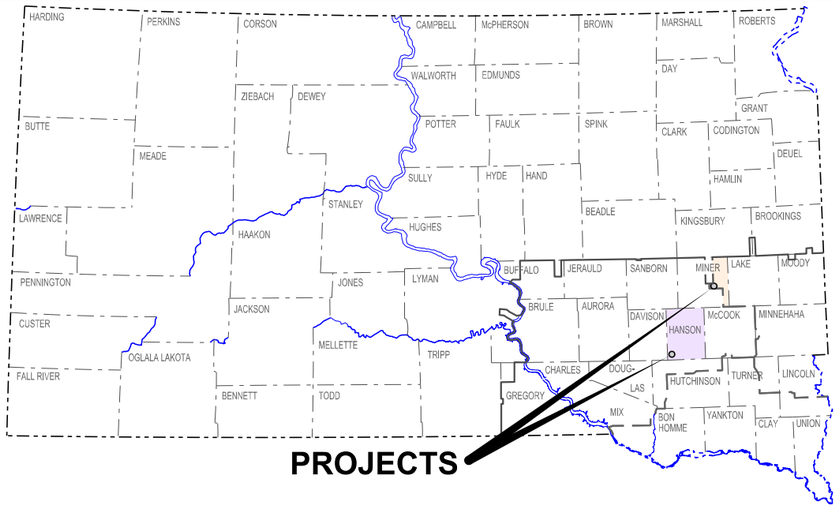


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

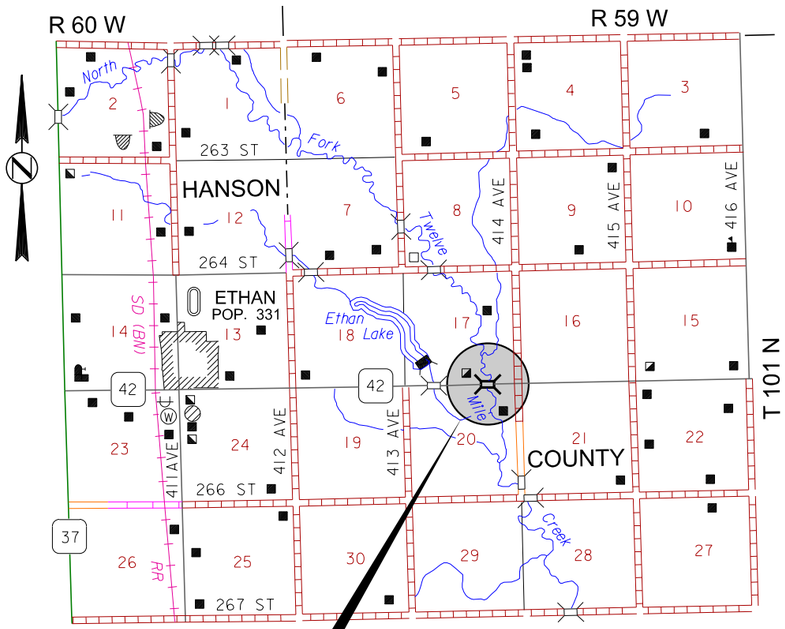
PROJECTS
PT 0042(90)305 &
PT 0034(209)366
SD HIGHWAYS 42 & 34
HANSON & MINER COUNTIES

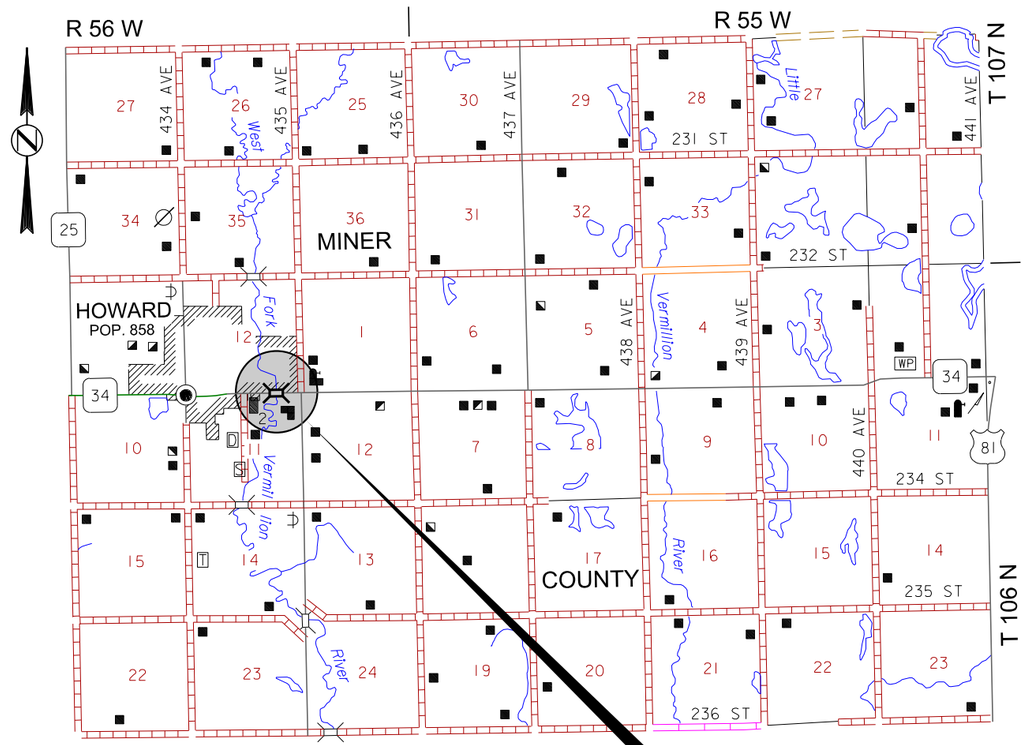
SCOUR PROTECTION -
BERM REPAIR & RIPRAP
PCN 0824 & 0827

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0042(90)305 & PT 0034(209)366	1	13

Plotting Date: 11/13/2023

INDEX OF SHEETS





STORM WATER PERMIT
(None required)

DESIGN DESIGNATION

ROUTE	SD42	SD34
ADT(2022)	513	1,949
ADT(2042)	701	3,175
DHV	81	427
D	51%	50%
T DHV	6.7%	6.6%
T ADT	14.8%	14.2%
V	65 MPH	65 MPH

STR. NO. 31-017-210
196+40.75 to 197+46.25
Continuous Concrete Bridge
over Twelve Mile Creek
105'-6"=0.020 Mile
MRM 305.57

