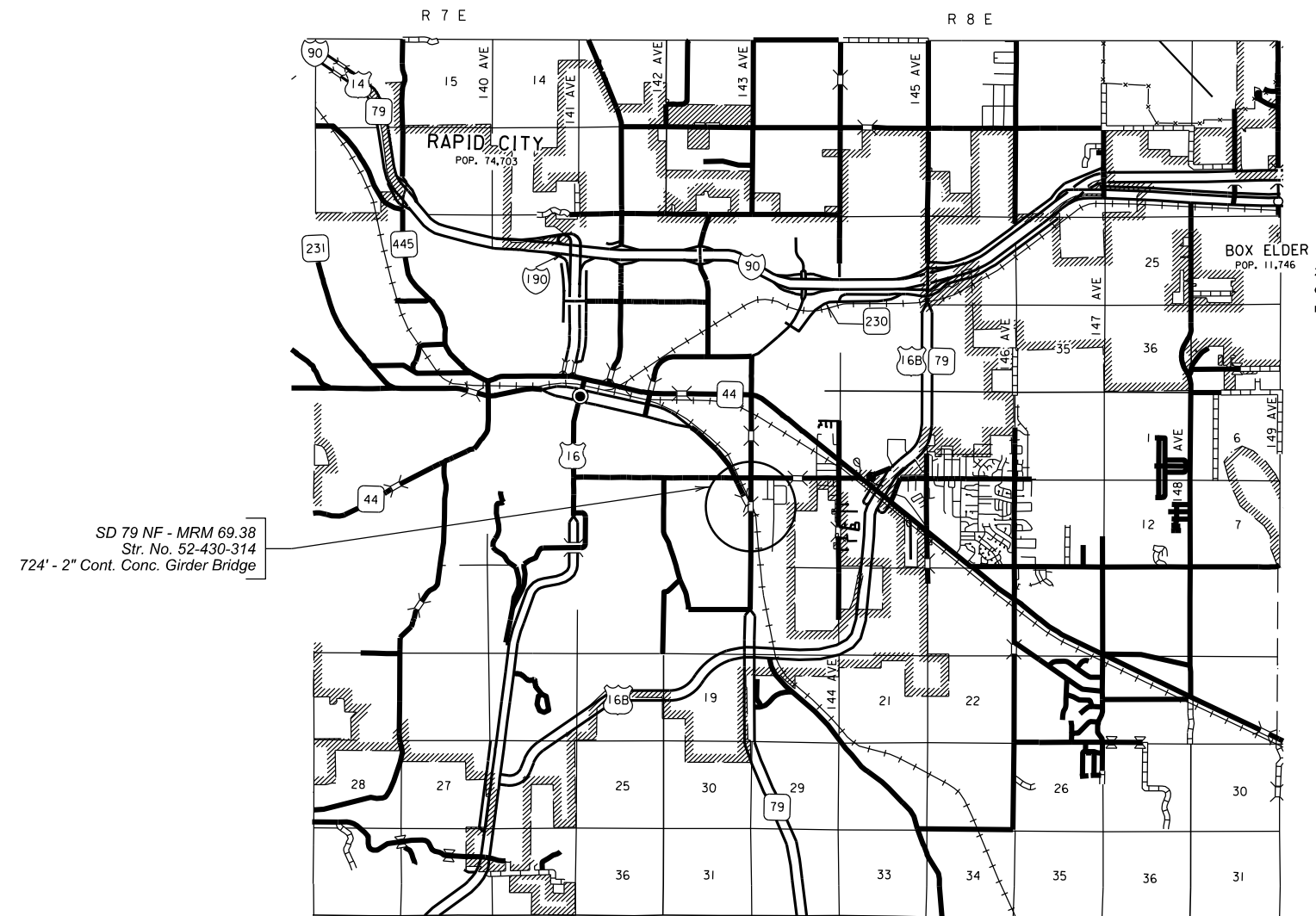


Section E: Structure Plans

INDEX OF SHEETS -

Sheet E1	Layout Map and Index
Sheet E2	Estimate of Structure Quantities
Sheet E3 to E9	Str. No. 52-430-314 724' - 2" Cont. Comp. Girder Bridge



