

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

Rev. 2/13/25 pm

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0011(158)12 & PT 0048(15)382		

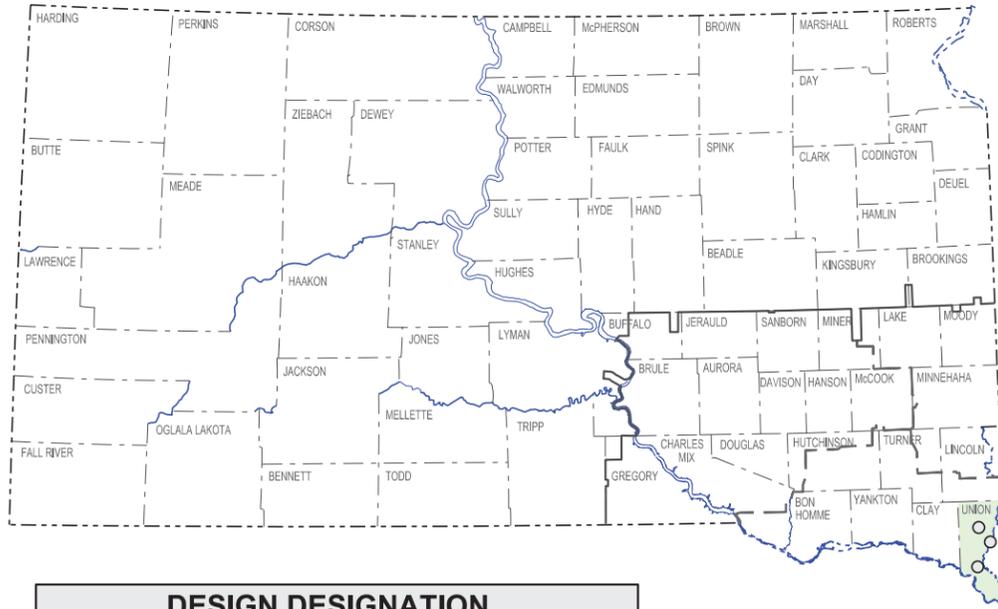
Plotting Date: 02/13/2025

PLANS FOR PROPOSED
PROJECTS PT 0011(158)12 & PT 0048(15)382
SD HIGHWAYS 11 & 48
UNION COUNTY

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SCOUR PROTECTION -
BERM REPAIR & RIPRAP
PCN 082C & 082D

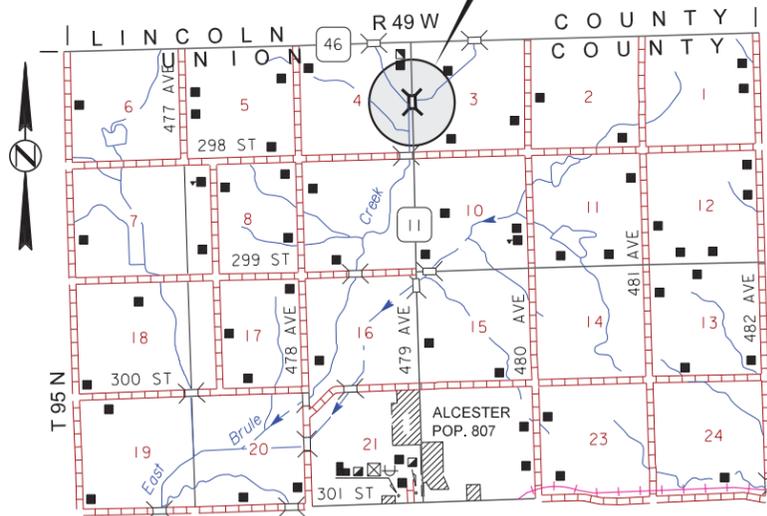


PROJECTS

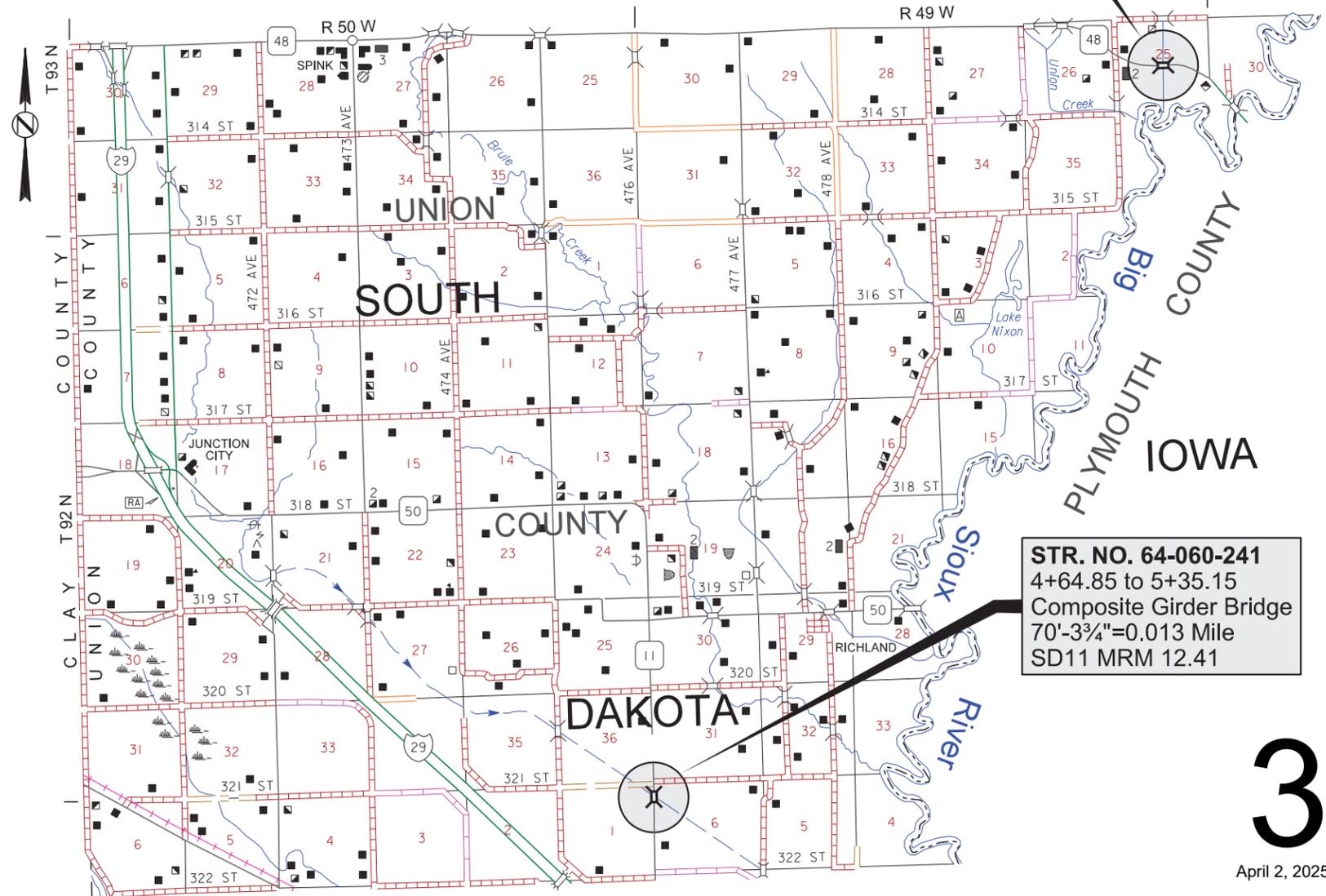
ROUTE	DESIGN DESIGNATION		SD48
	SD11 (N)	SD11 (S)	
ADT(2022)	1,108	717	1.097
ADT(2042)	1,676	1,104	1,689
DHV	193	127	195
D	51%	51%	51%
T DHV	4.3%	3.9%	11.0%
T ADT	9.5%	8.6%	24.1%
V	65 MPH	65 MPH	65 MPH

STR. NO. 64-090-005
26+13.35 to 27+06.65
Continuous Concrete Bridge
93'-3¾"=0.018 Mile
SD11 MRM 38.97

STR. NO. 64-115-166
244+73 to 245+33.5
Continuous Concrete Bridge
60'-6"=0.012 Mile
MRM 383.27



STORM WATER PERMIT
(None required)



STR. NO. 64-060-241
4+64.85 to 5+35.15
Composite Girder Bridge
70'-3¾"=0.013 Mile
SD11 MRM 12.41

3

April 2, 2025

PLOT SCALE = 1:8400

PLOTTED FROM - TRMLINT16

FILE - ... \APR2025\UNIN082C\TTL082C.DGN

PLOT NAME -

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0011(158)12 & PT 0048(15)382	2	24

PCN 082C

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	160.0	Hour
634E0110	Traffic Control Signs	422.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0103	Type 3 Erosion Control Blanket	1,736	SqYd

PCN 082D

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	80.0	Hour
634E0110	Traffic Control Signs	211.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0103	Type 3 Erosion Control Blanket	416	SqYd

UTILITIES

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

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 will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

STRUCTURE NO. 64-060-241

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	11.2	Ton
464E0100	Controlled Density Fill	12.8	CuYd
680E0224	4" PVC Outlet Pipe	40	Ft
700E0210	Class B Riprap	205.7	Ton
831E0110	Type B Drainage Fabric	221	SqYd
831E1030	Perforated Geocell	320	SqFt

STRUCTURE NO. 64-115-166

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	23.4	Ton
464E0100	Controlled Density Fill	3.7	CuYd
700E0210	Class B Riprap	158.0	Ton
831E0110	Type B Drainage Fabric	242	SqYd
831E1030	Perforated Geocell	670	SqFt

STRUCTURE NO. 64-090-005

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	24.1	Ton
464E0100	Controlled Density Fill	2.0	CuYd
700E0210	Class B Riprap	274.7	Ton
831E0110	Type B Drainage Fabric	315	SqYd
831E1030	Perforated Geocell	719	SqFt

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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ENVIRONMENTAL COMMITMENTS

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

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

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

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

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A2: STREAMS

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 0.03 acre(s) of stream (includes temporary and permanent) becoming impacted.

Table of Impacted Streams

Stream Name	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
Big Ditch	N/A	0.004	0.004	N/A	N/A	0.008
East Brule Creek	N/A	0.007	0.007	N/A	N/A	0.014
Unnamed Ditch	N/A	0.004	0.004	N/A	N/A	0.008

Action Taken/Required:

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

The contractor will complete excavation after temporary diversion is in place, if required, with minimal standing water to create the profile of slope protection specified in plans. Once the instream work is completed, the removed material will be placed on top of the riprap to match the natural ground, proposed groundline, or specified shape and elevations shown in plans. When overburden extends into the streambed it will form the channel bottom and profile as specified in plans. The finished ground under the bridge will be shaped to match the upstream and downstream channel and flood plain.

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

COMMITMENT C: WATER SOURCE

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

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

Action Taken/Required:

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

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

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

Big Ditch Creek (Structure No. 64-060-241) is classified as a warm water semi-permanent fishery with a total suspended solids standard of less than 90 mg/L 30-day average, less than 158 mg/L daily maximum.

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

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

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

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

Action Taken/Required:

If construction dewatering is required and this project is not required to be covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the Contractor will obtain the General Permit for Temporary Discharge Activities from the DANR Surface Water Program, 605-773-3351.

https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_TemporaryDischargeNOI2018Fillable.pdf >

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the SDDANR using the following form:

https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_AddTempInfoFillable.pdf >

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

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:

<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx> >

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COMMITMENT E: STORM WATER

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

Action Taken/Required:

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

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

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

The form can be found at:

<

https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppendixCCA2018Fillable.pdf >

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

Storm Water Pollution Prevention Plan

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

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

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

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

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

DANR:<

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

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

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

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

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COMMITMENT J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S.

The Contractor is advised that special construction measures must be taken to ensure that the waterways of the U.S. are not impacted.

Action Taken/Required:

Excavation will not occur below the ordinary high-water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting. The natural streambed will not be disturbed unless specified by the plans and under the observation of the Project Engineer. Refer to the Table of U.S. Waterways to Protect for ordinary high-water elevations. Any structure work over or within the waterway will be constructed according to Section 7.21 C of the Specifications.

All dredged or excavated materials will be placed at a site above the ordinary high-water elevation in a confined area (not classified as a wetland) that is a minimum of 50 feet away from concentrated flows of storm water, drainage courses, and inlets to prevent return of such material to the waterway.

The construction of temporary work platforms, crossings, or berms below the ordinary high-water elevation will be allowed if all material placed below the ordinary high-water elevation consists of Class B or larger riprap.

All temporary caissons, cribs, cofferdams, steel piling, sheeting, work platforms, crossings, and berms will be removed with minimal disturbance to the streambed. Proper construction practices will be used to minimize increases in suspended solids and turbidity in the waterway.

Bridge berms, wing dams, traffic diversions, channel reconstruction, stream diversions, grading, etc. will be constructed in close conformity with the plans to ensure that the hydraulic capacity of the waterway is not changed.

Temporary waterway crossings required for the Contractor's construction operations will be constructed with an adequate drainage structure size and minimum fill height to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

All temporary works in waterways of the US are required to be covered in the Corp of Engineers 404 Permit. At the time of the preconstruction meeting, the Contractor will submit documentation for all temporary works for the purpose of complying with the 404 Permit requirements in accordance with Section 423.3 A of the Specifications.

If an on-site construction crossing is used, the temporary crossing will need to be designed so it will not increase the Q_{100} water surface elevation. The Contractor will submit the proposed temporary crossing geometric layout and structure size to the Project Engineer during the preconstruction meeting. This information will be forwarded to the SDDOT Hydraulics Office and Environmental Office for review. Construction of the temporary crossing is not allowed until approval of the proposal is obtained from the SDDOT Hydraulics Office and Environmental Office.

Table of U.S. Waterways to Protect

Waterway	Ordinary High-Water Elevation
Big Ditch	1118.85
East Brule Creek	455.00
Unnamed Ditch	256.45

Stream channel excavation within "Waters of the US" is subject to USACE regulatory jurisdiction. Stream channel excavation cannot exceed the permitted quantities and/or surface area. The 404 Permit is included in the Special Provisions.

The Contractor will take all precautions necessary to prevent any incidental discharges associated with the excavation and hauling of material from the stream channel. This pertains to any excavation operations such as, foundation, pier, or abutment excavation, channel cleanout, excavation for riprap protection, and removal of any temporary fill associated with construction activities.

COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

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

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

EROSION CONTROL

The estimated area requiring erosion control is 0.6 acres for 082C and 0.3 acres for 082D. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding will be incidental to the contract lump sum price for "Erosion Control".

The limits of erosion control work will be determined by the Engineer during construction.