STR. NO. 49-168-130
24+56 to 25+52.25
Continuous Concrete Bridge
over West Fork Vermillion River
96'-3"=0.018 Mile
MRM 366.83

5

January 17, 2024

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0042(90)305 & PT 0034(209)366	2	13

PCN 0824

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	80.0	Hour
634E0110	Traffic Control Signs	169.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS

PCN 0827

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	80.0	Hour
634E0110	Traffic Control Signs	169.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS

STR. NO. 31-017-210

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E0600	Contractor Furnished Borrow Excavation	227	CuYd
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	19.1	Ton
464E0100	Controlled Density Fill	0.7	CuYd
700E0210	Class B Riprap	145.6	Ton
831E0110	Type B Drainage Fabric	309	SqYd
831E1030	Perforated Geocell	546	SqFt

STR. NO. 49-168-130

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E0600	Contractor Furnished Borrow Excavation	83	CuYd
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	14.4	Ton
464E0100	Controlled Density Fill	2.0	CuYd
700E0210	Class B Riprap	175.6	Ton
831E0110	Type B Drainage Fabric	327	SqYd
831E1030	Perforated Geocell	412	SqFt

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.

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0042(90)305 & PT 0034(209)366	3	13

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 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:
< http://sdleastwanted.com/maps/default.aspx >

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

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.

Cost 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 100 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/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor 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.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

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

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

All 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, work will not be allowed during hours of darkness.

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

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

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.

TRAFFIC CONTROL SIGNS

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

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W8-6	TRUCK CROSSING	4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			338.0

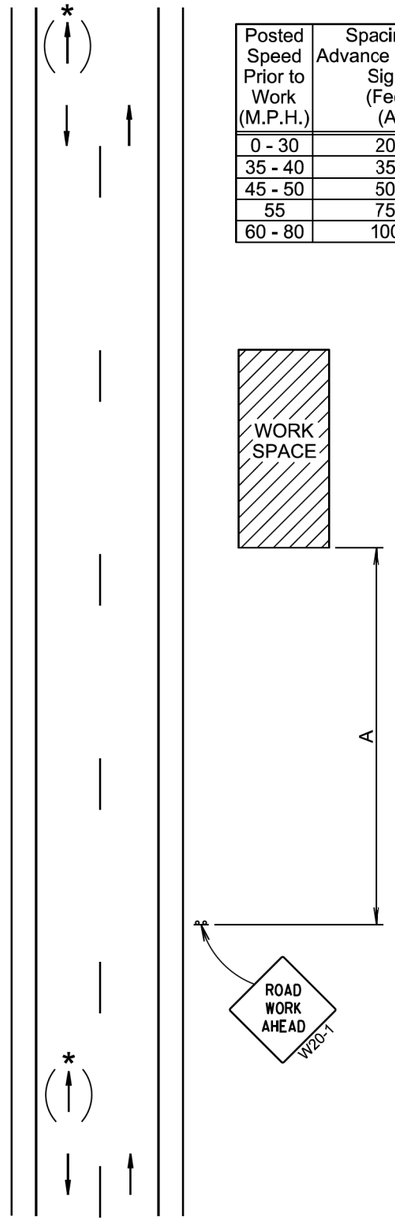
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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.

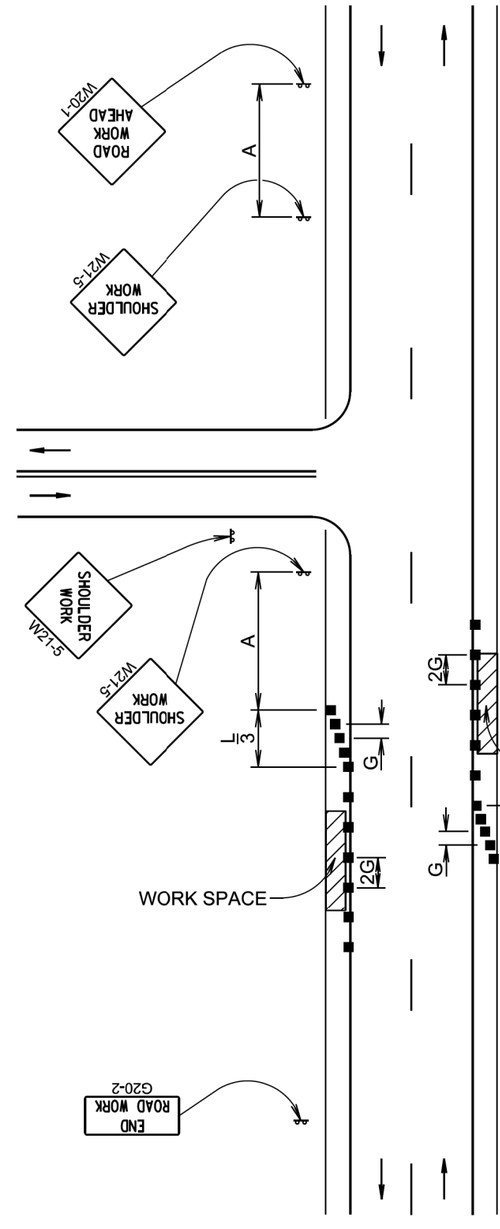
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



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

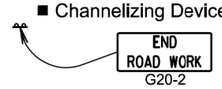
January 22, 2021

Published Date: 2024	SDDOT	WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1



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

■ Channelizing Device



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

Published Date: 2024	SDDOT	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1

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

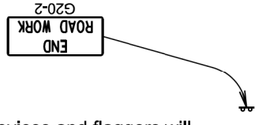
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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.

