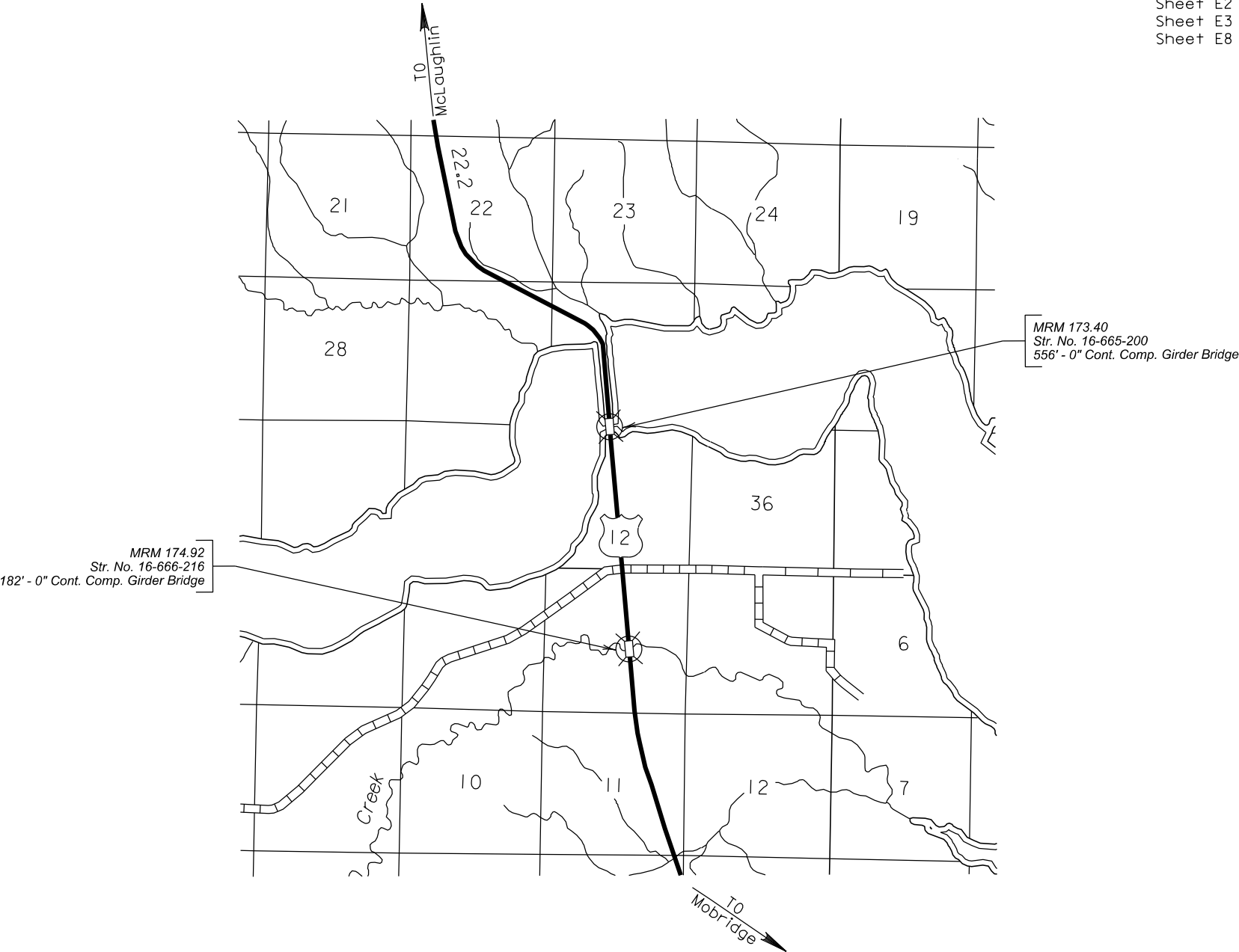


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		E1	E11
S.D.	NH 0012(312)173		

Section E: Structure Plans

INDEX OF SHEETS -

Sheet E1	Layout Map and Index
Sheet E2	Estimate of Structure Quantities
Sheet E3 to E7	Str. No. 16-665-200 556' - 0" Cont. Comp. Girder Bridge
Sheet E8 to E11	Str. No. 16-666-216 182' - 0" Cont. Comp. Girder Bridge



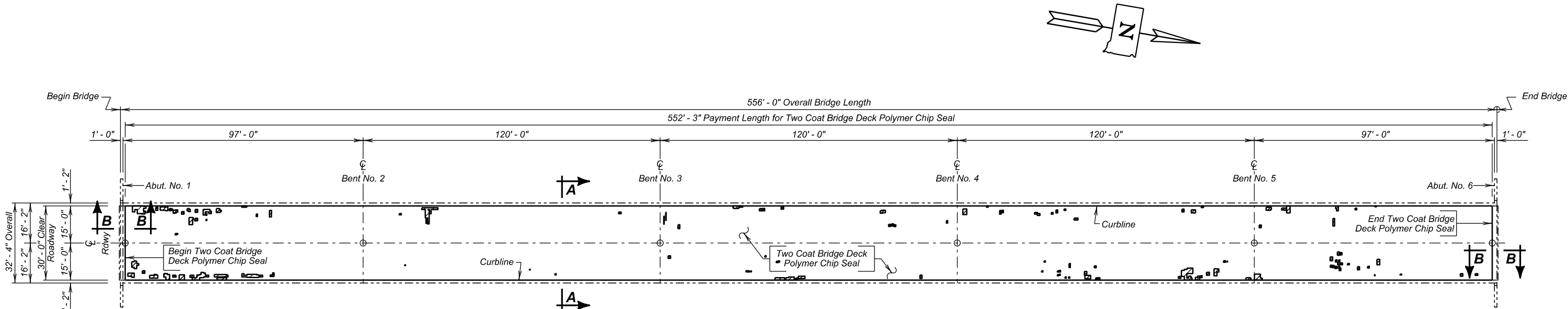
SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

Str. No. 16-665-200

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1,840.8	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1,840.8	SqYd
491E0120	Bridge Deck Grinding	1,840.8	SqYd
491E0130	Concrete Removal, Class A	25.1	SqYd
491E0140	Concrete Removal, Class B	25.1	SqYd
491E0172	Concrete Patching Material, Bridge Deck	113.1	CuFt