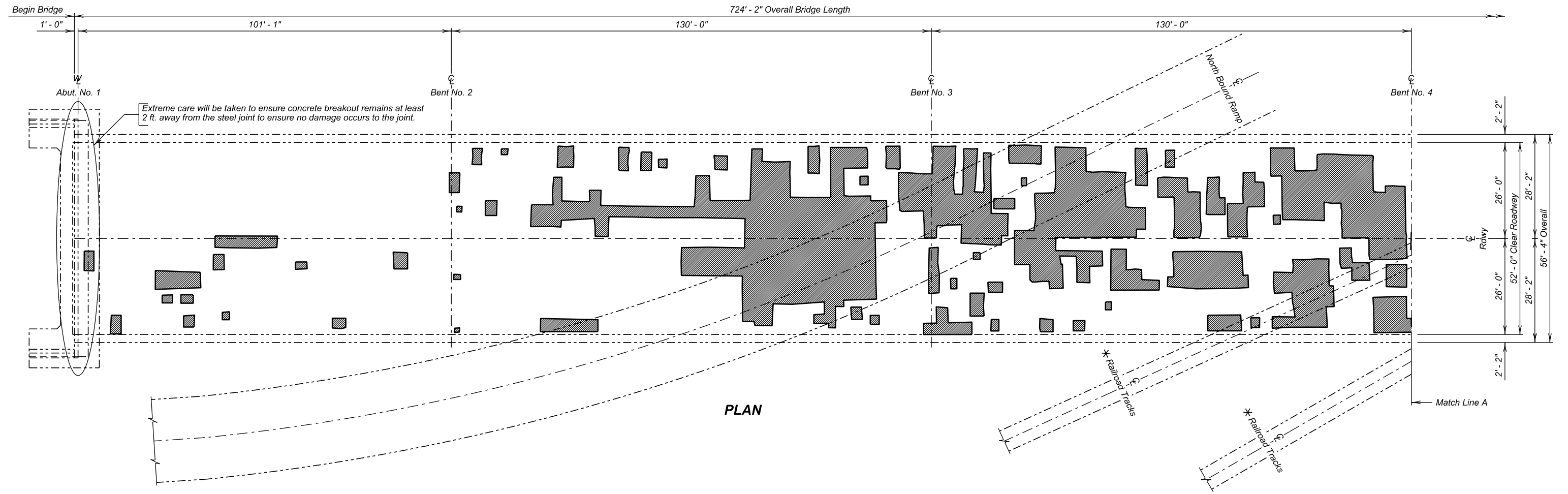
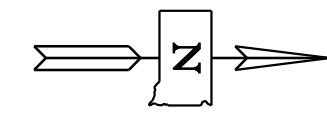
SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

PCN 09G8:

Str. No. 52-430-314

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
460E0030	Class A45 Concrete, Bridge Deck	87.3	CuYd
460E0650	Roadway Canopy	Lump Sum	LS
550E0110	Concrete Removal Type 1B	967.0	SqYd
550E0120	Concrete Removal Type 1C	96.7	SqYd
550E0130	Concrete Removal Type 1D	96.7	SqYd
550E0140	Concrete Removal Type B	40.0	Ft

Revised 02/02/2026 T.J.M.



PLAN

LEGEND:

- Shaded areas indicate approximate location of unsound concrete requiring Concrete Removal Type 1B, Type 1C, Type 1D, and B removals will be as required and approved by the Engineer.
- * Concrete Removal Type 1D will not be allowed over the Railroad.

**-X571-
INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Deck Repair Layout (A)
- Sheet No. 2 - Deck Repair Layout (B)
- Sheet No. 3 - Estimate of Structure Quantities and Notes
- Sheet No. 4 - Notes (Continued)
- Sheet Nos. 5 thru 7 - Original Construction Plans

DECK REPAIR LAYOUT (A)

FOR
724' - 2" CONT. COMP. GIRDER BRIDGE
 52' - 0" ROADWAY 0° SKEW
 OVER SD 79 & RAILROAD SEC. 7/8-T1N-R8E
 STR. NO. 52-430-314 P 79NF(03)69
 PCN 09G8

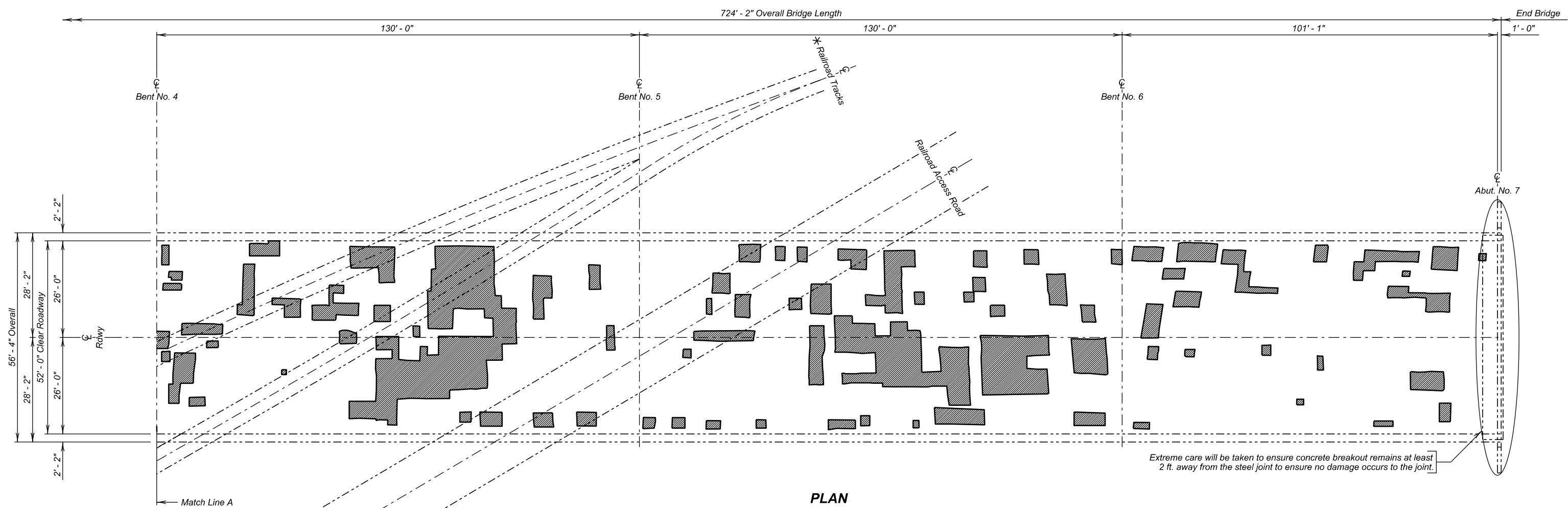
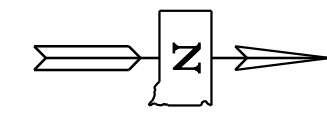
PENNINGTON COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2026

