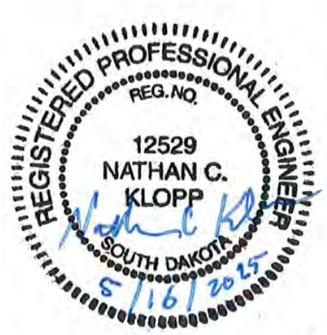
SECTION E: STRUCTURE PLANS

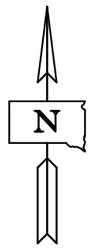
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E1	E130

INDEX OF SHEETS

Sheet E1	Layout Map and Index
Sheet E2	Estimate of Structure Quantities
Sheet E3 to E51	Str. No. 42-065-020 276' - 6" Steel Girder Bridge
Sheet E52 to E60	Str. No. 42-066-020 11'x10' Box Culvert
Sheet E61 to E113	Str. No. 42-065-016 312' - 11⅜" Steel Girder Bridge
Sheet E114 to E124	M.S.E Large Panel Retaining Walls and Reinforced Concrete Barriers
Sheet E125 to E130	Reinforced Concrete Barriers





END EM 0292(88)73
Station 106+06.35
located 1103.12 feet south and
1959.66 feet west of the northeast
corner of Section 18 -Township 100 North -
Range 50 West of the 5th P.M.
MRM (029 N) 75.17+0.032

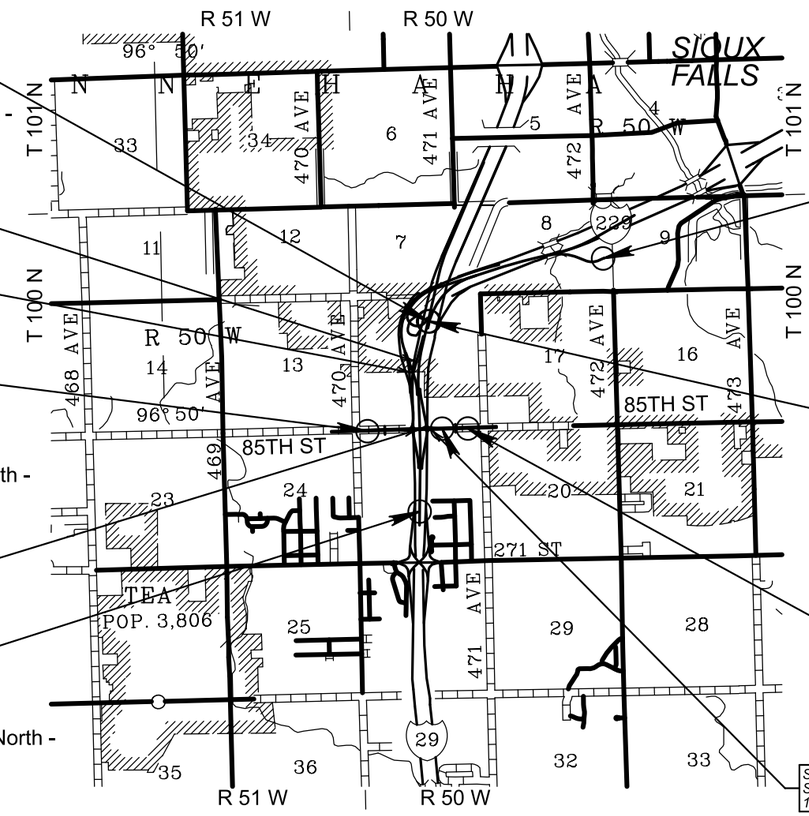
Sta. 0+01.50 to Sta. 6+65.00
M.S.E. Large Panel Retaining Wall

Sta. 60+35.34 to Sta. 63+50.03
Str. No. 42-065-016
312'-11⅜" Steel Girder Bridge
Concrete Barrier Curb and Gutter

BEGIN EM 0292(88)73
85TH STREET
Station 299+35.00
located 20.50 feet south and
499.13 feet east of the northwest
corner of Section 19 - Township 100 North -
Range 50 West of the 5th P.M.

Sta. 318+79.74 to Sta. 321+55.24
Str. No. 42-065-020
276'-6" Steel Girder Bridge
Concrete Barrier Curb and Gutter

BEGIN EM 0292(88)73
Station 30+27.82
located 2117.41 feet north and
2376.09 feet east of the southwest
corner of Section 19 - Township 100 North -
Range 50 West of the 5th P.M.
MRM (029 N) 73.38+0.364



END IM 2292(104)0
I-229 RAMP C LOUISE AVENUE
Station 43+87.81
located 1411.81 feet north and
4960.21 feet east of the southwest
corner of Section 8 -Township 100 North -
Range 50 West of the 5th P.M.
MRM (229 N1) 00.92+0.000

BEGIN IM 2292(104)0
I-229 RAMP B
Station 19+34.15
located 1115.22 feet south and
1906.32 feet west of the northeast
corner of Section 18 -Township 100 North -
Range 50 West of the 5th P.M.
MRM (229 N) 00.00+00.032

END EM 0292(88)73
85TH STREET
Station 339+30.00
located 33.11 feet south and
600.68 feet west of the northwest
corner of Section 20 - Township 100 North -
Range 50 West of the 5th P.M.

Sta. 324+45.77
Str. No. 42-066-020
11'x10' Box Culvert

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E2	E130

Plotting Date: 06/26/2025

Revised Date: 06/26/2025
Initials: NCK

SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

PCN 06JQ:

Str. No. 42-065-016

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	939.0	SqYd
120E7000	Select Granular Backfill	14.9	Ton
410E0020	Structural Steel	Lump Sum	LS
410E0700	Abutment Joint Drain	2	Each
410E2100	Finger Type Expansion Joint Assembly	2	Each
420E0100	Structure Excavation, Bridge	465	CuYd
430E0200	Bridge End Embankment	1,720	CuYd
430E0300	Granular Bridge End Backfill	156.0	CuYd
430E0510	Approach Slab Underdrain Excavation	2.0	CuYd
430E0700	Precast Concrete Headwall for Drain	6	Each
460E0030	Class A45 Concrete, Bridge Deck	340.1	CuYd
460E0050	Class A45 Concrete, Bridge	560.6	CuYd
460E0150	Concrete Approach Slab for Bridge	238.5	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	34.6	SqYd
460E0500	Deck Drain, Girder Bridge	9	Each
480E0100	Reinforcing Steel	73,346	Lb
480E0200	Epoxy Coated Reinforcing Steel	8,496	Lb
480E0300	Stainless Reinforcing Steel	67,897	Lb
510E3521	HP 14x73 Steel Test Pile, Furnish and Drive	420	Ft
510E3525	HP 14x73 Steel Bearing Pile, Furnish and Drive	7,120	Ft
635E8020	2" Rigid Galvanized Steel Conduit	313	Ft
680E0040	4" Underdrain Pipe	380	Ft
680E2500	Porous Backfill	32.0	Ton
734E2022	Bridge Berm Slope Protection, Quarried Aggregate	442.1	SqYd
831E0100	Type A Drainage Fabric	443	SqYd
831E0110	Type B Drainage Fabric	47	SqYd
831E1030	Perforated Geocell	425	SqFt

Str. No. 42-065-020

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	2,470.0	SqYd
120E7000	Select Granular Backfill	37.0	Ton
410E0020	Structural Steel	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	184.5	Ft
420E0100	Structure Excavation, Bridge	407	CuYd
430E0200	Bridge End Embankment	2,980	CuYd
430E0300	Granular Bridge End Backfill	408.0	CuYd
430E0510	Approach Slab Underdrain Excavation	6.0	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	820.2	CuYd
460E0050	Class A45 Concrete, Bridge	530.4	CuYd
460E0150	Concrete Approach Slab for Bridge	407.4	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	150.4	SqYd
462E0100	Class M6 Concrete	40.9	CuYd
470E0220	Steel Pedestrian Railing on Concrete Barrier	767.0	Ft
480E0100	Reinforcing Steel	111,682	Lb
480E0200	Epoxy Coated Reinforcing Steel	1,284	Lb
480E0300	Stainless Reinforcing Steel	203,000	Lb
510E0300	Preboring Pile	200	Ft
510E3521	HP 14x73 Steel Test Pile, Furnish and Drive	365	Ft
510E3525	HP 14x73 Steel Bearing Pile, Furnish and Drive	8,400	Ft
635E8020	2" Rigid Galvanized Steel Conduit	277	Ft
635E8040	4" Rigid Galvanized Steel Conduit	1,110	Ft
680E0040	4" Underdrain Pipe	117	Ft
680E2500	Porous Backfill	14.0	Ton
734E2022	Bridge Berm Slope Protection, Quarried Aggregate	583.0	SqYd
831E0100	Type A Drainage Fabric	584	SqYd
831E0110	Type B Drainage Fabric	118	SqYd
831E1030	Perforated Geocell	1,056	SqFt

Str. No. 42-066-020, M.S.E. Large Panel Retaining Walls, and Reinforced Concrete Barriers

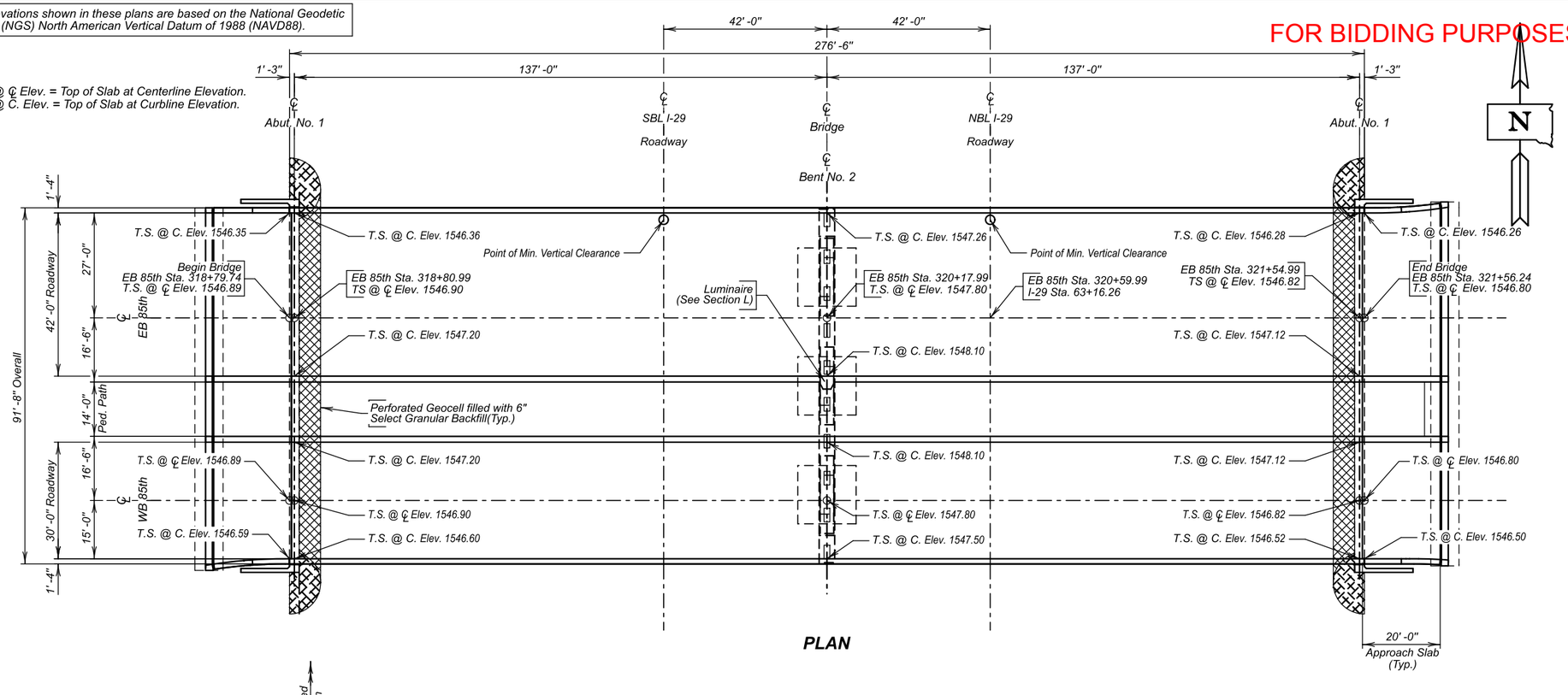
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0300	Structure Excavation, Retaining Wall	2,750	CuYd
420E1000	Foundation Preparation, Retaining Wall	1,277	CuYd
421E0200	Box Culvert Undercut	139	CuYd
430E0200	Bridge End Embankment	1,878	CuYd
430E0700	Precast Concrete Headwall for Drain	1	Each
460E0100	Class A45 Concrete, Miscellaneous	659.8	CuYd
460E0120	Class A45 Concrete, Box Culvert	268.5	CuYd
460E0204	Anti-Graffiti Coating	26,543.0	SqFt
480E0100	Reinforcing Steel	49,688	Lb
480E0200	Epoxy Coated Reinforcing Steel	100,103	Lb
530E0420	MSE Large Panel Wall, Furnish	10,140	SqFt
530E0422	MSE Large Panel Wall, Install	10,140	SqFt
530E0702	Granular Backfill for MSE Large Panel Wall	6,009.0	CuYd
651E0040	4" Concrete Sidewalk	164	SqFt
680E0040	4" Underdrain Pipe	1,345	Ft
680E2500	Porous Backfill	660.0	Ton

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

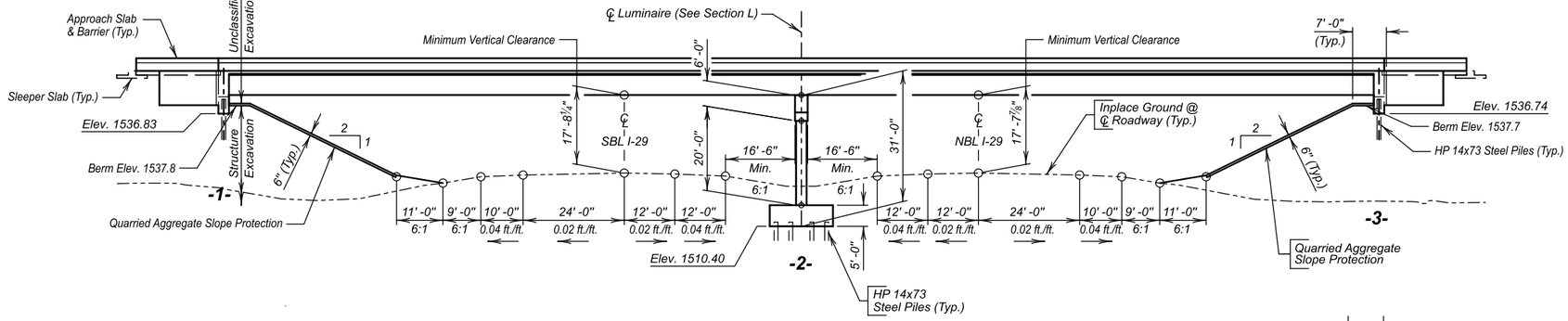
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E3	E130

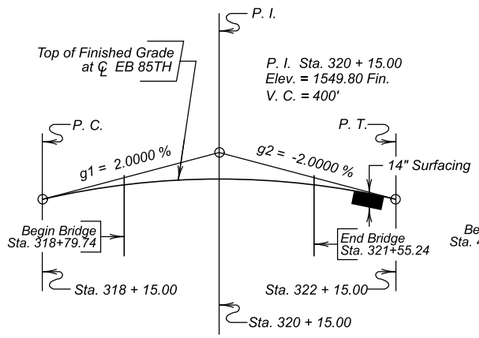
T.S. @ ℄ Elev. = Top of Slab at Centerline Elevation.
T.S. @ C. Elev. = Top of Slab at Curbline Elevation.



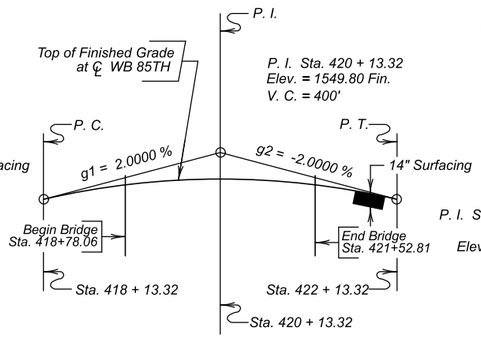
PLAN



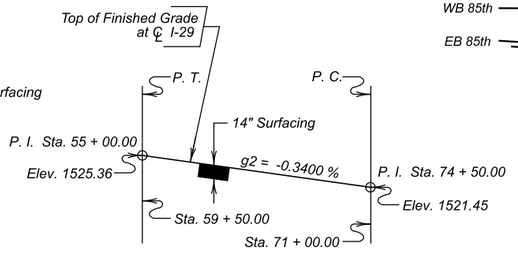
ELEVATION
(Luminaire Not Shown)



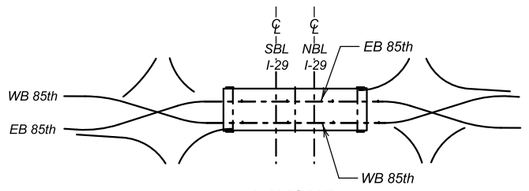
VERTICAL CURVE DATA
EB 85TH



VERTICAL CURVE DATA
WB 85TH



VERTICAL CURVE DATA
I-29



LAYOUT

-X271-
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Sheet No. 5 - Notes (Continued)
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Sheet No. 37 - Approach Slab Details (G)
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Sheet No. 49 - Details of Standard Plate No.'s

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

GENERAL DRAWING
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020
PCN 06JQ

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

-X271- — 1 OF 49

Plans Prepared By:
Short Elliott Hendrickson
5016 S Bur Oak Place, Suite 1
Sioux Falls, SD 57108

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotting Date: 08/28/2025
Revised Date: 08/28/2025
Initials: NCK

FOR BIDDING PURPOSES ONLY

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	L.S.	
Concrete Penetrating Sealer	2,470.0	Sq. Yd.	See Special Provision
Select Granular Backfill	37.0	Ton	
Structural Steel	Lump Sum	L.S.	See Special Provision
Membrane Sealant Expansion Joint	184.5	Ft.	
Structure Excavation, Bridge	407	Cu. Yd.	
Bridge End Embankment	2,980	Cu. Yd.	
Granular Bridge End Backfill	408.0	Cu. Yd.	
Approach Slab Underdrain Excavation	6.0	Cu. Yd.	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	820.2	Cu. Yd.	
Class A45 Concrete, Bridge	530.4	Cu. Yd.	
Concrete Approach Slab for Bridge	407.4	Sq. Yd.	
Concrete Approach Sleeper Slab for Bridge	150.4	Sq. Yd.	
Class M6 Concrete	40.9	Cu. Yd.	
Steel Pedestrian Railing on Concrete Barrier	767.0	Ft.	
Reinforcing Steel	111,682	Lb.	
Epoxy Coated Reinforcing	1,284	Lb.	
Stainless Reinforcing Steel	203,000	Lb.	See Special Provision
Preboring Pile	200	Ft.	
HP 14 x 73 Steel Test Pile, Furnish and Drive	365	Ft.	
HP 14 x 73 Steel Bearing Pile, Furnish and Drive	8,400	Ft.	
2" Galvanized Steel Conduit	277	Ft.	
4" Galvanized Steel Conduit	1,110	Ft.	
4" Underdrain Pipe	177	Ft.	
Porous Backfill	14	Ton	
Bridge Berm Slope Protection, Quarried Aggregate	583.0	Sq. Yd.	
Type A Drainage Fabric	584	Sq. Yd.	
Type B Drainage Fabric	118	Sq. Yd.	
Perforated Geocell	1,056	Sq. Ft.	

BRIDGE SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2025 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
3. All welding and welding inspections will be in conformance with the latest edition of AASHTO/AWS D1.5/D1.5M Bridge Welding Code unless noted otherwise in the plans.

BRIDGE DESIGN LOADING

1. AASHTO HL-93.
2. Dead Load includes 22 psf for future wearing surface on the roadway.

DESIGN MATERIAL STRENGTHS

Class A45 Concrete	f'_c = 4,500 psi
Reinforcing Steel (ASTM A615, Gr. 60)	f_y = 60,000 psi
Piling (ASTM A572 Grade 50)	f_y = 50,000 psi
Structural Steel (ASTM A709 Gr. 50T2)	fy = 50,000 psi

GENERAL CONSTRUCTION

1. All lap splices shown are contact lap splices unless noted otherwise.
2. All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
4. The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
5. Barrier curbs will be built perpendicular to the roadway grade line.
6. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
7. Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.11. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
8. The elevation of the bridge deck is 14 inches above subgrade elevation.