Str. No. 16-666-216

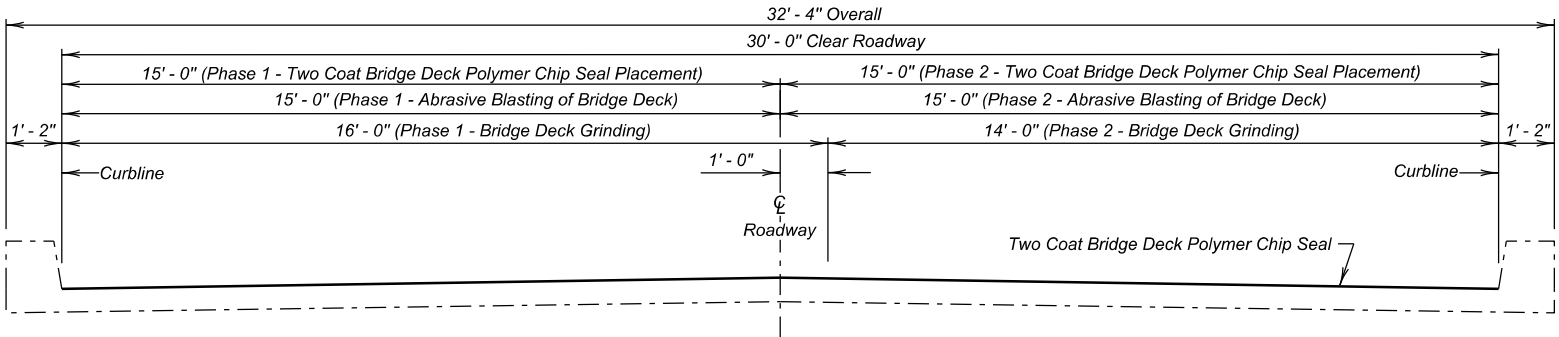
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	603.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	603.4	SqYd
491E0120	Bridge Deck Grinding	603.4	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	20.2	CuFt



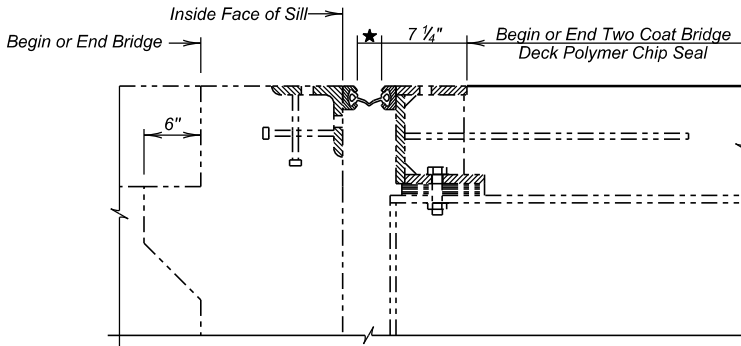
LEGEND:

Shaded areas indicate approximate locations of unsound concrete requiring concrete repair.

PLAN



SECTION A - A
(Concrete shading and reinforcing steel not shown for clarity)



SECTION B - B
(Concrete shading and reinforcing steel not shown for clarity)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Phase I	Phase 2
Two Coat Bridge Deck Polymer Chip Seal	SqYd	920.4	920.4
Abrasive Blasting of Bridge Deck	SqYd	920.4	920.4
Bridge Deck Grinding	SqYd	981.8	859.0
* Concrete Removal, Class A	SqYd	13.4	11.7
* Concrete Removal, Class B	SqYd	13.4	11.7
* Concrete Patching Material, Bridge Deck	CuFt	60.3	52.8

* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL LAYOUT FOR

556' - 0" CONT. COMP. GIRDER BRIDGE

30' - 0" ROADWAY 0° SKEW

OVER GRAND RIVER SEC. 26/35 -T20N-R28E

STR. NO. 16-665-200 NH 0012(312)173

PCN 090X

CORSON COUNTY

S. D. DEPT. OF TRANSPORTATION

JULY 2025

1 OF 5

- X031 -

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Two Coat Bridge Deck Polymer Chip Seal Layout

Sheet No. 2 - Estimate of Structure Quantities and Notes

Sheet No. 3 thru 5 - Original Construction Plans

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

DESIGNED BY CMM CORS090X	CK. DES. BY JB 090XMA01	DRAFTED BY CMM	Steve A. Johnson BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	-------------------------------------

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1840.8	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1840.8	SqYd
491E0120	Bridge Deck Grinding	1840.8	SqYd
491E0130	Concrete Removal, Class A	25.1	SqYd
491E0140	Concrete Removal, Class B	25.1	SqYd
491E0172	Concrete Patching Material, Bridge Deck	113.1	CuFt

SPECIFICATIONS

Construction Specifications: Standard Specifications for Roads and Bridges, 10-1-25 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

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.

- Perform Bridge Deck Grinding for the first phase of construction.
- Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction.
- Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
- Switch traffic and repeat steps 1 through 4 for the second phase of construction.

CONCRETE PATCHING MATERIAL, BRIDGE DECK

- In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
- A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
556' - 0" CONT. COMP. GIRDER BRIDGE

