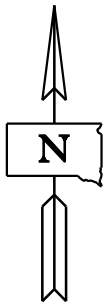


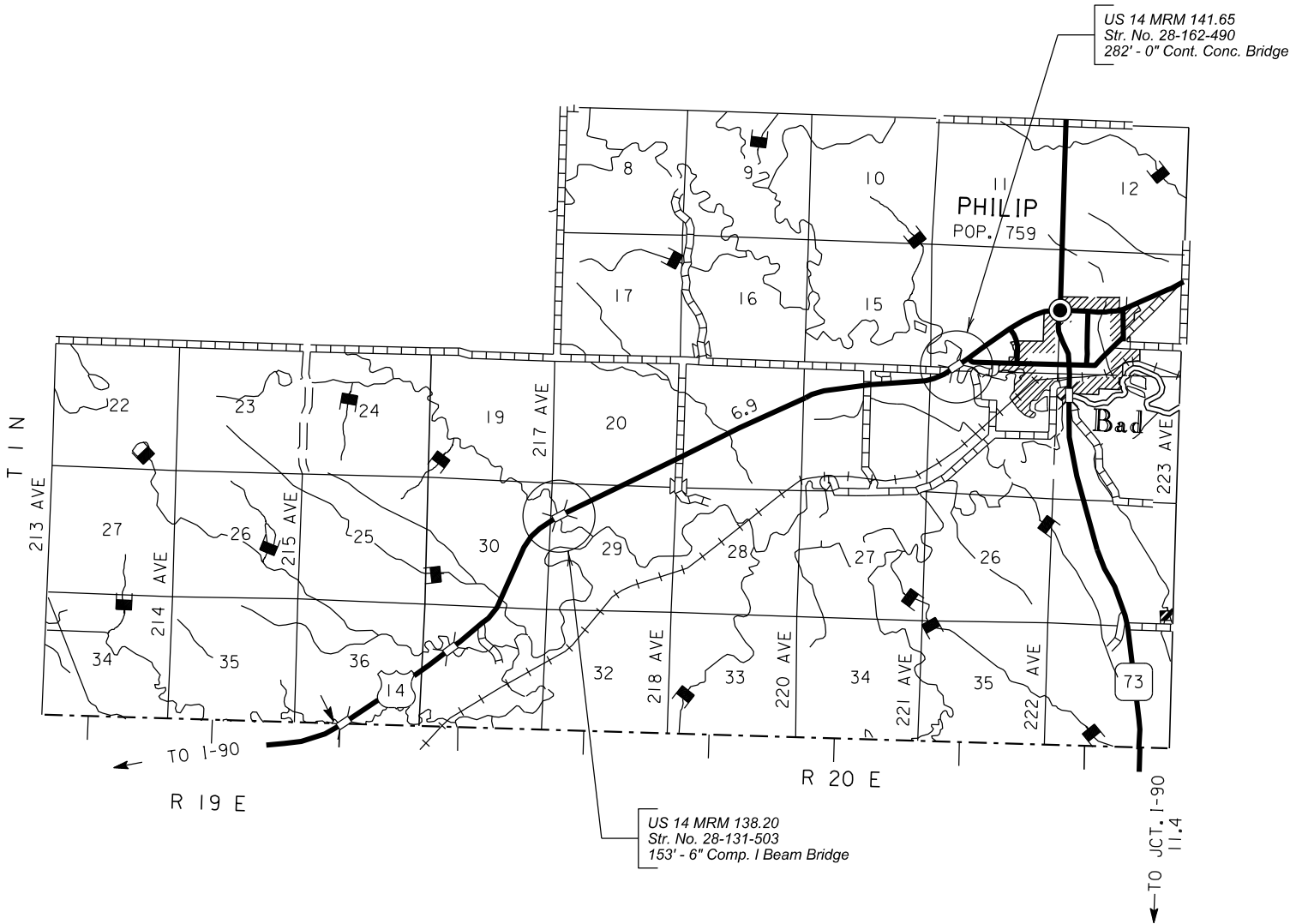
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0014(250)138	E1	E12

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.28-131-503 153' - 6" Composite IBeam Bridge
Sheet E8 to E12	Str.No.28-162-490 282' - 0" Continuous Concrete Bridge



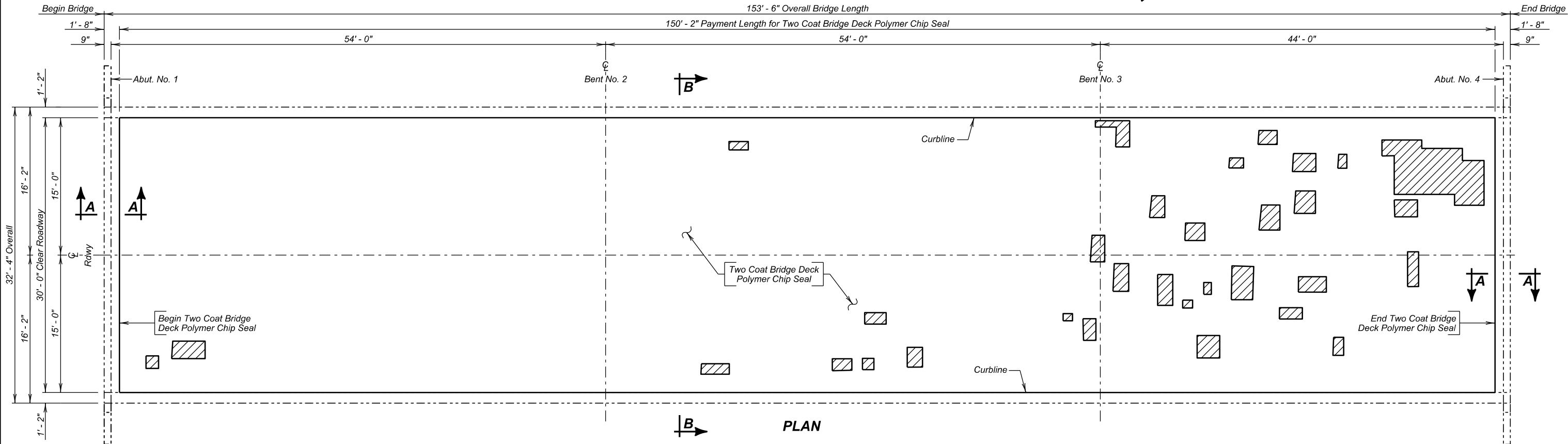
SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

Str. No. 28-131-503

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	500.6	SqYd
491E0110	Abrasive Blasting of Bridge Deck	500.6	SqYd
491E0120	Bridge Deck Grinding	500.6	SqYd
491E0130	Concrete Removal, Class A	19.0	SqYd
491E0140	Concrete Removal, Class B	19.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	110.6	CuFt