Mycorrhizal Inoculum

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

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

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

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

Permanent Seeding

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

Type G Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

EROSION CONTROL BLANKET

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

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

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

TABLE OF EROSION CONTROL BLANKET

082C Structure No.	Location	Type	Quantity (SqYd)
64-060-241	NW Corner/Spill Cone	3	200
	NE Corner/Spill Cone	3	200
	SW Corner/Spill Cone	3	200
	SE Corner/Spill Cone	3	200
	64-090-005	NW Corner/Spill Cone	3
	NE Corner/Spill Cone	3	168
	SW Corner/Spill Cone	3	168
	SE Corner/Spill Cone	3	200
	Additional Quantity	3	200
082C Total:			1736

082D Structure No.	Location	Type	Quantity (SqYd)
64-115-166	NW Corner/Spill Cone	3	79
	NE Corner/Spill Cone	3	79
	SW Corner/Spill Cone	3	79
	SE Corner/Spill Cone	3	79
	Additional Quantity	3	100
082C Total:			416

Revised, 01/22/2025(MY)

GENERAL TRAFFIC CONTROL

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

All construction operations will be conducted in the general direction of traffic movement.

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

Unless otherwise stated in these plans, no work will be allowed during hours of darkness.

Lane closures will exist only when required for manned workspace or haul of material into the work area. The lanes will be opened to traffic when manned workspace or haul of material is not in progress.

Traffic control signs have been included in a table for each site. Payment will only be for those signs used on each site.

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

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for "Traffic Control Signs".

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours.

If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS(STRUCTURE # 64-060-241)

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					211.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS(STRUCTURE # 64-115-166)

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					211.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS(STRUCTURE # 64-090-005)

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					211.0

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	500	25
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) will 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 will be drums or 42" cones.

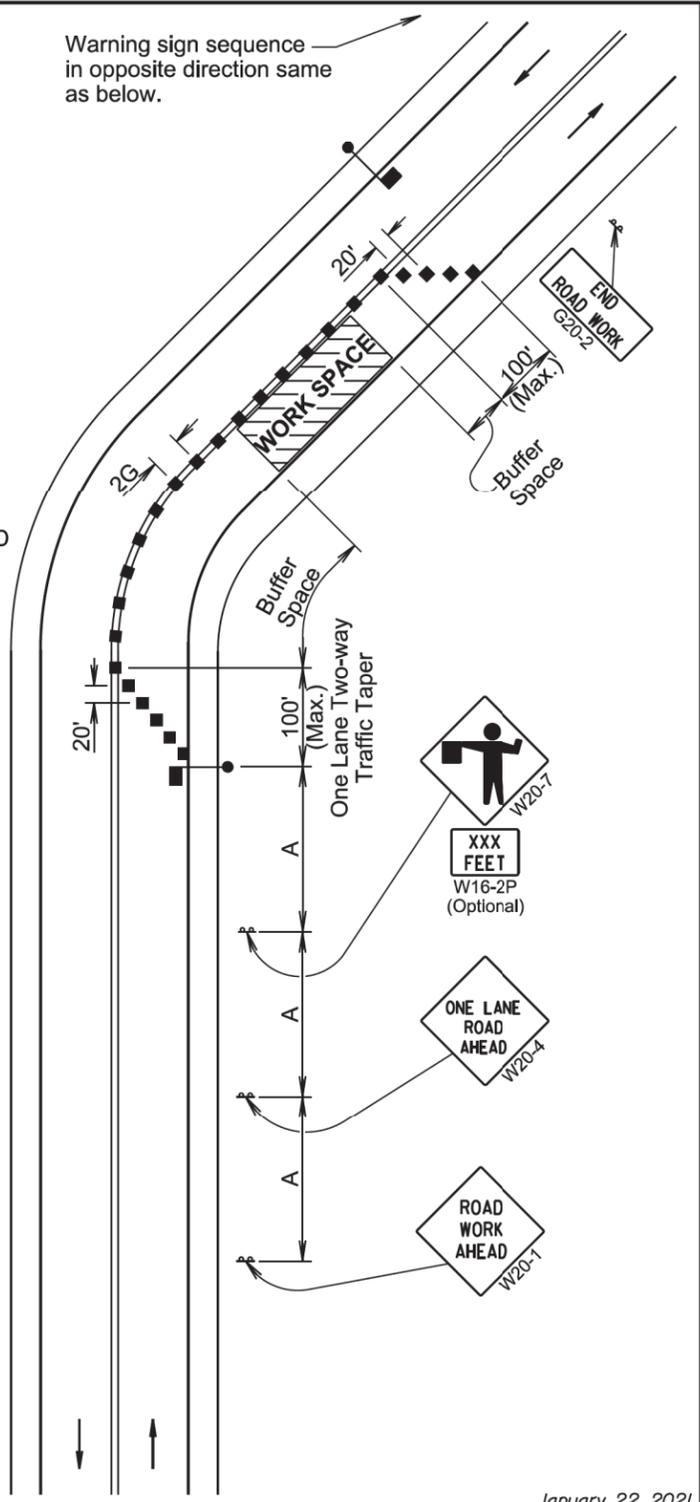
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

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

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

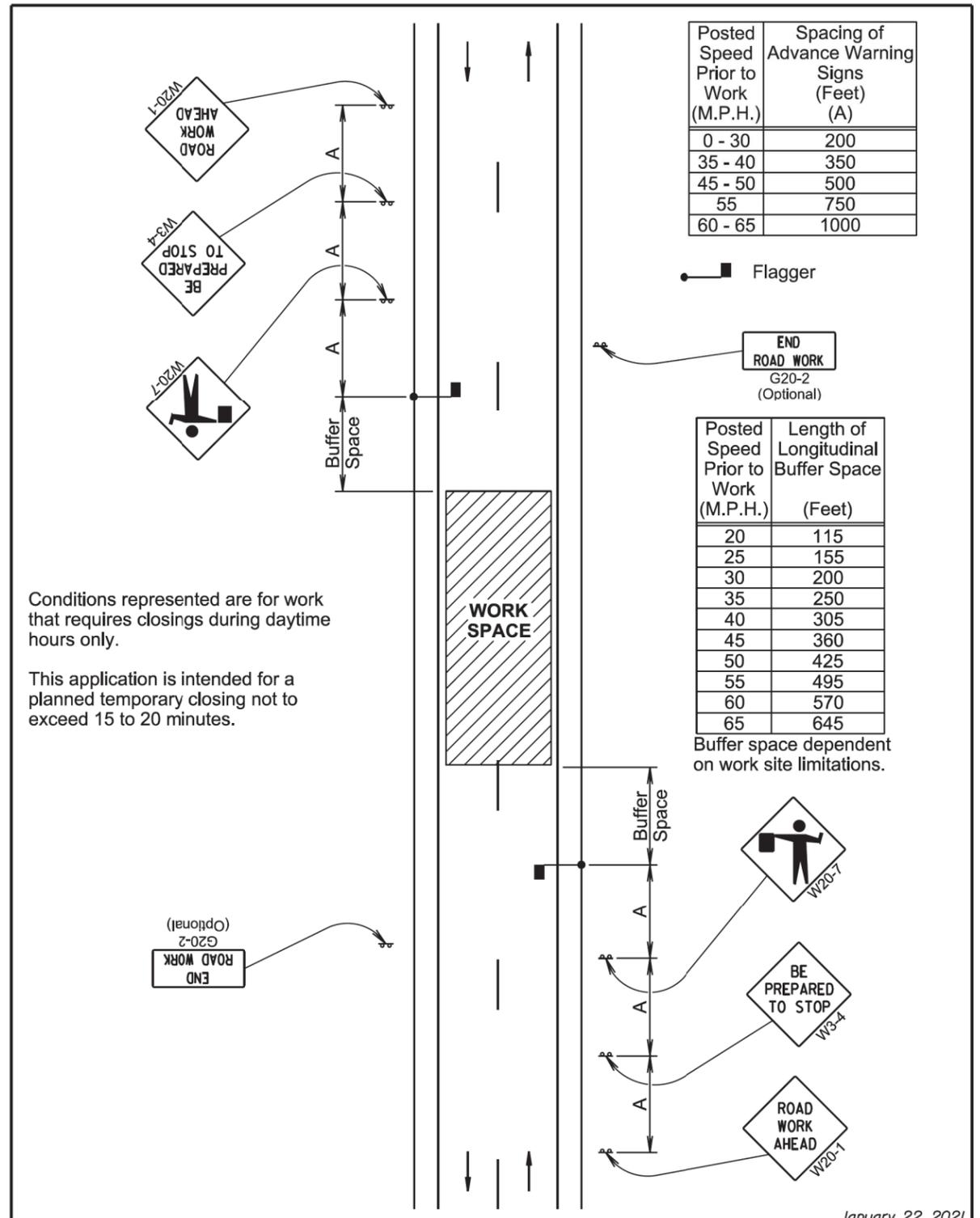
The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.



January 22, 2021

S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
	<i>Published Date: 2025</i>	Sheet 1 of 1



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

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

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

 Flagger

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

Buffer space dependent on work site limitations.

January 22, 2021

S D D O T	TEMPORARY ROAD WORK	PLATE NUMBER 634.30
	<i>Published Date: 2025</i>	Sheet 1 of 1

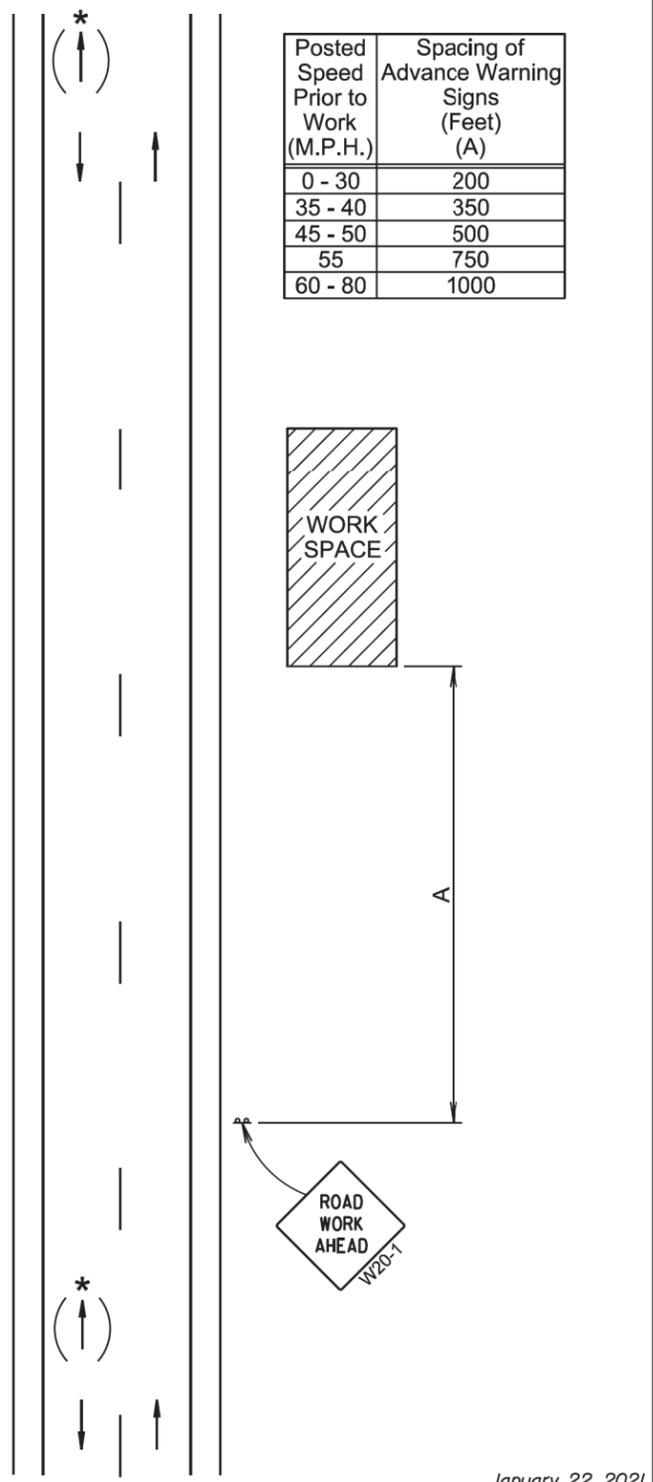
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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

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

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

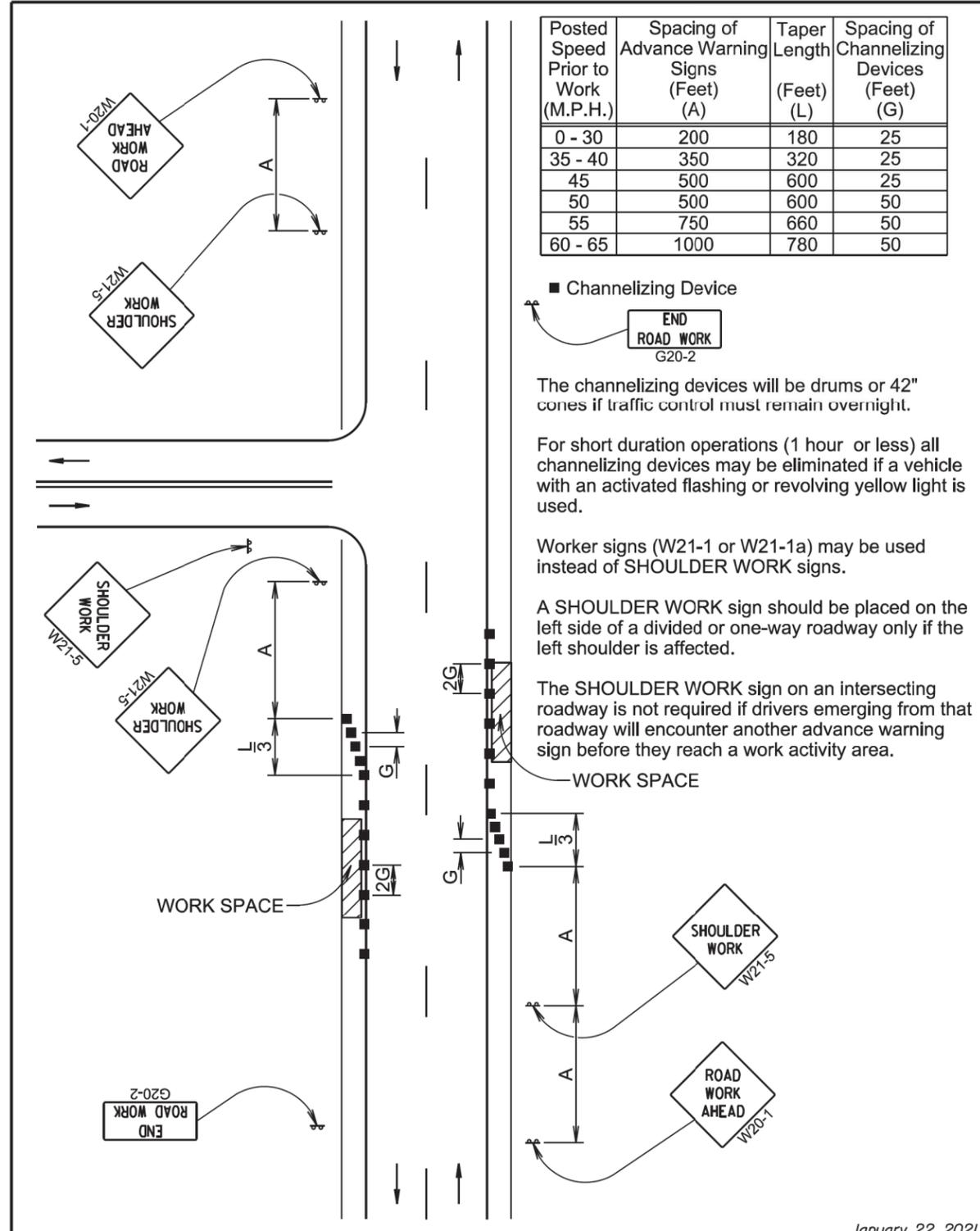
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



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

January 22, 2021

S D D O T	WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
	Published Date: 2025	Sheet 1 of 1



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

■ Channelizing Device
END ROAD WORK G20-2

The channelizing devices will 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.