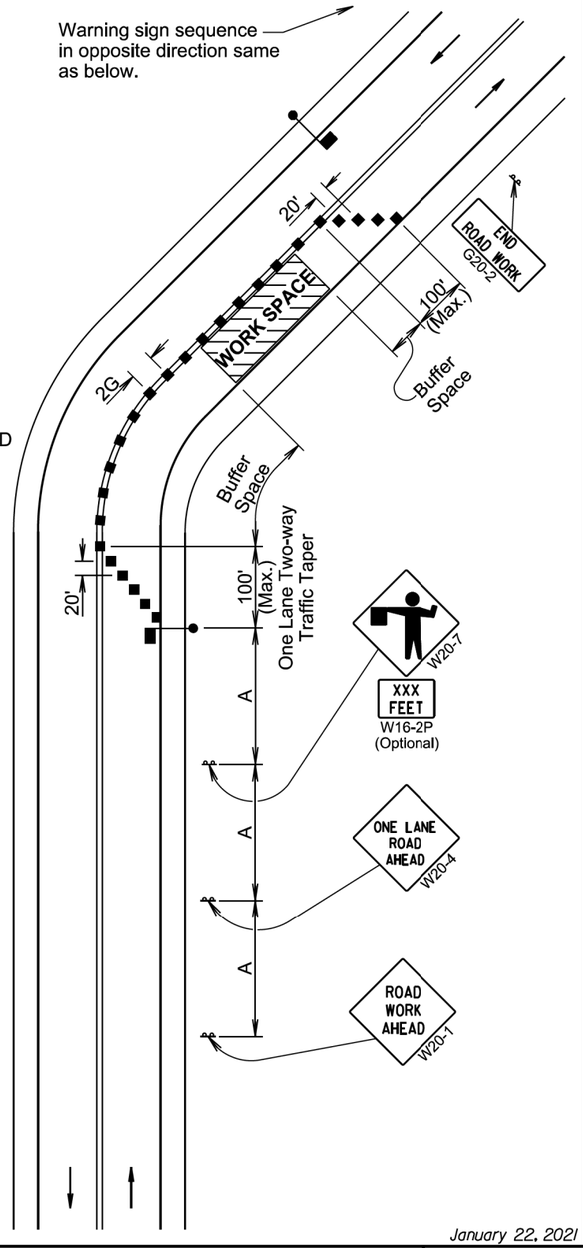
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

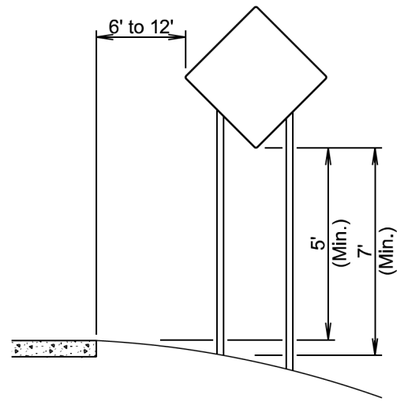
The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

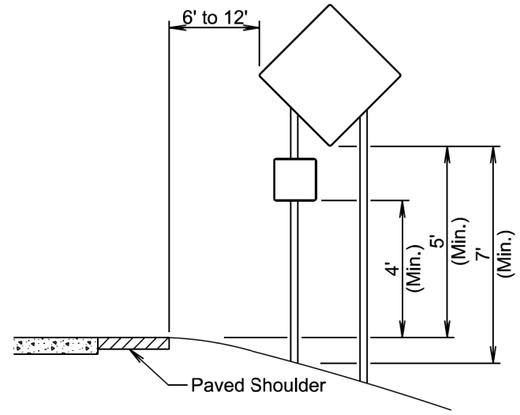


January 22, 2021

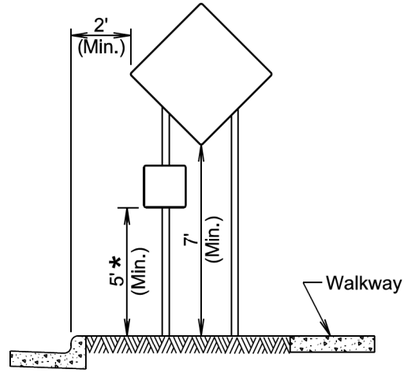
Published Date: 2024	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



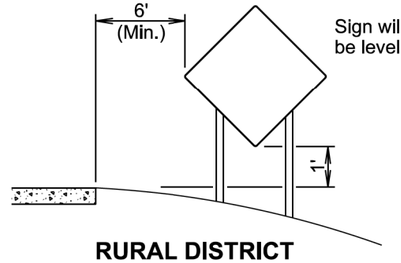
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

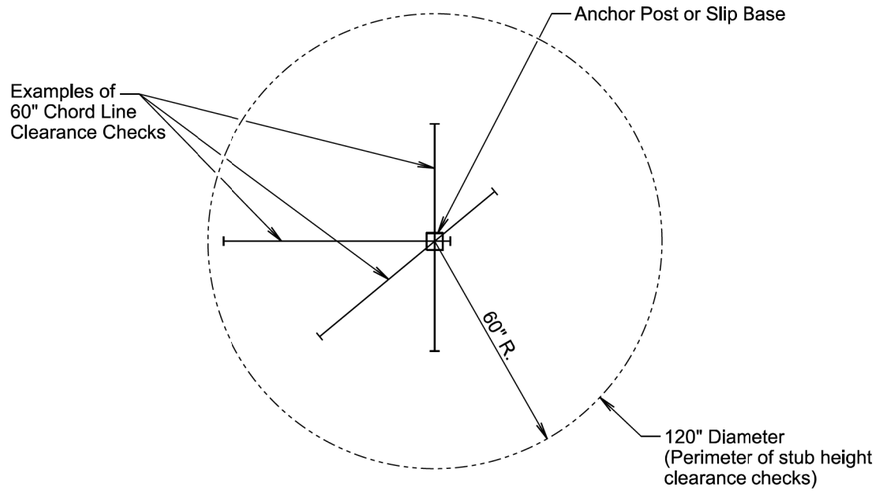


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

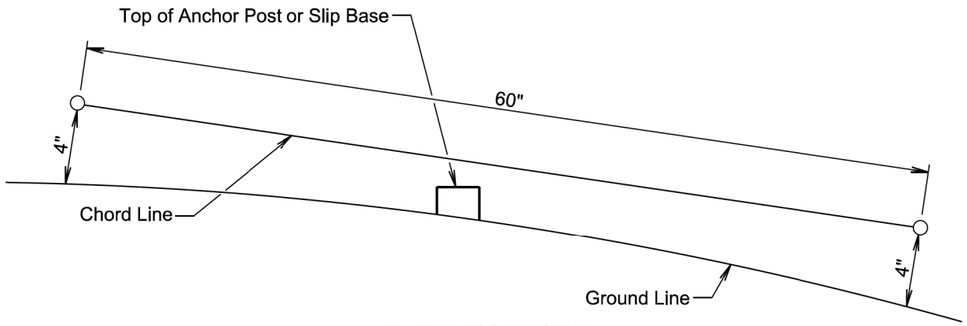
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2024	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