- X571 -

DESIGNED BY TJM PENN09G8	CK. DES. BY JKI 09G8RA01	DRAFTED BY KR	 BRIDGE ENGINEER
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Revised 02/02/2026 T.J.M.



PLAN

LEGEND:

- Shaded areas indicate approximate location of unsound concrete requiring Concrete Removal Type 1B, Type 1C, Type 1D, and B removals will be as required and approved by the Engineer.
- * Concrete Removal Type 1D will not be allowed over the Railroad.

DECK REPAIR LAYOUT (B)

FOR
724' - 2" CONT. COMP. GIRDER BRIDGE
 52' - 0" ROADWAY 0° SKEW
 OVER SD 79 & RAILROAD SEC. 7/8-T1N-R8E
 STR. NO. 52-430-314 P 79NF(03)69
 PCN 09G8

PENNINGTON COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2026

DESIGNED BY TJM PENN09G8	CK. DES. BY JKI 09G8RA02	DRAFTED BY KR	 BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
460E0030	Class A45 Concrete, Bridge Deck	87.3	CuYd
460E0650	Roadway Canopy	Lump Sum	LS
550E0110	Concrete Removal Type 1B	967.0	SqYd
550E0120	Concrete Removal Type 1C	96.7	SqYd
550E0130	Concrete Removal Type 1D	96.7	SqYd
550E0140	Concrete Removal Type B	40.0	Ft

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.

COORDINATION WITH RAILROAD

During deck patching operations, the Contractor will not interfere with the operating railroad train movements. Construction activity must not take place within 25 ft. of the centerline track when train movements are occurring through the construction site and construction equipment will be removed from this zone prior to arrival of any train. See Special Provision for Working on Railroad Company Right-of-Way.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

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

- Accomplish all Concrete Removal Type 1B, 1C, 1D, and B to satisfaction of the Engineer for the first phase of construction.
- Prepare removal areas, patch areas, and cure each patch as required for the first phase of construction.
- Switch traffic and repeat steps 1 and 2 for the second phase of construction.

ROADWAY CANOPY

- The Contractor will construct a rigid canopy above the railroad and roadway under the structure. The canopy is intended to capture smaller debris and not act as safety net for falling deck sections. As such, no traffic will be allowed under an area of active deck removal even with the canopy in place. The exception is traffic will be allowed under the canopy if the only removal occurring is using hand tools and chipping hammers. The canopy is an added safeguard and does not relieve the Contractor of any responsibility for the safety of the public. The canopy will meet the following minimum requirements.
 - The entire system will be above the bottom of the girders.
 - Attachments will not be made to the girders using welding.
 - The canopy will be of a design and material which can adequately capture and contain falling debris as selected by the Contractor and approved by the Engineer.
 - The canopy will be constructed for an entire span before any breakout can occur in that span.
 - The erection of the canopy will be completed in a manner which will cause the least inconvenience to the traveling public.
- The Contractor will submit a detailed Demolition Plan, 30 days prior to any bridge deck removal. This Demolition Plan will include all canopy details and a sequence of traffic control.
- All broken out concrete and other discarded material will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
- The Roadway Canopy will be paid for at the contract lump sum price of Roadway Canopy. This payment will include all construction, maintenance, and removal of the Roadway Canopy.

DECK REPAIR

- This work will consist of removing delaminated concrete down to the top mat of reinforcing steel, repairing spalled areas, and patching the bridge deck. While the intent is to limit the removal of to the top reinforcing mat and above, the deck condition is such that deeper removals may occur. The Contractor is to plan operations to limit the amount of deep removal that occurs.
- The Contractor will sound the area adjacent to the spalled concrete periphery to determine the limits of the loose and delaminated concrete. At a minimum, for these spalled areas, the Contractor will then remove the concrete down to the top layer of reinforcing steel in the deck within this limit. Class B removal will occur on at least one bar for every foot of patch in spalled areas.

