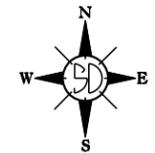


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

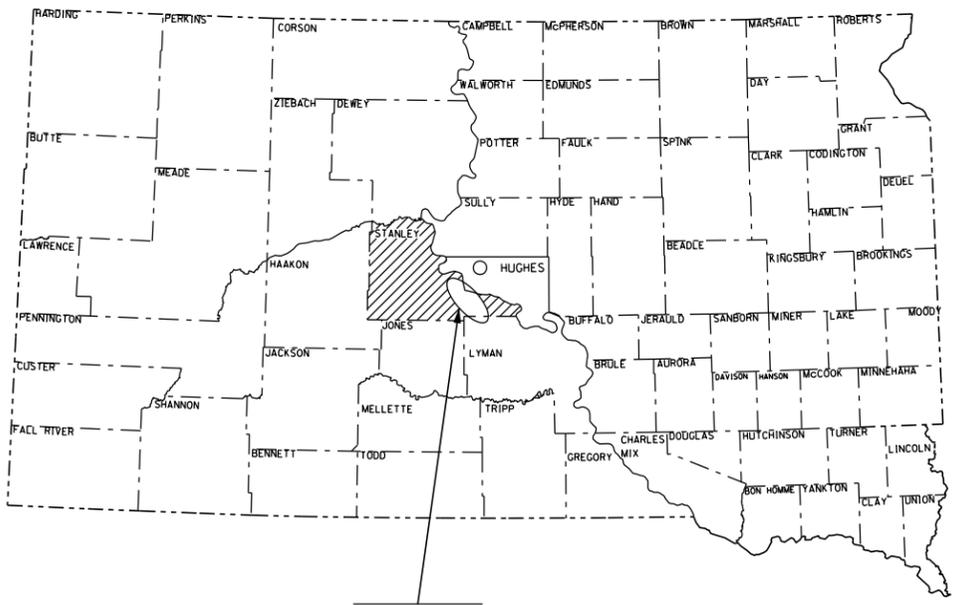
PLANS FOR PROPOSED
P 0031(27)
SD HIGHWAY 1806
STANLEY COUNTY

PIPE LINING, EROSION REPAIR, AND DITCH SHAPING
PCN 041U



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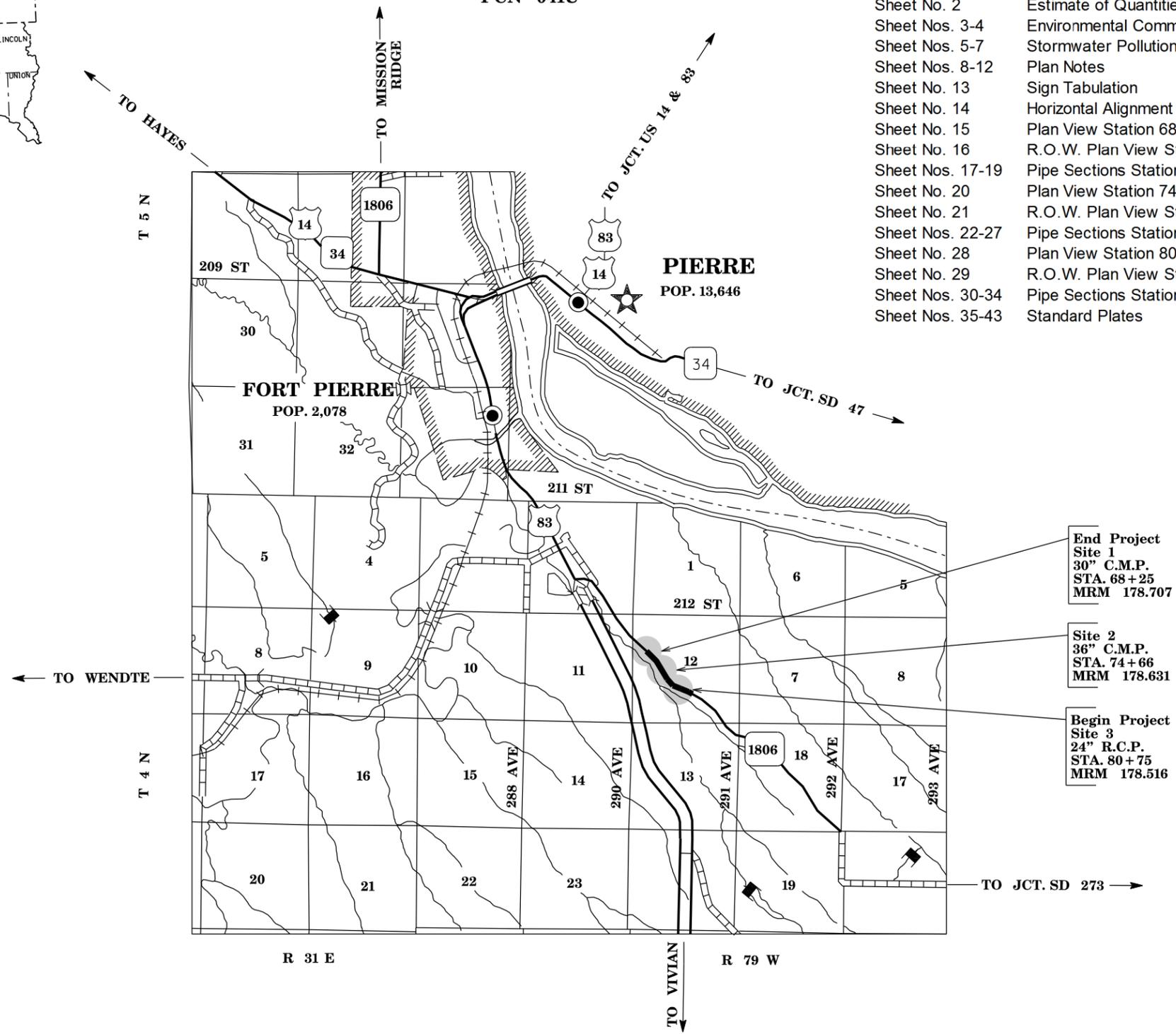
PROJECT

DESIGN DESIGNATION
(SD HIGHWAY 1806)

ADT (2013)	232
ADT (2033)	352
DHV	59.8
D	51%
T DHV	4.2%
T ADT	9.2%
V	55 MPH

STORM WATER PERMIT

Major Receiving Body of Water: Missouri River
Area Disturbed: 2.36 acres
Total Project Area: 9.18 acres
Approx. Begin Lat/Long: 44° 19' 04" N 100° 20' 23" W



ESTIMATE OF QUANTITIES

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	206	Ft
110E0510	Remove Pipe End Section	2	Each
110E1690	Remove Sediment	0.7	CuYd
110E1693	Remove Erosion Control Wattle	75	Ft
110E1700	Remove Silt Fence	141	Ft
110E7510	Remove Pipe End Section for Reset	2	Each
110E7802	Remove Fence for Reset	590	Ft
120E0010	Unclassified Excavation	5,786	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
450E5215	24" CMP Flared End, Furnish	2	Each
450E5216	24" CMP Flared End, Install	2	Each
450E5219	30" CMP Flared End, Furnish	2	Each
450E5220	30" CMP Flared End, Install	2	Each
450E9001	Reset Pipe End Section	2	Each
450E9224	Slipline 24" Pipe	91	Ft
450E9226	Slipline 30" Pipe	120	Ft
462E0200	Controlled Density Fill	29.3	CuYd
462E0250	Cellular Grout	15.6	CuYd
620E0510	Type 1 Temporary Fence	1,524	Ft
620E4100	Reset Fence	590	Ft
634E0010	Flagging	30	Hour
634E0100	Traffic Control	374	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0210	Class B Riprap	928.1	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	300	Ft
734E0165	Remove and Reset Erosion Control Wattle	75	Ft
734E0602	Low Flow Silt Fence	565	Ft
734E0610	Mucking Silt Fence	39	CuYd
734E0620	Repair Silt Fence	141	Ft
831E0110	Type B Drainage Fabric	1,285	SqYd

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS NOTES

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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 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 B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

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

Action Taken/Required:

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

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

The online form can be found at:

<http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

ENVIRONMENTAL COMMITMENTS NOTES

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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:

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway 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 State 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 State 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 designated option borrow 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: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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

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

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

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

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites 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.

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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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** 9.18 ACRES (4.2 1.b.)
- **Total Area To Be Disturbed** 2.36 ACRES (4.2 1.b.)
- **Existing Vegetative Cover (%)** 70
- **Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series
Classification: Chantier-Bullcreek Clays, 2 to 9 percent slopes & Bullcreek Clay (4.2 1. d.)
- **Name of Receiving Water Body/Bodies** Missouri 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.**
- **Install channel and ditch bottom protection.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Complete final grading.**
- **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 Area
- Temporary Diversion Channel
- Work Platform
- Temporary Water Barrier
- Temporary Water Crossing
- Other:

➤ Wetland Avoidance

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

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

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

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

- **Waste Disposal**
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- **Hazardous Waste**
All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.

▪ Sanitary Waste

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

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

➤ Maintenance and Inspection Practices

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

❖ Non-Storm Water Discharges (3.0)

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

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

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

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

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

❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ Housekeeping

- Only needed products will be stored on-site by the contractor.
- Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
- Products must be stored in original containers and labeled.
- Material mixing will be conducted in accordance with the manufacturer's recommendations.
- When possible, all products will be completely used before properly disposing of the container off site.
- The manufacturer's directions for disposal of materials and containers will be followed.
- The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
- Dust generated will be controlled in an environmentally safe manner.
- Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

▪ Hazardous Materials

- Products will be kept in original containers unless the container is not re-sealable.
- 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, degreasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.

➤ **Product Specific Practices (6.8)**

▪ Petroleum Products

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

▪ Fertilizers

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

▪ Paints

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

▪ Concrete Trucks

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

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

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill 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 cleanup will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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❖ Spill Notification

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

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

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

❖ Construction Changes (4.4)

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

CERTIFICATIONS

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

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

➤ South Dakota Department of Transportation

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



Authorized Signature (See the General Permit, Section 6.7.1.C.)

➤ Prime Contractor

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

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

Authorized Signature

CONTACT INFORMATION

➤ Contractor Information:

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

➤ Erosion Control Supervisor

- Name:
- Address:
- 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.

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SCOPE OF WORK

The work required within these sites includes, but is not limited to, the following items, not listed in order of execution.

1. Remove for Reset R.O.W. Fence
2. Install Temporary Fence
3. Remove/Stockpile Topsoil
4. Slope Grading
5. Slipline Pipe
6. Drainage Fabric & Riprap Placement
7. Replace Topsoil
8. Reset R.O.W. Fence
9. Install Erosion Control Devices
10. Permanent Seeding & Mulching of Disturbed Areas

The Contractor is encouraged to inspect the project prior to bidding to evaluate the extent of work that will be required for construction.

SEQUENCE OF OPERATIONS

The Contractor may perform work on the erosion areas during daylight hours only, unless additional hours are approved by the Engineer. Daylight hours are considered to be ½ hour before sunrise until ½ hour after sunset.

The Contractor shall not be allowed to leave the 1:1 cut at the downspouts open at night. The Contractor shall be required to maintain a 4:1 slope during non-working hours at the removed downspout locations location.

The Contractor shall submit his/her proposed sequence of operations for the Engineer's approval at least two week prior to the preconstruction meeting.

Traffic shall be maintained through the project at ALL Times.

UTILITIES

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area 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 Engineer to determine modifications that will be necessary to avoid utility impacts.

TRAFFIC CONTROL

The Contractor shall designate an employee who will be available 24 hours/day, 7 days/week to be responsible for the maintenance of traffic during periods of repair work. The person so designated must have training and experience in the field of construction traffic control and be knowledgeable about the Manual on Uniform Traffic Control Devices (MUTCD). The cost of the traffic control person shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous. The Engineer must approve the employee selected. The name and phone number of person(s) shall be provided to the SD Department of Transportation (605-773-5294), SD Highway Patrol (Pierre State Radio (605-773-3536)), & Stanley County Sheriff's Department (605-223-7792).

Channelizing devices in a series shall be of the same type.

Channelizing drums shall be of a two part construction with breakaway bases.

All traffic control devices shall be in "like new" condition.

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone (30') and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work site in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Traffic approaching the project from intersecting roadways and approaches must be adequately accommodated. Major intersections or large commercial entrances may require additional signing, flaggers, and channelizing devices on a temporary basis until work activities pass these areas.

Access to businesses and residences along the project shall be maintained at all times, unless arrangements are made between the Contractor and business or residence owners to provide an alternative entrance during construction.

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

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP Report 350 or MASH crash-worthy requirements.

The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Traffic Control units, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

TEMPORARY PAVEMENT MARKINGS

Flagger symbol signs (W20-7) and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights shall be positioned on the roadway shoulder in advance of workers for both directions of traffic during the installation of temporary road markers. The traffic control device used shall be moved to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1), a Workers symbol signs (W21-1) or a BE PREPARED TO STOP (W3-4) warning sign shall be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work shall be approved by the Engineer.

REMOVING, STOCKPILING, AND REPLACING TOPSOIL

The Contractor will be required to remove and salvage 4 inches of the existing topsoil down a portion of the inslope throughout the entire length of the riprap installation, ditch shaping areas and at areas where the Engineer determines to be necessary based on the amount of disturbance to the existing topsoil due to the Contractor's operation.

The Contractor shall stockpile the material at a site approved by the Engineer, and/or windrow the material near the disturbed areas to control potential sediment runoff as determined by the Engineer.

The replacement of topsoil shall be spread evenly throughout all disturbed areas upon completion of the work. Any clumps larger than 3 inches shall be broken up prior to seeding the areas.

All topsoil removal, stockpiling, salvaging, windrowing, and replacement shall be done as according to the plans and/or as directed by the Engineer.

All cost associated with removing, salvaging, stockpiling, windrowing, and replacing topsoil shall be incidental to the contract lump sum price for "Remove and Replace Topsoil".

All of the excess topsoil material shall become property of the Contractor.

Measurement of topsoil quantities will not be made; however for informational purposes only, the Table of Estimated Topsoil Removal and Replacement shows the estimated topsoil removal and replacement throughout the sites within this Contract.

TABLE OF ESTIMATED TOPSOIL REMOVAL AND REPLACEMENT

Location	Topsoil Removal (CuYd)	Topsoil Replacement (CuYd)
Station 68+25	131	111
Station 74+66	331	320
Station 80+75	260	200
Total:	722	631

PIPE NOTES

The Contractor is responsible for verifying the size of each pipe prior to ordering any pipe or endwalls. The Contractor shall obtain the approval of the Engineer before ordering any pipe or pipe end section.

Pipe culverts that are removed and not reset shall become the property of the Contractor. Pipe culverts shall be disposed of as per the waste disposal site notes and shall not be in view from the project upon completion of the project.

The excavation required to expose the existing pipe and end sections at Station 80+75 will be incidental to the contract unit prices for "Remove Pipe End Section for Reset".

SCOPE OF WORK FOR PIPE

Station 68+25: The site work on the left consists of removing the existing end section and installing a 24" CMP flared end section onto the slipline pipe. The site work on the right consists of a 1:1 cut at the edge of the pavement until the pipe is discovered and the 10 degree elbow is removed. The existing pipe from the inlet to the removed elbow shall remain in-place and be sliplined with a 24" solid wall HDPE slipline pipe. A solid wall HDPE slipline pipe is required at this location. If the 10 degree elbow is not discovered, the solid wall HDPE slipline pipe shall be pushed through the elbow and soil until it daylights. The remaining downspout shall then be removed. A 24" CMP flared end section shall be installed on the outlet of the slipline pipe. A 2.5' thick x 10' wide Class B Riprap revetment, with Type B Drainage Fabric beneath the riprap, shall be installed from the outlet to the bottom of the channel. Excess soil removed from this area shall be disposed of by the Contractor or used as fill at other locations throughout the project. Scour holes and erosion shall be filled in. All disturbed areas will be seeded and mulched.

Station 74+66: The site work on the left consists of removing the existing end section and installing a 30" CMP flared end section onto the slipline pipe. The site work on the right consists of a 1:1 cut at the edge of the pavement until the pipe is discovered and the 15 degree elbow is removed. The existing pipe from the inlet to the removed elbow shall remain in-place and be sliplined with a 30" slipline pipe. The downspout then shall be collapsed and filled with Cellular Grout. A 30" CMP flared end section shall be installed on the outlet. A 2.5' thick x 10' wide Class B Riprap revetment, with Type B Drainage Fabric beneath the riprap, shall be installed from the outlet to the bottom of the channel. Excess soil removed from this area shall be disposed of by the Contractor or used as fill at other locations throughout the project. Scour holes and erosion shall be filled in. All disturbed areas will be seeded and mulched.

Station 80+75: The site work at this location consists of removing and resetting the 24" RCP flared end sections and tying them to the first interior section. A 2.5' thick x 10' wide Class B Riprap revetment, with Type B Drainage Fabric beneath the riprap, shall be installed from the flared end section to the bottom of the channel. Riprap shall be placed in the channel and wrap around the existing scour hole. Excess soil removed from this area shall be disposed of by the Contractor or used as fill at other locations throughout the project. Scour holes and erosion shall be filled in. All disturbed areas will be seeded and mulched.

TIE BOLTS FOR RCP

All RCP that is being reset, will be tied together.

For informational purposes: Field drilling will be required to install the tie bolts on reset culvert, on reset culvert ends and on existing culvert when installing a new/reset end section.

Cost for drilling tie bolt holes and furnishing and installing tie bolts shall be incidental to the contract unit prices for installing or resetting RCP Culverts and End Sections.

EXISTING SLIPLINE PIPE

Located at Station 68+25 and 74+66 is existing pipe liner. This liner shall be salvaged and transported to the SDDOT Pierre Maintenance Yard located at 104 South Garfield Building B Pierre, SD 57501. The Contractor shall contact the SDDOT at (605-773-5294) to set up a time and date to deliver the liner. It is estimated that 80 feet of pipe liner exist between the two locations. All costs for salvaging the slipliner pipe shall be incidental in the contract unit price per foot for the corresponding bid item for "Slipline 24" Pipe" or "Slipline 30" Pipe".

SLIPLINE PIPE

The Contractor shall furnish and install slipliner pipe at locations specified in the Table of Slipline Pipe. This work consists of slipping high density polyethylene (HDPE) or polyvinyl chloride (PVC) pipe liner inside existing pipe and grouting the void between the liner and the existing pipe.

The Contractor shall submit a proposed procedure for sliplining pipes, including the grouting procedure, to the Engineer at least two weeks prior to beginning this work.

Slipliner pipe shall conform to one of the following types:

- Closed Profile HDPE:**
Closed profile HDPE pipe shall meet the requirements of ASTM F894 and shall have a cell classification of 345464C in accordance with ASTM D3350. The pipe shall have a minimum Ring Stiffness Constant (RSC) classification of 160 lb/ft as defined in ASTM F894. Pipe joints shall be in accordance with the pipe manufacturer's recommendations and as approved by the Engineer.
- Solid Wall HDPE:**
Solid wall HDPE pipe shall meet the requirements of ASTM F714 (SDR 32.5) and shall have a cell classification of 345464C in accordance with ASTM D3350. Pipe joints may be grooved press-on joints or heat fused as approved by the Engineer. Heat fused joints shall be fused in accordance with the pipe manufacturer's recommendations by an experienced operator of the heat fusion equipment.

- PVC:**
PVC pipe shall meet the requirements of ASTM F949 with a minimum pipe stiffness of 46 psi. PVC pipe shall have a cell classification of 12454 in accordance with ASTM D1784. Pipe joints shall be elastomeric seals (gaskets) in accordance with the requirements of ASTM F477.

- Spirally Wound PVC:**
Spirally wound PVC slipliner shall meet the requirements of ASTM F949 with minimum pipe stiffness of 46 psi. Pipe joints shall be in accordance with the pipe manufacturer's recommendations and as approved by the Engineer.

The diameter specified in the bid item description is the diameter of the existing pipe to be sliplined. The Contractor shall provide the largest diameter slipliner pipe that will fit into the existing pipe to maximize flow capacity.

Slipliner pipe shall have a smooth interior surface.

Slipliner pipe shall be joined into a continuous length with joints that are adequate for pushing, pulling, or winding the liner pipe through the existing pipe. The joints shall not allow seepage during pressure grouting. To allow for unrestricted insertion of the liner, the outside diameter of the liner pipe shall not be increased at the joints.

Prior to sliplining, the Contractor shall clean the existing pipe of all debris, silt, and obstructions to ensure that the slipliner pipe can be inserted, the grout will flow to all voids, and the inserted slipliner pipe will not be set upon or irregularly supported by such material. Cleaning shall be accomplished by the use of jet rodding equipment or other approved methods.

The slipliner pipe shall be inserted into the existing pipe by pushing, pulling, or winding methods that do not damage the slipliner pipe. The slipliner pipe shall be clean and substantially dry before insertion.

To minimize the change in flowline, slipliner pipe shall be held down during the grouting operation. This may be accomplished by attaching fasteners or blocks at the top of the pipe, adding weight to the inside of the slipliner pipe, placing multiple grout lifts, or other means as approved by the Engineer.

Bulkheads shall be constructed at each end of the pipe. Each bulkhead shall be constructed to withstand the pressure of the grouting operation. The bulkhead shall extend from the end of the existing pipe inward a minimum depth of 18 inches. The bulkhead shall be free from leaks and the exterior surface shall be given a smooth trowel finish. The bulkhead at the inlet end shall be finished with a 45 degree mitered bevel transition between the existing pipe and the inside of the slipliner pipe with the slipliner pipe face pushed inside the existing pipe face.

Pressure grouting shall be done to ensure all the voids are filled between the slipliner pipe and the existing pipe including all breaks or holes in and around the existing pipe. Grouting pressures used shall ensure all voids are filled, but do not collapse or deform the slipliner pipe more than 5 percent of the diameter. Multiple grout lifts may be necessary to minimize pipe deflection for 60-inch diameter and larger pipe in accordance with the pipe manufacturer's recommendations.

SLIPLINE PIPE (Continued)

The grout shall be a cellular grout (grout with pre-generated foam) with a minimum 28 day compressive strength of 100 pounds per square inch. If water is not present within the sliplined pipe a low density grout with a minimum of 30 pounds per cubic foot wet density may be used. When it is not possible to dewater the existing pipe or keep water out of the annular space during grouting, a high density grout with a minimum of 70 pounds per cubic foot shall be used which may include approved sand. The foaming agent used shall meet the requirements of ASTM C869 when tested in accordance with ASTM C796.

Both of the cellular grout mix designs shall be submitted to the SDDOT Concrete Engineer for approval prior to use. The mix design submittal shall include the base cement slurry mix per cubic yard of cellular grout, expansion factor of the foaming agent, and the cellular grout wet density (pounds per cubic foot).

The Contractor shall install a bypass valve adjacent to the location where the pressure grouting hose is attached for obtaining samples to be checked for wet density. The wet density of the cellular grout shall be checked by the Contractor to verify the proper minimum wet density before the cellular grout filling operations begin and at a minimum once every two hours during production. The SDDOT shall document the results of the density checks.

Cellular grout shall be wasted until the cellular grout meets the minimum wet density required; however, if 0.5 cubic yards or more of base cement slurry is wasted trying to meet density requirements, then that quantity will not be included for payment.

If grout holes are utilized, cylindrical wooden plugs or other approved plugs shall be inserted to plug holes until the grout has set. After the plugs are removed the holes shall be filled with concrete.

The quantity of cellular grout was estimated based on void quantity between the slipliner pipe and the existing pipe, and an additional quantity if necessary was estimated for the void volume outside the existing pipe.

