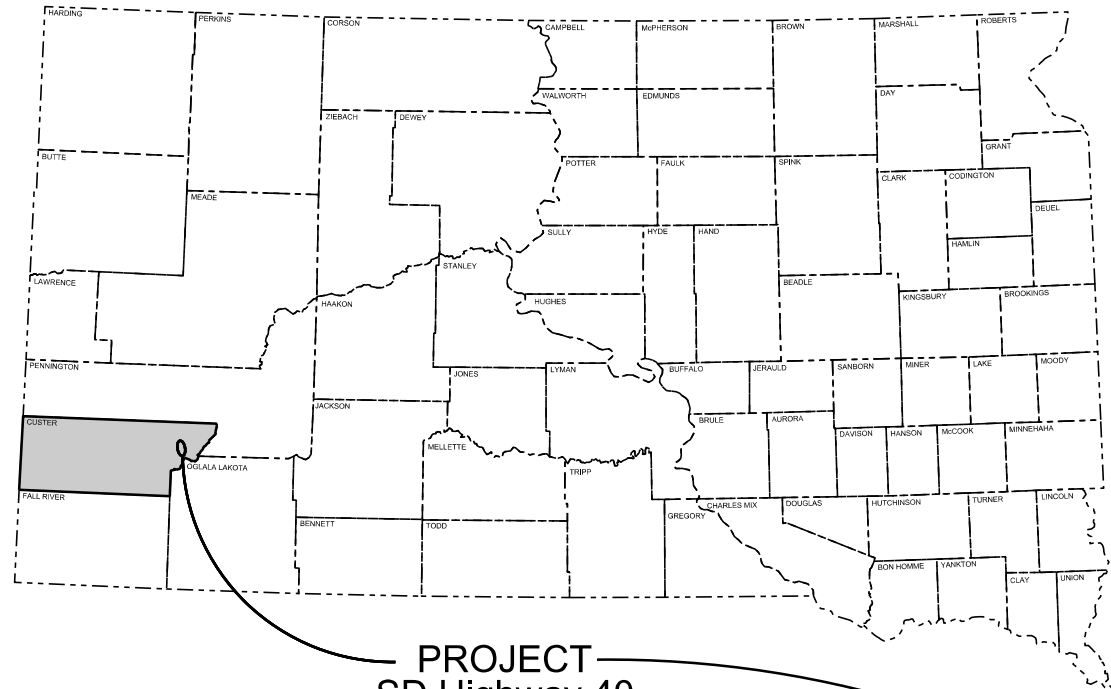


Plot Scale - 1:200

Plotted From - ttrc12808



PROJECT
SD Highway 40
MRM 68.2 to MRM 68.4

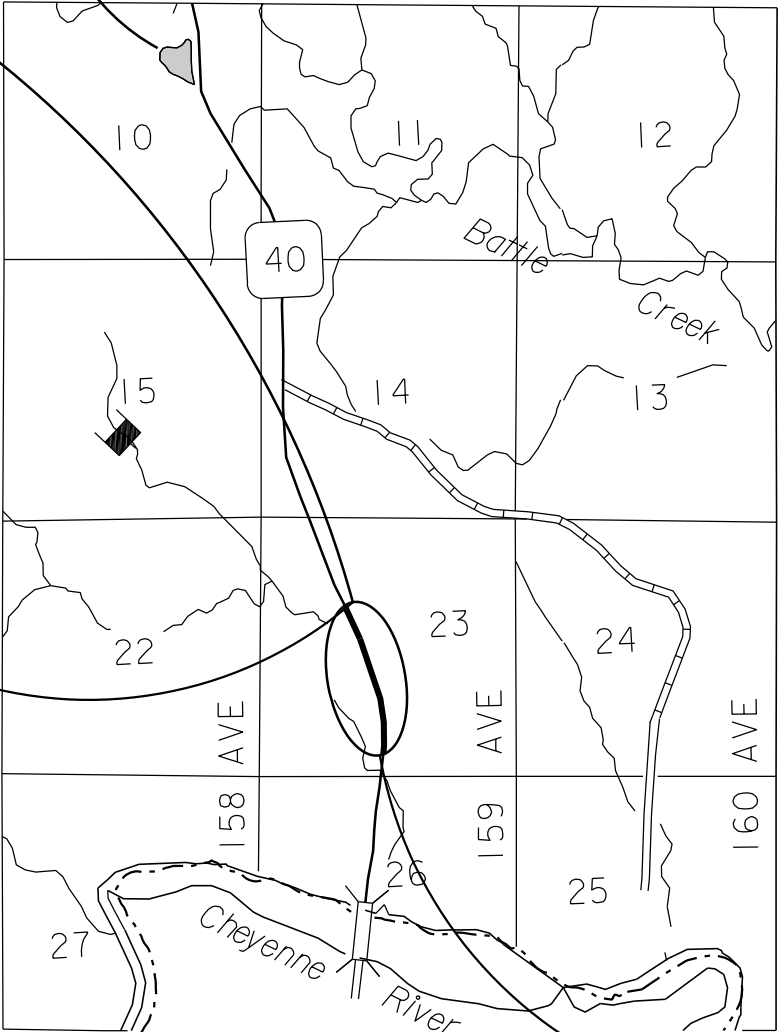
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT P 0040(237)68
SD HIGHWAY 40
CUSTER COUNTY

LANDSLIDE REPAIR
PCN 05KH

Borrow Pit
NE 1/4
Sec. 10 - T4S - R10E

BEGIN P 0040(237)68
617' North and 1876' East
of the W 1/4 Corner
of Sec.23 T4S - R10E
of the Black Hills Meridian
Custer County, SD



END P 0040(237)68
792' South and 2253' East
of the W 1/4 Corner
of Sec.23 T4S - R10E
of the Black Hills Meridian
Custer County, SD

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	1	72

Plotting Date: 07/12/2016
Revised: 7/12/2016 GDS

INDEX OF SHEETS

Sheet No	1:	Title and Index
Sheets No.	2 - 12:	Estimate, Notes & Tables
Sheet No	13:	Borrow Pit Information
Sheets No	14 - 15:	Typical Sections
Sheets No	16 - 17:	Traffic Control Details
Sheet No	18:	Erosion Control Details
Sheet No	19:	Topographical Index Sheet
Sheet No	20:	Plan Sheet
Sheet No	21:	Pavement Marking Details
Sheet No	22:	Underdrain Details
Sheets No	23 - 34:	Standard Plates
Sheets No	35 - 72:	Cross Sections

SCALES			
PLAN	RURAL 1"=200'	SUBURBAN 1"=100'	URBAN 1"=40'
PROFILE	HORIZONTAL: 1"=200'	1"=100'	1"=40'
	VERTICAL: 1"=20'	1"=20'	1"=10'
CROSS SECTIONS	HORIZONTAL: 1"=40'	1"=20'	1"=20'
	VERTICAL: 1"=20'	1"=10'	1"=10'

DESIGN DESIGNATION

ADT (2014)	480
ADT (2034)	583
DHV	72
D	52%
T DHV	2.8%
T ADT	6.1%
V	65 MPH

STORM WATER PERMIT

Major Receiving
Body of Water: Cheyenne River
Area Disturbed: 4.1 ac
Total Project Area: 6.5 ac
Approx. Begin Lat,Long: 45°41'15.28" N, 102°53'32.54" W



ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0030	Maintenance of Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
110E7152	Remove Delineator for Reset	6	Each
110E7802	Remove Fence for Reset	2,580	Ft
120E0010	Unclassified Excavation	73,815	CuYd
120E0100	Unclassified Excavation, Digouts	10	CuYd
120E0500	Option Borrow Excavation	37,201	CuYd
120E6000	Water for Dust Control	100.0	MGal
120E6100	Water for Embankment	2,220.3	MGal
210E3000	Ordinary Roadway Shaping	0.200	Mile
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1030	Base Course, Salvaged	2,139.0	Ton
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	2,300.0	Ton
320E1200	Asphalt Concrete Composite	692.0	Ton
320E7008	Grind 8" Rumble Strip or Stripe in Asphalt Concrete	0.3	Mile
620E0515	Type 1A Temporary Fence	3,730	Ft
620E1020	2 Post Panel	5	Each
620E4100	Reset Fence	2,580	Ft
632E2100	Reset Delineator	6	Each
633E1200	Waterborne Pavement Marking Paint with High Grade Polymer, White	8	Gal
633E1205	Waterborne Pavement Marking Paint with High Grade Polymer, Yellow	6	Gal
634E0010	Flagging	300.0	Hour
634E0110	Traffic Control Signs	149.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	2	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	67	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E0640	Temporary Pavement Marking	2,520	Ft
634E0700	Traffic Control Movable Concrete Barrier	67	Each
634E0750	Temporary Concrete Barrier End Protection	2	Each
634E0900	Portable Temporary Traffic Control Signal	2	Unit
680E0240	4" Corrugated Polyethylene Drainage Tubing	217	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	462	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	194.0	Ton
700E0210	Class B Riprap	1,116.0	Ton
730E0100	Cover Crop Seeding	11.0	Bu
730E0208	Type E Permanent Seed Mixture	130	Lb
731E0200	Fertilizing	4.90	Ton
734E0102	Type 2 Erosion Control Blanket	19,309	SqYd
734E0154	12" Diameter Erosion Control Wattle	880	Ft
831E0110	Type B Drainage Fabric	1,435	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT A: WETLANDS

Approximately 0.08 acres of wetlands will be impacted by the project. Refer to Section B – Grading Plans for location and boundaries of the impacted wetlands.

Table of Impacted Wetlands

Wetland No.	Type	Station	Impact Left (Acres)	Impact Right (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
1	PEM	172+00 to 175+00	0	0.08	0	0.08

Action Taken/Required:

Mitigation is not required in accordance with Section 404 of the Clean Water Act.

Temporary impacts will not be mitigated as original grades will be re-established

The Contractor shall notify the Project Engineer if additional easement is needed to complete the work adjacent to any wetlands. The Project Engineer shall obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any additional wetlands. The contact person is the Environmental Project Scientist of the SDDOT Environmental Office at 605-773-3268.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D2: SURFACE WATER DISCHARGE

This segment of Cheyenne River is classified as a warm water semi-permanent fishery with a total suspended solids standard of 90 milligrams/liter.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

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

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

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

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

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

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

EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

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

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

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources, to include fossils, is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

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

COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

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

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

COMMITMENT R: FIRE PREVENTION

This project is located within the confines of the Buffalo Gap National Grassland.

Action Taken/Required:

The Contractor shall adhere to the “Special Provision for Fire Plan”.

UTILITIES

The Contractor shall be responsible for locating and protecting any utility that would conflict with any work. Utilities are not planned to affected on this project. If utilities are identified to be affected through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the contractor shall contact the project engineer to determine modifications that will be necessary to avoid utility impacts.

SEQUENCE OF OPERATIONS

The intent of the plan sequence of operations is to have the least amount of impact on the traveling public and adjacent landowners. 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 shall be submitted for review a minimum of two weeks prior to potential implementation. Work shall proceed according .to the following sequence or as approved by the Engineer:

1. Set up traffic control.
2. Place temporary fence.
3. Remove existing fence for reset.
4. Place wattles.
5. Complete roadway shaping on diversion.
6. Excavate slope.
7. Place underdrain tubing, porous backfill, and underdrain headwalls and backfill trench.
8. Place embankment.
9. Place stream bank armoring.
10. Place surfacing on roadway.
11. Place permanent pavement marking.
12. Remove roadway diversion.
13. Place erosion control measures.
14. Reset fence.
15. Remove temporary fence.
16. Remove traffic control.

HORIZONTAL ALIGNMENT DATA

Type	Station			Northing	Easting
POB	162+68.11			504636.678	1291549.869
		TL= 181.68	S 20°16'17" E		
PC	164+49.79			504466.255	1291612.814
PI	166+06.56	R = 3000.00	Delta = 05°58'58" R	504319.195	1291667.13
PT	167+63.04			504167.276	1291705.822
		TL=1349.41	S 14°17'20" E		
POE	181+12.45			502859.607	1292038.87

UNCLASSIFIED EXCAVATION

Unclassified Excavation is provided on the project for removing slide material.

Unclassified Excavation shall be completed in such a manner so as to not undermine or destabilize the surrounding undisturbed slope

Plans quantity shall be the basis of payment for the Unclassified Excavation quantity. If changes are made in the field during construction, measurements shall be taken and the quantity shall be adjusted accordingly.

Excess material not needed on the project shall be handled as waste.

All materials encountered during the construction of this project, regardless of their nature or the manner in which they are excavated, will be considered Unclassified Excavation.

Most of the material encountered should be able to be excavated using conventional methods. Prospective bidders are encouraged to review the geology report compiled by the SDDOT Geotechnical Engineering Activity and observe the project conditions in the field. The geology report is available at the Custer Area Office.

OPTION BORROW EXCAVATION

A Borrow Pit is located in the NE ¼ of Sec. 10 - T4S - R10E.

Temporary fence shall be erected after completion of pit operation.

UNSTABLE EXCAVATION

Unstable Excavation will be required throughout the project limits to excavate saturated or weak compressible soils and other organic materials. A nominal 5 ft. depth of compressible material is anticipated to be removed from the fill footprint prior to construction of the embankment. The depth of unstable excavation may be adjusted by the Engineer to ensure a solid foundation free of organic, soft, unstable material is prepared. Unstable and/or highly organic material shall be stockpiled for use as topsoil or wasted at a site approved by the Engineer.

LANDSLIDE DEBRIS EXCAVATION

Landslide Debris Excavation will be required at the locations shown on the cross sections. It is anticipated that most of the excavated Landslide Debris can be used in the construction of the berm and mainline inslopes. Borrow will be required to construct the remaining embankment. The Landslide Debris Excavation limits shall not exceed those shown on the cross sections unless directed by the Engineer. The temporary backslope required to excavate Landslide Debris will become unstable over the long-term. However, the temporary 3:1 excavated backslope should remain globally stable over the short-term during construction provided that measures are taken to divert runoff away from the slope and regular monitoring of the slope is conducted. Construction activities shall be sequenced to minimize the amount of time the steep temporary backslopes are left exposed and unsupported. Landslide Debris Excavation shall be paid for as Unclassified Excavation.

EMBANKMENT CONSTRUCTION

Embankment construction shall 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 shall be benched into the existing slopes in accordance with Section 120.3 B.2 of the Specifications. Compaction of the embankment will be according to the Specified Density Method. Minimum density testing requirements shall be one test per zone. Each zone shall be 3 feet in depth. Moisture testing shall remain as per Minimum Sample Testing Requirements.

REMOVE EXISTING TRAFFIC DIVERSION

The existing traffic diversion shall be used in the embankment construction once embankment is placed to an elevation that will allow maintenance of traffic through the project. It is estimated that 2596 cuyds of excavation will be needed to remove the existing traffic diversion and place in the embankment. Plans quantity shall be the method of payment and field measurement will not be required.

WATER FOR EMBANKMENT

Water for Embankment is estimated at the rate of 20 gallons of water per cubic yard of Embankment minus Waste.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	5	72

Revised 7/12/2016

Table of Excavation Quantities							
		Unclassified	Water	Water		Option	Ordinary
	Unclassified	Excavation	for	for		Borrow	Roadway
	Excavation	Digouts	Embankment	Control	#Embankment	Excavation	Shaping
	(CuYd)	(CuYd)	(Mgal)	(Mgal)	(CuYd)	(CuYd)	(Mile)
	71219.0	10	2220.3	100	111015.8	37200.8	0.2
Removal of Traffic Diversion	2596.0						
Total	73815	10	2220.3	100	111015.8	37200.8	0.2
# For informational purposes only							

SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL

An **estimated 2300 tons** (1217 Cubic Yards) of asphalt mix and granular base material shall be salvaged from the entire length of the existing highways and stockpiled at sites furnished by the Contractor and satisfactory to the Engineer.

The quantity of salvage asphalt mix and granular base material may vary from the plans. No adjustment will be made to the contract unit price for variations of the quantity of Salvage and Stockpile Asphalt Mix and Granular Base Material. Plans quantity will be the basis of measurement and payment for the above mentioned work.

BASE COURSE, SALVAGED

Base Course, Salvaged shall be obtained from the stockpile site(s) provided by the Contractor stockpiled on this project and may be used without further testing.

At the time of compaction, the material shall have approximately 4% moisture uniformly blended throughout the depth of material. The percent moisture may be adjusted by the Engineer.

Compaction shall be to the satisfaction of the Engineer.

Any excess material shall be handled as waste.

All other requirements for Base Course, Salvaged shall apply.

ASPHALT CONCRETE COMPOSITE

Asphalt for prime MC-70 at the rate of 0.30 Gal/SqTd. All costs for Asphalt for Prime shall be incidental to the lump sum price for Asphalt Concrete Composite.

Table of Surfacing (2 Lifts - 2" Depth)				
			Base	Asphalt
			Course,	Concrete
Station	to	Station	Salvaged	Composite
			(Ton)	(Ton)
168+00	to	176+40	2139	692

CLASS B RIPRAP

Class B Riprap and Drainage Fabric shall be placed on the existing creek bank to prevent migration of the creek channel toward the proposed counter berm. Riprap shall conform to the specifications for Class B Riprap. Riprap shall be placed uniformly without segregation or large voids and shall be properly seated and compacted as directed by the Engineer.

1. The Riprap shall be constructed to the configuration, limits and elevations shown on the plan sheets. Slopes in the areas of riprap placement shall be reconstructed as shown in the plan drawings and as approved by the Engineer. Cost of reconstructing the slopes shall be incidental to the contract unit price per ton for Class B Riprap except as noted otherwise in these plans.
2. Riprap shall consist of quarried ledgerrock.
3. Drainage fabric will be placed underneath the Riprap. The fabric shall conform to Section 831 of the Specifications for Type B Drainage Fabric.
4. The fabric shall be placed so that the lapped joints between rolls (if any) are transverse to the direction of flow with the overlapping in the direction of flow. All joints shall be lapped a minimum of twelve (12) inches.
5. Vehicles and equipment shall not be operated directly on the fabric. The full depth of riprap shall be in place before any equipment is allowed on the area.
6. Prior to placement of the drainage fabric, the surface to be covered shall be smooth, free of obstructions, and conform to the plan configuration.
7. A factor of 1.4 tons/cu.yd. was used to convert Cu. Yds. to Tons.
8. Type B Drainage Fabric will be measured and paid for by the square yard of surface area of fabric accepted complete in place on the project. Measurement will not include fabric required for lapped seams or joints. Payment will be full compensation for furnishing the Drainage Fabric and for all labor, equipment, materials, and incidentals necessary to prepare the area for the fabric and satisfactory installation of the Drainage Fabric.

Table of Class B Riprap				
				Type B
			Class B	Drainage
			Riprap	Fabric
Station	to	Station	(Ton)	(SqYd)
171+00		176+00	1116	1435

UNDERDRAIN CONSTRUCTION

The underdrain trench shall be graded to maintain a minimum of .01ft/ft or 1% drop from beginning to outlet. The Outlet Headwall shall be placed to blend in with the surrounding topography with the outlet tubing placed above the bottom of the drainage so as to permit proper flow from the outlet.

Care must be taken to insure that the underdrain and outlet tubing is not damaged during construction. Sufficient cover material is to be placed over the underdrains before heavy equipment is allowed to work over the underdrains.

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

Table of Underdrain Quantities				
		4" Corrugated	4" Slotted	
		Polyethylene	Corrugated	Concrete
			Polyethylene	Headwall
	Porous	Drainage	Drainage	for
	Backfill	Tubing	Tubing	Underdrain
	(Ton)	(Ft)	(Ft)	(Each)
Total	194	217	462	2

TRAFFIC CONTROL – GENERAL NOTES

1. Unless otherwise stated in these plans, no work will be allowed during hours of darkness.
2. Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.
3. Non-applicable traffic control devices shall be completely covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 2 calendar days.
4. All regulatory signs shall have a minimum mounting height of 5' in rural locations, even when mounted on portable supports.
5. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.
6. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
7. All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.
8. All construction operations shall be conducted in the general direction of traffic movement.
9. If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD – whichever is more stringent shall be used, as determined by the Engineer.
10. Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS

Concrete barriers will be provided by the State and are available for pickup from the DOT South Maintenance Yard located south of Rapid City adjacent to Highway 79. Barriers to be adjusted or moved shall be disconnected from adjacent barriers to minimize damage to connecting pins. Pins damaged by the Contractor shall be replaced at no cost to the Department. All costs associated with picking up from the South Yard, transporting, and installing shall be incidental to the contract unit price per each for Traffic Control Movable Concrete Barrier.

Concrete barrier sections shall be placed as depicted in the plans. The barriers shall be pinned and bolted together as directed by the Engineer.

BARRIER MOUNTED LINEAR DELINEATION SYSTEM PANELS

A linear delineation system panel shall be attached to each side of the barrier section. One panel shall be white and the other panel shall be yellow. The color shall be the same as the nearest pavement marking, white along outside edgelines or yellow for the left side on one way traffic sections. The linear delineation system shall be 34 inches long and 6 inches in height and be constructed of aluminum formed into a shape to provide retroreflective properties across a wide range of angles. It shall be sheeted with super high or very high intensity sheeting. The panels shall be installed at the center of the barrier when measured along the length, with the top of the panel 4 inches below the top of the barrier. Installation shall be as per the manufacturer's recommendation using stainless steel inserts and bolts. This will allow for easy removal for replacement of damaged panels or to replace with an alternate color. The Contractor shall furnish, and install one panel along each side of the barrier if any panels are missing from the barriers. Replacement of damaged linear delineation system panels shall be furnished and replaced by the Contractor. All costs associated with furnishing, and installing the linear delineation system shall be included in the contract unit price per each for Linear Delineation System Panel, Barrier Mounted.

All linear delineation system panels shall remain attached to the barrier sections and shall become the property of the State of South Dakota upon completion of the project.

The Contractor shall verify the number of LDS panels that will need to be installed or replaced on the Traffic Control Movable Concrete Barriers. The contract amount of LDS panels is an estimate and the full contract amount may not be required.

Table of Traffic Control Movable Concrete Barriers					
			Traffic Control Movable Concrete Barrier	Linear Delineation System Panel, Barrier Mounted	Temporary Concrete Barrier End Protection
Station to	Station		(Each)	(Each)	(Each)
168+00	174+80		67	67	2

INVENTORY OF TRAFFIC CONTROL DEVICES

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R10-6	STOP HERE ON RED	2	24" x 36"	6.0	12.0
W3-3	SIGNAL AHEAD (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS			
		149.0			
		SQFT			

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	2

FENCE

Temporary Fence shall be placed at the perimeter of the temporary easements and the borrow pit as directed by the Engineer.

Table of Fencing							
				Remove		Type 1A	2
				Fence	Reset	Temporary	Post
Station to	Station	Side (L/R)		for Reset	Fence	Fence	Panels
				(Ft)	(Ft)	(Ft)	(Each)
164+00 to	179+80	R		1580	1580	1970	3
Borrow Pit				1000	1000	1760	2
		Total		2580	2580	3730	5

TEMPORARY PAVEMENT MARKING

Payment for temporary pavement marking will be by the foot per 4" line or equivalent. Payment will be for all costs to furnish, and install temporary pavement markings.

PERMANENT PAVEMENT MARKINGS

All surfaces have existing markings and the Contractor is encouraged to review this route prior to bidding.

All materials shall be applied as per manufacturer's recommendations.

PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

This material shall consist of a durable high build, low VOC, fast drying, waterborne traffic paint with a 100% acrylic polymer (DOW DT-400 or DOW HD-21A or equivalent) and with reflective media adhered to the paint. The reflective media shall consist of glass beads as well as bonded core reflective elements. The bonded core reflective elements shall contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. All microcrystalline ceramic beads bonded to reflective elements shall have a minimum index of refraction of 1.8 when tested using the liquid oil immersion method.

The Department will take retro-reflectivity readings on the pavement marking lines no sooner than 3 days and no later than 30 days after the completion of all line applications required for an individual highway route using a portable retro-reflectometer conforming to 30-meter geometry. Retro-reflectivity readings will be taken on a test location with cleaning being limited to light hand brooming.

Pavement markings not conforming to the Retro-reflectivity requirements shall be removed and replaced. If replacement of markings cannot be applied within the same year, the Contractor shall schedule subject work to be completed no later than June 15th in the following year. Upon replacement, the retro-reflectivity testing process will be done again requiring new readings.

The Department will randomly select one test location per mile of each edge line including ramps and one test location per mile of centerline (solid and/or skip line will be considered as one centerline). Three retro-reflectivity readings will be taken at each test location. The three readings will be averaged and become the reading for that test location.

Initial Readings (within 3 - 30 days of the line application):

<u>Pavement Marking Color</u>	<u>Minimum Value</u>
White	350 mcd/m2/lux
Yellow	275 mcd/m2/lux

All pavement markings not conforming to the requirements provided in these plans will be considered deficient and shall be removed and replaced. Additional retro-reflectivity readings will be taken by the Department to determine the limits of removal. The removal shall be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process shall remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width shall be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings shall be at Contractor's expense, with no cost incurred by the State.

RATES OF MATERIALS FOR HIGH GRADE POLYMER PAINT

Solid 4" Line = 27.8 Gals/Mile
Glass Beads – 5.3 Lbs/Gal
Composite Reflective Elements – 2.1 Lbs/Gal

All cost for materials, labor, and equipment necessary to furnish and install the pavement markings shall be incidental to the contract unit price per gallon for Waterborne Pavement Marking Paint with High Grade Polymer, White or Yellow.

Table of Pavement Marking				
Temporary Pavement Marking	4" Temporary Pavement Marking Tape Type I	Waterborne Pavement Marking Paint with High Grade Polymer, White	Waterborne Pavement Marking Paint with High Grade Polymer, Yellow	Grind 8" Rumble Strip or Stripe in Asphalt Concrete
(Ft)	(Ft)	(Gal)	(Gal)	(Miles)
2520	144	8	6	0.3

REMOVE AND REPLACE TOPSOIL

Prior to beginning resurfacing operations, a 4" depth of topsoil shall be shall be salvaged and stockpiled as directed by the Engineer. Following completion of grading operations, topsoil shall be placed back on the slope as directed by the Engineer.

The estimated amount of topsoil to be removed and replaced is 6991 CuYd.

All costs associated with removing and replacing the topsoil on disturbed areas shall be incidental to the contract lump sum price for Remove and Replace Topsoil.

MYCORRHIZAL INOCULUM

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

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

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

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

<u>Product</u>	<u>Manufacturer</u>
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com

FERTILIZING

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

The fertilizer shall be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer's recommended method of application.

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

<u>Product</u>	<u>Manufacturer</u>
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com

TYPE E PERMANENT SEED MIXTURE

The areas to be hydroseeded with Type E Permanent Seed Mixture shall comprise of all newly graded areas within the project limits.

Type E Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Canada Wildrye	Mandan	2
Wildflowers		
Dotted Gayfeather (<i>Liatris punctata</i>)		0.5
Black-eyed Susan (<i>Rudbeckia hirta</i>)		0.5
Blue Flax (<i>Linum lewisii</i>)		0.5
Pale Purple Coneflower (<i>Echinacea angustifolia</i>)		0.5
Total:		20

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 shall be determined by the Engineer during construction.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall 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 shall provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles shall remain on the project to decompose.

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

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

EROSION CONTROL BLANKET

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

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

Table of Erosion Control Items							
	Acres	Type E Permanent Seed Mixture (Lbs)	Cover Crop Seeding (Bu)	Type 2 Erosion Control Blanket (SqYd)	Fertilizing (Ton)	12" Erosion Control Wattle (Ft)	Erosion Control Wattle Notes
Total	6.5	130	11	19309.0	4.9	880	Perimeter

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

SITE DESCRIPTION (4.2 1)

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - ☒ Clearing and grubbing
 - ☒ Excavation/borrow
 - ☒ Grading and shaping
 - ☐ Filling
 - ☒ Cutting and filling
 - ☐ Other (describe):
- **Total Project Area 6.5 ac (4.2 1.b.)**
- **Total Area To Be Disturbed 3.8 ac (4.2 1.b.)**
- **Existing Vegetative Cover 95(%)**
- **Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification (4.2 1. d.)
- **Name of Receiving Water Body/Bodies Cheyenne River (4.2 1.e.)**

ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)

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

- **Install perimeter protection where runoff sheets from the site.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install utilities, storm sewers, curb and gutter.**
- **Install inlet and culvert protection after completing storm drainage and other utility installations.**
- **Complete final grading.**
- **Complete final paving and sealing of concrete.**
- **Complete traffic control installation and protection devices.**
- **Reseed areas disturbed by removal activities.**

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

(Check all that apply)

- **Stabilization Practices (See Detail Plan Sheets)**
 - ☒ Temporary Seeding (Cover Crop Seeding)
 - ☒ Permanent Seeding
 - ☐ Sodding
 - ☐ Planting (Woody Vegetation for Soil Stabilization)
 - ☐ Mulching (Grass Hay or Straw)
 - ☐ Hydraulic Mulch (Wood Fiber Mulch)
 - ☐ Soil Stabilizer
 - ☐ Bonded Fiber Matrix
 - ☒ Erosion Control Blankets or Mats
 - ☐ Vegetation Buffer Strips
 - ☐ Roughened Surface (e.g. tracking)
 - ☐ Dust Control
 - ☐ Other:
- **Structural Temporary Erosion and Sediment Controls**
 - ☐ Silt Fence

- ☐ Floating Silt Curtain
- ☐ Straw Bale Check
- ☐ Temporary Berm
- ☐ Temporary Slope Drain
- ☒ Straw Wattles or Rolls
- ☐ Turf Reinforcement Mat
- ☒ Rip Rap
- ☐ Gabions
- ☐ Rock Check Dams
- ☐ Sediment Traps/Basins
- ☐ Inlet Protection
- ☐ Outlet Protection
- ☐ Surface Inlet Protection (Area Drain)
- ☐ Curb Inlet Protection
- ☐ Stabilized Construction Entrances
- ☐ Entrance/Exit Equipment Tire Wash
- ☐ Interceptor Ditch
- ☐ Concrete Washout Facility
- ☐ Temporary Diversion Channel
- ☐ Work Platform
- ☐ Temporary Water Barrier
- ☐ Temporary Water Crossing
- ☐ Other:

➤ **Wetland Avoidance**

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

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

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

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

- **Waste Disposal**

All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general Contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- **Hazardous Waste**

All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the Contractor's on-site representative will be responsible for seeing that these practices are followed.
- **Sanitary Waste**

Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management Contractor or as required by any local regulations.

MAINTENANCE AND INSPECTION (4.2 3. and 4.2 4.)

- **Maintenance and Inspection Practices**
 - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
 - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
 - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches ¹/₃ of the height of the silt fence.
 - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
 - Check dams will be inspected for stability. Sediment will be removed when depth reaches ¹/₂ the height of the dam.
 - All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
 - Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
 - The SDDOT Project Engineer and Contractor's Erosion Control Supervisor are responsible for inspections. Maintenance, repair activities are the responsibility of the Contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

NON-STORM WATER DISCHARGES (3.0)

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

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

MATERIALS INVENTORY (4.2. 2.c.(2))

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings “EROSION AND SEDIMENT CONTROLS” and “SPILL PREVENTION” (check all that apply).

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

	STATE OF SOUTH DAKOTA	PROJECT P 0040(237)68	SHEET 11	TOTAL SHEETS 72
<u>SPILL PREVENTION (4.2 2.c.(2))</u>				
➤ Material Management				
▪ <u>Housekeeping</u>				
• Only needed products will be stored on-site by the Contractor.				
• Except for bulk materials the contractor will store all materials under cover and in appropriate containers.				
• Products must be stored in original containers and labeled.				
• Material mixing will be conducted in accordance with the manufacturer's recommendations.				
• When possible, all products will be completely used before properly disposing of the container off-site.				
• The manufacturer's directions for disposal of materials and containers will be followed.				
• The Contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.				
• Dust generated will be controlled in an environmentally safe manner.				
• Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.				
▪ <u>Hazardous Materials</u>				
• Products will be kept in original containers unless the container is not resealable.				
• Original labels and material safety data sheets will be retained in a safe place to relay important product information.				
• If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.				
• Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.				
• Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.				
• Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.				
➤ Product Specific Practices (6.8)				
▪ <u>Petroleum Products</u>				
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.				
▪ <u>Fertilizers</u>				
Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.				
▪ <u>Paints</u>				
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.				
▪ <u>Concrete Trucks</u>				
Contractors will provide designated truck washout facilities on the site. These areas must be self-contained and not connected to any storm water outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.				
➤ Spill Control Practices (4.2 2 c.(2))				
In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.				
▪ For all hazardous materials stored on site, the manufacturer's recommended methods for spill 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. The Contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.				
➤ Spill Response (4.2 2 c.(2))				
The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.				
▪ The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.				
▪ If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.				
▪ Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.				
▪ If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.				
▪ If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.				
▪ Personnel with primary responsibility for spill response and clean up will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.				
▪ Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.				
<u>SPILL NOTIFICATION</u>				
In the event of a spill, the Contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:				
➤ A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately if any one of the following conditions exists:				
▪ The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).				
▪ The discharge causes an immediate danger to human health or safety.				
▪ The discharge exceeds 25 gallons.				
▪ The discharge causes a sheen on surface water.				
▪ The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.				
▪ The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.				
▪ The discharge of any substance that harms or threatens to harm wildlife or aquatic life.				
▪ The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).				
To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.				
<u>CONSTRUCTION CHANGES (4.4)</u>				
When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.				