Str. No. 28-162-490

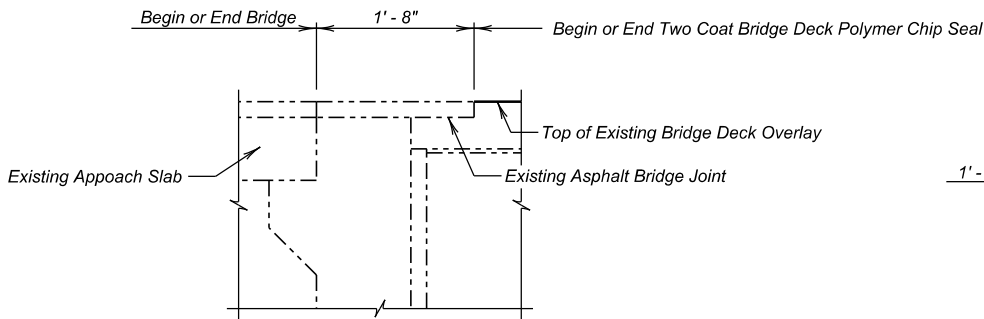
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1,373.8	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1,373.8	SqYd
491E0120	Bridge Deck Grinding	1,373.8	SqYd
491E0130	Concrete Removal, Class A	10.7	SqYd
491E0140	Concrete Removal, Class B	10.7	SqYd
491E0172	Concrete Patching Material, Bridge Deck	128.9	CuFt



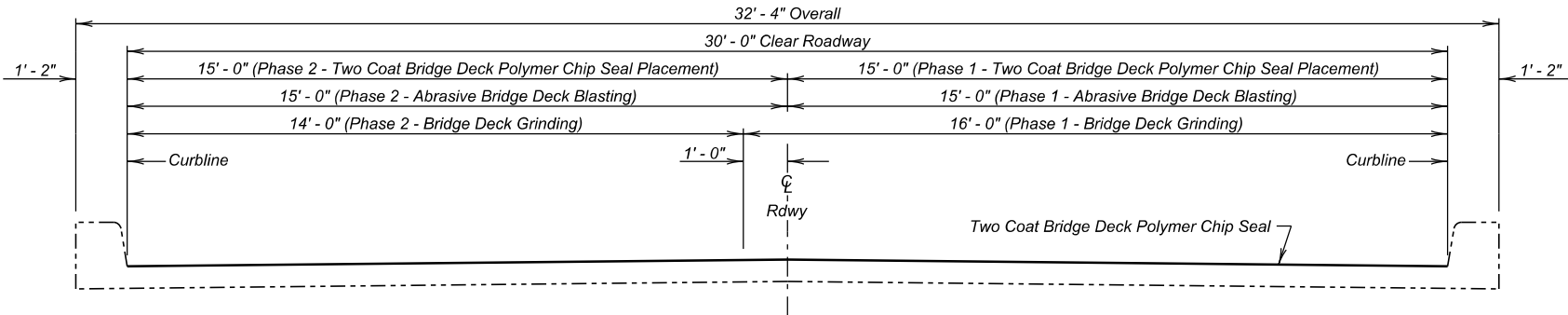
PLAN

LEGEND -

Shaded area indicate approximate location of unsound concrete requiring Concrete Repair



SECTION A - A



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	250.3	250.3
Abrasive Blasting of Bridge Deck	SqYd	250.3	250.3
Bridge Deck Grinding	SqYd	267.0	233.6
* Concrete Removal, Class A	SqYd	10.1	8.9
* Concrete Removal, Class B	SqYd	10.1	8.9
* Concrete Patching Material, Bridge Deck	CuFt	59.0	51.6

* 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

153' - 6" COMPOSITE I BEAM BRIDGE
30' - 0" ROADWAY 0°SKEW
OVER CREEK SEC. 29 -T1N-R20E
STR. NO. 28-131-503 NH 0014(250)138
PCN 08JL

HAAKON COUNTY

S. D. DEPT. OF TRANSPORTATION

AUGUST 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 JB HAKN08JL	CK. DES. BY AP 08JLBA01	DRAFTED BY JB	Steve A. Johnson BRIDGE ENGINEER
-------------------------------	-------------------------------	------------------	-------------------------------------

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	500.6	SqYd
491E0110	Abrasive Blasting of Bridge Deck	500.6	SqYd
491E0120	Bridge Deck Grinding	500.6	SqYd
491E0130	Concrete Removal, Class A	19.0	SqYd
491E0140	Concrete Removal, Class B	19.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	110.6	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 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. Perform Bridge Deck Grinding for the first phase of construction.
2. 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.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for the second phase of construction.

BRIDGE DECK GRINDING

1. The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.
2. The existing bridge deck has a polymer chip seal, pavement markings and tining that will be removed.

CONCRETE PATCHING MATERIAL, BRIDGE DECK

1. 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.
2. 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
153' - 6" COMPOSITE I BEAM BRIDGE

STR. NO. 28-131-503
AUGUST 2025

-X031-

INDEX OF BRIDGE SHEETS

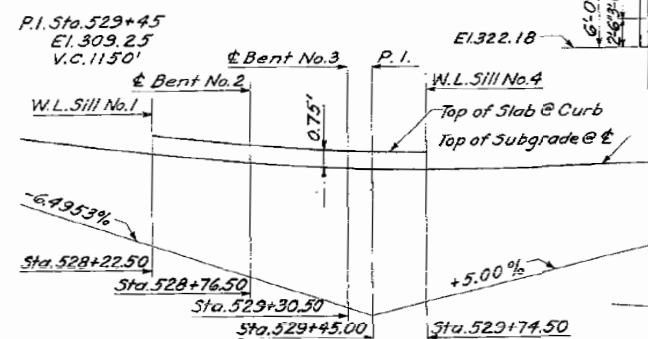
Sheet No.1 General Drawing and Quantities
Sheet No.2 Def. for Std. Reinf. Conc. Sill WP-44-30-00-R
Sheet No.3 Def. for Std. Reinf. Conc. Sill WP-54-30-00-R
Sheet No.4 Def. for Std. Reinf. Conc. Bent CB-30-00-B (3-16-54)
Sheet No.5 Def. for Std. I-Beam Viaduct SIB-44-30-00-RI (5-19-50)
Sheet No.6 Def. for Std. I-Beam Viaduct SIB-54-30-00-RI (7-7-52)
Sheet No.7 Special Details
Sheet No.8 Std. Railing and Drain Details RA-1 (12-4-51)

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A	C. 01
V	80 1/2 sec.