The quantity of base cement slurry ordered shall be approved by the Engineer. The quantity of base cement slurry needed shall be calculated to the nearest tenth of a cubic yard using the approved mix design, expansion factor of the foaming agent, and estimated amount of cellular grout. The quantity for payment to the nearest tenth of a cubic yard of "Cellular Grout" is a calculated quantity based on the amount of base cement slurry used on the project to the nearest tenth of a cubic yard, expansion factor of the foaming agent, and approved mix design.

All costs for furnishing and installing the slipliner pipe, including work area excavation, backfilling, pipe cleaning, and incidentals necessary to satisfactorily complete the work shall be included in the contract unit price per foot for the corresponding bid item for "Slipline 24" Pipe" or "Slipline 30" Pipe".

All costs for furnishing and installing the cellular grout including bulkhead construction, inlet bevel construction, and incidentals necessary to satisfactorily complete the work shall be included in the contract unit price per cubic yard for "Cellular Grout".

TABLE OF SLIPLINE PIPE

Station	Existing Inside Dia. (In)	* Slipliner Design Inside Dia. (In)	Slipline 24" Pipe (Ft)	Slipline 30" Pipe (Ft)	Cellular Grout (CuYd)
68+25**	30	24	90	-	3.8
74+66	36	30	-	120	6.1
Totals:			90	120	9.9

* The hydraulic design of the pipe was based on the slipliner inside diameter as noted in the TABLE OF SLIPLINE PIPE. If a smaller diameter liner is needed, contact the Design Engineer for approval.

** Station 68+25 requires a solid wall HDPE pipe to be installed. If the Contractor is unable to form a bulkhead around the pipe to add cellular grout, the Contractor shall substitute controlled density fill for cellular grout.

DITCH BLOCK

The existing ditch blocks shall be adjusted to meet the new design criteria for the slipline pipe. The new centerline elevation of the ditch block can be seen in the Ditch Block Table. Unclassified Excavation Material shall be used to adjust the height of the ditch blocks. For information only, an estimated 13 cubic yards of material is needed to construct the ditch blocks. The cost of for constructing the ditch block shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation".

Location	Elevation at Centerline of Ditch Block (ft)
Station 73+80	1562.91
Station 80+74	1568.24

CONTROLLED DENSITY FILL FOR PIPE

Controlled density fill shall be a flowable mortar material. Materials shall be in accordance with the Specifications, except as modified below. The mix design shall be:

Material	Rate per Cubic Yard
Portland Cement Type I, II, III, or V	200 Lb
Fine Aggregate	2600 Lb
Coarse Aggregate	None
Water	35 Gal
"W.R. Grace – Darafill" or approved equal	1 (3 oz.) capsule or equivalent *

* Shall be one 3 ounce capsule or equivalent CLSM performance additive (foaming admixture).

The fine aggregate shall be natural sand consisting of mineral aggregate particles conforming to the following gradation requirements:

Passing 3/8 Inch Sieve	100%
Passing No. 200 Sieve	0-10%

The mix design shown above is designed to produce a minimum compressive strength of 100 psi. The Engineer may allow adjustments to the proportion of water at the site to provide the necessary consistency of the mix.

Controlled density fill shall be contained within the required limits with sandbags or other methods approved by the Engineer.

The Contractor shall prevent the flotation or movement of the culvert due to the buoyant force from the controlled density fill until the controlled density fill hardens. Overlying surfacing materials shall not be placed sooner than four hours after placement of the controlled density fill.

All costs for furnishing and installing the controlled density fill, including sandbags, labor, materials, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for "Controlled Density Fill."

Plans quantity will be the basis for payment unless otherwise ordered by the Engineer.

Station	Quantity (CuYd)
74+66	29.3
Total:	29.3

RIPRAP

General: The riprap slope shall be established as shown on the cross sections and shall be placed to the satisfaction of the Engineer and by following the Specifications.

Prior to riprap placement, it will be necessary to re-construct the embankment necessary to insure the proper profile of the embankment is re-established.

All disturbed areas beyond the riprap placement and other areas disturbed due to construction activities shall be restored to the satisfaction of the Engineer.

A factor of 1.4 tons per cubic yard was used to convert cubic yard to Tons.

Drainage fabric shall be placed underneath and up the sides of the riprap. The fabric shall conform to Section 831 of the Specifications.

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 to satisfactory install the drainage fabric.

Location	Class B Riprap (Tons)	Type B Drainage Fabric (SqYd)
Station 68+25	208.6	315
Station 74+66	111.1	171
Station 80+75	608.4	799
Total:	928.1	1,285

UNCLASSIFIED EXCAVATION

Material as shown in the plans, table of unclassified excavation, and cross sections shall be removed to re-establish the desired embankment profile. It is anticipated that the majority of the removed material shall be wasted. The unclassified material shall be placed as shown in the applicable plan sheets and/or to the satisfaction of the Engineer. For information only, the plans quantity and excavation to achieve the riprap footprint for Unclassified Excavation is shown in the Table of Unclassified Excavation. Payment for the bid item "Unclassified Excavation" shall be paid for at the plan quantity for overburdened material and ditch shaping. Once the overburdened material has been removed, payment for "Unclassified Excavation" to achieve the riprap footprint shall be incidental to the placement of the riprap.

A shrinkage factor of 30% was used.

TABLE OF UNCLASSIFIED EXCAVATION

Location	Excavation Quantity (Overburden Material & Ditch Shaping) (CuYd)	Excavation Quantity (Incidental to Riprap) (CuYd)	Place Back Quantity +30% (CuYd)
Station 68+25	662	277	709
Station 74+66	3,622	138	1,951
Station 80+75	1,502	378	7
Total:	5,786	793	2,667

WATER FOR EMBANKMENT

When, in the opinion of the Engineer, the fill material is dry, water may be ordered and placed to the satisfaction of the Engineer. The moisture content for compaction shall be approximately optimum moisture for the material unless otherwise directed by the Engineer. The cost of water shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation". For informational purposes only, it has been estimated that if water is needed it shall be at the rate of 10 gallons per cubic yard of material. An estimated 23.4 MGal of water is required for the project.

EROSION CONTROL WATTLE

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

The placement of the erosion control wattles will be determined by the Engineer.

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

Erosion control wattles shall remain on the project until vegetation has been established.

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>

REMOVE AND RESET EROSION CONTROL WATTLE

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for "Remove and Reset Erosion Control Wattle".

LOW FLOW SILT FENCE

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

<http://apps.sd.gov/Applications/HC54ApprovedProducts/main.asp>

Low flow silt fence shall be placed at locations that will minimize the siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

An estimate of Low Flow Silt Fence has been added to the Estimate of Quantities and for temporary sediment control at each riprap location.

TABLE OF LOW FLOW SILT FENCE

Location	Quantity (Ft)
Station 68+25	150
Station 74+66	150
Station 80+75	150
Additional Quantity:	115
Total:	565

MUCKING SILT FENCE

Mucking silt fence shall consist of removing muck trapped by the silt fence and spreading the material evenly over the adjacent area to conform to the existing grade.

REMOVE SILT FENCE

Silt fence shall be removed when vegetation is established. Some or the entire silt fence may be left on the project until vegetation is established as determined by the Engineer.

RIGHT-OF-WAY (ROW) FENCE

General:

Where fence is being removed and reset, the Contractor shall install the fence on the same alignment and/or as detailed in the plans as determined by the Engineer. It shall be the Contractor's responsibility to preserve the existing fence alignment. Refer to the "Plan View" sheets for fence locations and details.

Remove Fence for Reset:

The Contractor shall remove fence at the locations denoted in the plans to gain access to the project sites with equipment and materials needed.

All costs associated with removal of the fence and resetting the fence shall be incidental to the contract unit price per foot for "Remove Fence for Reset" and "Reset Fence".

Type 1 Temporary Fence:

The Contractor shall be responsible for erecting temporary fencing as required to maintain control of livestock and prevent livestock from leaving the pasture near the work areas.

It shall be the responsibility of the Contractor to contact the landowner(s) to determine the need/location of the temporary fence.

All costs associated with the temporary fencing shall be incidental to the contract unit price per foot for "Type 1 Temporary Fence".

EROSION CONTROL

The areas disturbed as a result of work on these projects shall be restored and/or reshaped to the satisfaction of the Engineer. All disturbed areas beyond the riprap limits shall be seeded and mulched.

All permanent seed shall be planted in the topsoil at a depth of ¼” to ½”. Hand seeding devices approved by the Engineer will be allowed. All seed broadcast must be raked or dragged in (incorporated) within the top ¼” to ½” of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Little Bluestem or Buffalograss or Blue Grama	Badlands, Itasca, Bowie, Cody, Tatanka, Bad River, Willis	2
Regreen or QuickGuard: all year; Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

It is estimated that 2.36 acres shall be disturbed throughout the aforementioned areas. Application of fertilizer will not be required on this project.

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

All costs associated with furnishing and placing the seed, inoculum, and mulch along with the labor, equipment, and all incidentals needed to satisfactorily complete the work shall be paid for at the contract lump sum price for "Erosion Control".

MYCORRHIZAL INOCULUM

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

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

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

The mycorrhizal inoculum shall be from the list below or an approved equal:

Product
MycApply

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

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SIGN TABULATION

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
W20-1	48" x 48"	ROAD WORK ##### FT. OR AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD ##### FT. OR AHEAD	3	34	102
W20-7	48" x 48"	FLAGGER (SYMBOL)	1	34	34
W21-5	48" x 48"	SHOULDER WORK	4	34	136
TOTAL UNITS					374

HORIZONTAL ALIGNMENT & CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0031(27)	14	43

HORIZONTAL ALIGNMENT DATA

<u>Type</u>	<u>Station</u>			<u>Northing</u>	<u>Easting</u>
PC	64+89.29				
POB	65+95.00			723691.573	1966534.784
PI	69+23.31	R = 1637.02	Delta = 32°56'36" Lt.	724622.323	1967882.165
PT	73+80.52			723173.961	1967114.394
PC	81+77.00	TL = 796.48	S 62°05'55" E	722799.113	1967818.420
POE	82+82.10			722748.161	1967910.341
PI	83+27.37	R = 2864.79	Delta = 6°00'33" Rt.		
PT	84+77.46				

CONTROL DATA

HORIZONTAL & VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP1	73+18.45	230.89	723404.073	1967175.778	1608.120	Rebar w/ Yellow Cap (SDPR BASE)

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System.
South Zone (NAD 83/2011) SF = 0.9999269767
The elevations shown on this sheet are based on NAVD 88.

SITE 1 PLAN VIEW Station 68+25



REMOVE & RESET FENCE (147 ft)

FM STA. 67+50 88' R TO STA. 68+90 78' (147 ft)

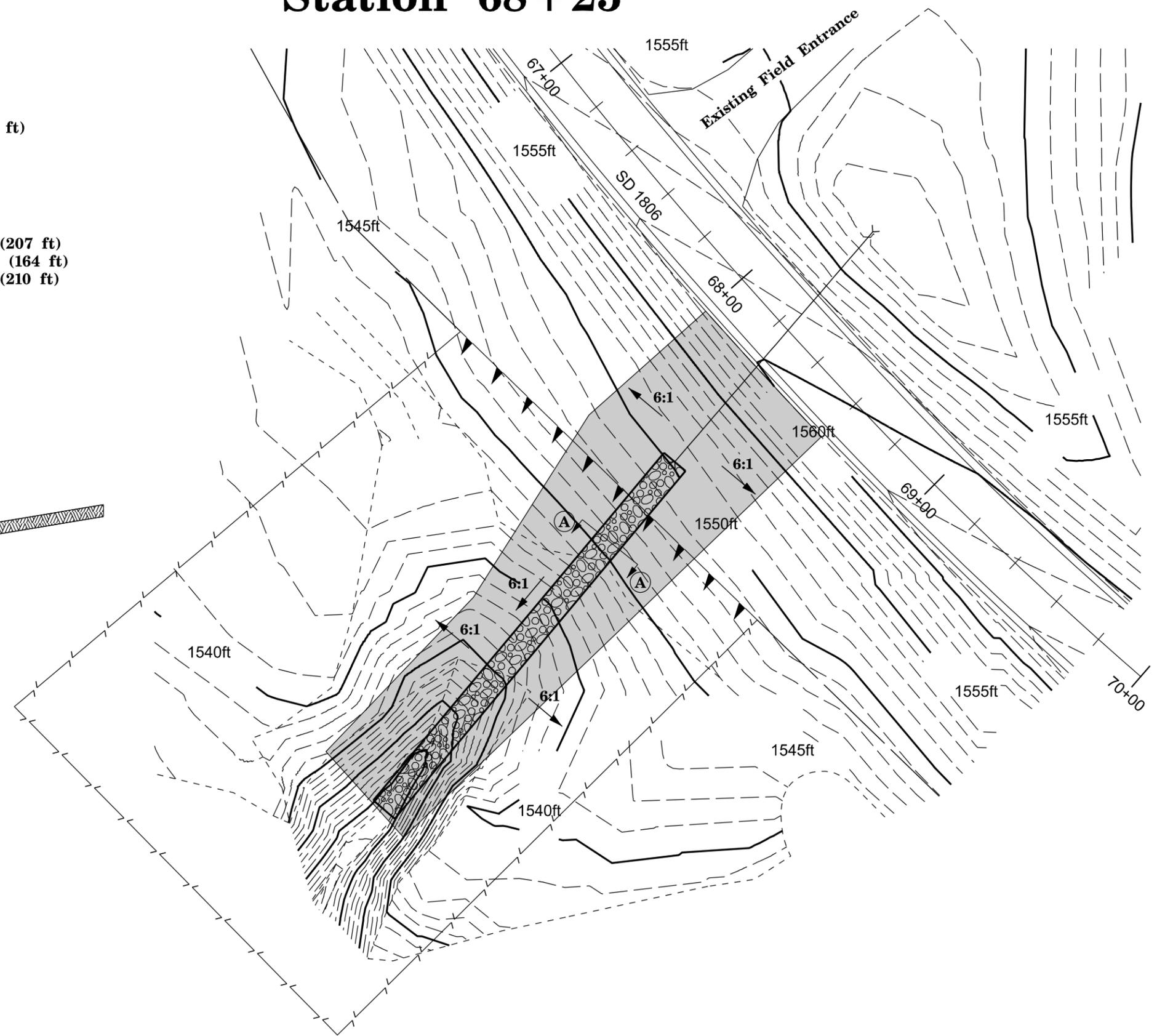
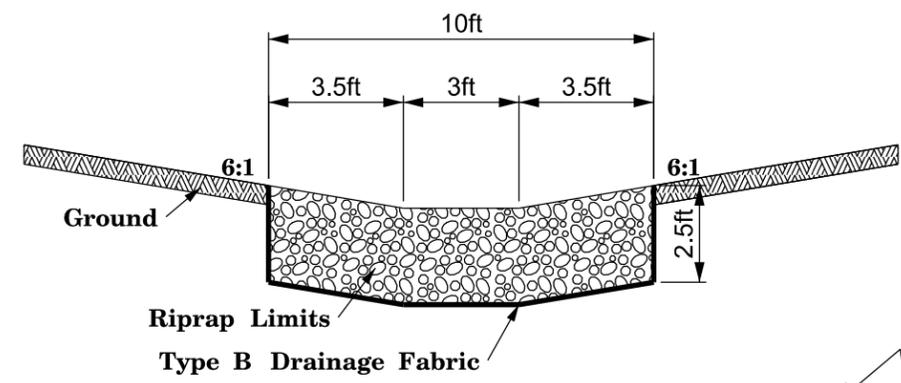
TYPE 1 TEMPORARY FENCE (581 ft)

FM STA. 67+50 88' R TO STA. 67+50 295' R (207 ft)

FM STA. 67+50 295' R TO STA. 68+90 288' R (164 ft)

FM STA. 68+90 288' R TO STA. 68+90 78' R (210 ft)

SECTION A-A



- LEGEND**
- Class B RipRap
 - Ground
 - Limits of Work
 - Remove Fence for Reset
 - Existing Fence
 - Type 1 Temporary Fence
 - 1 Foot Contour Line
 - 5 Foot Contour Line

SITE 1

R.O.W. PLAN VIEW

Station 68+25

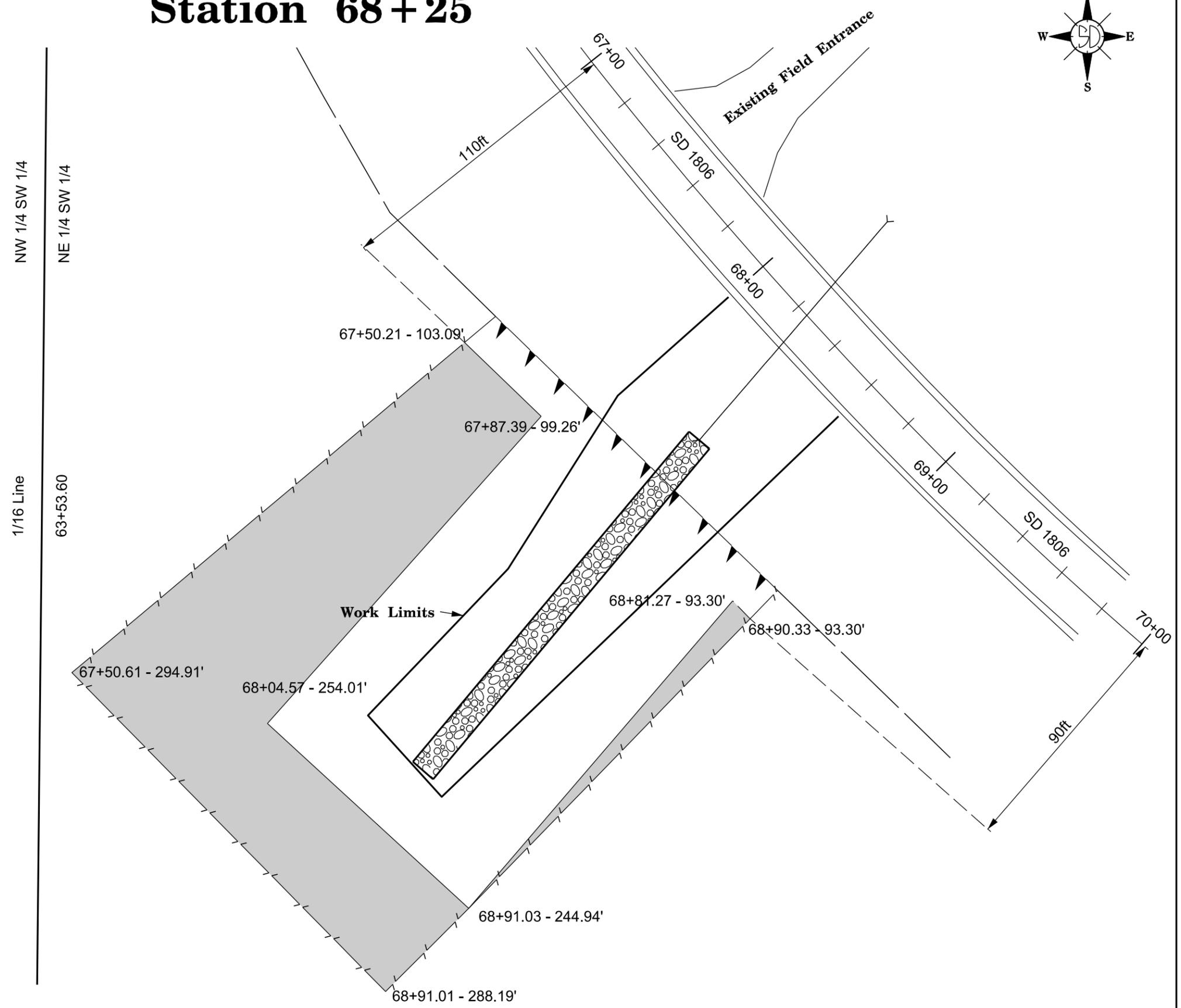
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0031(27)	16	43

Plotting Date: 08/18/2014



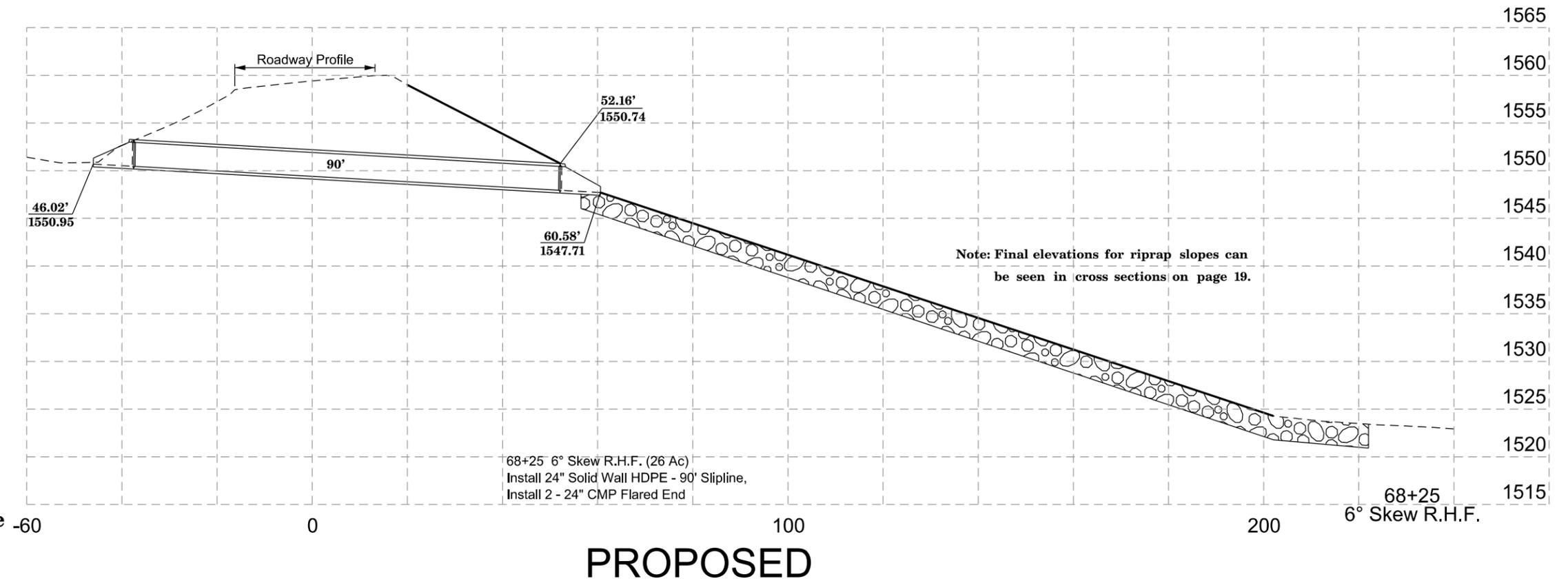
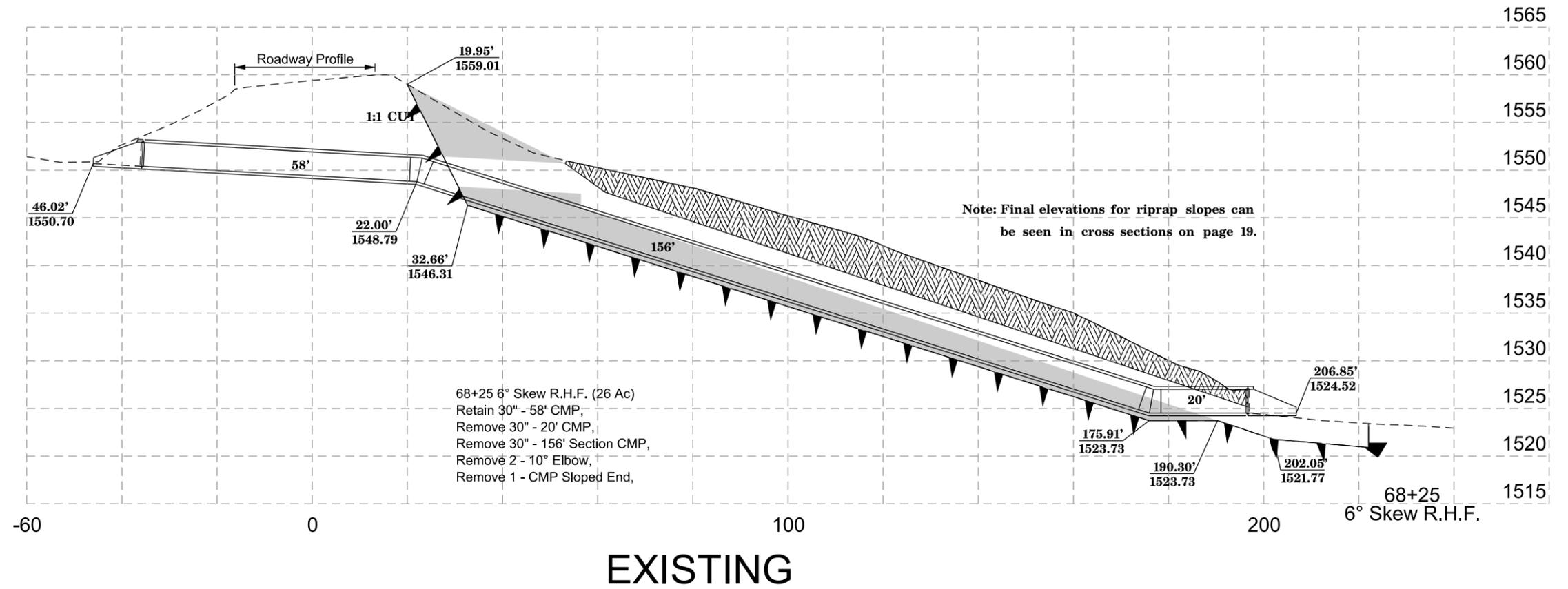
Lower Brule Sioux Tribe
 NE 1/4 SW 1/4 of Section 12 - Township 4 North -
 Range 31 East of the BHM, lying west of the
 Fort Pierre - Antelope Road (SD 1806)