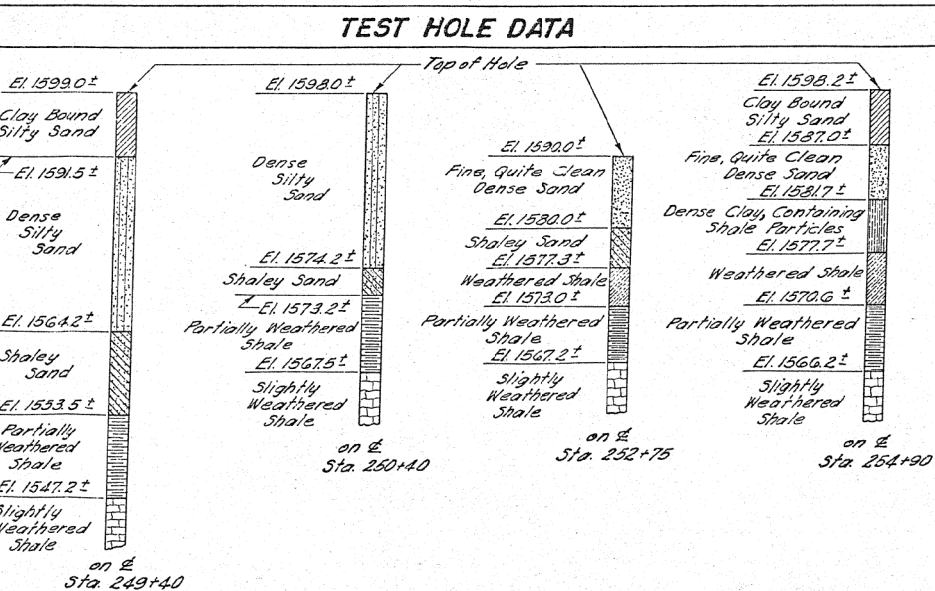
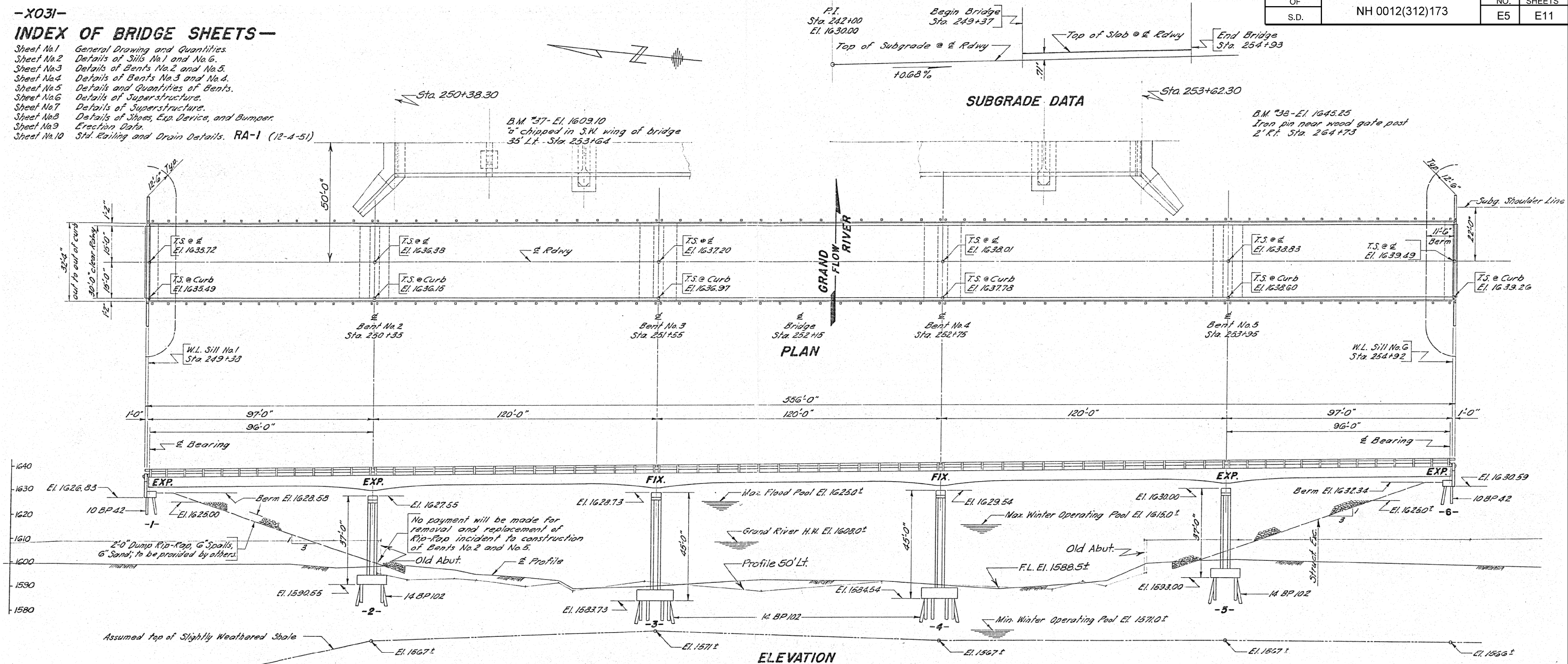
STR. NO. 16-665-200
JULY 2025

-X031-

INDEX OF BRIDGE SHEETS—

Sheet No.1 General Drawing and Quantities.
Sheet No.2 Details of Sills No.1 and No.6.
Sheet No.3 Details of Bents No.2 and No.5.
Sheet No.4 Details of Bents No.3 and No.4.
Sheet No.5 Details and Quantities of Bents.
Sheet No.6 Details of Superstructure.
Sheet No.7 Details of Superstructure.
Sheet No.8 Details of Shoes, Exp. Device, and Bumper.
Sheet No.9 Erection Data.
Sheet No.10 Std. Railing and Drain Details. RA-1 (12-4-51)

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0012(312)173	E5	E11



ESTIMATED QUANTITIES						
ITEM	Concrete - cu yds	Steel - lbs	Type RA-1 Steel Railing - Lbs	Driving Steel Bearing Piles - 14BP106 - Lbs	Steel Bearing Piles - 10BP13 - Lbs	Excavation - cu yds
Superstr - 556'-0" Cont Unit	3750	85,345	463,400	1114.3	36,262.5	20,194.7
Substr - Sill No.1	294	3,535			5,964.25	10,194.7
Substr - Bent No.2	14.3	19,580		10 # 30x300' 239		180,130.50
Substr - Bent No.3	159.1	26,280		14 # 30x300' 239		140,144.2
Substr - Bent No.4	158.1	28,350		14 # 25x300' 376		180,171.11
Substr - Bent No.5	112.8	18,380		10 # 30x300' 239		120,124.16
Substr - Sill No.6	294	3,435			5,964.25	20,194.7
Totals	3816	185,185	463,400	1230	57,750	560,194.7