DESIGN MIX OF CONCRETE

1. All structural concrete will be Class A45 Concrete unless otherwise indicated.
2. Type II cement conforming to Section 750 of the Construction Specifications is required in all concrete on the structure except in the abutments. Abutment concrete will use a Type III cement or an approved modified A45 mix. The modified mix will meet the requirements for A45 concrete specified in Section 460 of the Construction Specification with the following modifications: a high range water reducer is required at the manufactures' recommended dosage, the maximum concrete slump is 6 inches, the maximum water/cementitious material ratio will be at least 0.02 less than the A45 mix used in the rest of the substructure, and the minimum concrete temperature at time of placement will be 65 degrees Fahrenheit. If used, type III cement will contain a maximum 8% Tricalcium Aluminate (C_3A) and a maximum 0.6% Alkalis ($Na_2O + O.658K_2O$).
3. Grout design mix will be as specified in Section 460.2 K of the Construction Specifications. A compressive strength of 2000 psi will be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4-inch. The quantity of grout is included in and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
8/28/2025

ESTIMATE OF STRUCTURE QUANTITES AND NOTES
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hdaridge File - ...\Sheets\b06JQ_01_seq.dgn

ABUTMENTS

1. Preboring piling at each abutment is required to whichever is greater, ten feet to natural ground.

2. The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling will develop a field verified nominal bearing resistance of 335 tons per pile.

3. One test pile will be driven at each abutment and will become part of the pile group. The test pile will be driven before any other pile and will be driven to the required field verified nominal resistance or as directed by the Engineer prior to driving any portion of the bearing piles.

4. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40.

5. Piles will not be driven out of position by more than three inches in the direction parallel to the girder centerline. A pile-driving template will be used to ensure this accuracy.

6. Each finished abutment will include a Bridge Survey Marker. See Standard Plate 460.05

7. Abutment backwall and wings will not be cast until after the deck has been poured.

CONNECTION OF GIRDER TO PILE

1. Cut off piling at the elevations shown in the plans and weld bearing plates to the piling. Adjust as necessary to make bearing plates level, and to permit proper position of the girders. If piles are driven out of position to the extent that bearing plates will not fit, the Contractor will submit the method of correction to the Engineer for approval. Piles will not be pulled into position.

2. All girder erection will be complete with the splices fully bolted and diaphragms in place, before welding girders to bearing plates. (Diaphragms need not be secured with more than temporary bolting, prior to the pile to girder connections.)

3. An alternate connection, capable of transmitting a direct load of 8000 lbs. to the pile and developing 30,000 lbs. horizontal force, may be submitted to the Office of Bridge Design for prior approval.

4. This connection will not be made when the temperature is greater than 70° F or less than 30° F.

5. Steel for the bearing plates will conform to ASTM A709 Gr. 50.

6. Payment for furnishing and installing the bearing plates will be incidental to the contract lump sum price for Structural Steel.

POURING OF ABUTMENT CONCRETE

1. Abutment concrete will be placed, as directed by the Engineer, at a time when a relatively stable temperature can be expected. A relatively stable temperature is defined as an air temperature deviation of not more than 30° F within 12 hours of completing the abutment pour from the air temperature at the time when the abutment concrete is placed.

2. The forms will be secured to the girders in such a manner that they will be free to move longitudinally with the expansion or contraction of the girder.

3. The girders will be braced near the abutments in such a manner that their lateral movement or rotation will be prevented during the placing of concrete. The Contractor will include details for this bracing with the falsework plans.

BENT

1. All Swedge Bolts will be 1 1/2-inch diameter x 2'-6" F1554, Grade 55 bolts with heavy hex nut and cut washer (listed with structural steel in Superstructure quantities). A minimum of 20% of the embedded bolt surface will be covered with deformations whose radial dimensions are 15 to 20% of the bolt diameter.

2. The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling will develop a field verified nominal bearing resistance of 335 tons per pile.

3. One test pile will be driven at each bent and will become part of the pile group. The test pile will be driven before any other pile pile and will be driven to the required field verified nominal resistance or as directed by the Engineer prior to driving any portion of the bearing piles.

4. The contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40

SUPERSTRUCTURE

1. Structural steel will conform to ASTM A709 Gr. 50T2. Steel for diaphragms and stiffeners will conform to ASTM A709 Gr. 50. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.

2. Bolts, nuts and washers will conform to ASTM F3125, Grade A325.

3. Shear connectors will be field welded to the girders in accordance with the Shear Connector Field Installation Special Provision.

4. All butt-welded girder splices will be ultrasonically inspected.

5. The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel.

6. Structural steel will be painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).

7. Structural steel used in all girder web plates, girder flanges, and girder splice plates will comply with the Charpy-V-Notch toughness requirements set forth in Section 970 of the Construction Specifications. Material greater than 1 1/2 inches in thickness will require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension and stress reversal areas of girder flanges.

8. The use of an approved deck finishing machine will be required during placement of bridge deck concrete. The deck finishing machine will be adjusted and operated in such a manner that the screed or screeds are parallel with the centerline of the bridge. The finish machine and concrete placement will be parallel to the skew of the bridge.

9. The concrete bridge deck will be placed and finished at a minimum rate of 54 feet of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. If a header is required sometime during the pour operation, its location will be at or as near as possible to the three-quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 54 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.

10. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.

11. Dead Load camber will be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.

12. The Contractor is required to submit a detailed plan showing the proposed girder erection. The girder erection plan will be designed and stamped by a Professional Engineer registered with the State of South Dakota. The plan must be submitted 30 days prior to the start of work for approval by the Office of Bridge Design. The plan will include. But not limited to, complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details, and temporary bracing details.

13. All single girder segments will be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully installed and bolts fully tightened. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected. At no time will a single girder segment be allowed over traffic.

14. See Special Provision for Concrete Penetrating Sealer.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

NOTES (CONTINUED)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

4" RIGID GALVANIZED STEEL CONDUIT

1. Conduit, with expansion fittings, junction boxes and pull tape will be provided at the location detailed in the plans.

2. Cast in place concrete inserts for conduit attachment will be Dayton Superior ¼" bolt diameter stainless steel F-42 Loop Ferrule Inserts with ¼" stainless steel bolts conforming to ASTM F593.

3. Conduit, fittings and attaching hardware will meet the requirements of NFPA 70 National Electrical Code (NEC). All steel components will be hot dip galvanized in accordance with ASTM A123 or A153 as applicable. Isolate the galvanized conduit brackets from the stainless steel insert and bolt with fiber washers.

4. All costs to provide the 4"diameter conduit, including concrete inserts, conduit, attaching hardware, junction boxes, expansion devices, pull tape, labor, equipment and any incidentals necessary to install the conduit will be included in the contract unit price per foot for 4"Rigid Galvanized Steel Conduit.

2" RIGID GALVANIZED STEEL CONDUIT

1. Conduit, with expansion fittings, junction boxes and pull tape will be provided at the location detailed in the plans.

2. Cast in place concrete inserts for conduit attachment will be Dayton Superior ¼" bolt diameter stainless steel F-42 Loop Ferrule Inserts with ¼" stainless steel bolts conforming to ASTM F593.

3. Conduit, fittings and attaching hardware will meet the requirements of NFPA 70 National Electrical Code (NEC). All steel components will be hot dip galvanized in accordance with ASTM A123 or A153 as applicable. Isolate the galvanized conduit brackets from the stainless steel insert and bolt with fiber washers.

4. All costs to provide the 2"diameter conduit, including concrete inserts, conduit, attaching hardware, junction boxes, expansion devices, pull tape, labor, equipment and any incidentals necessary to install the conduit will be included in the contract unit price per foot for 2"Rigid Galvanized Steel Conduit.

BEARINGS

1. All steel for the bearings will conform to ASTM A709, Gr. 50.

2. The pre-formed fabric pads will be composed of multiple layers of 8-ounce cotton duck impregnated and bonded with high quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness, after compression and vulcanization. The finished pads will withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 psi without detrimental reduction in thickness or extrusion.

3. The bearing plates will be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).

4. Tolerances and surface finish for Rocker Plates will be as follows:

Convex Radius Dimension	+0.000-inch to -0.010-inch
Surface Finish, Machined Surfaces	125 RMS or Better
Surface Finish, Other Surfaces	230 RMS or Better

5. Payment for furnishing and installing the bearings, including the pre-formed fabric pads under the bearing plates and painting, will be incidental to the contract lump sum price for Structural Steel.

FIELD BOLTED GIRDER SPLICES

1. Steel for splice and filler plates will conform to ASTM A709 Gr. 50T2.

2. Bolts in flange splices will be placed with the heads down.

3. Bolts in web splices of exterior girders will be placed with the heads on the exterior face of girders.

4. All bolts will be fully tightened prior to removing temporary supports.

WELDING AND WELD INSPECTION

Main members referred to in Section 6.7 Nondestructive Testing of the Bridge Welding Code are identified as follows: girder webs, girder flanges, and bearing stiffeners. Ultrasonic testing of groove welds will be used in lieu of radiography. See girder layout for locations of tension and stress reversal areas of the girder flanges.

FALL PROTECTION

1. The Contractor will install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system will be installed. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.

2. Modifications to any bridge components used to accommodate the Fall Protection System will be shown on the Falsework Plans and the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System will be incidental to the other contract items.

BOLT TESTING

The certified mill test reports for all bolts used on the project will include the test results for all the testing specified in section 972.2 D of the Construction Specifications. Some of these tests are supplemental tests that must be requested at the time the bolts are ordered. It is the responsibility of the Contractor to notify the bolt supplier of these requirements.

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish will be applied to the following areas:

   a. **Abutments:** all exposed surfaces to an elevation 1-foot below finished ground line.*
   b. **Barrier:** all exposed surfaces (Tan**, Top** and Front**).
   c. **Slab:** edge of slab.*
   d. **Bents:** All exposed surfaces.*

   * Color will be AMS – STD - 595 33690
   ** Color will be AMS – STD - 595 37875

2. The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications.

REGISTERED PROFESSIONAL ENGINEER
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NOTES (CONTINUED)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
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LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

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SHOP PLANS

Shop plans will be required as specified by the Construction Specifications.

The fabricator will submit shop plans in accordance with the Construction Specifications. Send shop plan submittals to Short Elliott Hendrickson Inc. (SEH®), 5016 S Bur Oak Place, Suite 1, Sioux Falls, SD 57108 (amurra@sehinc.com) After review, corrections (if necessary), and approval by SEH®, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

SHEAR STUD CONNECTOR

1. Prior to the welding of the studs to the girders, the top surface of the girders that are to have studs welded on will be clean of all dirt, rust, and any other foreign material.

2. The shear connectors that will be attached to the girder will be 7/8-inch diameter x 5 inches long and will conform to ASTM 108, Gr. 1015, 1018, or 1020. The connector will meet the following minimum mechanical property requirements for Type B studs,

Tensile	60 ksi
Yield Strength	60 ksi
Elongation	20%
Reduction of Area	50%

3. The shear connector will be installed in accordance with the Special Provision for Shear Connector Field Installation (Incidental).

PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The following pile hammers were evaluated and found to produce acceptable driving stresses:

   Delmag D46-32

2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity. Requests for evaluation of hammers not listed will be submitted a minimum of 5 business days prior to installation of piles.

STEEL RAILING – SIDEWALK

1. All rail posts will be built vertical.

2. All structural steel parts for railing will conform to ASTM A500, Grade B. Material less than 1/4-inch thick may be ASTM A1011, Grade 36. Rail post base plates will conform to ASTM A36.

3. Anchor bolts and nuts for railing will conform to ASTM A307. Washers will conform to ASTM F436 and all components will be galvanized in accordance with ASTM F2329. The bolts will be hex head “Structural” type with heavy hex nuts and round washers.

4. Anchor bolts will be tightened to a torque of 120 ft-lbs (approximated without the use of a calibrated torque wrench).

5. Non-shrink grout used to fill the recess beneath the rail post base plates will be a commercially available non-shrink grout containing no metallic particles and capable of attaining a 28-day compressive strength of 3000 psi. The non-shrink grout will be mixed according to the manufacturer’s recommendations. The cost of furnishing and placing the non-shrink grout will be incidental to the contract unit price per foot for Steel Pedestrian Railing on Concrete Barrier.

6. All steel railing will be galvanized in accordance with ASTM A123, then will be painted in accordance with Section 411 of the Construction Specifications and the color will be an approved brown (AMS STD 595 Color 30045). The galvanized steel railing will be cleaned in accordance with ASTM D6386 before painting.

7. Welding and Weld Inspection will be done in accordance with the current edition of AWS D1.5 Bridge Welding Code.

8. The costs of structural steel, welding, weld inspection, painting, and galvanization will be incidental to the contract unit price per foot for Steel Pedestrian Railing on Concrete Barrier.

APPROACH SLABS

1. Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the top pf the sleeper slab riser.

2. The portion of the sleeper slab below the construction joint may be precast. If the bottom portion of the sleeper slab is precast, the Contractor will submit proposed lifting and setting plans to the Bridge Construction Engineer for approval. In addition, if reinforcing or other details differ from those shown in the plans, the Contractor will submit proposed alternate details for approval.

3. The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine will be kept parallel to the screed.

4. Concrete Approach Sleeper Slab for Bridge, whether cast-in-place or precast, will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.

5. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer, and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment and any incidentals necessary to complete this item of work.

AS - BUILT ELEVATION SURVEY

The Contractor will be responsible for producing an as-built elevation survey soon after construction is completed but before the bridge is opened to traffic. The Contractor will be responsible for recording the as-built elevation shown in the plans. The completed table will be given to the Engineer and copies forwarded to the Office of Bridge Design and the Region Bridge Engineer. The elevations will be based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88). The Engineer will provide the Contractor with a description, elevation, and location of the nearest benchmark that has a NAVD88 established elevation for the Contractor’s use. The benchmark shown in the plans has not been tied to the NAVD88. The Contractor will be responsible for establishing a NAVD88 elevation for the benchmark provided in the plans. All cost associated with obtaining the NAVD88 elevations at the locations shown in the table and for the benchmark shown in the plans, including all equipment, labor, and any incidentals required will be incidental to the contract lump sum price for Bridge Elevation Survey.

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

NOTES (CONTINUED)
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276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
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LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

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Website: http://www.agtec.com

QUARRIED AGGREGATE SLOPE PROTECTION

1. This work will consist of paving the bridge berm slopes with crushed aggregate slope protection for control and prevention of berm erosion.

2. The aggregate used in the crushed aggregate slope protection will be composed of durable fragments of quarried quartzite or an approved alternative. The material will be pink in color and well graded with 90 to 100% passing a 6-inch sieve and 0 to 10% passing a 2-inch sieve.

3. The Type A Drainage Fabric will be non-woven.

4. The surface upon which the slope protection is to be placed will be smooth, uniform, and free from foreign material. The top surface of the slope protection will conform to the dimensions, elevations, and slopes shown in the plans.

5. The crushed aggregate will be shaped and compacted to provide a stable, smooth, and uniform surface.

6. Payment for crushed aggregate slope protection will be at the contract unit price per square yard for Bridge Berm Slope Protection, Crushed Aggregate and will include furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work. Payment will be for plans quantity.

APPROACH SLAB UNDERDRAIN SYSTEM

1. An underdrain system will be placed underneath the sleeper slabs and behind the abutments as shown in the plans in accordance with Section 435 of the Construction Specifications.

2. The 4-inch diameter Perforated PVC Drain Pipe will be PS 46 Solvent Weld PVC Pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve shall conform to ASTM D6707.

3. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.

4. All labor, tools, equipment, and any incidentals necessary for the Installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, 5-inch diameter schedule 40 steel pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

PERFORATED GEOCELL

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

   Company: Agtec
   Phone: 1-818-724-7657

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 in accordance with Section 850 of the Construction Specifications.

4. Perforated Geocell will be paid for at the contract unit price per square foot. Payment will be full compensation for furnishing and installing 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.

SIDEWALK APPROACH SLABS

1. The reinforced concrete sidewalks adjacent to the bridge will be paid for at the contract unit price per square foot for 6" Reinforced Concrete Sidewalk. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, epoxy coated reinforcing steel, asphalt paint or 6 mil polyethylene sheeting, hot poured elastic joint sealer; for disposal of all excavated, and surplus materials; and for all labor, tools, equipment, and incidentals necessary to complete this item of work.

2. The top of the sidewalk will transition from the end of the bridge to the top of approach slab curb at the sidewalk expansion device.

3. All costs involved in furnishing and placing the sidewalk sleeper slabs will be included in the contract unit price per square foot for Concrete Approach Sleeper Slab for Bridge.

SIDEWALK EXPANSION DEVICES

1. Material for the structural plates and bars will conform to ASTM A36. The end welded deformed bar anchors will conform to ASTM A496.

2. All steel components will be galvanized after shop welding in accordance with ASTM A123.

3. The plain ferrule inserts in the expansion device will be 3/4-inch diameter commercially available regular steel inserts to be positioned by welding onto the plate of the expansion device as shown in the plans.

4. The bolts used to attach the sliding plates to the expansion device will conform to ASTM F593 and will be 3/4-inch diameter Group 2, Type 316 stainless steel socket countersunk head flat screws furnished with a thread type to be compatible to the thread type supplied with the plain ferrule inserts of the expansion device. All bolts are to be coated with liquid thread locking material that is intended to allow for future removal.

5. All costs involved in furnishing and installing the expansion devices at the sidewalks will be included in the contract unit price per square foot for Concrete Approach Sleeper Slab for Bridge. For informational purposes only, the estimated weight of structural steel in the expansion devices is 1421 lbs.