Parcel A1
 0.35 acres Temporary Easement
 (15,148 sqft) for cut slopes and fill slopes



- LEGEND**
- Temporary Easement
 - Limits of Work
 - Remove Fence for Reset
 - Existing Fence
 - Type 1 Temporary Fence
 - R.O.W. Line

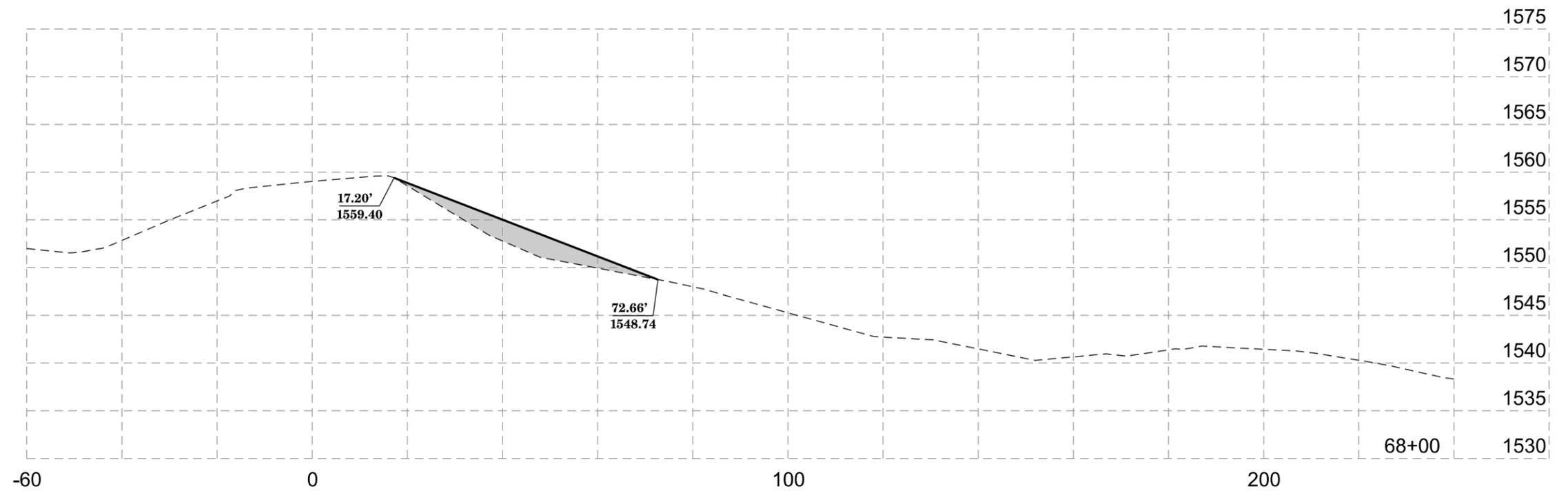
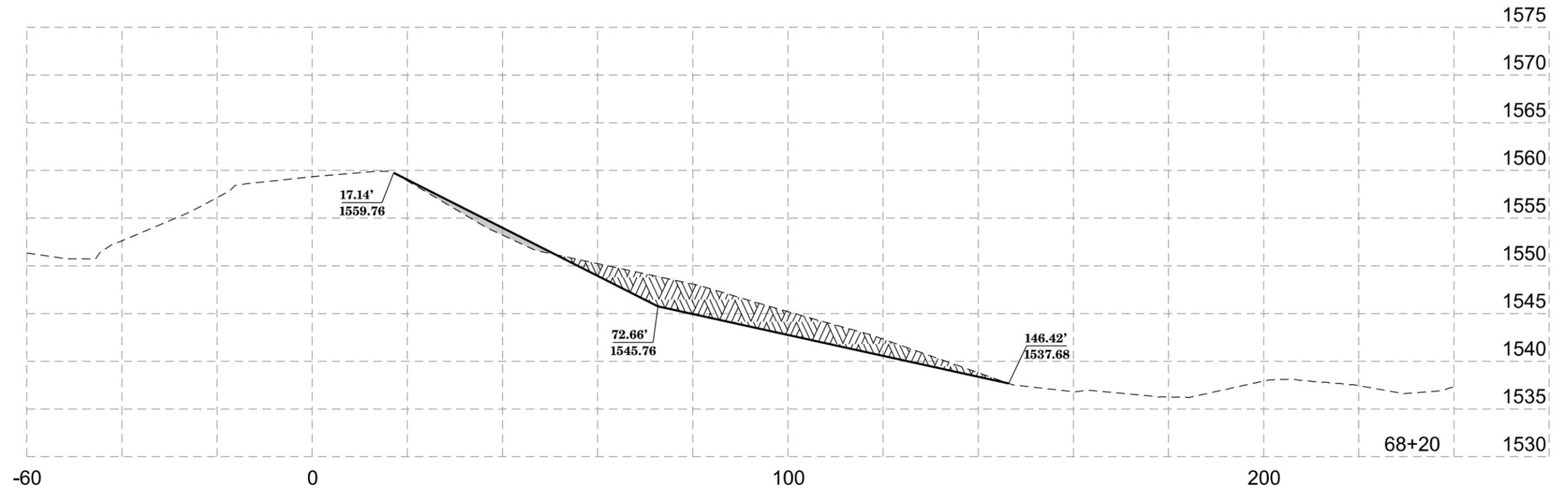
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed Cut
-  Proposed New Ground Line
-  Existing Ground Line

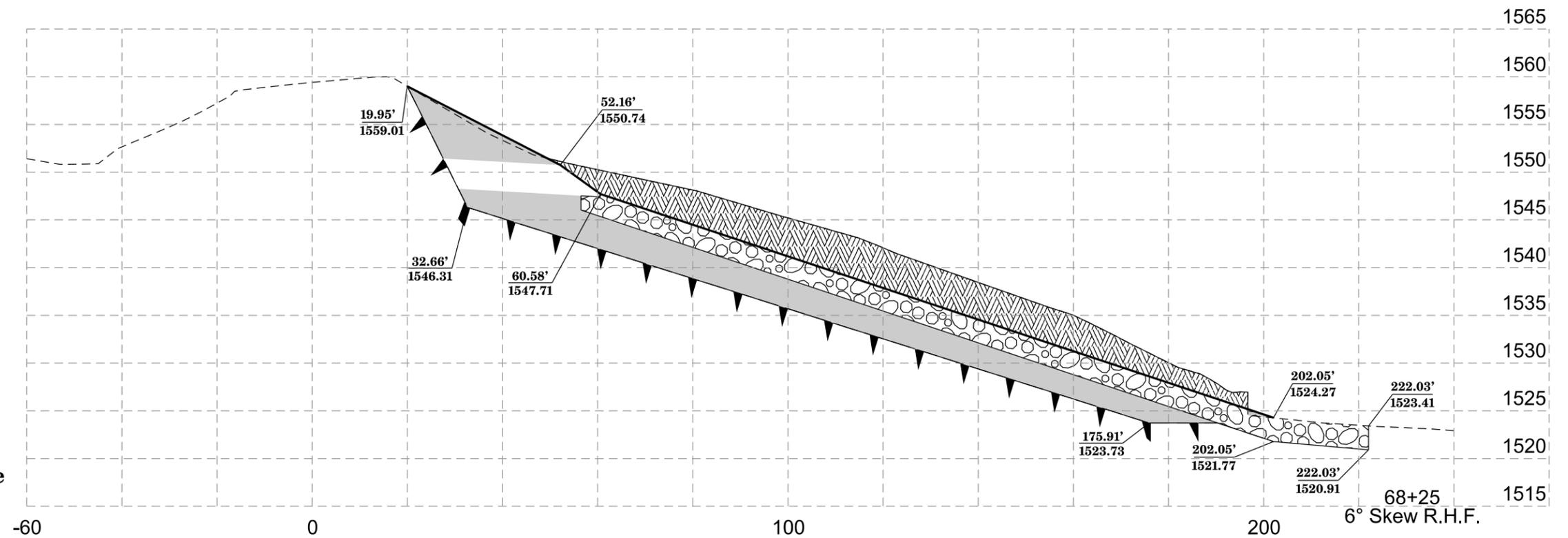
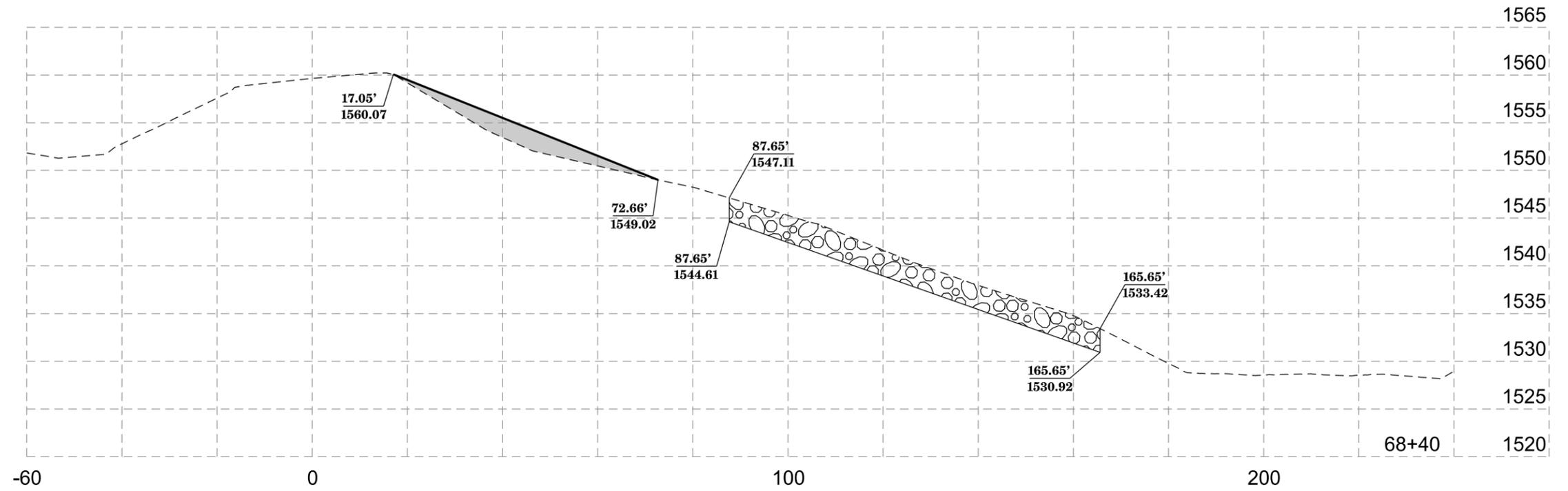
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Proposed Cut
-  Existing Ground Line

SITE 2 PLAN VIEW Station 74+66



REMOVE & RESET FENCE (261 ft)

FM STA. 73+50 109' R TO STA. 76+10 98' R (261 ft)

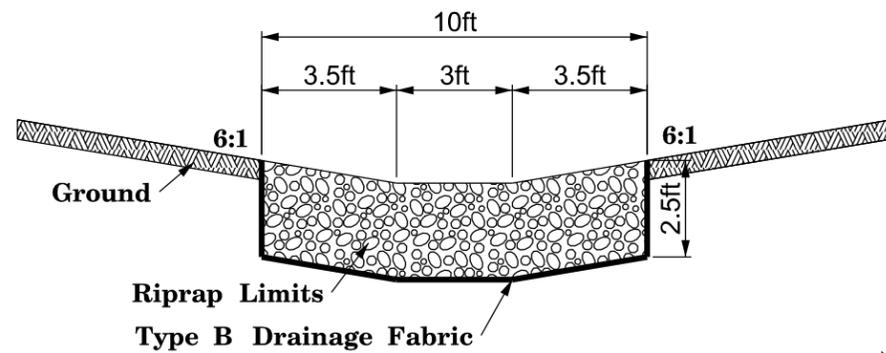
TYPE 1 TEMPORARY FENCE (495 ft)

FM STA. 73+50 109' R TO STA. 73+50 225' R (116 ft)

FM STA. 73+50 225' R TO STA. 76+10 214' R (263 ft)

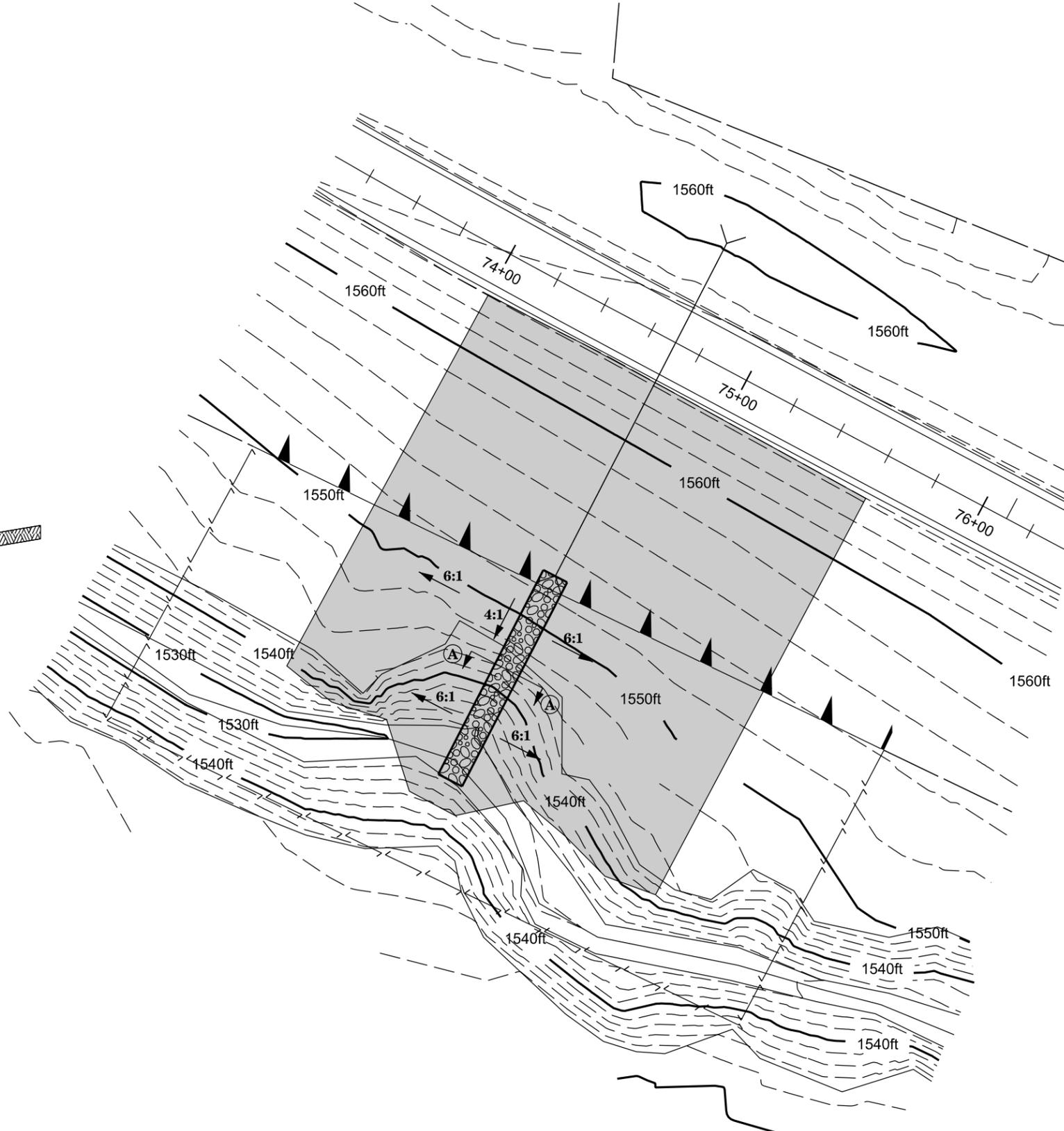
FM STA. 76+10 214' R TO STA. 76+10 98' R (116 ft)

SECTION A-A



LEGEND

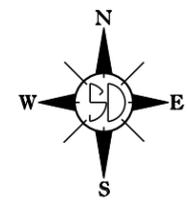
- Class B RipRap**
- Ground**
- Limits of Work**
- Remove Fence for Reset**
- Existing Fence**
- Type 1 Temporary Fence**
- 1 Foot Contour Line**
- 5 Foot Contour Line**



SITE 2

R.O.W. PLAN VIEW

Station 74+66



Mark Dennis Hanson

NE 1/4 SW 1/4 of Section 12 - Township 4 North -
Range 31 East of the BHM, lying north and east of SD Hwy 1806

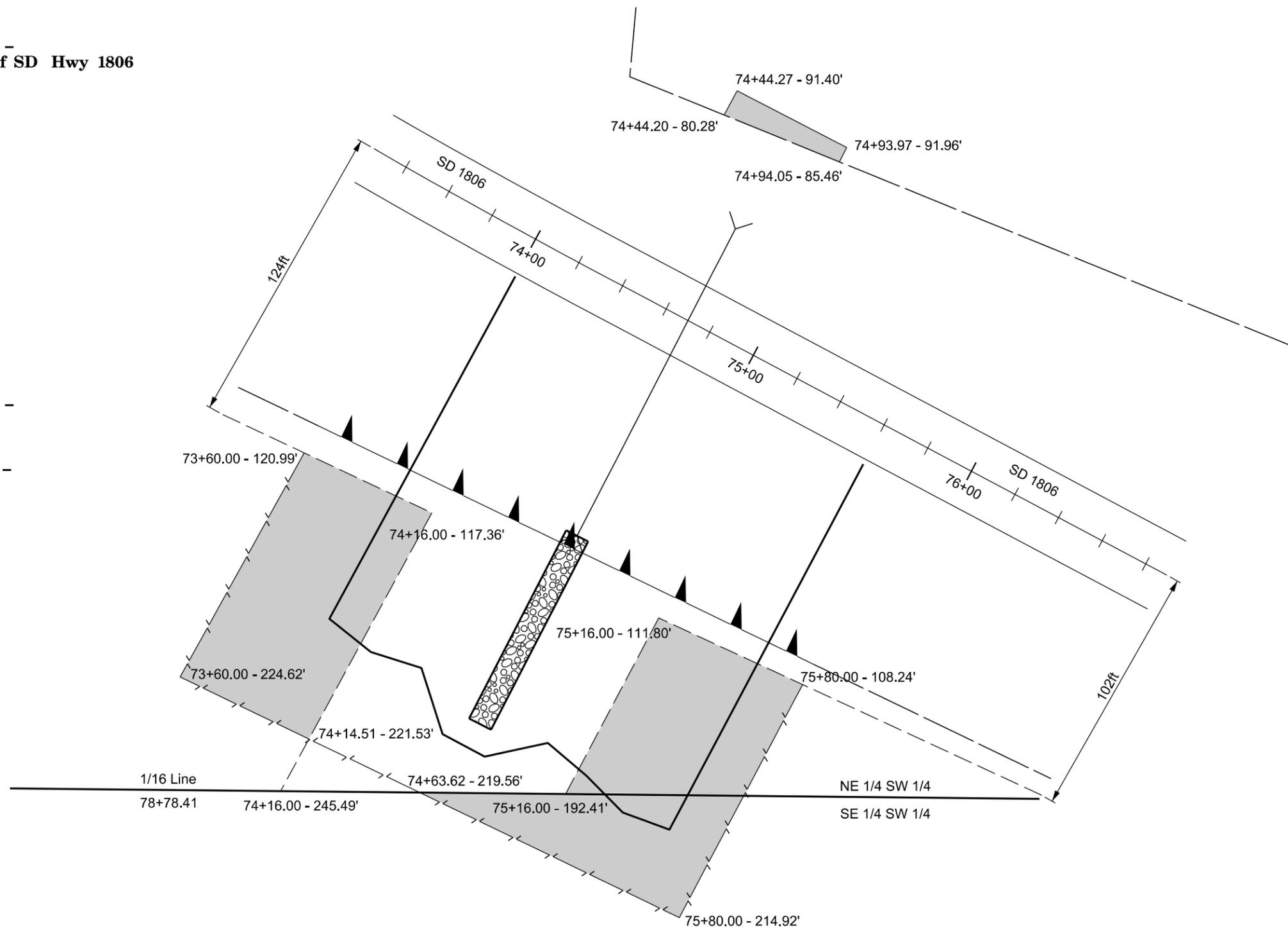
Parcel A2
0.01 acres Temporary Easement
(441 sqft) for pipe lining

Lower Brule Sioux Tribe

NE 1/4 SW 1/4 of Section 12 - Township 4 North -
Range 31 East of the BHM, lying west of the
Fort Pierre - Antelope Road (SD 1806)

SE 1/4 SW 1/4 of Section 12 - Township 4 North -
Range 31 East of the BHM, Stanley County