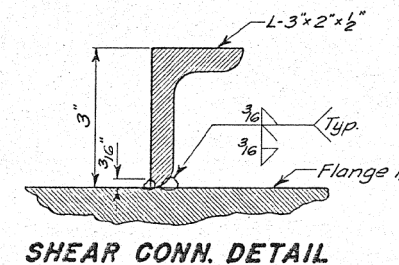
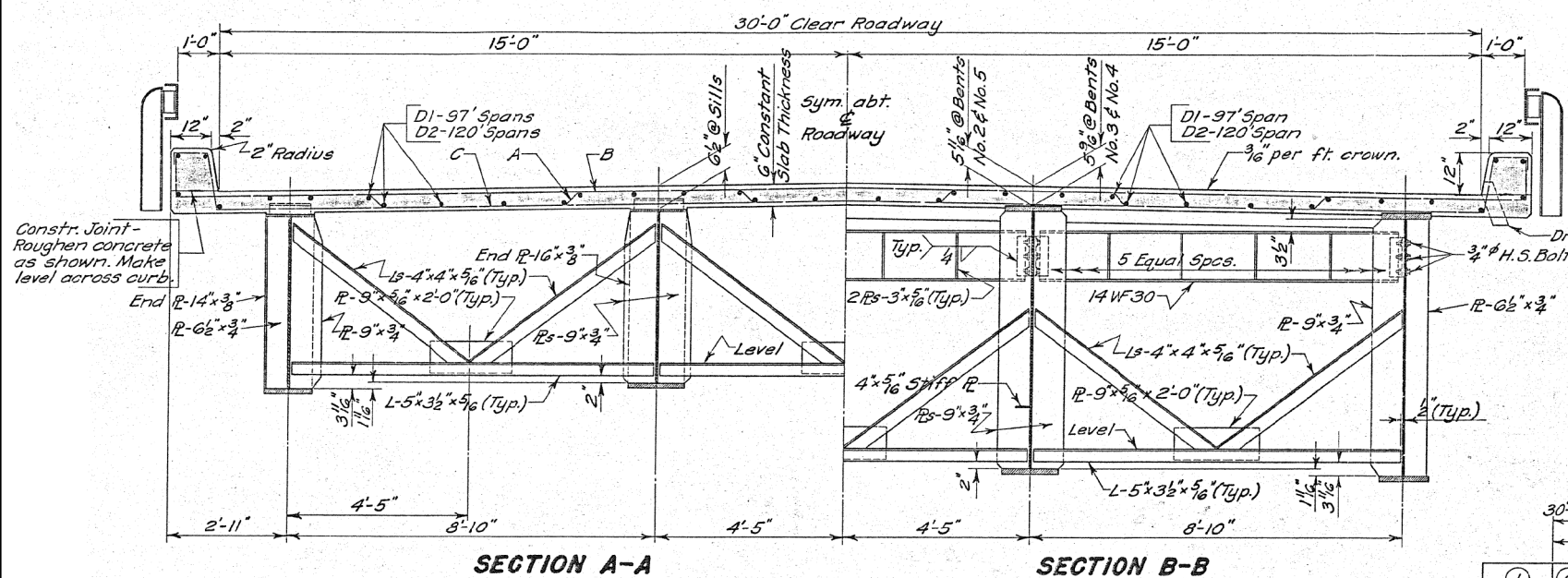
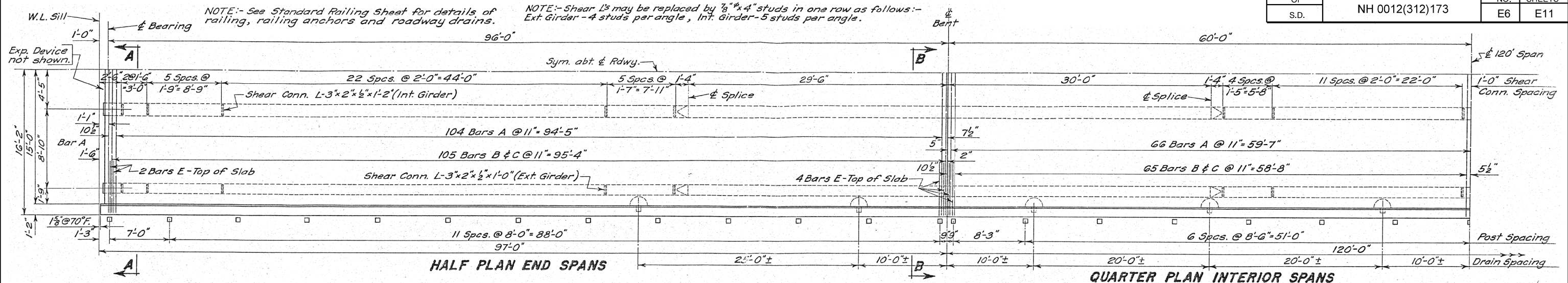
See Grading Plans for Unclassified Excavation.
*INCIDENTAL WORK:- In place 50' left of G, Sta. 250+38.3 to 253+62.3, 324'-0" x 26'-0" roadway Thru Truss Bridge with I-Beam approaches (2@40'-I-Beam Spans, 200' Thru Truss Span, 1@40'-I-Beam Span) and concrete floor throughout. Detail plans are on file in bridge division office. Present structure is to remain in place until traffic is routed over proposed structure. After traffic is routed over new structure take out old bridge.
ITEM 1:- Break down concrete floor being careful not to injure the structural properties of steel members in the floor system of the spans. Break down old concrete substructure to 1' below finished ground line. Satisfactory broken concrete shall be used as slope protection on new embankments of Sills No.1 and No.6. All other broken concrete and materials shall be disposed of as directed by the ENGINEER.
ITEM 2:- Match mark and dismantle spans by member or by panel sections; or spans may be moved intact. Care shall be taken not to injure the steel members structurally during the operation of dismantling, transporting or piling in storage yard. All salvaged materials shall be piled neatly in storage yard at McLaughlin a distance of 18 1/2 miles, as directed by the ENGINEER. The site to be provided by State Department of Highways.
ALTERNATE ITEM 2:- Remove superstructure steel by methods at the discretion of the contractor, the structural steel to become the property of the contractor. Any disposal of the structural steel locally shall be outside the limits of maximum pool elevation as directed by the ENGINEER.

GENERAL NOTES.—
1. Use current South Dakota Standard Specifications for Roads and Bridges.
2. Rail Posts shall be built vertical.