- Concrete removal will be by jackhammers or chipping hammers as approved by the Engineer. Jack hammers and mechanical chipping tools will not be operated at an angle greater than 45 degrees measured from the surface of the concrete. The removal areas will be a minimum of 1 inch in depth and have vertical edge or slope outward from bottom of the hole to deck surface. Saw cutting the edges of the removal area may be required if satisfactory results cannot be obtained by other means.
- Based on field documentation some areas have been found to have significantly less than the intended 2-inch overlay, so exercise extreme caution during concrete removal.
- Care will be taken during the removal operations not to nick, gouge or in any other way damage the in-place reinforcing steel. Any damage to the in-place reinforcing steel caused by the removal operations will be repaired as directed by the Engineer at no cost to the Department.
- During concrete removal operations no broken out material will be allowed to fall on the railroad or SD-79 NF. All broken out material will be disposed of by the Contractor.
- After removing all loose concrete to the defined limits, the area will be abrasive blast cleaned and blown clean with clean, dry, oil-free compressed air at 90 psi. The abrasive blasting will be to the extent that all surface laitance is removed. Abrasive blasting will expose the coarse aggregate and remove rust from any exposed reinforcing steel.
- The concrete in the patch areas will be tined perpendicular to the centerline of the roadway.
- The Contractor will use an approved A45 mix meeting the requirement for bridge decks mixed and proportioned in accordance with Section 460 of the Construction Specifications with the following modifications: the coarse aggregate gradation will be in accordance with Section 820 of the Construction Specifications and size #3 will be substituted in lieu of sizes #1 and #15.
- Class A45 Concrete, Bridge Deck quantity is based on the Type 1 B removal area with a depth of 3 1/4" which is the overlay thickness plus the depth to the top mat of reinforcing steel. Type 1C and Type 1D removal is based on 10 percent of the Type 1B removal. Type B removal is assumed to be 20 feet per phase. Actual quantities may vary.
- Class A45 Concrete placed in the bridge deck patches will be as specified for concrete to be used in the bridge deck in accordance with Section 460 of the Construction Specifications and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge Deck.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

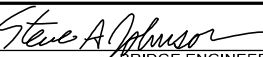
FOR

724' - 2" CONT. COMP. GIRDER BRIDGE

STR. NO. 52-430-314

APRIL 2026

3 OF 7

DESIGNED BY TJM PENNO9G8	CK. DES. BY JKI 09G8MA03	DRAFTED BY TJM	 BRIDGE ENGINEER
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**HYDRODEMOLITION**

1. The Contractor will have the option of using hydrodemolition for the concrete removals on this project.
2. Water will conform to section 790 and be acceptable for use by the manufacturer of the hydrodemolition equipment.
3. When hydrodemolition is used, a written water discharge plan will be submitted to the Engineer a minimum of 2 weeks before construction. The plan will detail how discharge water will be managed and controlled. At a minimum, discharge water needs to be contained until debris has been settled or filtered out of it. Concrete removal by hydrodemolition will not commence until the plan is approved.
4. Hydrodemolition equipment will be capable of removing concrete to the required depth without damaging reinforcing steel and surrounding concrete. The machine will be capable of controlling the water pressure plus the angle and distance of the orifice head in relation to the concrete surface. The equipment must have the ability to control the travel distance and the speed at which the head moves.
5. The operator will be capable of adjusting the removal depths to the satisfaction of the engineer. A test area for each span will be used to allow the operator to determine what adjustments are necessary to get the proper depth of removals. If removal depths can't be controlled, hydrodemolition will not be allowed for concrete removals.
6. The Contractor will provide protection and containment as required to prevent flying debris and water from leaving the construction area and entering a public travelway.
7. If Hydrodemolition is used for bridge deck removals, sandblasting may be eliminated; provided hydrodemolition creates a vertical edge of at least 3/4 inch, reinforcing steel is clean, and the concrete surface is roughened to the satisfaction of the Engineer.
8. Measurement will be based on the type of concrete removal that is being replaced with hydrodemolition.
9. Hydrodemolition will be paid for at the contract unit price for the concrete removal that is being replaced by hydrodemolition. Payment will be full compensation for equipment, labor, materials, and all other incidental items required to remove the concrete and to manage and control the water discharge.