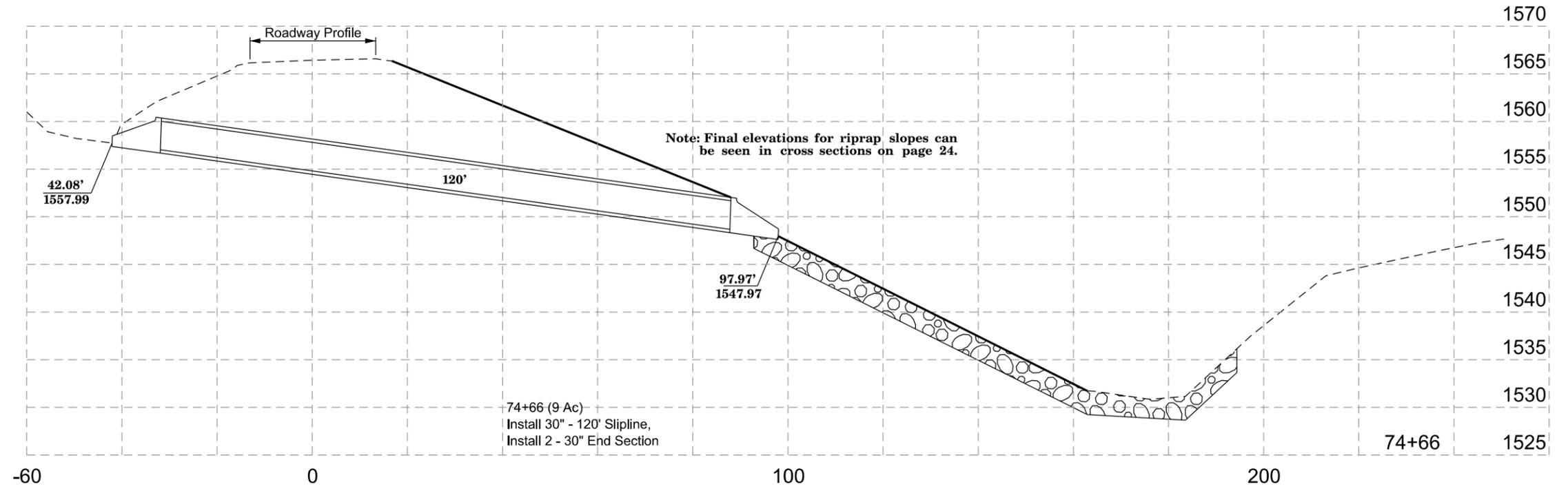
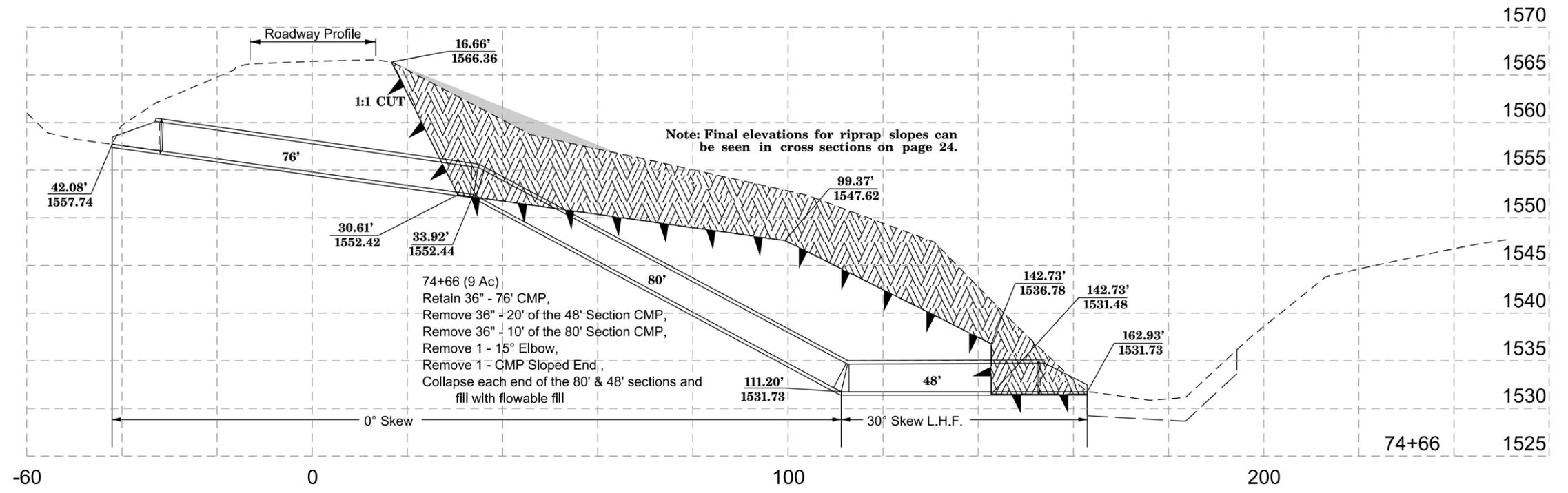
Parcel A3
0.31 acres Temporary Easement
(13,424 sqft) for cut slopes and fill slopes



LEGEND

- Temporary Easement
- Limits of Work
- Remove Fence for Reset
- Existing Fence
- Type 1 Temporary Fence
- R.O.W. Fence

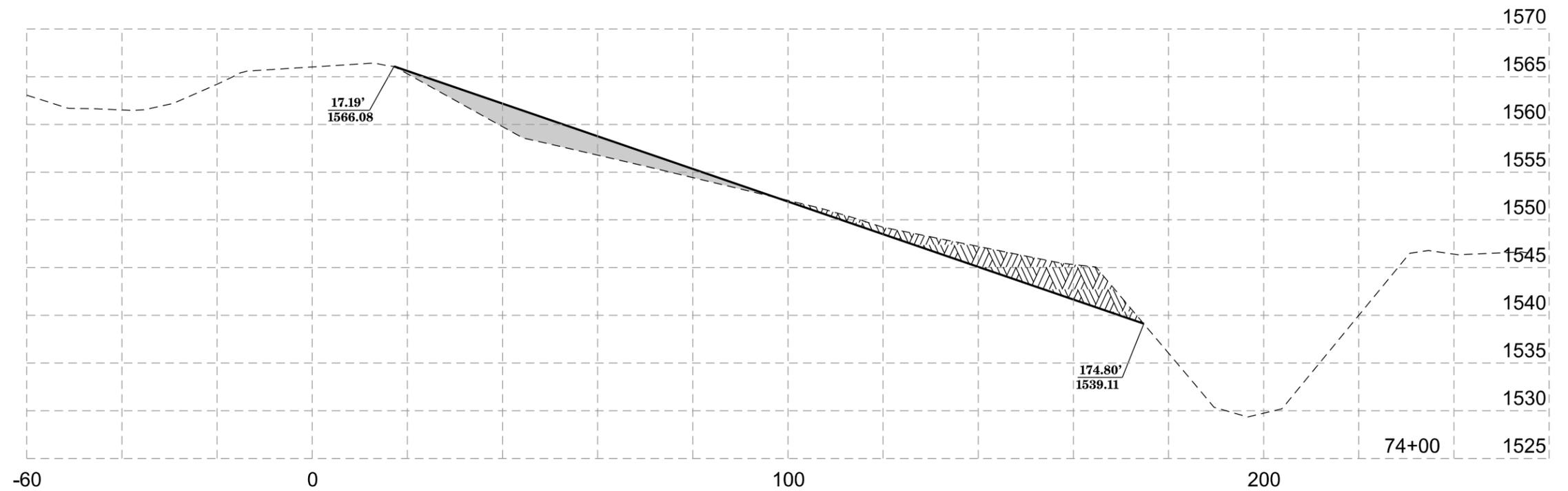
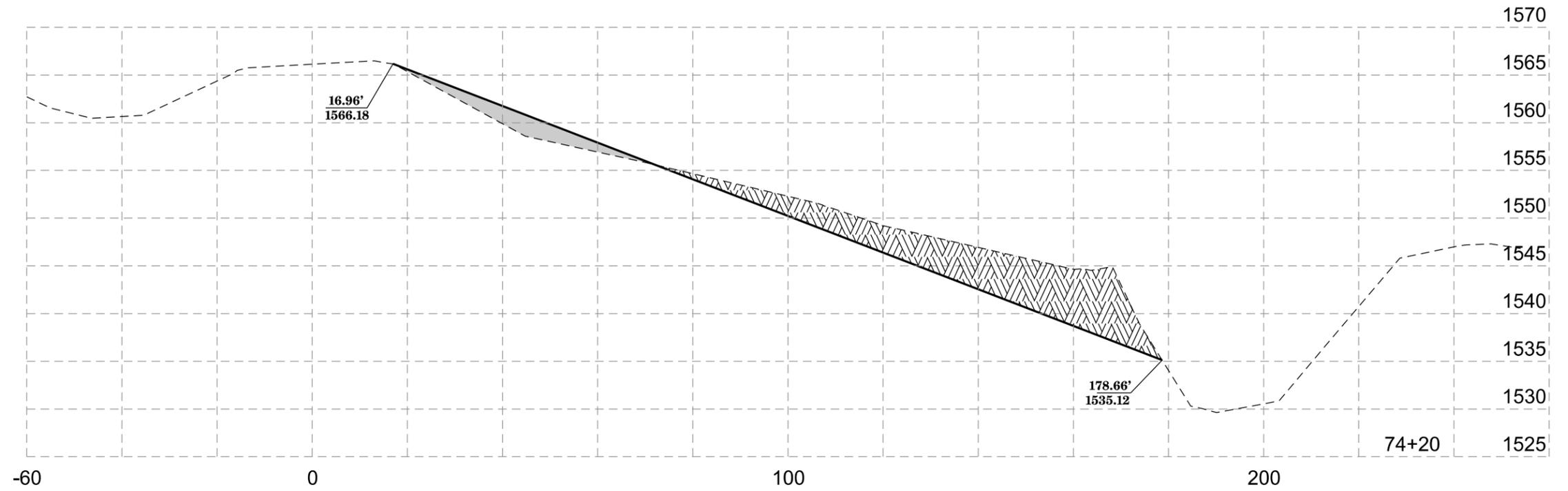
PIPE SECTIONS



LEGEND

- Class B RipRap
- Excavation Material
- Fill Material
- Proposed Cut
- Proposed New Ground Line
- Existing Ground Line

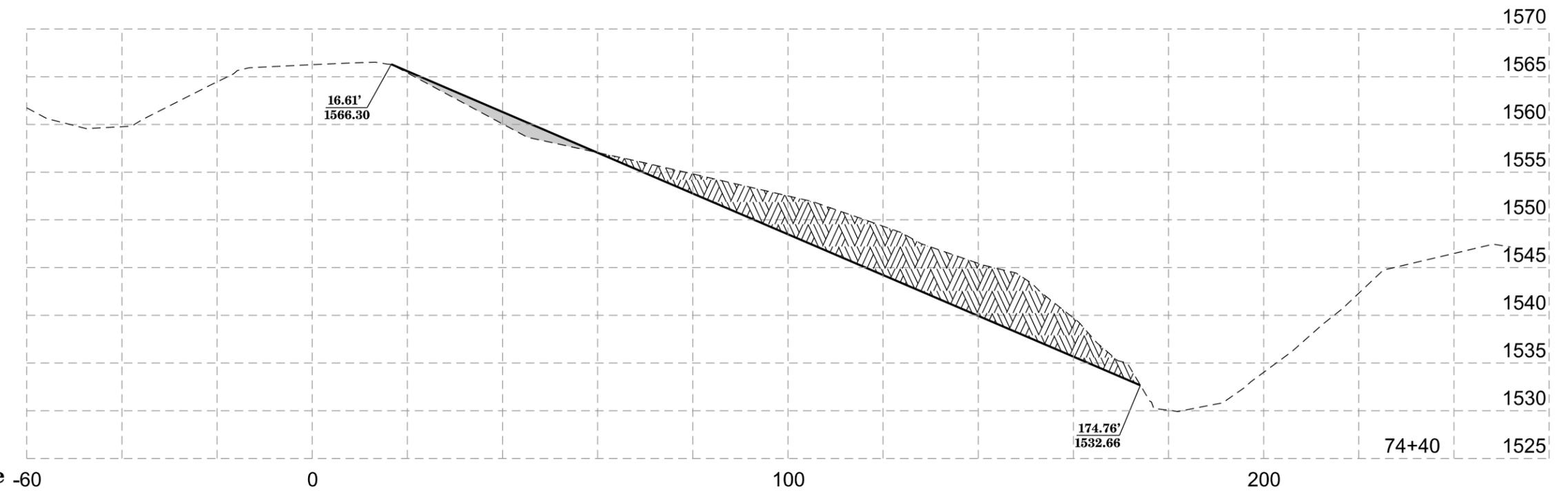
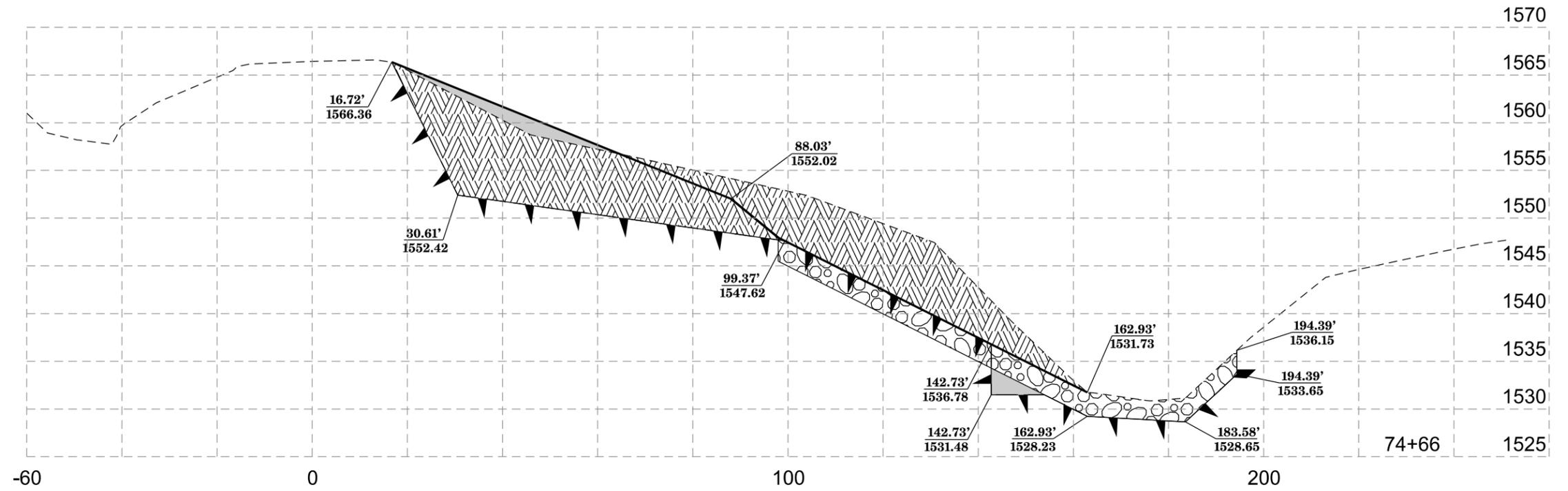
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

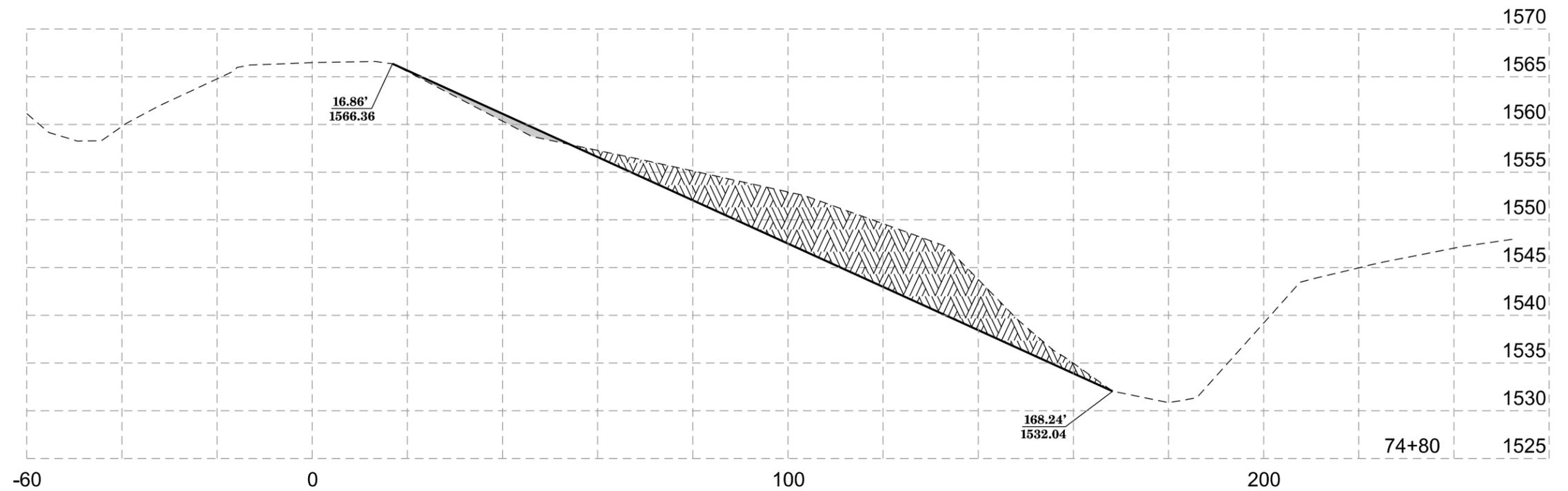
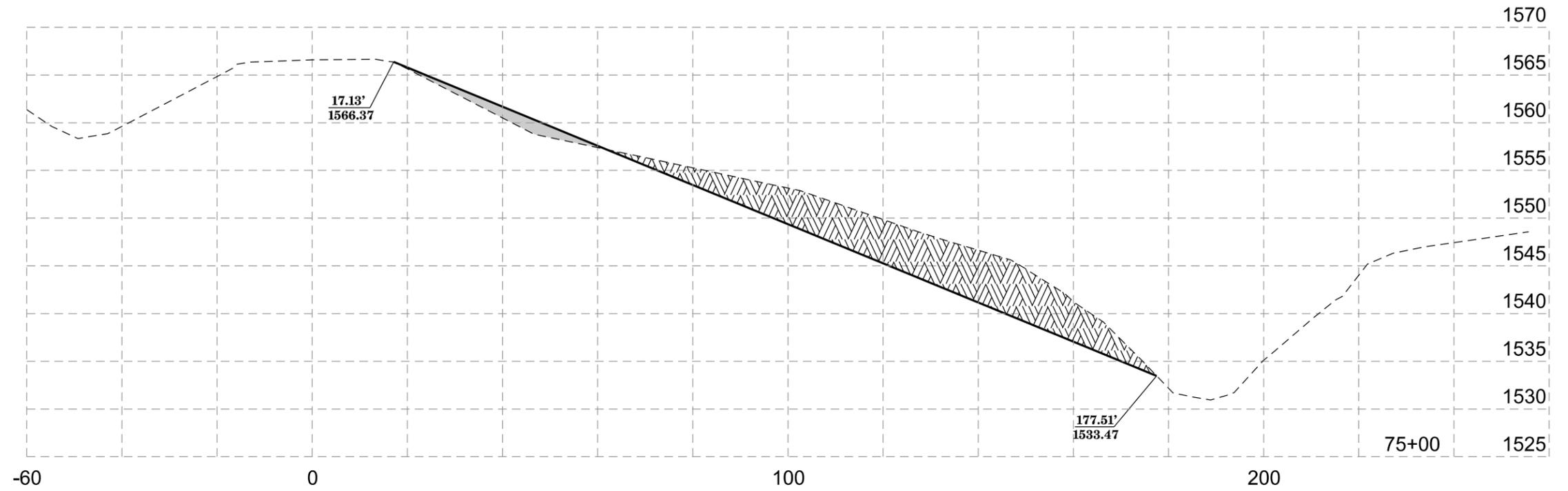
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line
-  Proposed Cut

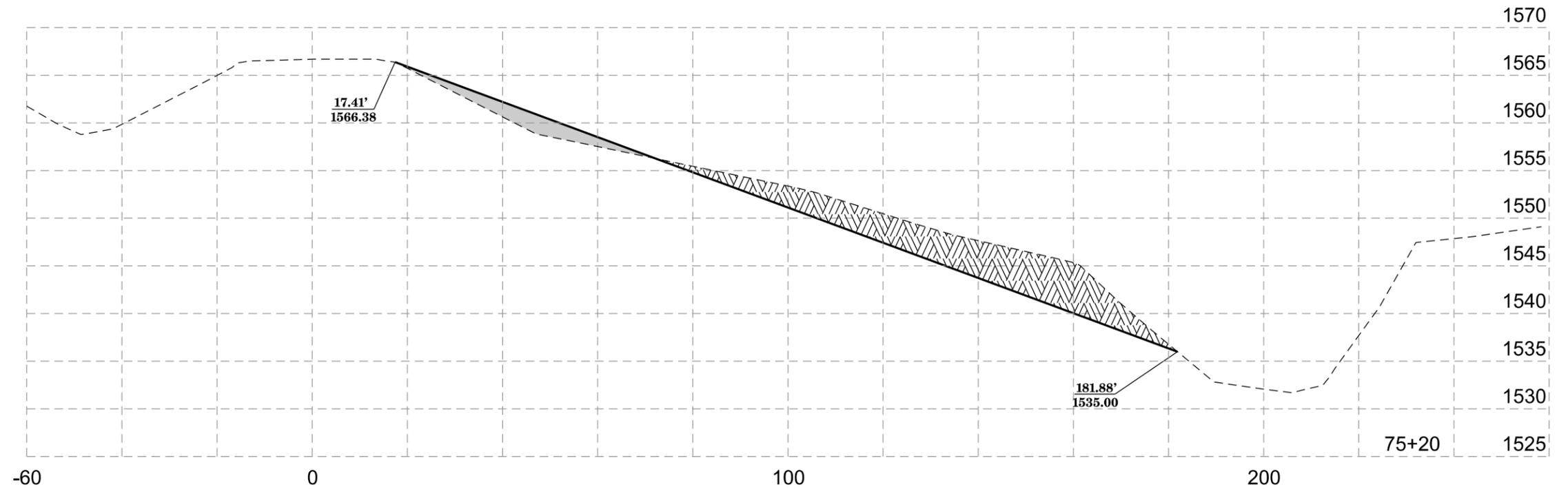
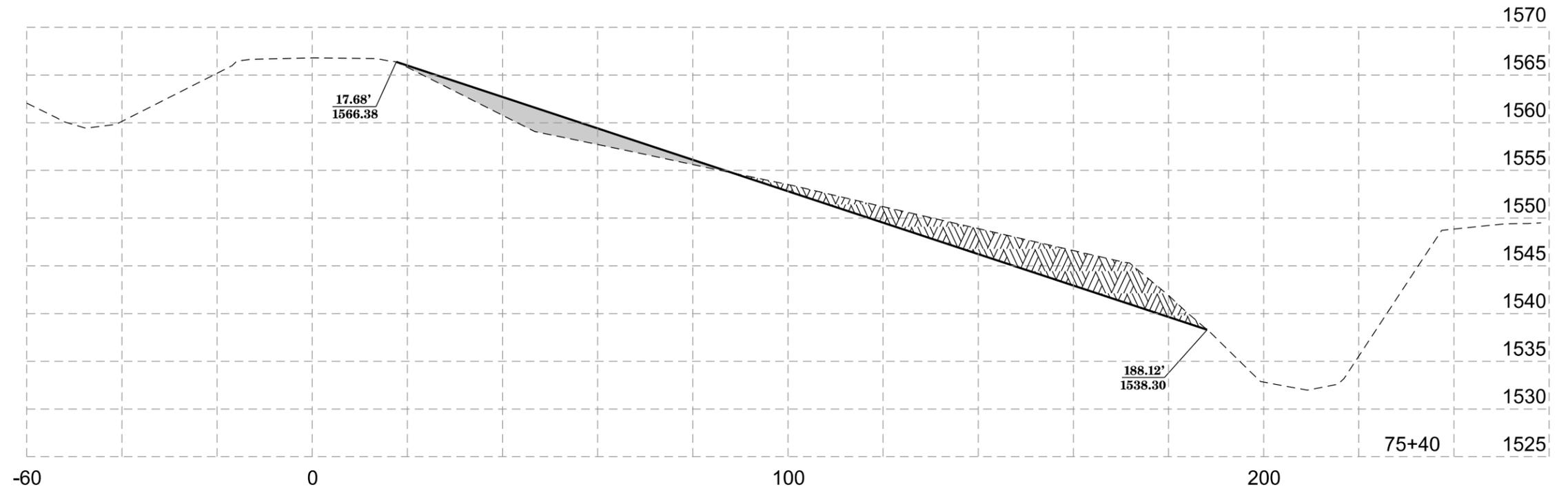
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