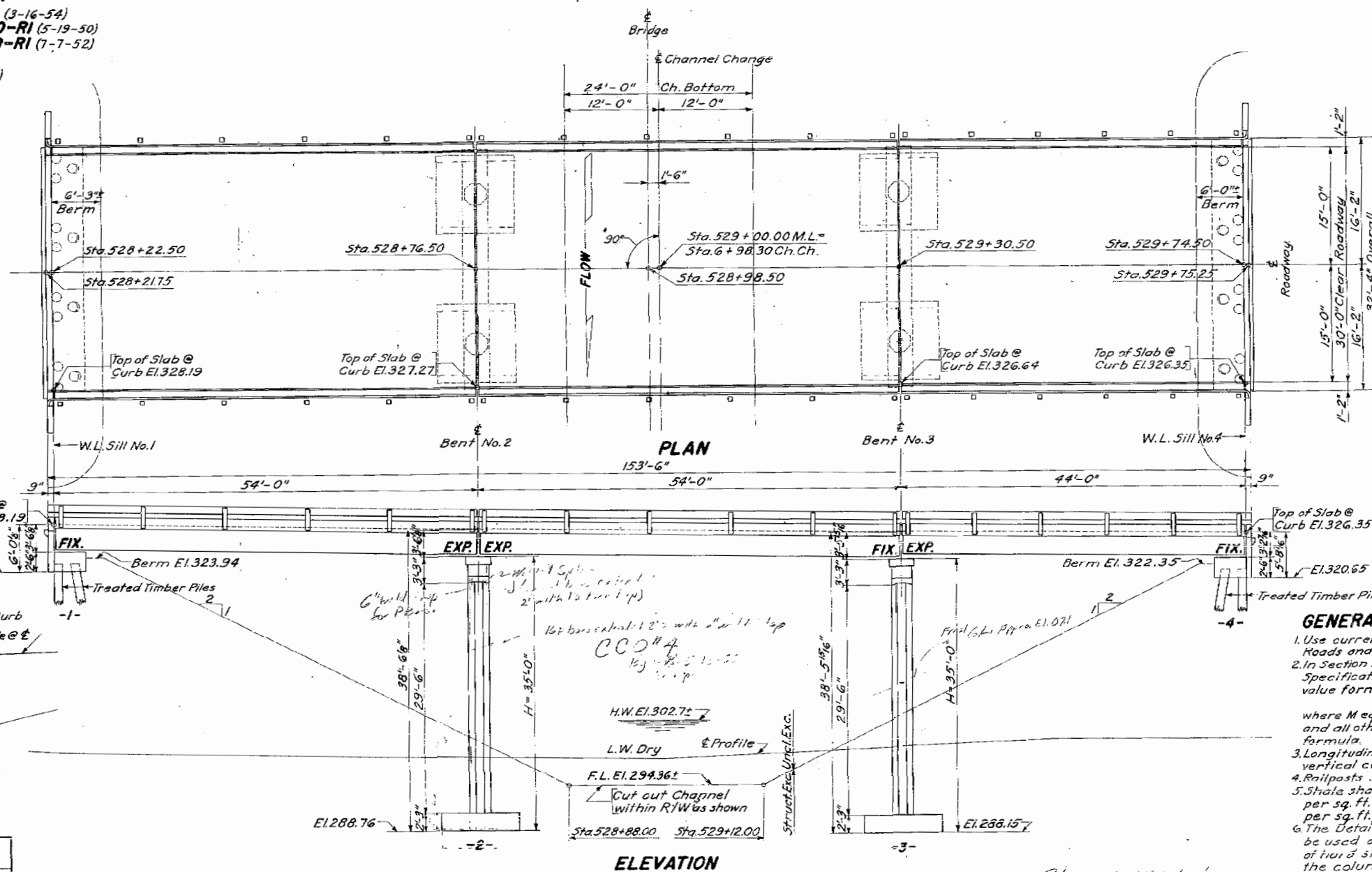
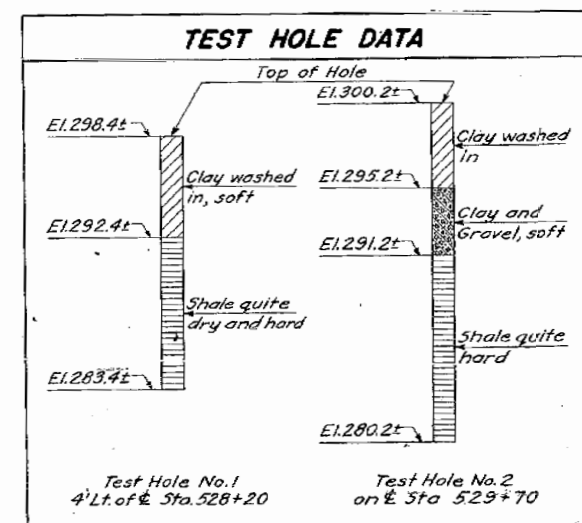
EXCAVATION NOTE:-

Footings for Bents No.2 & 3 shall be cast against solid undisturbed shale and carried into same 1'. Limits of shale excavation for these footings shall be bounded as nearly as practicable by the neat lines as shown in details of bent footing on Sheet No. ④ of ⑧

B.M. No. 55A - El. 347.47
Iron Pin
100' Rt. Sta. 525+04.90



SUBGRADE CURVE DATA



ELEVATION

ITEM	Cone C.Y.	ESTIMATED QUANTITIES		Reinf. Lin. Ft.	Railing Lin. Ft.	Treated Timber Piles 6 Lin. Ft.	Excavation - Cu. Yds.
		Steel Lbs.	Struct. Lbs.				
Superstructure V-44' Spans	30.3	6,670	23,840	80.6		145	14,371
Superstructure 2-54' Spans	74.8	16,380	65,965	218.6		12 @ 35' = 420	13,172
Substructure Sill No. 1	19.3	1,975				12 @ 35' = 420	13,172
Substructure Sill No. 2	18.9	1,950				12 @ 35' = 420	13,172
Substructure Bent No. 2 & 3	15.6	17,300				16 @ 35' = 560	17,300
Totals	218.9	44,275	89,805	309.2		840	61,287

* One Treated Timber Test Pile shall be driven at Sills No. 1 & No. 4 before remaining piles are ordered.
* See Grading Plans for Unclassified Excavation.

GENERAL NOTES:-

- Use current South Dakota Standard Specifications for Roads and Bridges.
- In Section 51.3 (m) of South Dakota Standard Specifications for Roads and Bridges, change the bearing value formula for gravity hammers to $P = \frac{3WH}{5+0.35 \times W+M}$, where M equals the weight of the pile plus driving head, and all other values are the same as in the replaced formula.
- Longitudinal elements of the slab shall conform to the vertical curve.
- Railposts shall be bilt vertical.
- Shale shall develop a minimum bearing value of 3.75 tons per sq. ft. If the bearing value is less than 3.75 tons per sq. ft., communicate with the office.
- The Details for Std. Reinf. Conc. Bent CB-30-00-B shall be used at Bents No. 2 & 3. Due to the underlying strata of hard shale the footing details and quantities for the columns and footings shall be revised as shown on Sheet No. ⑦ of ⑧

GENERAL DRAWING AND QUANTITIES

FOR

153'-6" COMPOSITE I-BEAM VIADUCT

30'-0" ROADWAY

OVER 200

SEC. 29-TIN-R20E

STA. 528+21.75 TO 529+75.25

F-F1162 (II)