NOTES (CONTINUED)

FOR

724' - 2" CONT. COMP. GIRDER BRIDGE

STR. NO. 52-430-314

APRIL 2026

4 OF 7

DESIGNED BY TJM PENN09G8	CK. DES. BY JKI 09G8MA04	DRAFTED BY TJM	 BRIDGE ENGINEER
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INDEX OF BRIDGE SHEETS--

- Sheet No 1 - General Drawing and Quantities
- Sheet No 2 - Subsurface Investigations
- Sheet No 3 - Details of Sill No. 1
- Sheet No 4 - Details of Sill No. 7
- Sheet No 5 - Details of Sill No. 7
- Sheet No 6 - Details of Bents No 2 and No 6
- Sheet No 7 - Details of Bents No 3 and No 5
- Sheet No 8 - Details of Bent No 4
- Sheet No 9 - Superstructure Details
- Sheet No 10 - Superstructure Details
- Sheet No 11 - Expansion Device and Shoe Details
- Sheet No 12 - Framing Diagram and Erection Data
- Sheet No 13 - Curb, Drain and Steel Railing Details
- Sheet No 14 - Details of Bolted Field Splice

B.M. No. "B" (New Line)
 El. 3163.69
 190' Rt. Sta. 13+00
 I.P. & Guards

CONSTRUCTION NOTES--

- Contractor shall submit for approval to the Bridge Section, at least 30 days prior to beginning of construction, a set of construction plans for Bent No. 4. These plans shall show supports for Girders adjacent to this Bent.
- All girders shall be joined and welded for at least all of the 130' spans before pouring Bent No. 4 Cap.

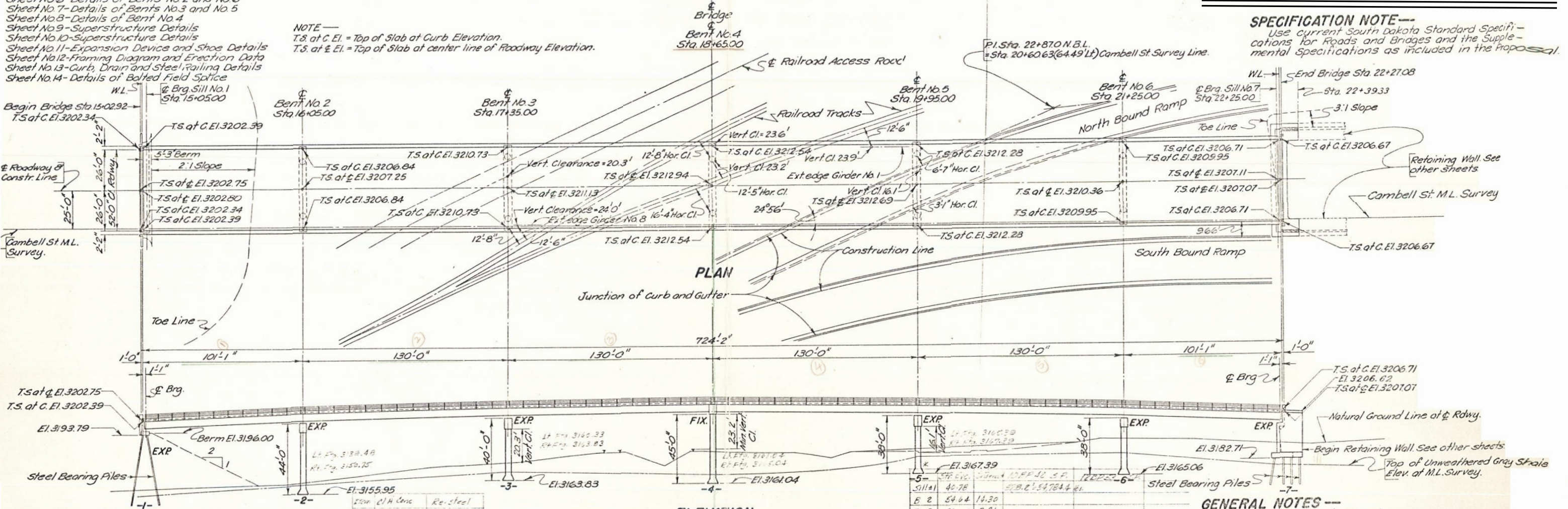
NOTE--
 T.S. at C. El. = Top of Slab at Curb Elevation.
 T.S. at & El. = Top of Slab at center line of Roadway Elevation.

B.M. No. "C" (New Line)
 El. 3189.82
 143' Lt. Sta. 25+56
 I.P. & Guards

ORIGINAL CONSTRUCTION PLANS

SPECIFICATION NOTE--

Use current South Dakota Standard Specifications for Roads and Bridges and the Supplemental Specifications as included in the proposal.



FOUNDATION NOTE--

All drilled holes for Bents shall be inspected and approved by the FOUNDATION SECTION before pouring concrete.