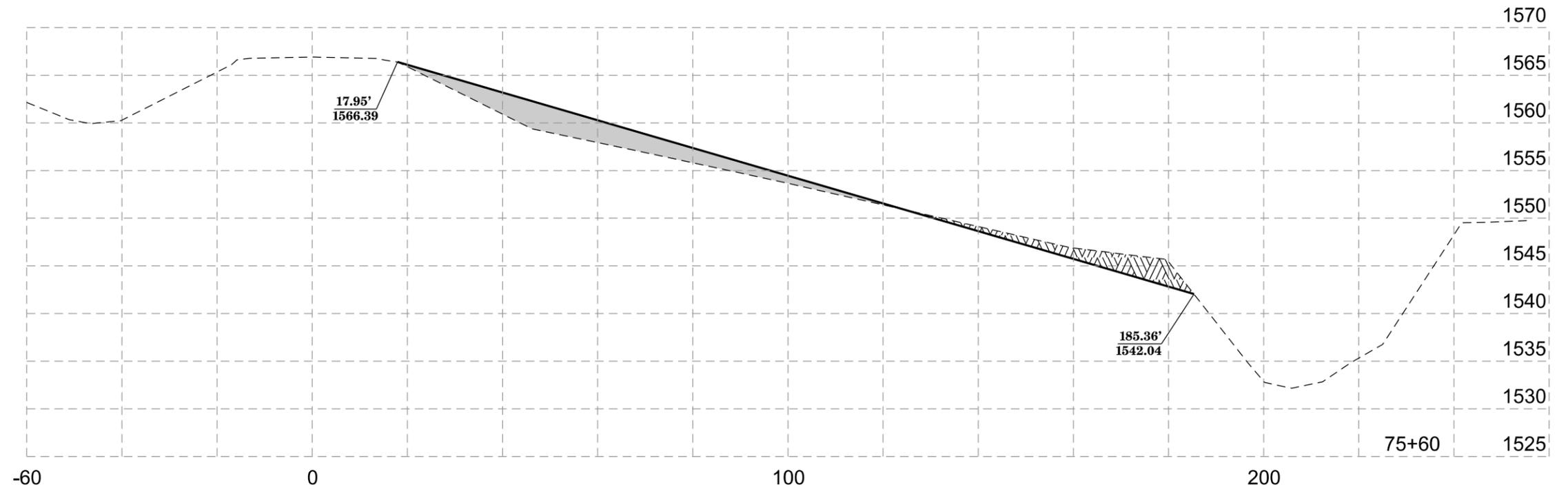
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

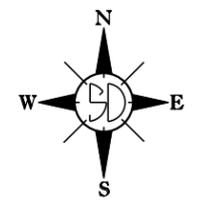
PIPE SECTIONS



LEGEND

-  **Class B RipRap**
-  **Excavation Material**
-  **Fill Material**
-  **Proposed New Ground Line**
-  **Existing Ground Line**

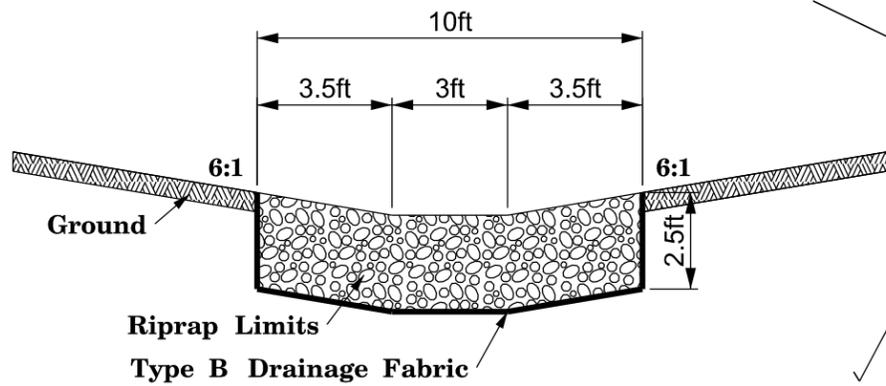
SITE 3 PLAN VIEW Station 80+75



REMOVE & RESET FENCE (182 ft)
 FM STA. 79+80 83' R TO STA. 81+88 74' R (208 ft)
 FM STA. 81+88 74' R TO STA. 82+20 75' R (32 ft)

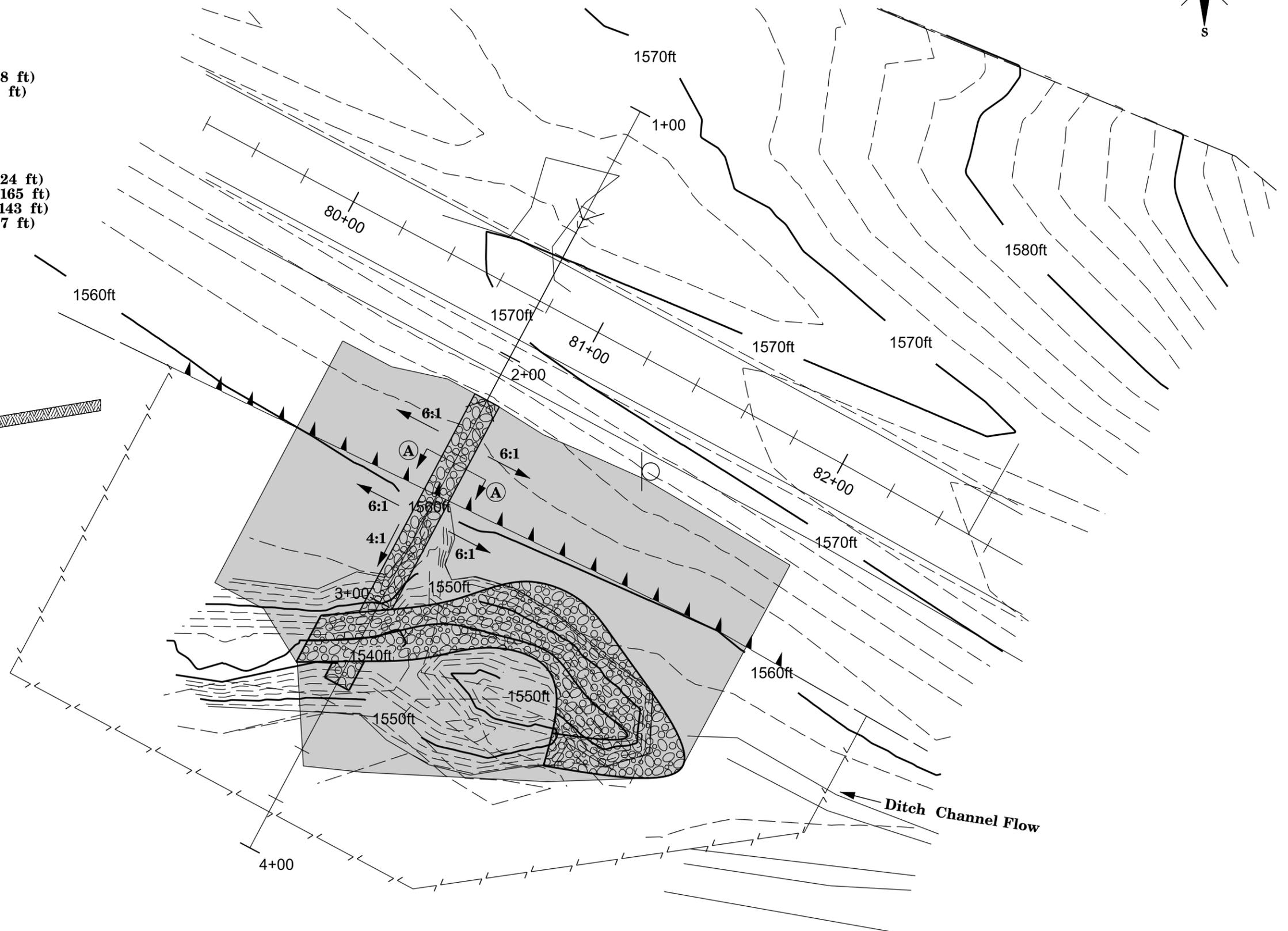
TYPE 1 TEMPORARY FENCE (448 ft)
 FM STA. 79+70 83' R TO STA. 79+70 207' R (124 ft)
 FM STA. 79+70 207' R TO STA. 81+36 208' R (165 ft)
 FM STA. 81+36 208' R TO STA. 82+52 122' R (143 ft)
 FM STA. 82+52 122' R TO STA. 82+52 75' R (47 ft)

SECTION A-A



LEGEND

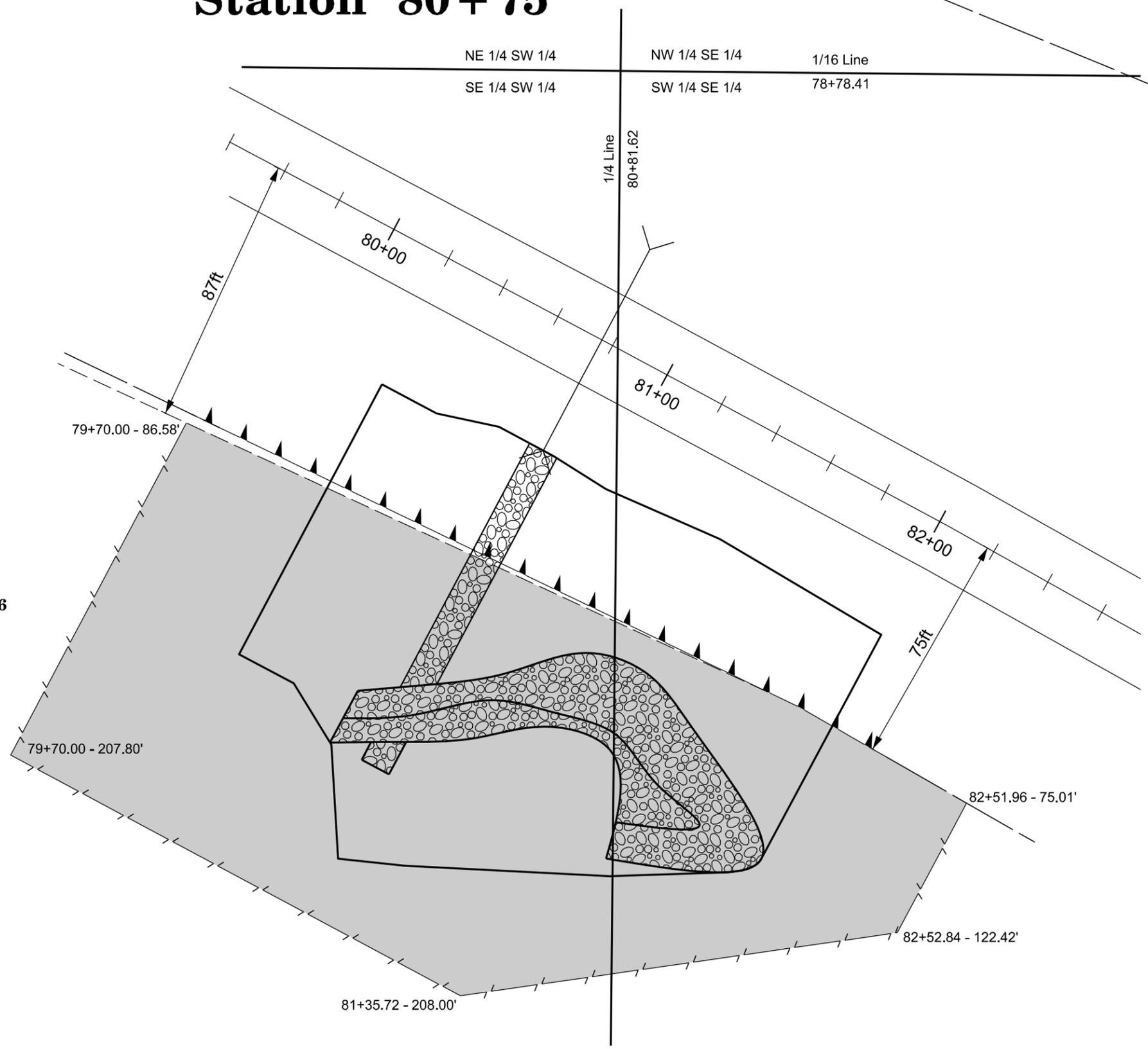
- Class B RipRap
- Ground
- Limits of Work
- Remove Fence for Reset
- Existing Fence
- Type 1 Temporary Fence
- 1 Foot Contour Line
- 5 Foot Contour Line
- No Pass Sign



SITE 3

R.O.W. PLAN VIEW

Station 80+75



Lower Brule Sioux Tribe

SE 1/4 SW 1/4 of Section 12 - Township 4 North -
Range 31 East of the BHM

Parcel A4
0.52 acres Temporary Easement
(22,716 sqft) for cut slopes and fill slopes

Lower Brule Sioux Tribe

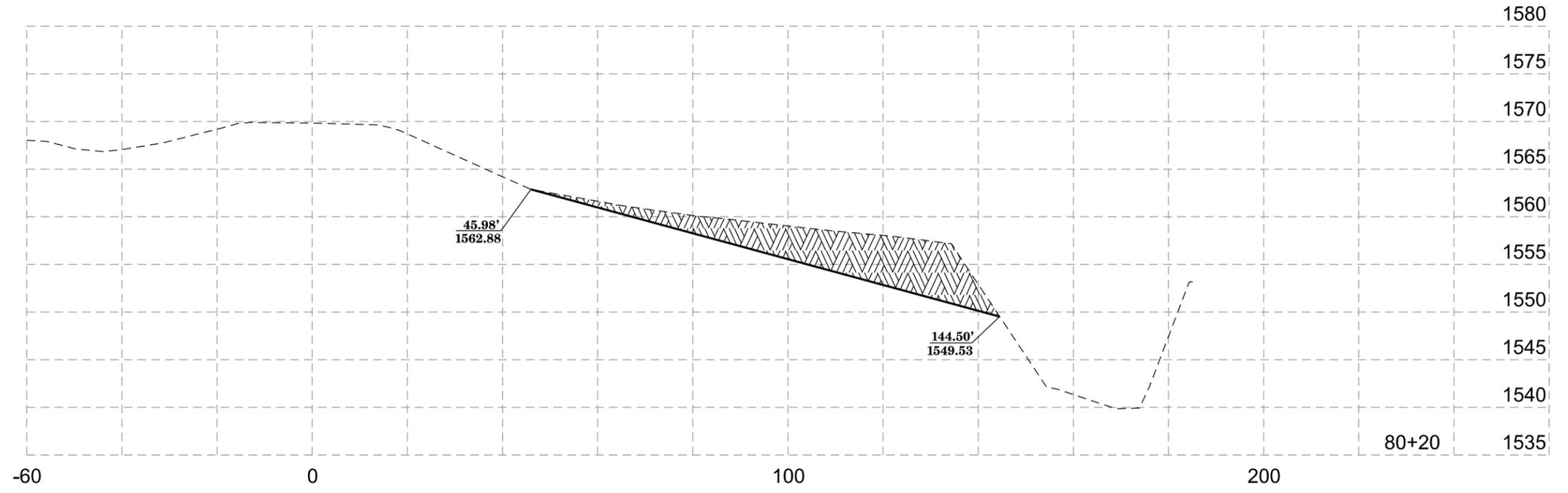
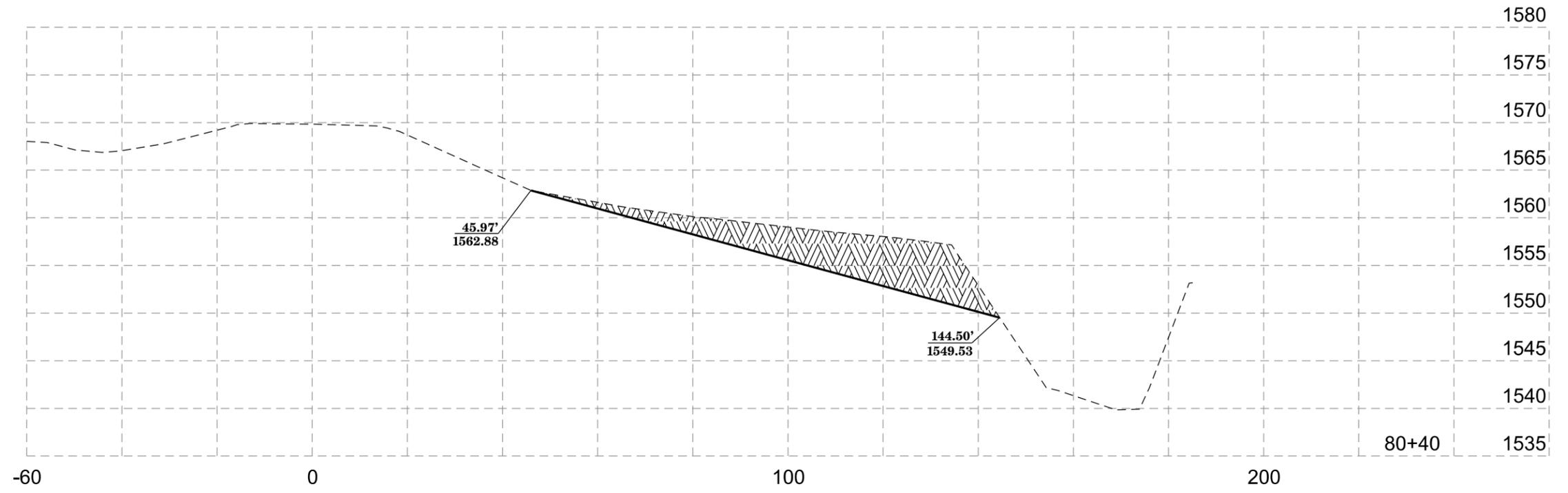
SW 1/4 SE 1/4 of Section 12 - Township 4 North -
Range 31 East of the BHM, lying south and west of Hwy 1806

Parcel A5
0.19 acres Temporary Easement
(8,442 sqft) for cut slopes and fill slopes

LEGEND

- Temporary Easement
- Limits of Work
- Remove Fence for Reset
- Existing Fence
- Type 1 Temporary Fence
- R.O.W. Fence

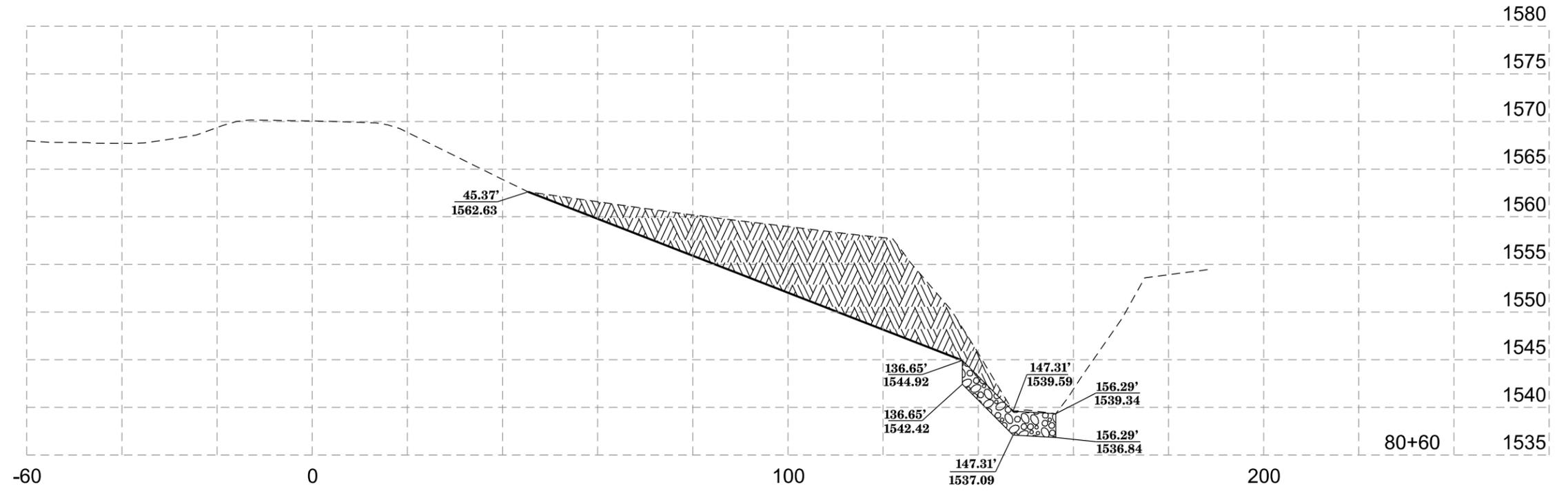
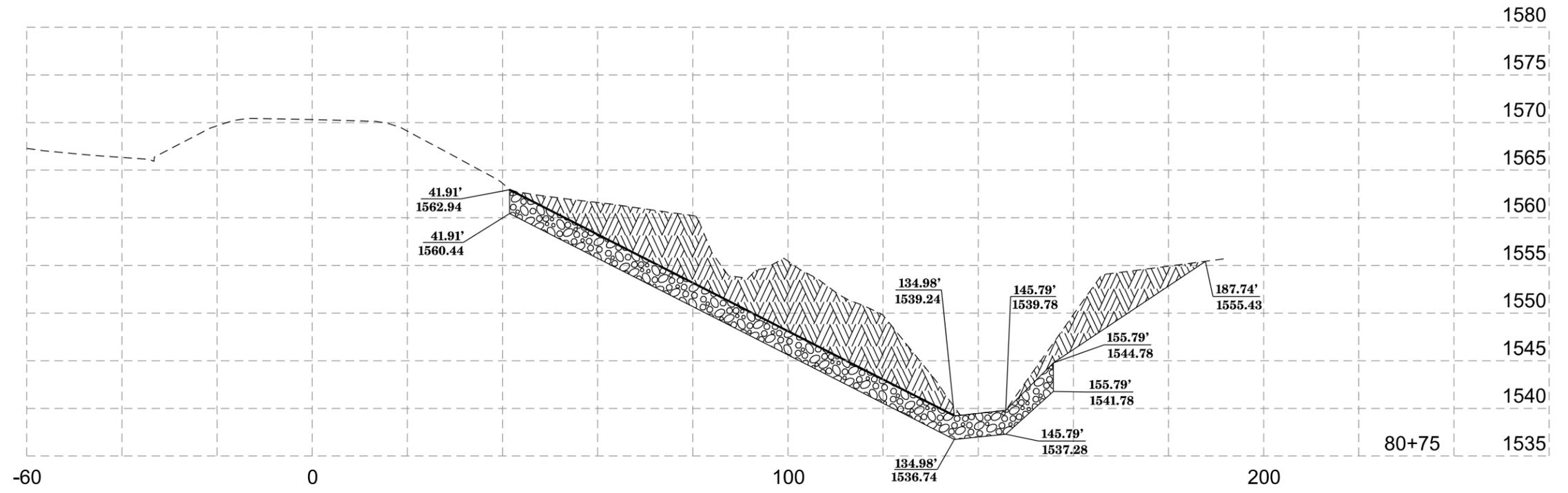
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