HAAKON COUNTY

SOUTH DAKOTA

H 20-44

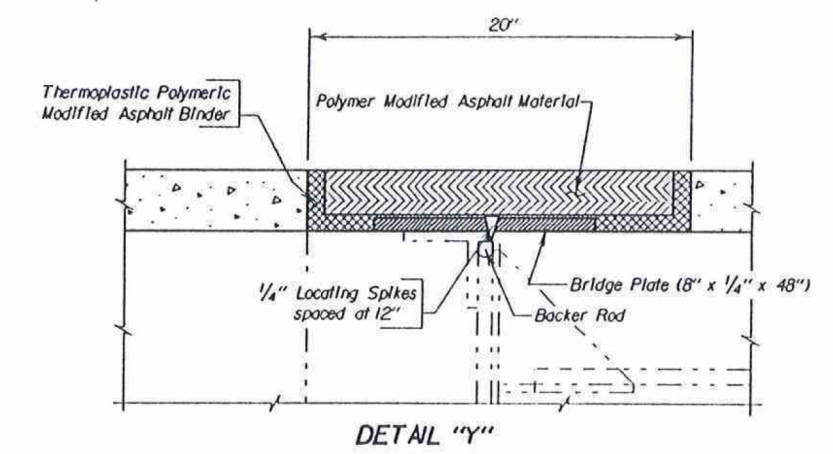
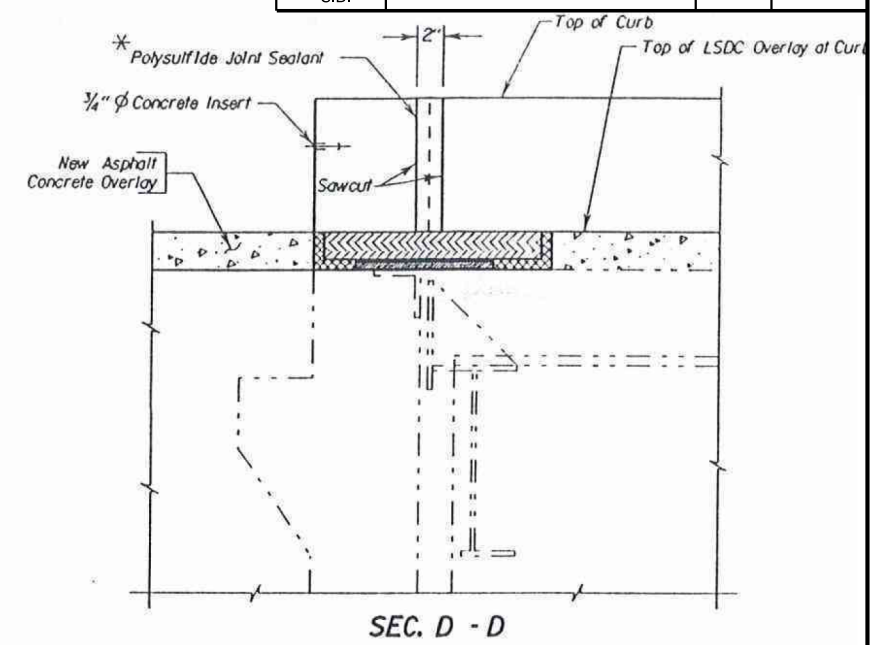
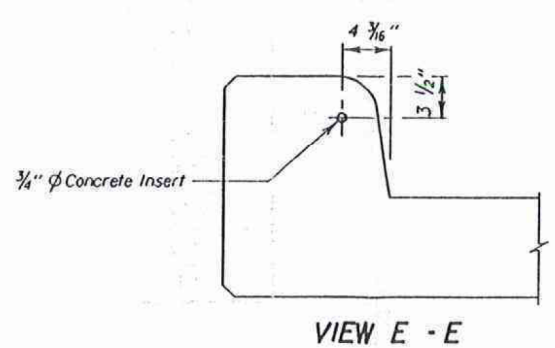
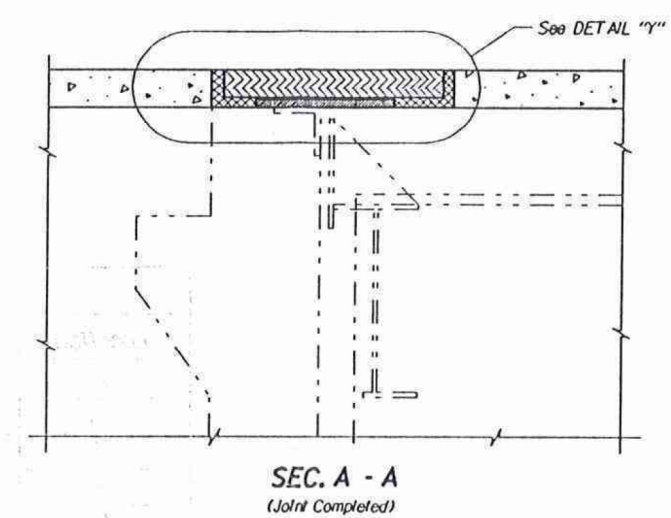
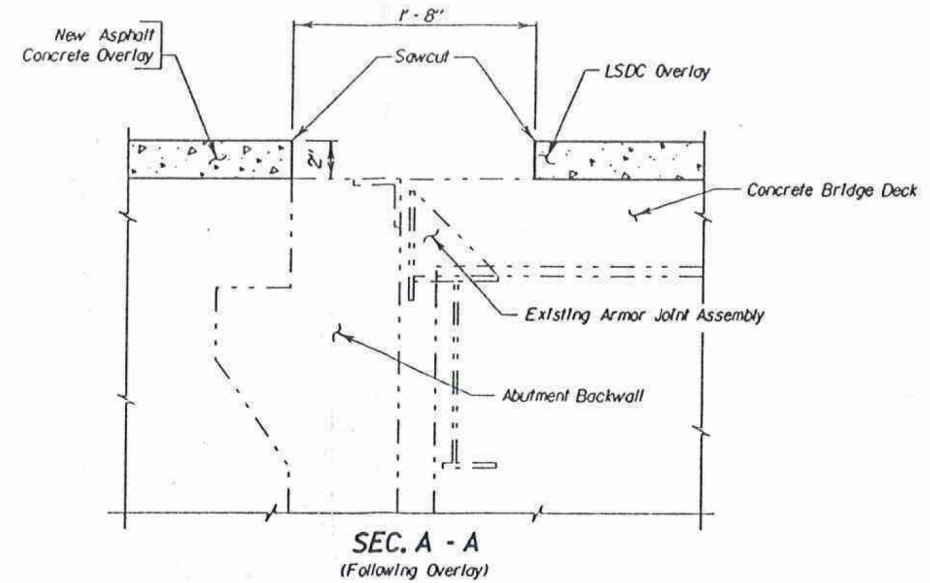
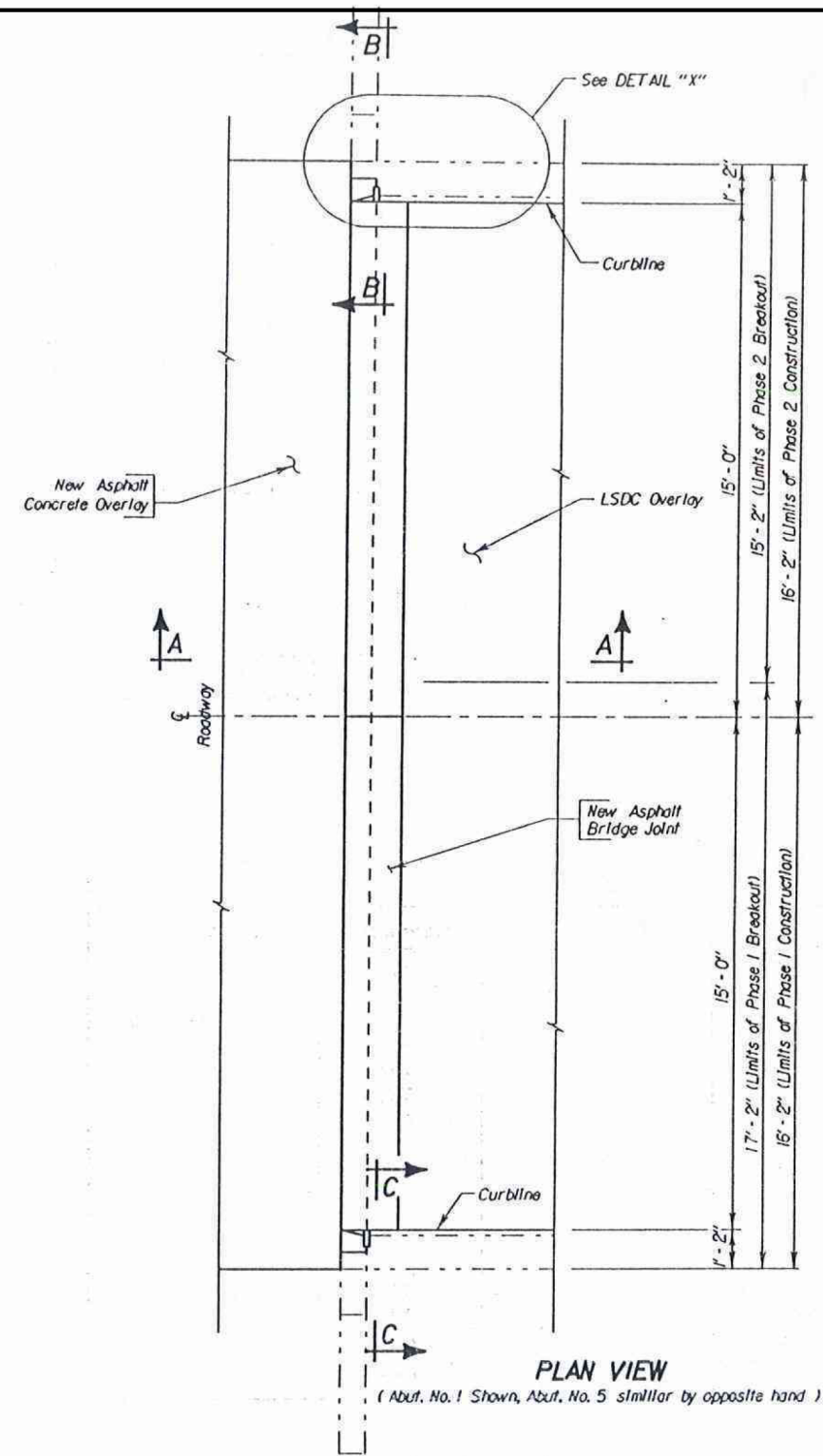
STATE HIGHWAY COMMISSION