CERTIFICATIONS

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

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

➤ **South Dakota Department of Transportation**

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



Authorized Signature (See the General Permit, Section 6.9.1.C.)

➤ **Prime Contractor**

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

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

Authorized Signature

CONTACT INFORMATION

➤ **Contractor Information:**

- Prime Contractor Name: _____
- Contractor Contact Name: _____
- Address: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **Erosion Control Supervisor**

- Name: _____
- Address: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **SDDOT Project Engineer**

- Name: _____
- Business Address: _____
- Job Office Location: _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **SD DENR Contact Spill Reporting**

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

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

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

Plot Scale - 1:200

Plotted From - Irrc12608

Plot Scale - 1:200

LAB ANALYSIS

HOLE#	1	1	1	2	2	2
DEPTH	0.5'-3.5'	3.5'-8'	8'-14'	0.5'-4'	4'-9'	9'-14'
DRY LOOSE WT.	81.9	90.0	103.1	78.6	95.2	112.3
% passing 3/8	100.0	98.0	65.8	100.0	99.6	58.7
% passing # 4	99.9	96.4	58.8	99.9	98.4	50.2
% passing # 10	98	92.8	51.3	99.4	95.9	39.8
% coarse sand	5.7	12.3	16.6	4.2	14.6	15.5
% fine sand	31.7	39.4	21.1	7.5	42.2	12.3
% silt	34.7	24.0	8.3	49.5	25.3	7.1
% clay	25.9	17.1	5.3	38.2	13.8	4.9
% passing # 40	92.3	80.5	34.7	95.2	81.3	24.3
% passing # 200	60.6	41.1	13.6	87.7	39.1	12.0
% coarse & fine sand	37.4	51.7	37.7	11.7	56.7	27.8
liquid limit	34	24	0	49	22	0
liquid plastic limit	19	20	0	21	0	0
P. I.	15	5	NP	27	NP	NP
TEX. CLASSIFICATION	CLAY SAND	SILTY SAND	GRAVELLY SAND	SILT CLAY	SANDY CLAY	SANDY GRAVEL
AASHTO CLASS.	A-6	A-4	A-1-b	A-7-6	A-4	A-1-a
GP Index	7	1	0	17	1	0
Field Color	tan	lt brow n	lt brow n	tan	tan	tan
GROUNDWATER ELEV.	0	0	0	0	0	0

PIT INFORMATION SHEET
BORROW

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	13	72

Plotting Date: 07/12/2016

PIT NO. Option Borrow Pit

PROJECT NO. P 0040(237)68, PCN 05KH COUNTY Custer

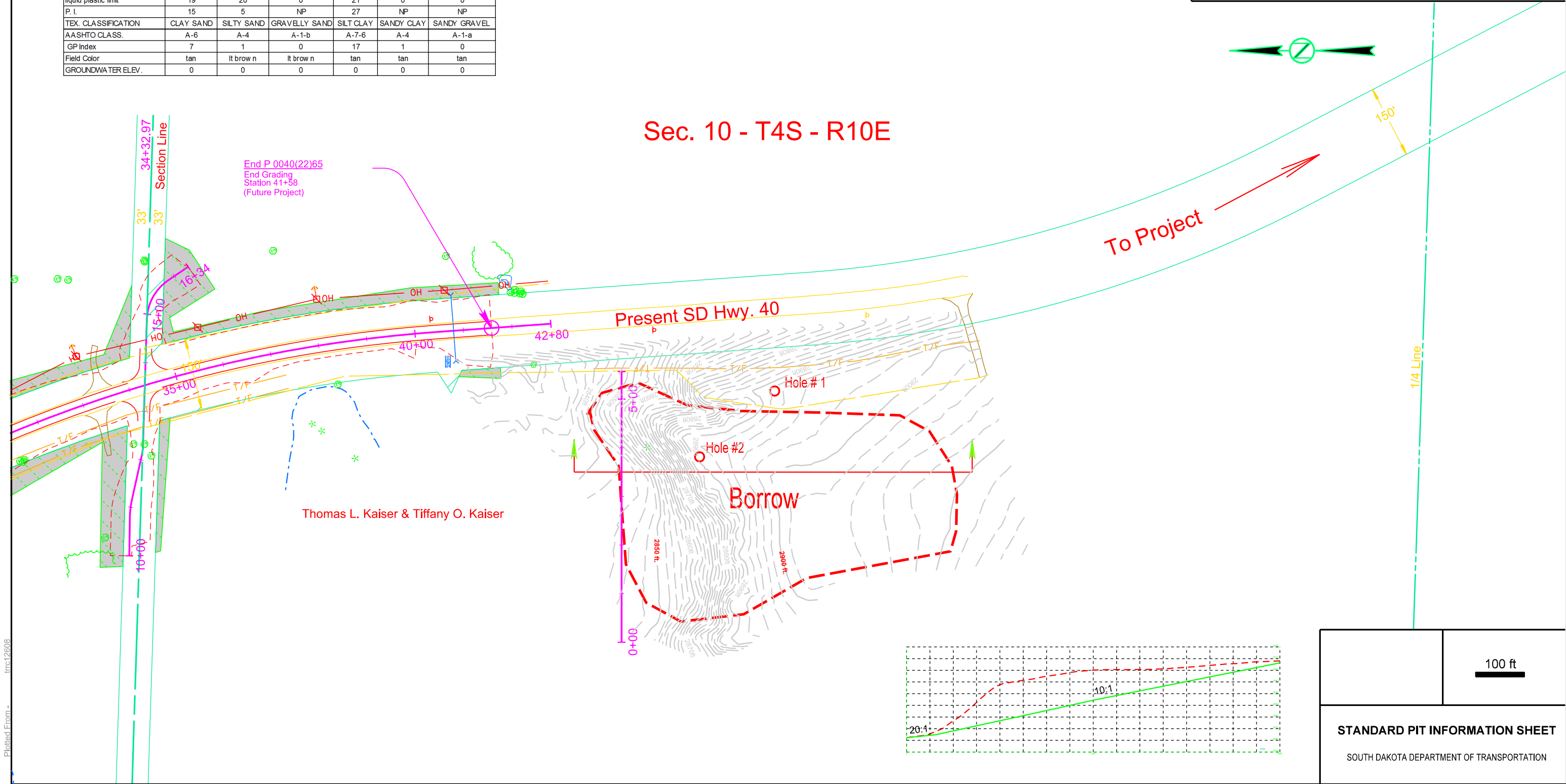
LOCATION Part of the NE 1/4 SEC. 10 TOWNSHIP 4S RANGE 10E

PIT OWNER Thomas & Tiffany Kaiser ADDRESS Hermosa, SD

AVERAGE DEPTH OF MATERIAL 7.7 Ft. AVERAGE DEPTH OF TOPSOIL 4 inches

MATERIAL AVAILABLE 50,000 CU. YARDS. ESTIMATED CU. YARDS OF TOPSOIL 1,800

12,675 Ft. DEADHAUL TO STATION 173+00



File - ...lpj\cust05kh\borrow05KH.dgn

TYPICAL SECTION

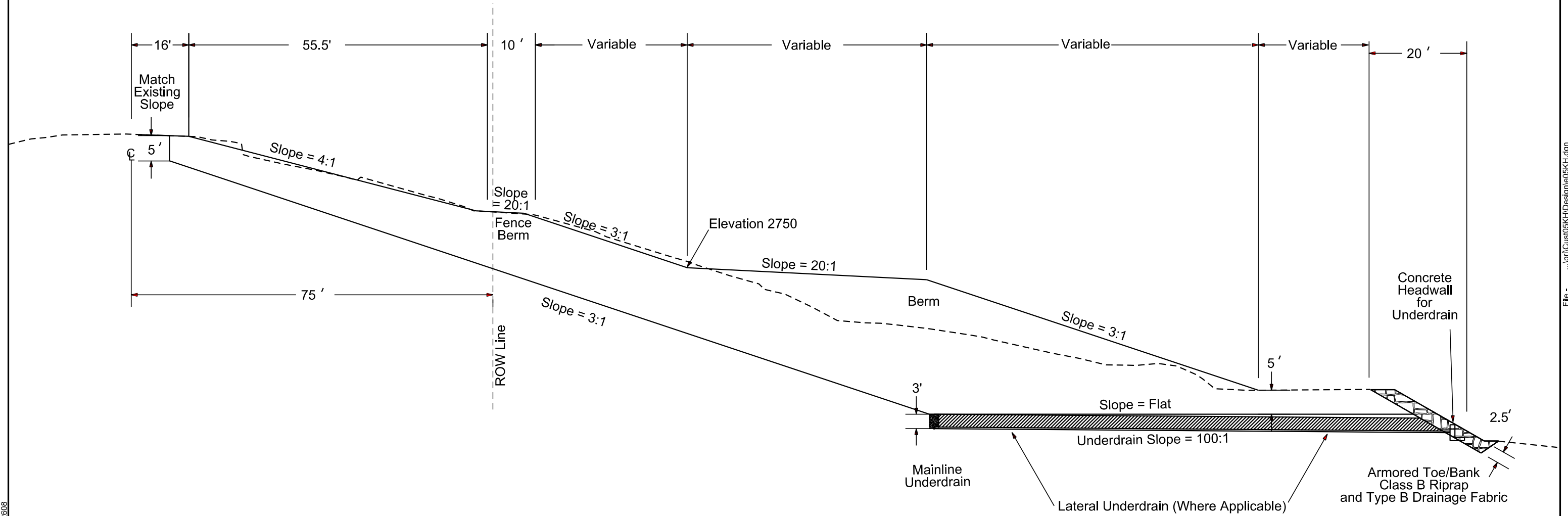
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	14	72

Plotting Date: 07/12/2016

Station 167+60 to Station 176+40

SD Highway 40

All variable dimensions see cross sections for actual width



Plot Scale - 1:20,25

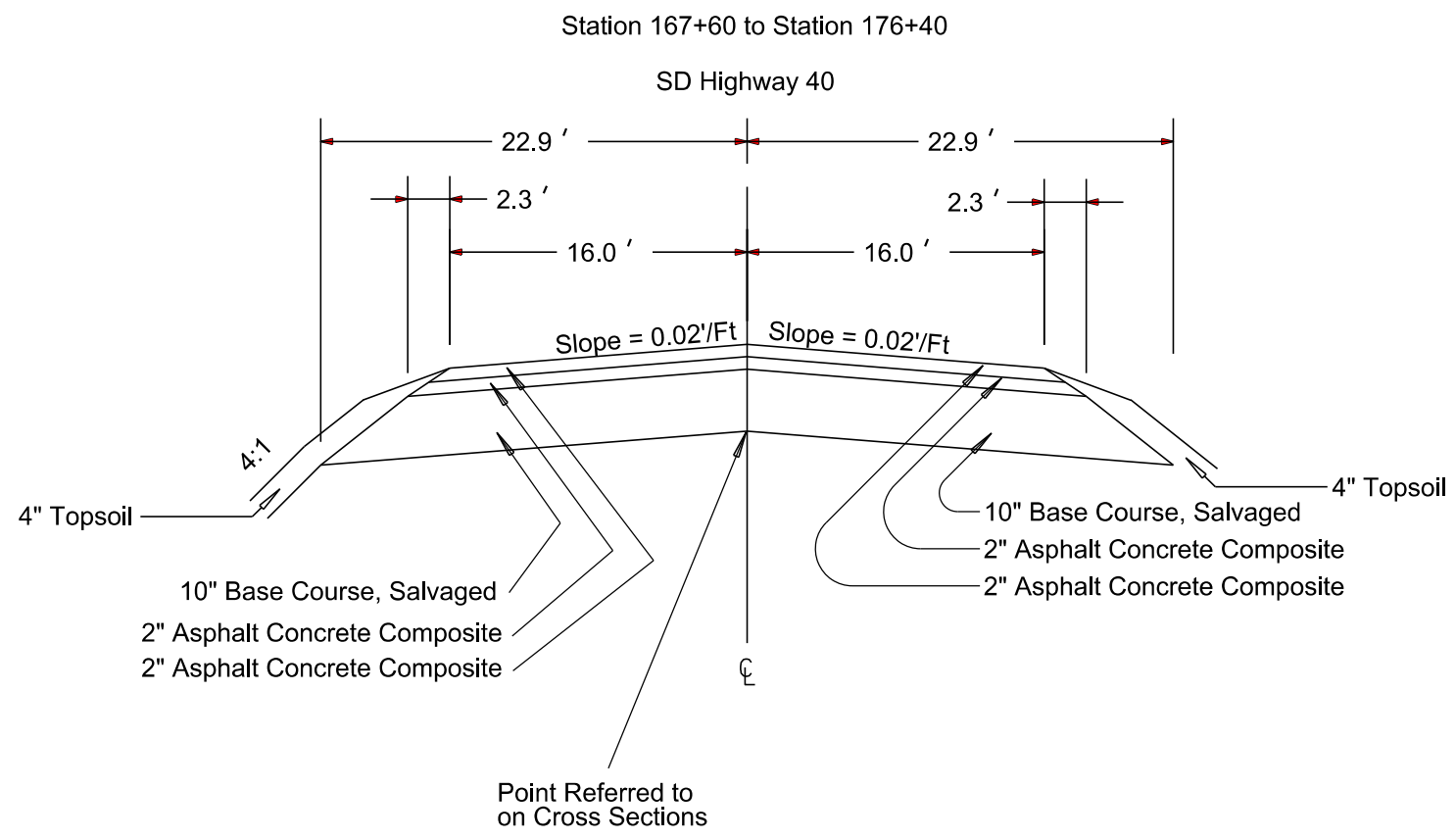
Plotted From - trrs12808

File - ...lpj\Custom\KH\Design\ao5KH.dgn

TYPICAL SECTION FOR ROADWAY CONSTRUCTION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	15	72

Plotting Date: 07/12/2016



Plot Scale - 1:10,125

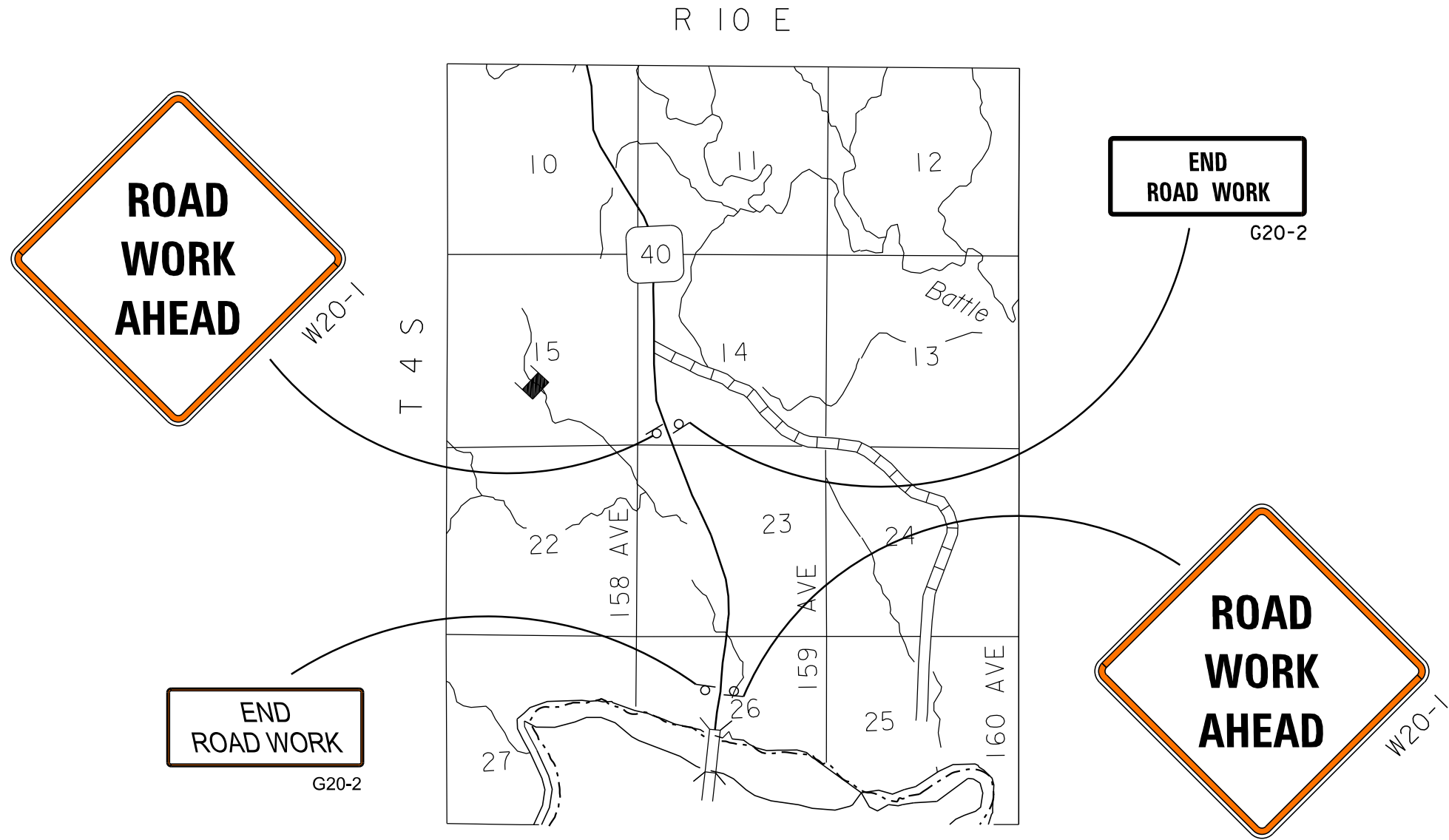
Plotted From - trcs12808

File - ...lpj\CustomKH\Design\05KH.dgn

FIXED LOCATION SIGNS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	16	72

Plotting Date: 07/12/2016



Plot Scale - 1:200

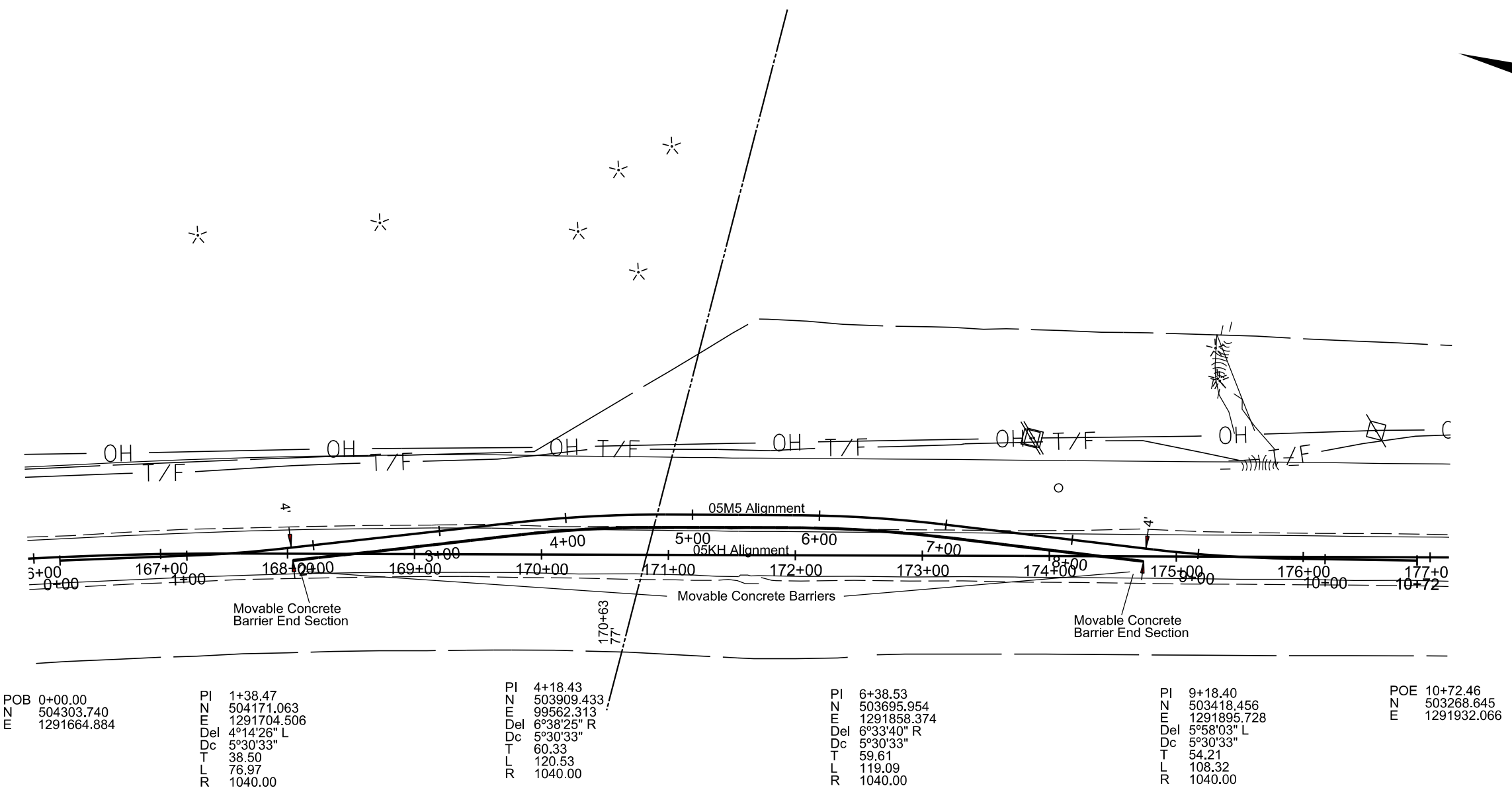
Plotted From - trcs12608

File - ...Design105kH_Titled.dgn

MOVABLE CONCRETE BARRIER LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	17	72

Plotting Date: 07/13/2016
Revised 7/13/2016 GDS



Plot Scale - 1:100

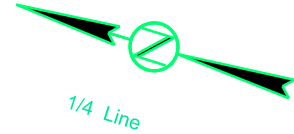
Plotted From - trc12808

Plotted From -

EROSION CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	18	72

Plotting Date: 07/12/2016
Revised 7/12/2016 GDS



Plot Scale - 1:100

Plotted From - Irrc12608

BEGIN P 0040(237)68
617' North and 1876' East
of the W 1/4 Corner
of Sec.23 T4S - R10E
of the Black Hills Meridian
Custer County, SD

United States of America
USDA - BGNG
Washington, DC 20001

PI 166+06.56
N 504319.195
E 1291667.130
Del 05°58'58" R
Dc 01°54'35"
T 156.77
L 313.25
R 3000.00

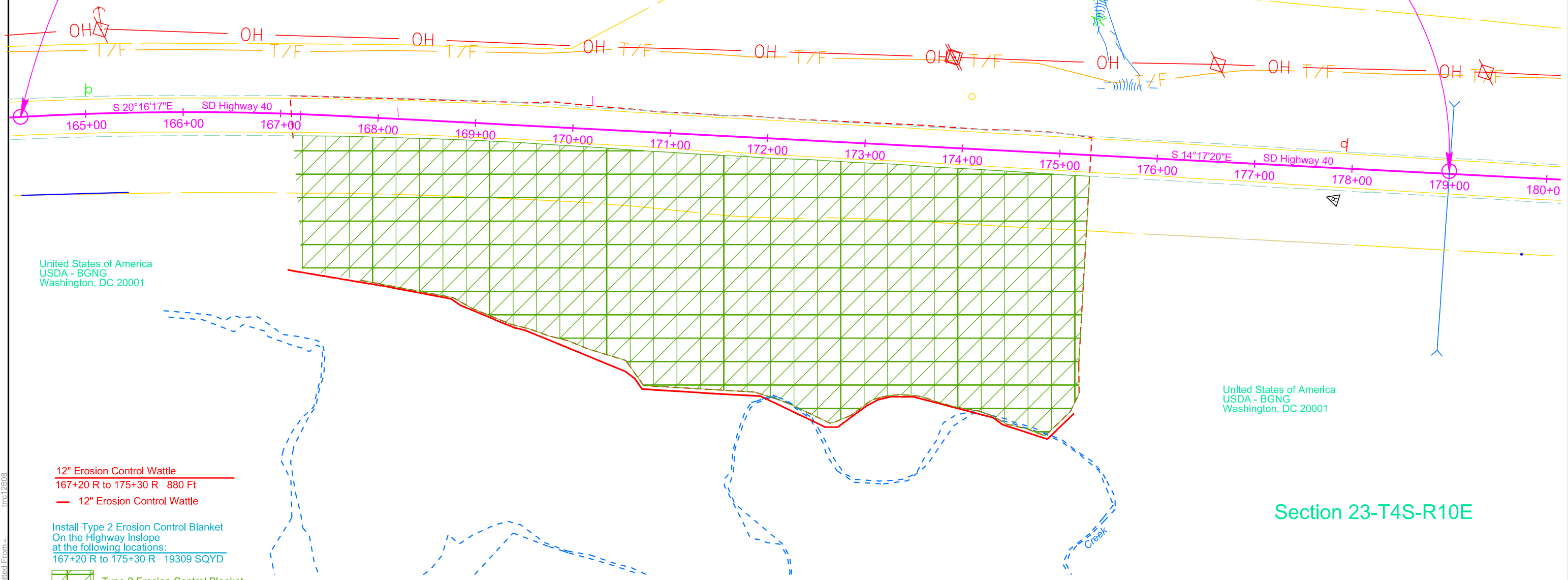
POB
162+68.11
504636.678 N
1291549.869 E

Section 23-T4S-R10E

United States of America
USDA - BGNG
Washington, DC 20001

END P 0040(237)68
792' South and 2253' East
of the W 1/4 Corner
of Sec.23 T4S - R10E
of the Black Hills Meridian
Custer County, SD

POE
181+12.45
502859.607 N
1292038.870 E



12" Erosion Control Wattle
167+20 R to 175+30 R 880 Ft
12" Erosion Control Wattle

Install Type 2 Erosion Control Blanket
On the Highway inslope
at the following locations:
167+20 R to 175+30 R 19309 SQYD

Type 2 Erosion Control Blanket

File - ...lpj\Custom\KHDesign\EC.dgn

PLOT SCALE - 1:200

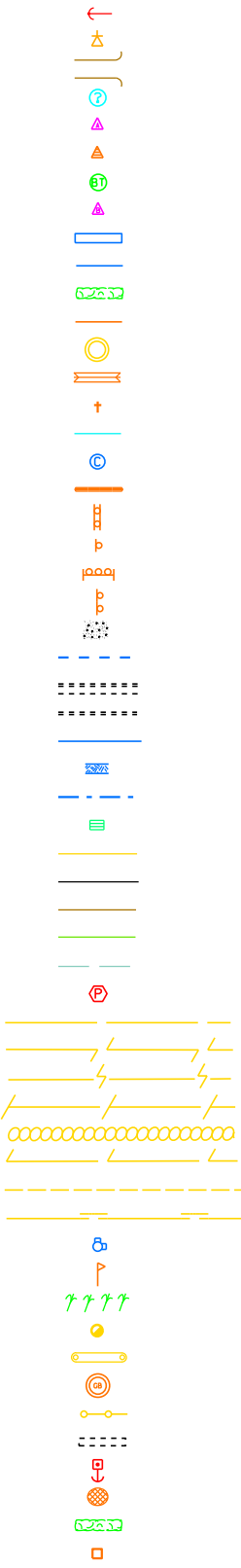
PLOTTED FROM - TRRC12608

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	19	72

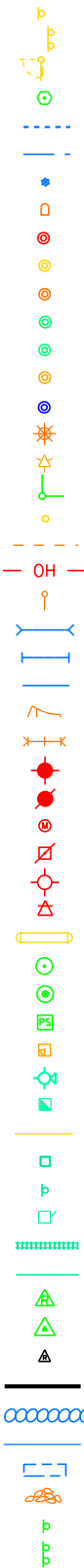
Plotting Date: 07/12/2016

EXISTING TOPOGRAPHY SYMBOLS AND LEGEND

Anchor
Antenna
Approach
Assumed Corner
Azimuth Marker
Bbq Grill/ Fireplace
Bearing Tree
Bench Mark
Box Culvert
Bridge
Brush
Buildings
Bulk Tank
Cattle Guard
Cemetery
Centerline
Cistern
Clothes Line
Commercial Sign Double Face
Commercial Sign One Post
Commercial Sign Overhead
Commercial Sign Two Post
Concrete Symbol
Creek Edge
Curb/Gutter
Curb
Dam Grade/Dike/Levee
Ditch Block
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
Gutter
Guy Pole
Haystack
Hedge
Highway R.O.W. Marker

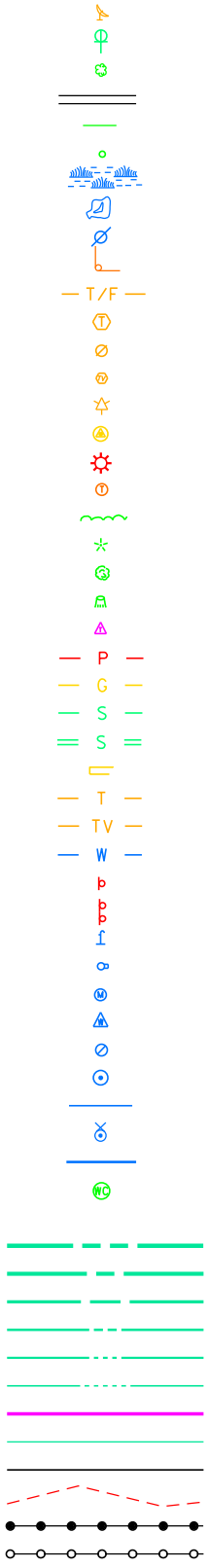


Information Sign One Post
Information Sign Two Post
Interstate Close Gate
Iron Pin
Irrigation Ditch
Lake Edge
Lawn Sprinkler
Mailbox
Manhole Electric
Manhole Gas
Manhole Misc
Manhole Sanitary Sewer
Manhole Storm Sewer
Manhole Telephone
Manhole Water
Merry-Go-Round
Microwave Radio Tower
Misc. Property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



Satellite Dish
Septic Tank
Shrub Tree
Sidewalk
Sign Face
Sign Post
Slough Or Marsh
Spring
Stream Gauge
Street Marker
Telephone Fiber Optics
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
Underground Gas Line
Underground Sanitary Sewer
Underground Storm Sewer
Underground Tank
Underground Telephone Line
Underground Television Cable
Underground Water Line
Warning Sign One Post
Warning Sign Two Post
Water Fountain
Water Hydrant
Water Meter
Water Tower
Water Valve
Water Well
Weir Rock
Windmill
Wingwall
Witness Corner

State and National Line
County Line
Section Line
Quarter Line
Sixteenth Line
Property Line
Construction Line
R. O. W. Line
New R. O. W. Line
Cut and Fill Limits
Control of Access
New Control of Access



PLOT NAME - 8

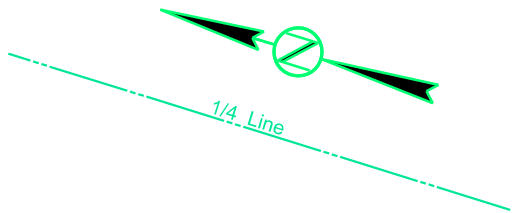
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Plot Scale - 1:100

Plotted From - Irrc12608

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	20	72

Plotting Date: 07/12/2016
Revised 7/12/2016 GDS



BEGIN P 0040(237)68
617' North and 1876' East
of the W 1/4 Corner
of Sec.23 T4S - R10E
of the Black Hills Meridian
Custer County, SD