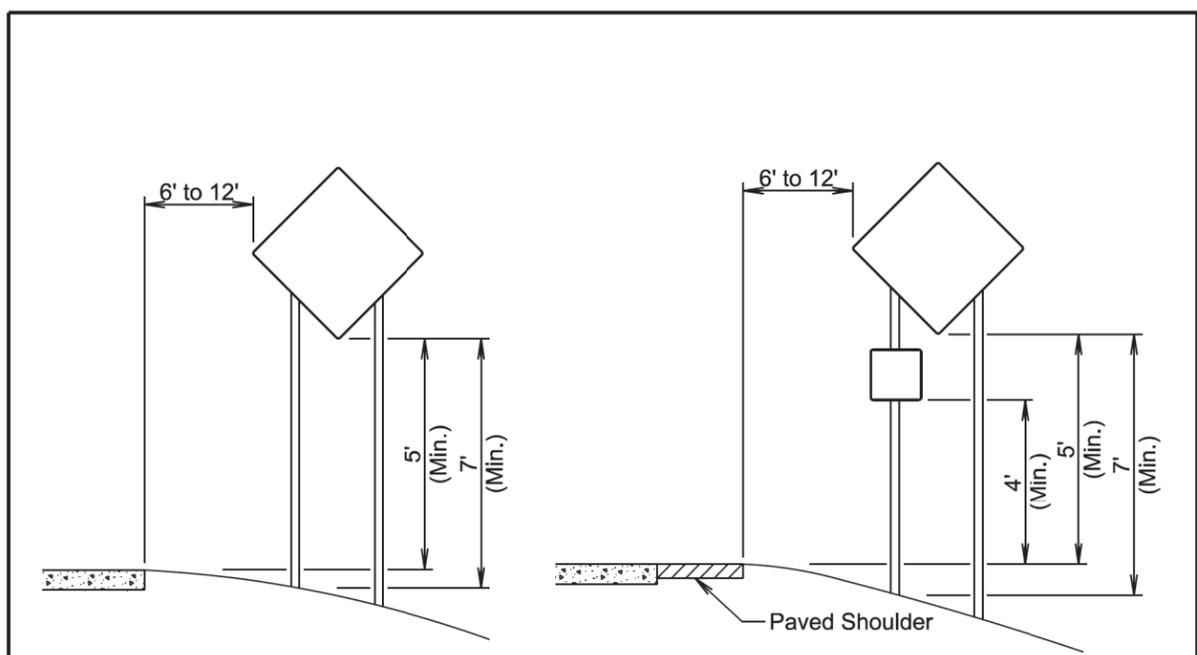
A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

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.

January 22, 2021

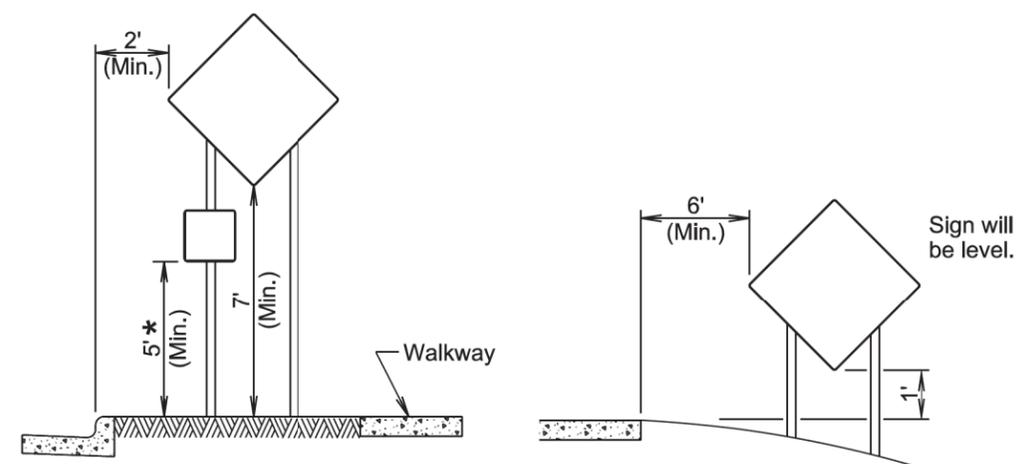
S D D O T	WORK ON SHOULDERS	PLATE NUMBER 634.03
	Published Date: 2025	Sheet 1 of 1

Plot Scale - 1:200



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



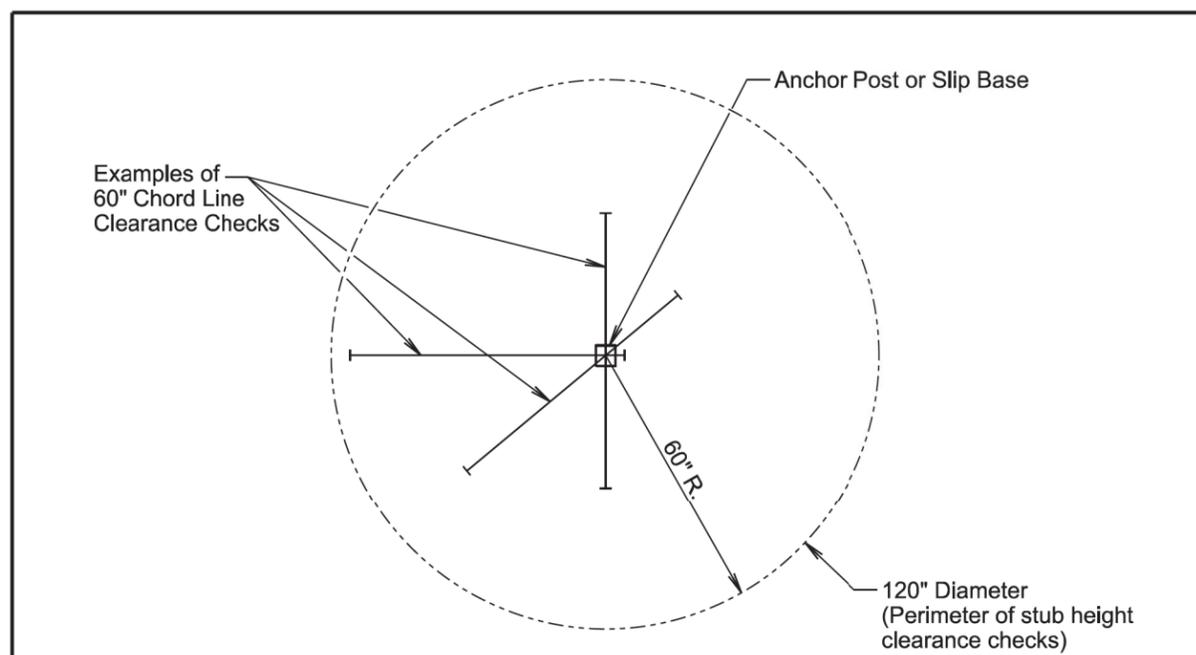
URBAN DISTRICT

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

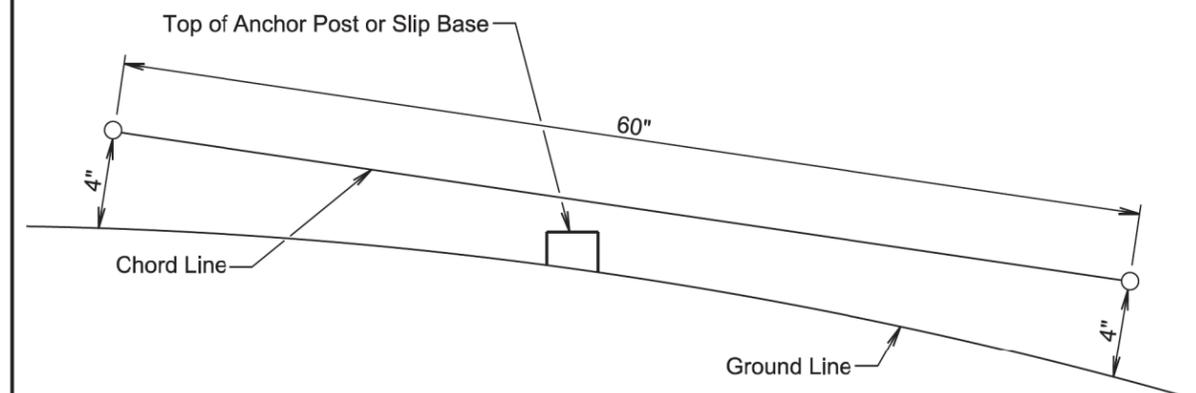
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

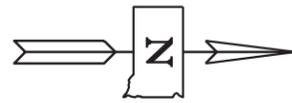
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2025	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

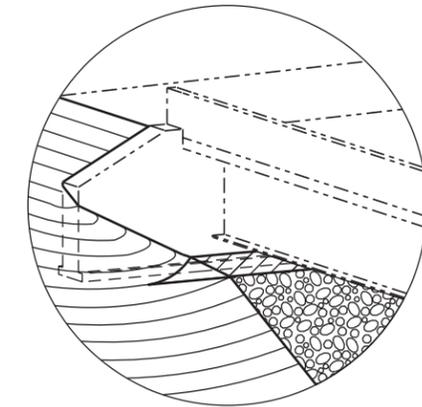
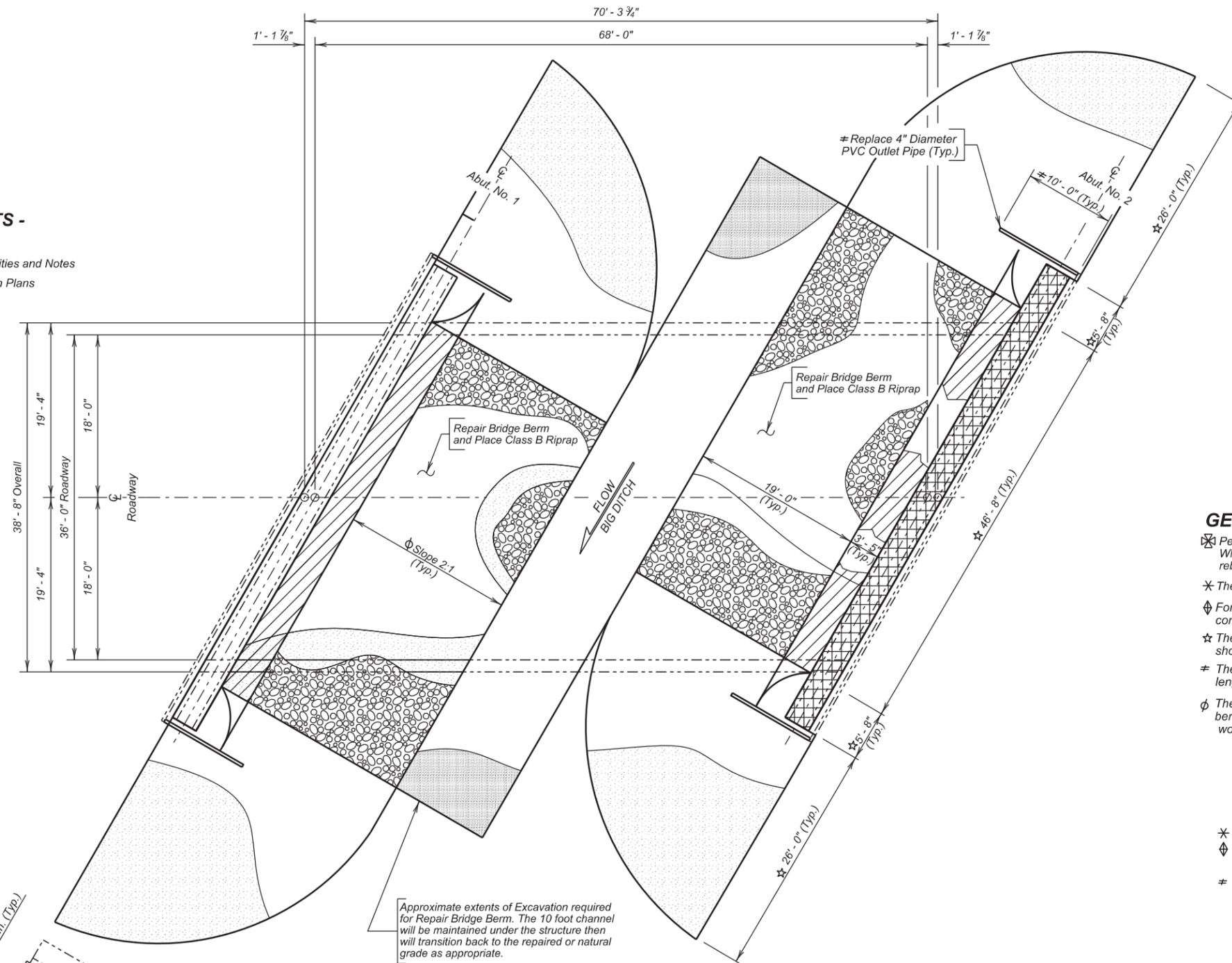
Plotted From - TRM113318

File - ...apj\unin082\Cltc Stid Plates.dgn



**-X071-
INDEX OF BRIDGE SHEETS -**

Sheet No. 1 - Layout for Upgrade
 Sheet No. 2 - Estimate of Structure Quantities and Notes
 Sheet Nos. 3 thru 5 - Original Construction Plans