REGISTERED PROFESSIONAL ENGINEER
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6/27/2025

NOTES (CONTINUED)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
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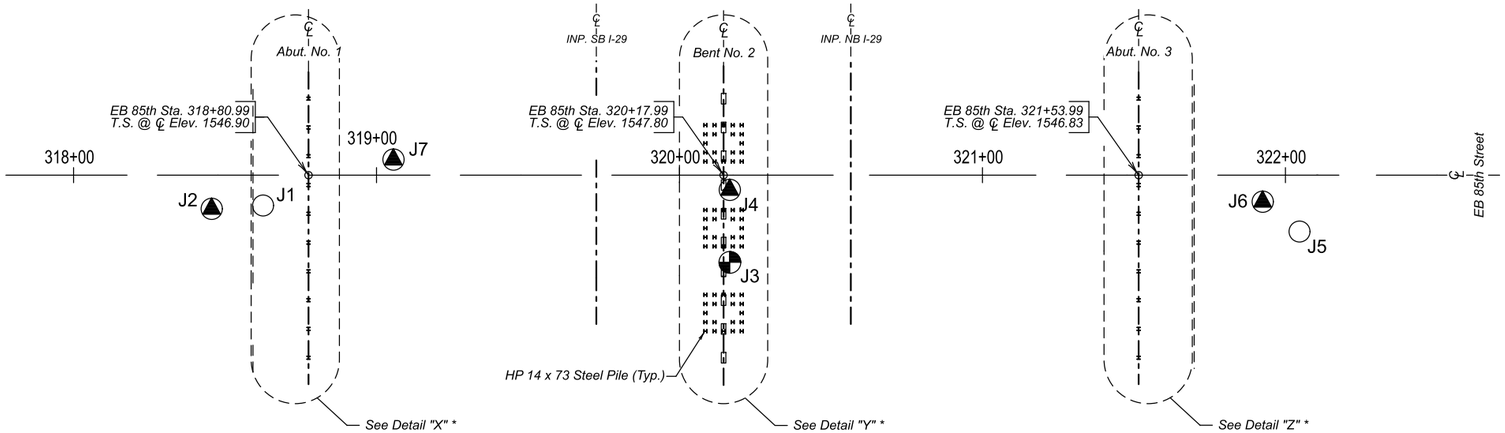
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E9	E130



PILING LAYOUT

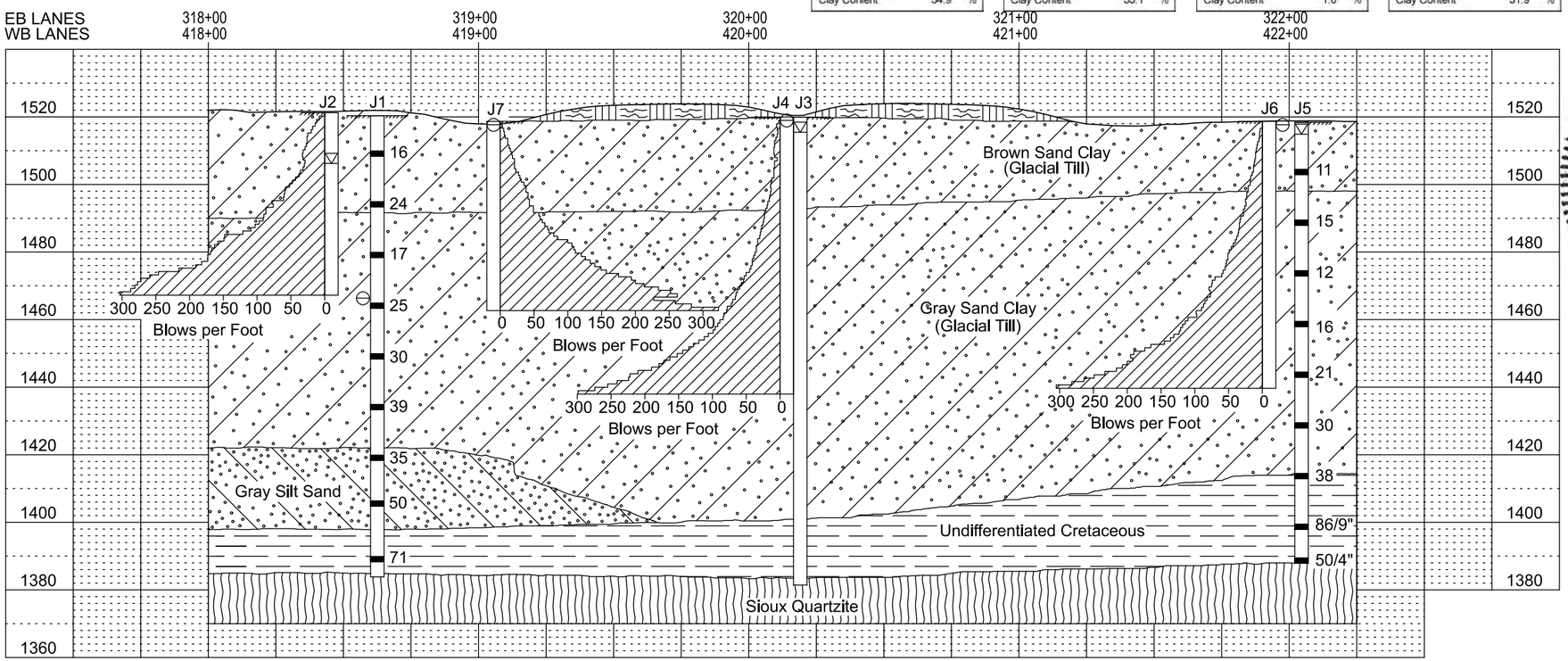
* See PILING AND FOOTING LAYOUT for Details "X", "Y" and "Z"

Hole Number	J1	
Station	3/418+62	
Depth	25.5	ft
Soil Color	Brown	
Classification	Sandy Clay	
Strength (Qu)	7,586	psf
Dry Density	103.8	pcf
Wet Density	124.1	pcf
Moisture	19.5	%
Pass No. 10	94.4	%
Pass No. 40	85.3	%
Pass No. 200	65.8	%
Sand Content	28.6	%
Silt Content	30.9	%
Clay Content	34.9	%

Hole Number	J1	
Station	3/418+62	
Depth	70.2	ft
Soil Color	Gray	
Classification	Sandy Clay	
Strength (Qu)	7,090	psf
Dry Density	110.0	pcf
Wet Density	130.7	pcf
Moisture	18.9	%
Pass No. 10	94.6	%
Pass No. 40	85.9	%
Pass No. 200	66.2	%
Sand Content	28.3	%
Silt Content	33.1	%
Clay Content	33.1	%

Hole Number	J1	
Station	3/418+62	
Depth	100.2	ft
Soil Color	Gray	
Classification	Silty Sand	
Strength (Qu)	No Test	psf
Dry Density	NA	pcf
Wet Density	NA	pcf
Moisture	20.3	%
Pass No. 10	100.0	%
Pass No. 40	97.7	%
Pass No. 200	34.3	%
Sand Content	65.7	%
Silt Content	33.3	%
Clay Content	1.0	%

Hole Number	J5	
Station	3/421+92	
Depth	75.2	ft
Soil Color	Gray	
Classification	Sandy Clay	
Strength (Qu)	5,306	psf
Dry Density	110.3	pcf
Wet Density	131.3	pcf
Moisture	19.1	%
Pass No. 10	96.6	%
Pass No. 40	87.8	%
Pass No. 200	67.5	%
Sand Content	29.0	%
Silt Content	35.7	%
Clay Content	31.9	%



Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The borings shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

LEGEND

Penetration Test
Drive Test
Auger Test
Water
Caved
Sample Zone

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2⅞ inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6⅝ inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil. Penetration Test results are listed as uncorrected "N" values in blows per foot. Blows over inches are listed if refusal is achieved, which is 50 blows within one 6 inch set.

All auger test holes are drilled with a 4½ inch diameter continuous flight auger.

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/16/2025

GROUNDWATER ELEVATIONS

OCTOBER 2013

J1	(DRY)	1466.4
J2		1506.2
J3		1515.4
J4	(DRY)	1519.0
J5		1514.9
J6	(DRY)	1517.7
J7	(DRY)	1516.4

MEASURED SKIN FRICTION

	ELEV.	PSF
J2	1467.3	869
J4	1438.0	309
J6	1439.7	552
J7	1461.4	851

SUBSURFACE INVESTIGATION AND PILING LAYOUT
FOR

276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS
with 14'-0" PEDESTRIAN TRAIL
85TH STREET OVER I-29
STA. 318+79.74EB to STA. 321+55.24EB
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0° SKEW
SEC. 18/19 - T100N - R50W
EM 0292(88)73
HL-93

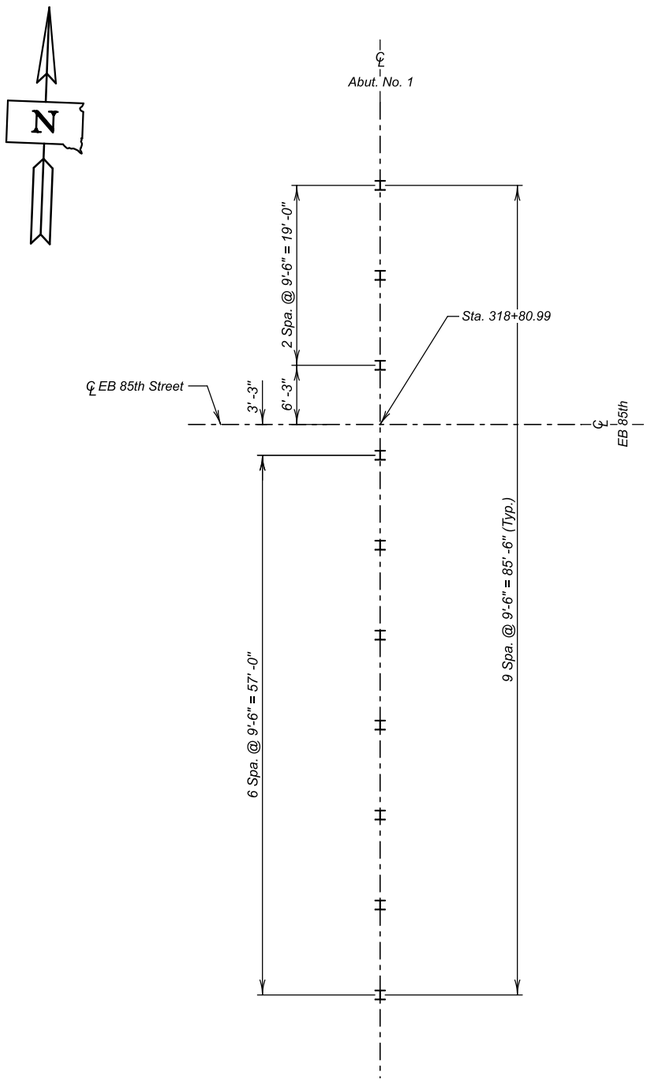
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

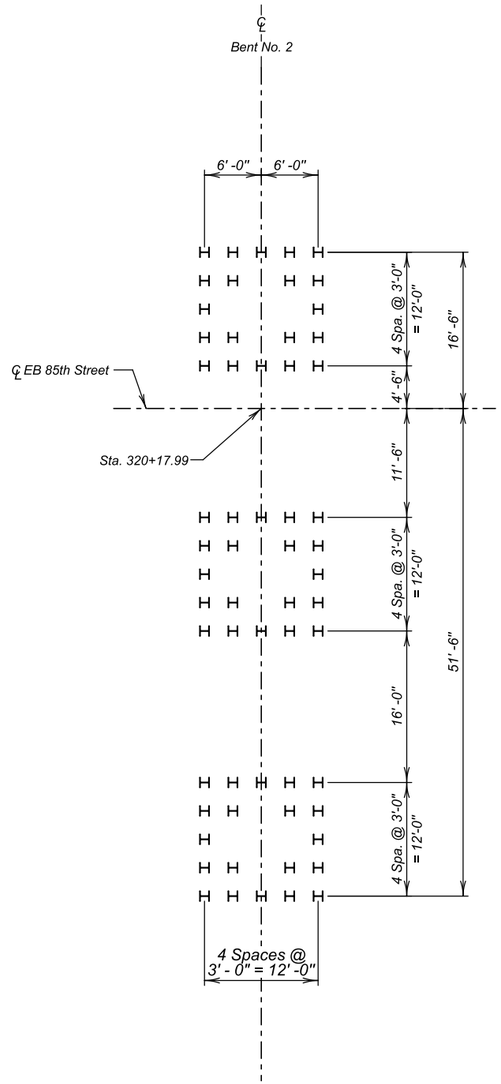
Plotted From - hdaridge File - ...\Sheets\b06JQ_01_bor.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

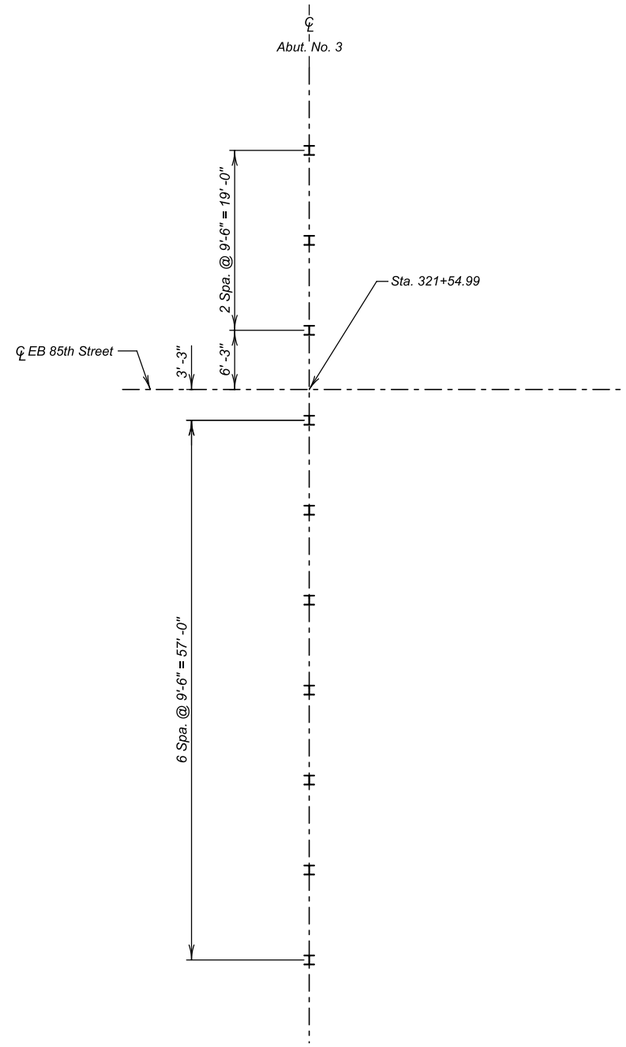
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E10	E130



DETAIL "X"



DETAIL "Y"



DETAIL "Z"

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SOUTH DAKOTA
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PILING AND FOOTING LAYOUT
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STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

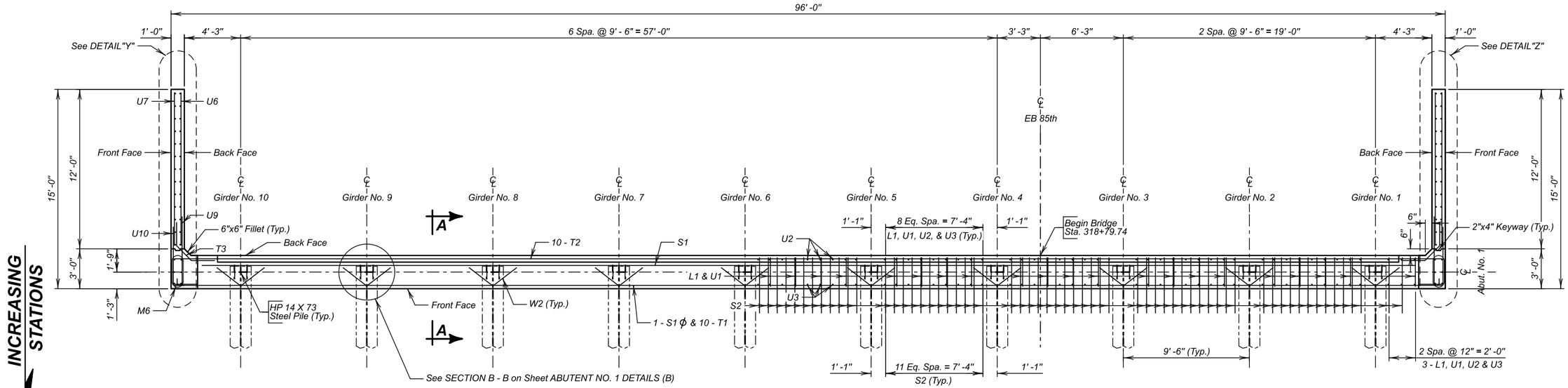
8 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_bor.dgn Plotting Date: 5/16/2025

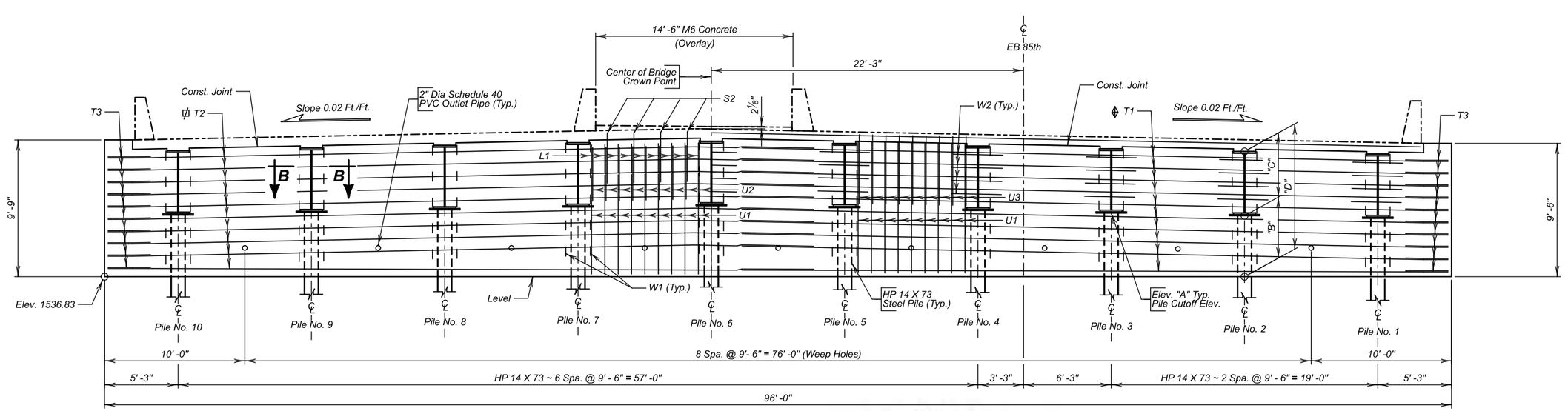
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E11	E130



INCREASING STATIONS

PLAN



BACK FACE

ELEVATION

FRONT FACE

TABLE OF ELEV. & DIMENSIONS				
Pile No.	Elev. "A"	"B"	"C"	"D"
1	1540.98	4.15	4.65	8.80
2	1541.17	4.34	4.65	8.99
3	1541.36	4.53	4.65	9.18
4	1541.55	4.72	4.65	9.37
5	1541.74	4.91	4.65	9.56
6	1541.93	5.10	4.65	9.75
7	1541.79	4.96	4.65	9.61
8	1541.60	4.77	4.65	9.42
9	1541.41	4.58	4.65	9.23
10	1541.22	4.39	4.65	9.04

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

ϕ *Minimum Lap = 3' -9"*
ϕ *Minimum Lap = 3' -3"*
ϕ *Minimum Lap = 5' -7"*
See ABUTMENT NO. 1 DETAILS (B) for Section A-A

ABUTMENT NO. 1 DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_ab1.dgn Plotting Date: 5/16/2025

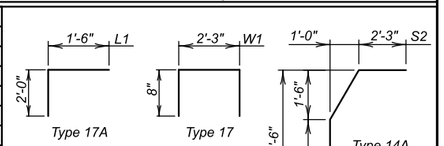
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E12	E130

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	L1	87	4	3' - 6"	17A
	M2	26	5	8' - 5"	Str.
	M3	26	5	8' - 2"	Str.
△	M6	12	5	9' - 2"	Str.
△	S1	6	9	25' - 10"	Str.
	S2	112	6	8' - 4"	14A
	T1	20	6	49' - 10"	Str.
	T2	20	7	50' - 2"	Str.
	T3	20	5	5' - 2"	14A
	U1	87	6	14' - 10"	17
	U2	87	6	5' - 9"	T9B
	U3	87	7	6' - 9"	T9B
	U6	20	5	11' - 6"	Str.
	U7	20	5	11' - 6"	Str.
	U9	20	5	5' - 9"	1A
	U10	20	5	6' - 10"	17A
	W1	60	6	3' - 7"	17
	W2	40	8	4' - 6"	13A

Bending Details



NOTES:
All dimensions are out to out of bars.
△ Bars to be Epoxy Coated.

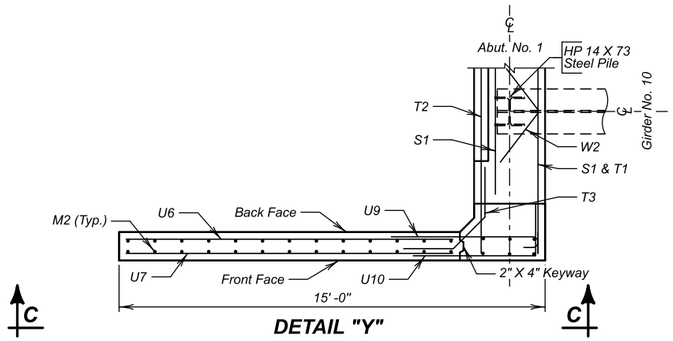
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Structure Excavation, Bridge	Cu. Yd.	20
*	Class A45 Concrete, Bridge	Cu. Yd.	100.1
	Reinforcing Steel	Lb.	11,146
	Epoxy Coated Reinforcing Steel	Lb.	642
	Preboring Pile	Ft.	10 @ 10' = 100'
	HP 14 X 73 Steel Test Pile, Furnish and Drive	Ft.	1 @ 115' = 115'
	HP 14 X 73 Steel Bearing Pile, Furnish and Drive	Ft.	9 @ 110' = 990'

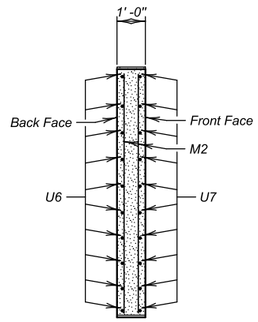
NOTE:
See ABUTMENT NO. 1 DETAILS (A) for location of Section A-A and Detail 'X'

* Includes 16 ft. of 2" dia. PVC Outlet Pipe as an approximate quantity contained in the Class A45 Concrete, Bridge.