NW1/4 of Section 23, Township 4 South, Range 10 East of the
Black Hills Meridian, Custer County, South Dakota; Less Lot
H1 as shown on Plat filed in Book 11 of Plats, Page 214

United States of America
USDA - BGNG
Washington, DC 20001

PI 166+06.56
N 504319.195
E 1291667.130
Del 05°58'58" R
Dc 01°54'35" R
T 156.77
L 313.25
R 3000.00

POB
162+68.11
504636.678 N
1291549.869 E

Section 23-T4S-R10E NW1/4

171+00 to 175+00 - R
Install Class B Riprap

169+46 - 175' R to 170+63 - 160' R
170+63 - 160' R to 173+67 - 160' R
173+67 - 160' R to 174+07 - 170' R
Install 462' - 4" Slotted Corrugated
Polyethylene Drainage Tubing

172+07 - 155' R - 292' R
Install 127' - 4" Corrugated
Polyethylene Drainage Tubing
and 1 Precast Concrete Headwall
for Drain

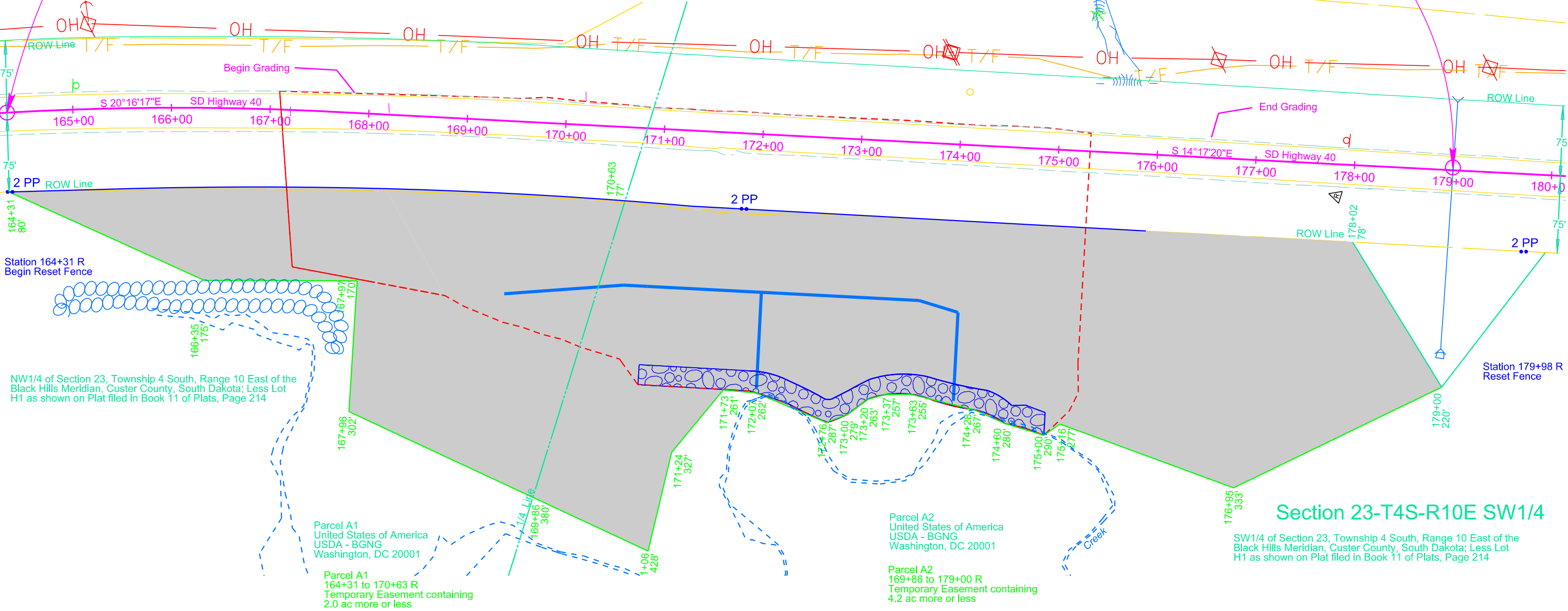
174+07 - 170' R - 260' R
Install 90' - 4" Corrugated
Polyethylene Drainage Tubing
and 1 Precast Concrete Headwall
for Drain

SW1/4 of Section 23, Township 4 South, Range 10 East of the
Black Hills Meridian, Custer County, South Dakota; Less Lot
H1 as shown on Plat filed in Book 11 of Plats, Page 214

United States of America
USDA - BGNG
Washington, DC 20001

END P 0040(237)68
792' South and 2253' East
of the W 1/4 Corner
of Sec.23 T4S - R10E
of the Black Hills Meridian
Custer County, SD

POE
181+12.45
502859.607 N
1292038.870 E



File - ...Cust05KtHDesign\Easement1.dgn

PLOT SCALE - 1:25

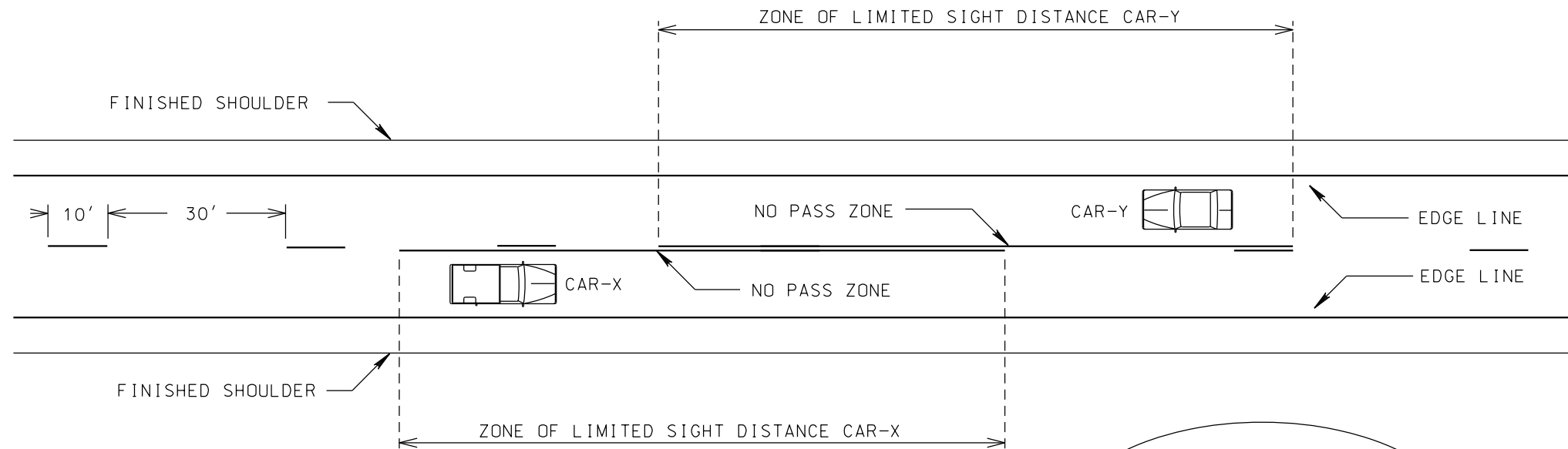
PLOTTED FROM - TRRC12608

GENERAL PAVEMENT MARKING LAYOUT

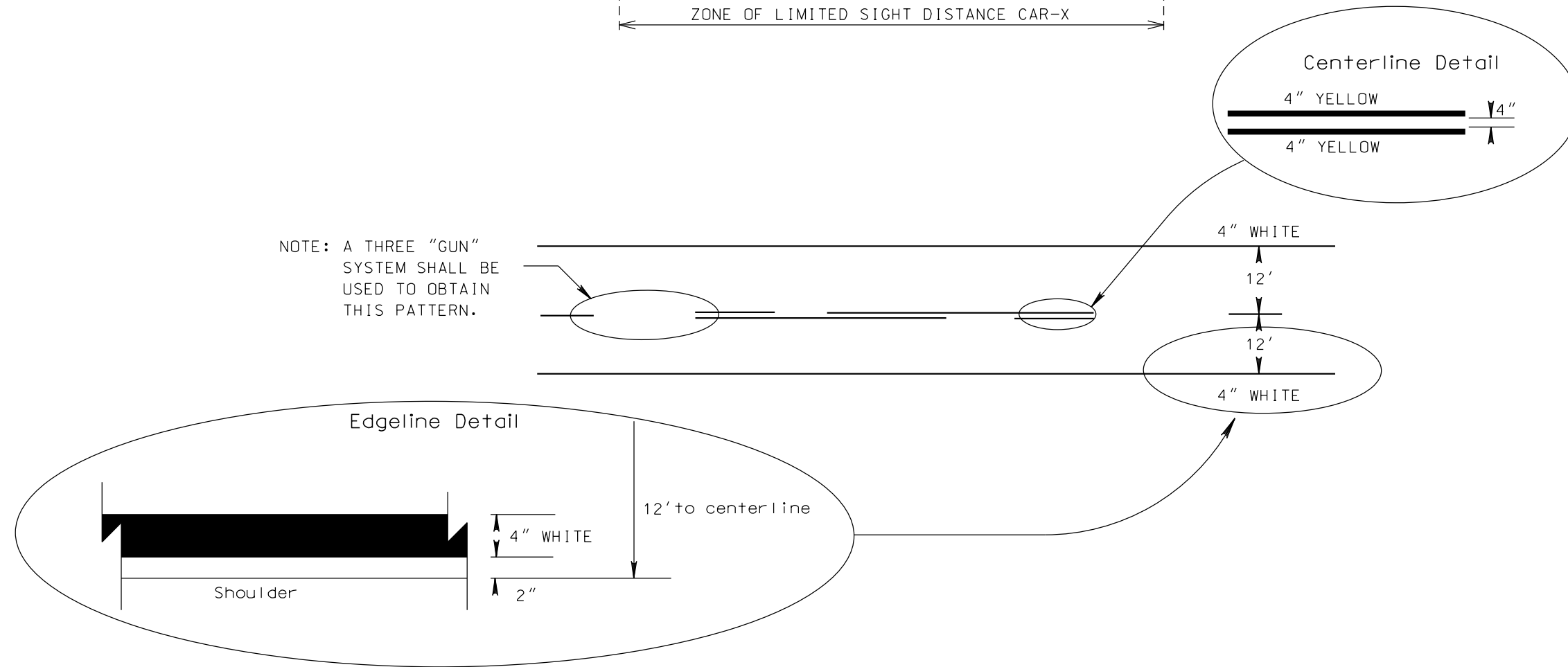
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	21	72
Plotting Date: 07/12/2016			

PLOT NAME - 10

FILE - ... \CUST05KH\DESIGN\PAYMARK.DGN



NOTE: A THREE "GUN" SYSTEM SHALL BE USED TO OBTAIN THIS PATTERN.



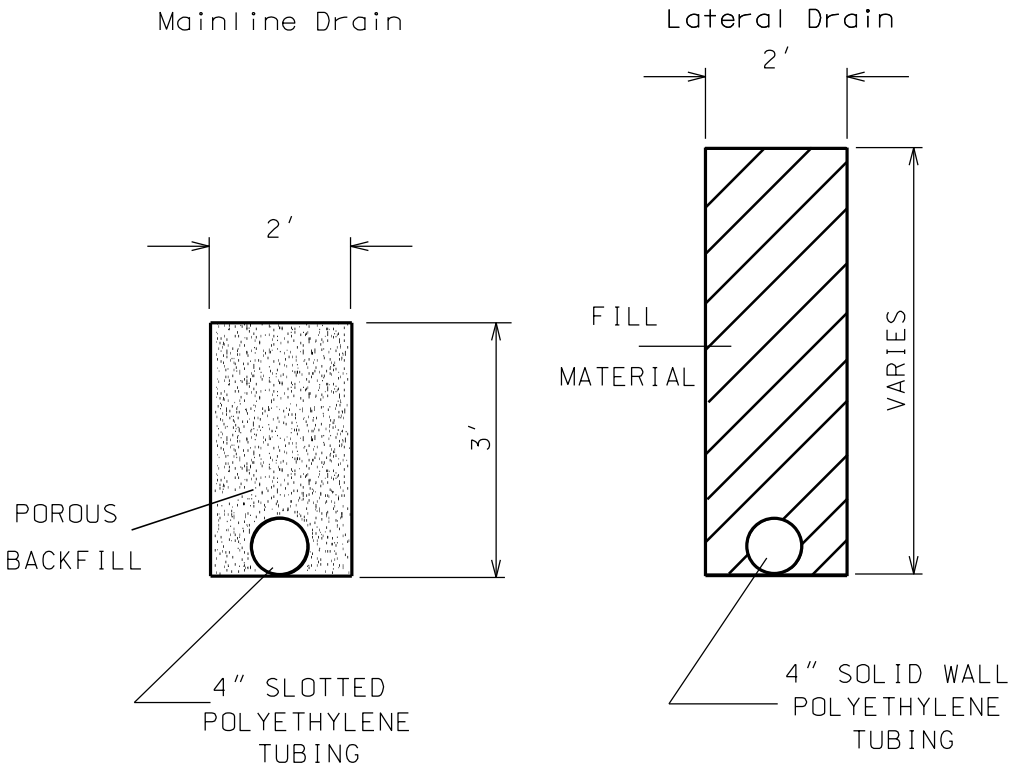
TYPICAL UNDERDRAIN INSTALLATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0040(237)68	22	72

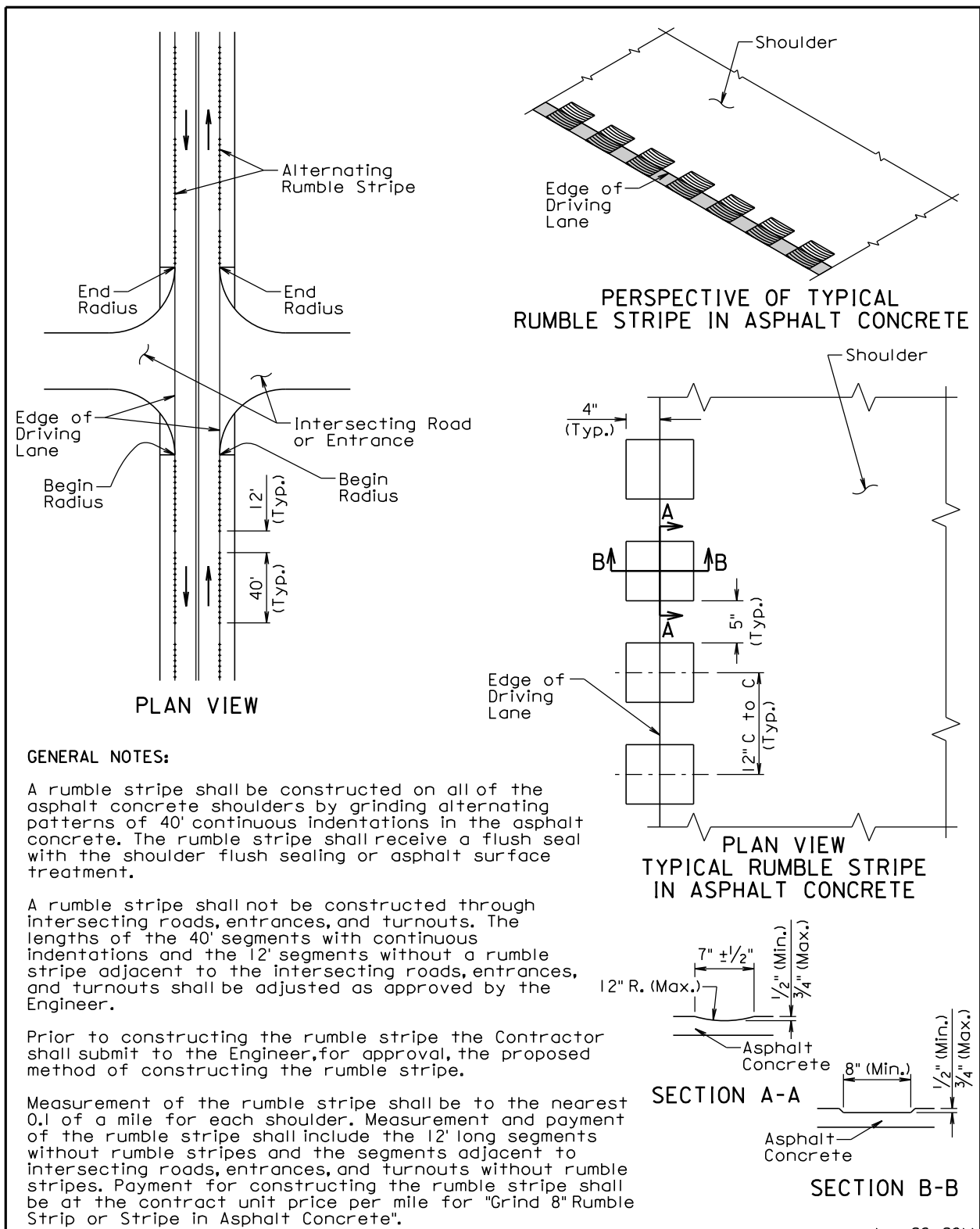
Plotting Date: 07/12/2016

Mainline Drain
Station 169+46 175' Rt. to Station 174+07 170' Rt.

Lateral Drains
Station 172+07 155' Rt. to Station '72+07 292' Rt.
Station 174+07 170' Rt. to Station 174+07 260' Rt.

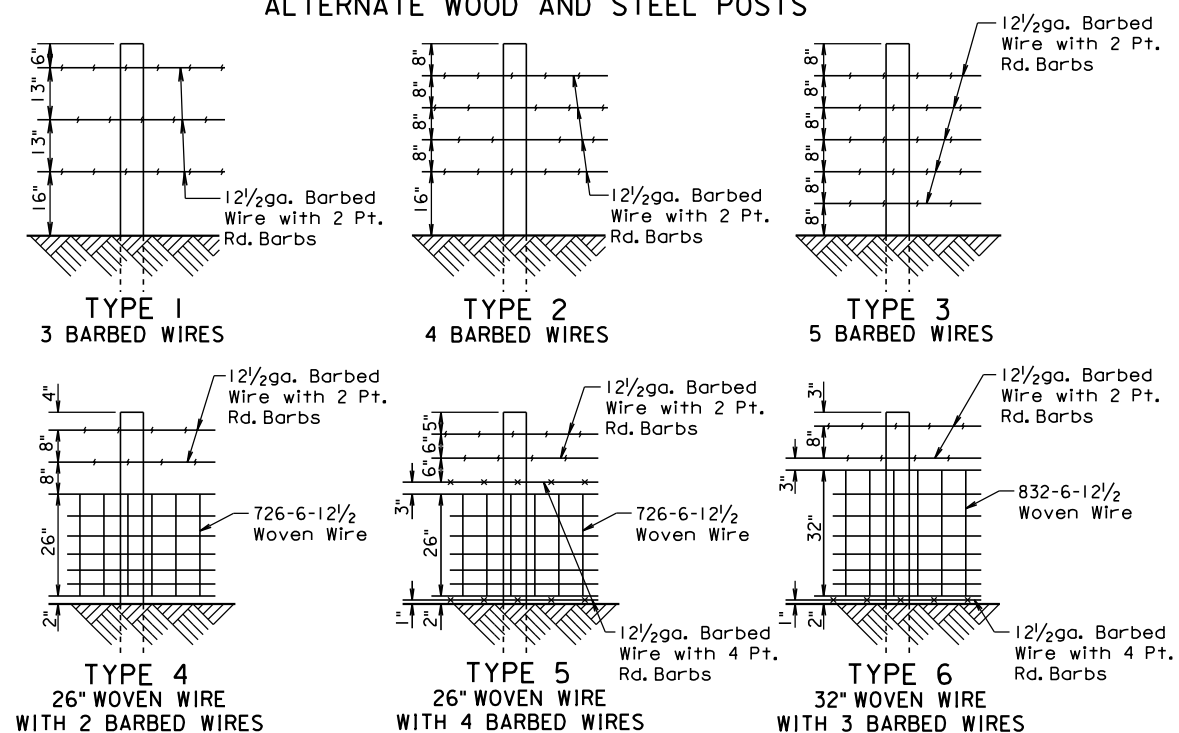
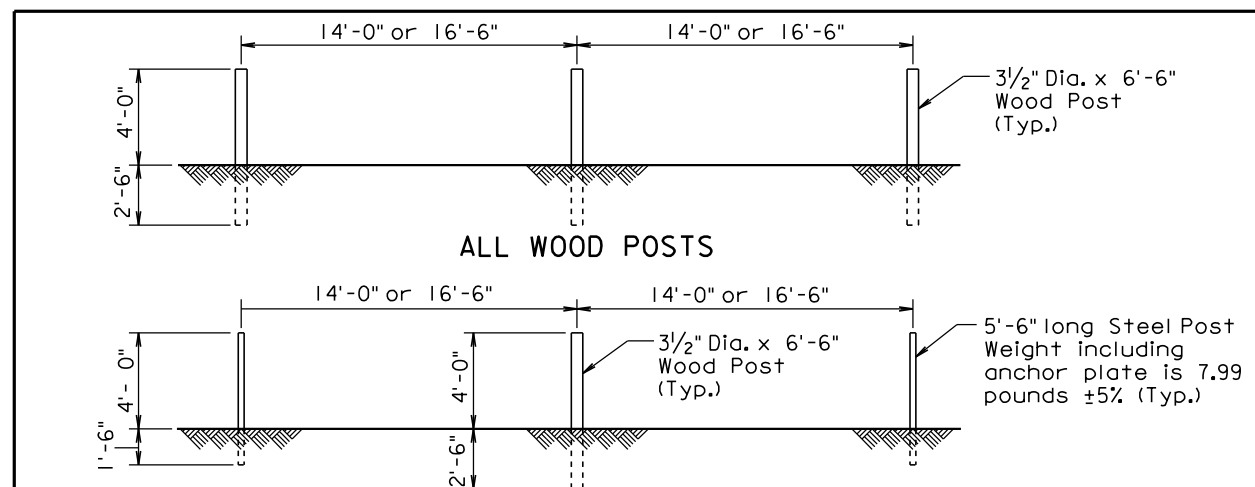


UNDERDRAINS SHALL BE CONSTRUCTED IN
ACCORDANCE WITH SECTION 680, OF THE SPECIFICATIONS



June 26, 2011

Published Date: 2nd Qtr. 2016	S D D O T	8" RUMBLE STRIPE IN ASPHALT CONCRETE ON NONDIVIDED HIGHWAY SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1



TYPE OF FENCE		LINE POST SPACING	BARBED WIRE		WOVEN WIRE
			WIRE GAGE	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
TYPE	DESCRIPTION				
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

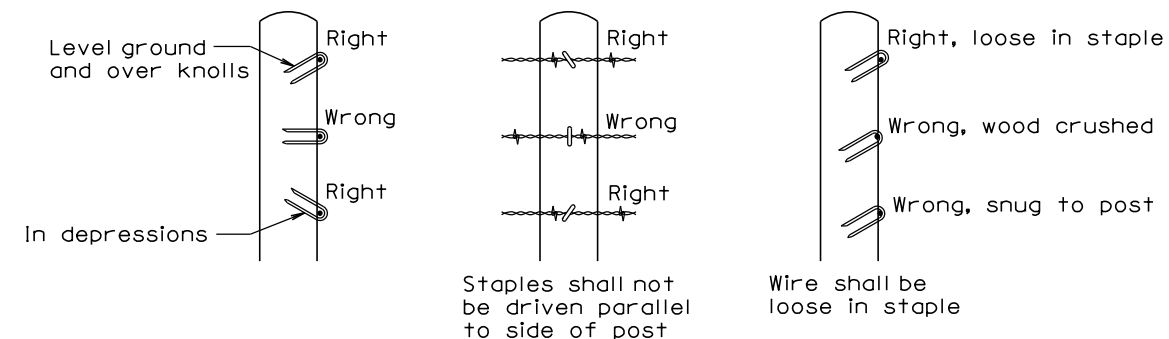
GENERAL NOTES:

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

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

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

September 14, 2009



STAPLE INSTALLATION

GENERAL NOTES:

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

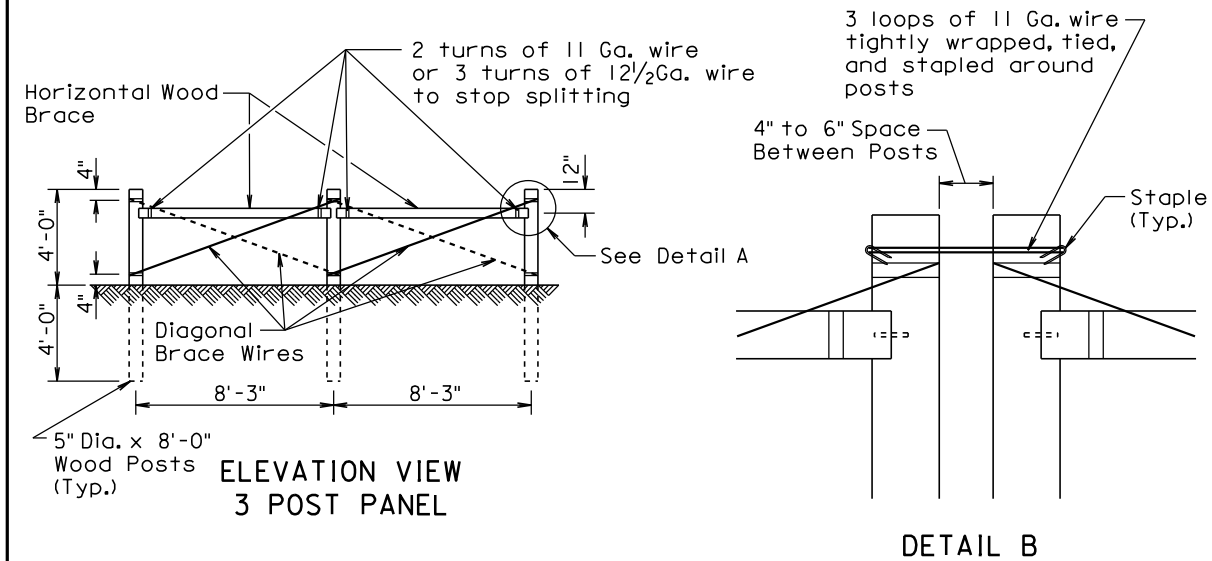
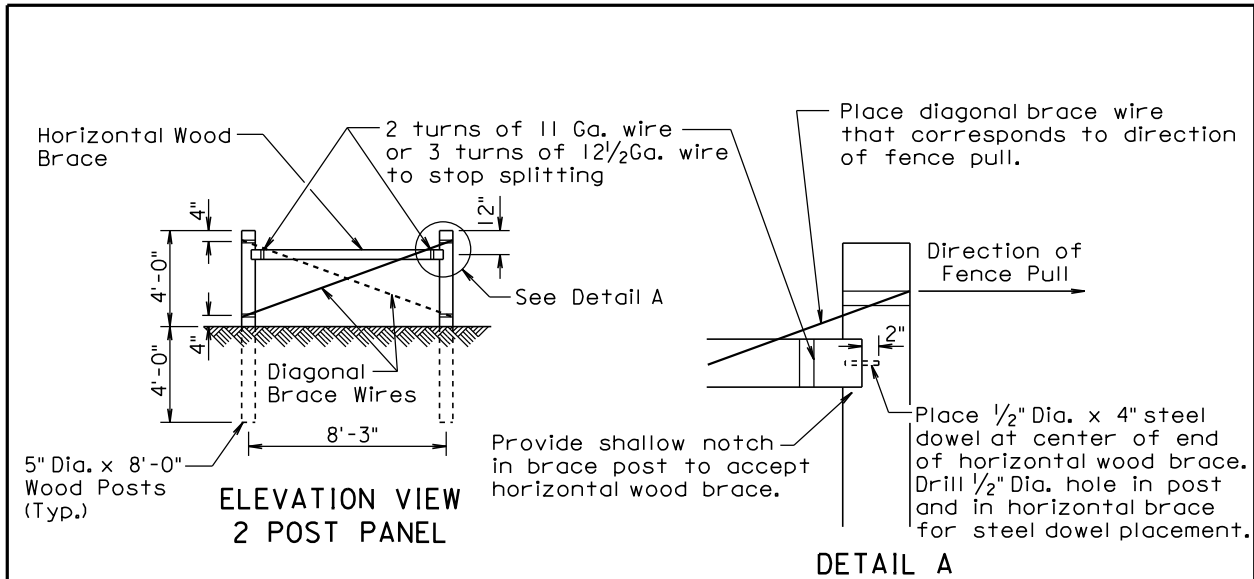
Barbs shall be fabricated from zinc coated 14 ga. wire. Two point barbs shall be wrapped twice around one main strand at 4" spacings and the four point barbs shall be interlocked and wrapped around both main strands at 5" spacings.

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 shall be as stated in AASHTO M281. Woven wire shall conform to design and specifications of ASTM A116 and barbed wire shall conform to ASTM A121.

December 23, 2004

<p><i>Published Date: 2nd Qtr. 2016</i></p>	<p>S D D O T</p>	<p>RIGHT-OF-WAY FENCE</p>	<p>PLATE NUMBER 620.01</p>
			<p>Sheet 1 of 1</p>

Published Date: 2nd Qtr. 2016	S D D O T	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02
			Sheet 1 of 1



GENERAL NOTES:

- Two Post Panels shall be installed at least every 1320' between corners.
- Two Post Panels shall be installed at any sharp vertical angle crest points and as directed by the Engineer.
- Horizontal wood braces shall consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.
- Diagonal brace wires shall be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires shall be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

December 23, 2004

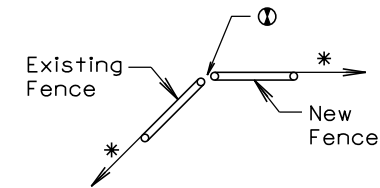
Published Date: 2nd Qtr. 2016	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 1 of 3

SPACING OF 2 POST PANELS WITHIN CURVES	
DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	**At P.C., P.T., and at every 1320' between P.C. and P.T.

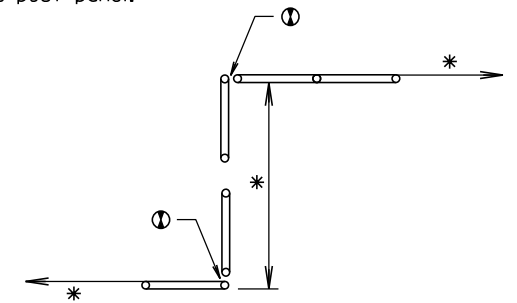
GENERAL NOTE:

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

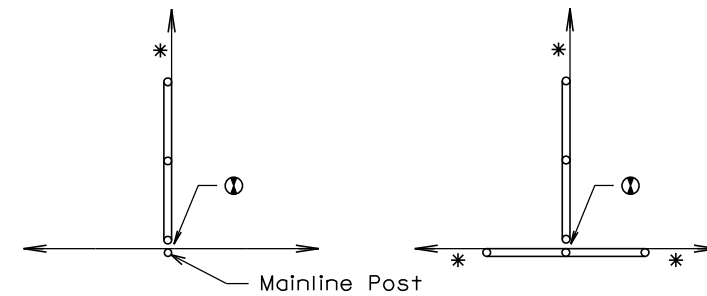
- * If fence length is less than 600' to next corner use a 2 post panel.
- * If fence length is greater than 600' to next corner use a 3 post panel.
- ** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.
- ① See Detail B on Sheet 1 of 3.