SPILL CONE DETAIL AT EMBANKMENT
 (Outlet Pipe Not Shown)

GENERAL NOTES:

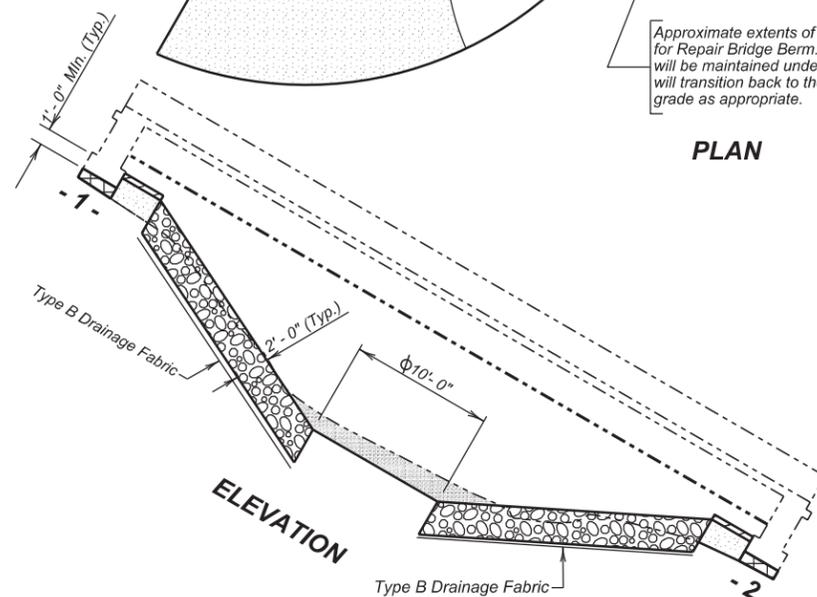
- ⊗ Perform excavation in a manner that limits disturbance to the existing bridge berm. Where disturbance can not be minimized or if the existing spill cone has eroded, rebuild as shown.
- * The berms and slope protection are to be repaired to match the original templates.
- ⬢ For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.
- ☆ The exact amount of berm repair will be field determined. The dimensions shown are best estimate.
- ≠ The exact lengths of the 4" Dia. PVC Outlet Pipe will be field determined. The lengths shown are a best estimate based on the original construction plans.
- ∅ The original construction plans show a 1.75:1 slope based on the berm elevations, berm width, and channel geometry shown on plans a 2:1 slope makes the geometry work. The actual berm slope might vary slightly but the 10 ft. channel bottom is to be maintained.

ESTIMATED QUANTITIES

(For Both Abutments)

ITEM	UNIT	QUANTITY
* Bridge Berm Repair	Each	2
⬢ Select Granular Backfill	Ton	11.2
Controlled Density Fill	CuYd	12.8
≠ 4" Outlet Pipe	Ft	40
Class B Riprap	Ton	205.7
Type B Drainage Fabric	SqYd	221
Perforated Geocell	SqFt	320

PLAN



LEGEND:

- Class B Riprap
- Perforated Geocell
- Controlled Density Fill
- Bridge Berm Repair
- Bridge Berm Repair (Excavation)

**LAYOUT FOR UPGRADE
FOR**

70'-3 3/4" SIMPLE SPAN COMP. GIRDER BRIDGE

36'-0" ROADWAY
 OVER BIG DITCH
 STR. NO. 64-060-241
 PCN 082C

30° SKEW L.H.F.
 SEC. 6/1-T9IN-R49/50W
 PT 0011(158)12

UNION COUNTY
 S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

1 OF 5

-X071-

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

DESIGNED BY PII UNIN082C	CHECKED BY TJM 082CIA01	DRAWN BY PII <i>Steve A. Johnson</i>
--------------------------------	-------------------------------	--

BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	11.2	Ton
464E0100	Controlled Density Fill	12.8	CuYd
680E0224	4" PVC Outlet Pipe	40	Ft
700E0210	Class B Riprap	205.7	Ton
831E0110	Type B Drainage Fabric	221	SqYd
831E1030	Perforated Geocell	320	SqFt

SPECIFICATIONS

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

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

- All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.
- The stationing shown in the original construction plans is reversed from the current project. As such, labels for the begin and end of bridge as well as the substructure units are reversed.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

- Place Controlled Density Fill in voids under the abutments.
- Repair Bridge Berm and inslopes at the abutments.
- Place Type B drainage fabric and Class B Riprap.
- Place Perforated Geocell filled with Select Granular Backfill on the berm top.

BRIDGE BERM REPAIR

- The bridge berms have significant material loss due to a flood event and will need rebuilt and shaped to their original template with Class B Riprap incorporated into the berm slope.

- Fill voids under the abutments using Controlled Density Fill. The quantity for Controlled Density Fill is based on a 1-foot-deep box across the length and width of both abutments. The actual quantity of material may vary.
- Due to material loss at the site, borrow is to be provided to rebuild the berm and fill any erosion features on the berm slope. Reconstruct the berms to at least 1-foot above the bottom of the abutment backwall. The berm slope will be benched into stable embankment during reshaping and reconstruction. The soil will be placed in horizontal lifts perpendicular to the centerline of the structure. For informational purposes the estimated borrow material required is 40 cubic yards.
- Shape the fill in front of the wing walls to divert runoff from the inslopes away from the face of the berm slope. Reshape the inslopes near the wing walls to approximately 20 feet out from the bridge.
- At the upper part of the berm slope, clearance between the structure and berm will prohibit the use of large compaction equipment. The soil in this area will be compacted using hand operated compaction equipment. Berm material will be placed in reduced lift thicknesses with adequate moisture to obtain density requirements.
- Soil used to reconstruct the berm slope will be furnished by the Contractor and approved by the Engineer. The soil will have 100% passing the 1 1/2 inch sieve, a maximum of 70% passing the #4 sieve, have a maximum Liquid Limit (LL) of 45 and a Plastic Index (PI) greater than 10 but less than 25. The Contractor will be responsible for one gradation, LL and PI test for each borrow source for berm reconstruction. The test results will be supplied to the Engineer in writing.
- Compaction of the reconstructed berm and inslopes will be governed by the Ordinary Compaction Method.
- Quantities provided are an estimate for this work. It is the responsibility of the Contractor to visit the site to determine quantities needed.
- The cost of the berm and stream channel reconstruction will be incidental to the contract unit price per each for Bridge Berm Repair. This payment will be full compensation for furnishing all materials, labor, tools, channel diversion excavation, and equipment necessary or incidental to the reconstruction of the bridge berm.

RIPRAP

- The cross section shown in this plan set is provided as a guide for riprap placement and is based on the existing ground location at the time of inspection. The location of the toe of the riprap may vary to suit local site conditions provided the following items are adhered to:
 - The opening provided under the structure for water flow is not reduced from what is shown on the cross section.

- Any changes in the riprap configuration are approved by the Engineer.
- Prior to placement of the drainage fabric, the surface to be covered will be smooth, free of obstructions, and conform to the plan configuration.
 - As the riprap is placed on a repaired berm, it is anticipated that minimal excavation will be required for riprap placement as directed by the Engineer. All material excavated to allow for riprap placement will be disposed of by the Contractor.
 - A factor of 1.4 tons/CuYd was used to convert the riprap quantity from CuYd to Tons.
 - The Class B Riprap will be constructed to the configuration, limits and elevations shown. All costs associated with placement of the riprap including all material, excavation in the riprap limits, labor, and equipment will be included in the contract unit price per ton for Class B Riprap.

PERFORATED GEOCELL

- Perforated Geocell will be from the following company or equivalent:

Company: Agtec
Phone: 1-818-724-7657
Website: <http://www.agtec.com>
- Perforated Geocell will be 6 inches tall with Type B Drainage Fabric underlying the perforated Geocell. Installation will adhere to the manufacturer's recommendation.
- Perforated Geocell will be filled with the Select Granular Backfill.
- Payment will be full compensation for labor, tools, materials, and any incidentals necessary to for the installation of the Perforated Geocell and will be included in the contract unit price per square foot for the Perforated Geocell.
- Select Granular Backfill will be paid for at the contract unit price per ton of material furnished. Payment will be full compensation for furnishing, loading, hauling, and placing the Select Granular Backfill.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR

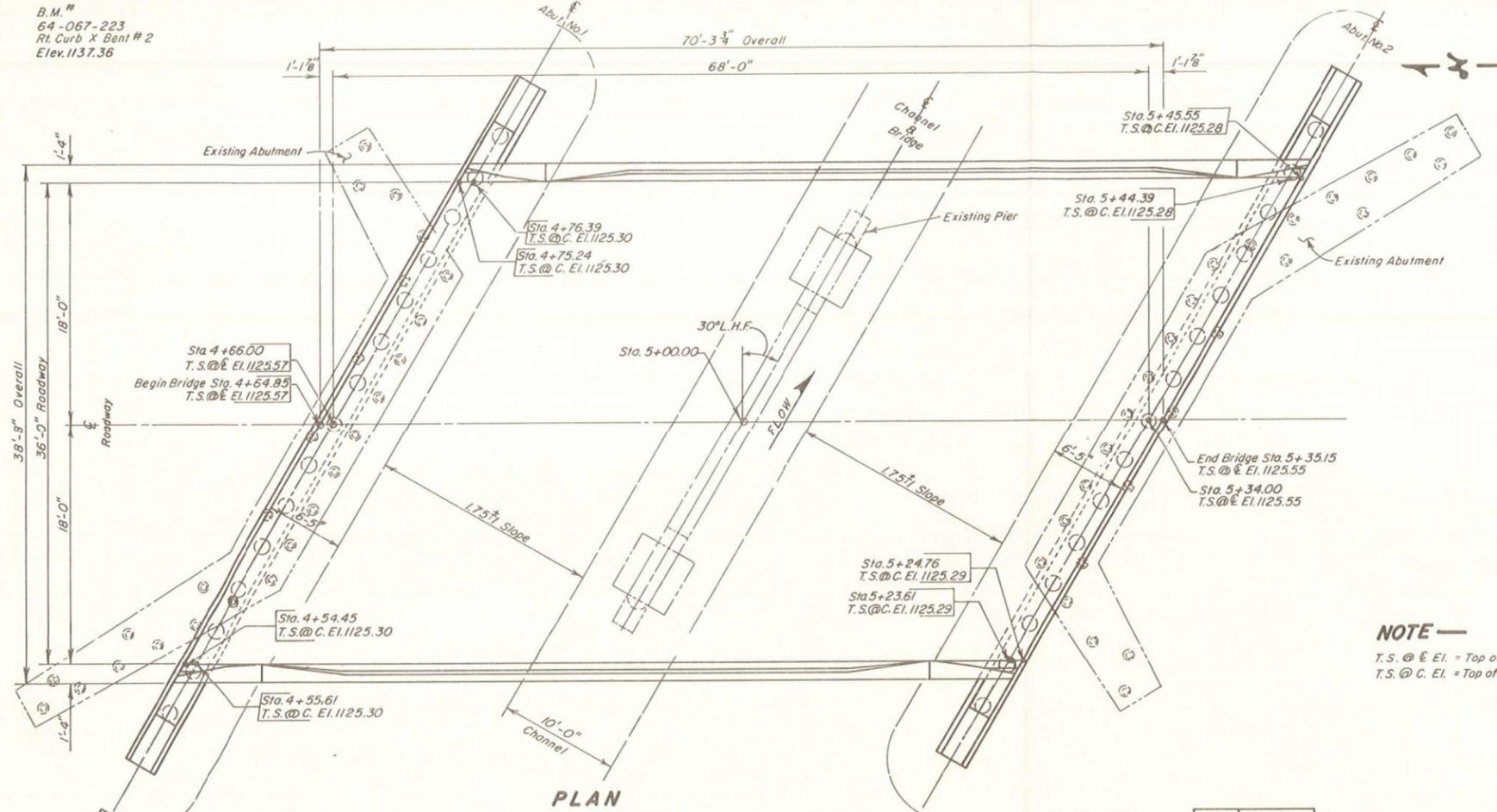
70'-3 3/4" SIMPLE SPAN COMP. GIRDER BRIDGE

STR. NO. 64-060-241

FEBRUARY 2025

2 OF 5

B.M. #
64-067-223
Rt. Curb X Bent # 2
Elev. 1137.36

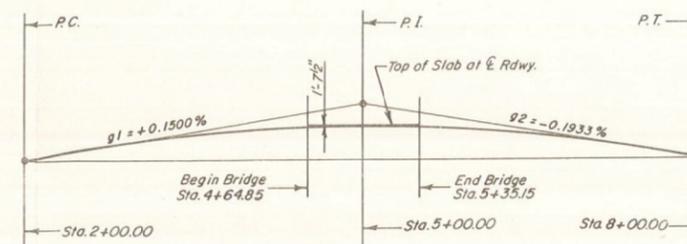
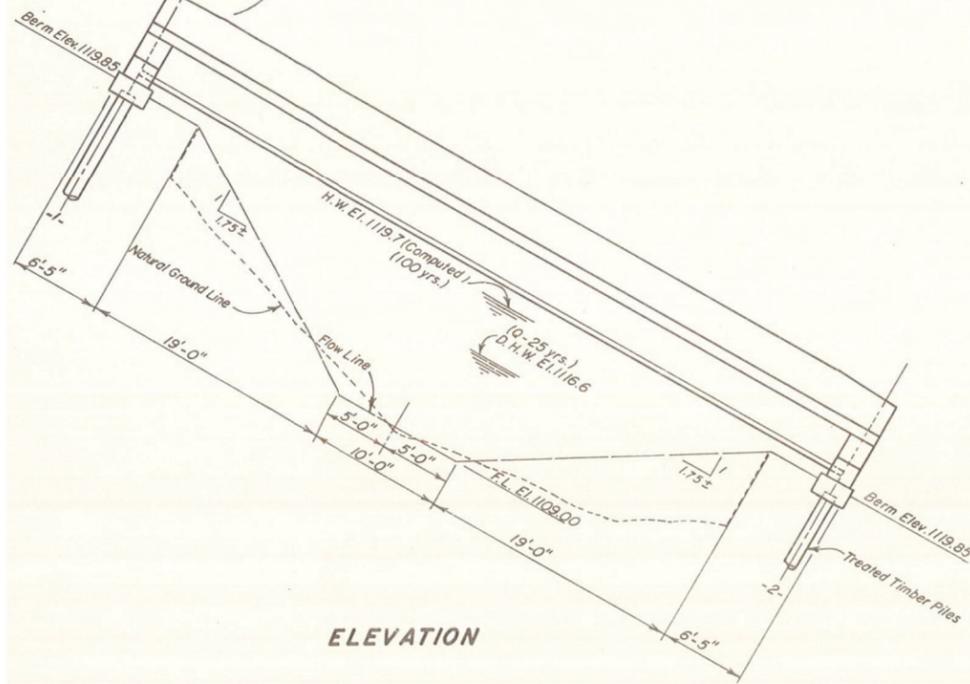


NOTE

T.S. @ C. El. = Top of Slab at Centerline Elevation.
T.S. @ C. El. = Top of Slab at Curb Elevation.