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING AND QUANTITIES
FOR
556'-0" CONT. COMP. GIRD. VIADUCT
30'-0" ROADWAY
OVER GRAND RIVER SEC. 26/35-T20N-R28E
STA. 249+37.00 TO 254+93.00 WAR 180 III
CORSON COUNTY H20-44
SOUTH DAKOTA

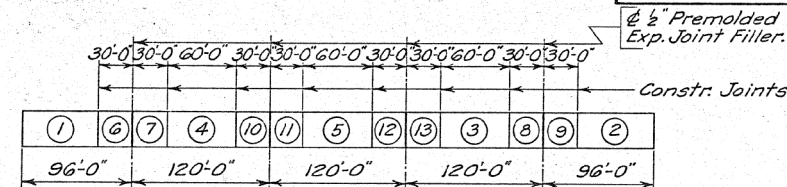
DEPARTMENT OF HIGHWAYS
STR. NO. 16-665-200 SEPT. 1959 **3** OF **5**
-X031-
DESIGNED BY _____ DRAWN BY H.C.W. CHECKED BY E.K. APPROVED *R.P. Burr*
BRIDGE ENGINEER



NOTE:- Shear connectors will be paid for as Structural Steel based on the weight of angles, regardless of the type of connector used. Shear angles shall be placed on the girders facing in the directions as shown on Longitudinal Section. (See Sheet No. 7)

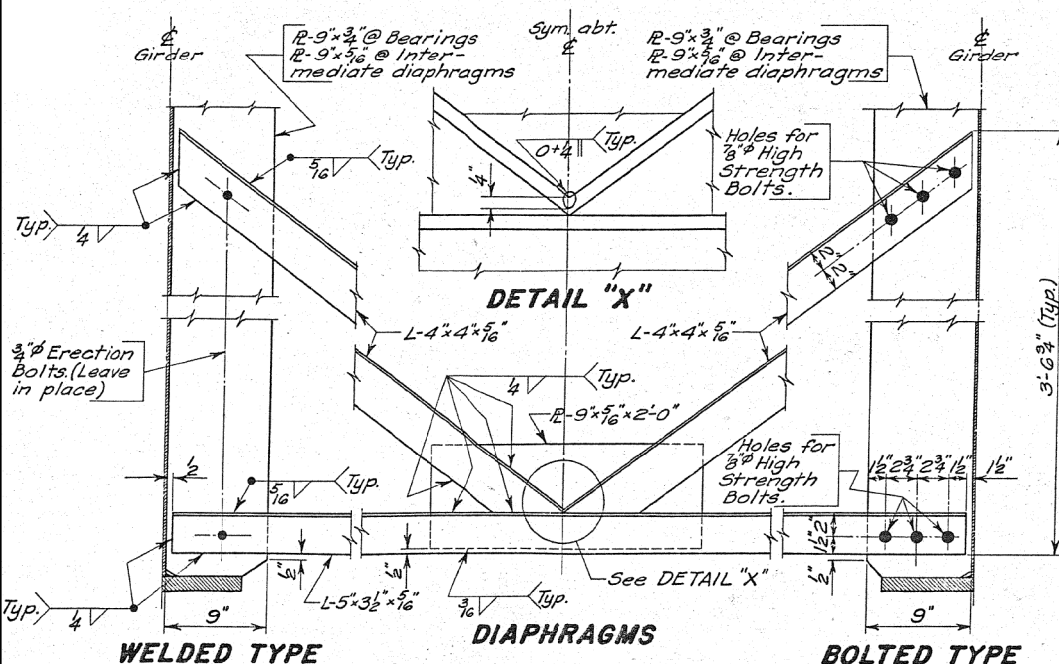
REINFORCING SCHEDULE					Bending Details	
Mk.	No.	Size	Length	Type		
A	603	5	34'-9"	15		Sym. abt.
B	600	5	33'-9"	2		
C	600	5	35'-0"	4		
D1	204	5	33'-0"	Str.		
D2	306	5	41'-0"	Str.		
E	40	6	6'-0"	Str.		

Figures in circles show Types.
Dimensions are out to out of bars.



NOTE:- The expansion devices shall be blocked off prior to pouring slab. After pouring slab, as indicated above, adjust and bolt devices and pour remainder of pours No. 1 and No. 2. Curbs shall be poured after all of slab has been poured.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
C. A Concrete	Cu. Yds.	3150
Reinforcing Steel	Lbs.	85,345
Structural Steel	Lbs.	469,400
Railing (Type RA-1 Steel)	Ltr. Ft.	1,114.3