MAY 1954

-X031-

STR. NO. 28-131-503

3 OF 5



ESTIMATED QUANTITIES			
(For Two Abutments)			
ITEM	UNIT	QUANTITY	
Joint, Asphalt Bridge	L.F.	60.0	

For informational purposes, the estimated quantity for Phase 1 is 15 L.F. per abutment, and Phase 2 is 15 L.F. per abutment.

ORIGINAL CONSTRUCTION PLANS

JOINT REPLACEMENT AT ABUTMENTS

FOR

153' - 6" COMPOSITE I-BEAM BRIDGE

30'-0" ROADWAY

OVER CREEK

STR. NO. 28-131-503

SEC. 29-TIN-R20E

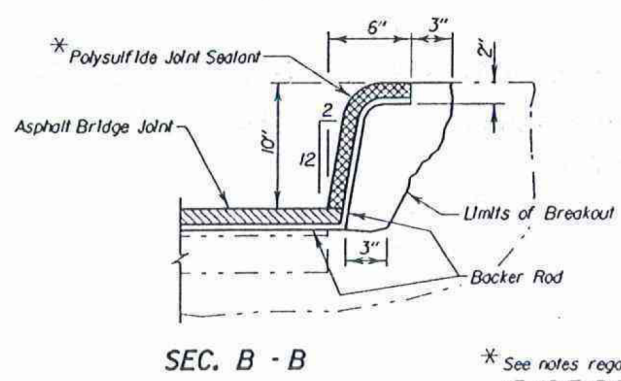
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HAAKON COUNTY

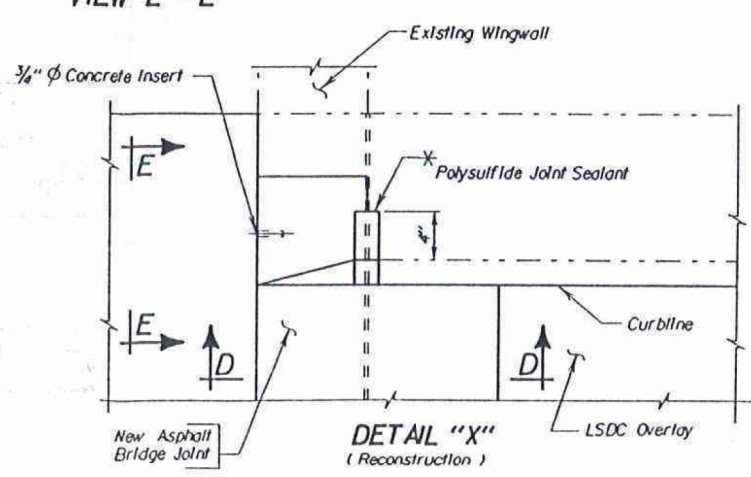
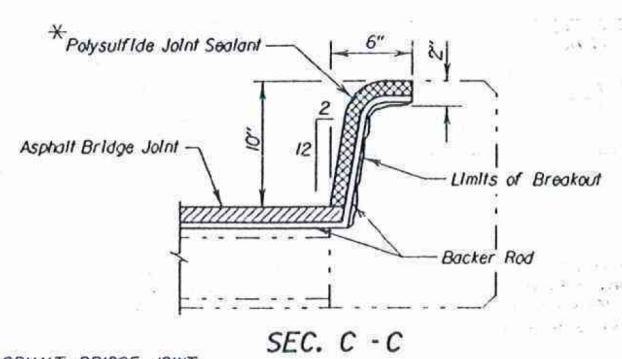
S. D. DEPT. OF TRANSPORTATION