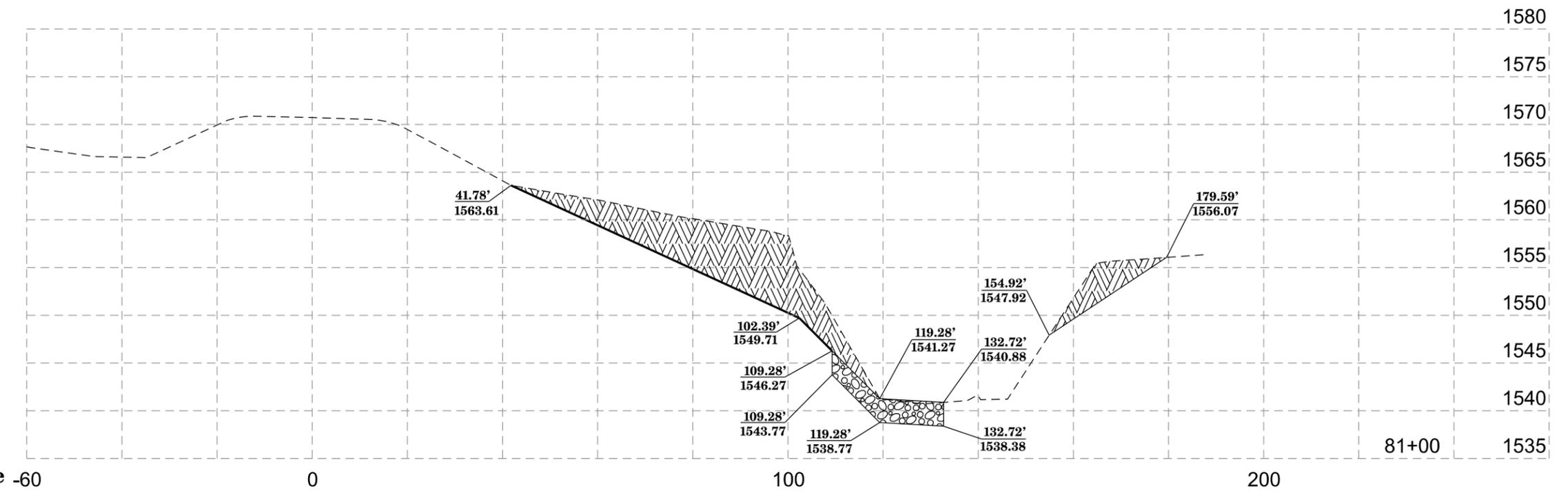
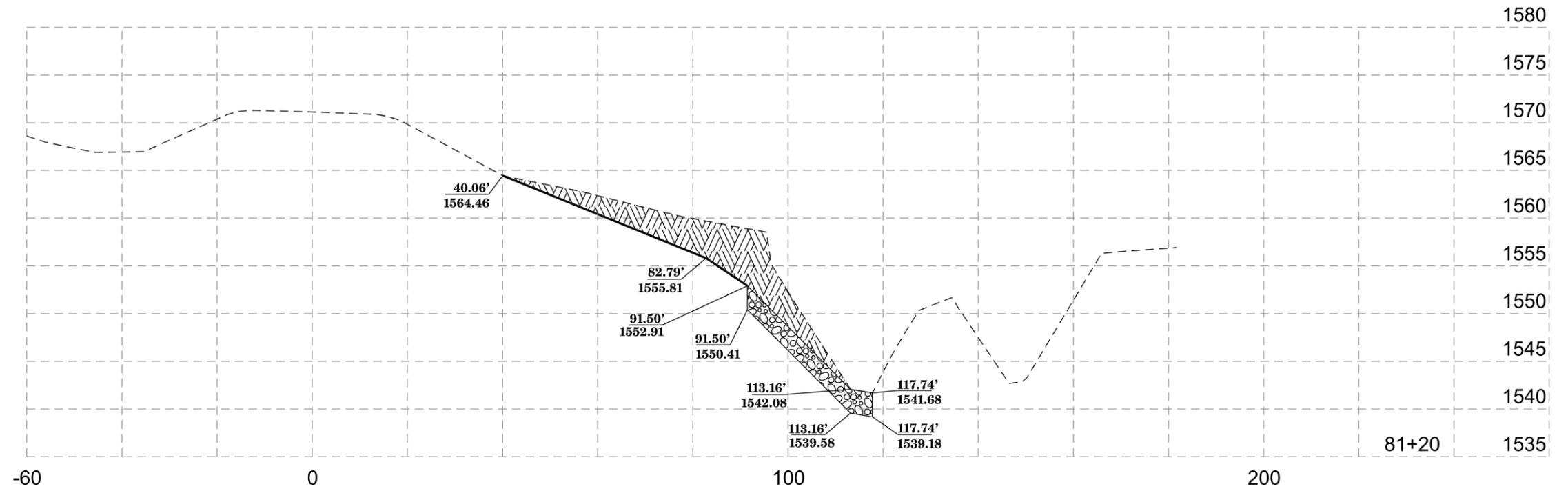
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

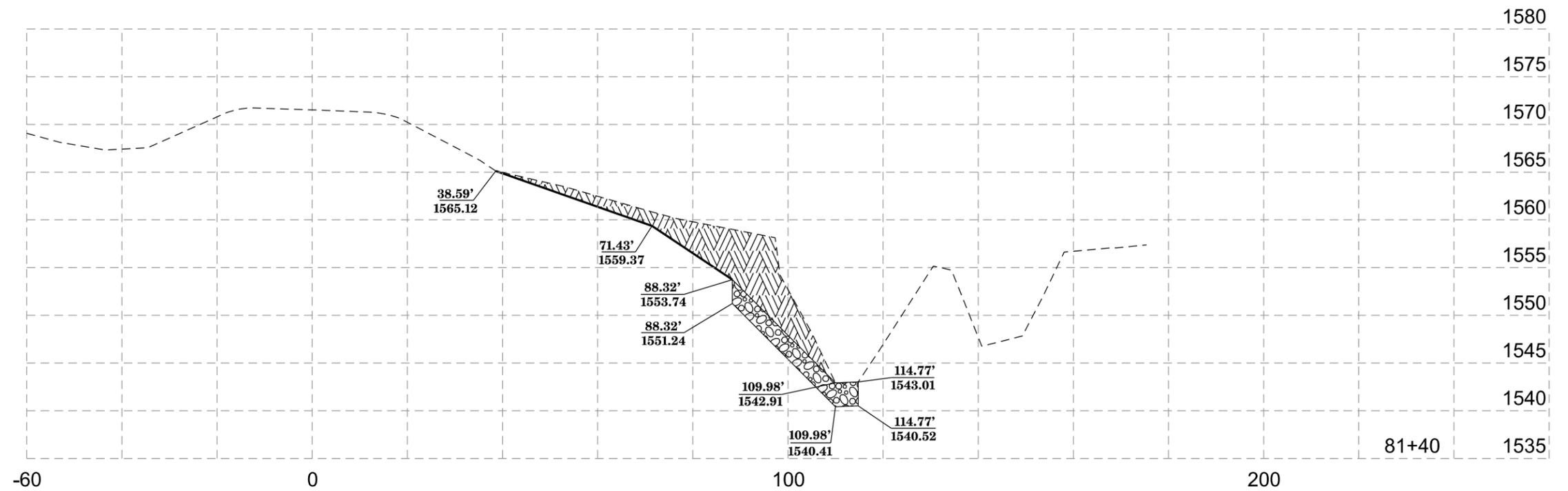
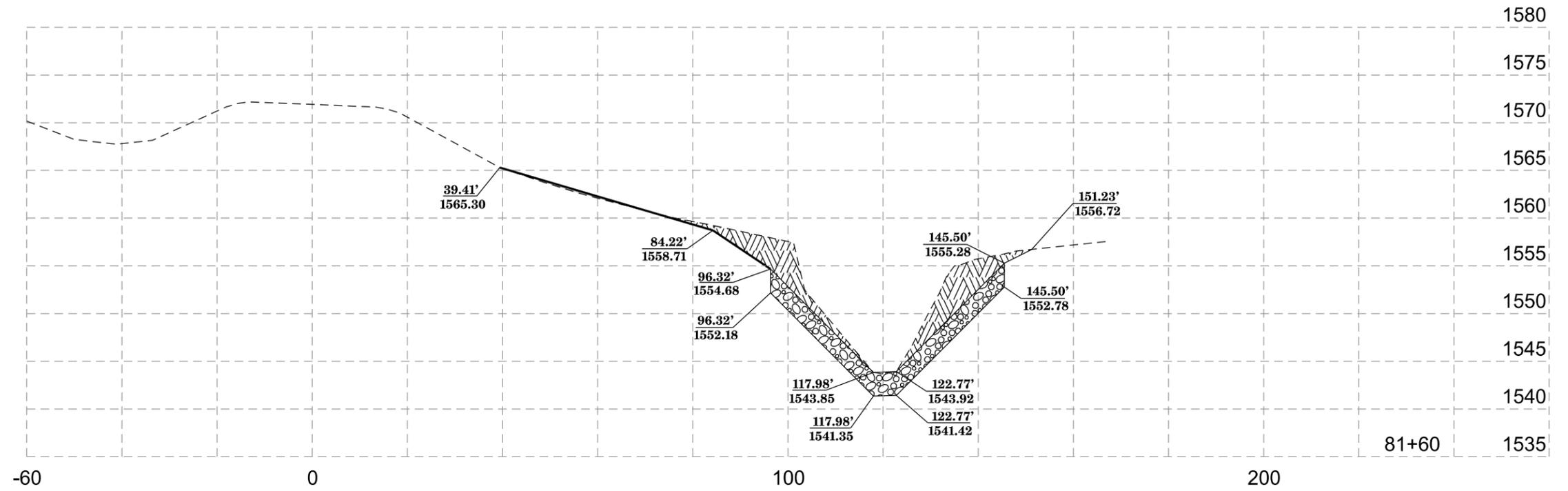
PIPE SECTIONS



LEGEND

-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line
-  Proposed Cut

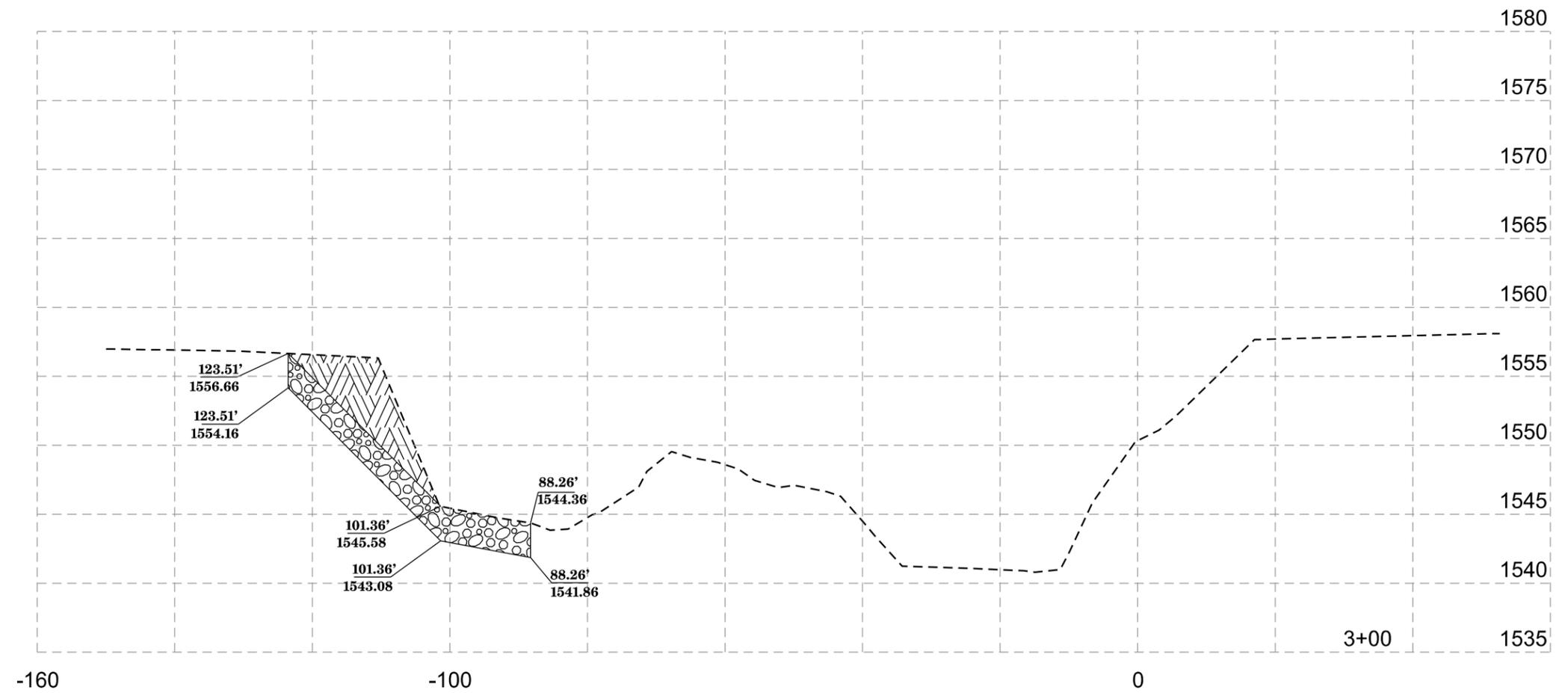
PIPE SECTIONS



LEGEND

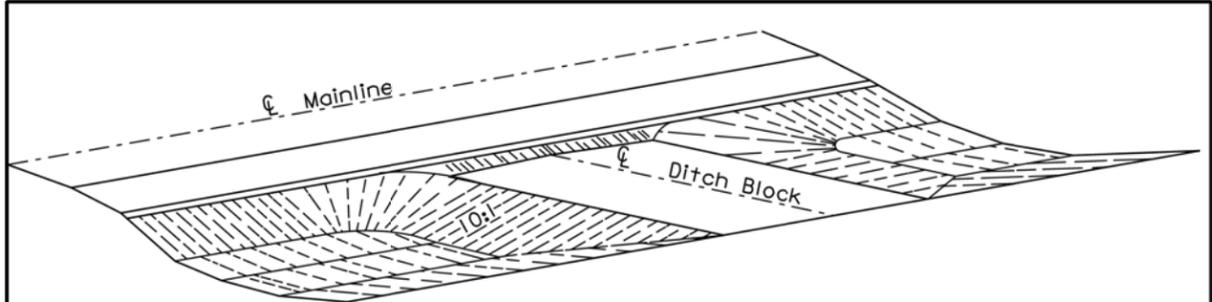
-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line

PIPE SECTIONS

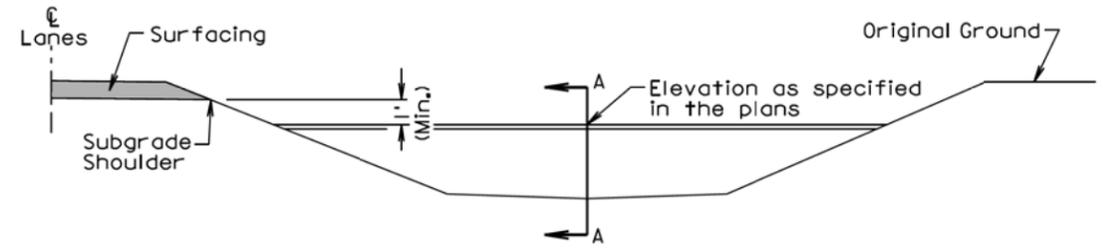


LEGEND

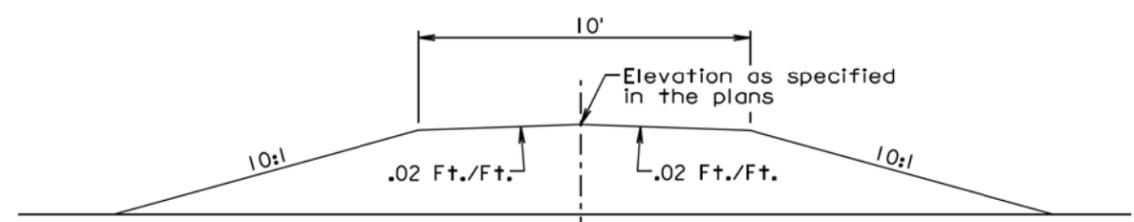
-  Class B RipRap
-  Excavation Material
-  Fill Material
-  Proposed New Ground Line
-  Existing Ground Line



PERSPECTIVE OF DITCH BLOCK



ELEVATION VIEW



SECTION A-A

GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.
 The inslopes of the ditch block shall be 10:1 or as specified in the plans.
 The transition area between the mainline inslope and the ditch block inslope shall be rounded to eliminate an abrupt transition.

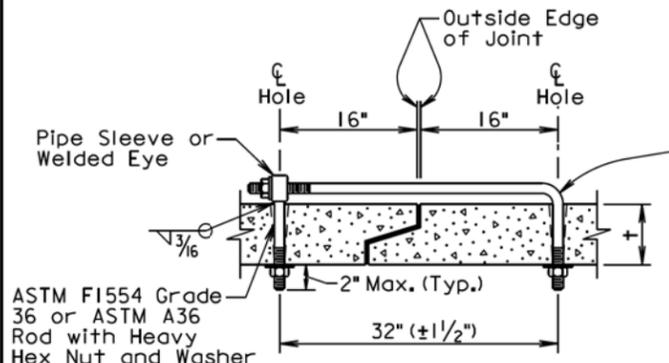
February 14, 2011

S D D O T	DITCH BLOCK	PLATE NUMBER 120.02
		Sheet 1 of 1
		Published Date: 4th Qtr. 2014

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

GENERAL NOTES:

Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.
 Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.
 Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.

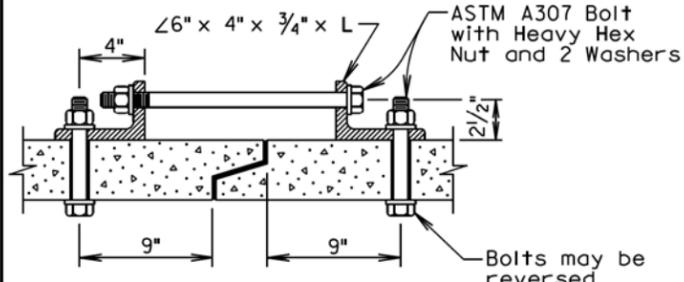


ADJUSTABLE EYE BOLT TIE

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

GENERAL NOTES:

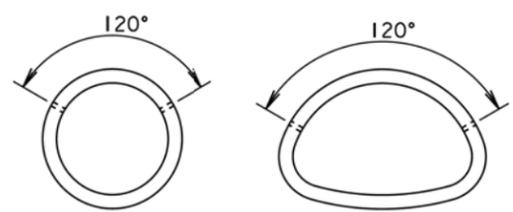
Angles shall conform to ASTM A36.
 Bolts shall conform to ASTM A307. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.
 Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



ANGLE AND BOLT TIE

GENERAL NOTES:

In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.
 All pipe sections of R.C.P. and R.C.P. Arch shall be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manhole, and junction boxes shall be tied with tie bolts.
 There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



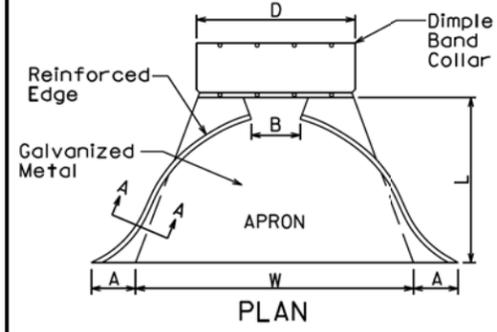
END VIEW "CIRCULAR"

END VIEW "ARCH"

February 28, 2013

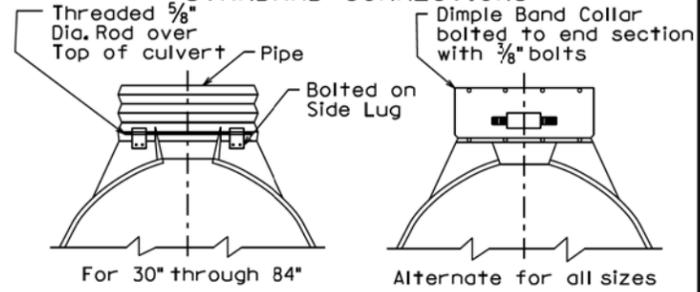
S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
		Sheet 1 of 1
		Published Date: 4th Qtr. 2014

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

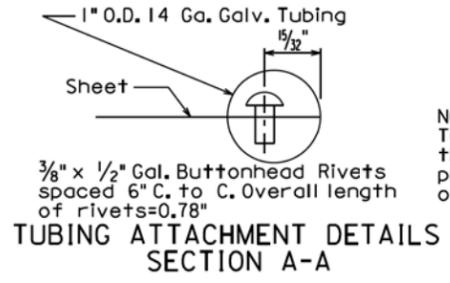


Dia. D (in.)	Ga.	DIMENSIONS (in.)						Approx. Slope	Body
		A	B	H	L	W			
12	16	6	6	6	21	24	2 1/2:1	1 Pc.	
15	16	7	8	6	26	30	2 1/2:1	1 Pc.	
18	16	8	10	6	31	36	2 1/2:1	1 Pc.	
21	16	9	12	6	36	42	2 1/2:1	1 Pc.	
24	16	10	13	6	41	48	2 1/2:1	1 Pc.	
30	14	12	16	8	46	60	2 1/2:1	1 Pc.	
36	14	14	19	9	51	72	2 1/2:1	2 Pc.	
42	12	16	22	11	60	84	2 1/2:1	2 Pc.	
48	12	18	27	12	69	90	2 1/4:1	2 Pc.	
54	12	18	30	12	78	102	2:1	3 Pc.	
60	12	18	33	12	84	114	1 3/4:1	3 Pc.	
66	12	18	36	12	87	120	1 1/2:1	3 Pc.	
72	12	18	39	12	87	126	1 1/3:1	3 Pc.	
78	12	18	42	12	87	132	1 1/4:1	3 Pc.	
84	12	18	45	12	87	138	1 1/6:1	3 Pc.	