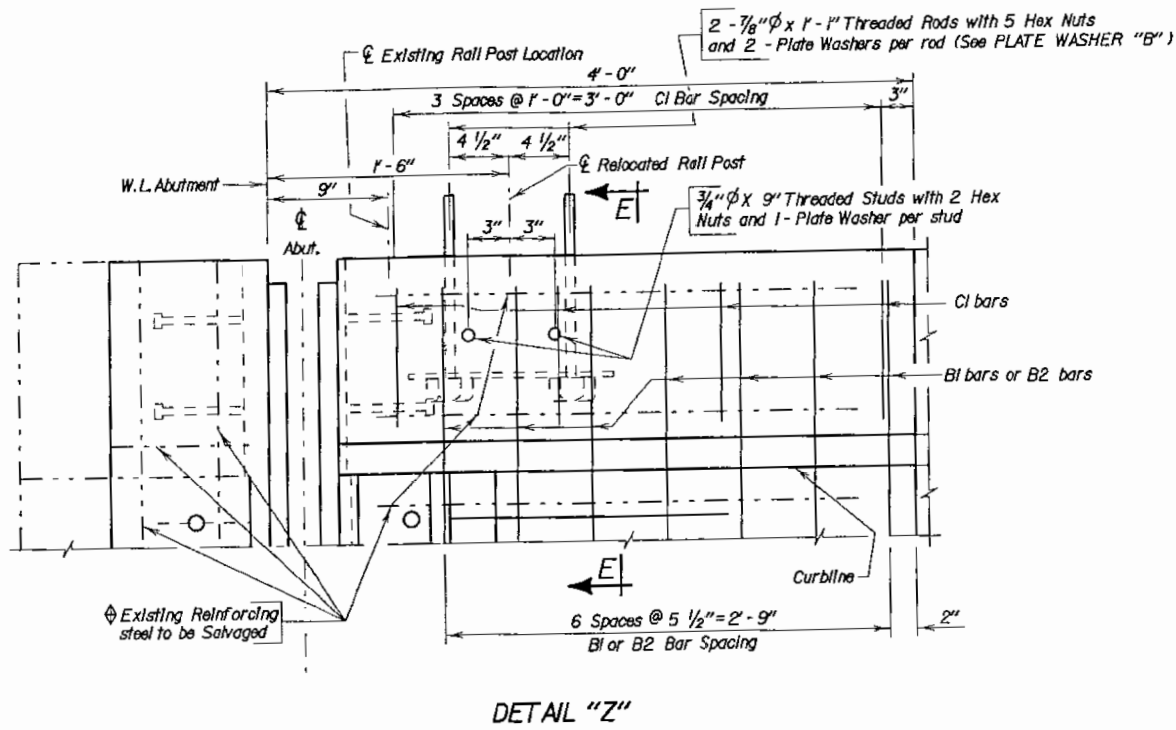
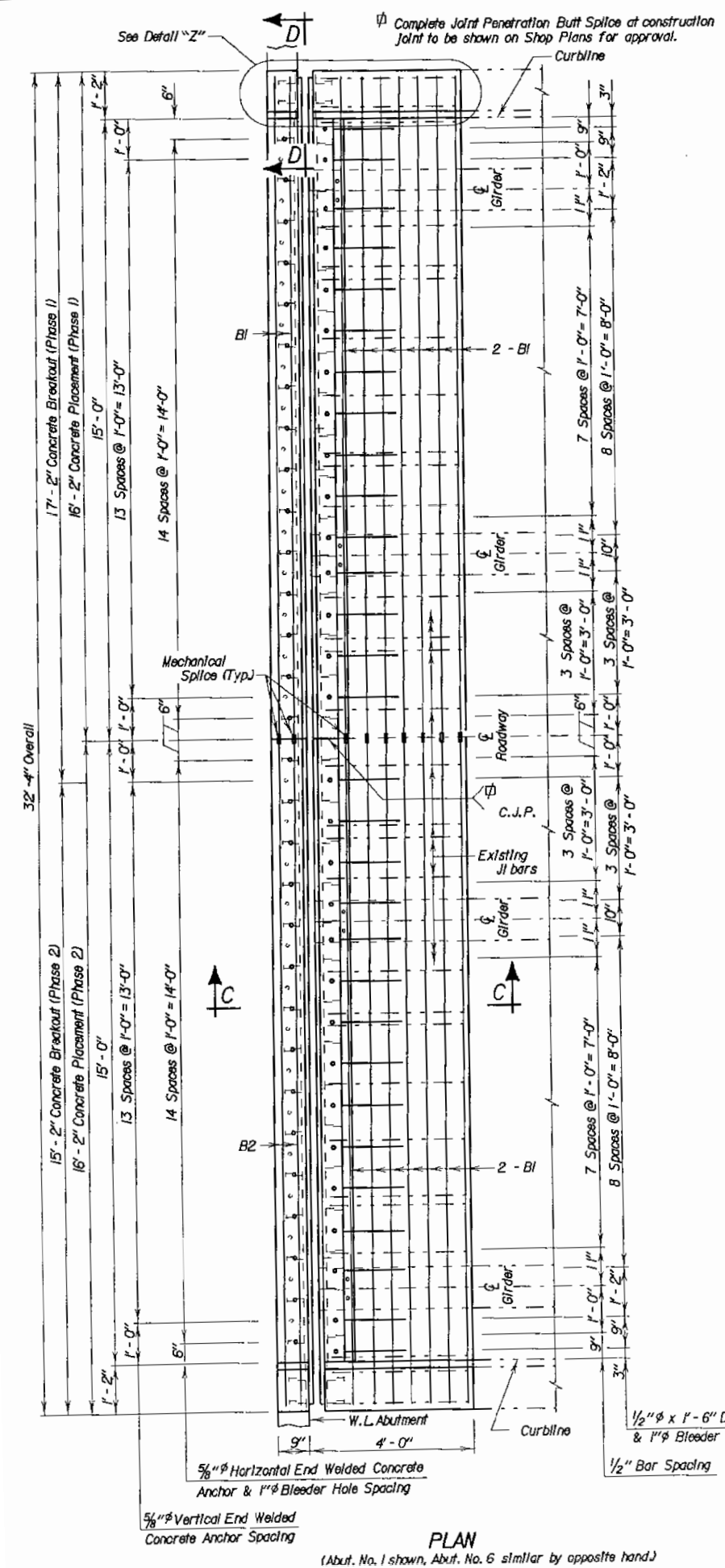
SUPERSTRUCTURE NOTES-
See Sheet No. 8 of 10.

NOTE:- Diaphragms shall be attached by welding or bolting, as shown, at the option of the contractor.

ORIGINAL CONSTRUCTION PLANS

DETAILS OF SUPERSTRUCTURE
FOR
556'-0" CONT. COMP. GIRD. VIADUCT
30'-0" ROADWAY
OVER GRAND RIVER SEC. 26/35-T20N-R28E
STA. 249+37.00 TO 254+93.00 WAR 180 III
CORSON COUNTY
SOUTH DAKOTA H20-44
DEPARTMENT OF HIGHWAYS
STR. NO. 16-665-200 SEPT. 1959 (4) OF (5)

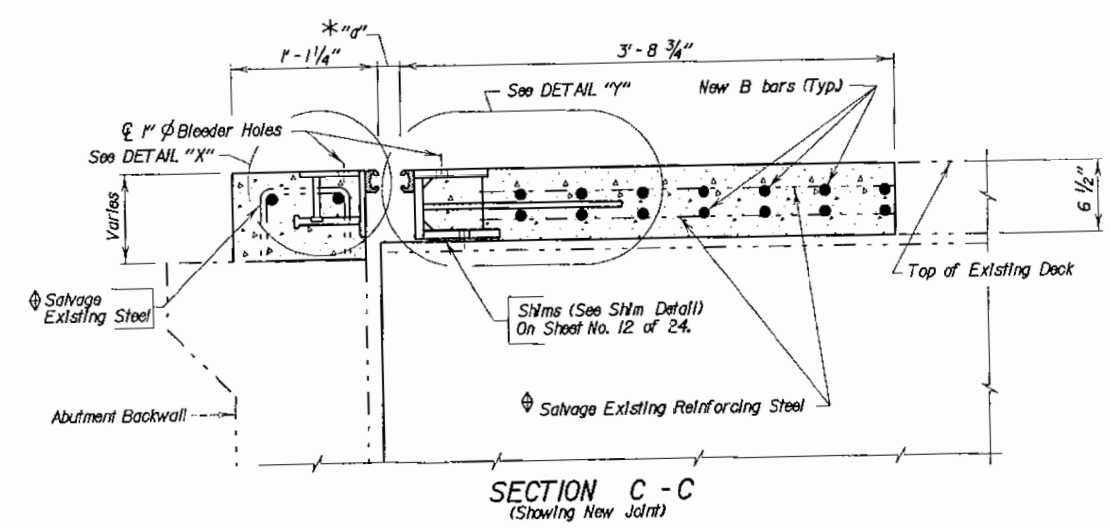
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	E.K.	
BRIDGE ENGINEER			



Phase 1					Bending Details
Mk.	No.	Size	Length	Type	
C1	4	4	4'-1 1/2"	T 7	
B1	16	5	16'-0"	Str.	
Phase 2					
Mk.	No.	Size	Length	Type	
C1	4	4	4'-1 1/2"	T 7	
B2	16	5	16'-0"	Str.	