Qd	838 c.f.s.
Ad	177.1 sq.ft.
Vd	4.73 f.p.s.
Q _F	838 c.f.s.
Q ₁₀₀	1,769 c.f.s.

Qd = design discharge for the proposed bridge based on 25 year frequency.
Q_F = designated peak discharge for the basin approaching proposed project based on 25 year frequency.
Q₁₀₀ = computed discharge for the basin approaching proposed project based on 100 year frequency.



VERTICAL CURVE DATA

PLANS BY:
BRIDGE PROGRAM, SOUTH DAKOTA DIVISION OF HIGHWAYS

-X071 - INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - General Drawing.
- Sheet No. 2 - Estimate of Structure Quantities and Notes.
- Sheet No. 3 - Subsurface Investigation and Piling Layout.
- Sheet No. 4 - Details of Abutments.
- Sheet No. 5 - Slab Details.
- Sheet No. 6 - End Block and Barrier Curb Details.
- Sheet No. 7 - Diaphragm Details.
- Sheet No. 8 - Girder Layout and Details.
- Sheet No. 9 - Framing Diagram and Erection Data.
- Sheet No. 10 - Details of Bridge End Backfill.
- Sheet No. 11 - Standard Plate No. 308 and 4 Bolt Assembly.
- Sheet No. 12 - Standard Plate No. 305.
- Sheet No. 13 - Standard Plate No. 301.1 and No. 303.1.

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING
FOR
70'-3 3/4" SIMPLE SPAN COMP. GIRDER BRIDGE
36'-0" ROADWAY
OVER BIG DITCH
STA. 4+64.85 TO 5+35.15
STR. NO. 64-060-241

30° SKEW L.H.F.
SEC. 6/1-T91N-R49/50W
BRFO011 (7) 14
HS 20-44
(8 ALT.)

UNION COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

-X071 -

FEB. 1983

3 OF 5

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	f. a. k.		
			BRIDGE ENGINEER

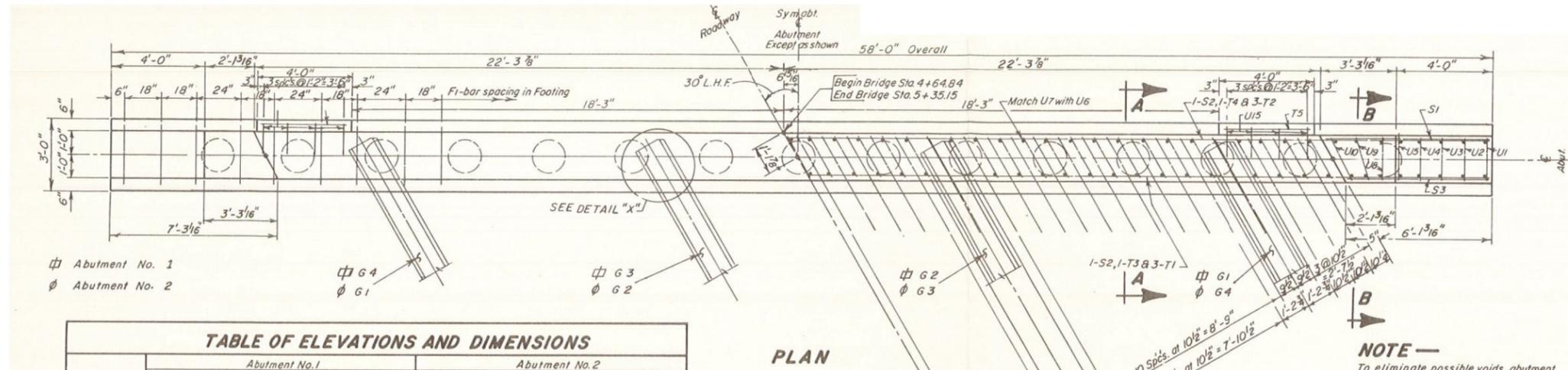
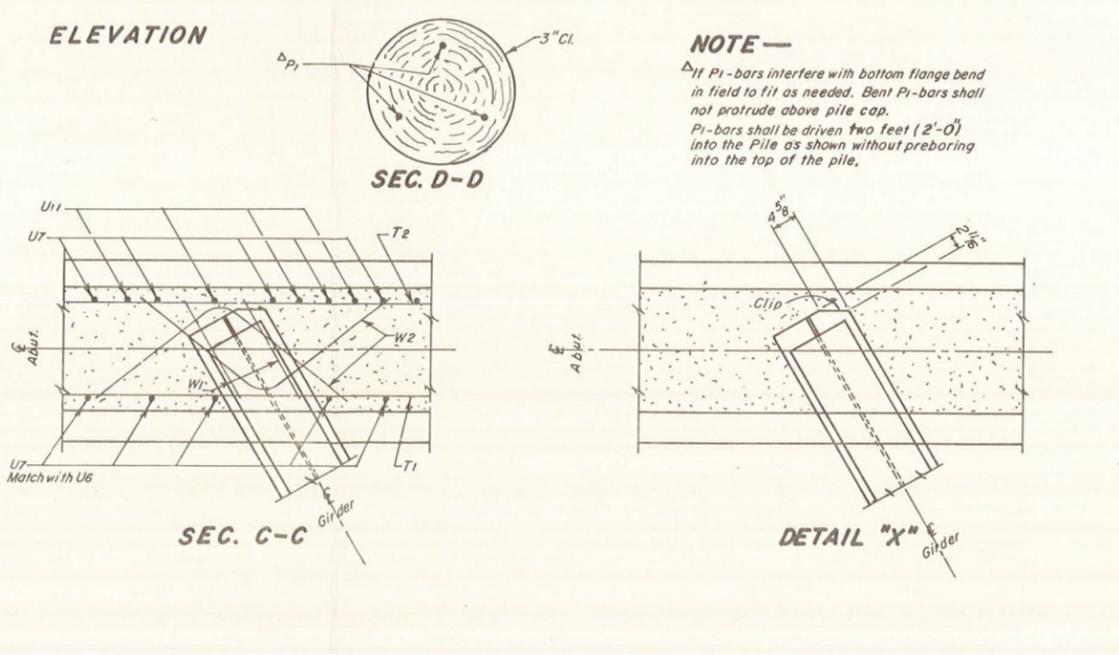
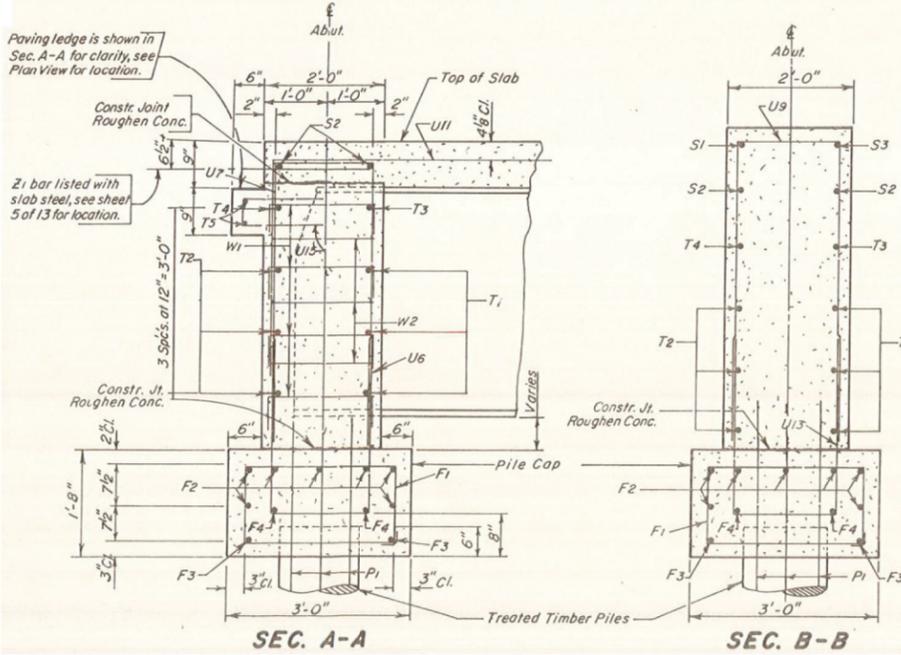
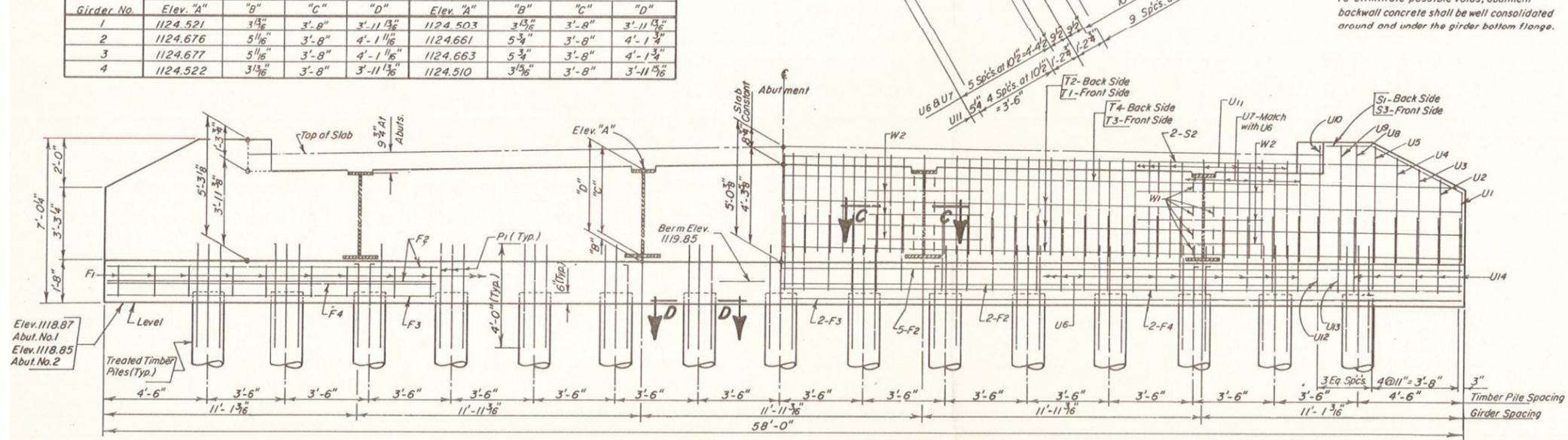


TABLE OF ELEVATIONS AND DIMENSIONS

Girder No.	Abutment No. 1				Abutment No. 2			
	Elev. "A"	"B"	"C"	"D"	Elev. "A"	"B"	"C"	"D"
1	1124.521	3'-8"	3'-8"	3'-11 1/2"	1124.503	3'-8"	3'-8"	3'-11 1/2"
2	1124.676	5'-1/2"	3'-8"	4'-1 1/2"	1124.661	5'-3/4"	3'-8"	4'-1 3/4"
3	1124.677	5'-1/2"	3'-8"	4'-1 1/2"	1124.663	5'-3/4"	3'-8"	4'-1 3/4"
4	1124.522	3'-3/8"	3'-8"	3'-11 1/2"	1124.510	3'-3/8"	3'-8"	3'-11 1/2"



REINFORCING SCHEDULE
(For One Abutment)

Mk.	No.	Size	Length	Type	Bending Details
F1	34	5	8'-6"	T1	1'-8" U1, U2, U3, U4, U5 & U8
F2	7	6	57'-8"	Str.	1'-9" U9
F3	2	9	57'-8"	Str.	1'-10" U10
F4	2	4	57'-8"	Str.	1'-11 1/2" U7
P1	45	5	4'-0"	Str.	
S1	2	6	8'-1"	16A	
*S2	2	9	53'-10"	Str.	
S3	2	6	7'-1"	16A	
T1	3	6	57'-8"	Str.	
T2	3	9	57'-8"	Str.	
T3	1	6	56'-8"	Str.	
U1	2	6	7'-6"	S10	
U2	2	6	8'-5"	S10	
U3	2	6	9'-4"	S10	
U4	2	6	10'-4"	S10	
U5	2	6	11'-3"	S10	
U6	4	6	8'-1"	S10	
*U7	4	6	10'-3"	S10	
U8	2	6	11'-4"	S10	
U9	2	6	11'-5"	S10	
U10	2	6	11'-6"	S10	
*U11	4	6	8'-0"	17	
U12	2	6	8'-0"	S10	
U13	2	6	7'-11"	S10	
U14	12	6	7'-10"	S10	
W1	32	6	3'-1"	S10	
W2	24	6	5'-10"	13A	
T4	1	9	56'-8"	Str.	
U15	8	4	3'-1"	S10	
T5	4	4	3'-6"	Str.	

ESTIMATED QUANTITIES
(For Two Abutments)

ITEM	UNIT	QUANTITY
Class "A" Concrete Bridge	Cu Yds	2873
Reinforcement concrete Masonry	Lbs	90075
Epoxy Coated Reinforcing Steel	Lbs	2,956
Structural Estimation - Bridge	Sq Yds	271
Finish Timber Test Pile	Lm Ft	241.63 = 150'
Drive Timber Test Pile	Lm Ft	240.65 = 130'
Finish Timber Piles	Lm Ft	28.01 60' = 1680'
Drive Timber Piles	Lm Ft	28.01 60' = 1680'
Prepiling Piling	Lm Ft	30.01 10' = 300'

ORIGINAL CONSTRUCTION PLANS

DETAILS OF ABUTMENTS
FOR
70'-3 3/4" SIMPLE SPAN COMP. GIRDER BRIDGE
36'-0" ROADWAY
OVER BIG DITCH
STA. 4+64.85 TO 5+35.15
STR. NO. 64-060-241

30° SKEW L.H.F.
SEC. 6/I-T9IN-R49/50W
BRFOO1 (7) 14
HS 20-44
(8 ALT.)

UNION COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
FEB. 1983

4 OF 5

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	f.o.k.		