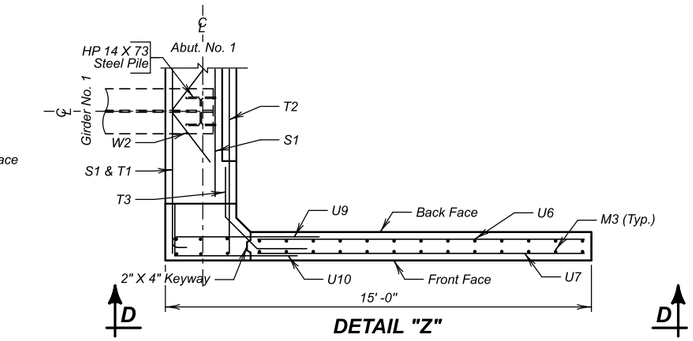
ϕ See SUPERSTRUCTRE DETAILS (B)



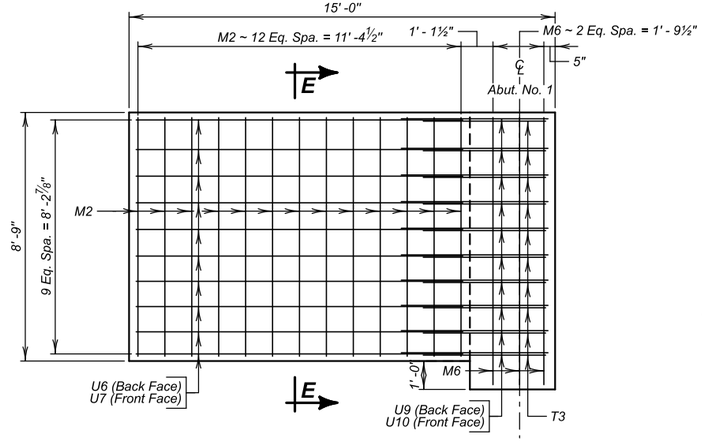
DETAIL "Y"



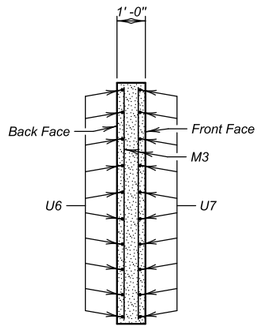
SECTION E - E



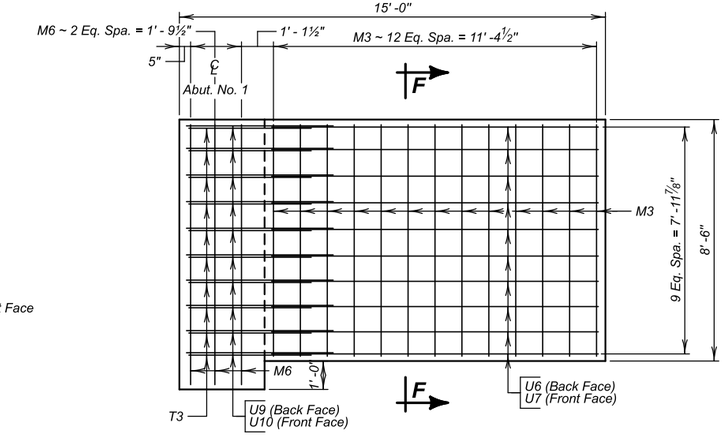
DETAIL "Z"



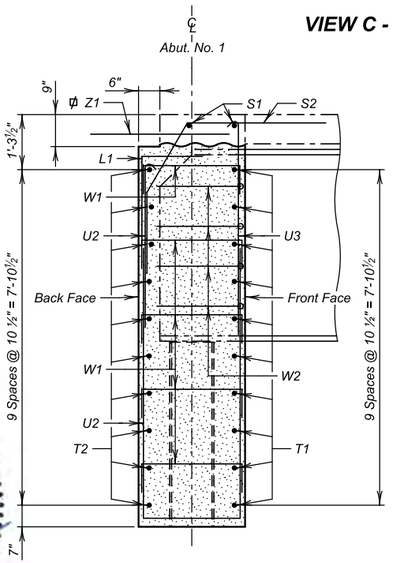
VIEW C - C



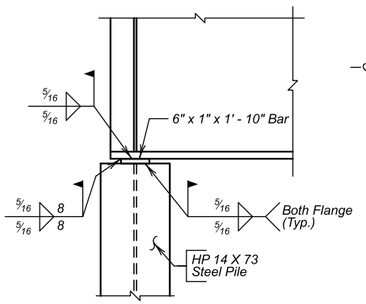
SECTION F - F



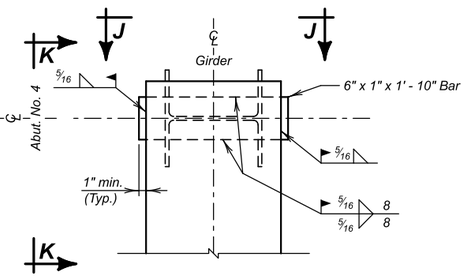
VIEW D - D



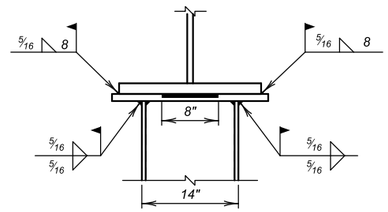
SECTION A - A



VIEW K - K



SECTION B - B



VIEW J - J
(Showing Weld Locations)

ABUTMENT NO. 1 DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

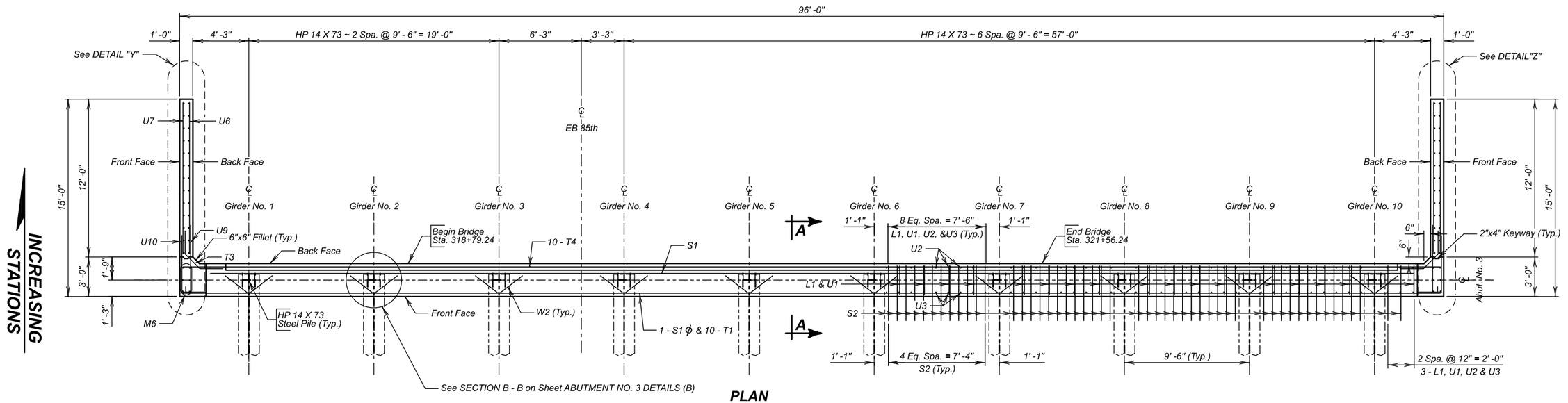
10 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

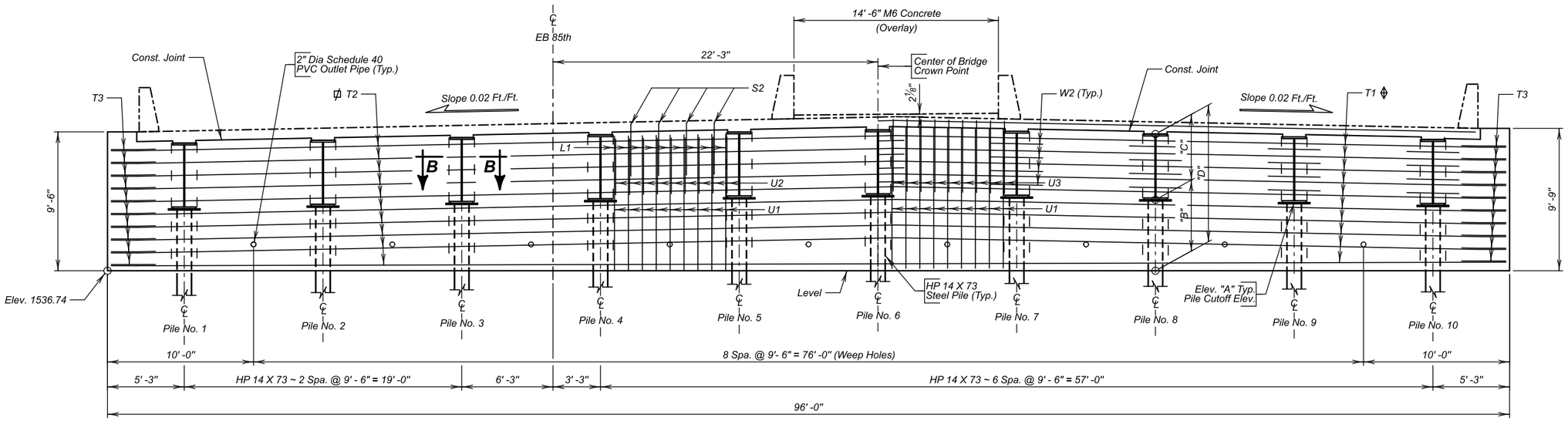
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E13	E130



PLAN



BACK FACE **ELEVATION** **FRONT FACE**

TABLE OF ELEV. & DIMENSIONS				
Pile No.	Elev. "A"	"B"	"C"	"D"
1	1540.90	4.15	4.65	8.80
2	1541.09	4.34	4.65	8.99
3	1541.28	4.53	4.65	9.18
4	1541.47	4.72	4.65	9.37
5	1541.66	4.91	4.65	9.56
6	1541.85	5.10	4.65	9.75
7	1541.71	4.96	4.65	9.61
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9	1541.33	4.58	4.65	9.23
10	1541.14	4.39	4.65	9.04

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ϕ Minimum Lap = 3' -9"
⧫ Minimum Lap = 3' -3"
ϕ Minimum Lap = 5' -7"
See ABUTMENT NO. 3 DETAILS (B) for Section A-A

ABUTMENT NO. 3 DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
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LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
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Plotted From - hclaridge File - ...\Sheets\b06JQ_01_ab2.dgn

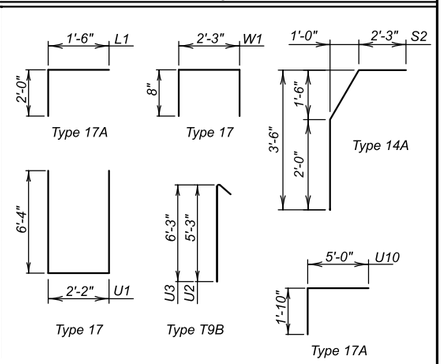
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E14	E130

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	L1	87	4	3' - 6"	17A
	M2	26	5	8' - 5"	Str.
	M3	26	5	8' - 2"	Str.
△	M6	12	5	9' - 2"	Str.
△	S1	6	9	25' - 10"	Str.
	S2	112	6	8' - 4"	14A
	T1	20	6	49' - 10"	Str.
	T2	20	7	50' - 2"	Str.
	T3	20	5	5' - 2"	14A
	U1	87	6	14' - 10"	17
	U2	87	6	5' - 9"	T9B
	U3	87	7	6' - 9"	T9B
	U6	20	5	11' - 6"	Str.
	U7	20	5	11' - 6"	Str.
	U9	20	5	5' - 9"	1A
	U10	20	5	6' - 10"	17A
	W1	60	6	3' - 7"	17
	W2	40	8	4' - 6"	13A

Bending Details



NOTES:
All dimensions are out to out of bars.
△ Bars to be Epoxy Coated.

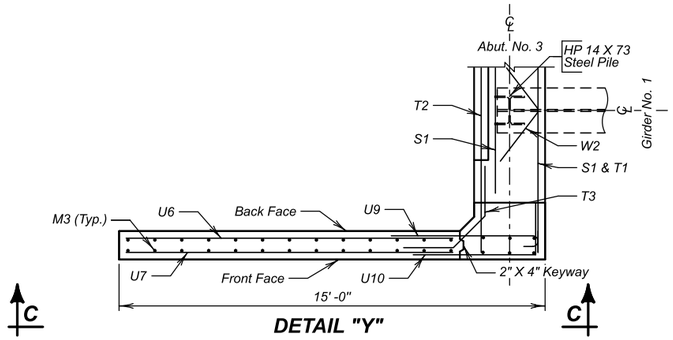
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Structure Excavation, Bridge	Cu. Yd.	20
*	Class A45 Concrete, Bridge	Cu. Yd.	100.1
	Reinforcing Steel	Lb.	11,146
	Epoxy Coated Reinforcing Steel	Lb.	642
	Preboring Pile	Ft.	10 @ 10' = 100'
	HP 14 X 73 Steel Test Pile, Furnish and Drive	Ft.	1 @ 140' = 140'
	HP 14 X 73 Steel Bearing Pile, Furnish and Drive	Ft.	9 @ 135' = 1215'

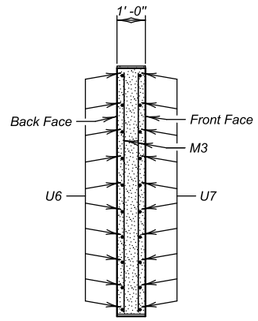
NOTE:
See ABUTMENT NO. 3 DETAILS (A) for location of Section A-A and Detail 'X'

* Includes 16 ft. of 2" dia. PVC Outlet Pipe as an approximate quantity contained in the Class A45 Concrete, Bridge.

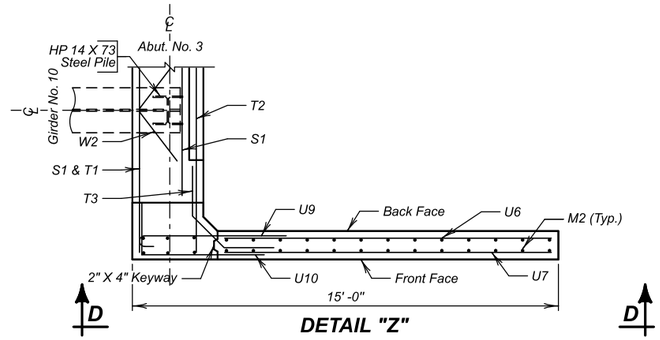
ϕ See SUPERSTRUCTRE DETAILS (B)



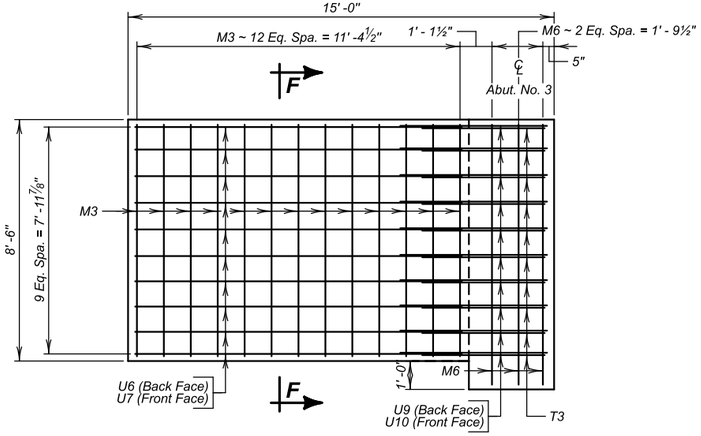
DETAIL "Y"



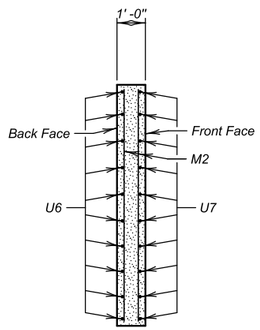
SECTION E - E



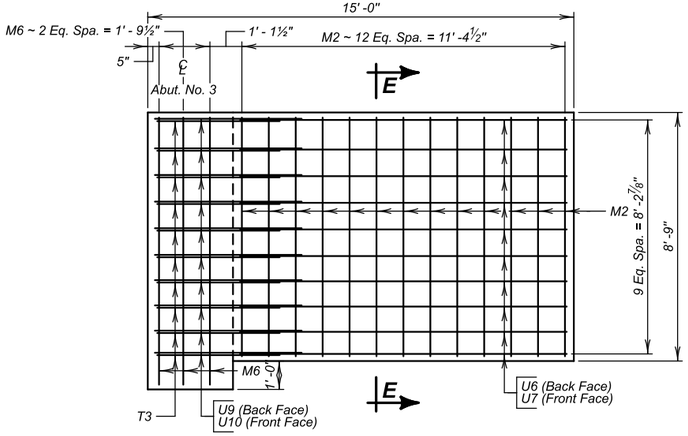
DETAIL "Z"



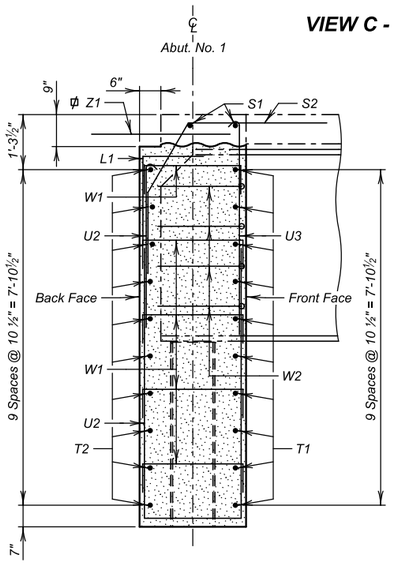
VIEW C - C



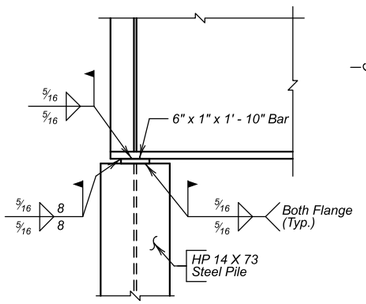
SECTION F - F



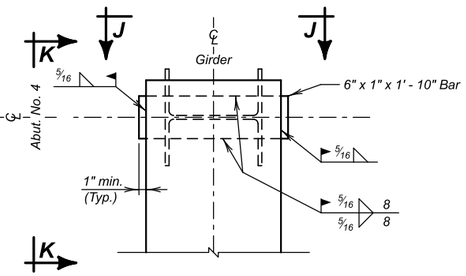
VIEW D - D



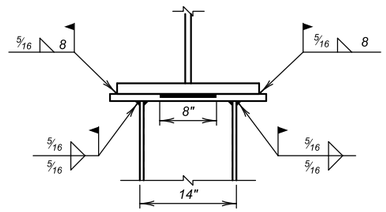
SECTION A - A



VIEW K - K



SECTION B - B



VIEW J - J
(Showing Weld Locations)

ABUTMENT NO. 3 DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

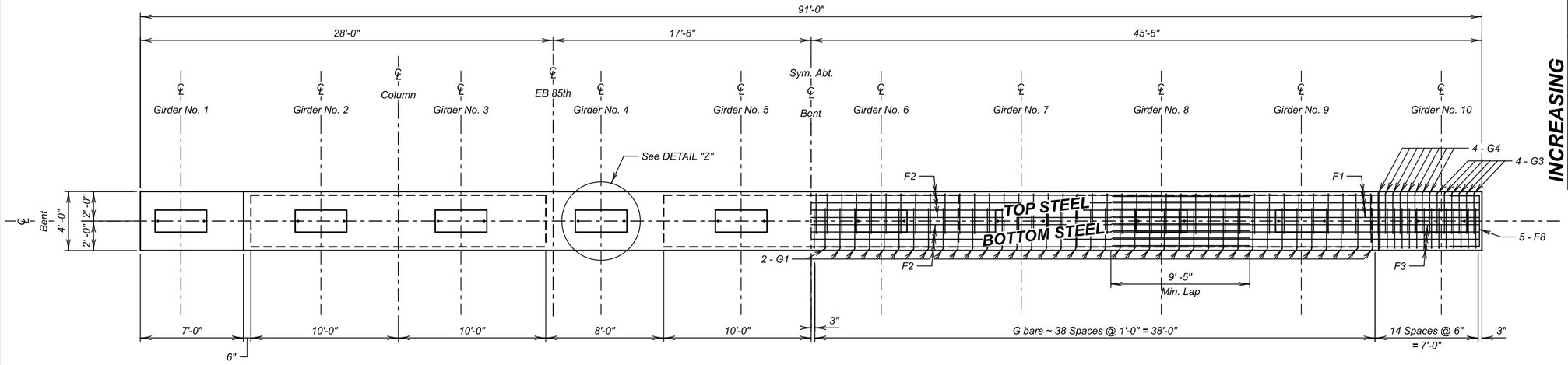
12 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