NOTES:
 All Bars to be Epoxy Coated
 All dimensions are out to out of bars.
 * Bars to be Mechanically Spliced

Temp.	Abut. No. 1
30°	2 1/16"
40°	2 5/16"
50°	2 7/16"
60°	2 9/16"
70°	2"
80°	1 3/4"
90°	1 1/16"



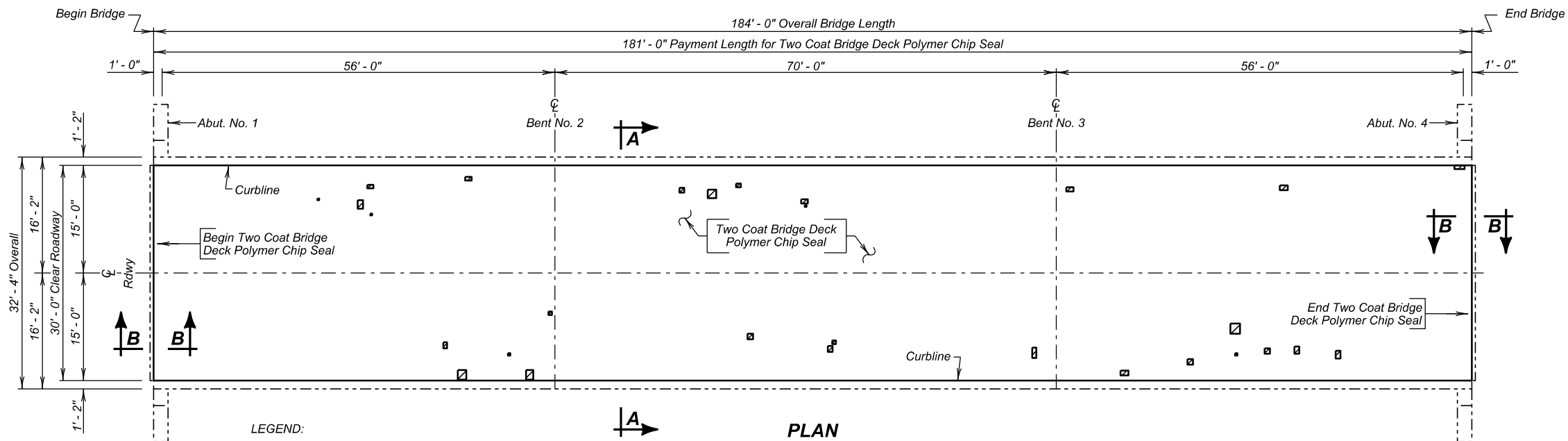
ORIGINAL CONSTRUCTION PLANS

ABUTMENT JOINT REPLACEMENT DETAILS FOR
 556' - 0" CONT. COMP. GIRDER BRIDGE
 30' - 0" ROADWAY 0° SKEW
 OVER GRAND RIVER SEC. 26/35-T20N-R28E
 STR. NO. 16-665-200 NH 0012(128)164

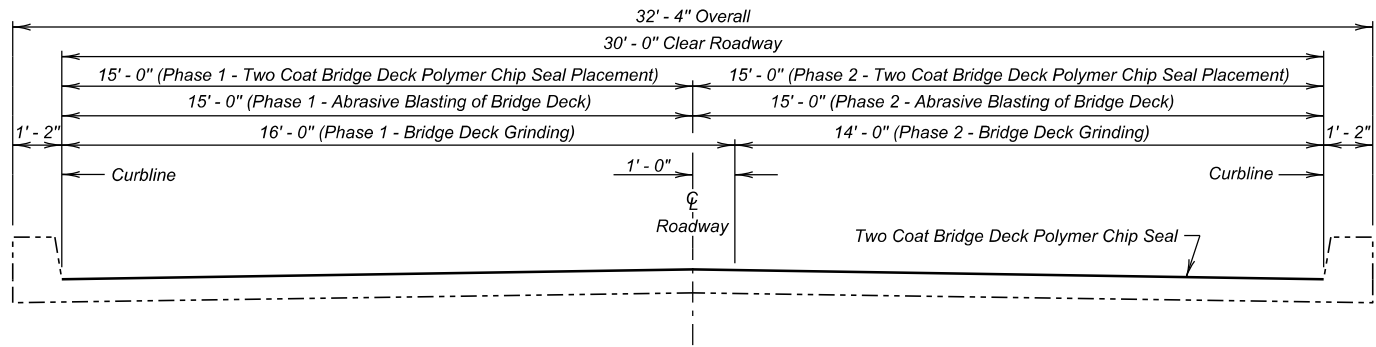
CORSON COUNTY
 S. D. DEPT. OF TRANSPORTATION
 STR. NO. 16-665-200 JANUARY 2007 (5) OF (5)

DESIGNED BY DM CORS5661	DRAWN BY JK 5661811	CHECKED BY PW	Kevin J. Coeden BRIDGE ENGINEER
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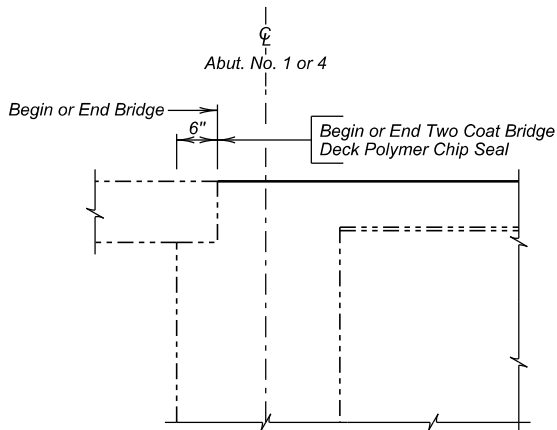
NOTE:
 This sheet to be used in conjunction with Sheet No. 12 of 24.