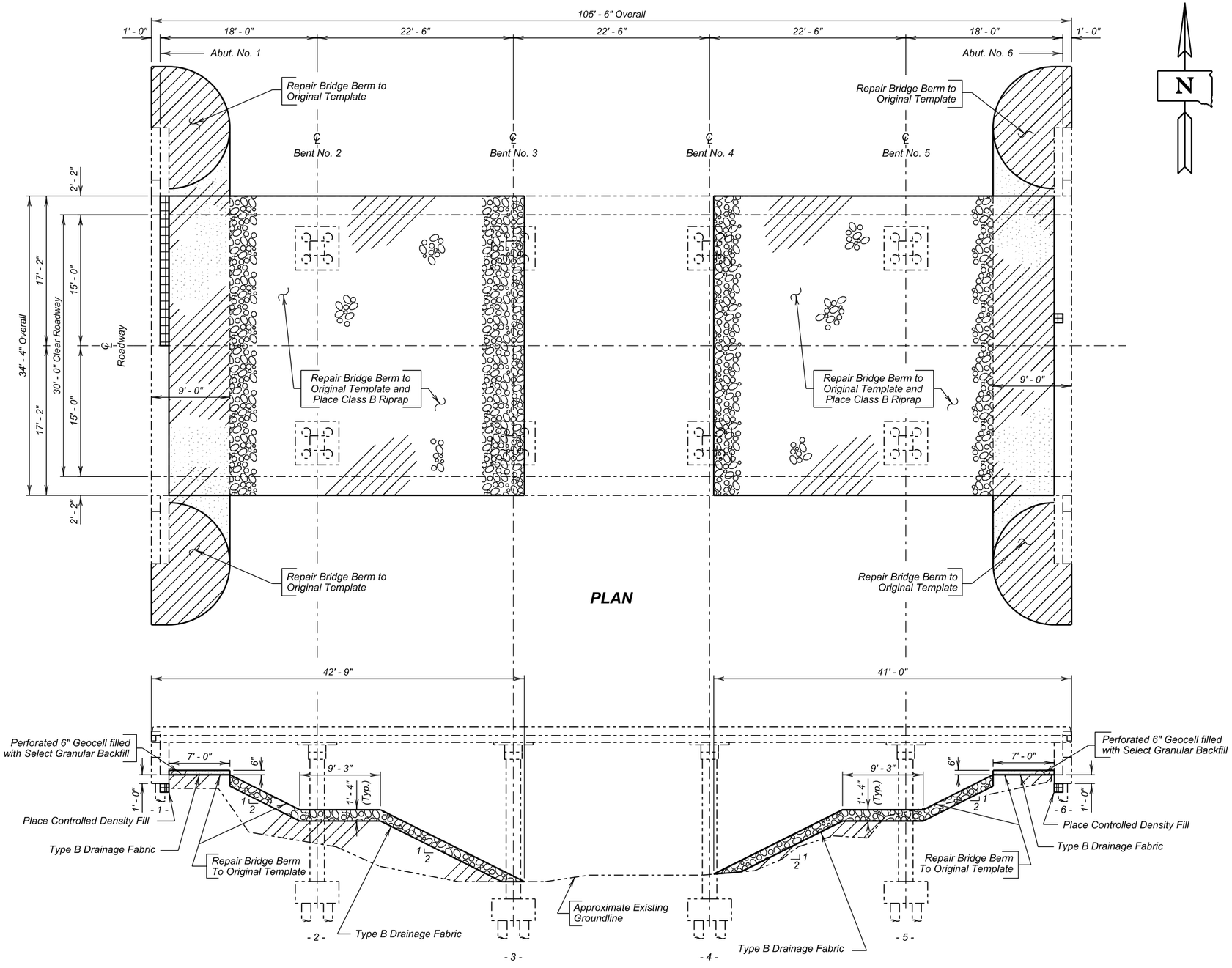
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

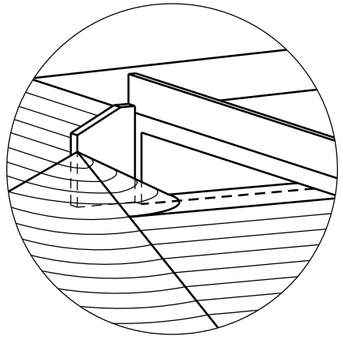
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2024	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	*PLATE NUMBER* 634.99
			Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PT 0042(90)305 & PT 0034(209)366	8	13





SPILL CONE DETAIL AT EMBANKMENT

LEGEND:

- Class B Riprap
- Controlled Density Fill
- Bridge Berm Repair
- Perforated Geocell with Select Granular Backfill

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⊛	Contractor Furnished Borrow Excavation	CuYd	227
	Bridge Berm Repair	Each	2
≠	Select Granular Backfill	Ton	19.1
⧫	Controlled Density Fill	CuYd	0.7
⧖	Class B Riprap	Ton	145.6
✳	Type B Drainage Fabric	SqYd	309
	Perforated Geocell	SqFt	546

NOTE:

⊛ 1.25 Shrinkage Factor used.

≠ For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

⧫ Quantitiy was estimated using 1 SqFt box across half the length of Abutment No. 1 and a 1 SqFt box in a 1 ft area at Abutment No. 6.

⧖ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert cu. yds. to tons.

✳ Overlap is not included in quantity.

Cut existing unused piles and footing rebar in berm repair area down 1 foot below the existing groundline.

Dimensions based on original construction plans and survey completed in August of 2022. Actual quantities may vary.

-X020-
INDEX OF BRIDGE SHEETS -

LAYOUT FOR UPGRADE

FOR

105' - 6" CONT. CONCRETE BRIDGE

30' - 0" ROADWAY — 0° SKEW

OVER N.F. TWELVE MILE CR. — SEC. 17/20-T101N-R59W

STR. NO. 31-017-210 — PT 0042(90)305

PCN 0824

HANSON COUNTY

S. D. DEPT. OF TRANSPORTATION

DECEMBER 2023

-X020-

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JRB	CM	JRB	Steve A Johnson BRIDGE ENGINEER
HANS0824	0824BA01		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PT 0042(90)305 & PT 0034(209)366	9	13

Revised 11/14/2023 JRB

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
120E0600	Contractor Furnished Borrow Excavation	227	CuYd
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	19.1	Ton
464E0100	Controlled Density Fill	0.7	CuYd
700E0210	Class B Riprap	145.6	Ton
831E0110	Type B Drainage Fabric	309	SqYd
831E1030	Perforated Geocell	546	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 and are provided as information only. 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. Place Controlled Density Fill in voids under the abutments.
2. Cut existing unused piles in the berm repair area 1 foot below the existing groundline.
3. Repair Bridge Berm and inslopes at the abutments and place Type B Drainage Fabric in the designated areas.
4. Place Class B Riprap in designated areas.
5. Place Perforated Geocell with Select Granular Backfill in designated areas.