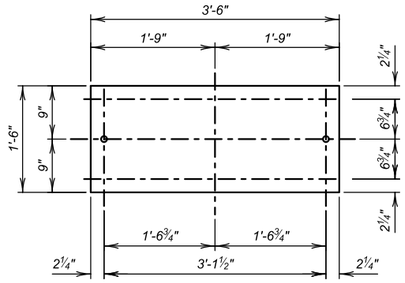
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E15	E130



PLAN

INCREASING STATIONS

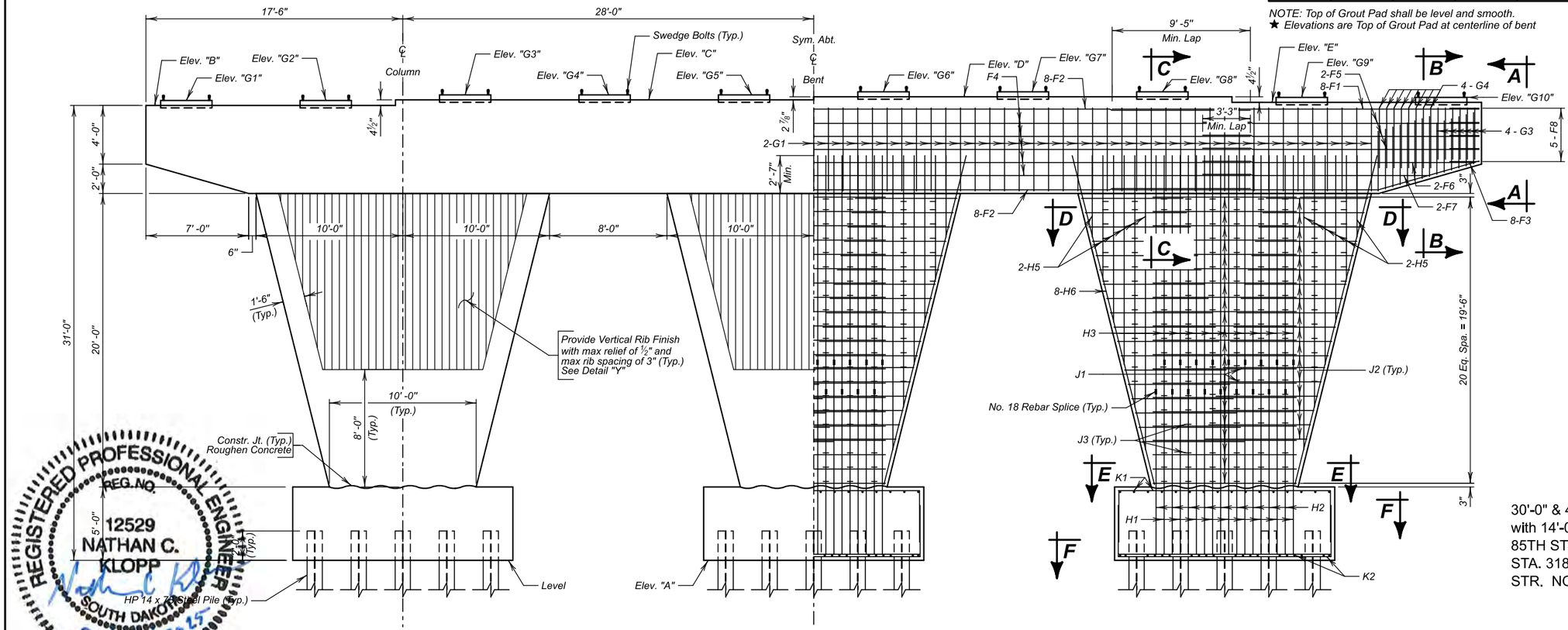


DETAIL "Z"
(Grout Pad)

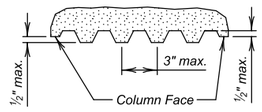
★ TABLE OF ELEVATIONS

Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"	Elev. "G5"	Elev. "G6"	Elev. "G7"	Elev. "G8"	Elev. "G9"	Elev. "G10"
1541.52	1541.71	1541.90	1542.09	1542.28	1542.47	1542.33	1542.14	1541.95	1541.76

NOTE: Top of Grout Pad shall be level and smooth.
★ Elevations are Top of Grout Pad at centerline of bent



ELEVATION



DETAIL "Y"

TABLE OF ELEVATIONS

Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"
1510.40	1541.40	1541.78	1542.02	1541.64

NOTE:
This sheet is to be used in conjunction with Bent No. 2 (B) and (C)

BENT NO. 2 DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
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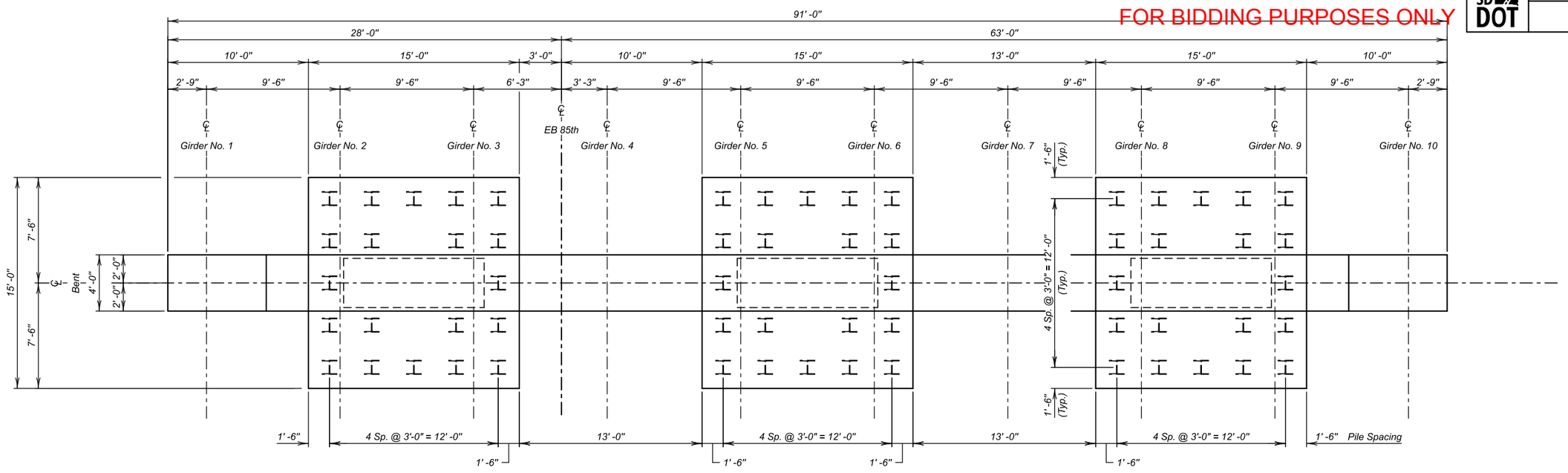
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

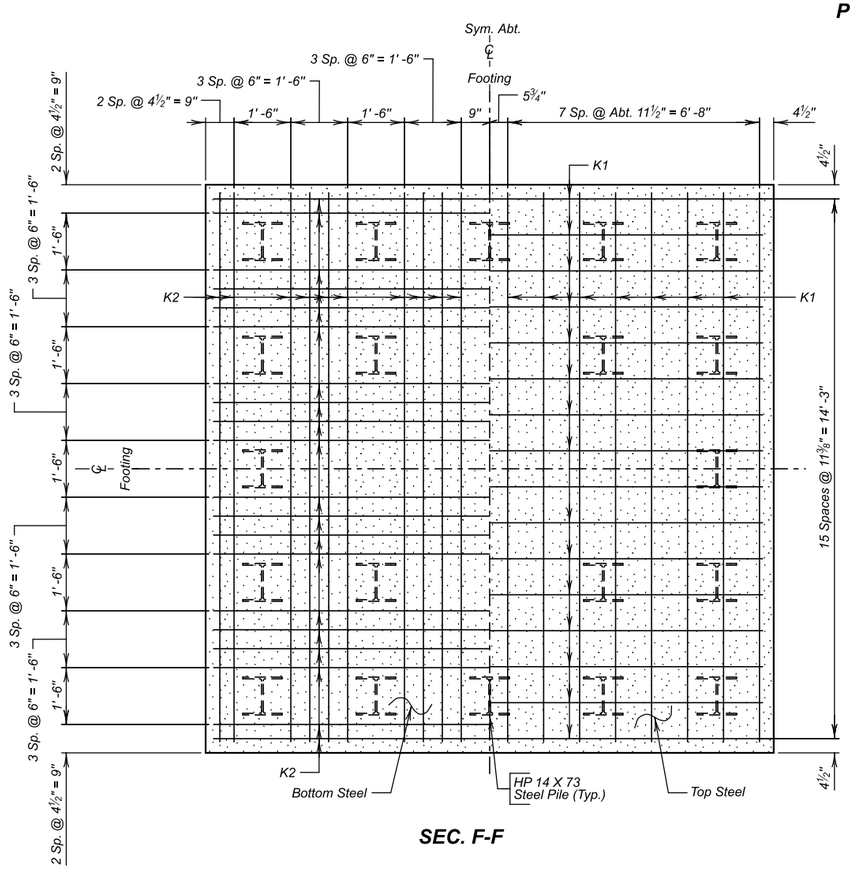
REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E16	E130



PLAN



SEC. F-F

NOTE:
This sheet is to be used in conjunction with Bent No. 2 (A) and (C)

BENT NO. 2 DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

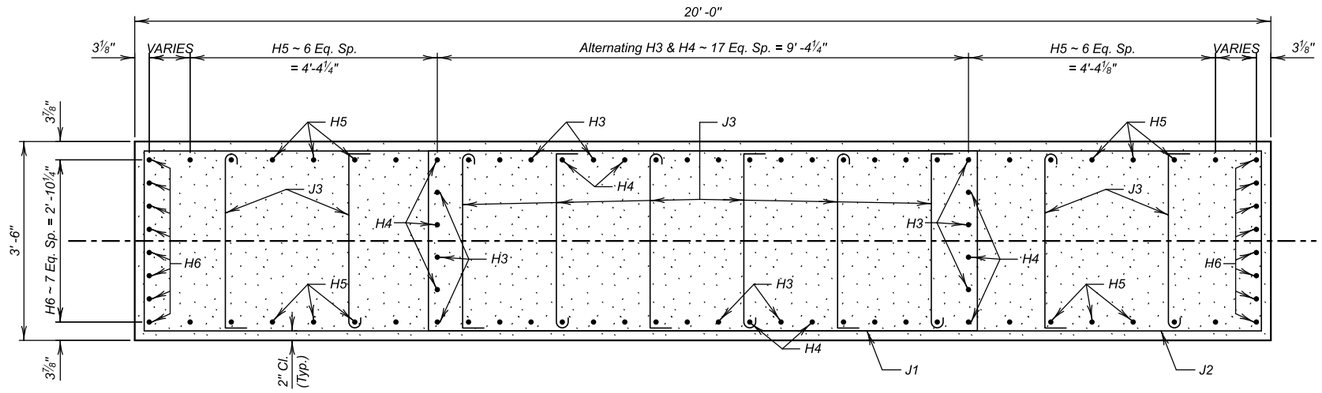
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_pir2.dgn

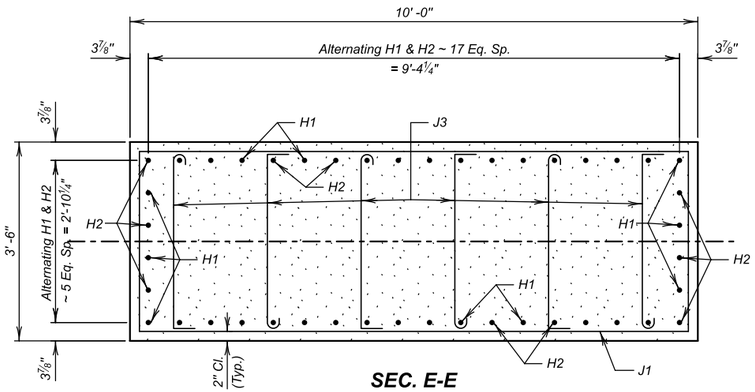
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E17	E130

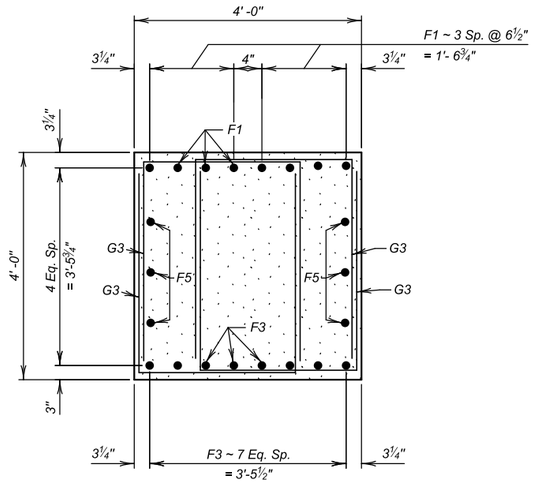
NOTE:
This sheet is to be used in conjunction with Bent No. 2 (A) and (B)



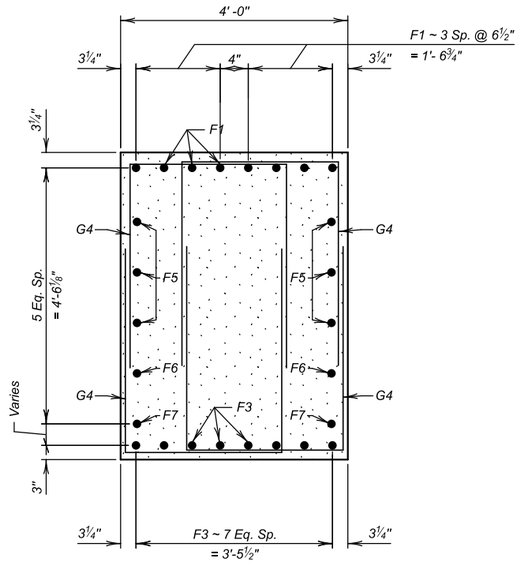
SEC. D-D



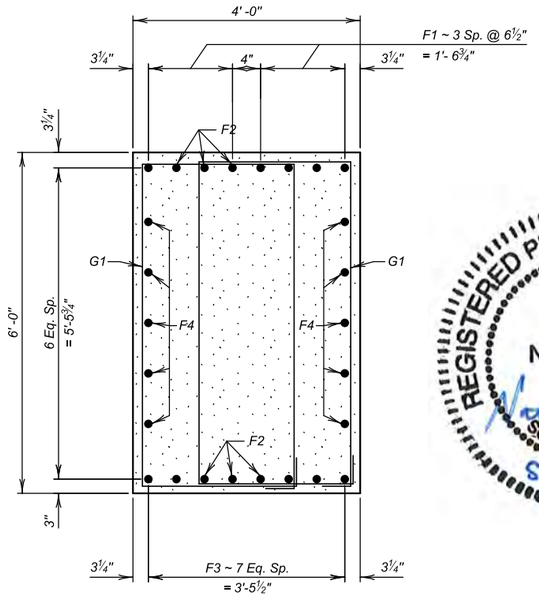
SEC. E-E



VIEW A-A



SEC. B-B

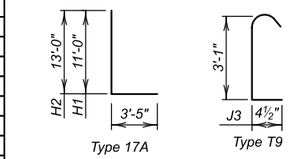


SEC. C-C

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
F1	16	10	28' - 7"	1A
F2	16	10	59' - 6"	Str.
F3	16	10	25' - 4"	19B
F4	10	6	59' - 6"	Str.
F5	12	6	21' - 2"	Str.
F6	4	6	20' - 11"	Str.
F7	4	6	17' - 9"	Str.
F8	10	5	8' - 5"	17
G1	156	5	17' - 2"	T2
G3	48	5	9' - 8"	17
G4	64	5	10' - 8"	17
H1	66	18	14' - 5"	17A
H2	66	18	16' - 5"	17A
H3	66	18	16' - 6"	Str.
H4	66	18	14' - 6"	Str.
☆ H5	18	6	25' - 6"	Str.
H6	48	6	23' - 2"	Str.
J1	63	5	26' - 7"	T2
J2	108	5	17' - 0"	17
J3	504	4	4' - 0"	T9
K1	96	7	21' - 8"	17
K2	120	9	21' - 8"	17

Bending Details



NOTE:
All dimensions are out to out of bars.

☆See cutting diagram

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
℄ Class A45 Concrete, Bridge	Cu. Yd.	330.2
Reinforcing Steel	Lb.	89,390
Structure Excavation, Bridge	Cu. Yd.	367
HP 14 X 73 Steel Test Pile, Furnish and Drive	Ft.	1 @ 110' = 110'
HP 14 X 73 Steel Bearing Pile, Furnish and Drive	Ft.	59 @ 105' = 6195'

℄ Includes 0.4 Cu. Yds. for Grout Pads for each Bent.

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/16/2025

BENT NO. 2 DETAILS (C)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

15 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

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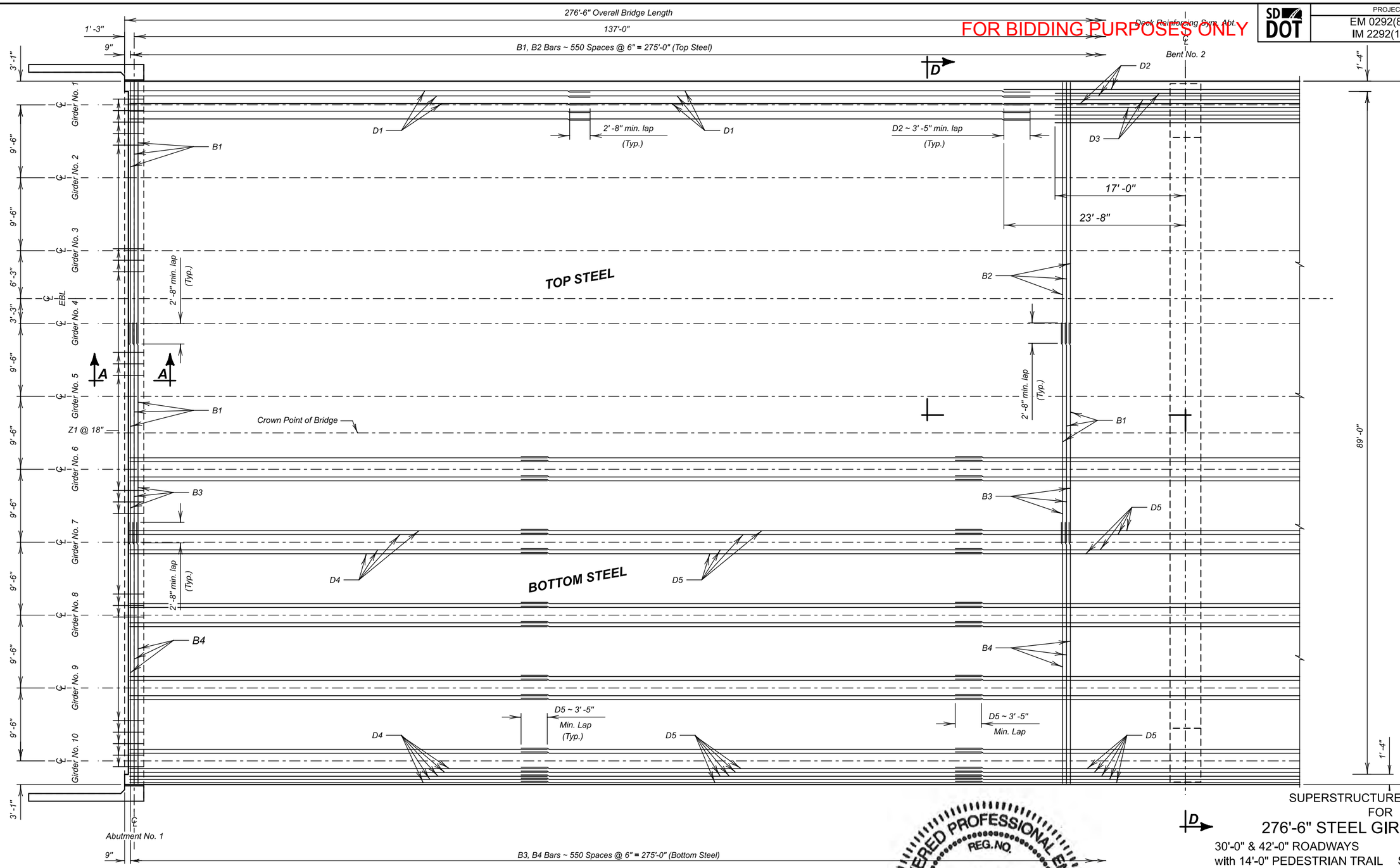
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E18	E130