BRIDGE ENGINEER

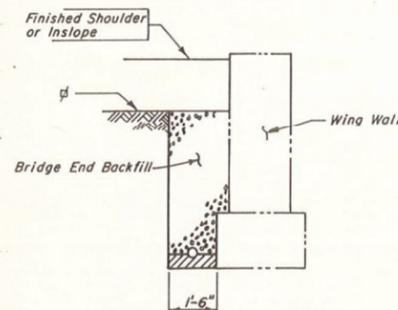
NOTES REGARDING BRIDGE END BACKFILL

- Bridge End Backfill shall conform to the following requirements

Passing a 1/2 inch sieve	100%
Passing a 1 inch sieve	95 - 100%
Passing a 1/2 inch sieve	25 - 60%
Passing a No. 4 sieve	0 - 10%

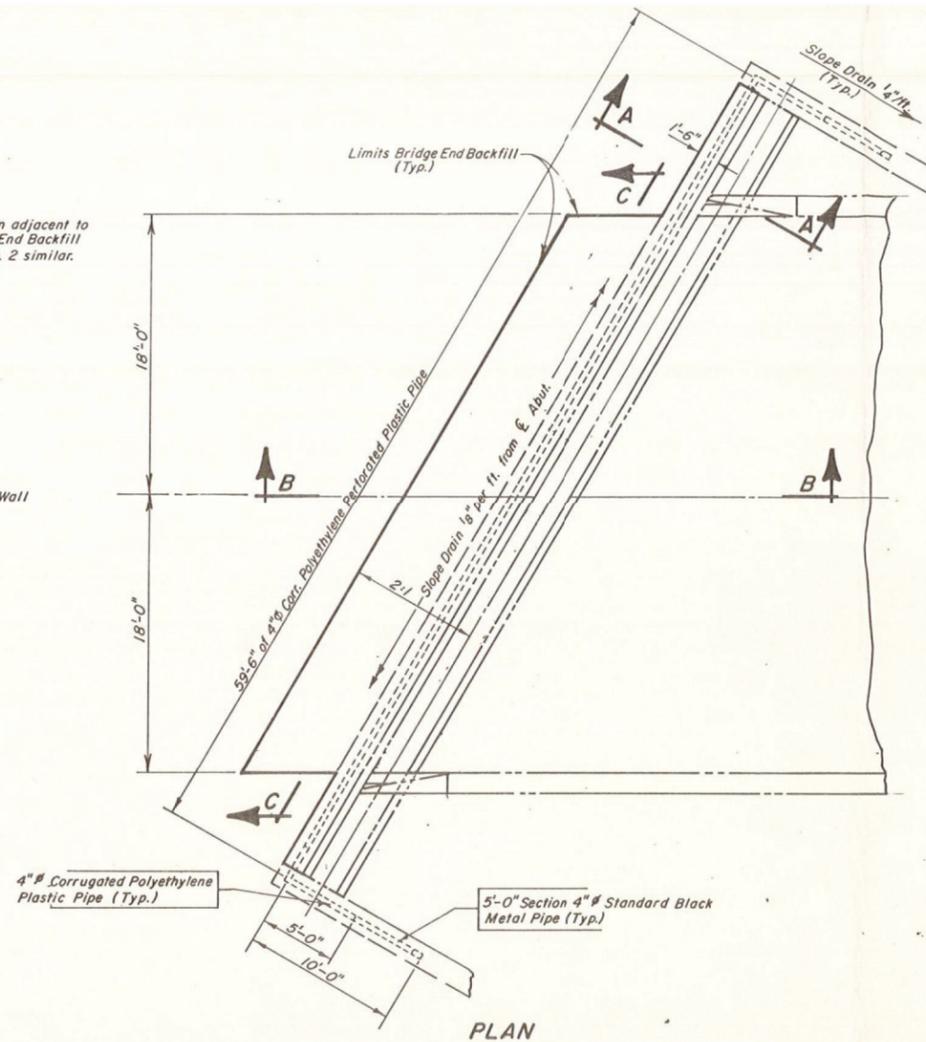
The above gradation conforms to that of Coarse Aggregate for Class "A" Concrete.
- Material to be crushed rock having at least two (2) fractured faces on material retained on a number 4 sieve, Abrasion loss (AASHTO-T96) shall not exceed forty (40).
- Backfill to be vibratory compacted in lifts not to exceed one (1) foot. Density requirements for backfill are waived.
- Granular Bridge End Backfill shall not be placed until at least 24 hours after the completion of the deck pour.
- Suitable screen or grating shall be provided at pipe outlets as approved by the Engineer.
- The 4" Corrugated polyethylene plastic pipe or tubing, perforated or non-perforated shall be standard strength conforming to AASHTO Specification M 252-82. A variance to M 252-82, 6.4 is allowed, length of individual slots shall not exceed 12 percent of the tubing inside nominal circumference.
- Bed 4" Corrugated Polyethylene Plastic Perforated Pipe or Tubing in Non-pervious material up to 1 1/2' from bottom of Tubing
- All costs involved in furnishing and installing 4" Standard Black Metal Pipe with Polyethylene connector, 90° Elbows, Outlet Screen or Grating and 4" Corrugated Polyethylene Plastic Pipe or Tubing, Perforated or Non-perforated shall be absorbed in the unit price bid for Bridge End Backfill Underdrain Pipe.
- For informational purposes only, the total length of 4" Corrugated Polyethylene Perforated Plastic Pipe or Tubing, for 2 abutments is 119 feet.
- For informational purposes only, the total length of 4" Corrugated Polyethylene Plastic Pipe or Tubing, for 2 abutments is 20 feet.
- Excavated material not used for backfill of Abutments, supplemented with Bridge End Backfill Material, if required, shall be used to build the spill cones around the ends of the wingwalls as directed by the Engineer.
- Total estimated length of 4" Standard Black Metal Pipe is 20 ft.
- Granular Bridge End Backfill will not be measured. Plans quantity payment will be full compensation for this item. The total estimated theoretical volume of Granular Bridge End Backfill is 92 cubic yards for two Abutments.
- The total length of Bridge End Backfill Under Drain Pipe is 159 lineal feet for 2 Abutments, including 4" Corrugated Polyethylene Plastic Pipe or Tubing, Perforated or Non-perforated and 4" Standard Black Metal Pipe.

NOTE:
Bridge End Backfill shown adjacent to Abutment No. 1, Bridge End Backfill adjacent to Abutment No. 2 similar.

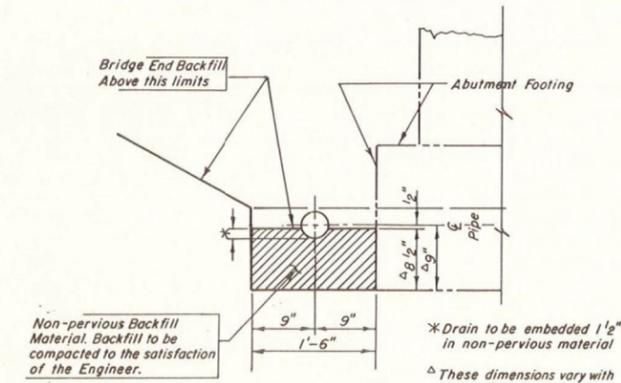


SEC. A-A

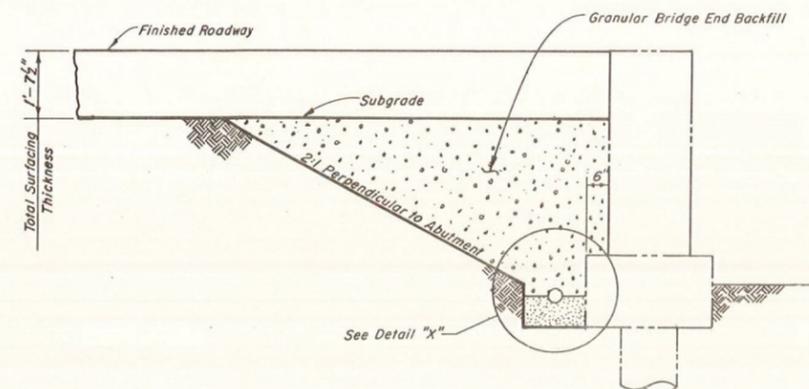
Backfill to subgrade, or to elevation that leaves room for top soil, as directed by the Engineer.



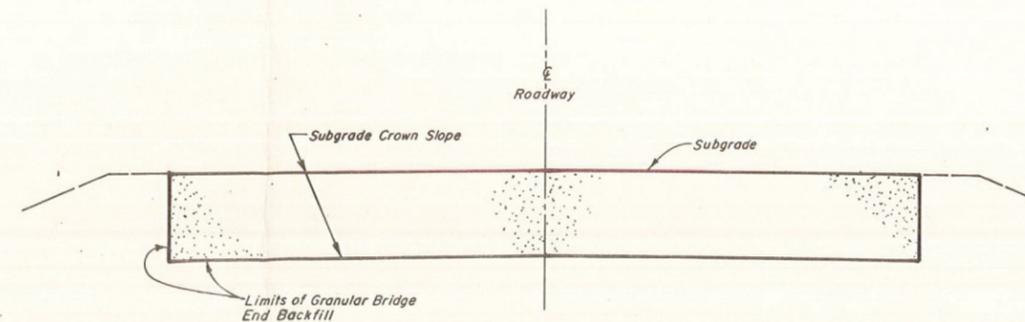
PLAN



DETAIL "X"
(Perpendicular to Abutment)



SEC. B-B



SEC. C-C
(Not to Scale)

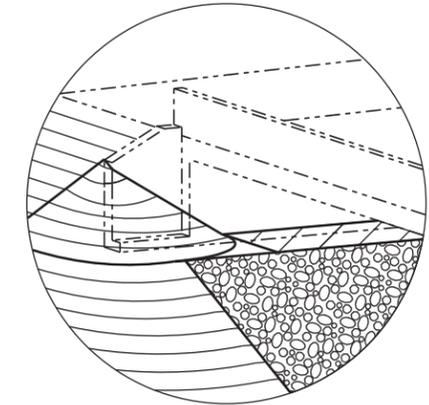
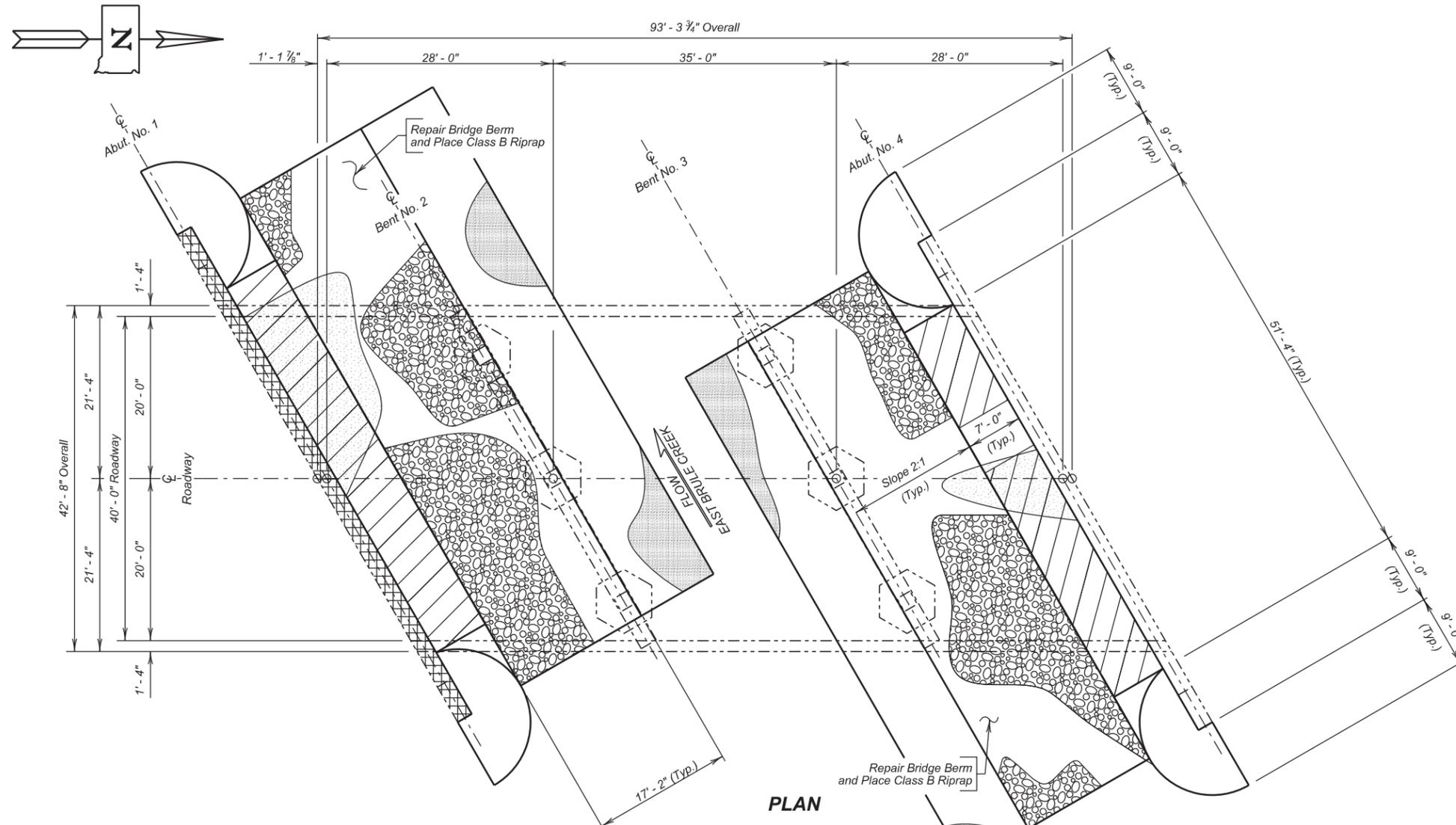
ORIGINAL CONSTRUCTION PLANS

DETAILS OF BRIDGE END BACKFILL
FOR
70'-3 3/4" SIMPLE SPAN COMP. GIRDER BRIDGE
36'-0" ROADWAY OVER BIG DITCH
30° SKEW L.H.F.
SEC. 6/1-T91N-R49/50'W
STA. 4+64.85 TO 5+35.15
STR. NO. 64-060-241
BRF0011(7)1+
HS 20-44 (8 ALT.)