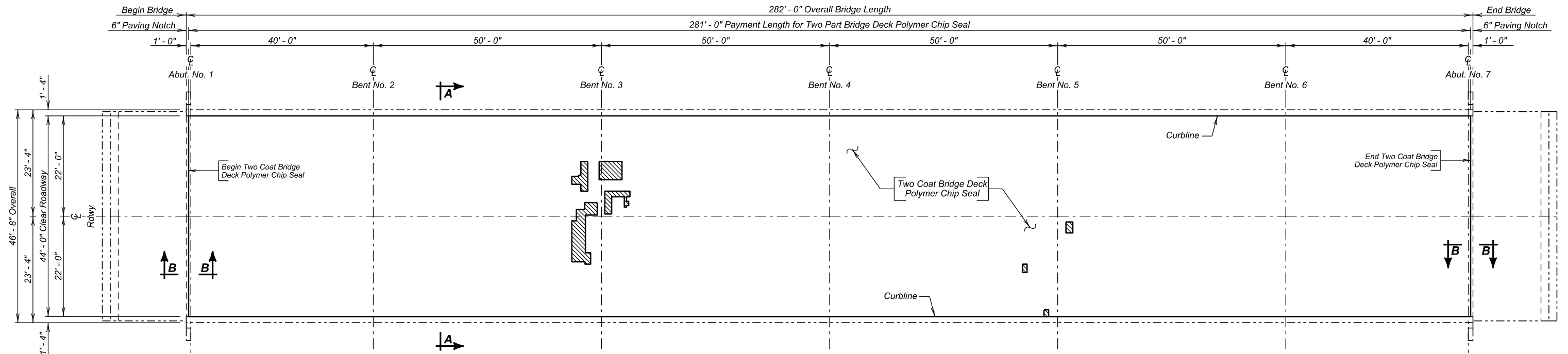
MARCH 1998

STR. NO. 28-131-503

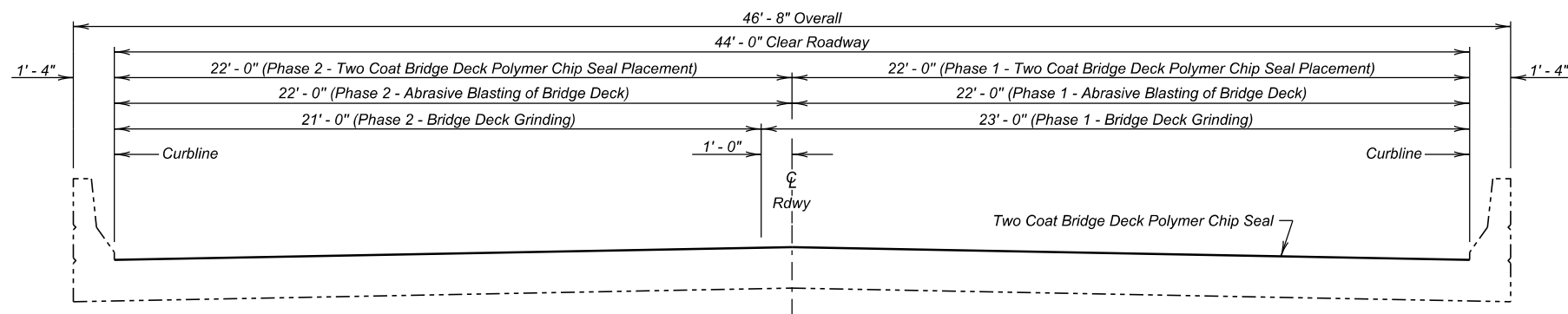


* See notes regarding ASPHALT BRIDGE JOINT AT ABUTMENTS on Sheet No. 7 of 66.





PLAN



SECTION A - A

(Concrete shading and reinforcing steel not shown for clarity)

- X020 -

INDEX OF BRIDGE SHEETS -

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

Sheet No. 2 - Estimate of Structure Quantities and Notes

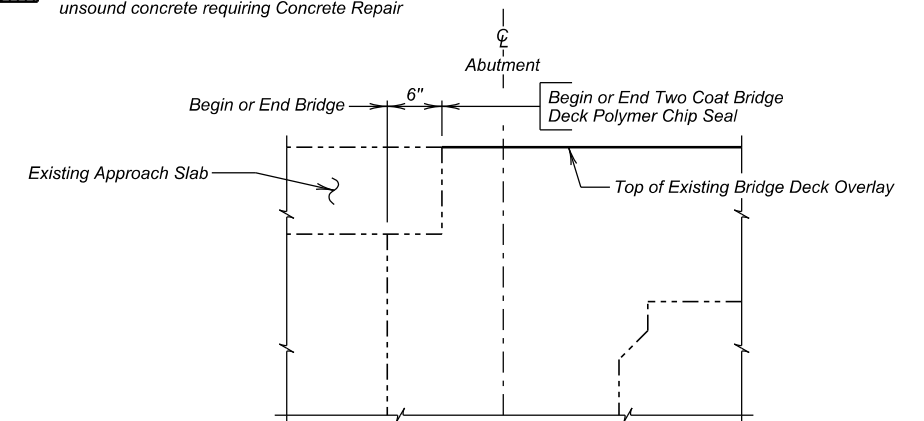
Sheet No. 3 thru 5 - Original Construction Plans

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase I	Phase 2
Two Coat Bridge Deck Polymer Chip Seal	SqYd	686.9	686.9
Abrasive Blasting of Bridge Deck	SqYd	686.9	686.9
Bridge Deck Grinding	SqYd	718.1	655.7
Concrete Removal, Class A	SqYd	5.6	5.1
Concrete Removal, Class B	SqYd	5.6	5.1
Concrete Patching Material, Bridge Deck	CuYd	67.4	61.5

* 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.

LEGEND -

 Shaded area indicate approximate location of unsound concrete requiring Concrete Repair



SECTION B - B

TWO COAT BRIDGE DECK POLYMER CHIP SEAL LAYOUT
FOR

282' - 0" CONTINUOUS CONCRETE BRIDGE

44' - 0" ROADWAY

OVER N. FK. BAD RIVER

STR. NO. 28-162-490

PCN 08JL

0°SKEW

SEC. 14 -T1N-R20E

NH 0014(250)138

HAAKON COUNTY

S. D. DEPT. OF TRANSPORTATION

AUGUST 2025

- X020 -

1 OF 5

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

DESIGNED BY JB HAKN0811	CK. DES. BY AP 0811BB01	DRAFTED BY JB	 BRIDGE ENGINEER
-------------------------------	-------------------------------	------------------	--

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1373.8	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1373.8	SqYd
491E0120	Bridge Deck Grinding	1373.8	SqYd
491E0130	Concrete Removal, Class A	10.7	SqYd
491E0140	Concrete Removal, Class B	10.7	SqYd
491E0172	Concrete Patching Material, Bridge Deck	128.9	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 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. Perform Bridge Deck Grinding for the first phase of construction.
2. 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.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for the second phase of construction.

BRIDGE DECK GRINDING

1. The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.
2. The existing bridge deck has a polymer chip seal, pavement marking and tining that will be removed.

CONCRETE PATCHING MATERIAL, BRIDGE DECK

1. 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.
2. 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.