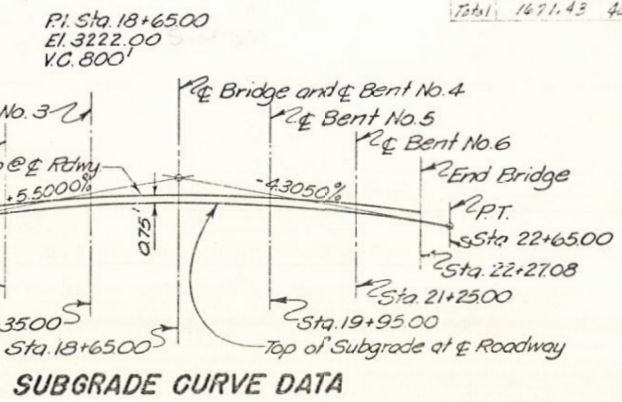
Item	CU Conc	Re. Steel
5.1	878.25	285,444
5.1	53.40	4110
5.2	103.56	23,667
5.2	104.73	21,876
5.4	102.84	23,932
5.5	102.43	21,818
5.6	87.90	19,520
5.7	238.50	33,130
Total	1471.43	425,440

ESTIMATED QUANTITIES

ITEM	Concrete		Steel		Excavation - cu yds	Struc. to Uncl. lbs
	cu yds	cu yds	cu yds	cu yds		
Superstructure (120 Bent Unit)	870.8	254,820	1023.669	14,435		
Sill No. 1	53.4	4,110			50	
Bent No. 2 B/No. 6	181.4	40,515			31	
Bent No. 3 B/No. 5	204.4	41,605			35	
Bent No. 4	104.1	21,415			15	
Sill No. 7	238.5	33,130			106	
Total	1,673.2	411,675	1,023.669	14,435	287	

GENERAL NOTES--

- See NOTES on Sheets No 2 thru 14.
- Longitudinal elements of slab shall conform to the vertical curve.
- Rail posts shall be built vertical.
- Design Specifications: AASHTO Specifications for Highway Bridges, 1961, with Interim Specifications for 1961, 1962.
- See Retaining Walls Sheet No 6 for wall surface finishing of Sill No. 7.

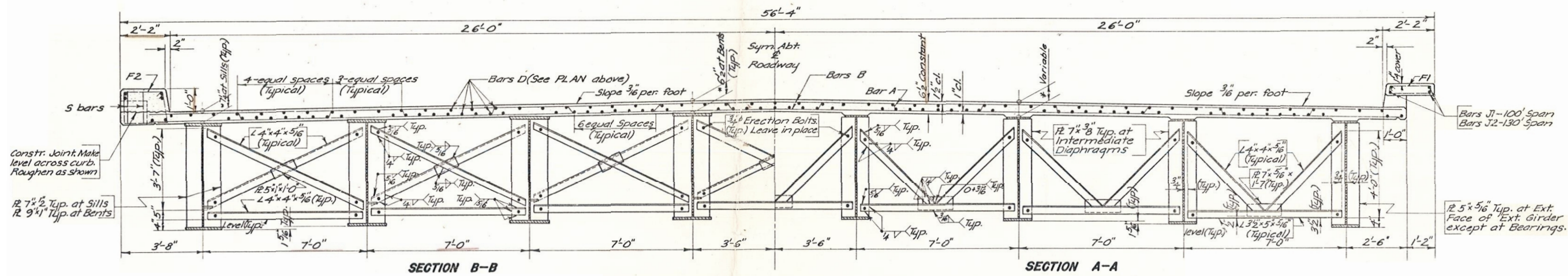
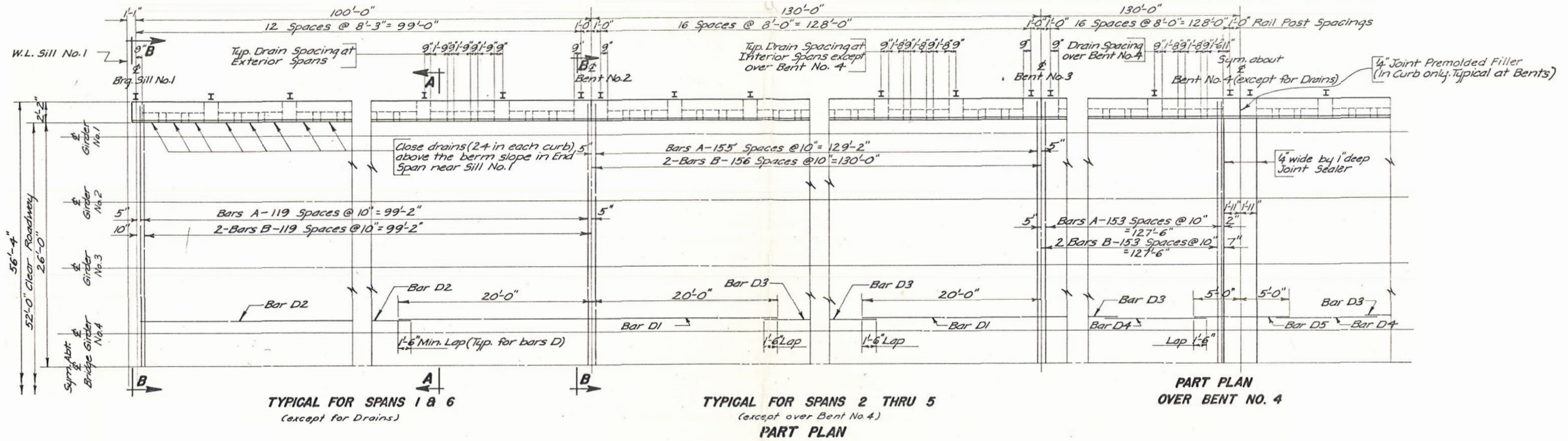