HALF PLAN

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

SUPERSTRUCTURE DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

16 OF 49

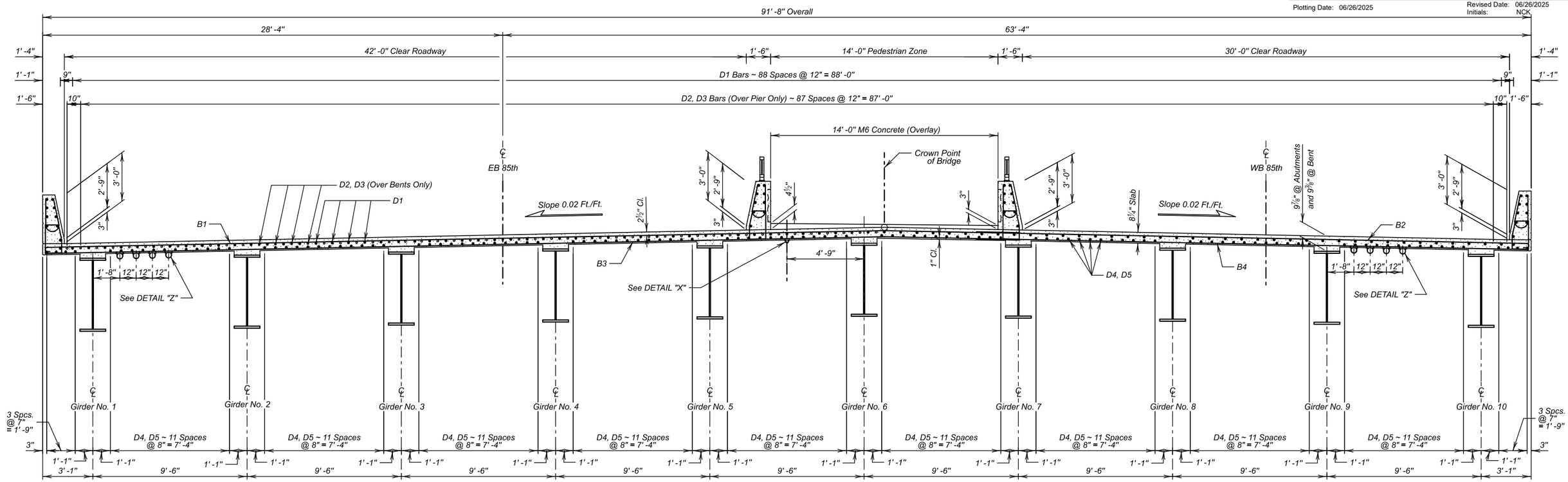
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\85th St\Sheets\b06JQ_01_ss.dgn

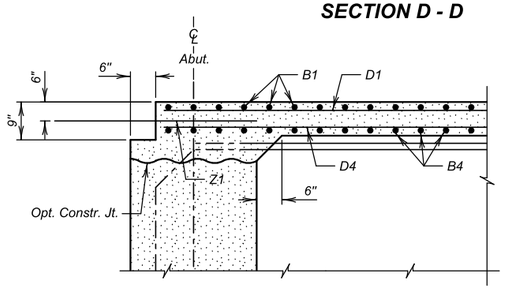
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E19	E130

Plotting Date: 06/26/2025 Revised Date: 06/26/2025 Initials: NCK



SECTION D - D

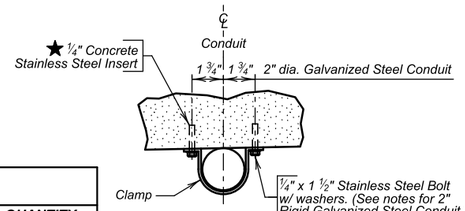


SECTION A - A

✳ *Dimensions are at ℄ bearing. At other points along the girders this dimension shall be computed as shown on the FRAMING DIAGRAM, CAMBER & ERECTION DATA DIAGRAMS, and SLAB FORM ELEVATIONS (A) and (B).*

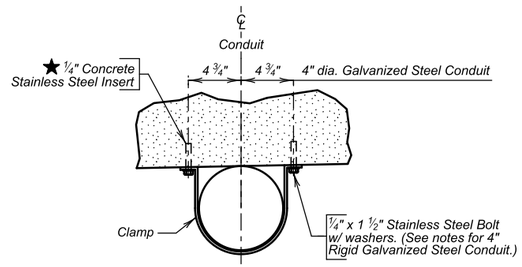
★ *Space Concrete Stainless Steel Inserts @ 5'-0" Maximum Spacing*

(All hardware will be incidental to contract unit price per foot for 2" dia. Galvanized Steel Conduit or 4" dia. Galvanized Steel Conduit.)



DETAIL "X"

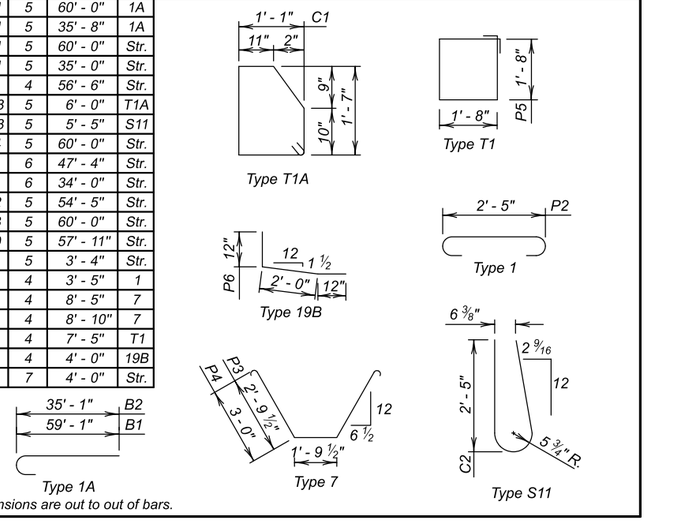
NOTE:
This sheet is to be used in conjunction with SUPERSTRUCTURE DETAILS (A)



DETAIL "Z"

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
B1	551	5	60' - 0"	1A	
B2	551	5	35' - 8"	1A	
B3	551	5	60' - 0"	Str.	
B4	551	5	35' - 0"	Str.	
B16	20	4	56' - 6"	Str.	
C1	1108	5	6' - 0"	T1A	
C2	1108	5	5' - 5"	S11	
D1	364	5	60' - 0"	Str.	
D2	90	6	47' - 4"	Str.	
D3	90	6	34' - 0"	Str.	
D4	232	5	54' - 5"	Str.	
D5	348	5	60' - 0"	Str.	
D8	160	5	57' - 11"	Str.	
P1	10	5	3' - 4"	Str.	
P2	8	4	3' - 5"	1	
P3	3	4	8' - 5"	7	
P4	3	4	8' - 10"	7	
P5	6	4	7' - 5"	T1	
P6	4	4	4' - 0"	19B	
Z1	118	7	4' - 0"	Str.	



NOTE:
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⊛	Class A45 Concrete, Bridge Deck	Cu. Yd.	820.2
	Stainless Reinforcing Steel	Lb.	203,000
✠	Structural Steel	LS	Lump Sum
	Class M6 Concrete	Cu. Yd.	40.9
	Concrete Penetrating Sealer	Sq. Yd.	2,470
	4" Galvanized Steel Conduit	Ft.	1,110
	2" Galvanized Steel Conduit	Ft.	277

⊛ *Concrete quantity for the Interior Barrier is 0.1481 Cu. Yd. per foot and for the Exterior Barrier is 0.1184 Cu. Yd. per foot*

✠ *For informational purposed only, the estimated weight of the structural steel is 954011 pounds. Incudes beams, splice plates, bolts, and diaphragms. For informational purposes only, the estimated weight of the shear connectors is 10419 pounds. For informational purposes only, the estimated area of structural steel to be painted is 50140 square feet. Includes beams, splice plates, and diaphragms.*

SUPERSTRUCTURE DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
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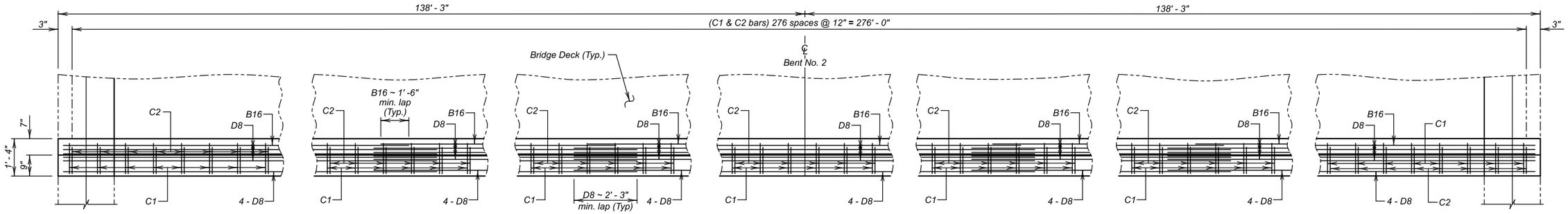
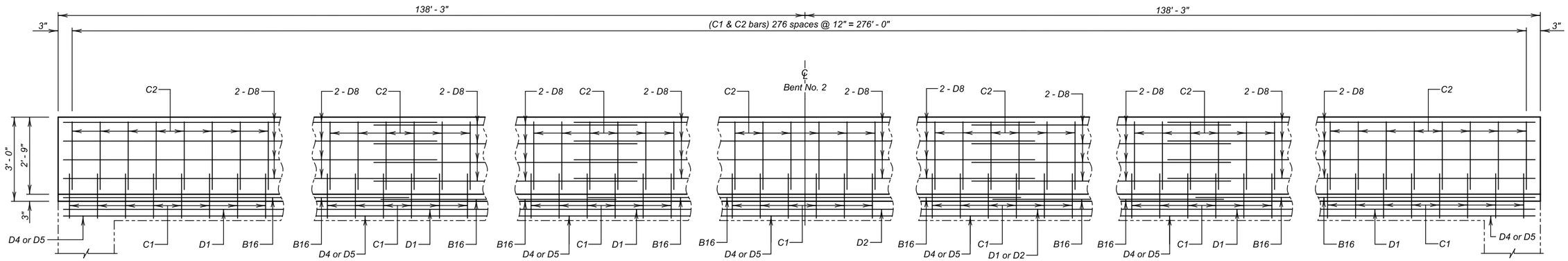
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E20	E130



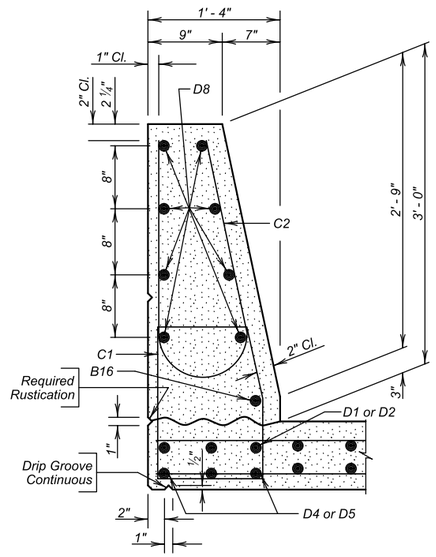
PLAN

(South Side Exterior Barrier Shown, North Exterior Barrier is Similar Opposite Hand)



ELEVATION

(South Side Exterior Barrier Shown, North Exterior Barrier is Similar Opposite Hand)



SINGLE SLOPE BARRIER
(Typical Cross-Section)

NOTE:
For listing of Stainless Reinforcing Steel see SUPERSTRUCTURE DETAILS (B).

REGISTERED PROFESSIONAL ENGINEER
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NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

EXTERIOR BRIDGE BARRIER DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

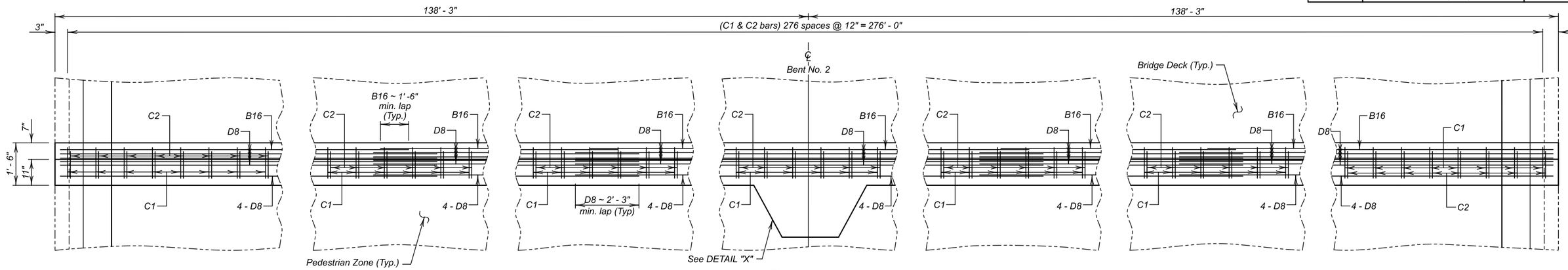
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

18 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

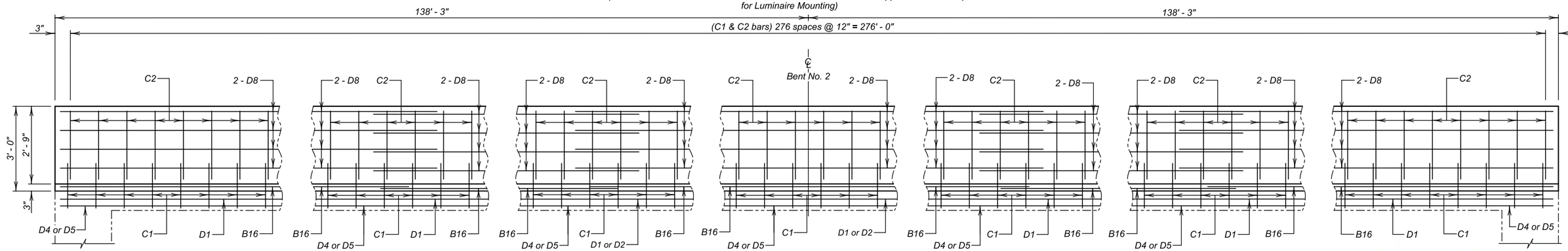
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E21	E130



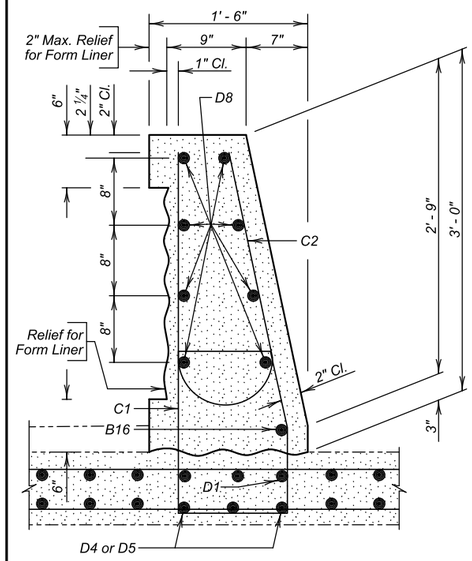
PLAN

(North Side Interior Barrier Shown, South Interior Barrier is Similar Opposite Hand Except for Luminaire Mounting)

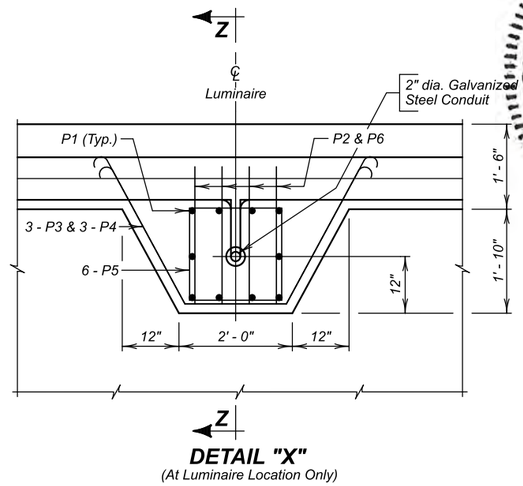


ELEVATION

(North Side Interior Barrier Shown, South Interior Barrier is Similar Opposite Hand Except for Luminaire Mounting)



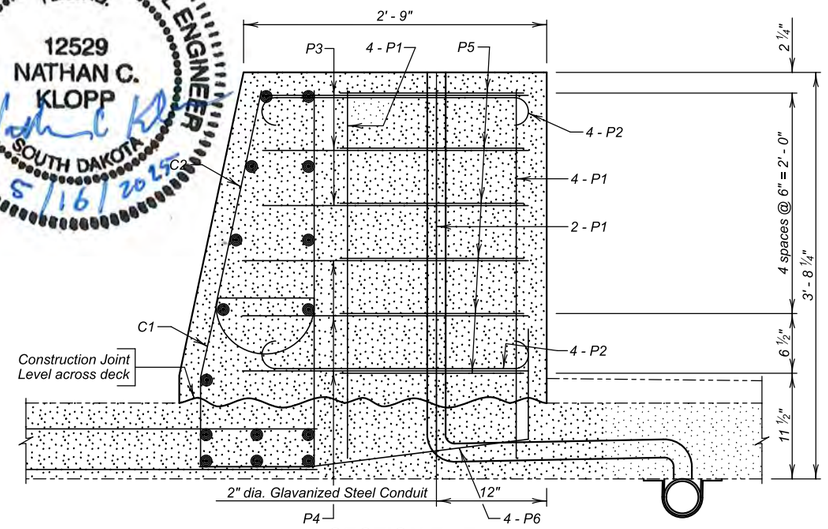
SINGLE SLOPE BARRIER (Cross-Section w/ Formliner)



DETAIL "X"

(At Luminaire Location Only)

NOTE:
For listing of Stainless Reinforcing Steel see SUPERSTRUCTURE DETAILS (B).
Start and Stop the Form Liner 2'-3" from ℄ of Luminaires.