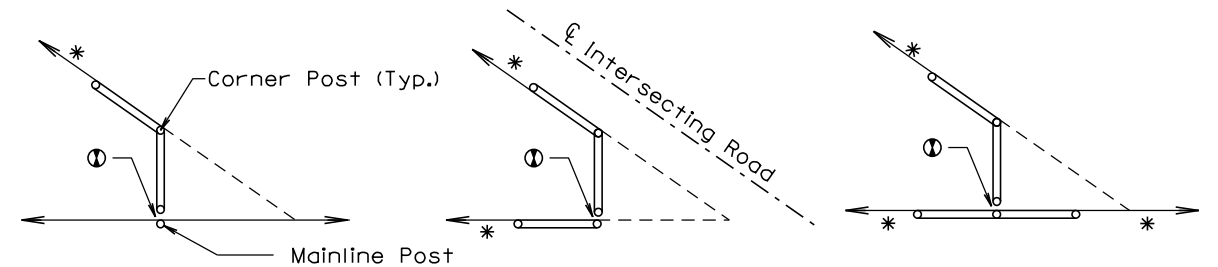
BEGIN OR END FENCE
(where new fence ties into existing fence)



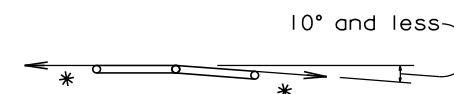
SHORT JOGS IN FENCE



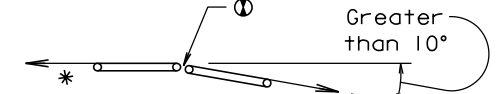
CROSS FENCE



SHARP ANGLES IN CROSS FENCE



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

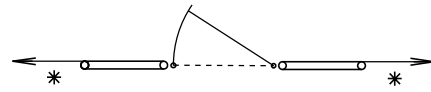


Additional fence panel is required when an angle in the mainline fence is greater than 10°.

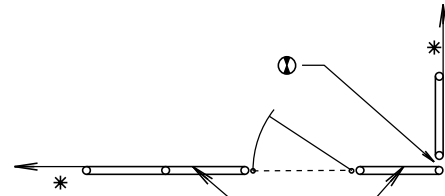
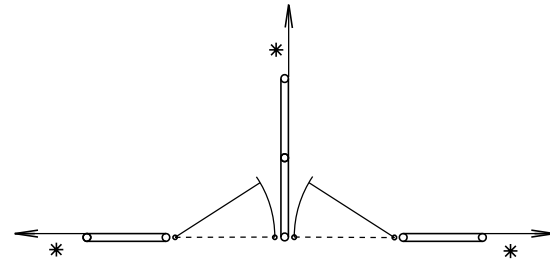
ANGLES IN MAINLINE FENCE

December 23, 2004

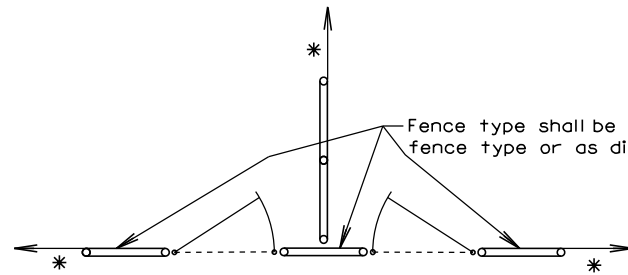
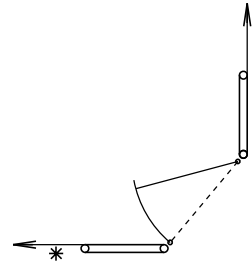
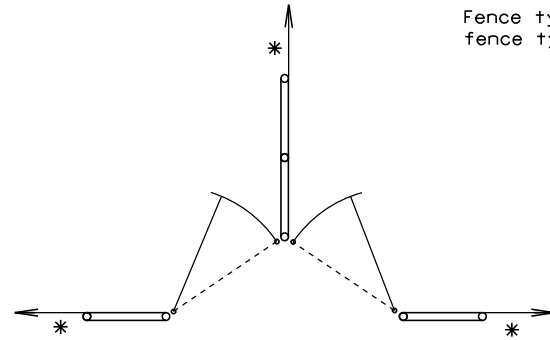
Published Date: 2nd Qtr. 2016	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3



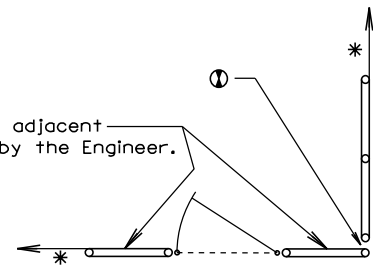
ENTRANCE
(NOT ON CORNER)



Fence type shall be same as adjacent
fence type or as directed by the Engineer.



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.

December 23, 2004

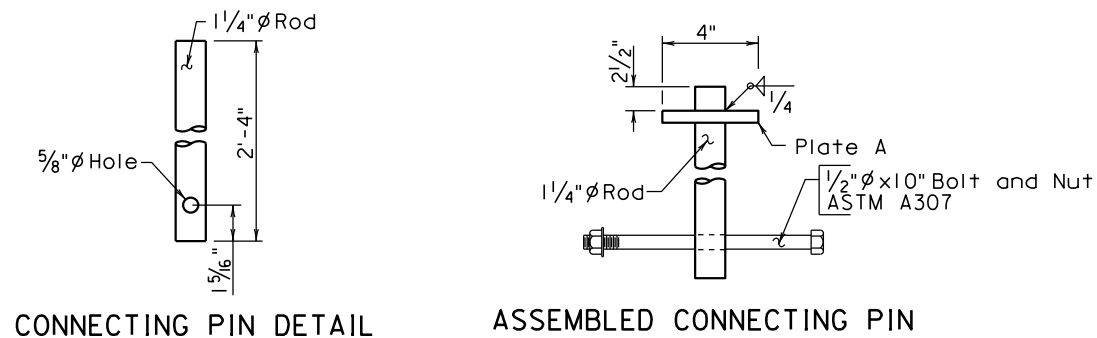
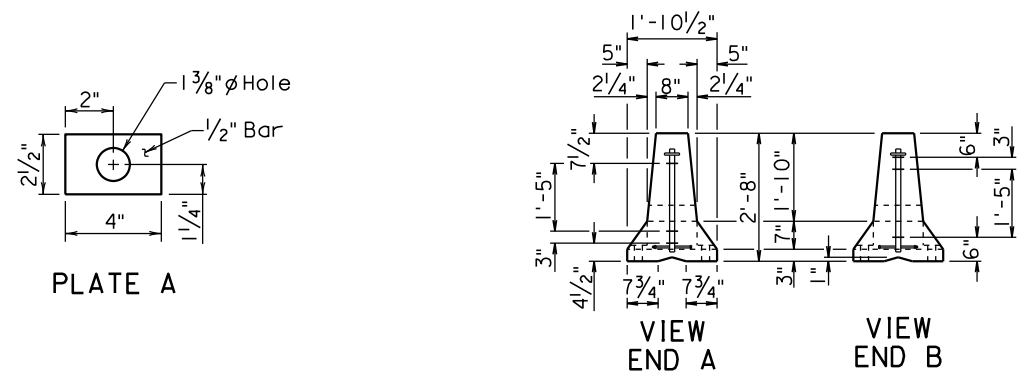
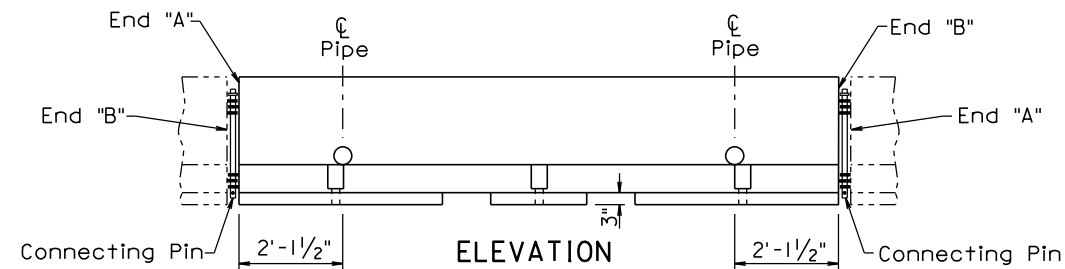
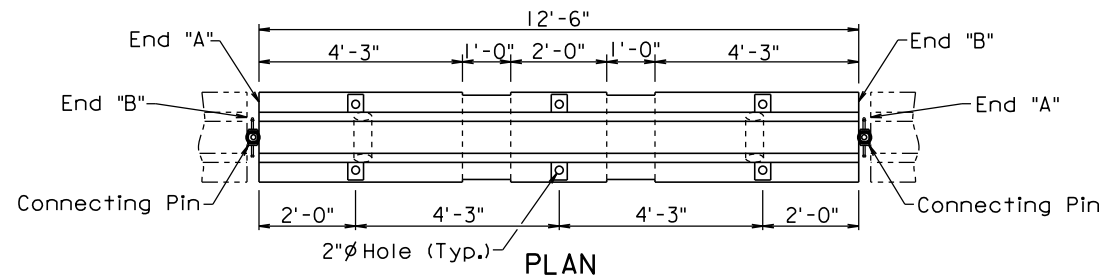
Published Date: 2nd Qtr. 2016

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**BRACE PANELS
AND APPLICATIONS OF BRACE PANELS**

**PLATE NUMBER
620.03**

Sheet 3 of 3



GENERAL NOTES:

The detailed drawings are for illustrative purpose and depicts the current version of the F shape concrete barrier. If new movable concrete barriers are requested on a project, they shall be constructed according to the F shape movable concrete barrier details on standard plate 628.10.

Each movable concrete barrier section weighs 5030 \pm pounds.

Each movable concrete barrier section is detailed to provide end "A" to end "B" connection by insertion of a pin through steel loops.

The Jersey shape or any version of the F shape traffic control movable concrete barriers may be used on a project, however, only the same type or version shall be used for each run of barriers.

Movable concrete barrier sections shall be placed to provide uniform bearing of the sections with the paved surface as approved by the Engineer.

Movable concrete barrier sections shall never be moved or lifted using the end loops.

Movable concrete barrier sections that have been damaged shall not be used. Barrier sections are considered damaged if the loops are end welded onto existing damaged loops, loops are fractured, or there is exposed rebar from fractured concrete.

All cost for transporting the barriers from the specified location to the project site, installing, and returning the barriers to the specified location shall be incidental to the contract unit price per each for "Traffic Control Movable Concrete Barrier".

If the concrete barriers need to be moved and reset on the project, requiring the barriers to be transported by truck, all cost for removing, transporting, and resetting the barriers shall be incidental to the contract unit price per each for "Remove and Reset Traffic Control Movable Concrete Barrier". All cost for small shifts in alignment of the barriers, not requiring the barriers to be transported by truck, shall be incidental to various contract items.

June 26, 2009

Published Date: 2nd Qtr. 2016	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
			Sheet 1 of 2

June 26, 2009

Published Date: 2nd Qtr. 2016	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
			Sheet 2 of 2

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

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

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

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

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

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



April 15, 2015

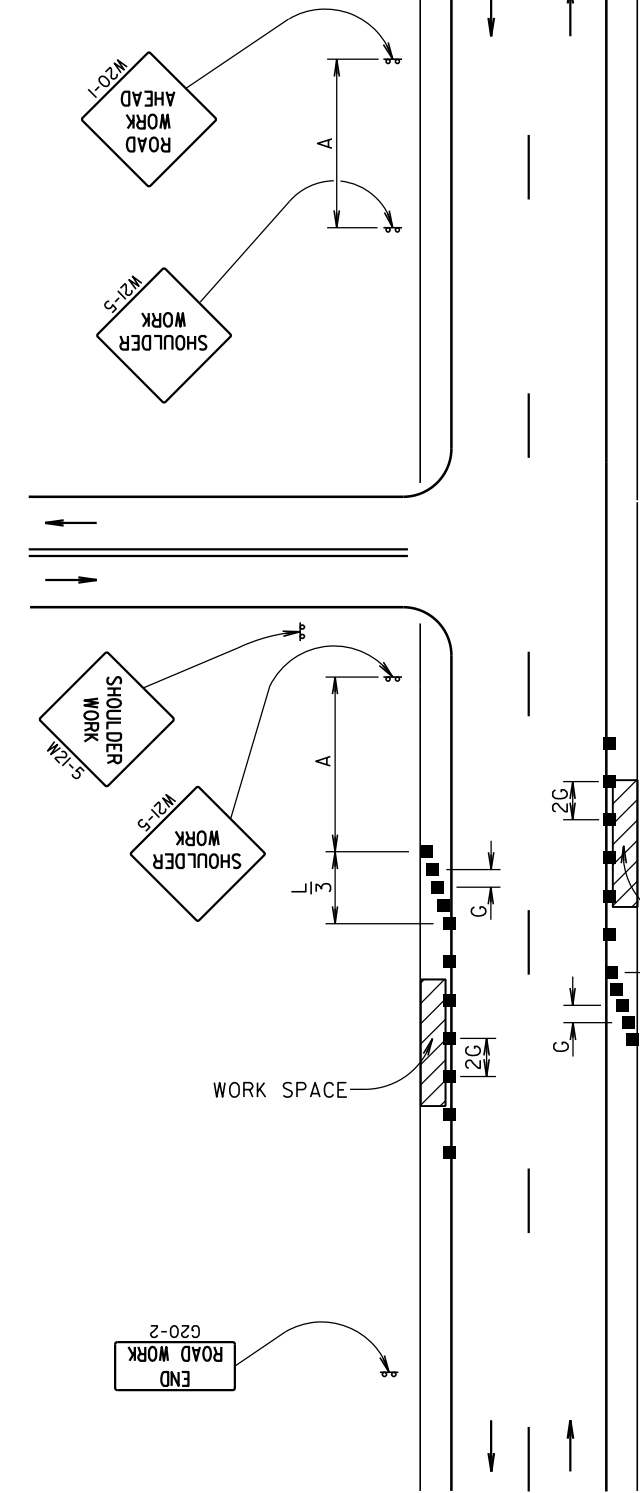
Published Date: 2nd Qtr. 2016

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

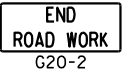
PLATE NUMBER
634.01

Sheet 1 Of 1



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

■ Channelizing Device



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

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

WORK SPACE



September 22, 2014

Published Date: 2nd Qtr. 2016

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER
634.03

Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

- Flagger
■ Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

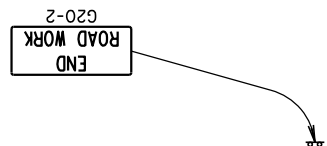
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

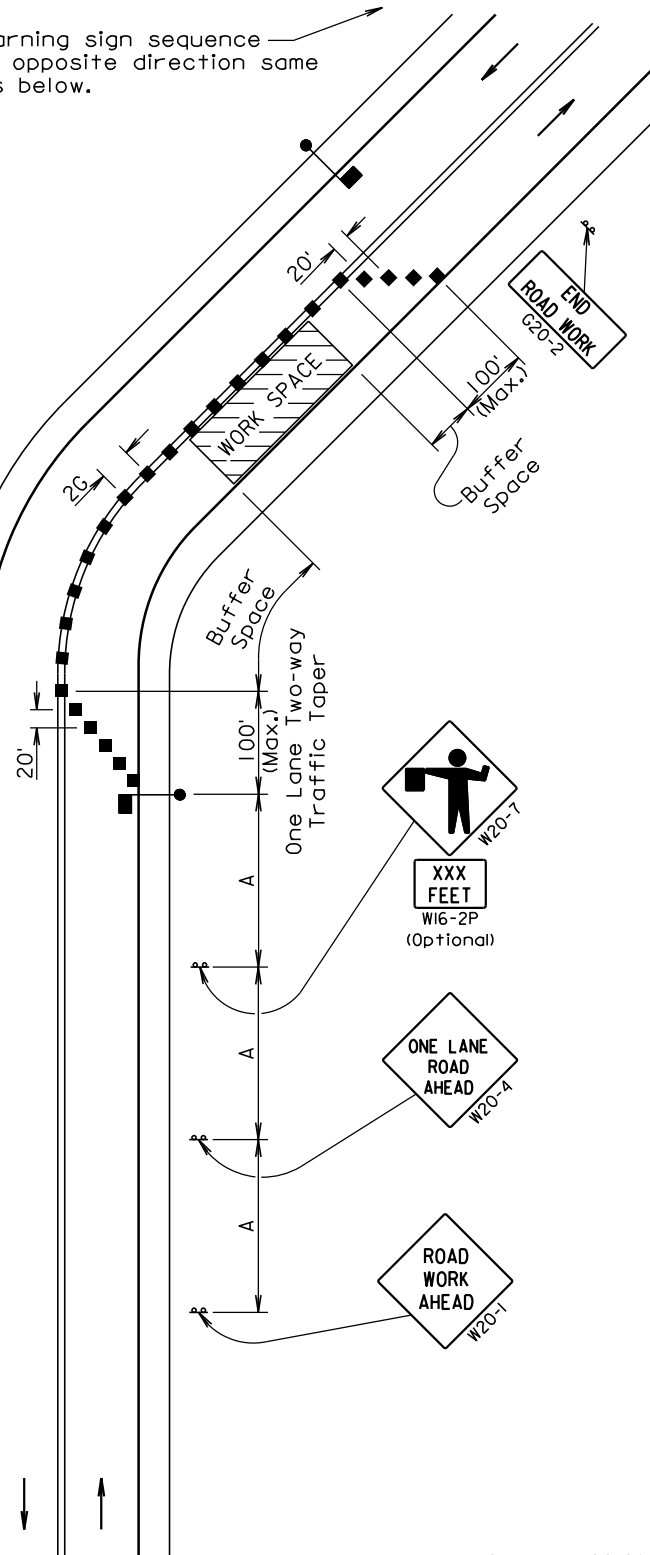


Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.



September 22, 2014

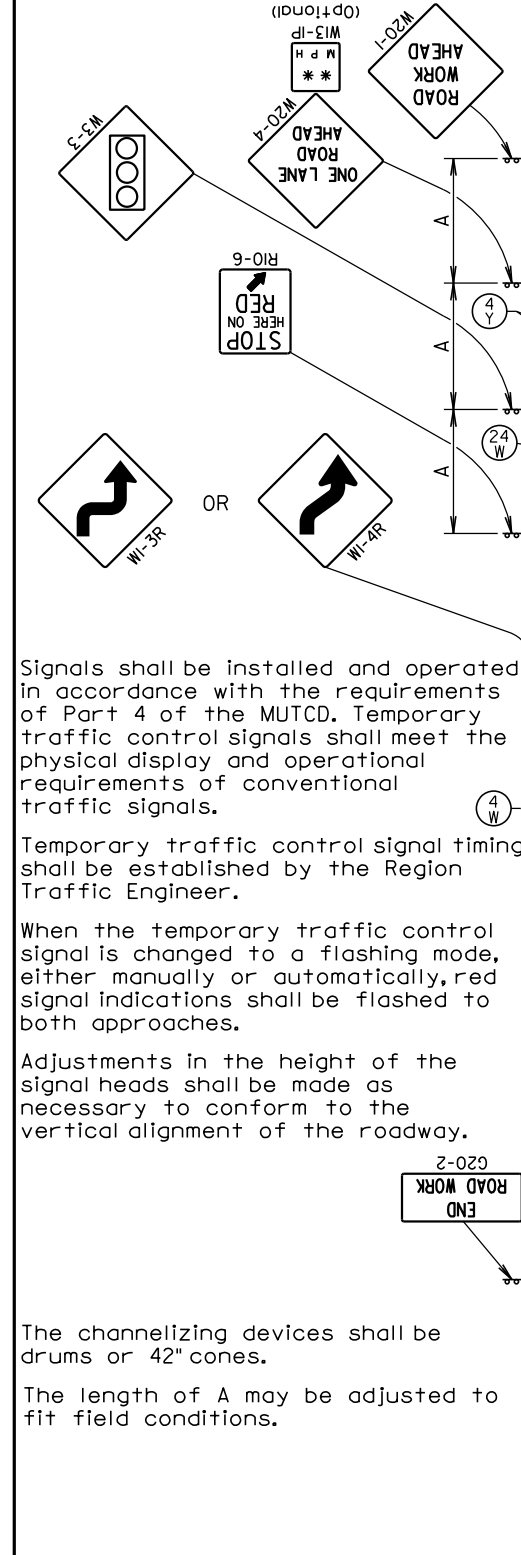
Published Date: 2nd Qtr. 2016

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GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER
634.23

Sheet 1 of 1



Signals shall be installed and operated in accordance with the requirements of Part 4 of the MUTCD. Temporary traffic control signals shall meet the physical display and operational requirements of conventional traffic signals.

Temporary traffic control signal timing shall be established by the Region Traffic Engineer.

When the temporary traffic control signal is changed to a flashing mode, either manually or automatically, red signal indications shall be flashed to both approaches.

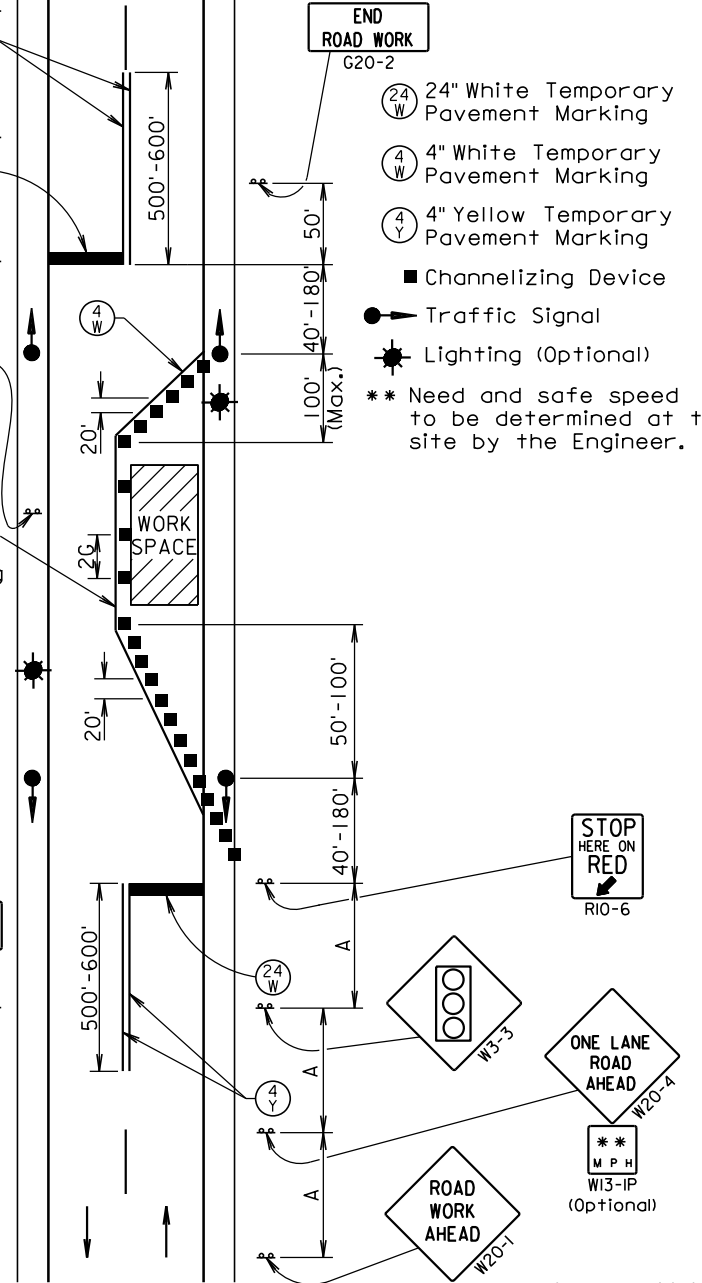
Adjustments in the height of the signal heads shall be made as necessary to conform to the vertical alignment of the roadway.

The channelizing devices shall be drums or 42" cones.

The length of A may be adjusted to fit field conditions.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

- END ROAD WORK G20-2
- 24" White Temporary Pavement Marking
 - 4" White Temporary Pavement Marking
 - 4" Yellow Temporary Pavement Marking
 - Channelizing Device
 - Traffic Signal
 - Lighting (Optional)
- ** Need and safe speed to be determined at the site by the Engineer.



September 22, 2014

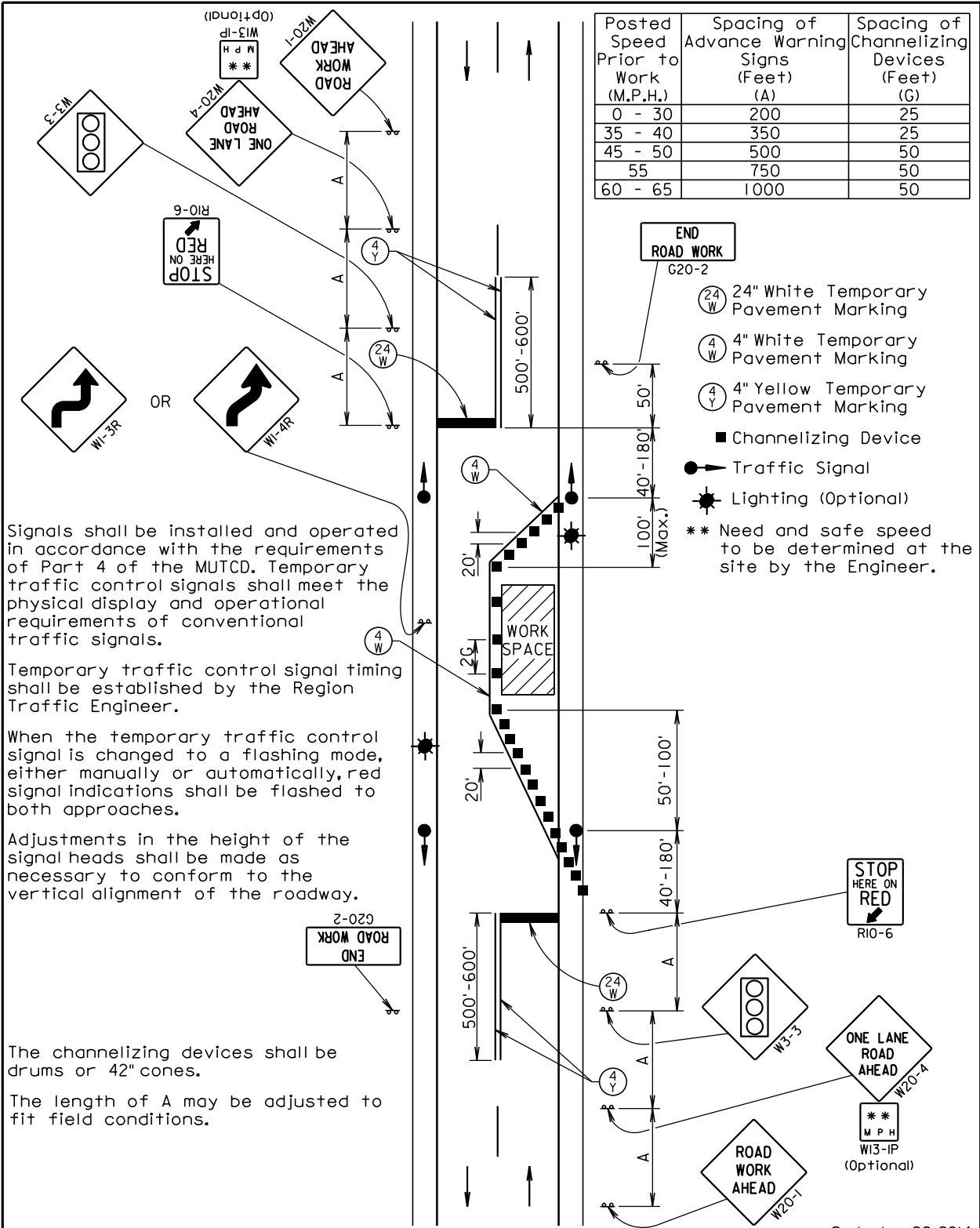
Published Date: 2nd Qtr. 2016

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GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE USING TRAFFIC SIGNALS

PLATE NUMBER
634.26

Sheet 1 of 1



September 22, 2014

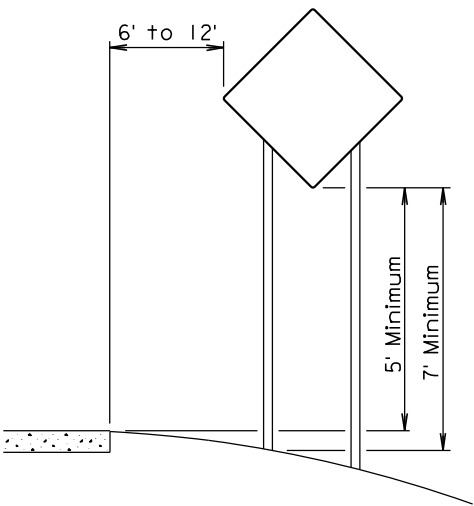
Published Date: 2nd Qtr. 2016

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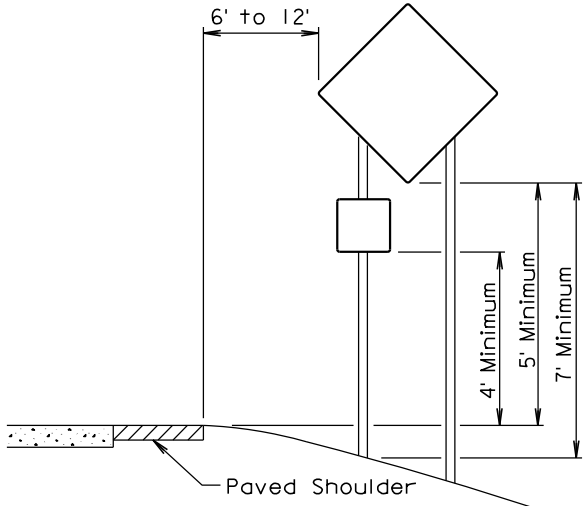
GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE USING TRAFFIC SIGNALS

PLATE NUMBER
634.26

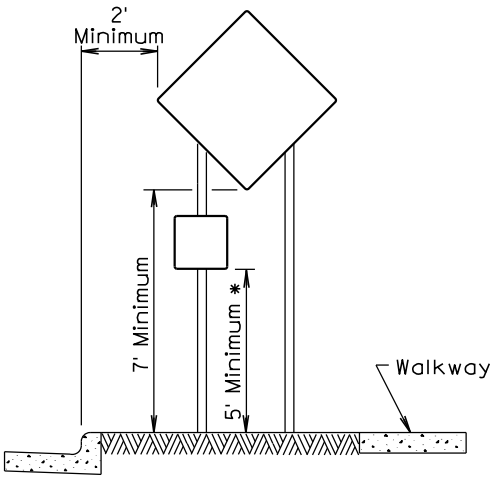
Sheet 1 of 1



RURAL DISTRICT

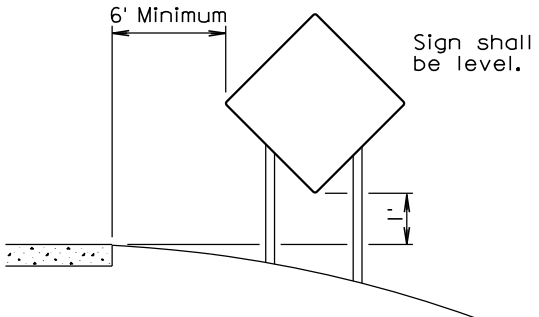


RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

* 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.



