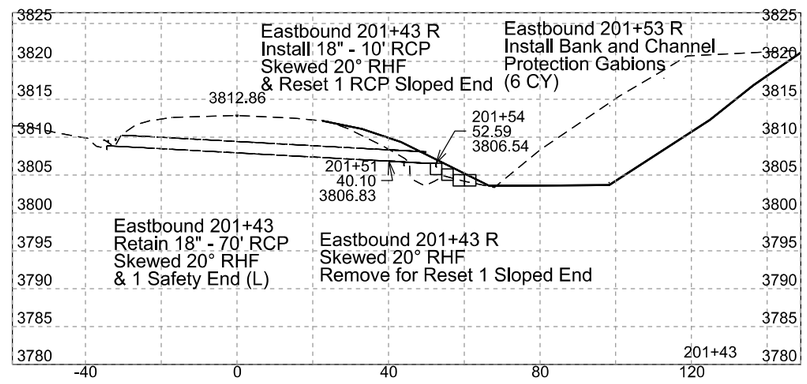


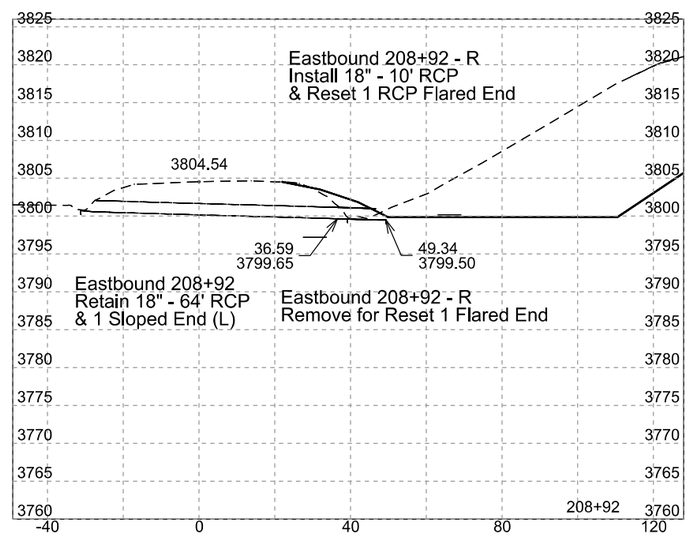
Westbound


3806.77
3806.18
Westbound 206+51 R
Take Out 1 Sloped End
(Incidental Work, Grading)
Westbound 206+51 R
Install 72" - 52' RCP
& 72" RCP to CMP Transition
& 2 Short Radius Bends (15°)
& 1 Flared End
Westbound 206+51
Retain 554' - 72" CMP
206+50
299.65
3741.24
206+83
351.72
3743.01
206+51
3810
3805
3800
3795
3790
3785
3780
3775
3770
3765
3760
3755
3750
3745
3740
3735
3730
3725
3720
3715
0
40
80
120
160
200
240
280
320
360
400
440

Eastbound


Eastbound 193+02 - R
Install 18" - 6' RCP
Skewed 20° RHF
& Reset 1 Sloped End
Eastbound 193+15 - R
Install Bank and Channel
Protection Gabions
(16.5 CY)
3838.19
3837.29
193+15
48.74
3831.90
193+13
40.12
3832.05
Eastbound 193+02
Retain 18" - 76' RCP
Skewed 20° RHF
& 1 Sloped End (L)
Eastbound 193+02 - R
Skewed 20° RHF
Remove for Reset 1 Sloped End
193+02
3850
3845
3840
3835
3830
3825
3820
-120
-80
-40
0
40
80
120


Eastbound 201+43 R
Install 18" - 10' RCP
Skewed 20° RHF
& Reset 1 RCP Sloped End
Eastbound 201+53 R
Install Bank and Channel
Protection Gabions
(6 CY)
3812.86
201+54
52.59
3806.54
201+51
40.10
3806.83
Eastbound 201+43
Retain 18" - 70' RCP
Skewed 20° RHF
& 1 Safety End (L)
Eastbound 201+43 R
Skewed 20° RHF
Remove for Reset 1 Sloped End
201+43
3825
3820
3815
3810
3805
3800
3795
3790
3785
3780
-40
0
40
80
120


Eastbound 208+92 - R
Install 18" - 10' RCP
& Reset 1 RCP Flared End
3804.54
36.59
3799.65
49.34
3799.50
Eastbound 208+92
Retain 18" - 64' RCP
& 1 Sloped End (L)
Eastbound 208+92 - R
Remove for Reset 1 Flared End
208+92
3825
3820
3815
3810
3805
3800
3795
3790
3785
3780
3775
3770
3765
3760
-40
0
40
80
120

Eastbound

Profile of Driveway Cross Pipe
Sta. 196+00 - 230' R