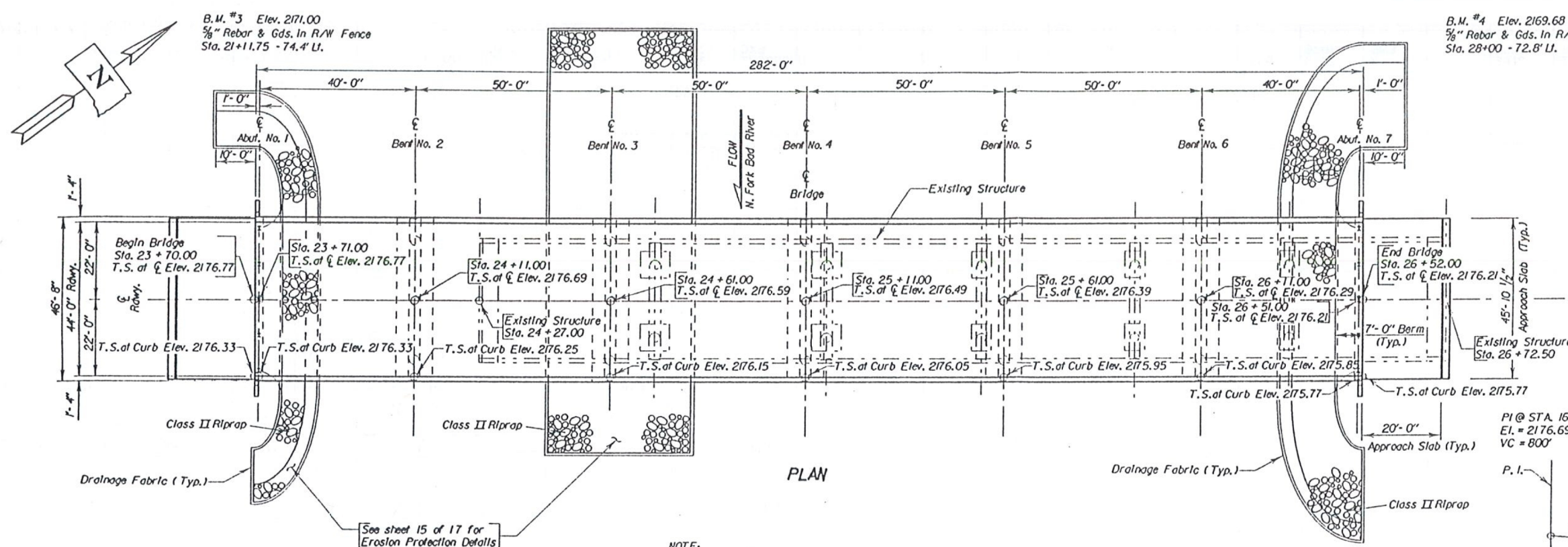
ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR
282' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 28-162-490

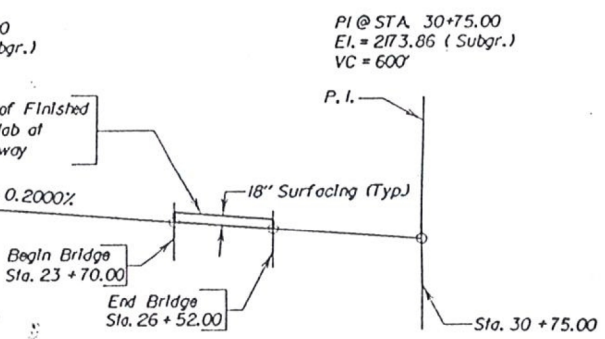
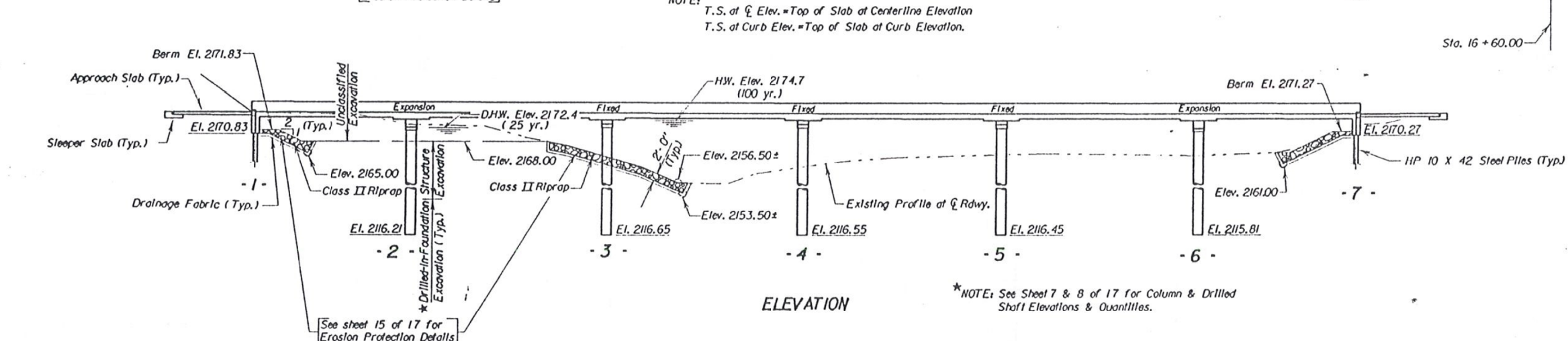
AUGUST 2025

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

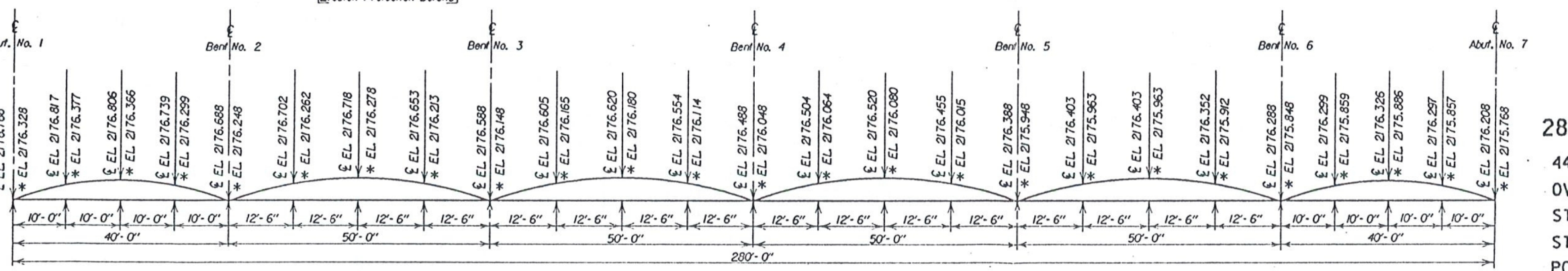
- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Notes (Cont.)
- Sheet No. 4 - Subsurface Investigation, Piling & Drilled Shaft Layout
- Sheet No. 5 - Existing Site Contour Map
- Sheet No. 6 - Abutment Details
- Sheet No. 7 - Details of Bents 2 & 6
- Sheet No. 8 - Details of Bents 3, 4 & 5
- Sheet No. 9 - Superstructure Details
- Sheet No. 10 - End Block and Barrier Curb Details
- Sheet No. 11 - Bearing Details for Bents 2 & 6
- Sheet No. 12 - Details of Bridge End Backfill
- Sheet No. 13 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 14 - Approach Slab Joint Details
- Sheet No. 15 - Erosion Protection Details
- Sheet No. 16 - Details of Standard Plates No.302 and No.305
- Sheet No. 17 - Details of Standard Plate No.308 and 5 - Bolt Insert Assembly.