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

September 22, 2014

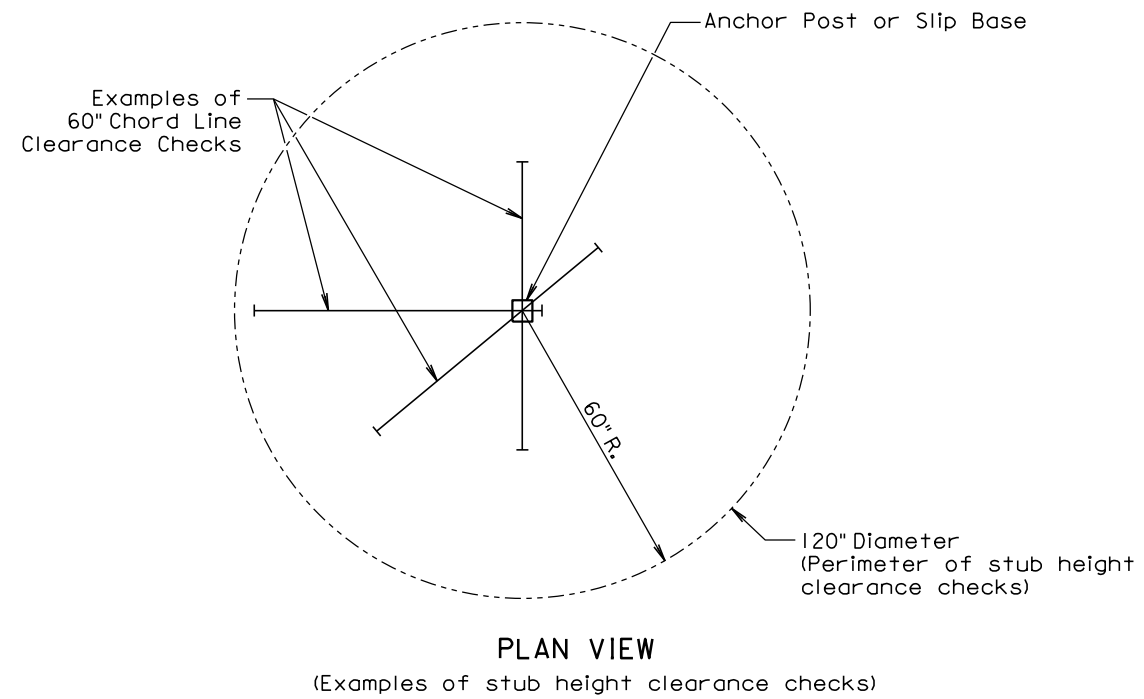
Published Date: 2nd Qtr. 2016

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CRASHWORTHY SIGN SUPPORTS
(Typical Construction Signing)

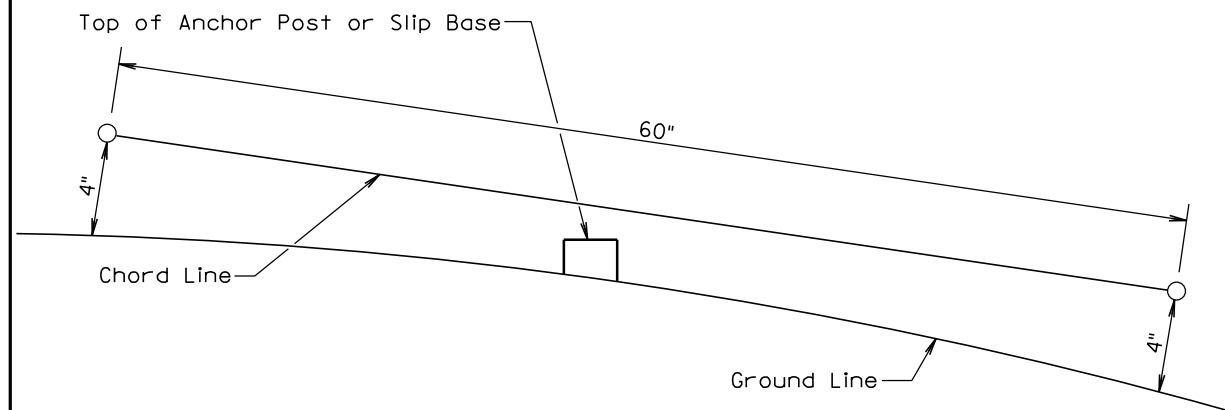
PLATE NUMBER
634.85

Sheet 1 of 1



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

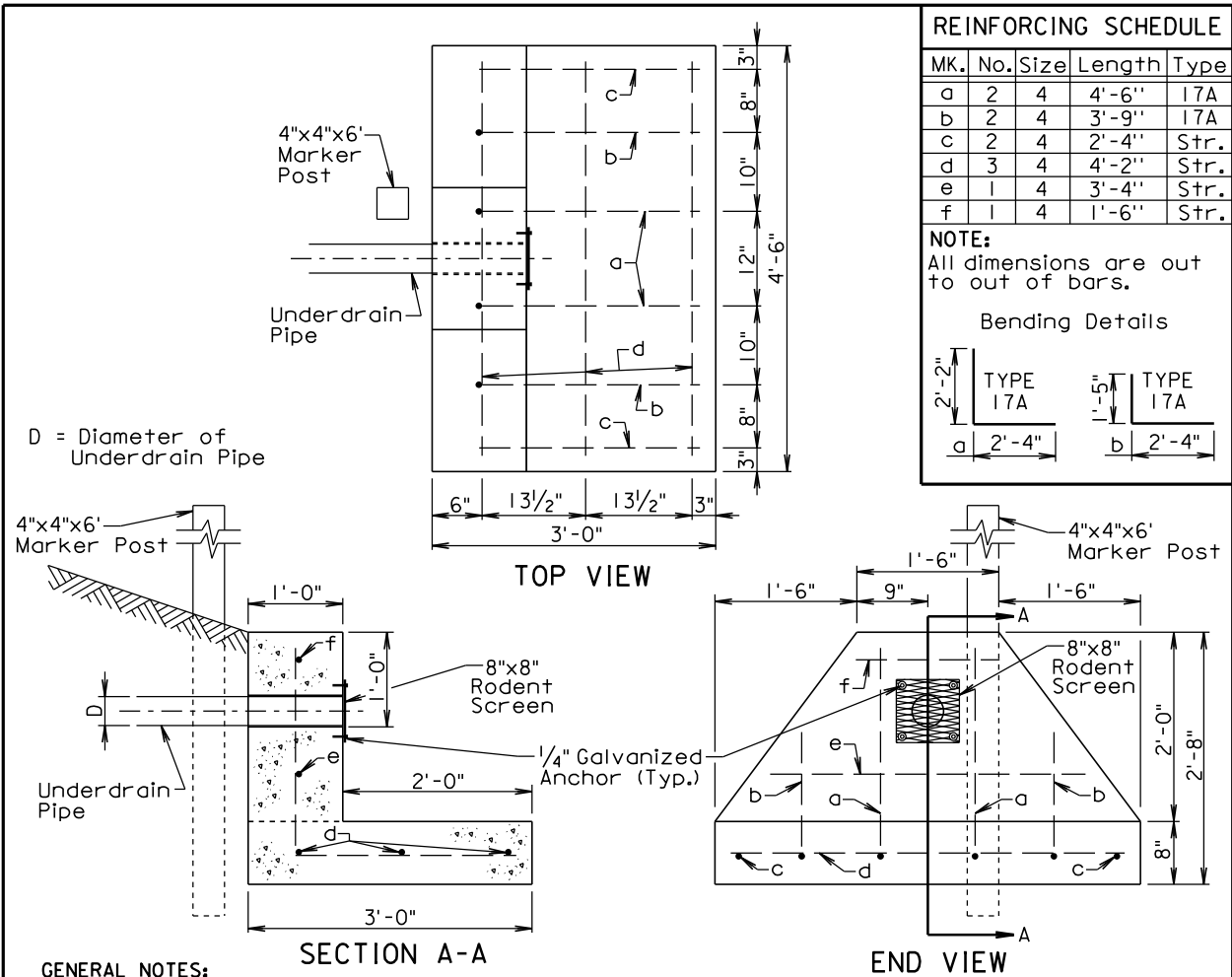
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall 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.

July 1, 2005

Published Date: 2nd Qtr. 2016	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER
			634.99
			Sheet 1 of 1

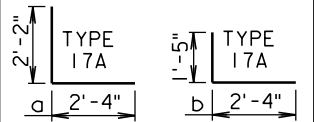


REINFORCING SCHEDULE

MK.	No.	Size	Length	Type
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.

Bending Details



GENERAL NOTES:

The concrete shall be Class M6. The concrete shall conform to the requirements of Section 462 of the Specifications except the minimum curing time shall 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 1/4" galvanized anchors shall be placed in the headwall. Each galvanized anchor shall 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 shall conform to ASTM A615 Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.

The underdrain pipe shall 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 shall be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size shall be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen shall 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 shall be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post shall project 3'± above the ground line. The marker post shall be cedar or treated with a wood preservative and shall 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 shall be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

June 26, 2015

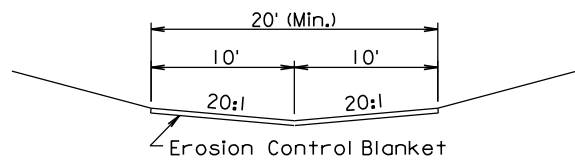
Published Date: 2nd Qtr. 2016

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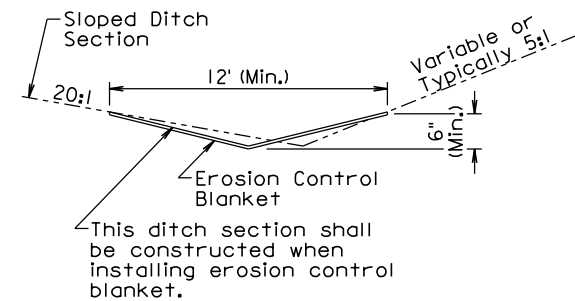
CONCRETE HEADWALL FOR UNDERDRAIN

PLATE NUMBER
680.01

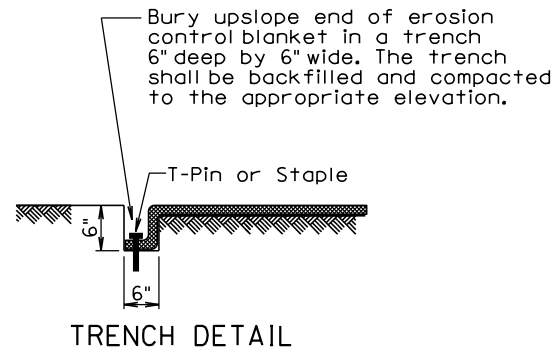
Sheet 1 of 1



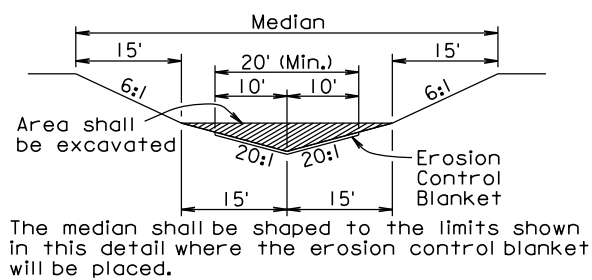
STANDARD DITCH SECTION



SLOPED DITCH SECTION



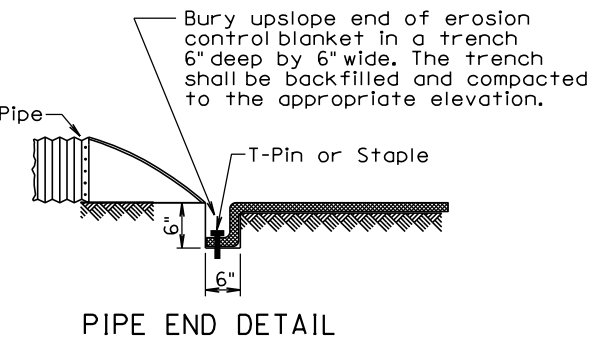
TRENCH DETAIL



MEDIAN 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



PIPE END DETAIL

GENERAL NOTES:

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

Erosion control blanket shall 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 shall be buried in a trench 6" wide by 6" deep. There shall 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.

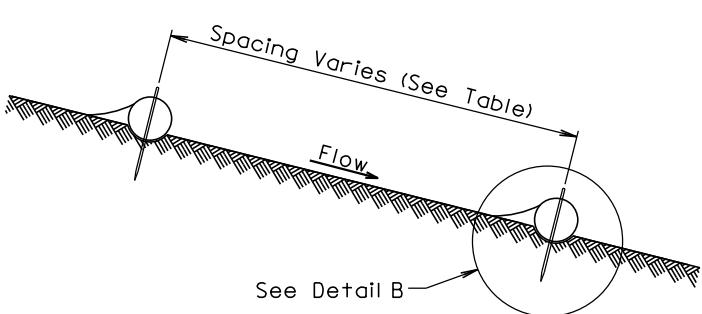
The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor shall 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 shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

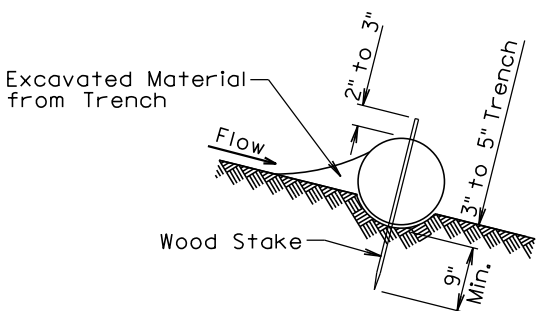
December 23, 2004

Published Date: 2nd Qtr. 2016	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

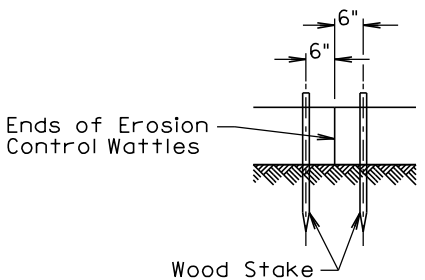


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

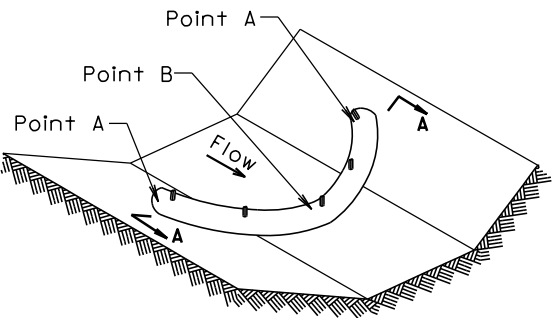
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



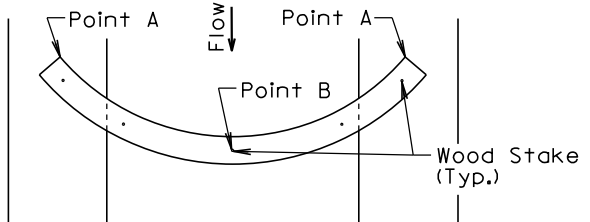
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

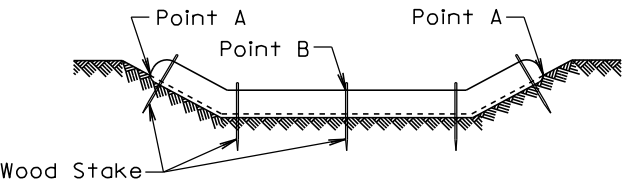


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 2nd Qtr. 2016	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

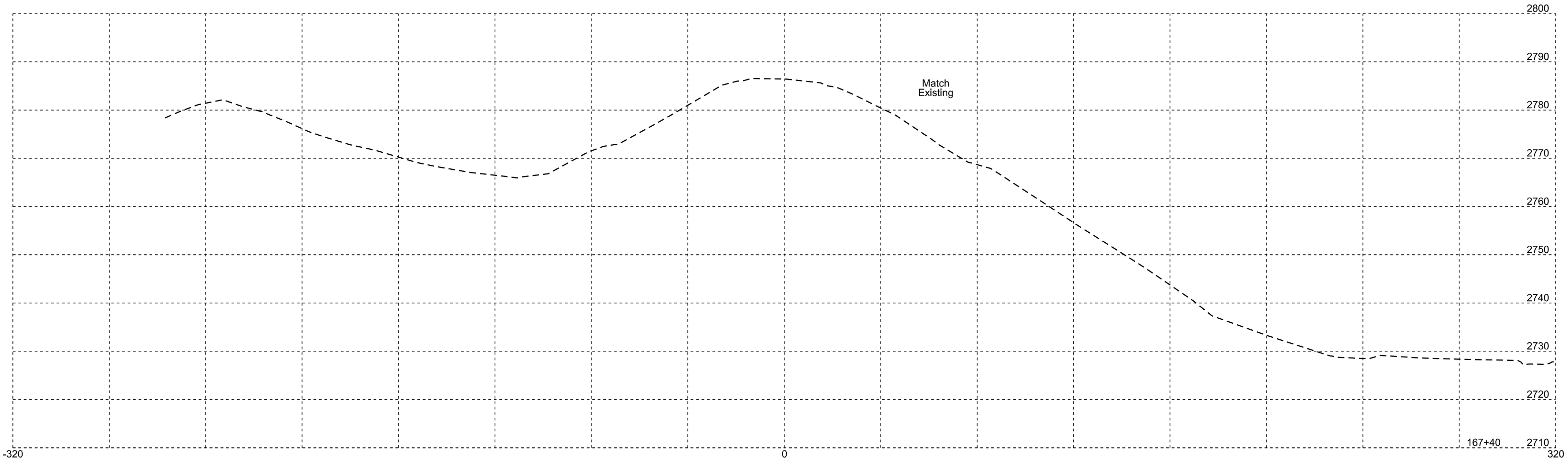
All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

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

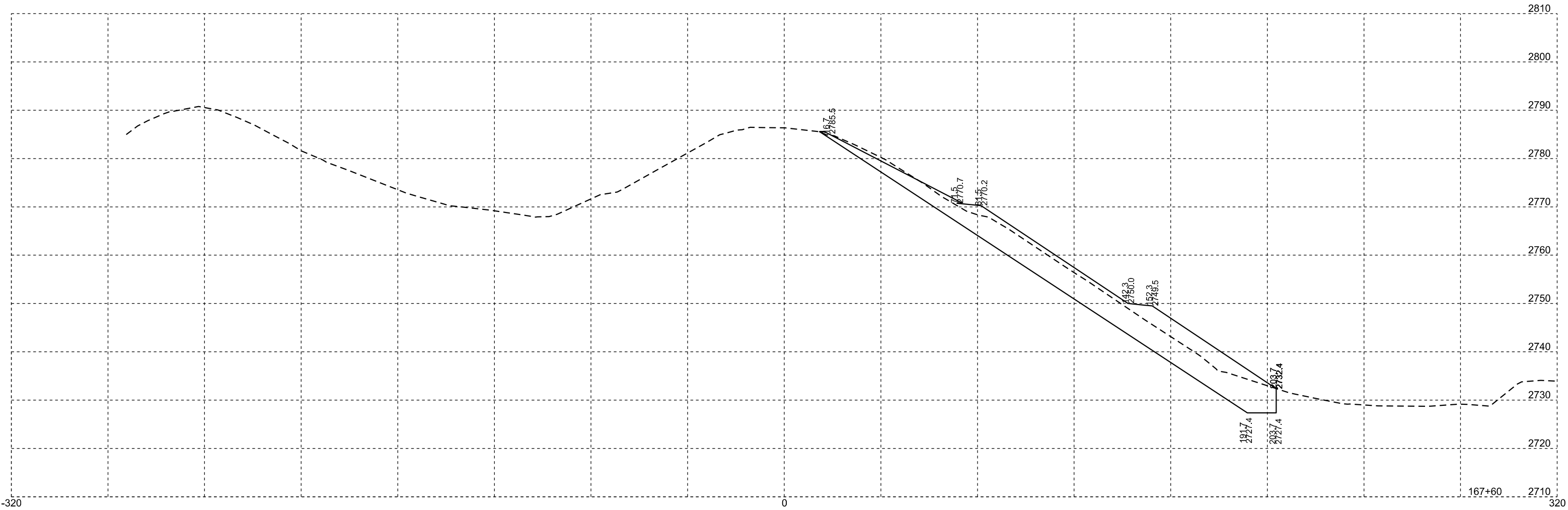
December 23, 2004

Published Date: 2nd Qtr. 2016	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

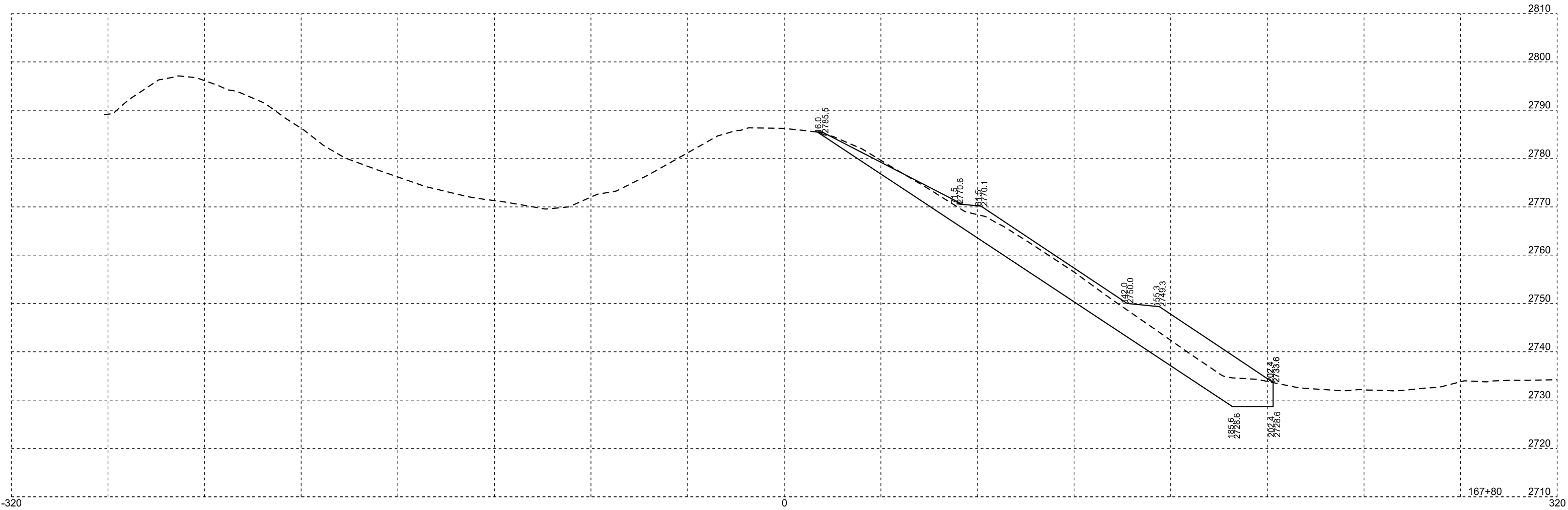
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	35	72



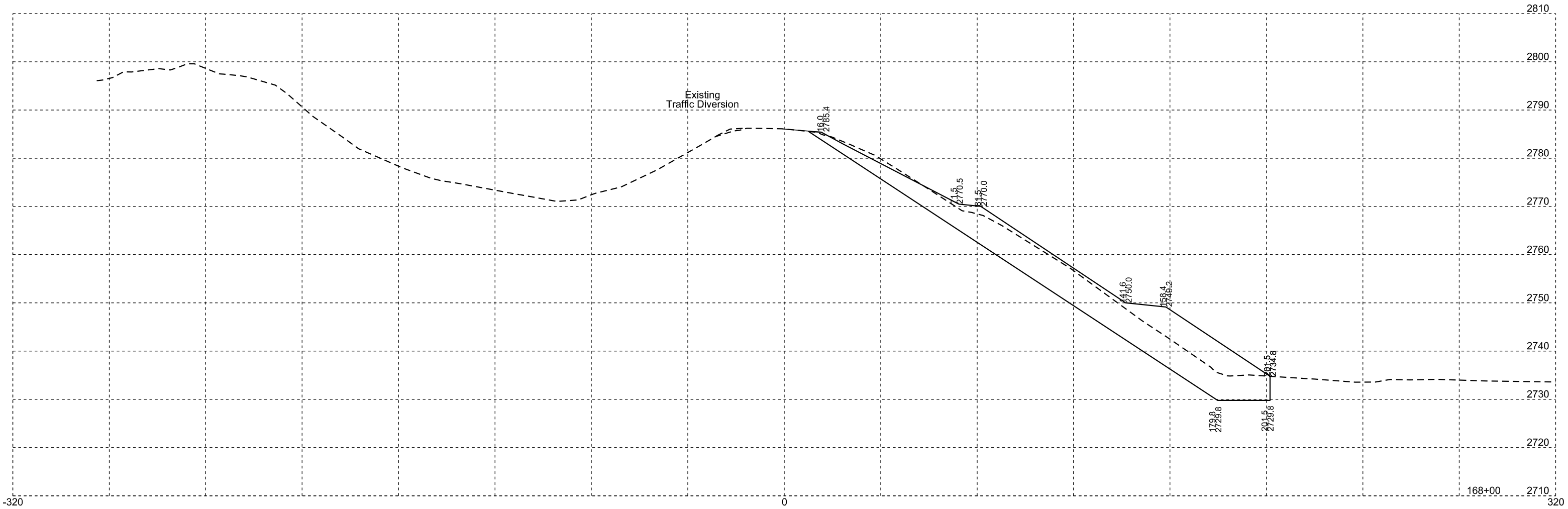
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	36	72

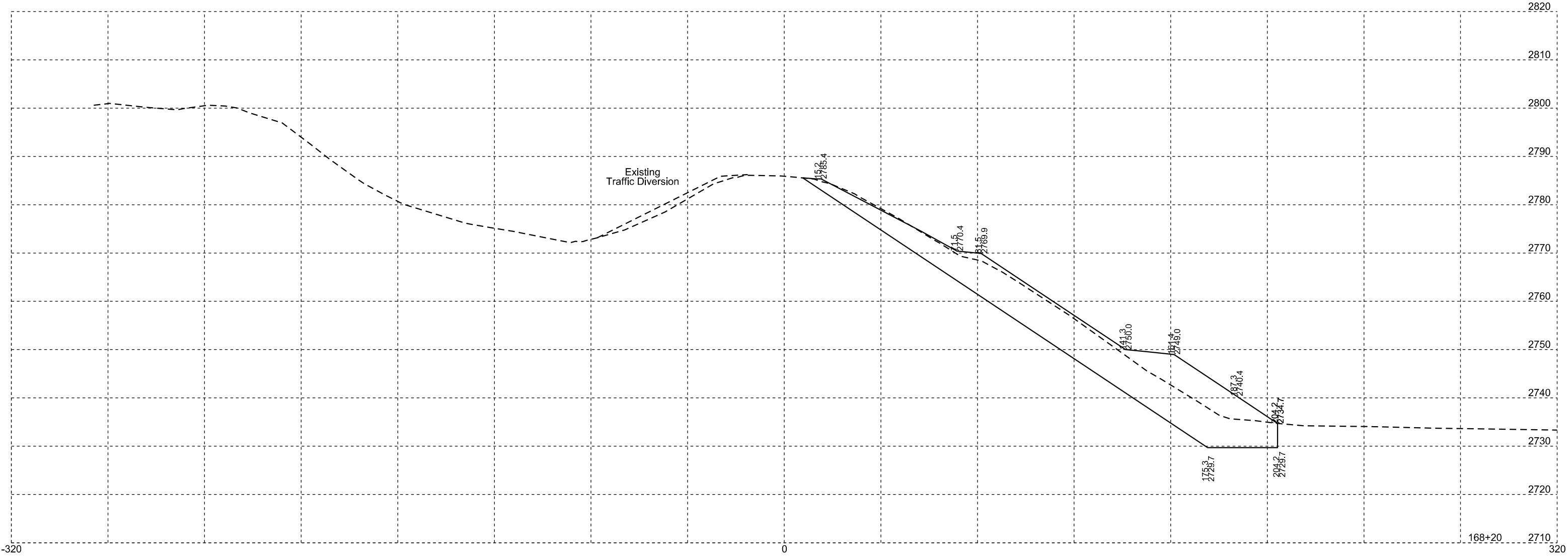


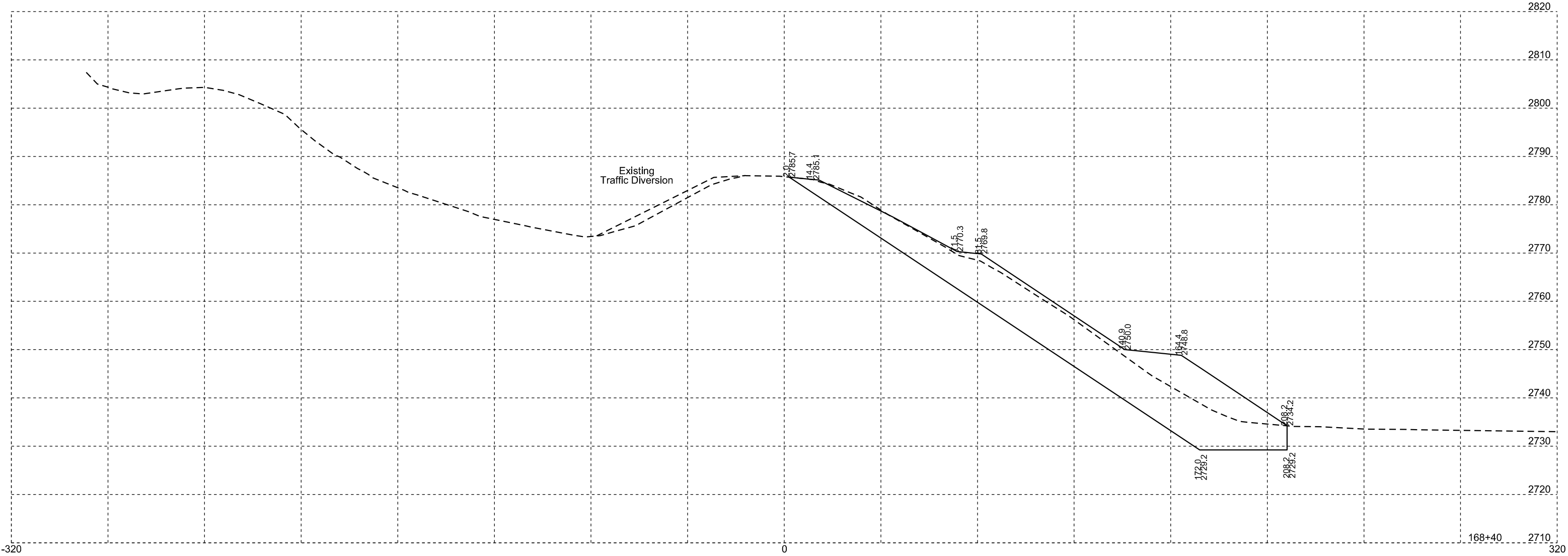
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	37	72

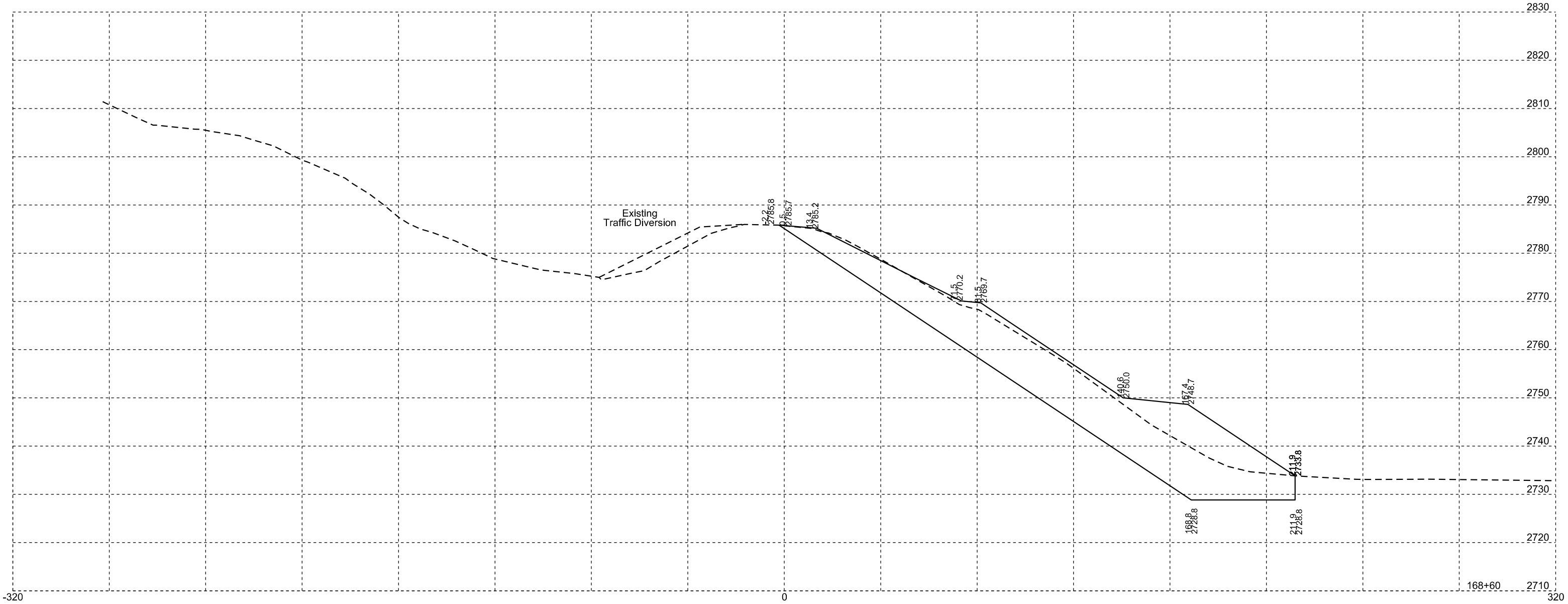


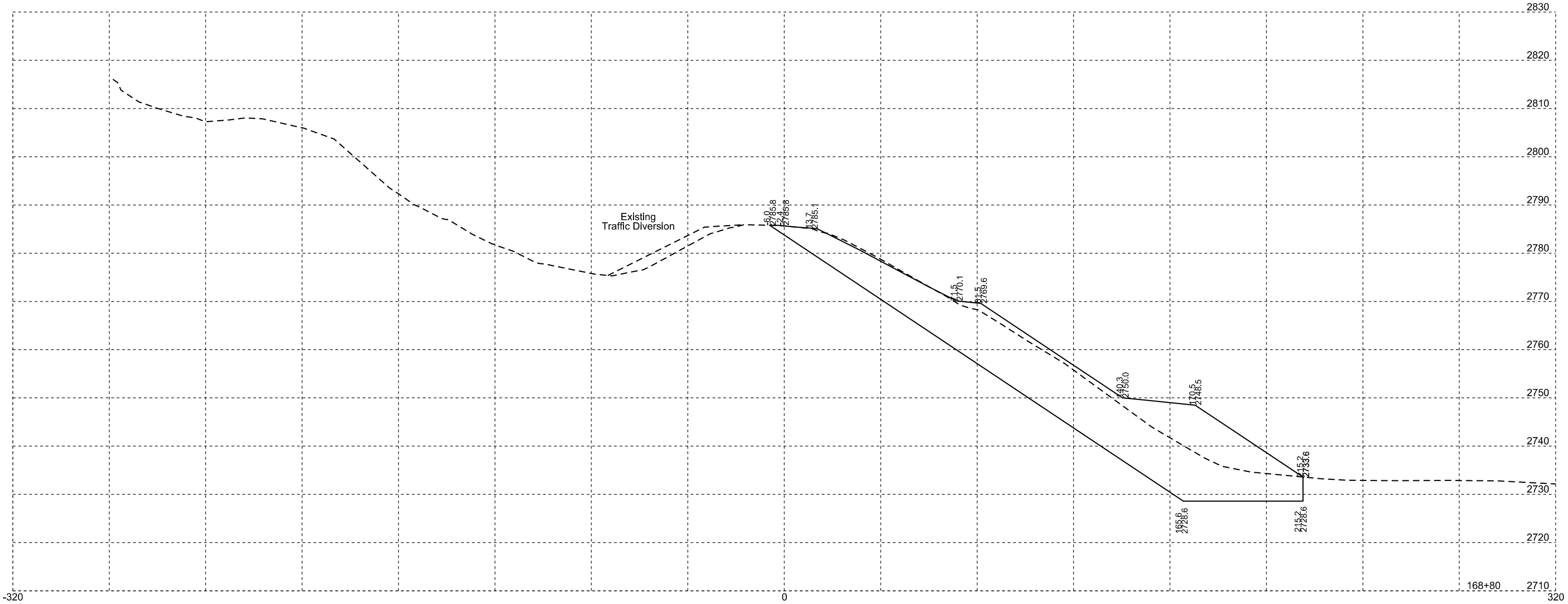
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	38	72