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. Fill voids under the abutments using Controlled Density Fill. The quantity for Controlled Density Fill is based on a 1 sq ft box across half the length of Abutment No. 1 and a 1 sq ft box in a 1 ft area at Abutment No. 6. The actual quantity of material may vary.
3. 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 will extend flat from the abutment backwall a minimum of 7' – 0" before the slope begins. 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.
4. 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.
5. 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.
6. 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 ½ 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.
7. Compaction of the reconstructed berm and inslopes will be governed by the Ordinary Compaction Method.
8. Quantities provided are an estimate for this work. It is the responsibility of the Contractor to visit the site prior to starting construction to determine quantities needed.
9. The cost of additional material required to repair the berm will be incidental to the contract unit price for Contractor Furnished Borrow Excavation.
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 labor, tools, and equipment necessary or incidental to the reconstruction of the bridge berm and the cutting of the existing piles.

RIPRAP

1. The cross sections shown in this plan set are provided as a guide for riprap placement and are based on the existing ground locations at the time of the survey in 2022. 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 sections.
   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 anticipated that some excavation will be required for riprap placement. 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 and limits 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
105' - 6" CONTINUOUS CONCRETE BRIDGE

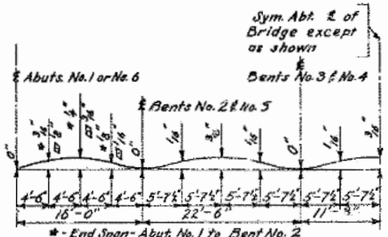
STR. NO. 31-017-210
DECEMBER 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JRB	CM	JRB	Steve A Johnson BRIDGE ENGINEER
HANS0824	0824BA02		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PT 0042(90)305 & PT 0034(209)366	10	13

-X020-

INDEX OF BRIDGE SHEETS



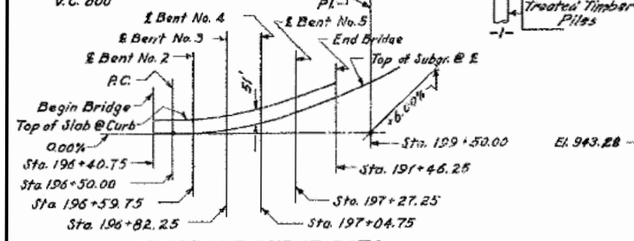
*-End Span-Abut. No.1 to Bent No.2
**-End Span-Bent No.5 to Abut. No.6

CAMBER DIAGRAM

Note:- Dimensions shown above, for quarter points of spans, supersede corresponding dimensions shown on sheet No.2. All other provisions for camber, shown on sheet No.2 shall apply.

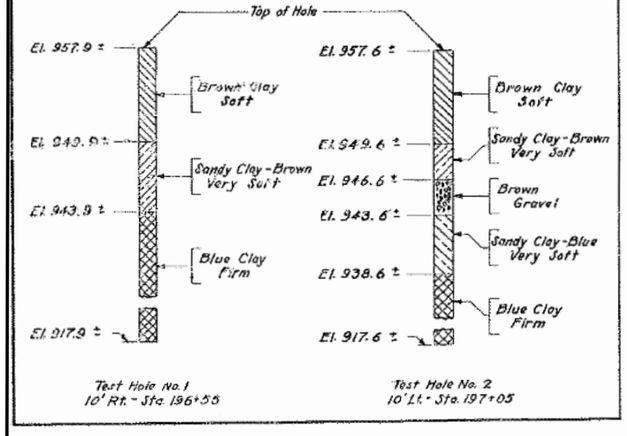
Q	3000	c.f.s.
A	605	Sq. ft.
V	4.93	f/Sec.

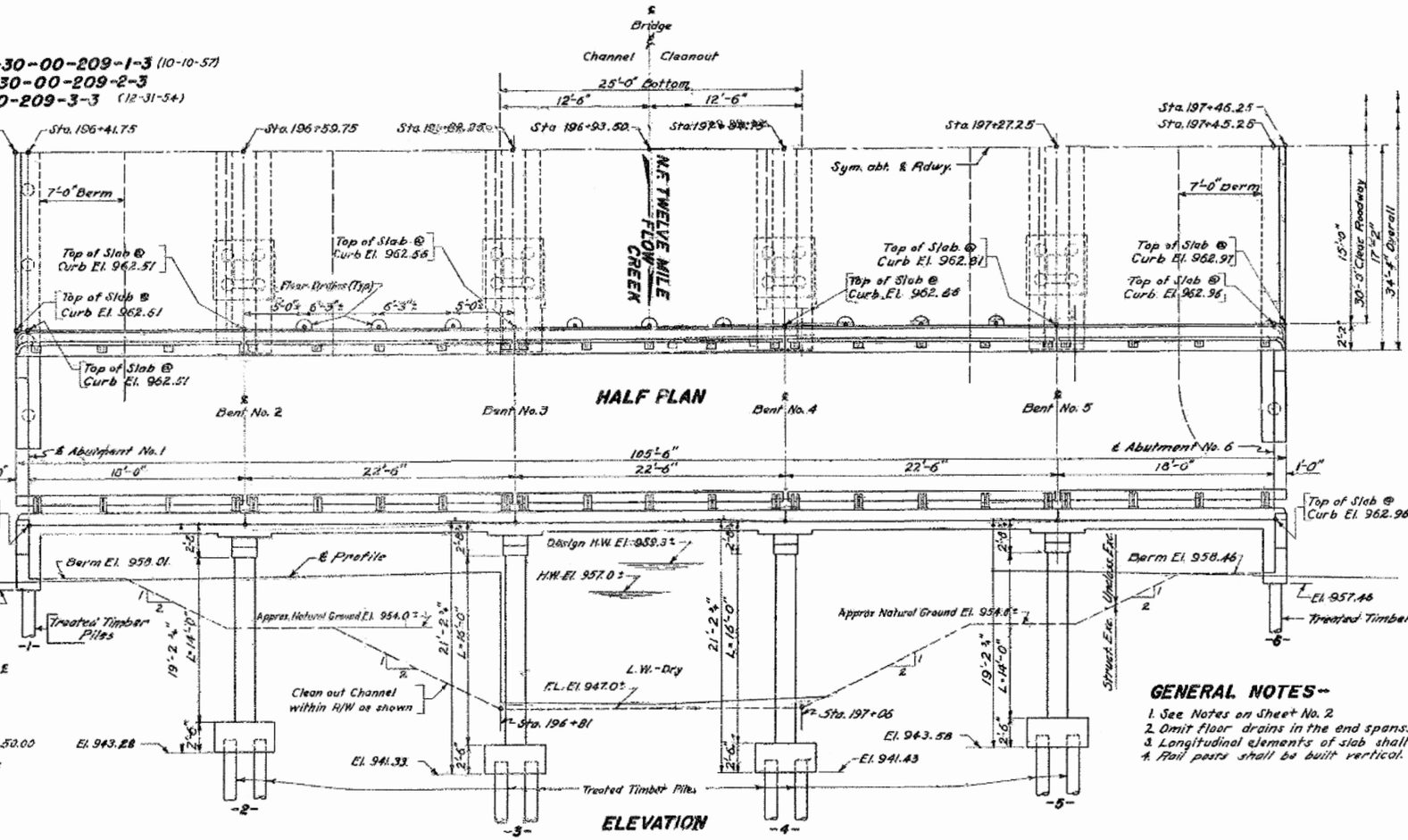
P.I. Sta. 199+50.00
El. 962.00
V.C. 600'