LEGEND:
Shaded areas indicate approximate locations of unsound concrete requiring concrete repair.



SECTION A - A
(Concrete shading and reinforcing steel not shown for clarity)



SECTION B - B
(Concrete shading and reinforcing steel not shown for clarity)

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Two Coat Bridge Deck Polymer Chip Seal	SqYd	301.7	301.7
Abrasive Blasting of Bridge Deck	SqYd	301.7	301.7
Bridge Deck Grinding	SqYd	321.8	281.6
* Concrete Removal, Class A	SqYd	2.0	2.0
* Concrete Removal, Class B	SqYd	2.0	2.0
* Concrete Patching Material, Bridge Deck	CuFt	10.1	10.1

* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL LAYOUT FOR

184' - 0" CONT. COMP. GIRDER BRIDGE

30' - 0" ROADWAY 0° SKEW

OVER DEEP BANK CREEK SEC. 2 - T19N-R28E

STR. NO. 16-666-216 NH 0012(312)173

PCN 090X

CORSON COUNTY

S. D. DEPT. OF TRANSPORTATION

JULY 2025

1 OF 4

- X071 -

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Two Coat Bridge Deck Polymer Chip Seal Layout

Sheet No. 2 - Estimate of Structure Quantities and Notes

Sheet No. 3 thru 4 - Original Construction Plans

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

DESIGNED BY CMM CORS090X	CK. DES. BY JB 090XMB01	DRAFTED BY CMM	Steve A. Johnson BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	603.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	603.4	SqYd
491E0120	Bridge Deck Grinding	603.4	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	20.2	CuFt

SPECIFICATIONS

Construction Specifications: Standard Specifications for Roads and Bridges, 10-1-25 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

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.

- Perform Bridge Deck Grinding for the first phase of construction.
- Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction.
- Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
- Switch traffic and repeat steps 1 through 4 for the second phase of construction.

CONCRETE PATCHING MATERIAL, BRIDGE DECK

- In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
- A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
184' - 0" CONT. COMP. GIRDER BRIDGE

STR. NO. 16-666-216
JULY 2025

INDEX OF DRAWING SHEETS
 Sheet No. 1-General Drawing and Quantities
 Sheet No. 2-Subsurface Investigations
 Sheet No. 3-Details of Sill No. 1 and No. 4
 Sheet No. 4-Bent Details
 Sheet No. 5-Slab and Diaphragm Details
 Sheet No. 6-Girder Layout and Details
 Sheet No. 7-Framing Diagram and Erection Data
 Sheet No. 8-Details of Bearings, Expansion Devices and Armored Devices
 Sheet No. 9-Standard Type RRA-1 Steel Railing RRA-1 (5-3-63)
 Sheet No. 10-Field Splice Details

B.M. No. 7 Elev. 1675.37
Rebar & Gds. (in pasture)
200' Lt. sta. 60+00.00



Q	2150 c.f.s.
A	367 sq. ft
V	59 f.p.s.

NOTE:
T.S. at E. El. = Top of Slab at Centerline of Roadway Elevation
T.S. at C. El. = Top of Slab at Curb Elevation.



Use South Dakota Standard Specifications for Roads and Bridges 1963 Edition, approved as Standard Sept. 21, 1964, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the proposal. All concrete shall be Class A (Type II Cement) with air entrainment.

GENERAL NOTES-

- GENERAL NOTES:-**
1. Design Specifications: AASHTO specifications for Highway Bridges, 1961, with Interim Specifications for 1961, 1962 and 1963.
 2. See NOTES: on Sheets No. 1 Thru No. 10.
 3. Place floor drains as shown in Plan (10 Required.)
 4. Longitudinal elements of the slab shall conform to the vertical curve.
 5. Rail Post shall be built vertical.
 6. The contractor shall have sufficient Pile Splice material on hand before pile driving is started. See Standard Plate No. 303 For Pile splice details.
 7. Prebored holes for Piles at sills shall be backfilled with granular material acceptable to the ENGINEER and compacted as specified by the ENGINEER. The cost of Granular material in place shall be included in the unit prices bid for the piles.

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING AND QUANTITIES

FOR

184'-0" CONT. COMP. GIRD. VIADUCT

30^L-0^N ROADWAY

OVER DEEP BANK CREEK

SEC. 2-T19N-R28E

STA. 55+28.00 TO 57+12.00

FO44-2(8)

CORSON COUNTY

SOUTH DAKOTA

HS20-44

DEPARTMENT OF HIGHWAYS

STR. NO. 16-666-216'

3 OF 4

DESIGNED BY: W. H. T. T. CHECKED BY: R. C. M. Bridge Engineer
Bridge Engineer

ESTIMATED QUANTITIES							
ITEM	2 1/2" Conc. Cu. Yds.	Steel - lbs. Reinf. Struct.	Type A' Steel Reinforcing Lin. Ft.	Timber Piles - Lin. Ft. Treated Timber Post	Excavation - Cu. Yds. Struct. / Undecl.		
Superstructure	187.5	42,330	93,620	3703			
Sill No. 1	23.8	2380		1 @ 7' x 550	1 @ 5' x 55'	18	
Sill No. 4	23.9	2380		1 @ 55' x 605	1 @ 60' x 60'	18	
Girts No. 2 & No. 3	88.6	20,840		30 @ 12' x 360'	2 @ 18' x 36'	419	
T-4-16	274.9	27,030	63,620	3703	151	151	455

* INCIDENTAL WORK
including 20

* One Treated Timber Test Pile shall be driven at Sills No. 1 and No. 4 and at Bents No. 2 and No. 3 before Remaining piles are ordered.
 * All Unclassified Excavation to be done by others.
 * INCIDENTAL WORK - In place, 550'± left of main line Sta. 55+60 ± is a 146'-10" 3-span (38'-68'-38') x 30'-0" Roadway I-Beam Viaduct in good condition, to be salvaged. Break down and Remove the concrete railing, the concrete curbs and floor. Dismantle and salvage the I-Beam stringers, expansion joints, steel bearing plates and Misc. items. Care shall be taken not to injure the structural properties of the salvaged materials during the dismantling or moving operations. All salvaged materials shall be placed