UNION COUNTY
S.D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

FEB. 1983

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	LAK		
			BRIDGE ENGINEER



⊠ SPILL CONE DETAIL AT EMBANKMENT

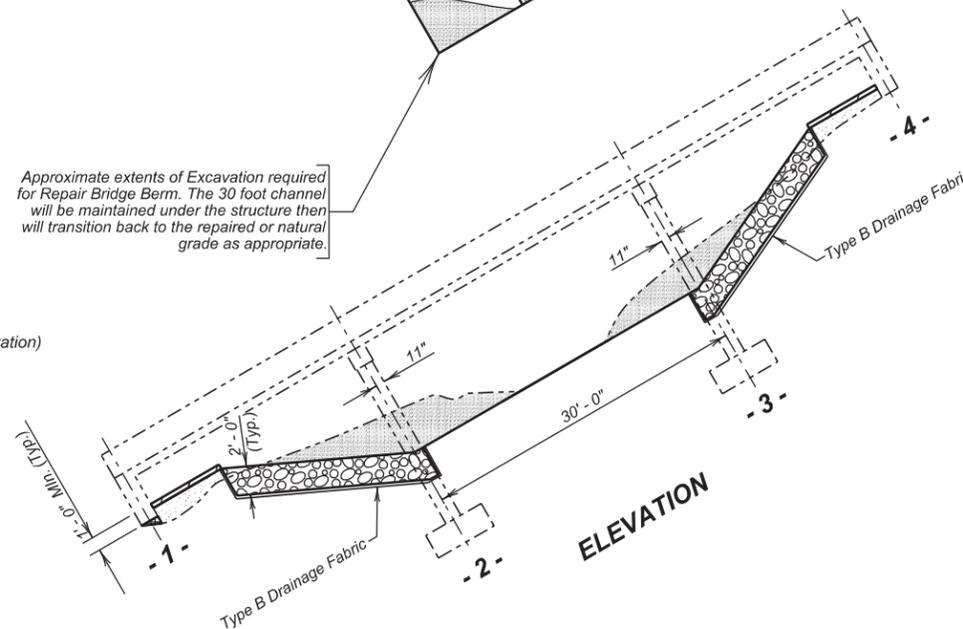
GENERAL NOTES:

- ⊠ Perform excavation in a manner that limits disturbance to the existing bridge berm. Where disturbance can not be minimized or if the existing spill cone has eroded, rebuild as shown.
- * The berms and slope protection are to be repaired to match the original templates.
- ⊠ For estimating purposes only, a factor of 1.89 Tons/CuYd was used to convert CuYds to Tons.
- ☆ The exact amount of berm repair will be field determined. The dimensions shown are best estimate.

LEGEND:

- Class B Riprap
- Perforated Geocell
- Controlled Density Fill
- Bridge Berm Repair
- Bridge Berm Repair (Excavation)

Approximate extents of Excavation required for Repair Bridge Berm. The 30 foot channel will be maintained under the structure then will transition back to the repaired or natural grade as appropriate.



ESTIMATED QUANTITIES
(For Both Abutments)

ITEM	UNIT	QUANTITY
⊠ Bridge Berm Repair	Each	2
⊠ Select Granular Backfill	Ton	24.1
⊠ Controlled Density Fill	CuYd	2.0
⊠ Class B Riprap	Ton	274.7
⊠ Type B Drainage Fabric	SqYd	315
⊠ Perforated Geocell	SqFt	719

LAYOUT FOR UPGRADE FOR

93'-3 3/4" CONTINUOUS CONCRETE BRIDGE
 40'-0" ROADWAY
 OVER EAST BRULE CREEK
 STR. NO. 64-090-005
 PCN 082C

30° SKEW R.H.F.
 SEC. 3-T95N-R49W
 PT 0011(158)12

UNION COUNTY
 S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

**-X020-
INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Layout for Upgrade
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet Nos. 3 thru 4 - Original Construction Plans

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	24.1	Ton
464E0100	Controlled Density Fill	2.0	CuYd
700E0210	Class B Riprap	274.7	Ton
831E0110	Type B Drainage Fabric	315	SqYd
831E1030	Perforated Geocell	719	SqFt

SPECIFICATIONS

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

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

- All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.
- The stationing shown in the original construction plans is reversed from the current project. As such, labels for the begin and end of bridge as well as the substructure units are reversed.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

- Place Controlled Density Fill in voids under the abutment.
- Repair Bridge Berm and inslopes at the abutments.
- Place Type B drainage fabric and Class B Riprap.
- Place Perforated Geocell filled with Select Granular Backfill on the berm top.

BRIDGE BERM REPAIR

- The bridge berms have significant material loss at the berm tops and infilled material on the berm slopes and toe due to a flood event and will need rebuilt and shaped to their original template with Class B Riprap incorporated into the berm slope.

- Fill voids under the abutments using Controlled Density Fill. The existing abutment had concrete material blocks which will require removal or will need formed around Controlled Density Fill placement. The quantity for Controlled Density Fill is based on a 1 sq ft box across half the length of Abutment No. 1. The actual quantity of material may vary.
- Due to material loss at the site, borrow is to be provided to rebuild the berm and fill any erosion features on the berm slope. Reconstruct the berms to at least 1-foot above the bottom of the abutment backwall. The berm slope will be benched into stable embankment during reshaping and reconstruction. The soil will be placed in horizontal lifts perpendicular to the centerline of the abutment. For informational purposes the estimated borrow material required is 46 cubic yards and material to be removed is 315 cubic yards.
- Shape the fill in front of the wing walls to divert runoff from the inslopes away from the face of the berm slope. Reshape the inslopes near the wing walls to approximately 20 feet out from the bridge.
- At the upper part of the berm slope, clearance between the structure and berm will prohibit the use of large compaction equipment. The soil in this area will be compacted using hand operated compaction equipment. Berm material will be placed in reduced lift thicknesses with adequate moisture to obtain density requirements.
- The berm has existing riprap. Some of the existing riprap might be encountered during the berm repair. The existing riprap can be removed and deposited or reused provided it meets the gradation requirements.
- Soil used to reconstruct the berm slope will be furnished by the Contractor and approved by the Engineer. The soil will have 100% passing the 1 1/2 inch sieve, a maximum of 70% passing the #4 sieve, have a maximum Liquid Limit (LL) of 45 and a Plastic Index (PI) greater than 10 but less than 25. The Contractor will be responsible for one gradation, LL and PI test for each borrow source for berm reconstruction. The test results will be supplied to the Engineer in writing.
- Compaction of the reconstructed berm and inslopes will be governed by the Ordinary Compaction Method.
- Quantities provided are an estimate for this work. It is the responsibility of the Contractor to determine quantities needed.
- The cost of the berm and stream channel reconstruction will be incidental to the contract unit price per each for Bridge Berm Repair. This payment will be full compensation for furnishing all materials, removing and disposal of material, removal of concrete material if needed, labor, tools, channel diversion, and equipment necessary or incidental to the reconstruction of the bridge berm.

RIPRAP

- The cross section shown in this plan set is provided as a guide for riprap placement and is based on the existing ground location at the time of inspection. The location of the toe of the riprap may vary to suit local site conditions provided the following items are adhered to:
 - The opening provided under the structure for water flow is not reduced from what is shown on the cross section.
 - Any changes in the riprap configuration are approved by the Engineer.
- Prior to placement of the drainage fabric, the surface to be covered will be smooth, free of obstructions, and conform to the plan configuration.
- As the riprap is placed on a repaired berm, it is anticipated that excavation will be required for riprap placement as directed by the Engineer. All material excavated to allow for riprap placement will be disposed of by the Contractor.
- A factor of 1.4 tons/CuYd was used to convert the riprap quantity from CuYd to Tons.
- The Class B Riprap will be constructed to the configuration, limits and elevations shown. All costs associated with placement of the riprap including all material, excavation in the riprap limits, labor and equipment will be included in the contract unit price per ton for Class B Riprap.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
93'-3 3/4" CONTINUOUS CONCRETE BRIDGE

STR. NO. 64-090-005
FEBRUARY 2025

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PT 0011(158)12 & PT 0048(15)382	18	24

PERFORATED GEOCELL

1. Perforated Geocell will be from the following company or equivalent:

Company: Agtec
 Phone: 1-818-724-7657
 Website: <http://www.agtec.com>

2. Perforated Geocell will be 6 inches tall with Type B Drainage Fabric underlying the perforated Geocell. Installation will adhere to the manufacturer's recommendation.
3. Perforated Geocell will be filled with the Select Granular Backfill.
4. Payment will be full compensation for labor, tools, materials, and any incidentals necessary to for the installation of the Perforated Geocell and will be included in the contract unit price per square foot for the Perforated Geocell.
5. Select Granular Backfill will be paid for at the contract unit price per ton of material furnished. Payment will be full compensation for furnishing, loading, hauling, and placing the Select Granular Backfill.

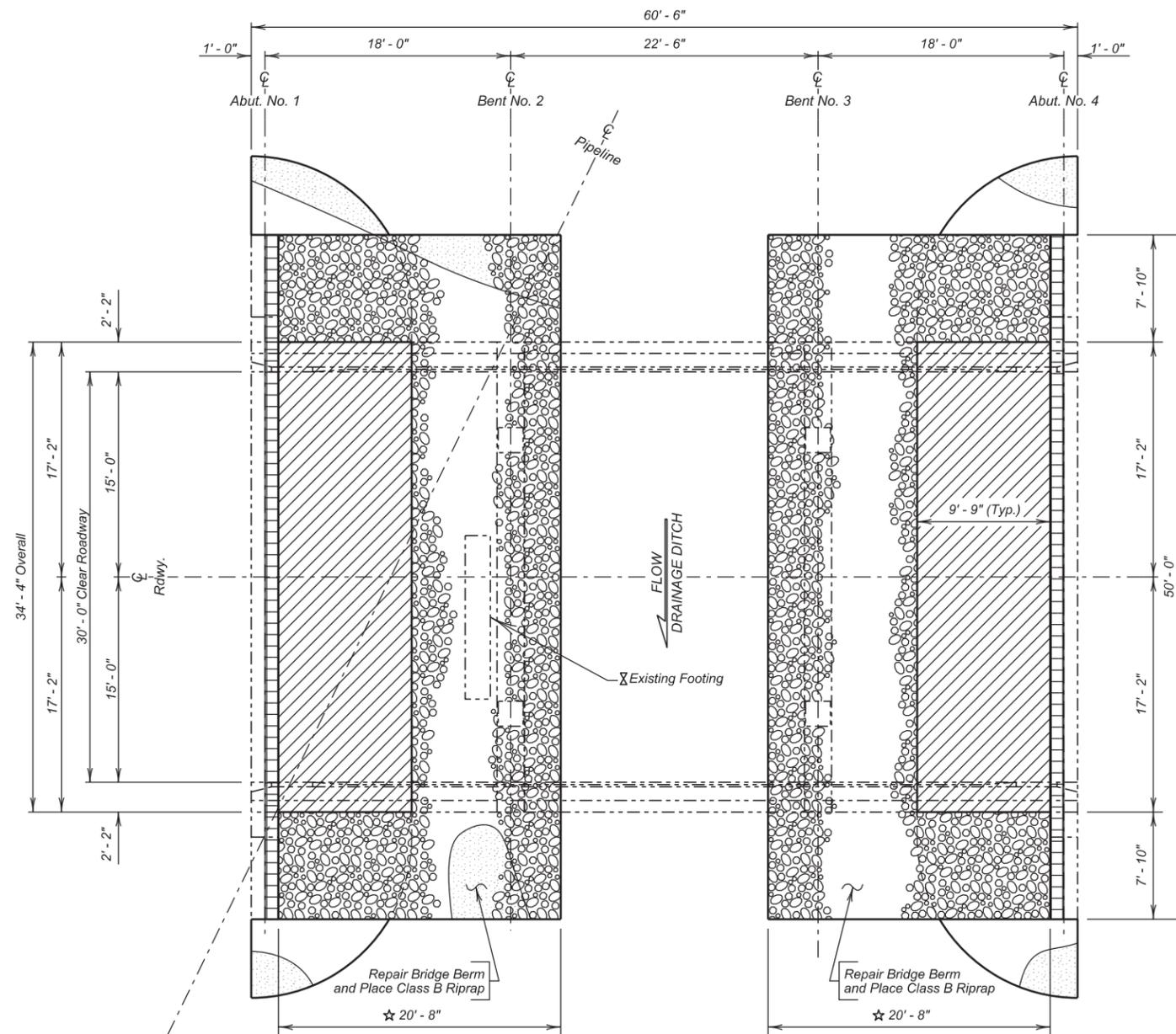
NOTES (CONTINUED)
 FOR
 93'-3 3/4" CONTINUOUS CONCRETE BRIDGE

STR. NO. 64-090-005

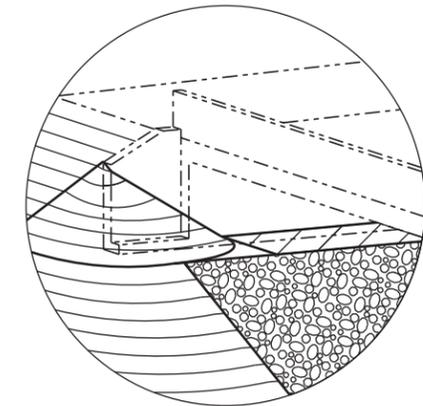
FEBRUARY 2025

3 OF 5

DESIGNED BY PII UNIN082C	DRAWN BY PII 082CIB03	CHECKED BY TJM	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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PLAN



⊗ SPILL CONE DETAIL AT EMBANKMENT

NOTES:

- ⊗ Perform excavation in a manner that limits disturbance to the existing bridge berm. Where disturbance can not be minimized or if the existing spill cone has eroded, rebuild as shown.
- ◆ For estimating purposes only, a factor of 1.89 Tons/CuYd. was used to convert CuYds. to Tons.
- ★ The exact amount of berm repair will be field determined. The dimensions shown are best estimate.
- ⊗ The existing footing can remain in place provided it is embedded in the soil. If the footing is loose on the berm slope that material will be removed prior to fixing the berm. If the existing footing remains in place berm repair and riprap placement will be done around the footing.

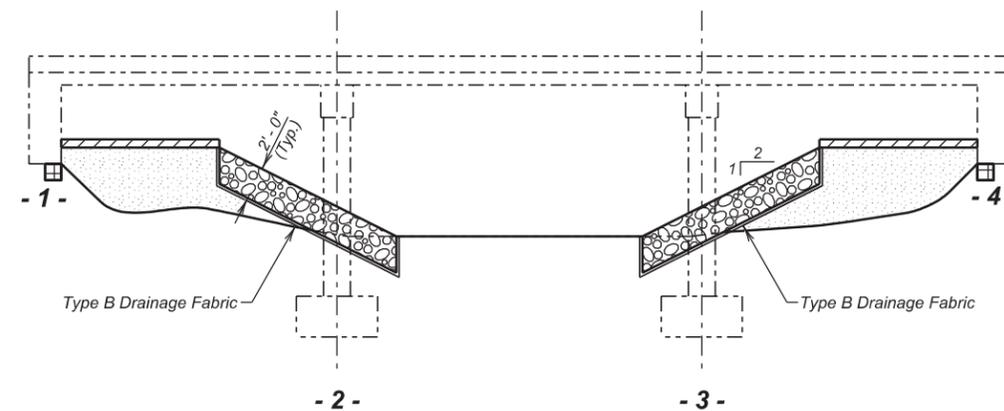
ESTIMATED QUANTITIES

(For Both Abutments)

ITEM	UNIT	QUANTITY
Bridge Berm Repair	Each	2
Select Granular Backfill	Ton	23.4
Controlled Density Fill	CuYd	3.7
Class B Riprap	Ton	158.0
Type B Drainage Fabric	SqYd	242
Perforated Geocell	SqFt	670

LEGEND:

- Class B Riprap
- Perforated Geocell
- Controlled Density Fill
- Bridge Berm Repair



ELEVATION

**-X020-
INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Layout for Upgrade
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet Nos. 4 thru 5 - Original Construction Plans

**LAYOUT FOR UPGRADE
FOR**

60' - 6" CONTINUOUS CONCRETE BRIDGE
 30' - 0" ROADWAY 0° SKEW
 OVER DRAINAGE DITCH SEC. 25-T93N-R49W
 STR. NO. 64-115-166 PT 0048(15)382
 PCN 082D

UNION COUNTY
 S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

1 OF 4

-X020-

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

DESIGNED BY PII UNIN082D	DRAWN BY PII 082DIB01	CHECKED BY TJM	 BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	23.4	Ton
464E0100	Controlled Density Fill	3.7	CuYd
700E0210	Class B Riprap	158.0	Ton
831E0110	Type B Drainage Fabric	242	SqYd
831E1030	Perforated Geocell	670	SqFt

SPECIFICATIONS

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

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Remove existing forms on the abutments and place Controlled Density Fill as required.
2. Remove temporary soil support and repair bridge berm and inslopes at the abutments.
3. Place Type B drainage fabric and Class B Riprap.
4. Place Perforated Geocell filled with Select Granular Backfill on the berm top.