SECTION Z - Z

(At Luminaire Location Only)

FORM LINER DETAIL

(Adjacent to Pedestrian Zone)

INTERIOR BRIDGE BARRIER DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
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REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

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REGISTERED PROFESSIONAL ENGINEER
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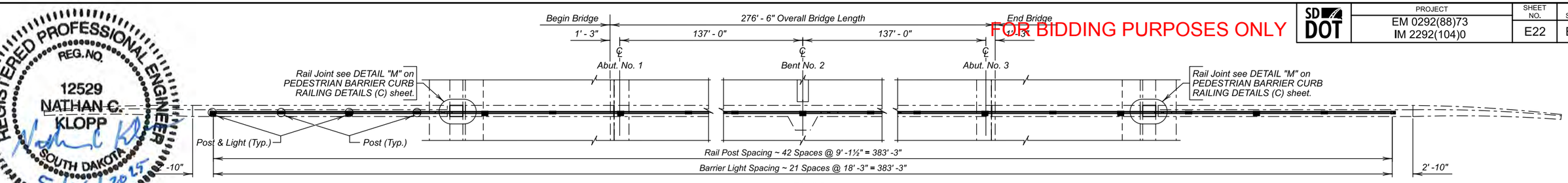
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

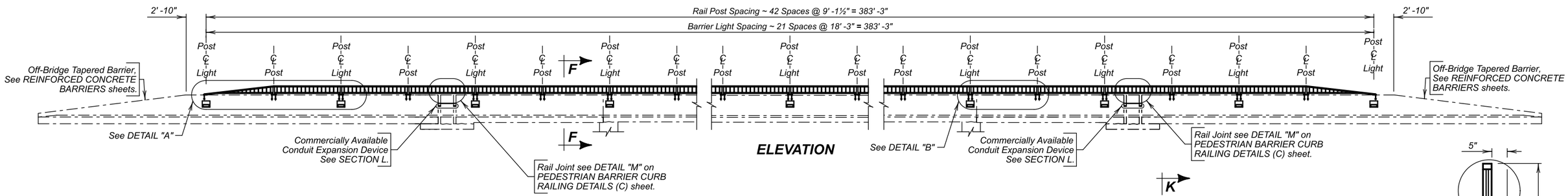
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E22	E130

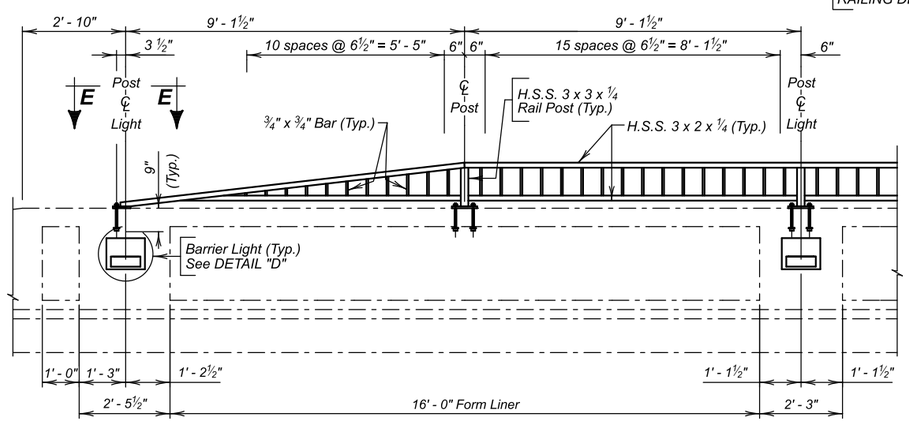


PLAN

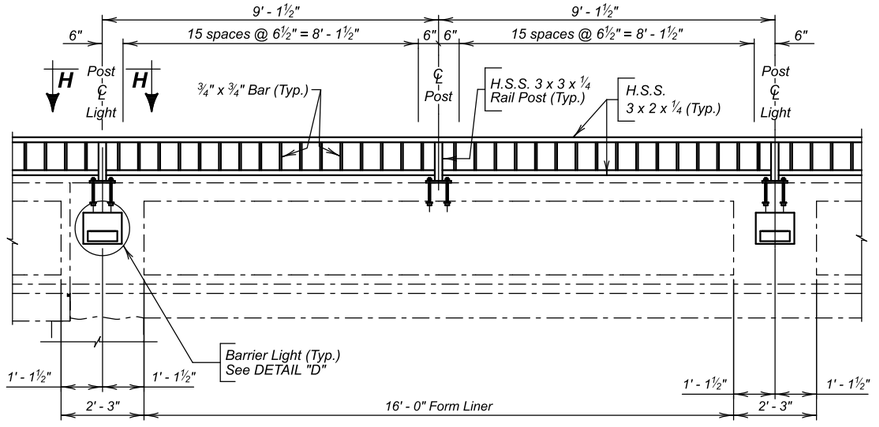
(North Pedestrian Curb Barrier Shown)
(Deck reinforcing steel and steel conduit NOT shown for clarity)



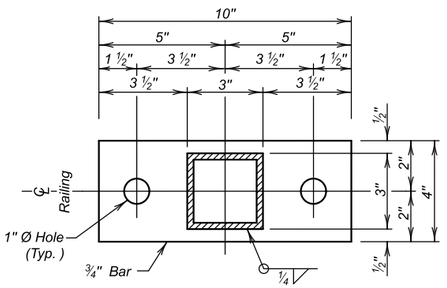
ELEVATION



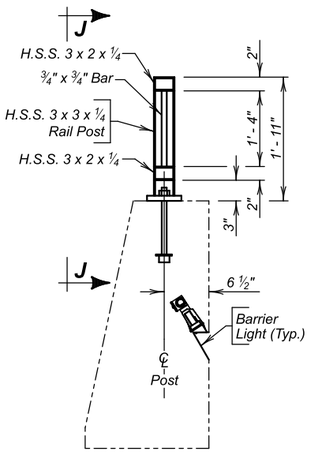
DETAIL "A"



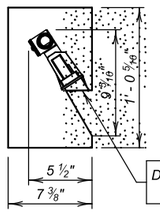
DETAIL "B"



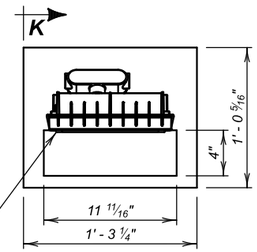
VIEW H - H



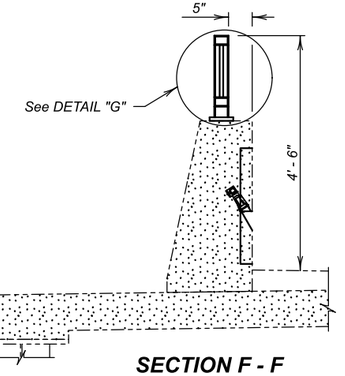
DETAIL "G"



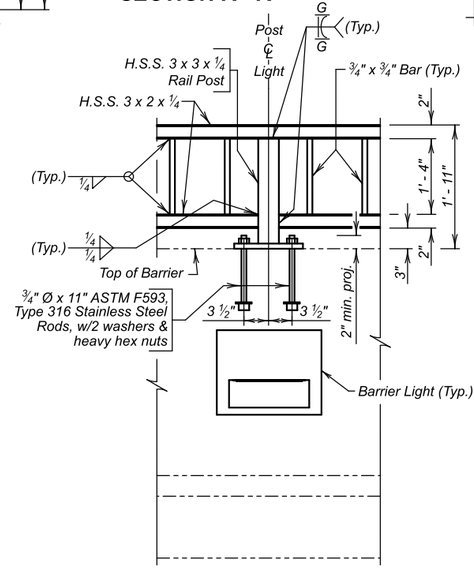
SECTION K - K



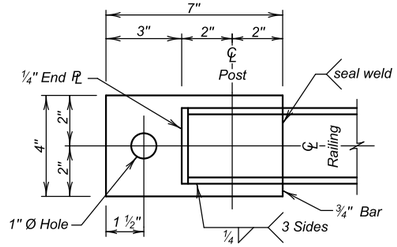
DETAIL "D"



SECTION F - F



VIEW J - J



VIEW E - E

PEDESTRIAN BARRIER CURB RAILING DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS
with 14'-0" PEDESTRIAN TRAIL
85TH STREET OVER I-29
STA. 318+79.74EB to STA. 321+55.24EB
STR. NO. 42-065-020

0° SKEW
SEC. 18/19 - T100N - R50W
EM 0292(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

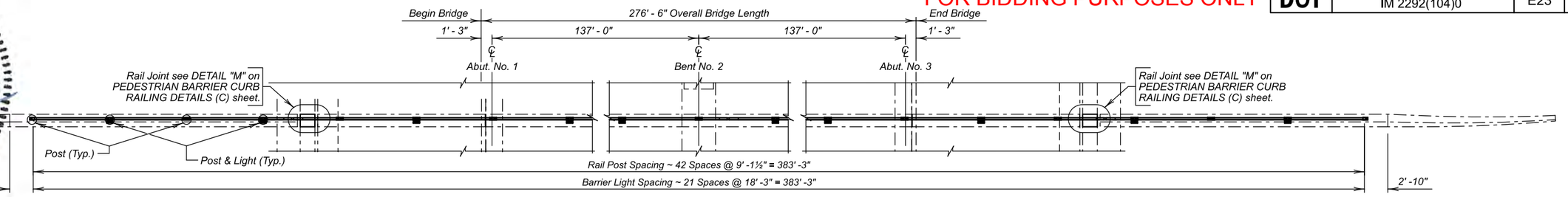
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_bar.dgn Plotting Date: 5/16/2025

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E23	E130

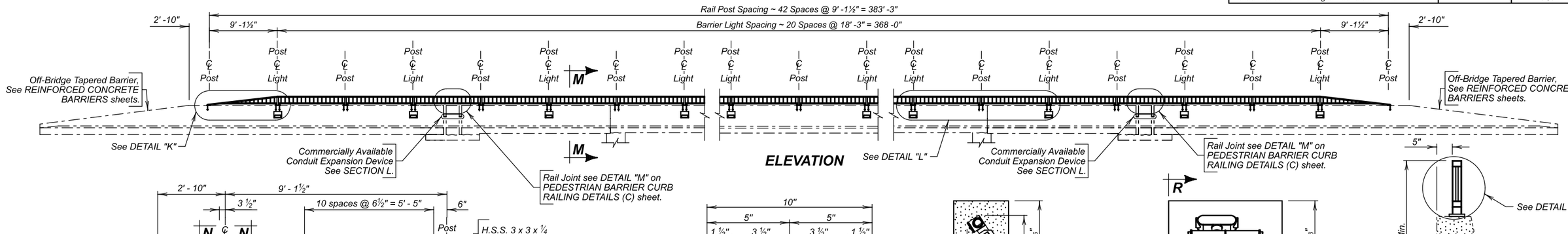


PLAN

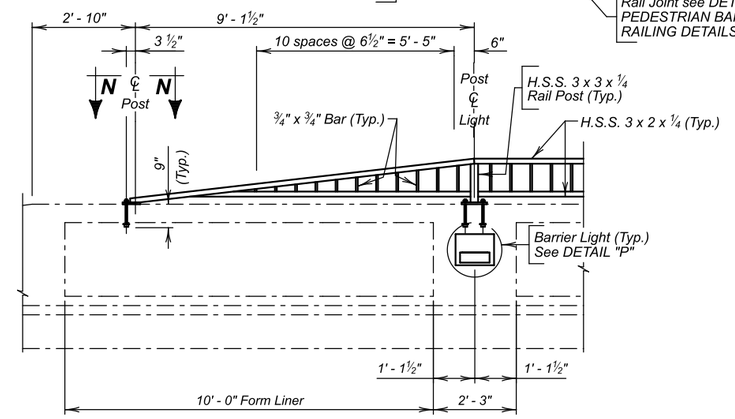
(South Pedestrian Curb Barrier Shown)
(Deck reinforcing steel and steel conduit NOT shown for clarity)

ESTIMATED QUANTITIES

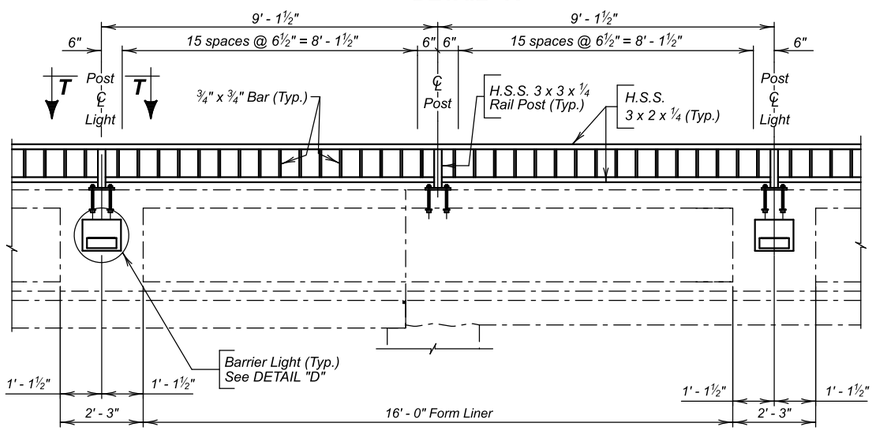
ITEM	UNIT	QUANTITY
Steel Pedestrian Railing on Concrete Barrier	Ft.	767



ELEVATION



DETAIL "K"



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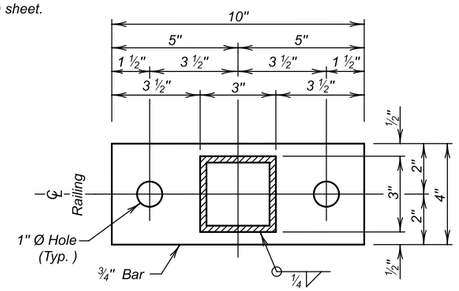
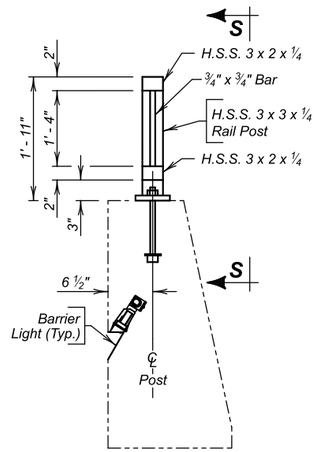


VIEW T - T



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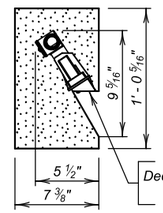
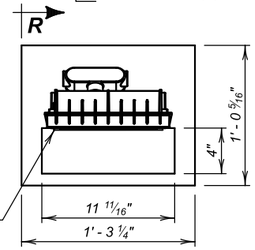


SECTION R - R



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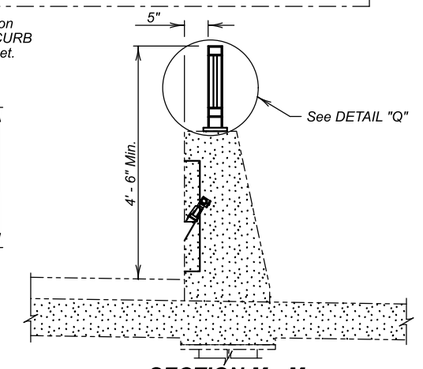

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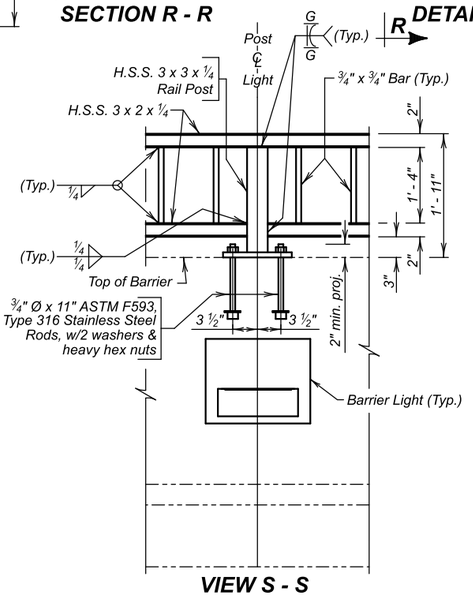
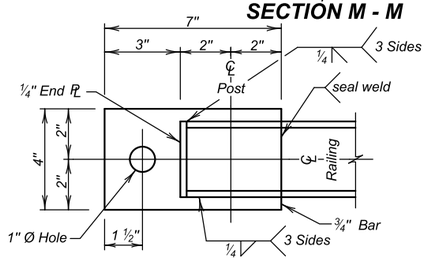


VIEW S - S



VIEW N - N

PEDESTRIAN BARRIER CURB RAILING DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS with 14'-0" PEDESTRIAN TRAIL
85TH STREET OVER I-29
STA. 318+79.74EB to STA. 321+55.24EB
STR. NO. 42-065-020

0° SKEW
SEC. 18/19 - T100N - R50W
EM 0292(88)73
HL-93

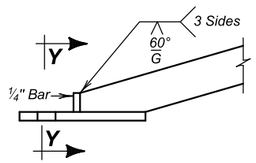
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

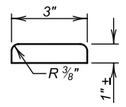
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_bar.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

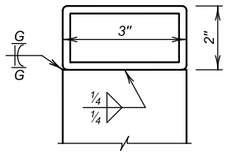
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E24	E130



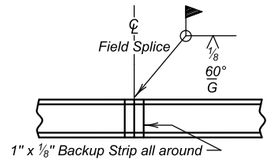
RAIL END CAP DETAIL



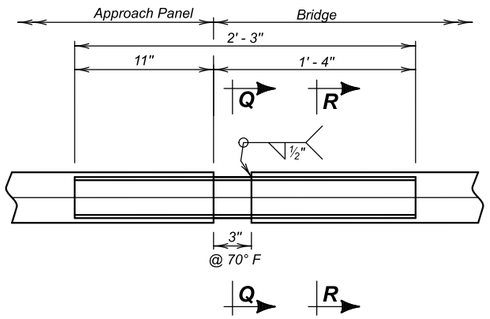
VIEW Y - Y



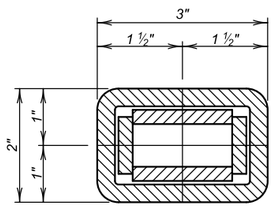
TOP RAIL WELD DETAIL



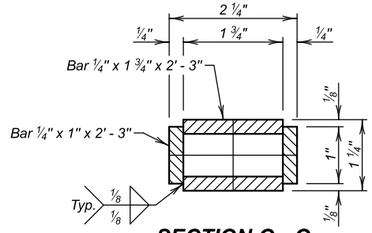
RAIL FIELD SPLICE
(Minimum Spacing = 40'-0")



DETAIL "M"



SECTION R - R



SECTION Q - Q

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

PEDESTRIAN BARRIER CURB RAILING DETAILS (C)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

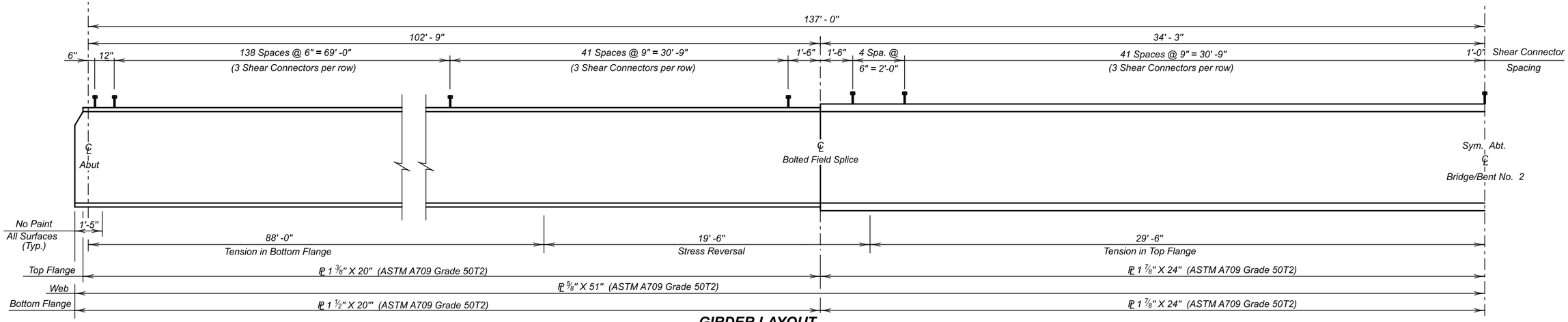
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_bar.dgn Plotting Date: 5/16/2025

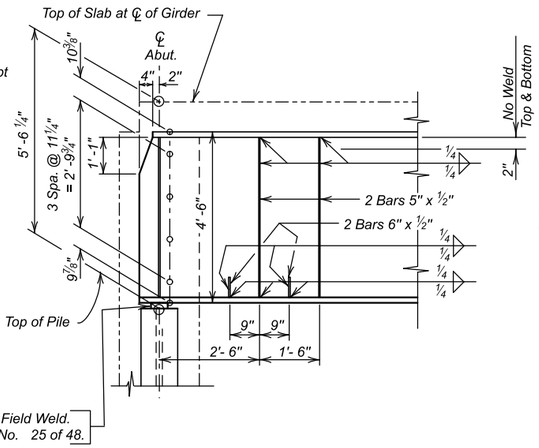
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E25	E130

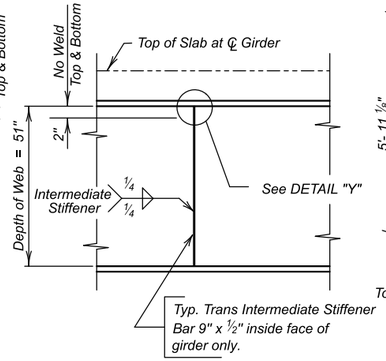


GIRDER LAYOUT

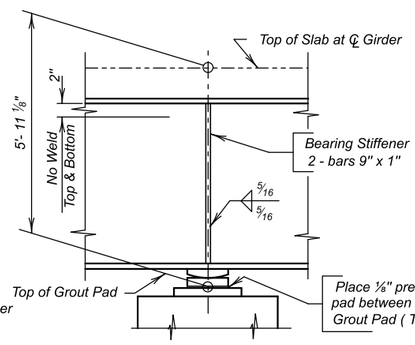
(2) NOTE: All fillet welds shall terminate ½" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.