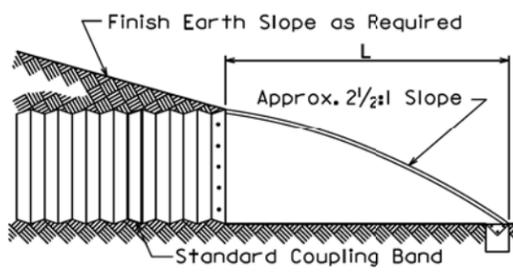
STANDARD CONNECTIONS



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



TUBING ATTACHMENT DETAILS SECTION A-A



TYPICAL CROSS-SECTION

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

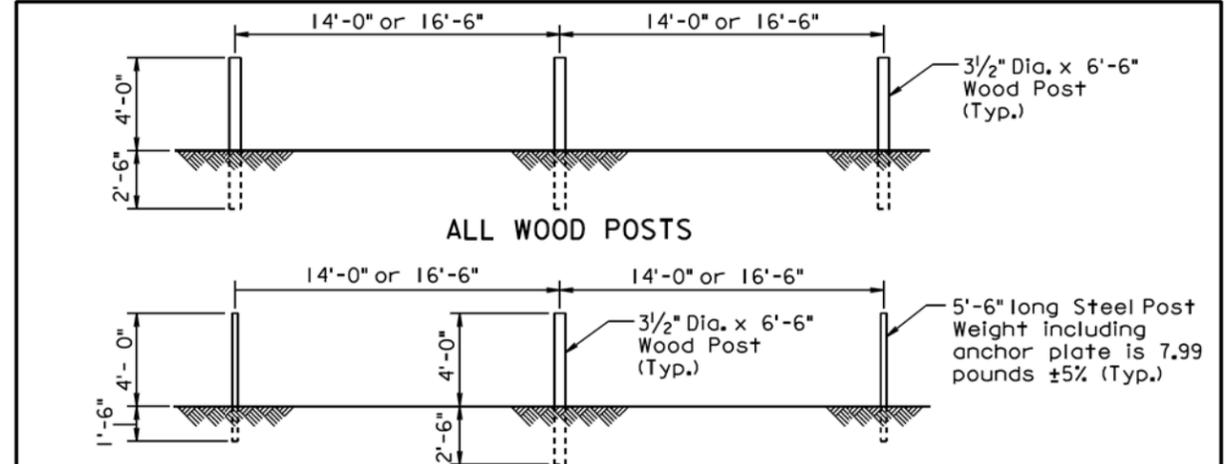
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

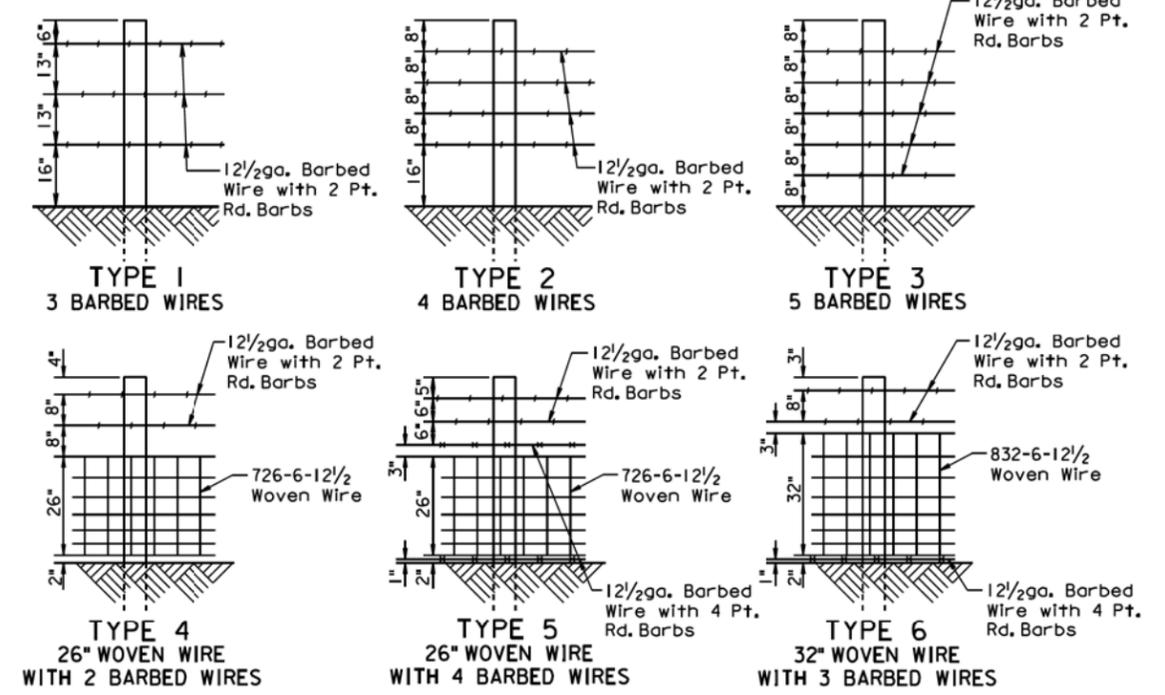
March 31, 2000

SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
		Sheet 1 of 1

Published Date: 4th Qtr. 2014



ALTERNATE WOOD AND STEEL POSTS



TYPE	DESCRIPTION	LINE POST SPACING	WIRE GAGE	BARBED WIRE		WOVEN WIRE
				NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.	
1	3 Barbed Wires	16'-6"	12/2	2 Point Round		
2	4 Barbed Wires	16'-6"	12/2	2 Point Round		
3	5 Barbed Wires	16'-6"	12/2	2 Point Round		
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12/2	2 Point Round		726-6-12 1/2
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12/2	2 wires with 2 Pt. Rd., 2 wires with 4 Pt. Rd.		726-6-12 1/2
6	32" Woven Wire with 3 Barbed Wires	14'-0"	12/2	2 wires with 2 Pt. Rd., 1 wire with 4 Pt. Rd.		832-6-12 1/2

GENERAL NOTES:

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

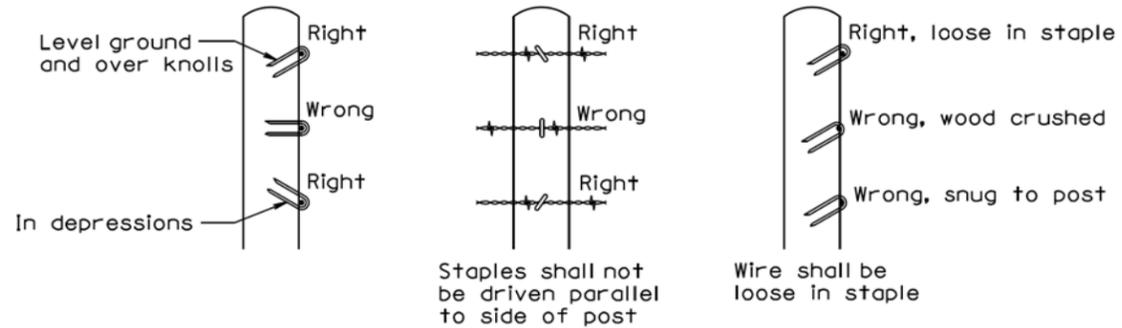
When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

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

September 14, 2009

SDDOT	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
		Sheet 1 of 1

Published Date: 4th Qtr. 2014



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.

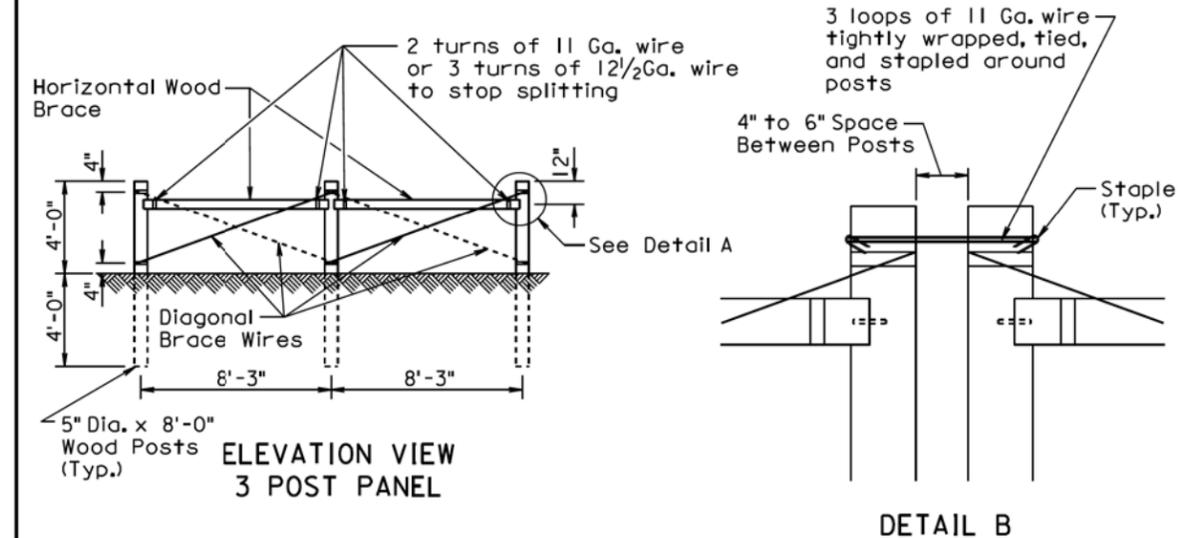
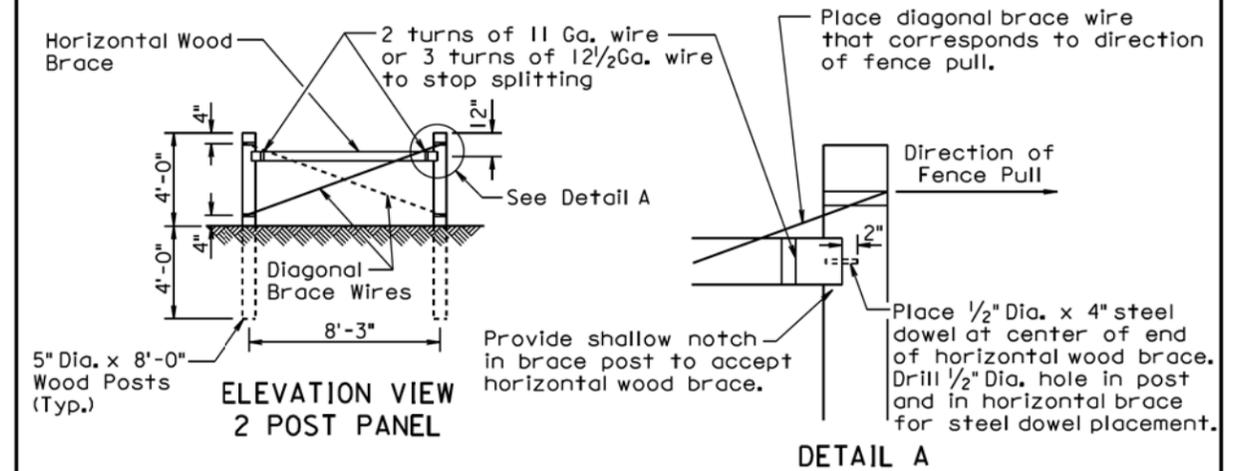
Right-of-Way fence other than on Interstate Projects shall be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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

S D D O T	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02
		Sheet 1 of 1
		Published Date: 4th Qtr. 2014



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.

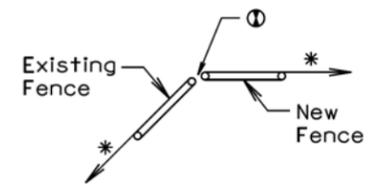
December 23, 2004

S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
		Sheet 1 of 3
		Published Date: 4th Qtr. 2014

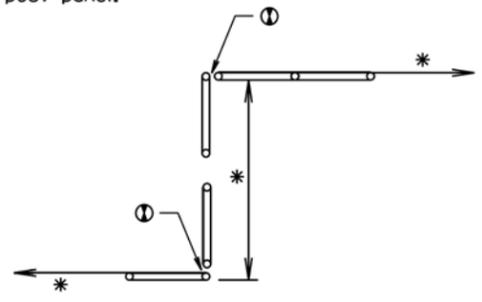
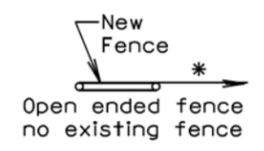
SPACING OF 2 POST PANELS WITHIN CURVES	
DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	**At P.C., P.T., and at every 1320' between P.C. and P.T.

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

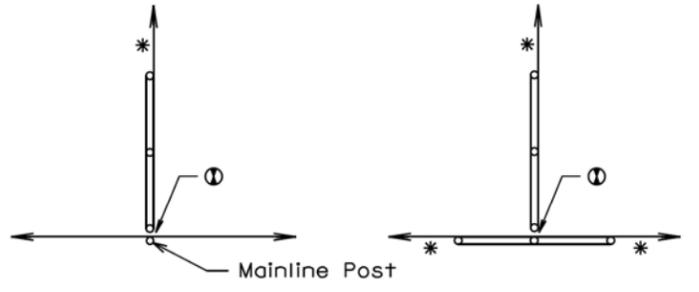
- * If fence length is less than 600' to next corner use a 2 post panel.
- If fence length is greater than 600' to next corner use a 3 post panel.
- ** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.
- ① See Detail B on Sheet 1 of 3.



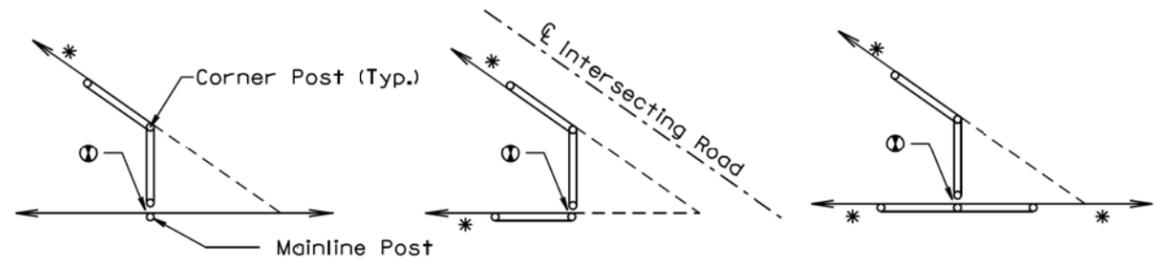
BEGIN OR END FENCE
(where new fence ties into existing fence)



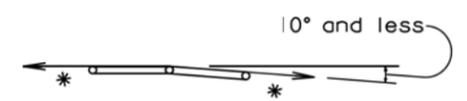
SHORT JOGS IN FENCE



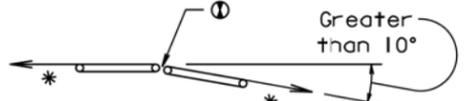
CROSS FENCE



SHARP ANGLES IN CROSS FENCE



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



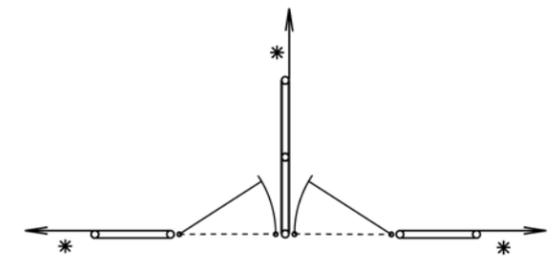
Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

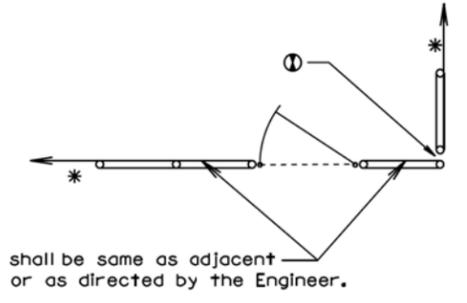
December 23, 2004



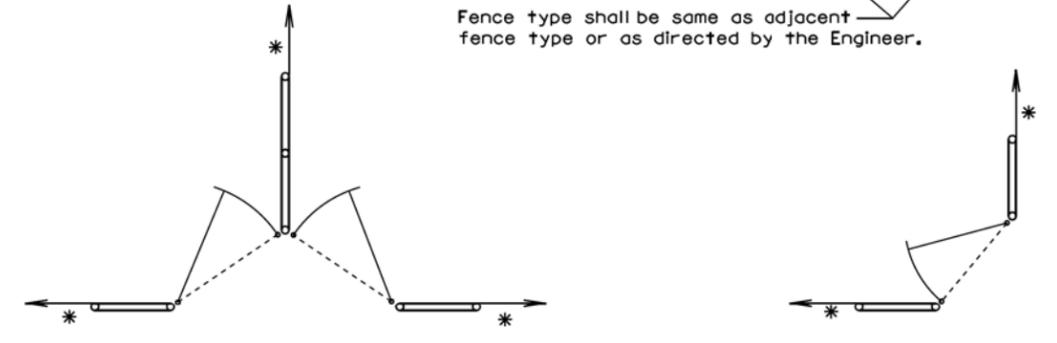
ENTRANCE (NOT ON CORNER)



DOUBLE ENTRANCES



ENTRANCES AT CORNERS



GATES

- * If fence length is less than 600' to next corner use a 2 post panel.
- If fence length is greater than 600' to next corner use a 3 post panel.
- ① See Detail B on Sheet 1 of 3.

December 23, 2004

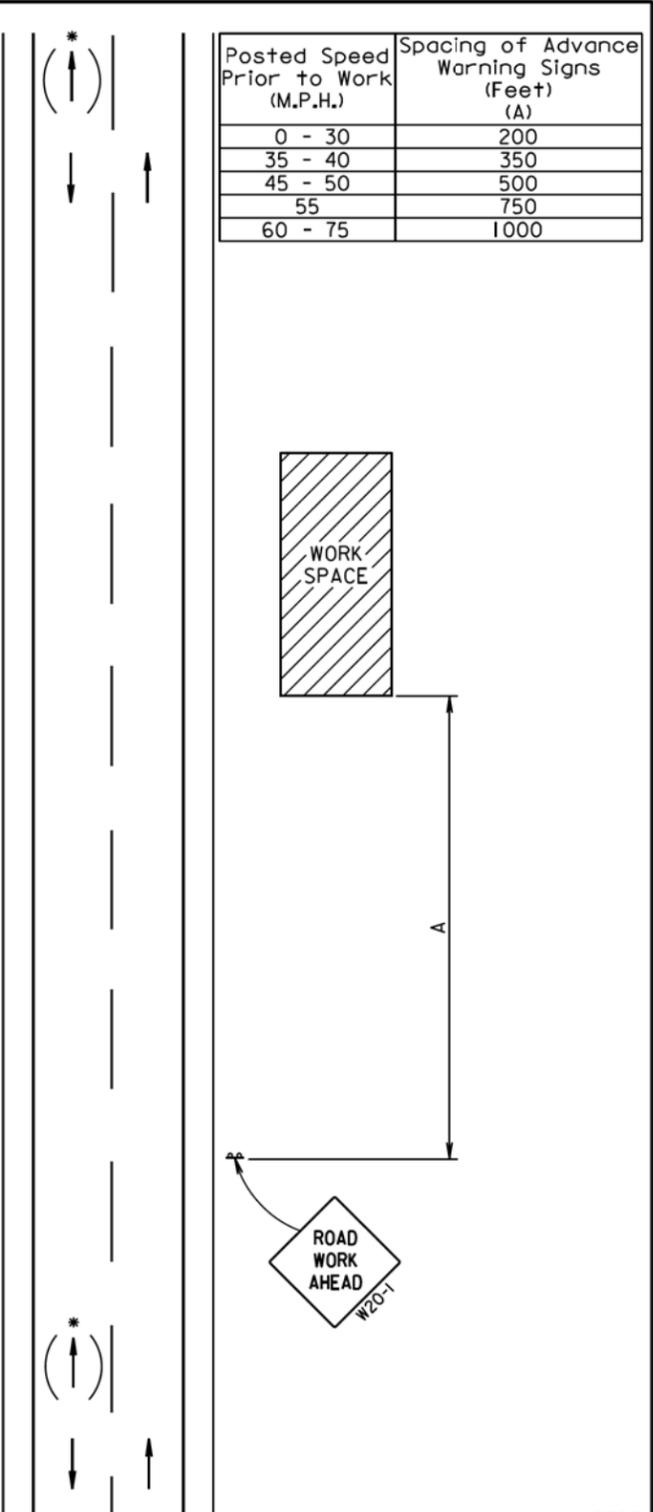
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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.

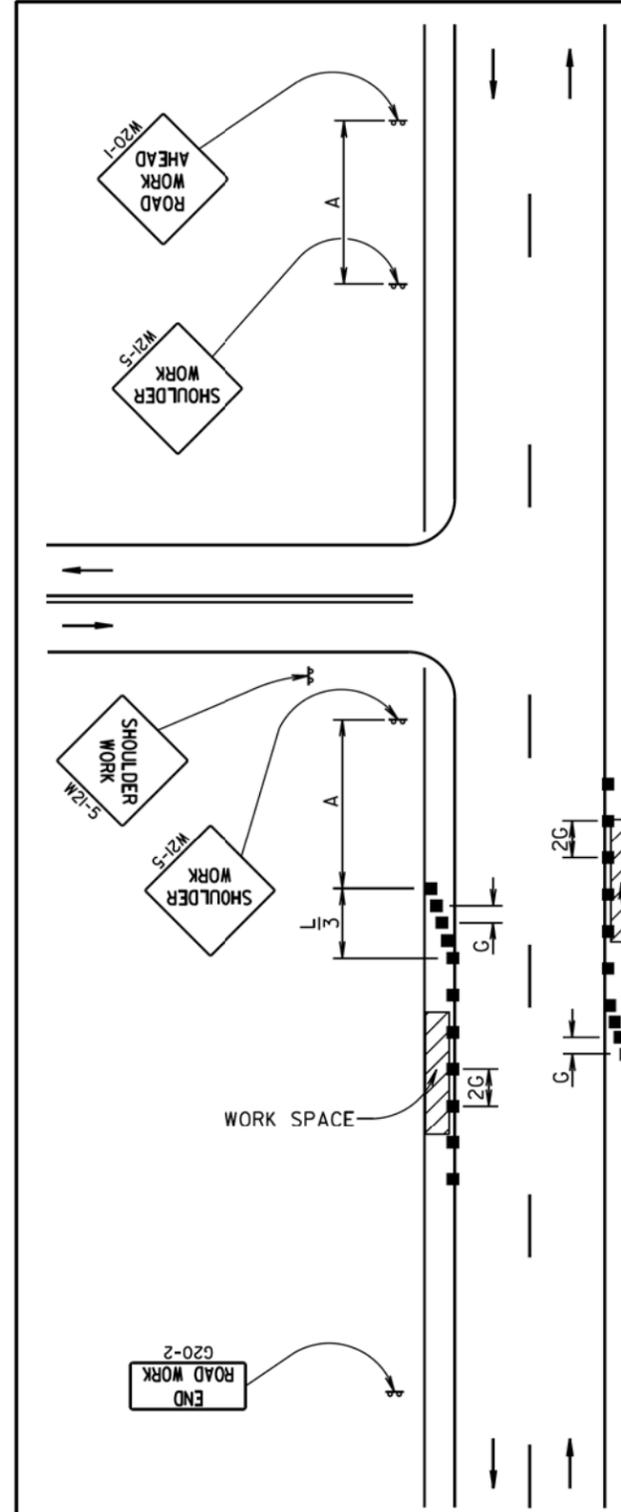
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* 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.



July 1, 2005



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

END ROAD WORK G20-2

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.

September 22, 2014

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.