HYDRAULIC DATA

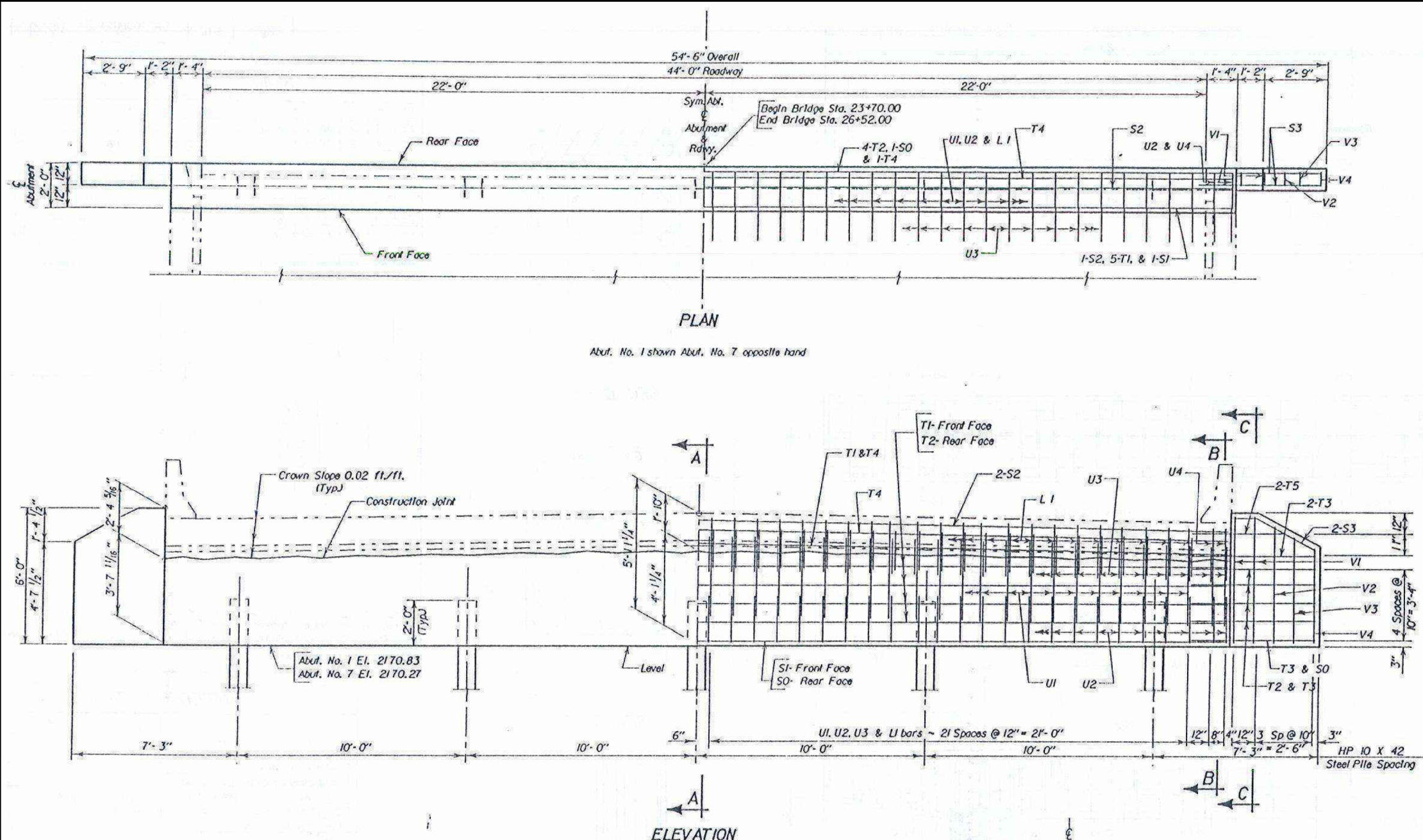
Q_d	5633 cfs
A_d	1334 sq.ft.
V_d	4.2 fps
Q_F	5633 cfs
Q_{100}	11401 cfs
V_{Max}	6.8 fps

Q_d = Design discharge for the proposed bridge based on 25 year frequency, El. 2172.4
 Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency, El. 2174.7
 V_{Max} = Maximum computed outlet velocity for the proposed bridge based on 100 year frequency.



Elevations Indicated with * are Top of Finished Slab at Curbs & with $\bar{E}$ are Top of Finished Slab at $\bar{E}$ Roadway. Camber for Dead Load Deflection Plus Plastic Flow, shown on Sheet No. 9 of 17 Bridge Plans, has been Included in the elevations shown above.

ORIGINAL CONSTRUCTION PLANS
 GENERAL DRAWING
 FOR
282'- 0" CONTINUOUS CONCRETE BRIDGE
 44'- 0" ROADWAY
 OVER N.F.K. BAD RIVER
 STA. 23+70.00 TO 26+52.00
 STR. NO. 28-162-490
 PCEMS NO. 1974
 SEC. 14-TIN-R20E
 0° SKEW
 BR# 0014(93)141
 HS25-44
 (& ALT.)
 HAakon COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 1994
 -X020-
 STR. NO. 28-162-490



MK.	No.	Size	Length	Type	Bending Details
Δ	L 1	44	4	3'-6"	17A
	S0	1	9	54'-2"	Sir.
	S1	1	9	46'-4"	Sir.
#	S2	2	9	46'-4"	Sir.
	S3	4	9	4'-0"	19B
#	T1	5	5	49'-6"	2
	T2	4	5	54'-2"	Sir.
	T3	14	5	5'-9"	Sir.
Δ	T4	2	5	46'-4"	Sir.
	T5	4	5	4'-7"	Sir.
Δ	U1	44	6	9'-8"	19
	U2	48	4	6'-0"	17
Δ	U3	48	4	2'-10"	S12A
Δ	U4	4	6	10'-4"	17
	V1	4	4	13'-3"	T1
	V2	2	4	12'-5"	T1
	V3	2	4	1'-7"	T1
	V4	2	4	10'-9"	T1

NOTE: All dimensions are out to out of bars.
Δ Bars to be Epoxy Coated.
Bend in field as necessary to fit.

ITEM	UNIT	QUANTITY
Class A95 Concrete, Bridge	Cu. Yd.	15.0
Reinforcing Steel	Lb.	1230
Epoxy Coated Reinforcing Steel	Lb.	1325
Structure Excavation, Bridge	Cu. Yd.	10.4
Furnish Steel Test Pile	HP 10 X 42	1 @ 36'-35"
Drive Steel Test Pile	HP 10 X 42	1 @ 36'-35"
Furnish Steel Pile	HP 10 X 42	4 @ 31'-12.1"
Drive Steel Pile	HP 10 X 42	4 @ 31'-12.1"
Protecting Piling	L.F.	5 @ 10'-50"

ORIGINAL CONSTRUCTION PLANS

ABUTMENT DETAILS
FOR
282'- 0" CONTINUOUS CONCRETE BRIDGE
44'- 0" ROADWAY
OVER N. FK. BAD RIVER
STA. 23+70.00 TO 26+52.00
STR. NO. 28-162-490

SEC. 14-TIN-R20E
0° SKEW
BRF 0014(93)141
HS25-44
(& ALT.)

HAAKON COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 1994
STR. NO. 28-162-490