EXCAVATION NOTES--

- Footings for Bents No. 2 thru 6 shall be cast against solid unweathered gray shale and carried into same approximately the depth of footings. Limits of shale excavation for these footings shall be bounded as nearly as practicable by the neat lines as shown in the details of Bent footings, sheet No. 6, 7 & 8.
- Shale at Bents 2 thru 6 shall develop a minimum bearing value of 20 tons per sq. ft. If bearing value is less than 20 tons per sq. ft. communicate with the BRIDGE SECTION.
- Final footing elevations for Bents No. 2 thru No. 6 shall be established before ordering column reinforcing steel for the respective Bents.

GENERAL DRAWING AND QUANTITIES
 FOR
724'-2" CONT. COMP. R. GIRDER BRIDGE
 ON CAMBELL ST. 52'-0" ROADWAY
 OVER SD 79 B.C. & N.W.R.R. SEC. 7/8-TIN-R8E
 STA. 15+02.92 TO 22+27.08 U 019-3(4)
 PENNINGTON COUNTY
 STR. NO. 52-430-314 SOUTH DAKOTA H20-S16-44
 DEPARTMENT OF HIGHWAYS
 JULY 1963

DESIGNED BY R.W.J.	DRAWN BY G.A.D.T.S.	CHECKED BY E.L.S.	APPROVED [Signature]
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REINFORCING SCHEDULE			
MK. No.	Size	Length	Type
A	860	5	55'-9" 15
B	1716	1	53'-9" Str.
D1	480	4	40'-0" Str.
D2	480	4	41'-0" Str.
D3	960	4	47'-3" Str.
D4	240	1	16'-6" Str.
D5	120	5	10'-0" Str.

Bending Details

Note: Dimensions are out to out of bars.

- SLAB POURING NOTES—**
1. Longitudinal Construction Joints are not to be used.
 2. Transverse Construction Joints will be permitted where positioned near the girder field splices other than the two splices nearest Bent No. 4.
 3. Contractor shall submit, prior to pouring, to the BRIDGE SECTION, for approval of plans, details and sequence of pouring.
 4. Curb shall be poured after all of the slab has been poured.
 5. The Expansion Device shall be blocked off prior to pouring slab; After all of slab has been poured, adjust Expansion Devices and finish pour.
 6. See Sheet No. 8 for pouring at Bent No. 4.

NOTES:

See Curb, Drains, and Railing Sheet No. 13 for details of Curb, Drain, Reinforcements and Railings.

*Dimensions at & Bearings. At Interior Points dimensions must be corrected according to the Erection Data on Sheet No. 12. See NOTES sheet No. 10.