SUBGRADE CURVE DATA

TEST HOLE DATA





ELEVATION

B.M. No.8 - El. 958.89
Re. bar & Guards
117' Rt. Sta. 185+14

B.M. No.9 - El. 959.23
X on East end North Wheel Guard.
10' Lt. Sta. 191+10

B.M. No. 10 - El. 1005.00
Re. bar & Guards
111' Rt. Sta. 211+09

GENERAL NOTES--

1. See Notes on Sheet No. 2
2. Omit floor drains in the end spans.
3. Longitudinal elements of slab shall conform to the vertical curve.
4. Rail posts shall be built vertical.

ESTIMATED QUANTITIES

ITEM	Concrete-Cl. "A" Cu. Yds.	Steel-Lbs. Reinf.	Steel-Lbs. Structl.	Saw Cut Shall Holes Lin. Ft.	Treated Timber Piles-Lin. Ft.	Excavation-Cu Yds. Structr.	Excavation-Cu Yds. *Unclass.	
Superstructure	120.5	26745	190	218.3				
Abutments No.1 & No.6	35.8	3630	760		16@25'=400	13		
Bents No.2 & No.5	23.1	3150			16@10'=160	80		
Bents No.3 & No.4	23.9	3275			16@10'=160	40		
TOTALS	203.1	36800	950	218.3	#720	133	*1,370	* INCIDENTAL WORK

#One Treated Timber Test Pile shall be driven at Abutments No.1 & No.6 and at Bents No.2 & No.4 before the remaining piles are ordered.
*See Grading Plans for Unclassified Excavation
* INCIDENTAL WORK: In place, Sta. 196+95, Single Span 28'-29' Rdwy. I-Beam Bridge. Break down railposts and remove gas pipe railing. Break out concrete floor and remove I-beam stringers. are shall be taken not to injure the structural properties of the I-beam stringers and the gas pipe railing. The salvaged I-beam stringers and gas pipe railing shall be placed neatly on the right-of-way as directed by the ENGINEER. Break down old concrete abutments to 1'± below finished ground line, except at Bents No.3 & No.4 where old substructure shall be removed as necessary for the construction of new footings. Satisfactory broken concrete shall be used as slope protection on the upstream side of new embankments around wings at ends No.1 & No.6. All other broken concrete and materials shall be disposed of as directed by the ENGINEER.

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING AND QUANTITIES
FOR
105'-6" CONTINUOUS CONCRETE BRIDGE
30'-0" ROADWAY
OVER N.F. TWELVE MILE CR. SEC. 17/20-T101N-R59W
STA. 196+40.75 TO 197+46.25 S 2211 (2)
HANSON COUNTY
STR. NO. 31-017-210 SOUTH DAKOTA H-20-44
DEPARTMENT OF HIGHWAYS
JAN. 1958