BRIDGE BERM REPAIR

1. The bridge berms have significant material loss due to a flood event and will need rebuilt and shaped to their original template with Class B Riprap incorporated into the berm slope.
2. Due to material loss at the site, borrow is to be provided to rebuild the berm and fill any erosion features on the berm slope. Reconstruct the berms to at least 1-foot above the bottom of the abutment backwall. The berm slope will be benched into stable embankment during reshaping and reconstruction. The soil will be placed in horizontal lifts perpendicular to

the centerline of the structure. For informational purposes the estimated borrow material required is 215.7 cubic yards.

3. Shape the fill in front of the wing walls to divert runoff from the inslopes away from the face of the berm slope. Reshape the inslopes near the wing walls to approximately 20 feet out from the bridge.
4. At the upper part of the berm slope, clearance between the structure and berm will prohibit the use of large compaction equipment. The soil in this area will be compacted using hand operated compaction equipment. Berm material will be placed in reduced lift thicknesses with adequate moisture to obtain density requirements.
5. There are existing forms on both abutments that will be removed. If any voids are found under the abutment, the voids are to be filled with Controlled Density Fill. For estimating purposes, a one-foot square box the length of the abutment was used. The actual quantity of Controlled Density Fill might vary.
6. The berms have temporary soil support consisting of riprap and sand bags that will need removed prior to rebuilding the berm.
7. Soil used to reconstruct the berm slope will be furnished by the Contractor and approved by the Engineer. The soil will have 100% passing the 1 1/2 inch sieve, a maximum of 70% passing the #4 sieve, have a maximum Liquid Limit (LL) of 45 and a Plastic Index (PI) greater than 10 but less than 25. The Contractor will be responsible for one gradation, LL and PI test for each borrow source for berm reconstruction. The test results will be supplied to the Engineer in writing.
8. Compaction of the reconstructed berm and inslopes will be governed by the Ordinary Compaction Method.
9. Quantities provided are an estimate for this work. It is the responsibility of the Contractor to visit the site to determine quantities needed.
10. The cost of the berm reconstruction will be incidental to the contract unit price per each for Bridge Berm Repair. This payment will be full compensation for furnishing all materials, removal and disposal of existing footing if required, excavation, labor, tools, and equipment necessary or incidental to the reconstruction of the bridge berm.

RIPRAP

1. The cross section shown in this plan set is provided as a guide for riprap placement and is based on the existing ground location at the time of inspection. The location of the toe of the riprap may vary to suit local site conditions provided the following items are adhered to:
 - a. The opening provided under the structure for water flow is not reduced from what is shown on the cross section.
 - b. Any changes in the riprap configuration are approved by the Engineer.

2. Prior to placement of the drainage fabric, the surface to be covered will be smooth, free of obstructions, and conform to the plan configuration.
3. As the riprap is placed on a repaired berm, it is not anticipated that excavation will be required for riprap placement. However, some excavation may be required where the riprap transitions back to the existing profile as directed by the Engineer. All material excavated to allow for riprap placement will be disposed of by the Contractor.
4. A factor of 1.4 tons/CuYd was used to convert the riprap quantity from CuYd to Tons.
5. The Class B Riprap will be constructed to the configuration, limits and elevations shown. All costs associated with placement of the riprap including all material, excavation, labor, and equipment will be included in the contract unit price per ton for Class B Riprap.

PERFORATED GEOCELL

1. Perforated Geocell will be from the following company or equivalent:

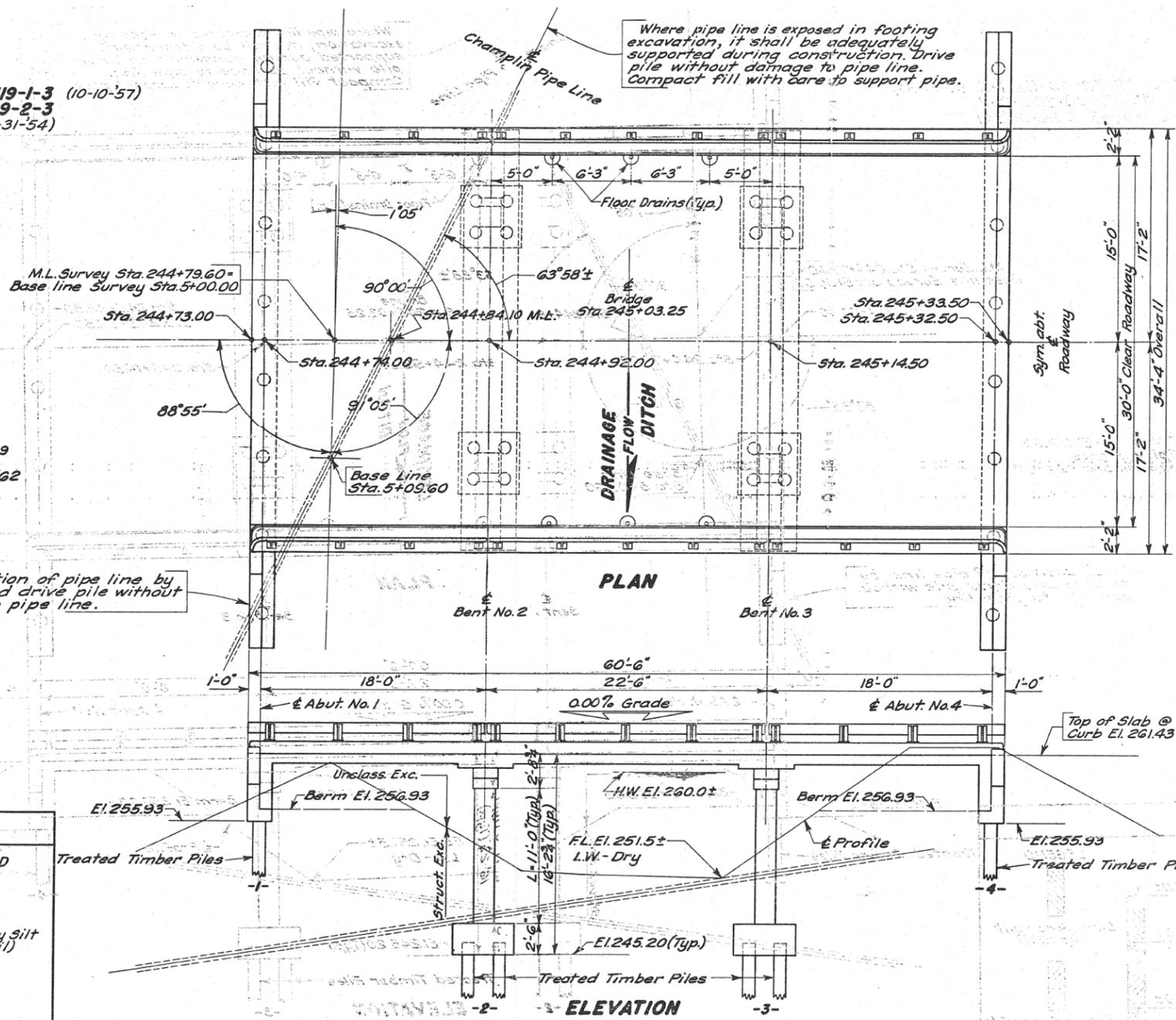
Company: Agtec
Phone: 1-818-724-7657
Website: <http://www.agtec.com>
2. Perforated Geocell will be 6 inches tall with Type B Drainage Fabric underlying the perforated Geocell. Installation will adhere to the manufacturer's recommendation.
3. Perforated Geocell will be filled with the Select Granular Backfill.
4. Payment will be full compensation for labor, tools, materials, and any incidentals necessary to for the installation of the Perforated Geocell and will be included in the contract unit price per square foot for the Perforated Geocell.
5. Select Granular Backfill will be paid for at the contract unit price per ton of material furnished. Payment will be full compensation for furnishing, loading, hauling, and placing the Select Granular Backfill.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
60' - 6" CONTINUOUS COMPOSITE BRIDGE

STR. NO. 64-115-166
FEBRUARY 2025

-X020-
INDEX OF BRIDGE SHEETS-

- Sheet No.1 - General Drawing and Quantities
- Sheet No.2 - Details of Std. Superstructure FBOP-CS-30-00-119-1-3 (10-10-57)
- Sheet No.3 - Details of Std. Substructure FBOP-CS-30-00-209-2-3
- Sheet No.4 - Details of Type-B Railing CS-RB-00-119-3-3 (12-31-54)



B.M. No. 15 - El. 254.83
Rebar in fence line
442' Lt. Sta. 264+13

B.M. No. 14 - El. 261.39
Spike in tree
396' Rt. Sta. 224+62

Check position of pipe line by probing and drive pile without damage to pipe line.

GENERAL NOTES-
1. See NOTES on Sheets No. 2, 3 & 4.
2. Omit floor drains in end spans.

ORIGINAL CONSTRUCTION PLANS

TEST HOLE DATA

TEST HOLE	DEPTH (ft)	SOIL TYPE	ELEVATION (ft)
Test Hole No. C-3 2' Lt. Sta. 244+00	0-10	Black Sandy Silt (Top Soil)	El. 254.5±
	10-15	Black Sandy Silt (Top Soil)	El. 246.8±
	15-20	Black Sandy Silt (Top Soil)	El. 239.5±
	20-25	Black Sandy Silt (Top Soil)	El. 227.0±
Test Hole No. C-2 2' Lt. Sta. 244+57	0-10	Black Sandy Silt (Top Soil)	El. 254.7±
	10-15	Black Sandy Silt (Top Soil)	El. 247.0±
	15-20	Black Sandy Silt (Top Soil)	El. 240.0±
	20-25	Black Sandy Silt (Top Soil)	El. 227.5±
Test Hole No. C-4 1' Lt. Sta. 244+30	0-10	Black Sandy Silt (Top Soil)	El. 253.6±
	10-15	Black Sandy Silt (Top Soil)	El. 245.6±
	15-20	Black Sandy Silt (Top Soil)	El. 237.5±
	20-25	Black Sandy Silt (Top Soil)	El. 225.1±
Test Hole No. C-1 14' Lt. Sta. 245+65	0-10	Black Sandy Silt (Top Soil)	El. 255.0±
	10-15	Black Sandy Silt (Top Soil)	El. 247.9±
	15-20	Black Sandy Silt (Top Soil)	El. 237.9±
	20-25	Black Sandy Silt (Top Soil)	El. 222.9±
Test Hole No. C-2 2' Lt. Sta. 244+57	0-10	Brown Sandy Silt	El. 253.6±
	10-15	Brown Sandy Silt	El. 245.6±
	15-20	Brown Sandy Silt	El. 237.5±
	20-25	Brown Sandy Silt	El. 225.1±
Test Hole No. C-3 2' Lt. Sta. 244+00	0-10	Sand	El. 254.5±
	10-15	Sand	El. 246.8±
	15-20	Sand	El. 239.5±
	20-25	Sand	El. 227.0±
Test Hole No. C-4 1' Lt. Sta. 244+30	0-10	Sand	El. 254.7±
	10-15	Sand	El. 247.0±
	15-20	Sand	El. 240.0±
	20-25	Sand	El. 227.5±
Test Hole No. C-1 14' Lt. Sta. 245+65	0-10	Gravel	El. 255.0±
	10-15	Gravel	El. 247.9±
	15-20	Gravel	El. 237.9±
	20-25	Gravel	El. 222.9±
Test Hole No. C-2 2' Lt. Sta. 244+57	0-10	Shale	El. 253.6±
	10-15	Shale	El. 245.6±
	15-20	Shale	El. 237.5±
	20-25	Shale	El. 225.1±
Test Hole No. C-3 2' Lt. Sta. 244+00	0-10	Shale	El. 254.5±
	10-15	Shale	El. 246.8±
	15-20	Shale	El. 239.5±
	20-25	Shale	El. 227.0±
Test Hole No. C-4 1' Lt. Sta. 244+30	0-10	Shale	El. 254.7±
	10-15	Shale	El. 247.0±
	15-20	Shale	El. 240.0±
	20-25	Shale	El. 227.5±

ESTIMATED QUANTITIES

ITEM	C/A Conc. Cu Yds.	Steel - Lbs. Reinf. Struct.	Type-B Steel Railing Lin. Ft.	Pile Shoes No.	Treated Timber Piles - 8 Lin. Ft.	Excavation - Cu Yds. Struct. % Unclass.
Superstructure	66.7	14,330	95	123.3		
Abuts. No. 1 & No. 4	35.6	3,630	760	16	16 @ 25' = 400	15.1
Bents No. 2 & No. 3	21.8	2,955		16	16 @ 50' = 800	65.1
Totals	124.1	21,915	855	145.3	1,200	80

One Treated Timber Test Pile shall be driven at Abuts. No. 1 & No. 4 and at Bent No. 3 before the remaining piles are ordered.
See Grading Plans for Unclassified Excavation.
American No. 1 All Steel Pile Shoes, or equivalent, shall be used; the cost to be included in the unit price bid for Treated Timber Piles.

GENERAL DRAWING AND QUANTITIES
FOR
60'-6" CONTINUOUS CONCRETE BRIDGE
30'-0" ROADWAY
OVER DRAINAGE DITCH SEC. 25-T93H-R49W
STA. 244+73.00 TO 245+33.50 \$ 3981(2)
UNION COUNTY
SOUTH DAKOTA H20-44
DEPARTMENT OF HIGHWAYS
JULY, 1959 3 OF 4