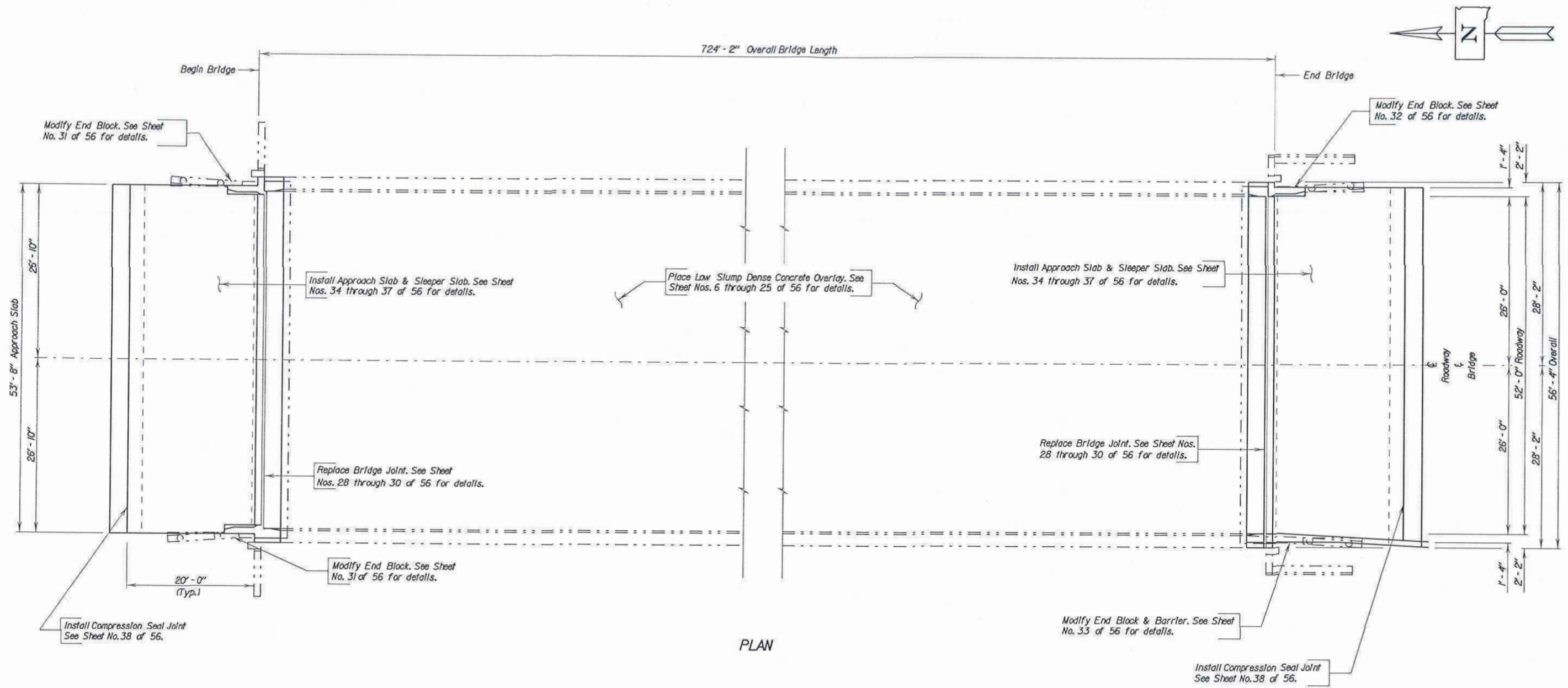
ITEM	UNIT	QUANTITY
1.5" Concrete	CY	830.5
Reinforcing steel	LBS	254,170
Structural steel	LBS	10,386.9
Railing steel	LIN FT.	4,435

Includes weight of Anchor Bolts.
*Includes quantities for End Rail Posts at Sills.

ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS
FOR
724'-2" CONT. COMP. R. GIRDER BRIDGE
ON GAMBELL STREET 52'-0" ROADWAY
OVER SD 79 & C&N.W.R. SEC. 7/8-TIN-R3E
STA. 15+02.92 TO 22+27.08 U019-3(4)
PENNINGTON COUNTY
STR. NO. 52-430-314 SOUTH DAKOTA H20-S16-44
DEPARTMENT OF HIGHWAYS
JUNE 1963

NOTE-
Begin and end bridge stations are reversed, on these plan sheets, from the rest of the project stationing. This was done to match the original construction plans.



PLAN

INDEX OF BRIDGE SHEETS-

- Sheet No. 1 - Layout for Upgrading
- Sheet Nos. 2 through 5 - Notes
- Sheet Nos. 6 through 15 - Deck Profiles for Low Slump Dense Concrete Overlay (North Bound)
- Sheet Nos. 16 through 25 - Deck Profiles for Low Slump Dense Concrete Overlay (South Bound)
- Sheet No. 26 - Concrete Breakout at Abutment No.1
- Sheet No. 27 - Concrete Breakout at Abutment No.7
- Sheet No. 28 - Joint Replacement Details at Abutments
- Sheet No. 29 - Joint Replacement at Abutment No.1 & Abutment No.7
- Sheet No. 30 - Joint Replacement at Abutment No.1 & Abutment No.7 (Continued)
- Sheet No. 31 - End Block Modification Details at Abutment No.1
- Sheet No. 32 - End Block Modification Details at Abutment No.7 (SouthEast)
- Sheet No. 33 - End Block Modification Details at Abutment No.7 (SouthWest)

- Sheet No. 34 - Layout of Approach Slabs
- Sheet No. 35 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 36 - Details of Approach Slab Adjacent to Bridge (Continued)
- Sheet No. 37 - Details of Approach Slab Adjacent to Bridge (Continued)
- Sheet No. 38 - Details of Compression Seal Joint
- Sheet Nos. 39 through 46 - AsBuilt Elevation Survey
- Sheet No. 47 - Details of Standard Plate No. 630.92
- Sheet Nos. 48 through 56 - Original Construction Plans

ORIGINAL CONSTRUCTION PLANS

UPGRADING LAYOUT FOR
724' - 2" CONT. COMP. GIRDER BRIDGE
 52'-0" ROADWAY 0° SKEW
 ON CAMBELL STREET SEC. 7/8-TIN-R8E
 STR. NO. 52-430-314 NH-PH 2016(14)68

PENNINGTON COUNTY
 S. D. DEPT. OF TRANSPORTATION

JANUARY 2005 7 OF 7

DESIGNED BY DM	DRAWN BY SMS	CHECKED BY TB	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
PENN4981	4981SA01		

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