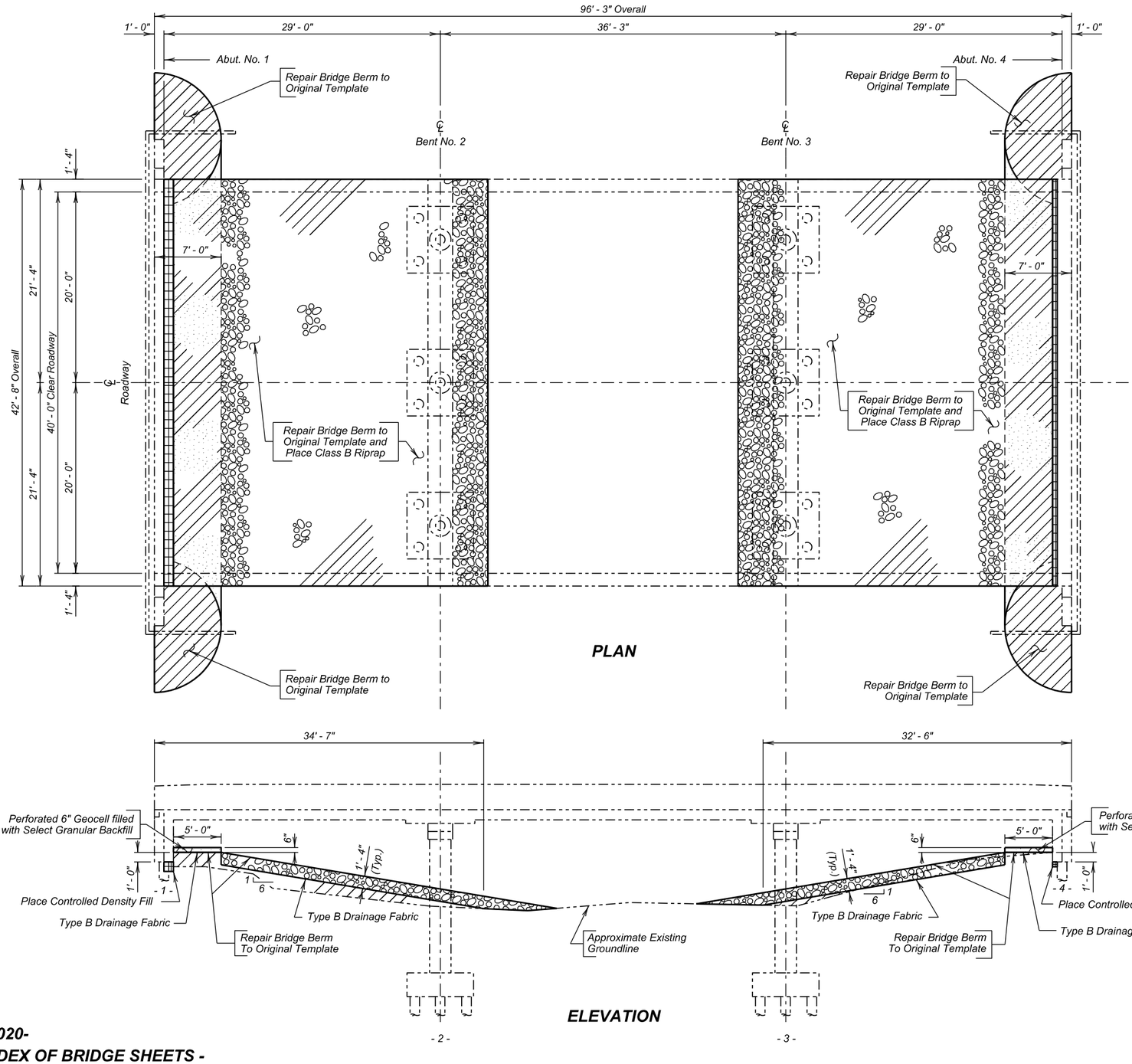
-X020-

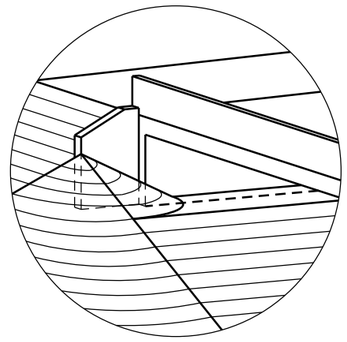
3 OF 3

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	EAP	DWH	BRIDGE ENGINEER

31-017-210

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PT 0042(90)305 & PT 0034(209)366	11	13





SPILL CONE DETAIL AT EMBANKMENT

LEGEND:

- Class B Riprap
- Controlled Density Fill
- Bridge Berm Repair
- Perforated Geocell with Select Granular Backfill

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⊛	Contractor Furnished Borrow Excavation	CuYd	83
	Bridge Berm Repair	Each	2
=	Select Granular Backfill	Ton	14.4
⧫	Controlled Density Fill	CuYd	2.0
⧗	Class B Riprap	Ton	175.6
✳	Type B Drainage Fabric	SqYd	327
	Perforated Geocell	SqFt	412

NOTE:

⊛ 1.25 Shrinkage Factor used.

= For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

⧫ Quantitiy was estimated using 1 SqFt box across the full length of Abutment No. 1 and a 0.25 SqFt box across the full length of Abutment No. 4.

⧗ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert cu. yds. to tons.

✳ Overlap is not included in quantity.

Cut existing unused piles in berm repair area down 1 foot below the existing groundline.

Dimensions based on original construction plans and survey completed in May of 2023. Actual quantities may vary.

Care will be taken to not damage the backwall drain pipes during the repairs.

LAYOUT FOR UPGRADE

FOR

96' - 3" CONT. CONCRETE BRIDGE

40' - 0" ROADWAY — 0° SKEW

OVER W. FORK VERMILLION RIVER — SEC. 2/11-T106N-R56W

STR. NO. 49-168-130 — PT 0034(209)366

PCN 0827

MINER COUNTY

S. D. DEPT. OF TRANSPORTATION

DECEMBER 2023

1 OF 3

-X020-

-X020-
INDEX OF BRIDGE SHEETS -

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JRB	CM	JRB	Steve A Johnson BRIDGE ENGINEER
MINR0827	0827BA01		

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
120E0600	Contractor Furnished Borrow Excavation	83	CuYd
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	14.4	Ton
464E0100	Controlled Density Fill	2.0	CuYd
700E0210	Class B Riprap	175.6	Ton
831E0110	Type B Drainage Fabric	327	SqYd
831E1030	Perforated Geocell	412	SqFt

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ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

96' - 3" CONTINUOUS CONCRETE BRIDGE

STR. NO. 49-168-130

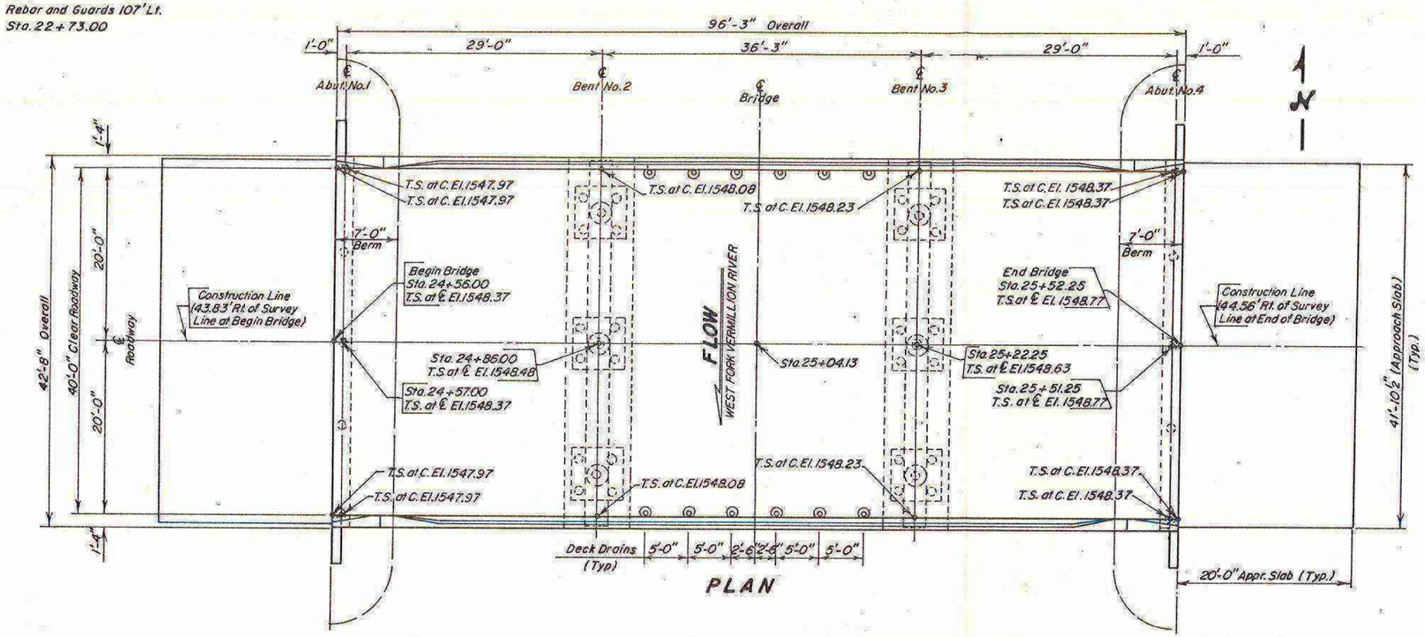
DECEMBER 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JRB	CM	JRB	Steve A Johnson BRIDGE ENGINEER
MINR0827	0827BB02		