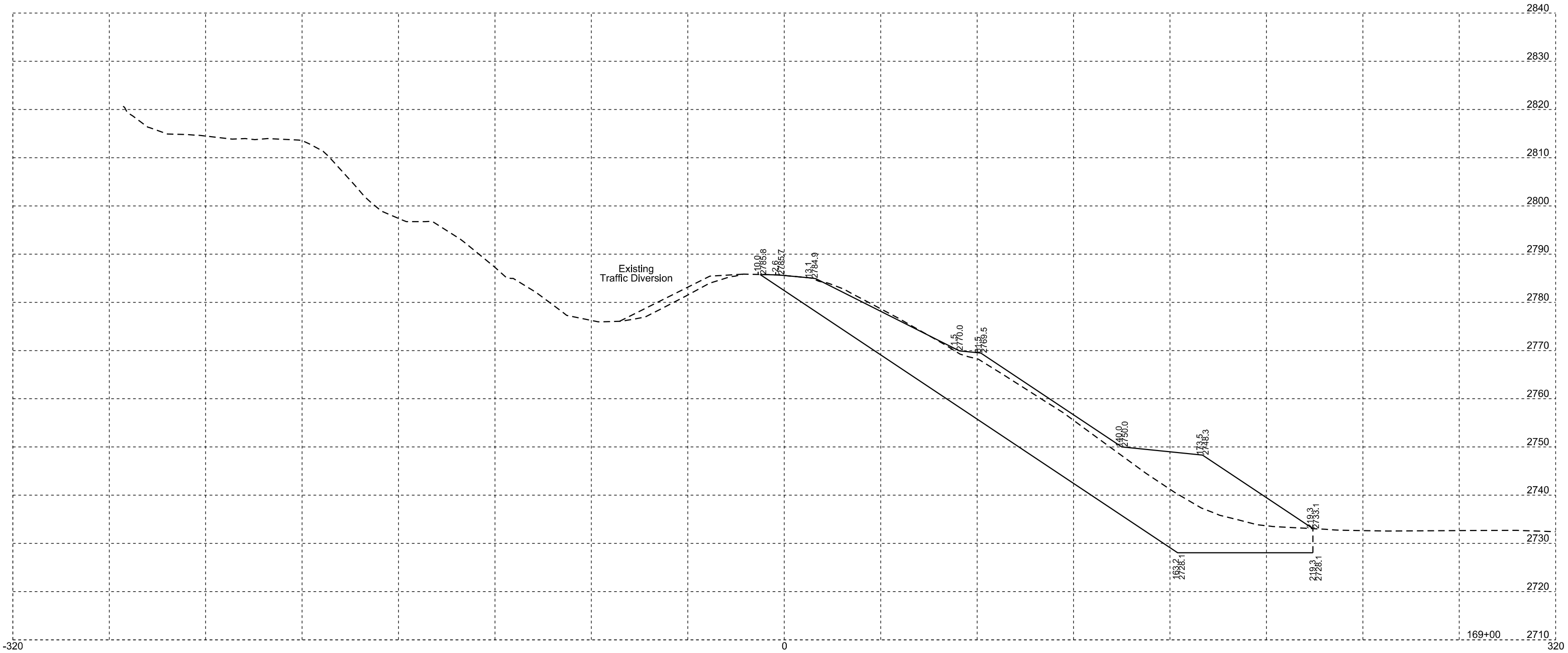




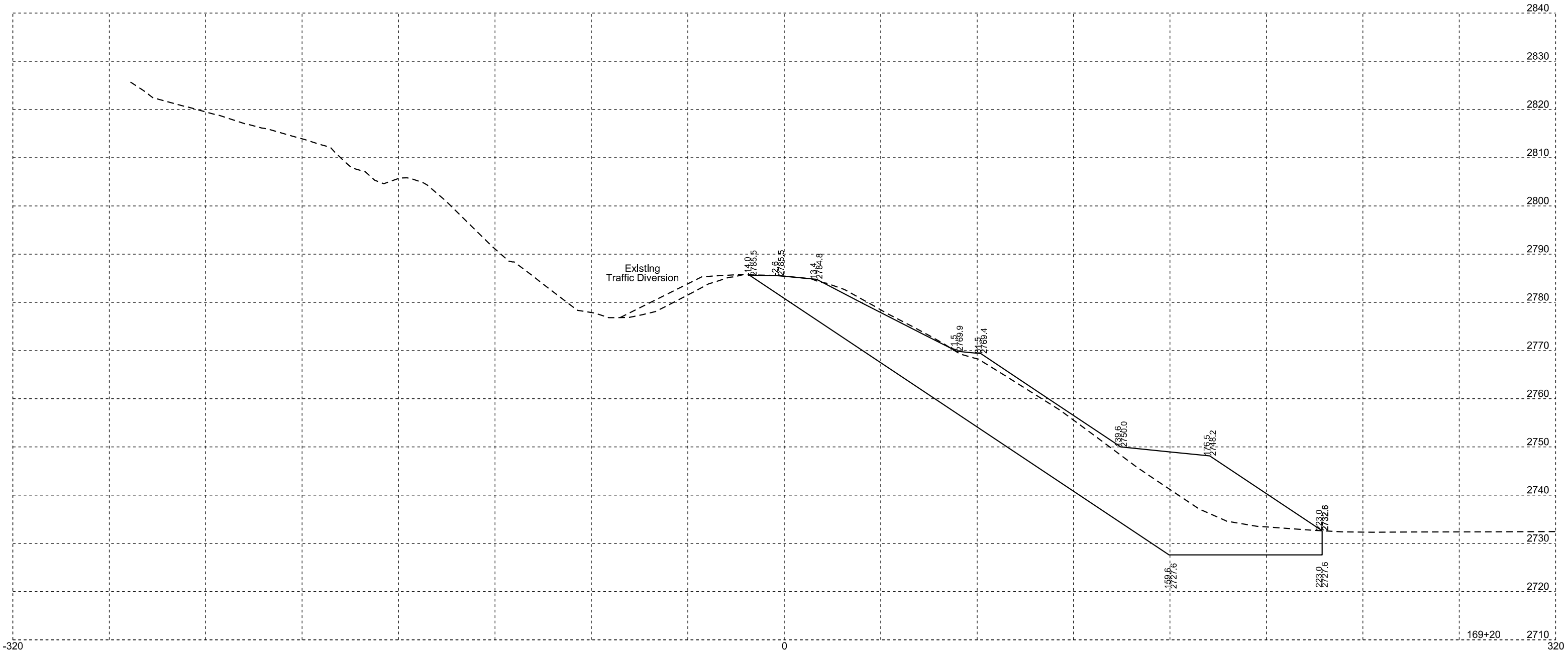




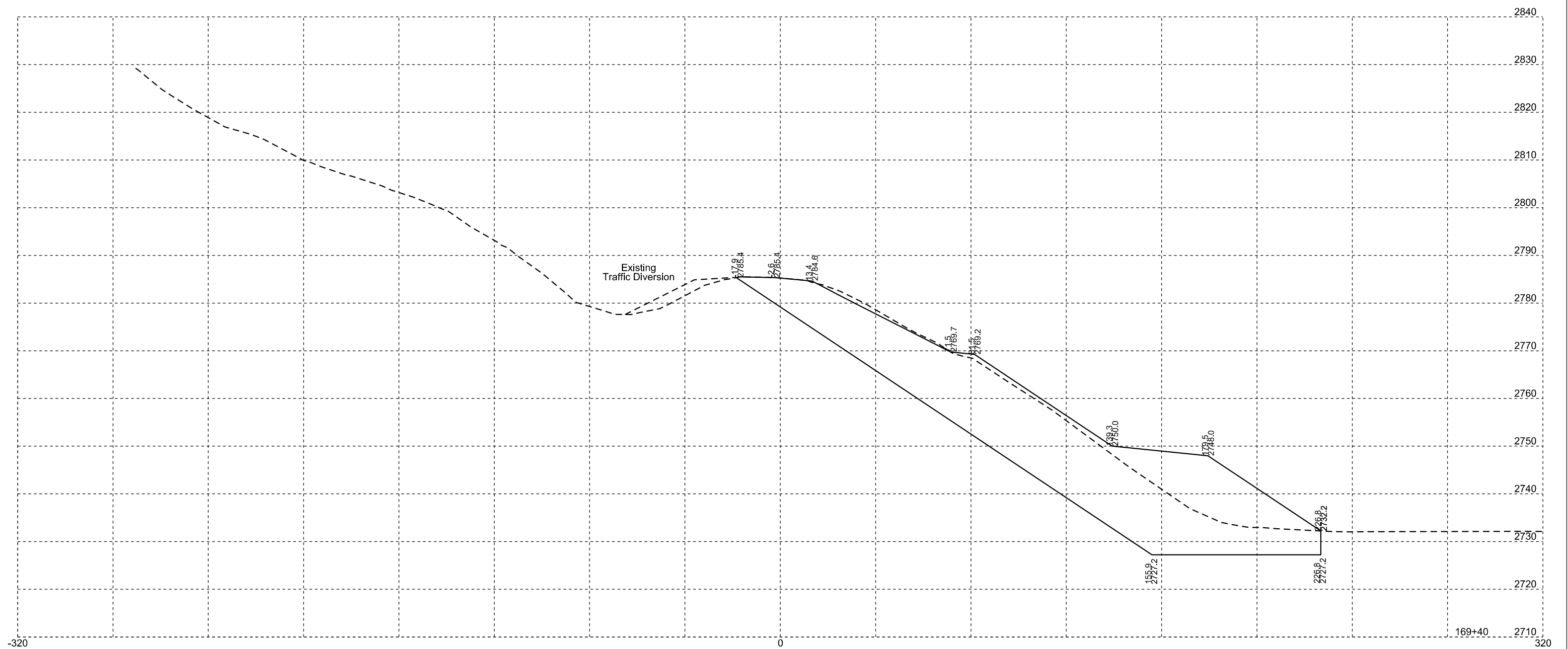


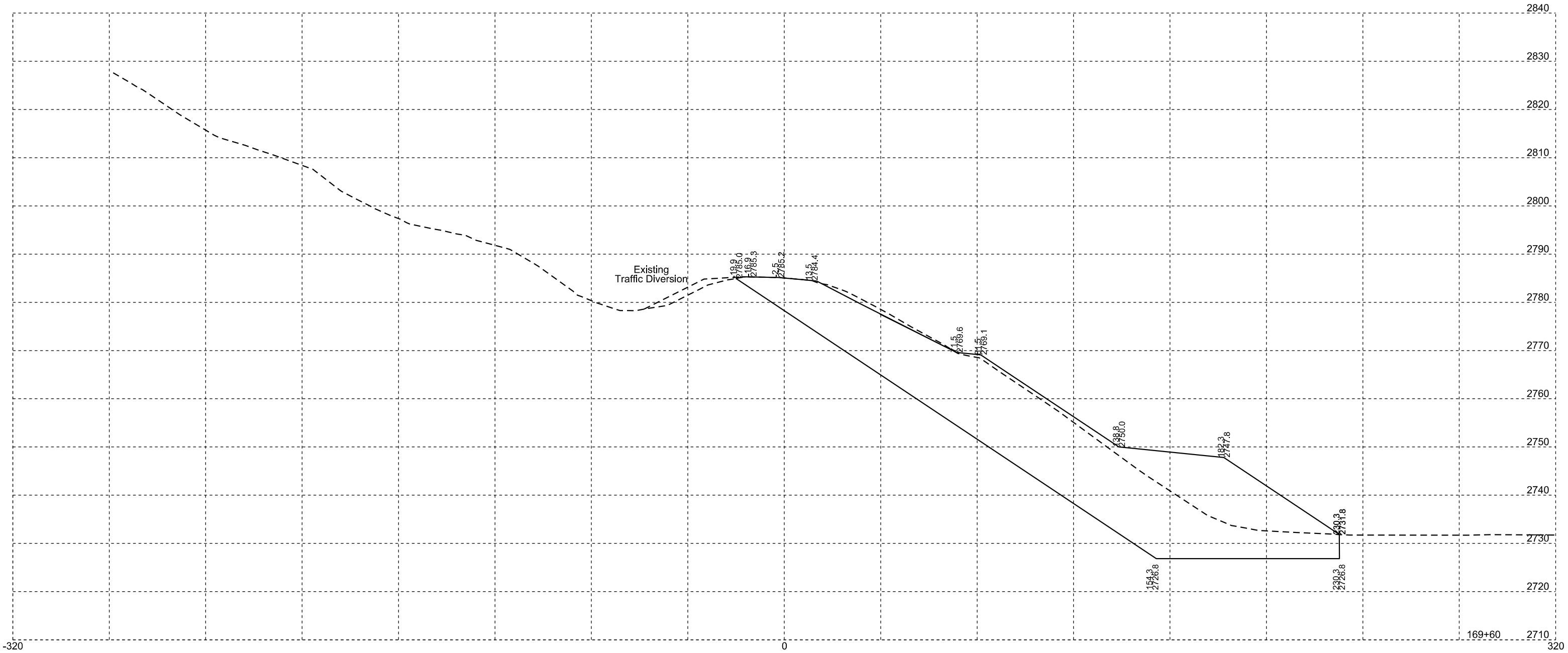


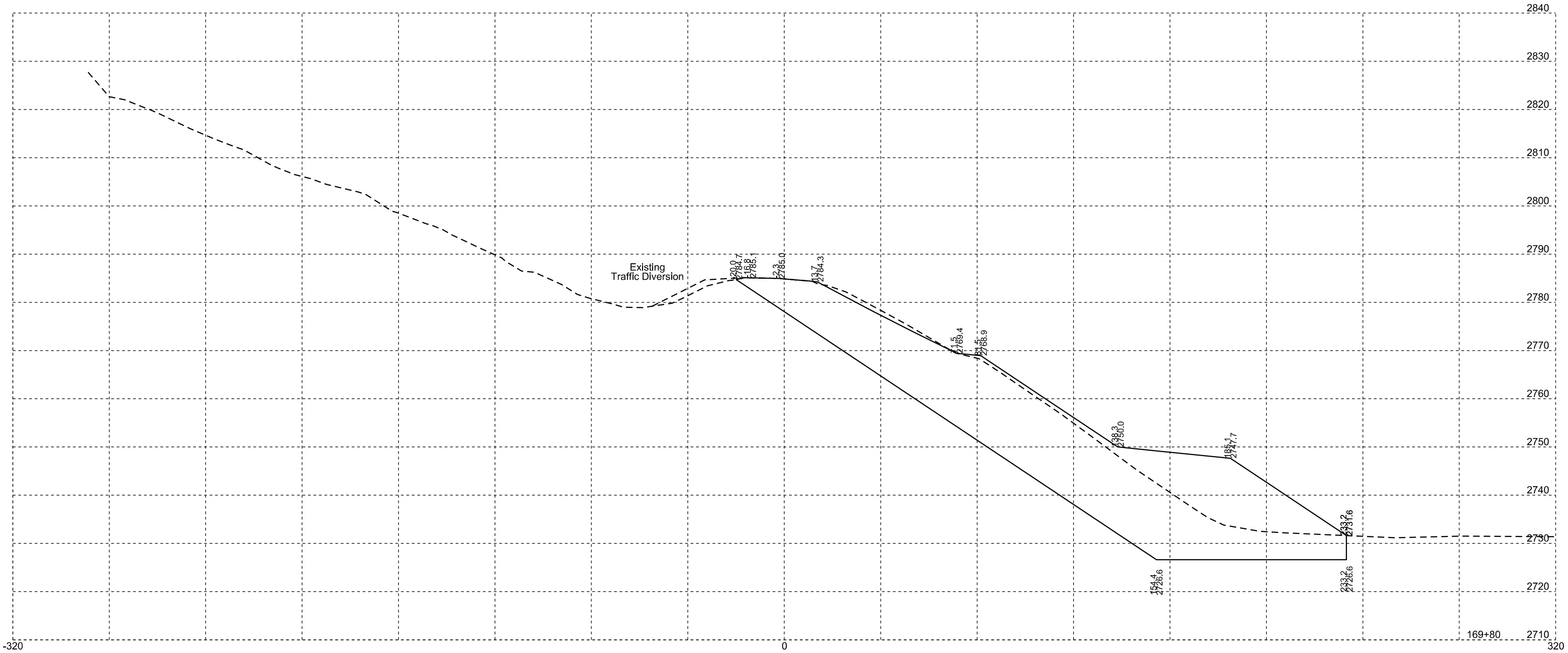
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	44	72

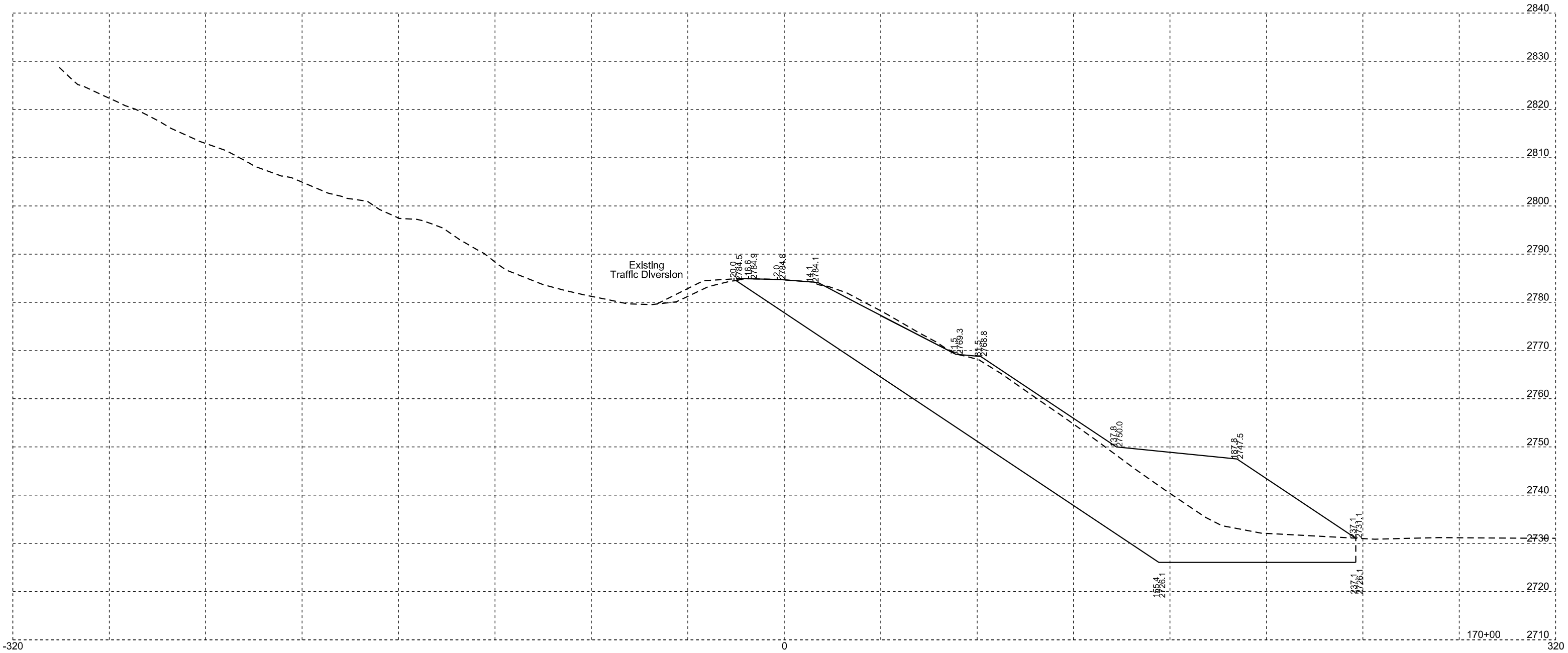


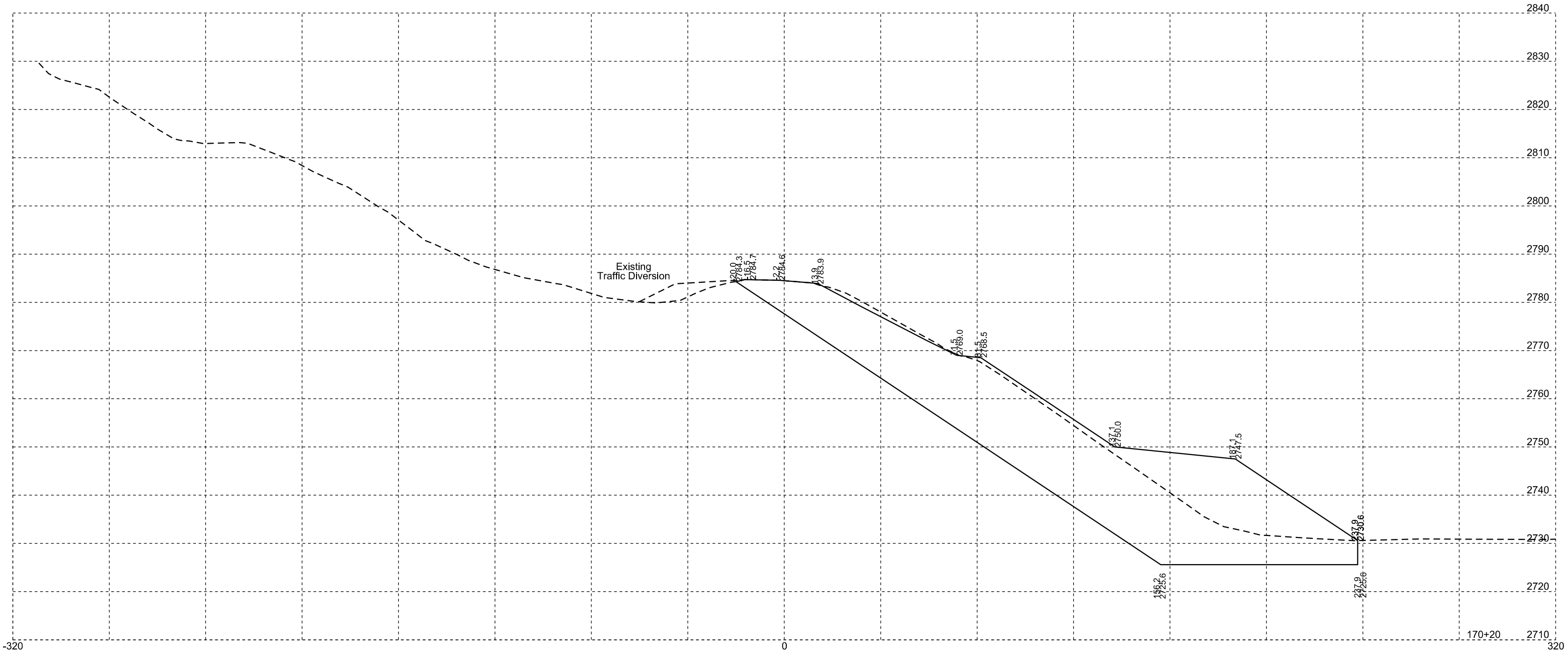
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	P 0040(237)68	45	72