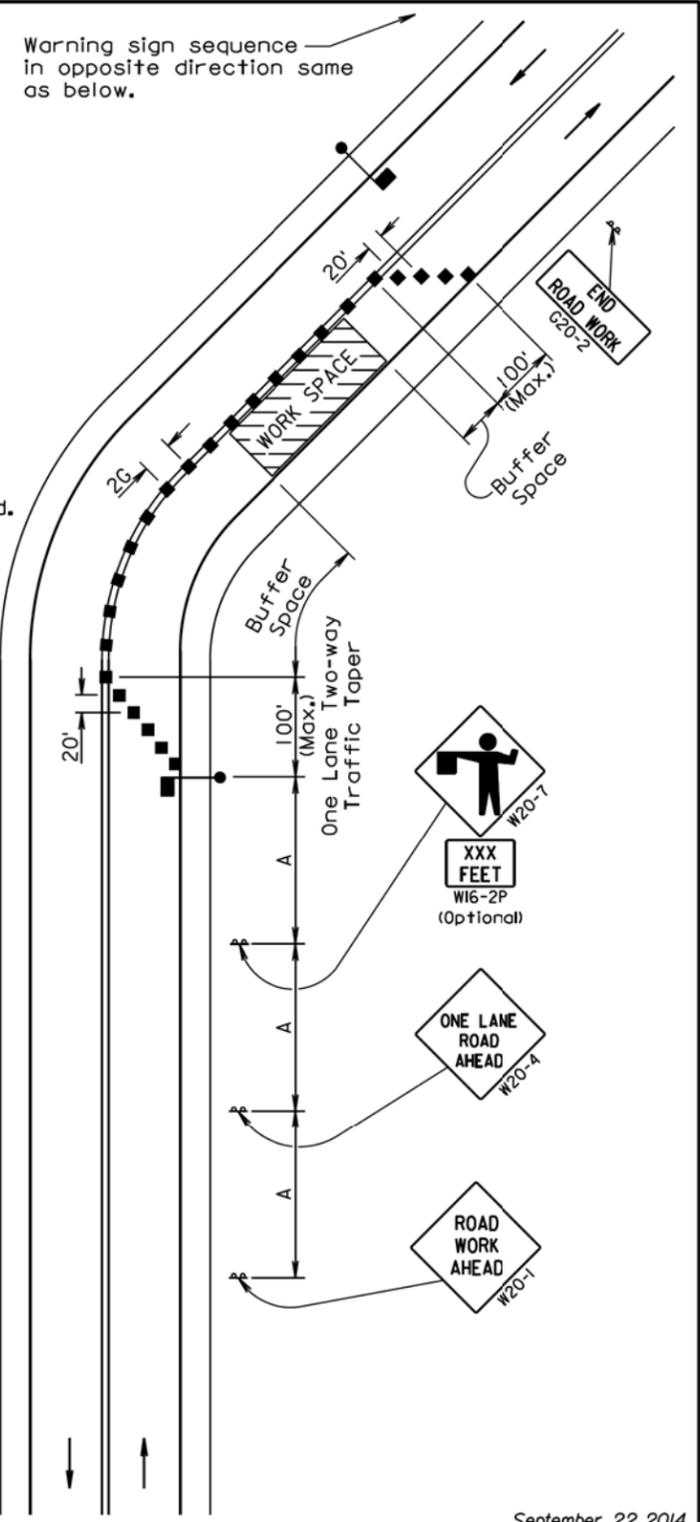
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

2-020
ROAD WORK
END

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

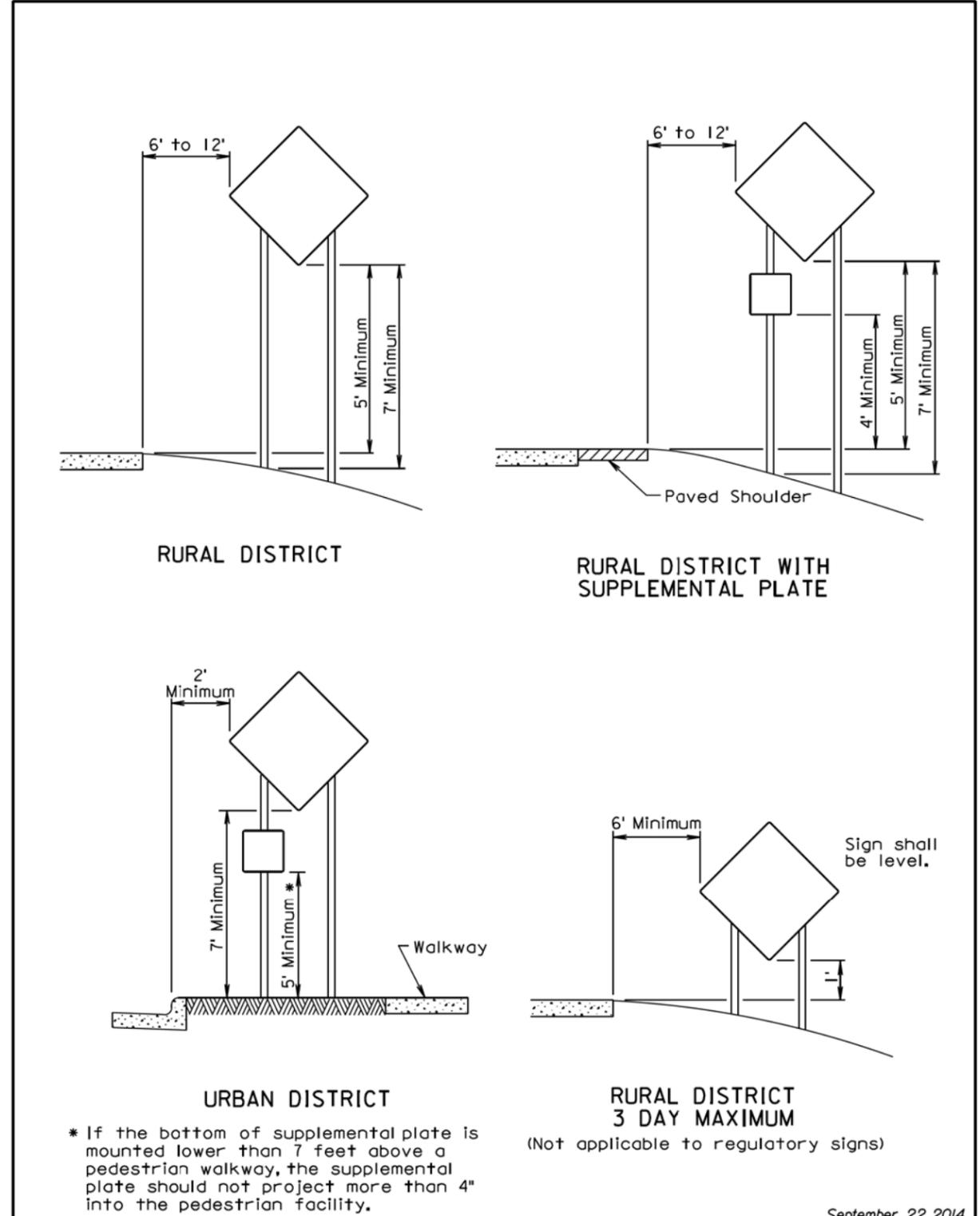
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

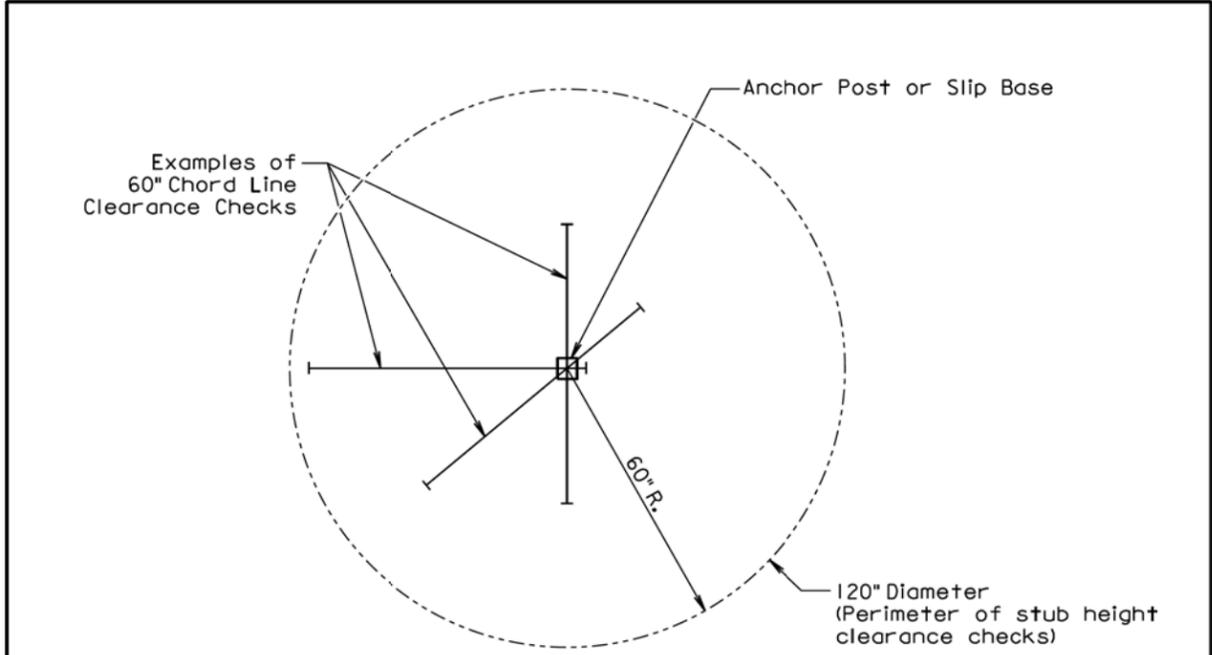


September 22, 2014

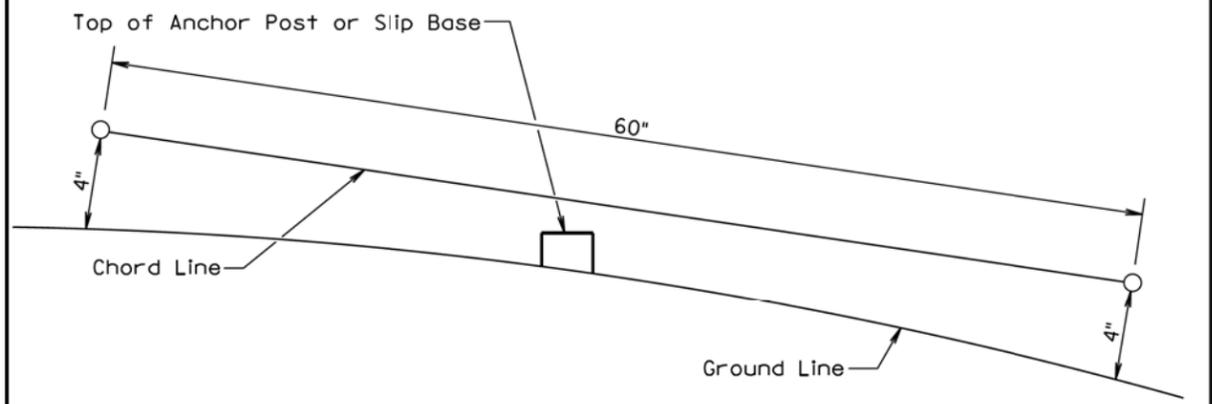
Published Date: 4th Qtr. 2014	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



Published Date: 4th Qtr. 2014	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

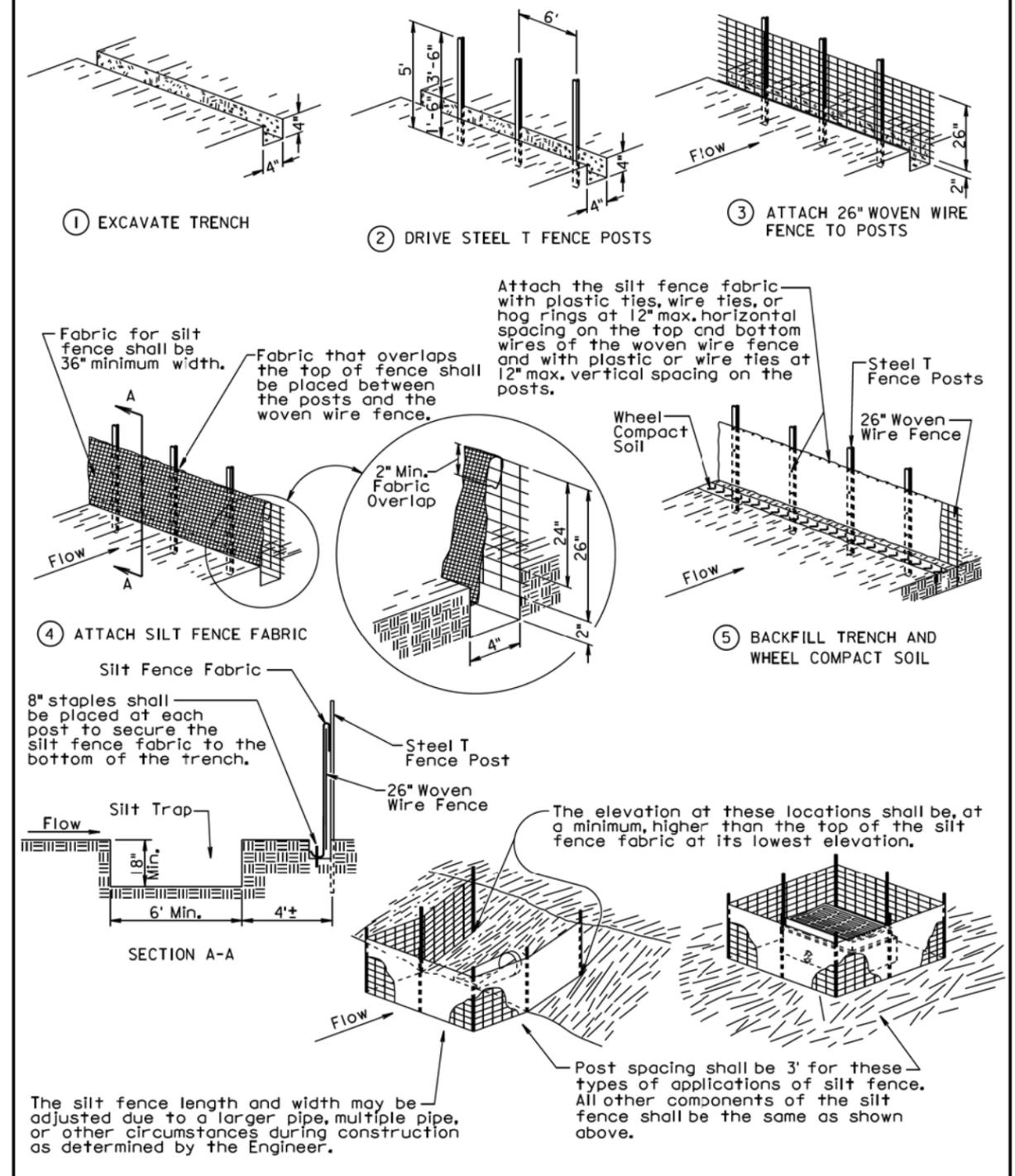
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
		Sheet 1 of 1
		Published Date: 4th Qtr. 2014

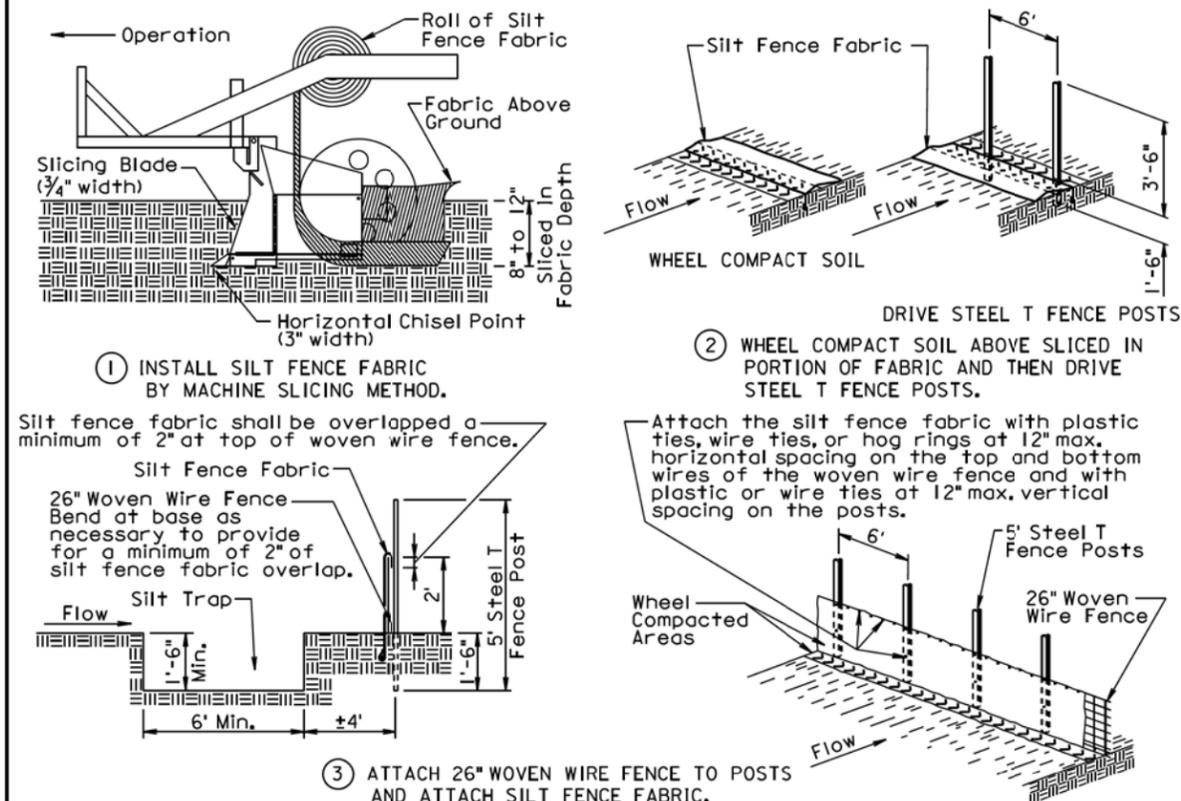
MANUAL LOW FLOW SILT FENCE INSTALLATION



December 23, 2003

S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
		Sheet 1 of 2
		Published Date: 4th Qtr. 2014

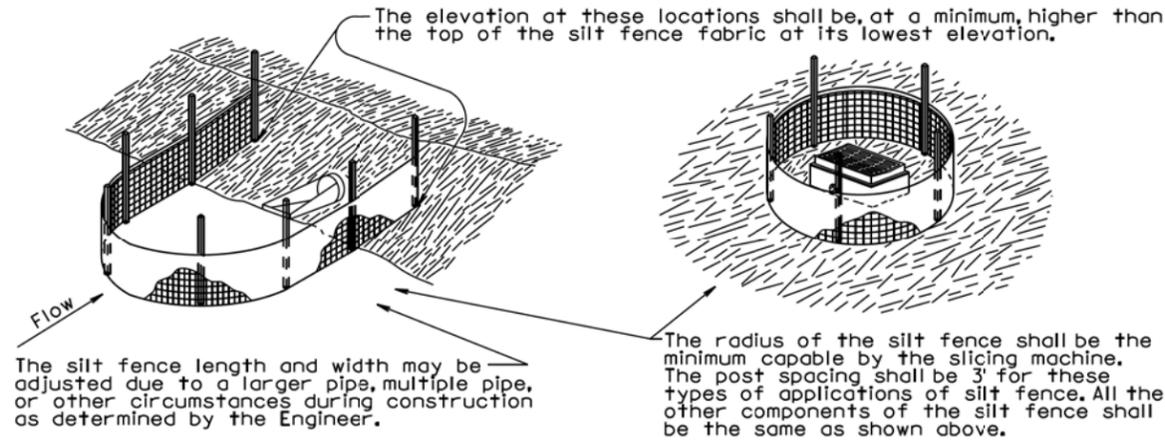
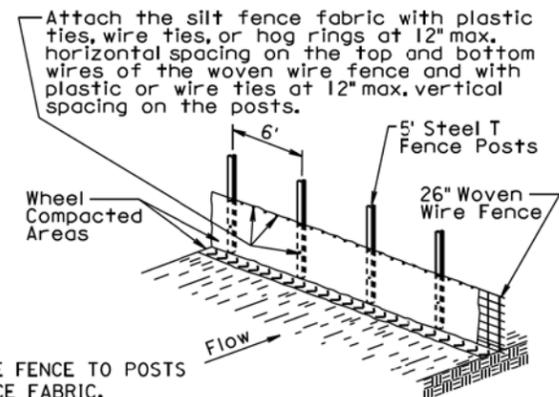
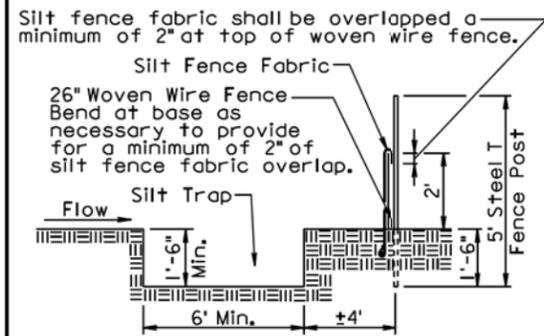
MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

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

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

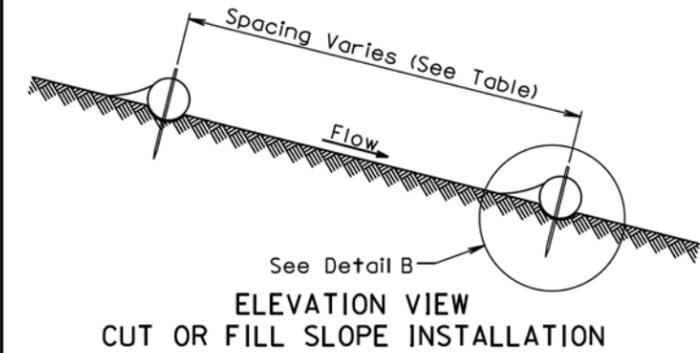


GENERAL NOTES:

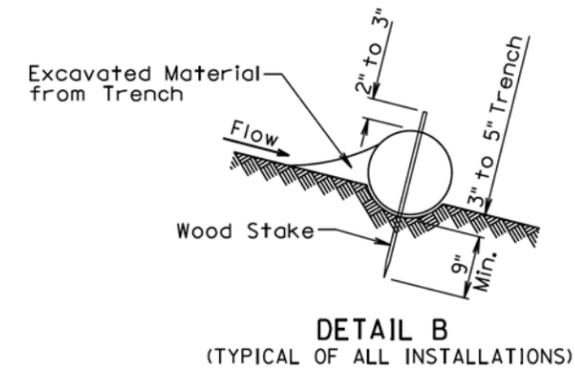
A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

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

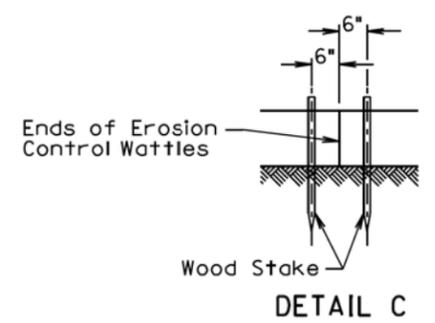
December 23, 2003



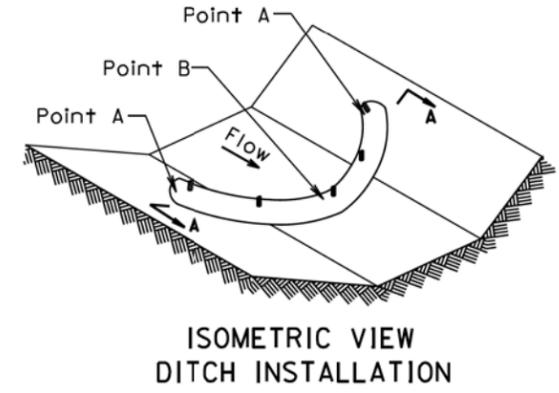
ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION



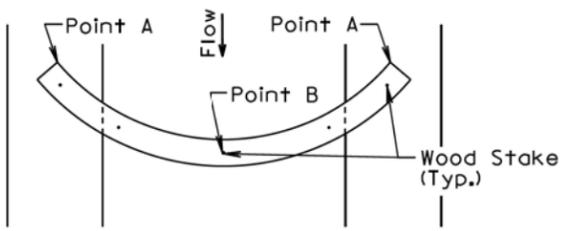
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

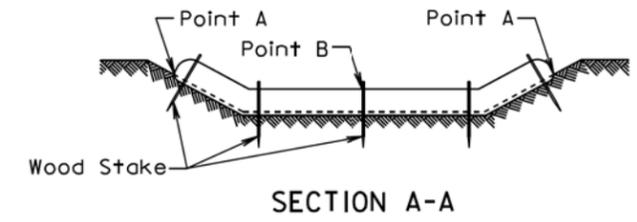


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

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

<i>Published Date: 4th Qtr. 2014</i>	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER
			734.06
			Sheet 2 of 2