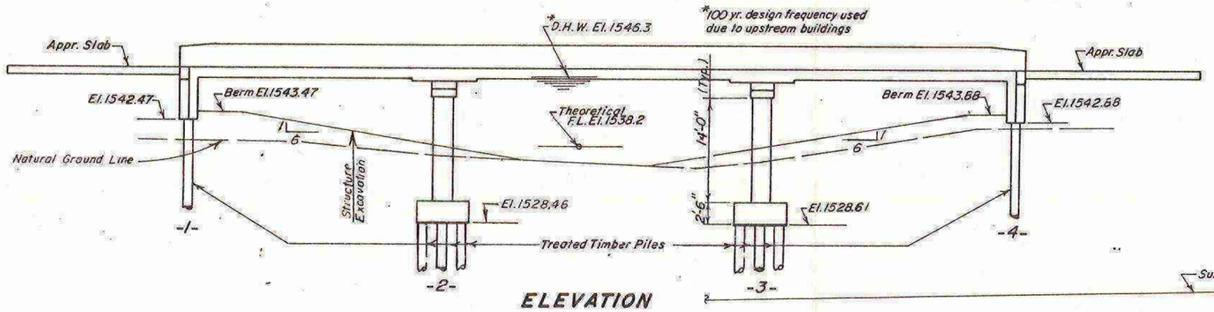
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PT 0042(90)305 & PT 0034(209)366	13	13

B.M. #2 Elev. 1542.85
Rebar and Guards 107' Lt.
Sta. 22+73.00

B.M. #3 Elev. 1545.71
Rebar and Guards 89' Lt.
Sta. 27+87.00



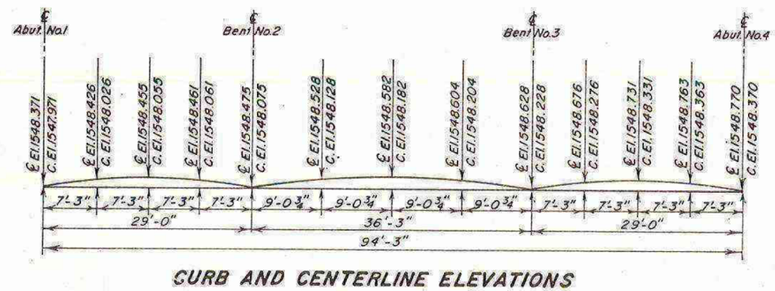
PLAN



ELEVATION

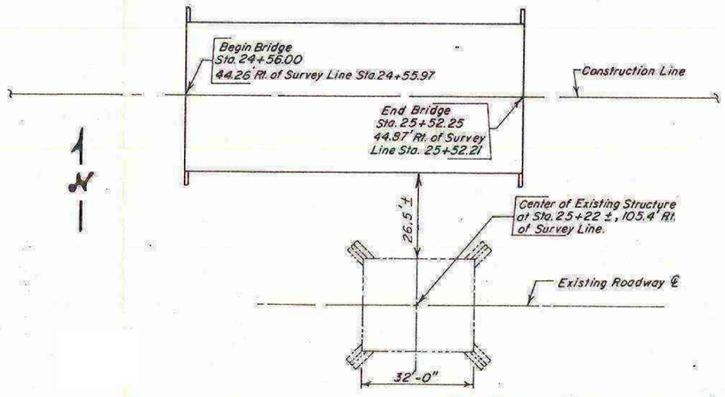
NOTE —

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



CURB AND CENTERLINE ELEVATIONS

Elevations indicated with ℄ are Top of finished slab at centerline roadway, with C are Top of finished slab at Curbs Camber for Dead Load Deflection Plus Plastic Flow, shown on Sheet No. 6 of bridge plans, have been included in the elevations shown above.



PLANS BY:
OFFICE OF BRIDGE DESIGN, S.D. DEPT. OF TRANSPORTATION

-X020-
INDEX OF BRIDGE SHEETS —

Qd	4,756 cfs
Ad	561 Sq.ft.
Vd	8.5 fps
QF	4756 cfs
Q100	4756 cfs
QOTfr	N/A

Qd = design discharge for the proposed culvert or bridge based on 100 year frequency. El. 1546.3 ±

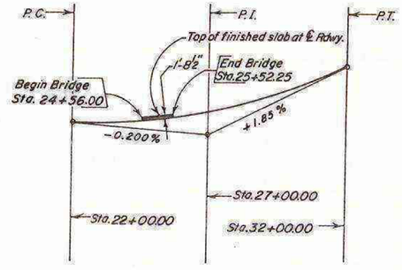
QOTfr = overtopping discharge and frequency N/A yr. recurrence interval, El. N/A

QF = designated peak discharge for the basin approaching proposed project based on 100 year frequency.

Q100 = computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1546.3 ±

HYDRAULIC DATA

P.I. = Sta. 27+00.00
Elev. = 1545.50 (Subgrade)
V.C. = 1000'



VERTICAL CURVE DATA

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING
FOR
96'-3" CONTINUOUS CONCRETE BRIDGE

40'-0" ROADWAY — 0° SKEW
OVER W. FORK VERMILLION RIVER — SEC. 2/11-T106N-R56W
STA. 24+56.00 TO 25+52.25 — BRF 0034(5) 366
STR. NO. 49-168-130 — HS 20-44 (8 ALT.)
PCEMS NO. 0591 — MINER COUNTY

S. D. DEPT. OF TRANSPORTATION

DEC. 1985

3 OF 3

-X020-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
TR/PK	f. a. k.	TR/PK	BRIDGE ENGINEER