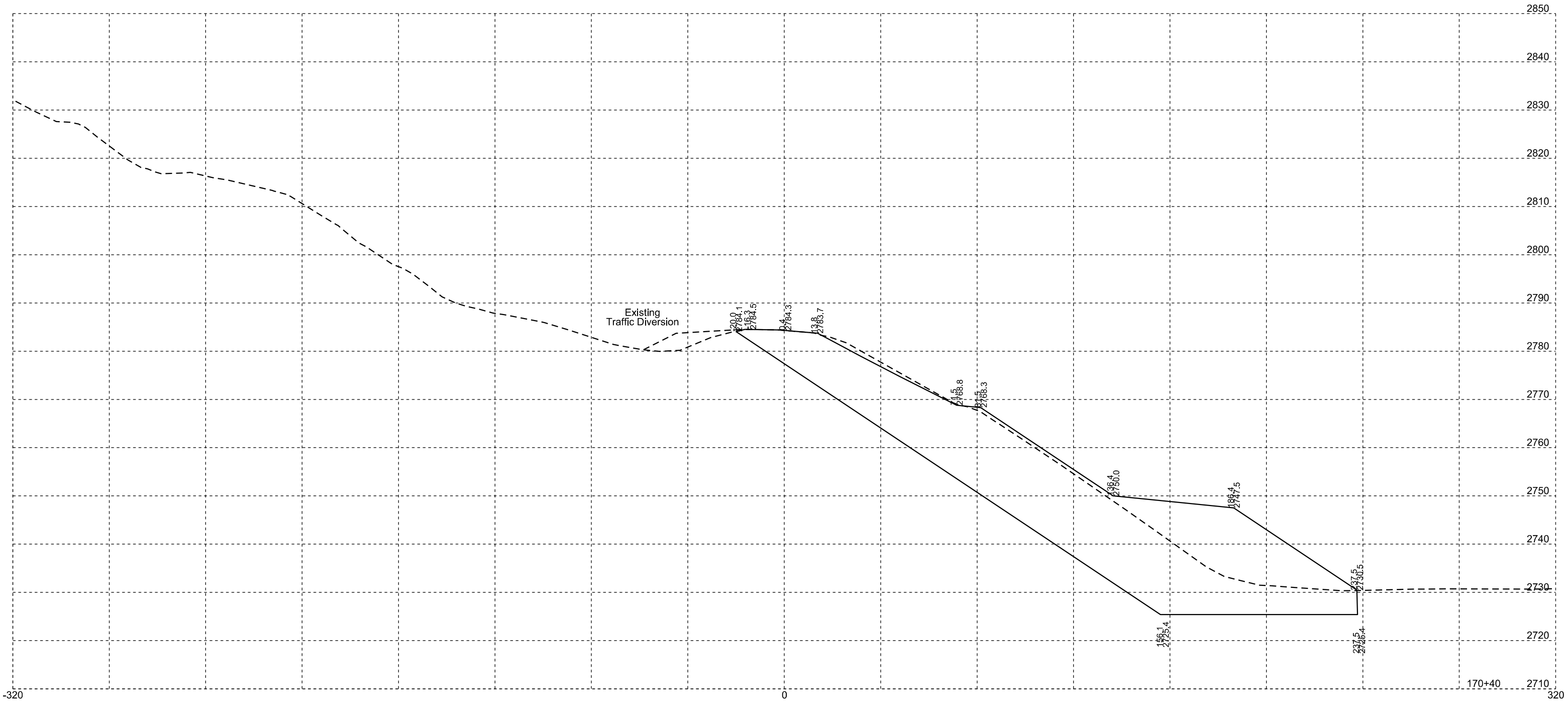




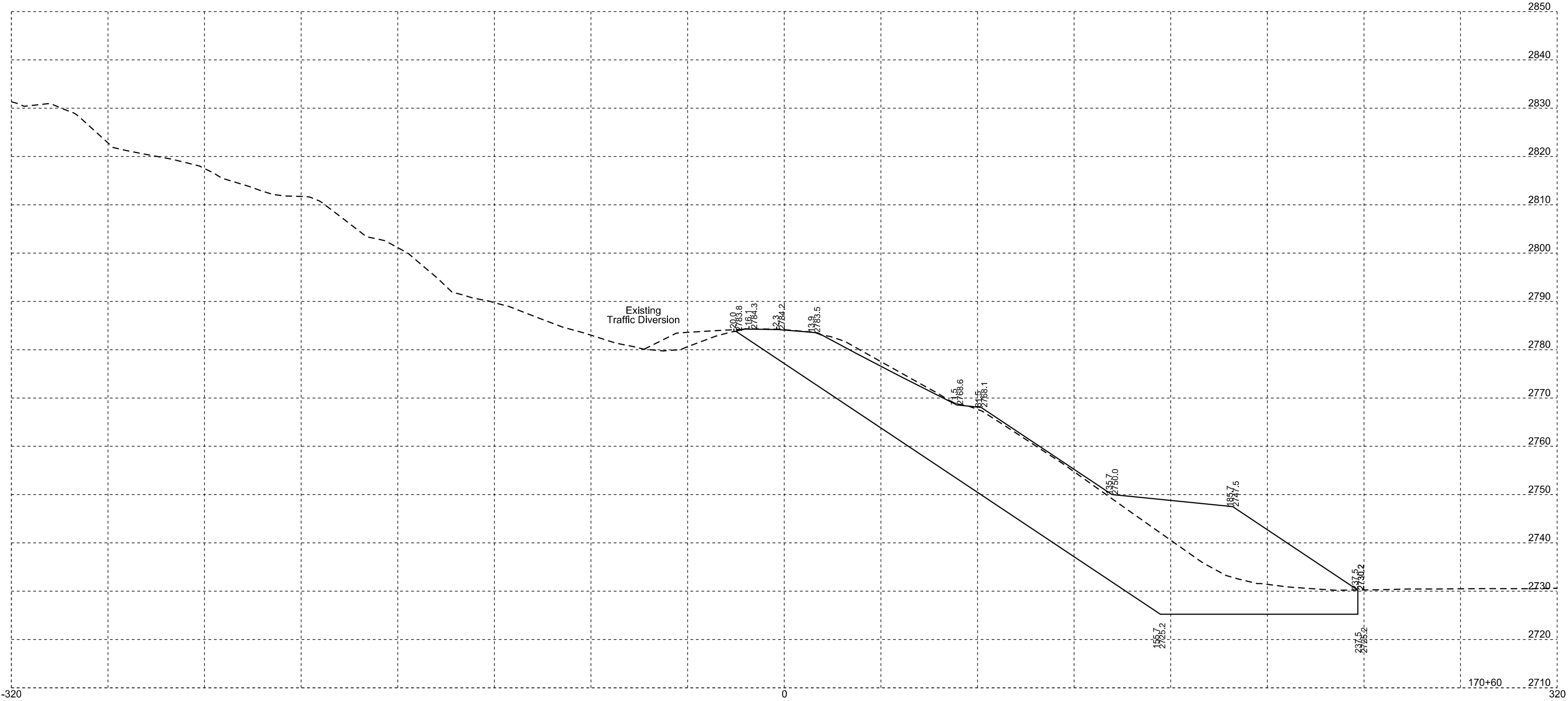


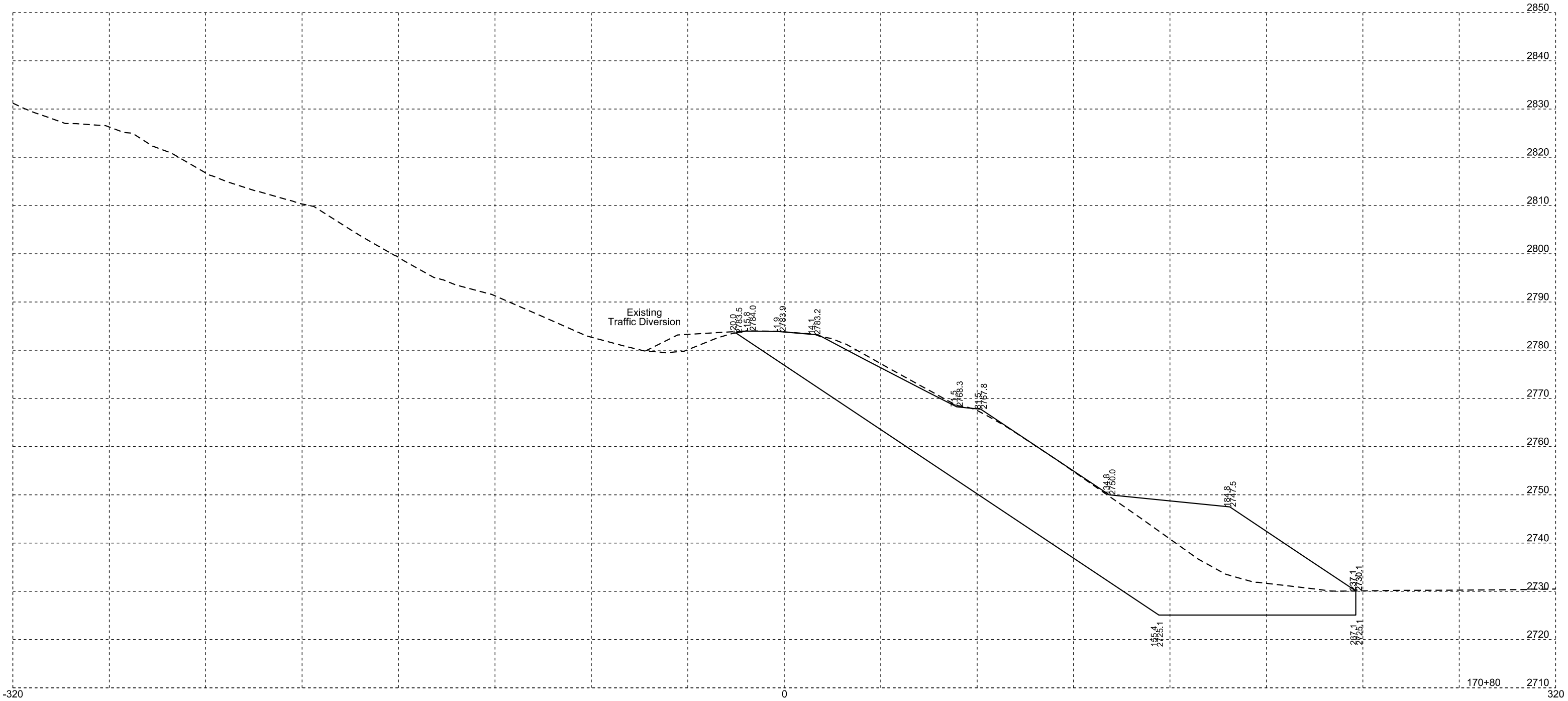


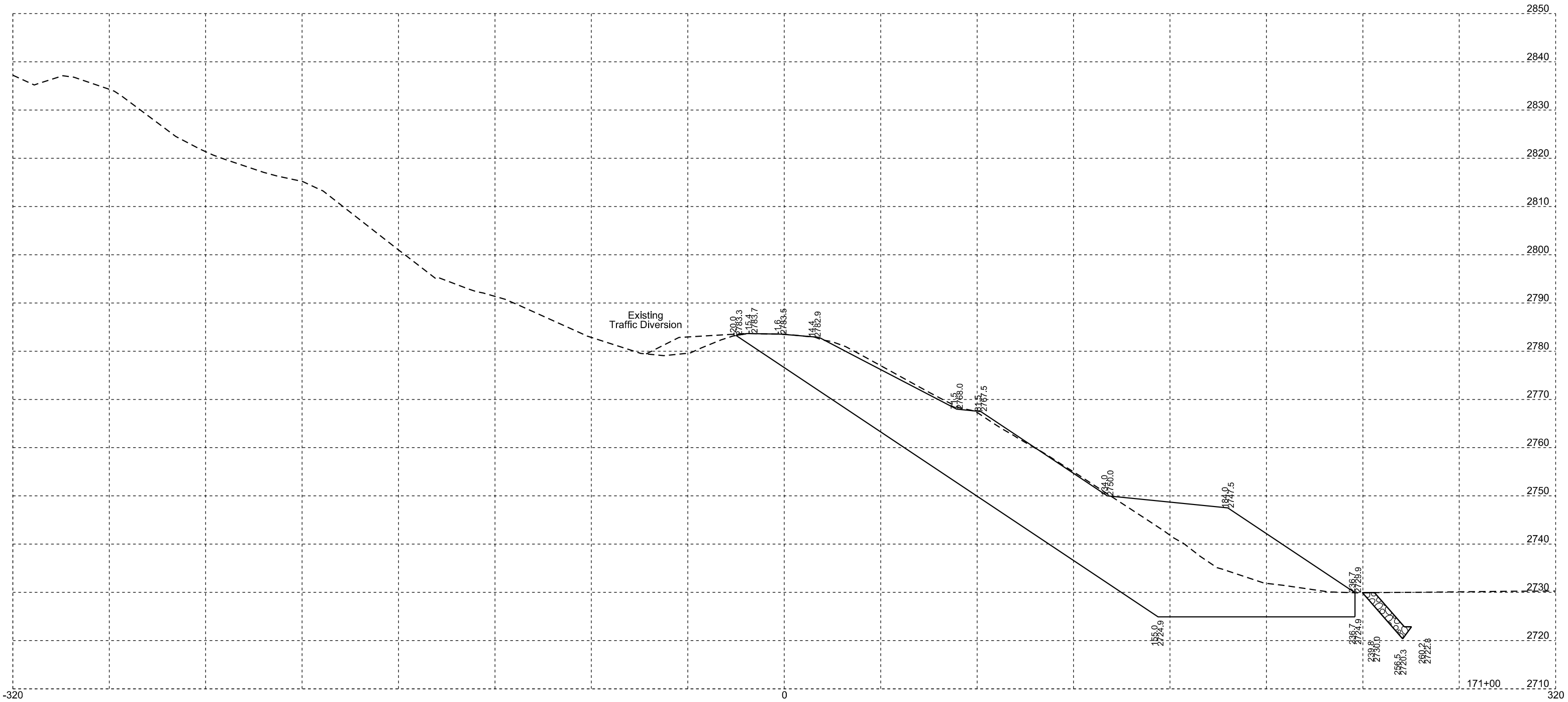


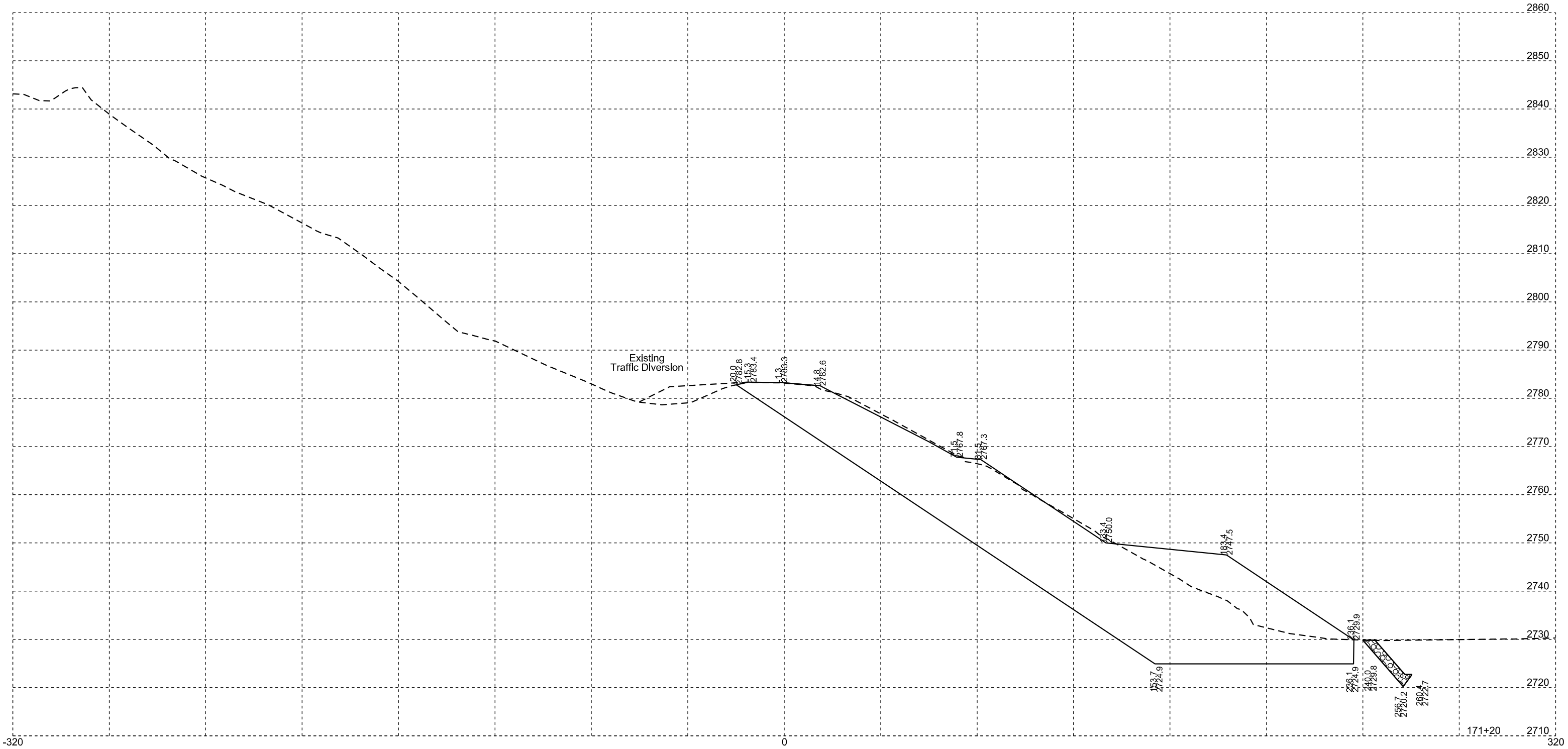


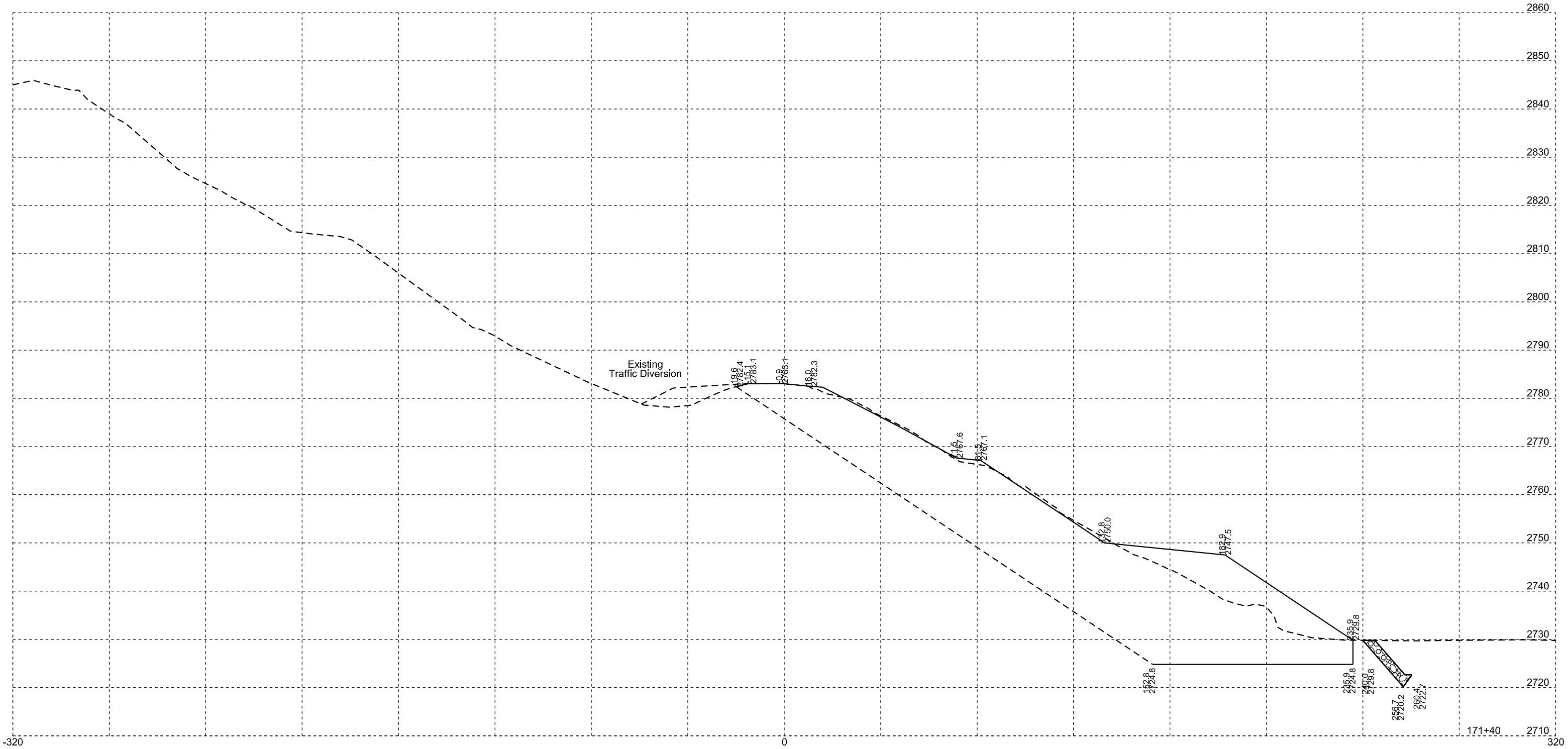
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	51	72

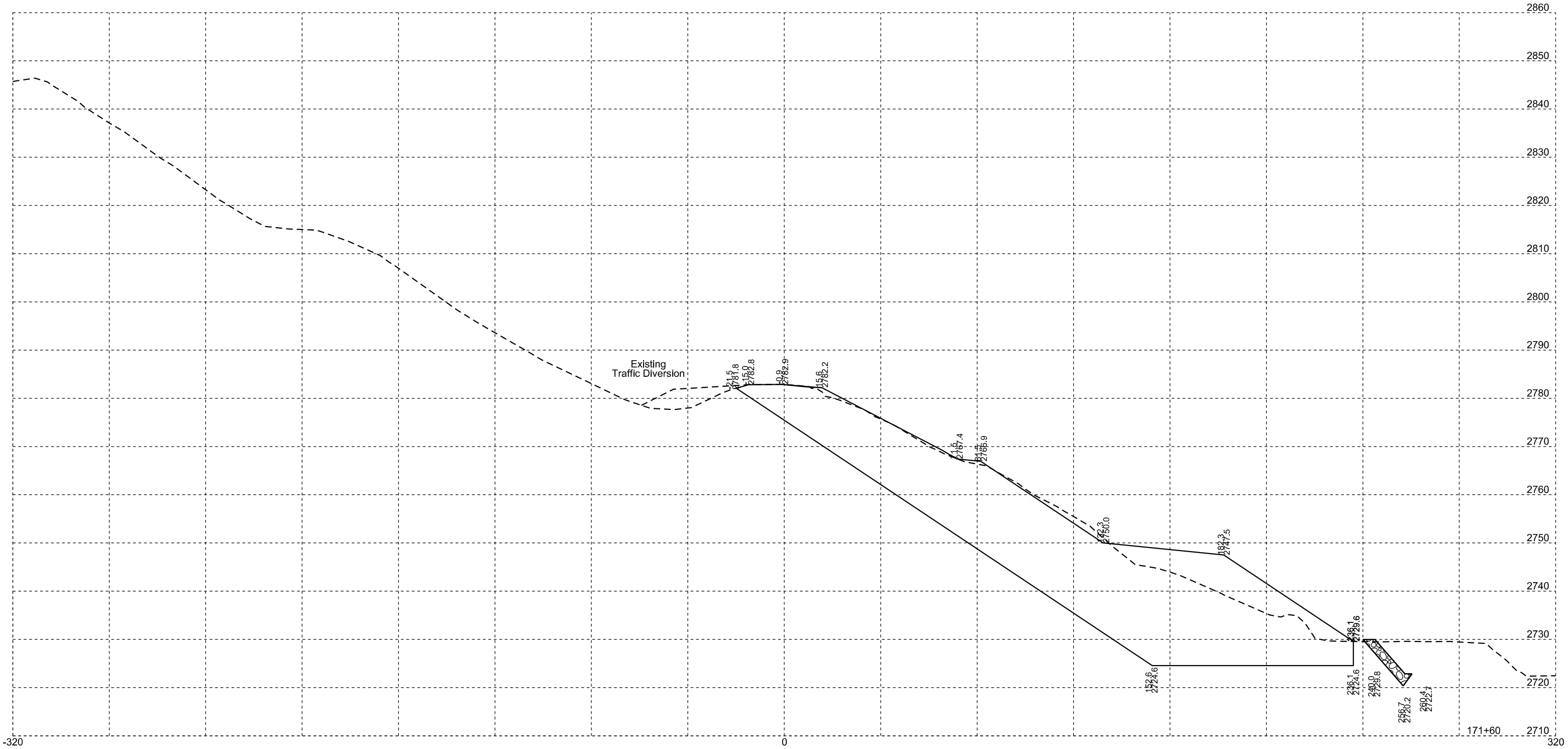


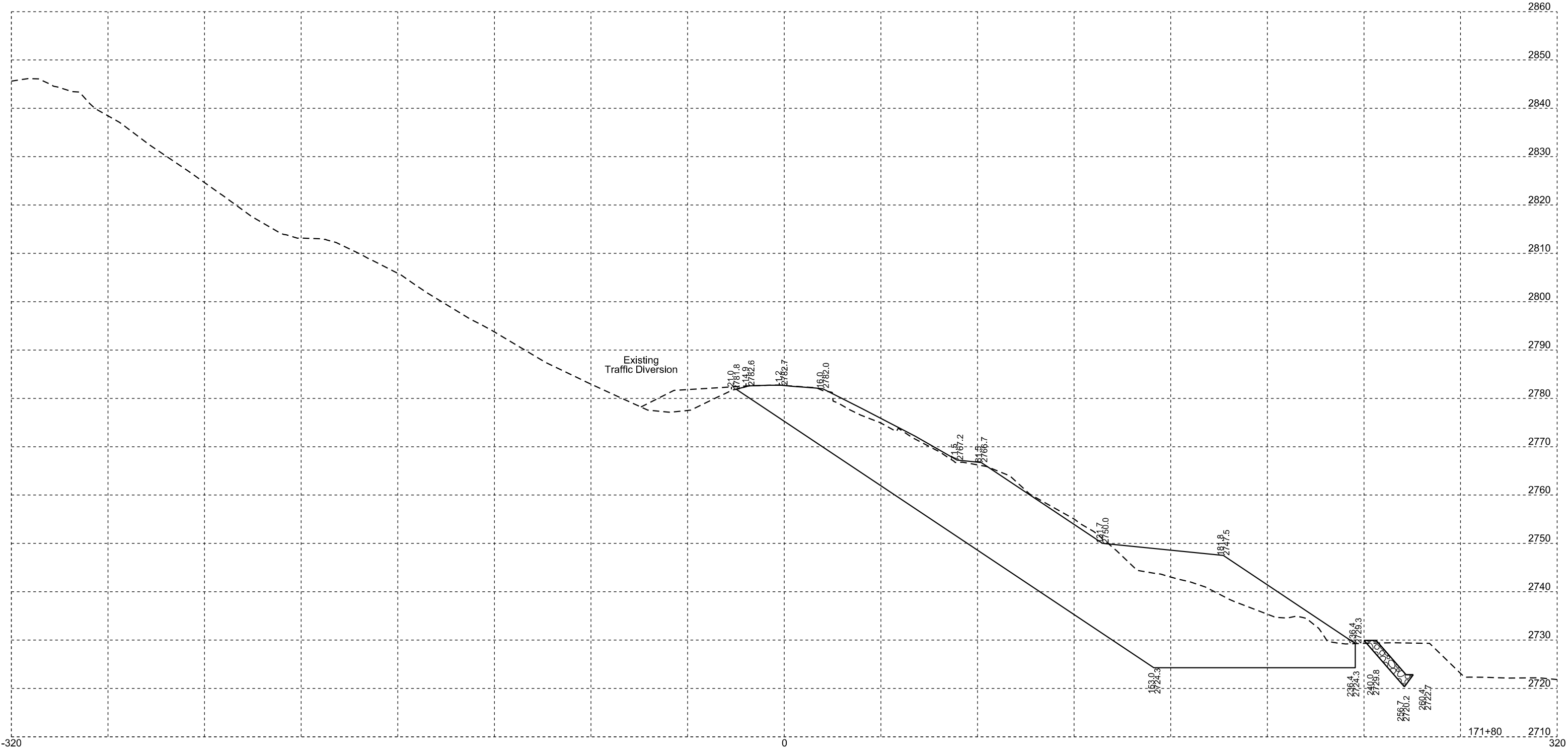


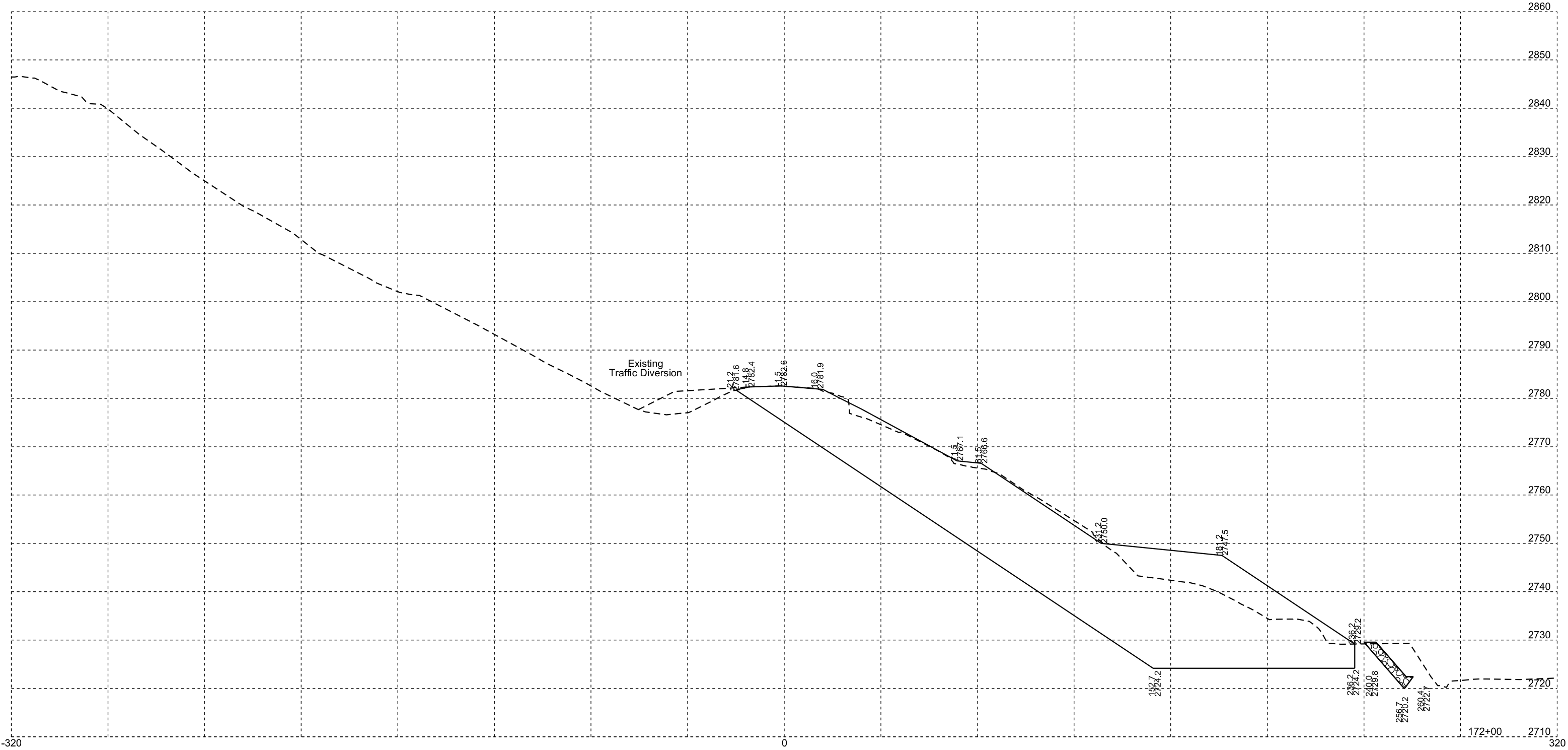


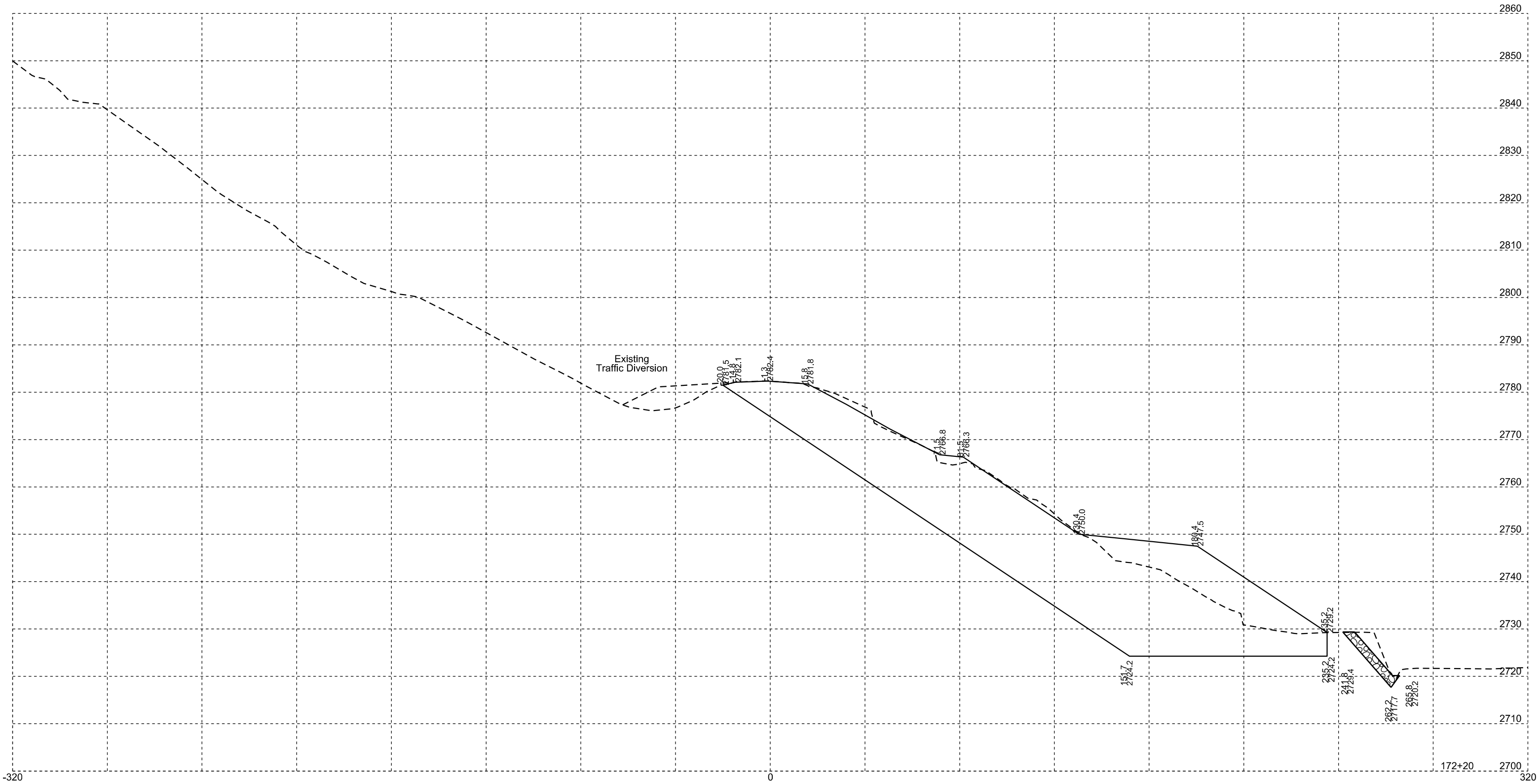






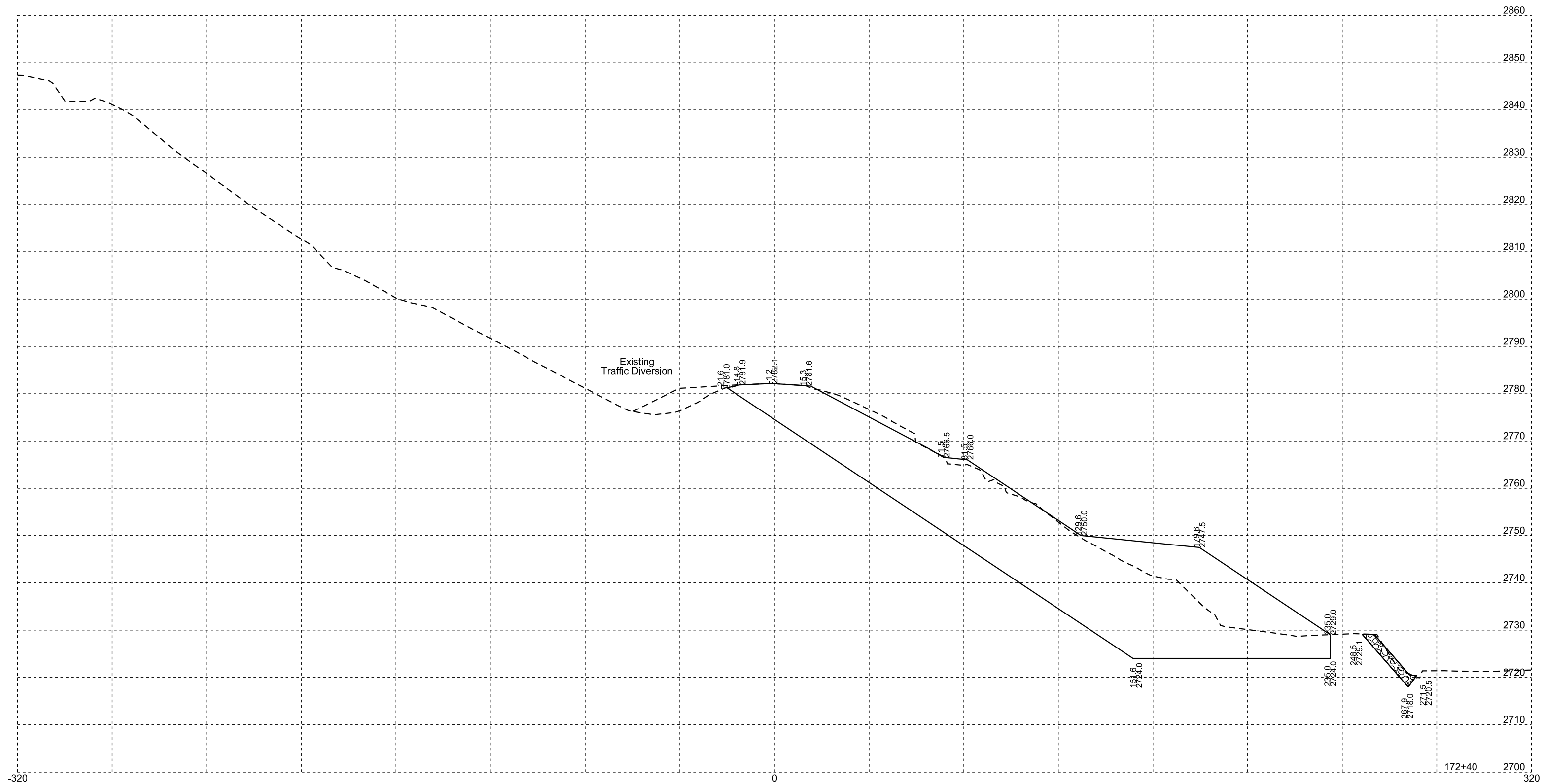


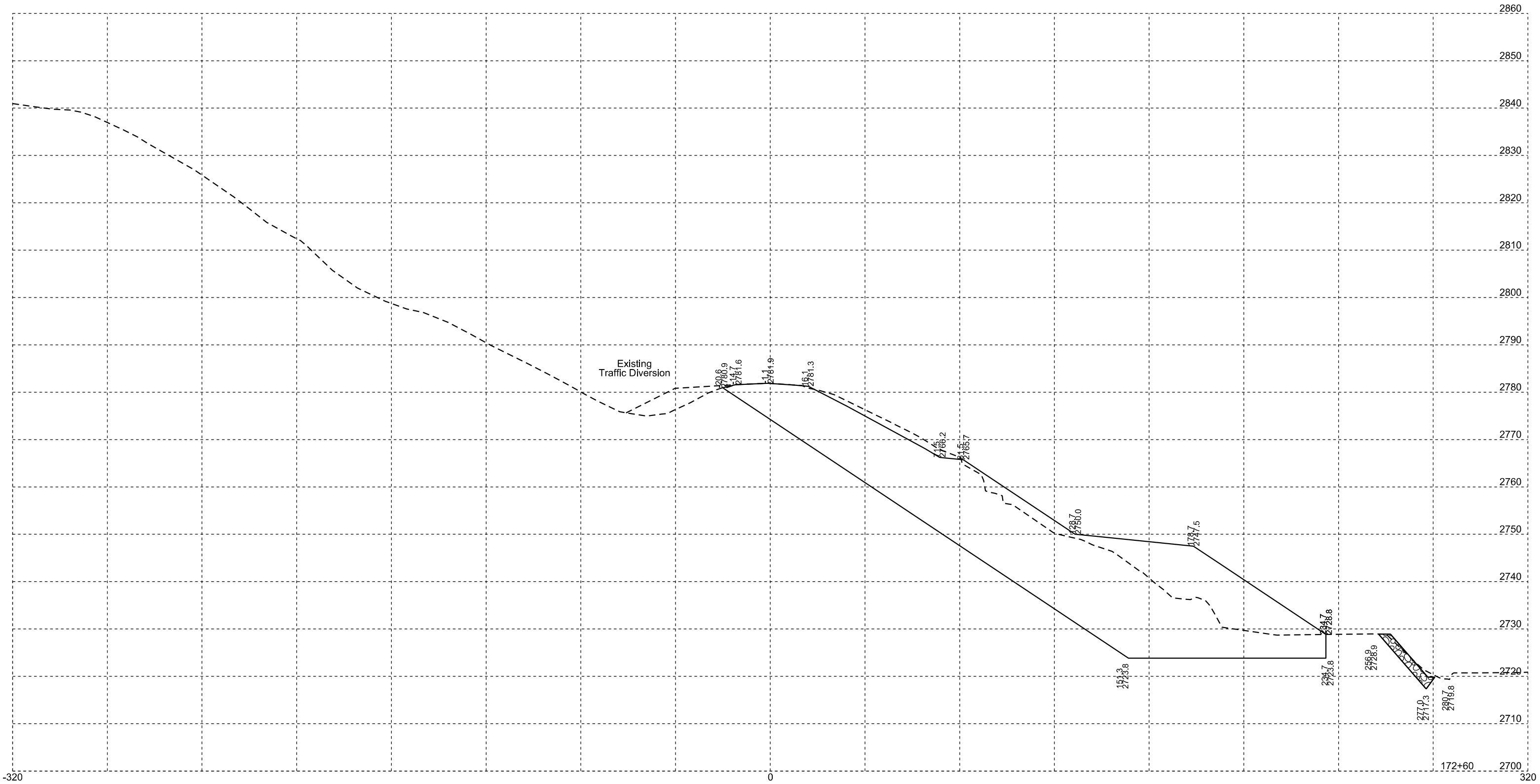


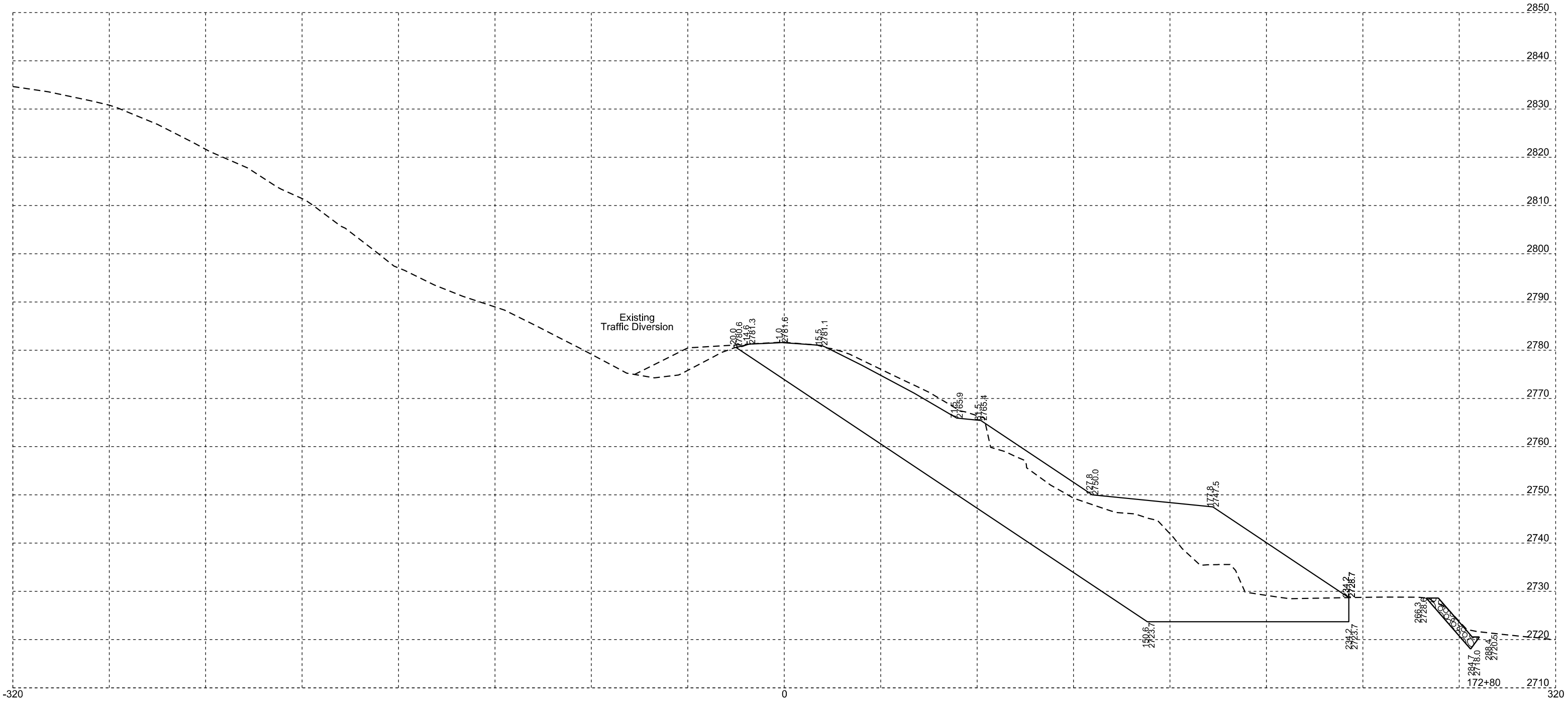


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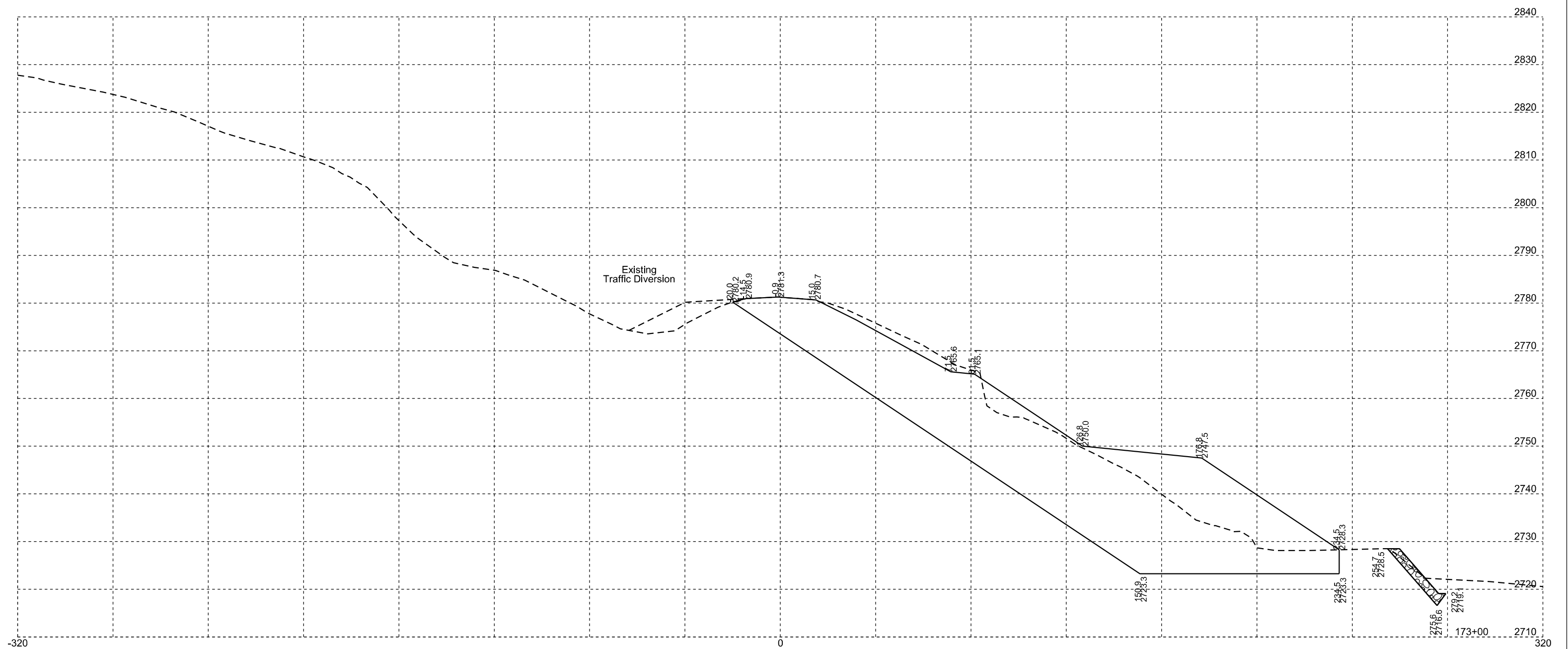
SHEET NO.	
60	

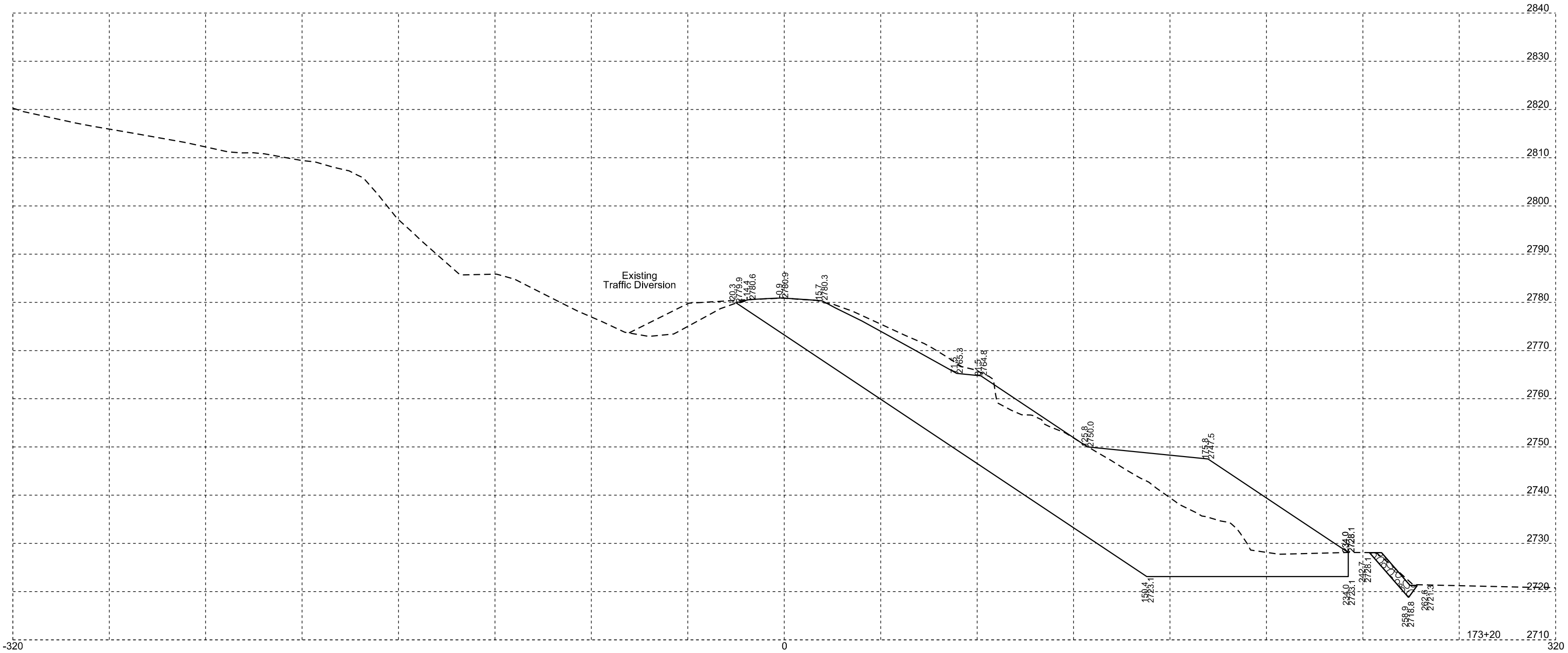


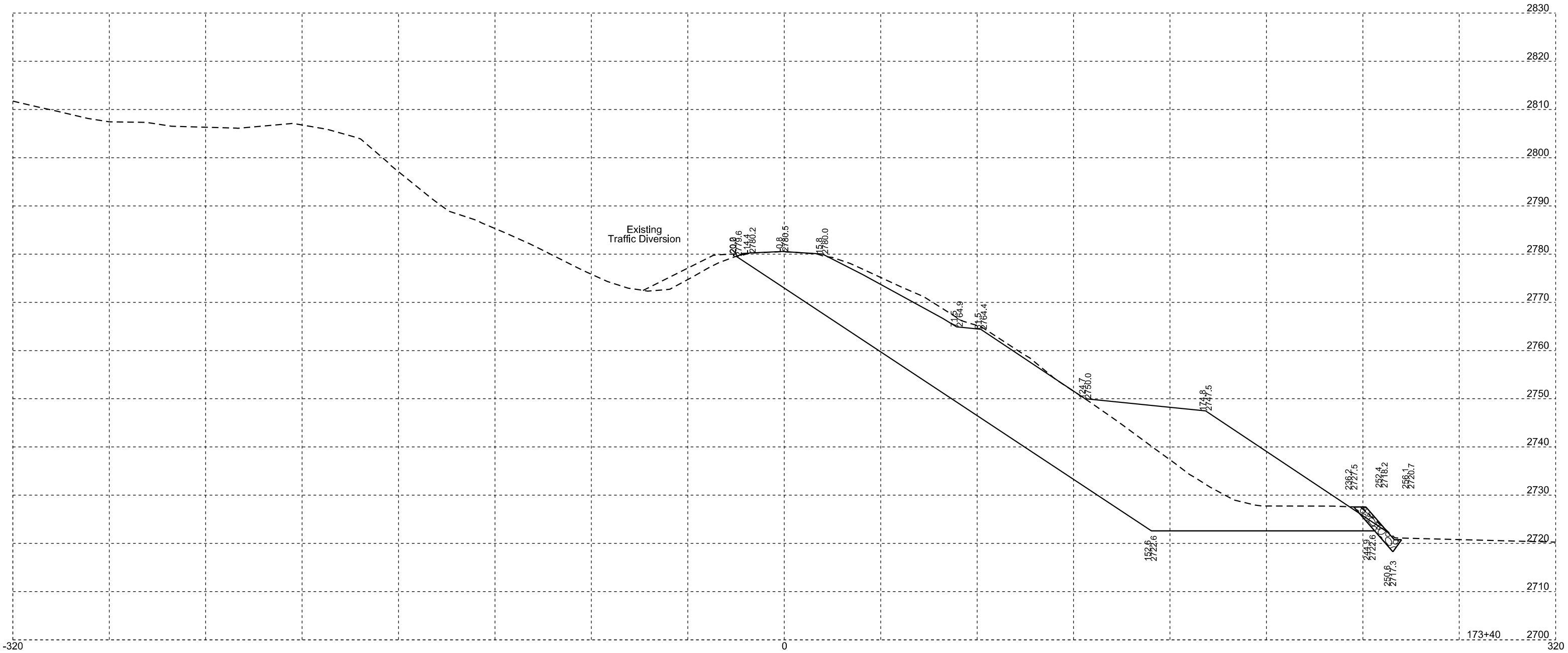




STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	63	72





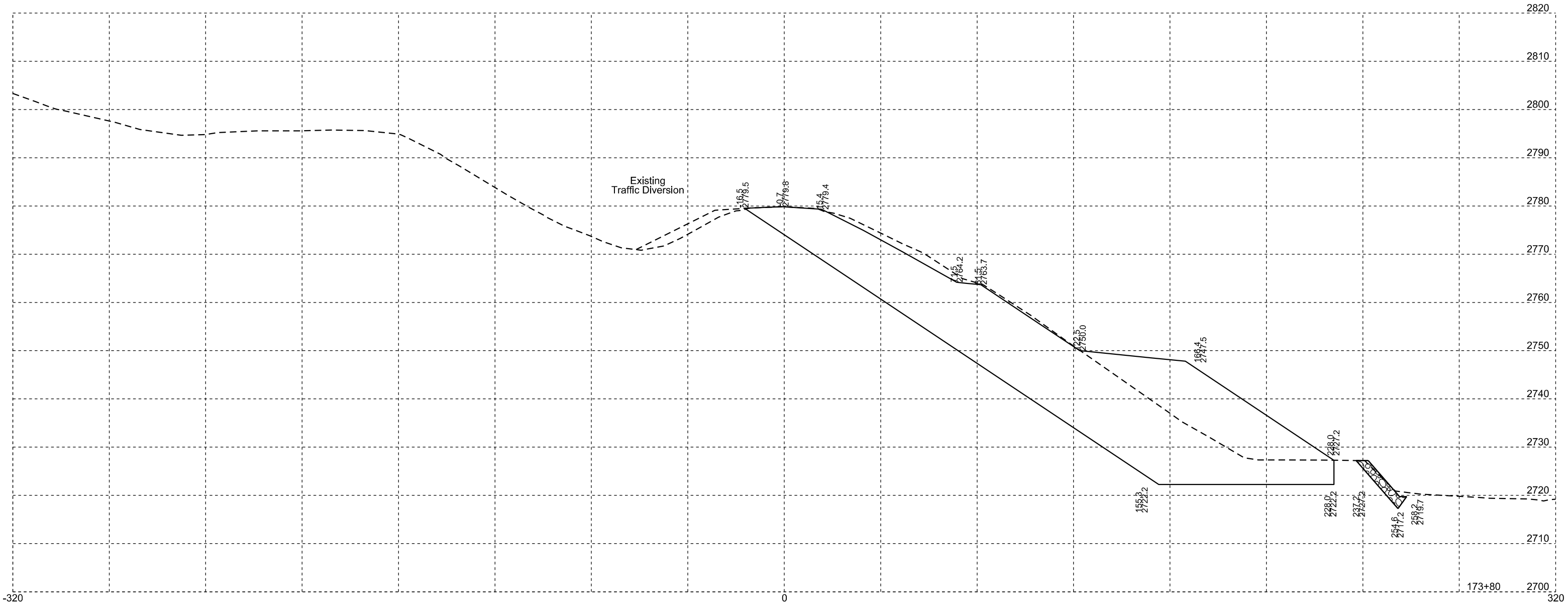


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	66	72

Profile view of the proposed road project. The vertical axis represents elevation in feet (2700 to 2820), and the horizontal axis represents stationing (-320 to 320). The profile shows the existing ground surface (dashed line) and the proposed road grade (solid line). Key features include a 'Traffic Diversion' point at station 0, a 'Proposed Road Grade' line, and a 'Proposed Road Surface' line. The profile shows a significant drop in elevation from station -320 to station 320, with a sharp drop at station 0.

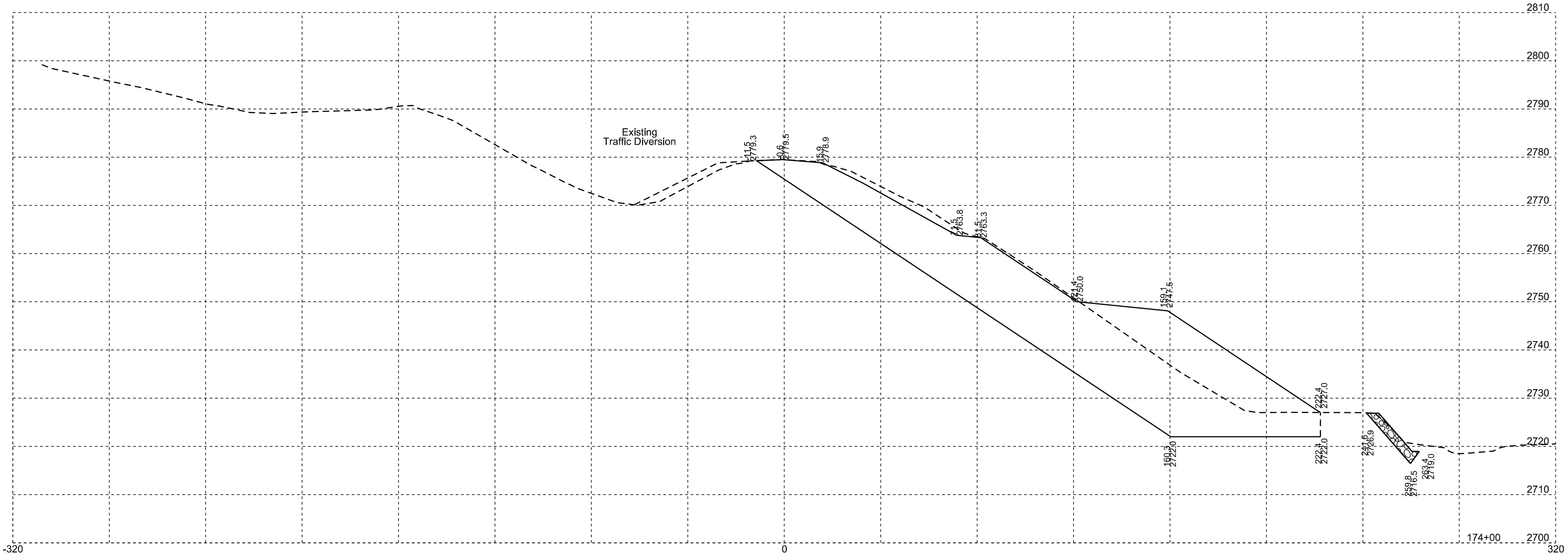
Station	Existing Ground Surface (ft)	Proposed Road Grade (ft)	Proposed Road Surface (ft)
-320	2805.0	2805.0	2805.0
-240	2804.5	2804.5	2804.5
-160	2804.0	2804.0	2804.0
-80	2798.0	2798.0	2798.0
0	2780.2	2780.2	2780.2
80	2779.7	2779.7	2779.7
160	2764.5	2764.5	2764.5
240	2764.0	2764.0	2764.0
320	2750.0	2750.0	2750.0

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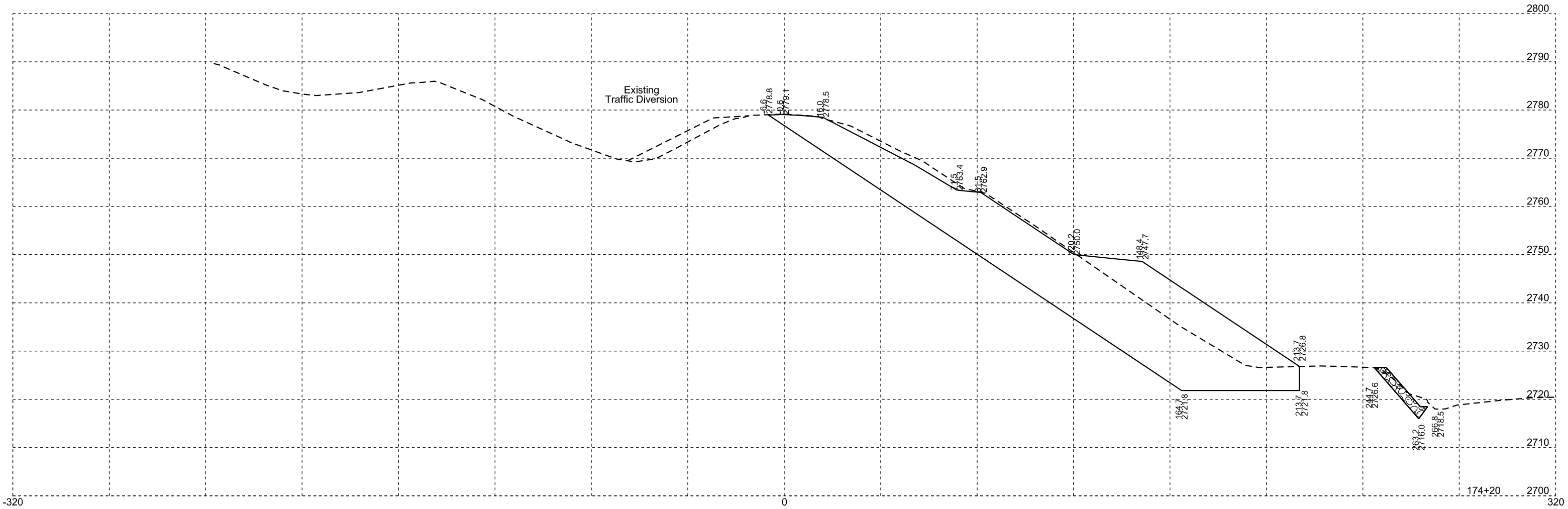
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	68	72

Revised 7/12/2016 GDS



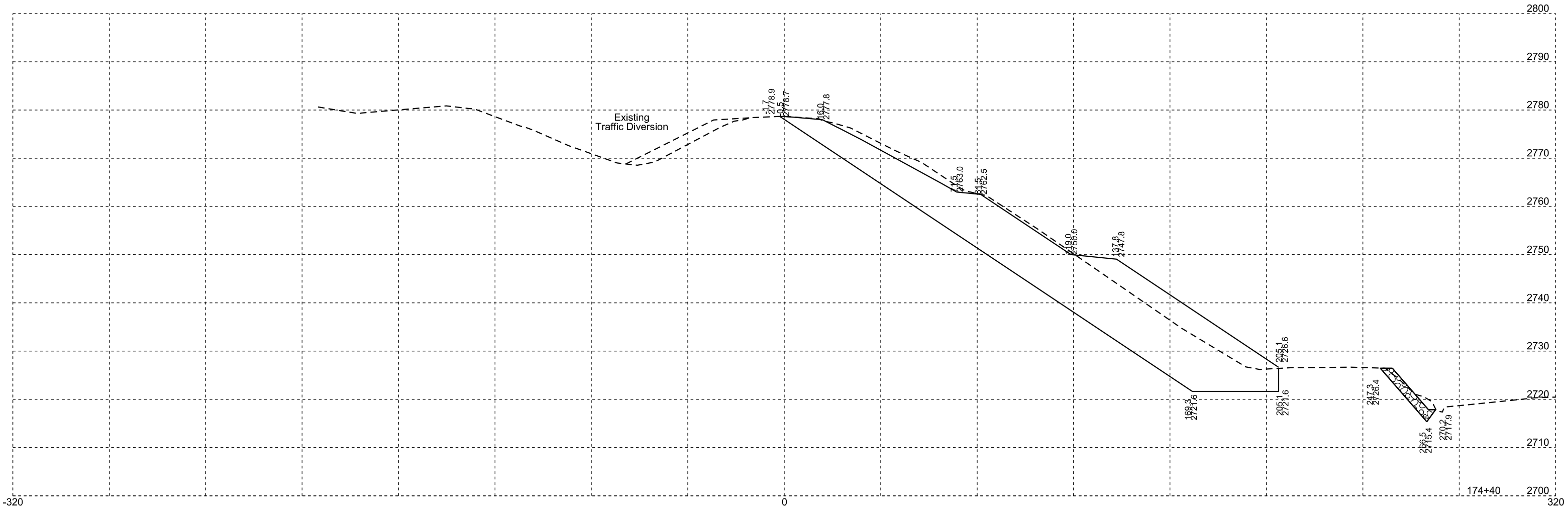
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	69	72

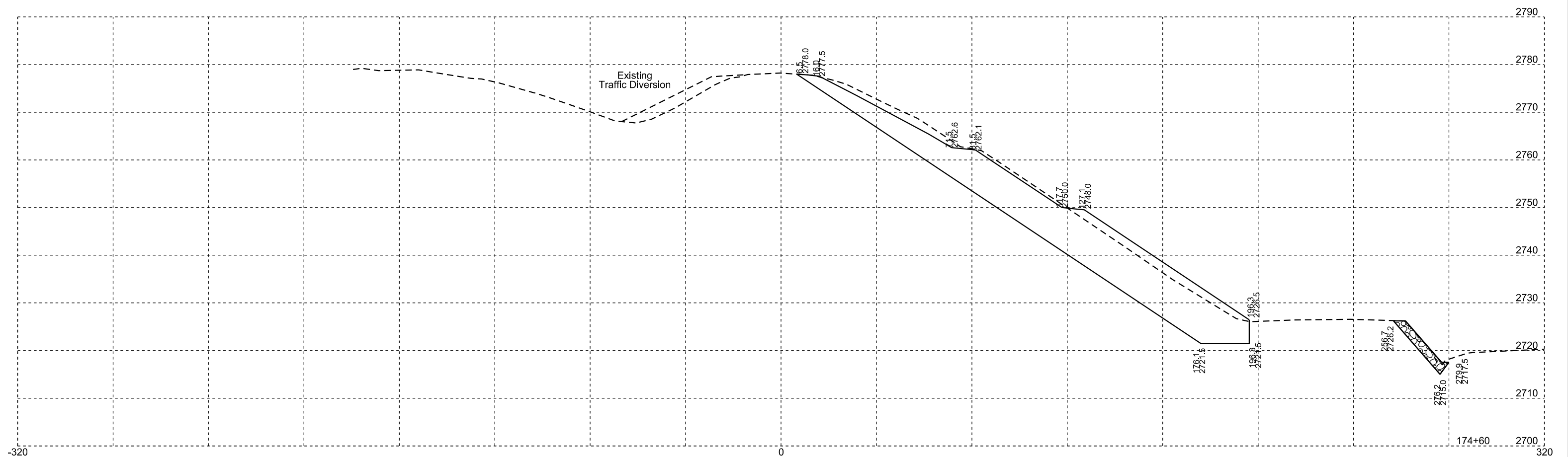
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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	70	72

Revised 7/12/2016 GDS





STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0040(237)68	72	72

Revised 7/12/2016 GDS