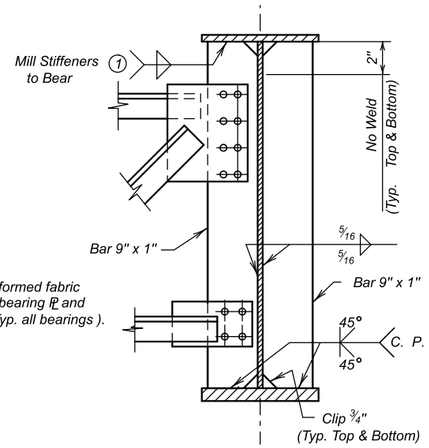
TYPICAL SECTION AT ABUTMENTS



TYPICAL SECTION AT INTERMEDIATE STIFFENER

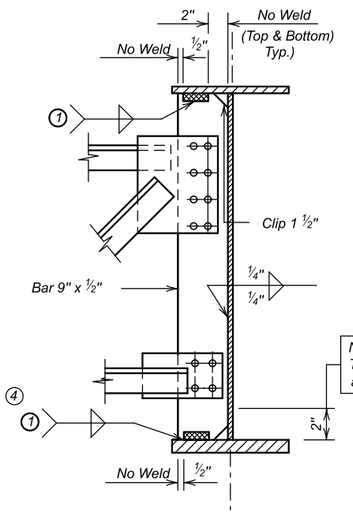


TYPICAL SECTION AT BENT



DETAILS OF STIFFENERS AT ℄ BEARINGS

(Exterior Girder shown)



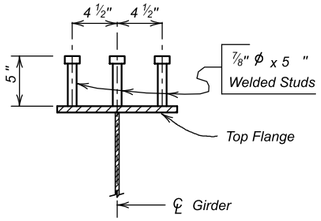
DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS

NOTES -

1. See "DIAPHRAGM DETAILS" Sheet for Diaphragm Details.
2. See "FRAMING DIAGRAM, CAMBER, & ERECTION DATA (A)" Sheet for spacing of Diaphragms and Stiffeners.
3. All dimensions shown are horizontal or vertical.
4. All Stiffeners and Girder Ends shall be made normal to flanges, except bearing stiffeners at abutments and bent will be vertical.
5. Stiffeners to have tight fit top and bottom.
6. Dimensions shown are for steel temperature of 45 F.°
7. Girder Camber shown on "FRAMING DIAGRAM, CAMBER, & ERECTION DATA (A)" Sheet.

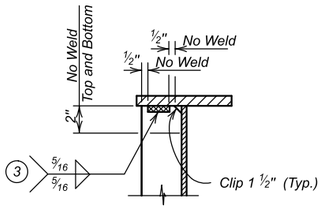
(1) NOTE: All fillet welds attaching diaphragm or bearing stiffeners to girder flanges, will terminate ½" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.

(4) Alternately, Mill Stiffeners to Bear & use 5/16" Fillet Weld, same as at Top Flange.



SHEAR CONNECTOR DETAILS

Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Shear Connectors will be included in the Lump Sum bid for Structural Steel. For informational purposes only, the total number of shear connectors is 13590 and 1359 Shear Connectors per Girder.



DETAIL "Y"

(3) Transverse Intermediate Stiffeners shall be welded to the compression flange as shown in DETAIL "Y". In zones of stress reversal the Transverse Intermediate Stiffener shall not be attached to either flange. Ends of Stiffeners not welded shall fit tight enough to exclude water. See Girder Layout above for location of tension flange and zones of stress reversal.

FLANGE TO WEB WELDS

Flange Thickness	Fillet Welds
3/4"	1/4"
1 3/4"	5/16"
1 1/4"	5/16"
1 3/8"	5/16"
1"	5/16"

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

GIRDER LAYOUT & DETAILS
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

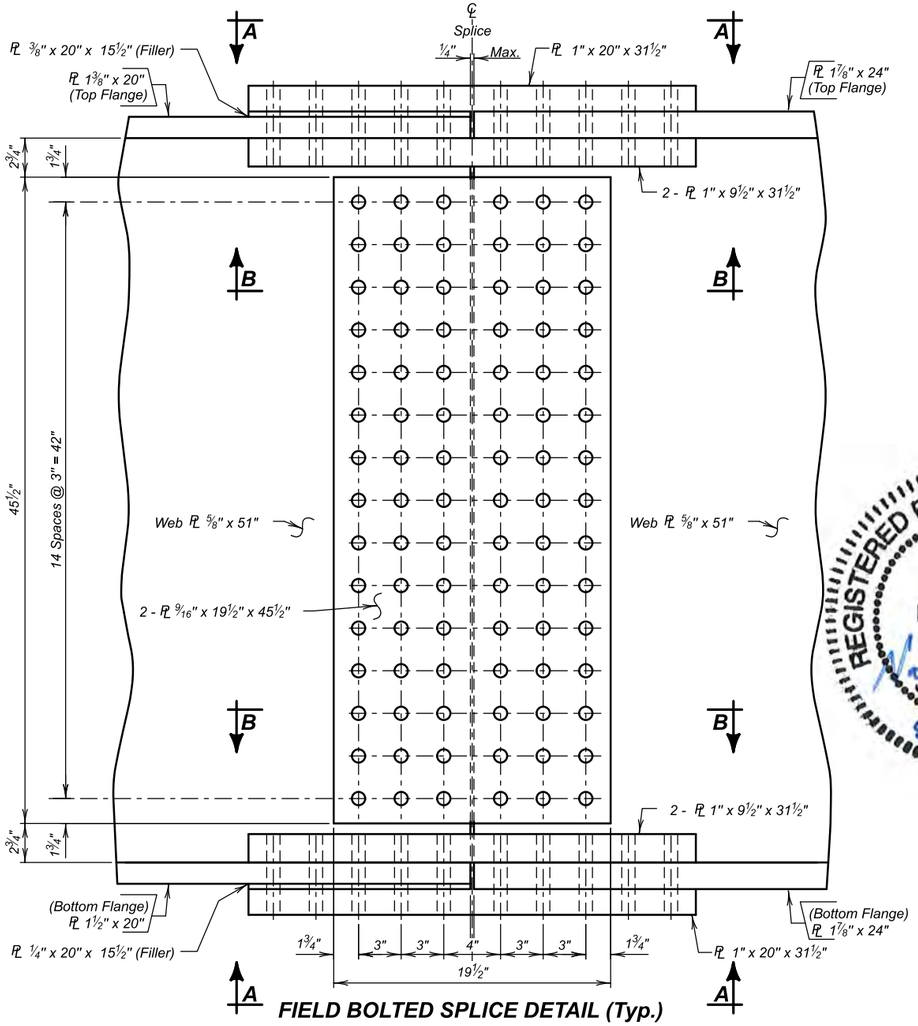
23 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

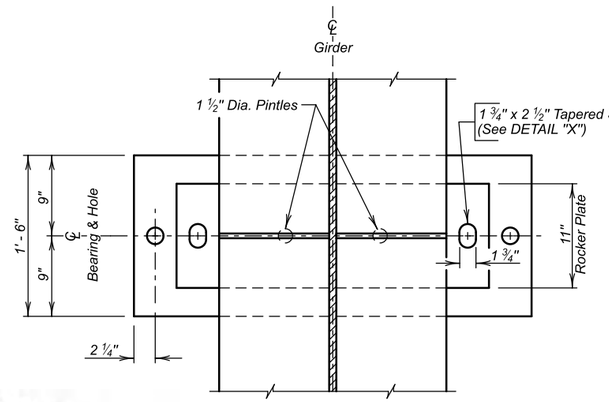
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_gir.dgn

FOR BIDDING PURPOSES ONLY

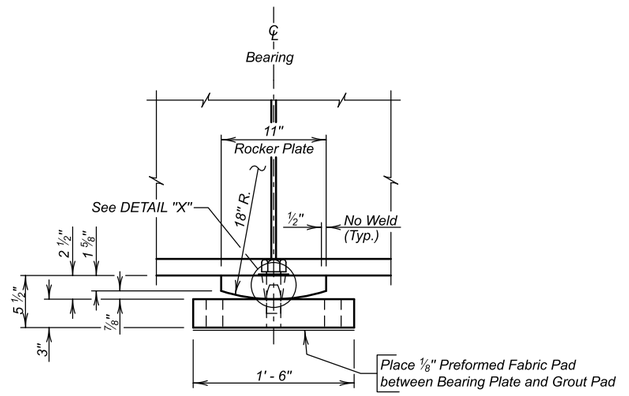
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E26	E130



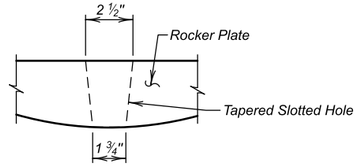
FIELD BOLTED SPLICE DETAIL (Typ.)



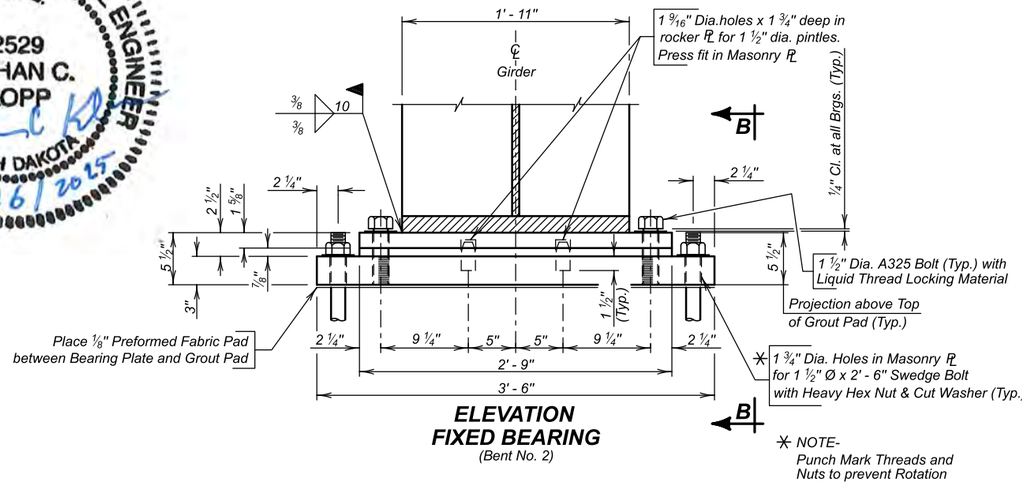
PLAN
(Bolts & washers not shown this view)



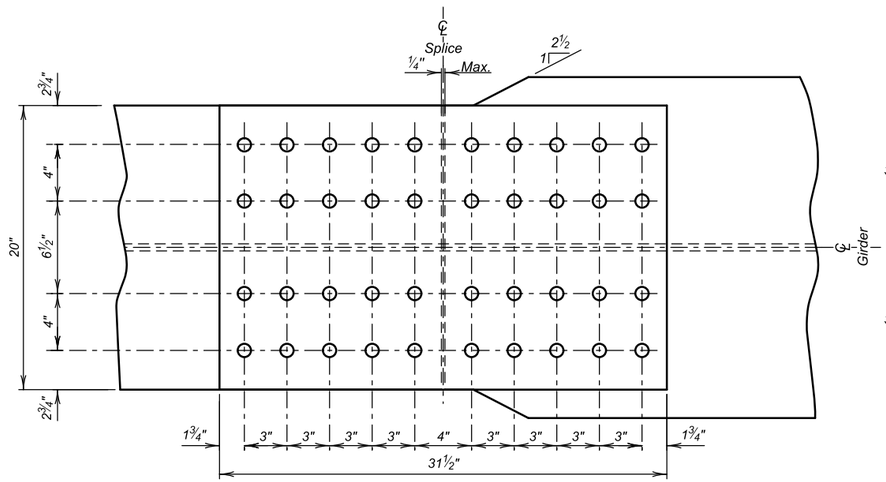
VIEW B - B



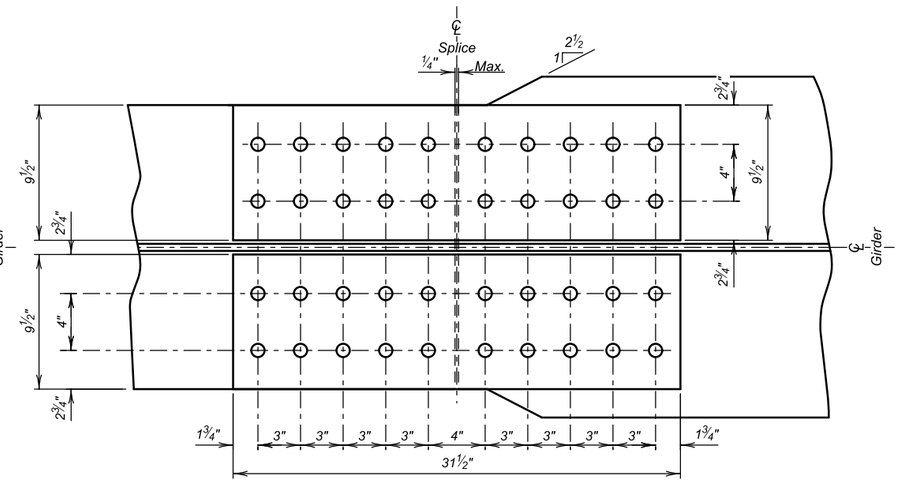
DETAIL "X"



ELEVATION
FIXED BEARING
(Bent No. 2)



SECTION A - A



SECTION B - B

Note:
All bolts in splices shall be 7/8" High Strength bolts, nuts and washers and conform to ASTM 3125 Grade A325. The bolts shall be the heavy hexagon head structural type with semi-finished hexagon nut and hardened washer. (See DIAPHRAGM DETAILS sheet for Direct Tension Indicator Details.)

REGISTERED PROFESSIONAL ENGINEER
REG.NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DETAILS OF BOLTED FIELD SPLICES
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
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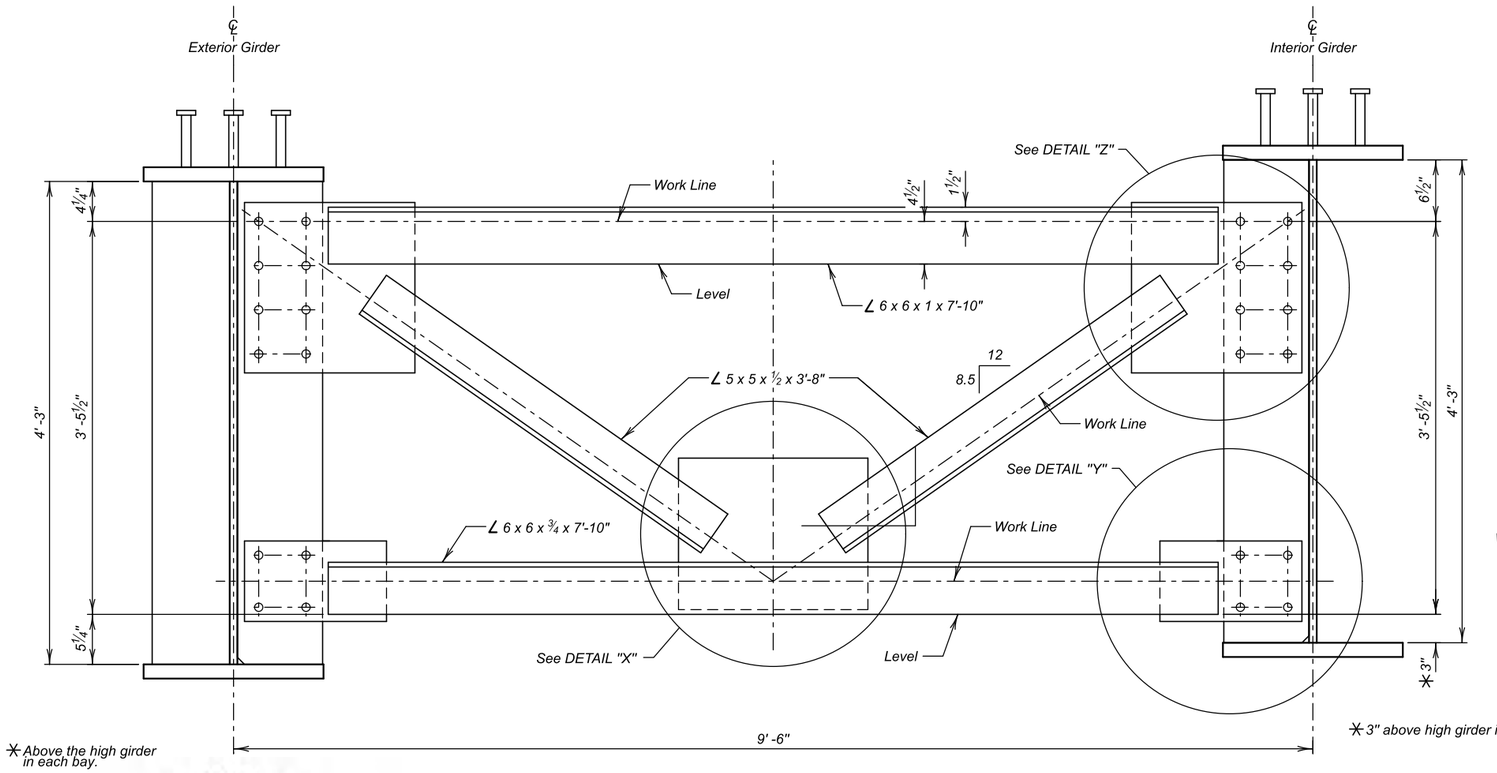
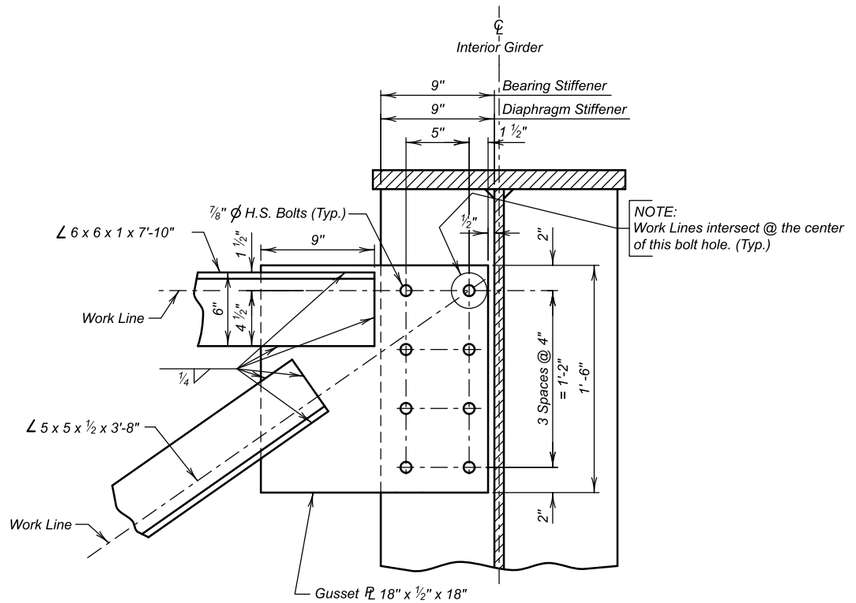
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_gir.dgn

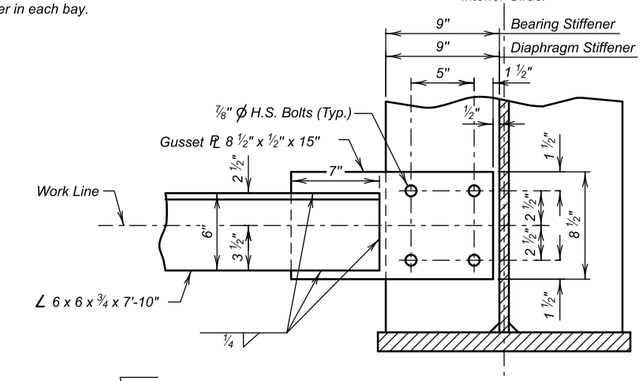
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E27	E130





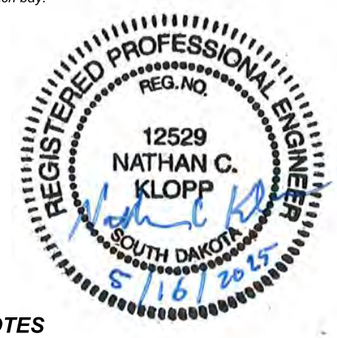
DETAIL "Z"



DETAIL "Y"

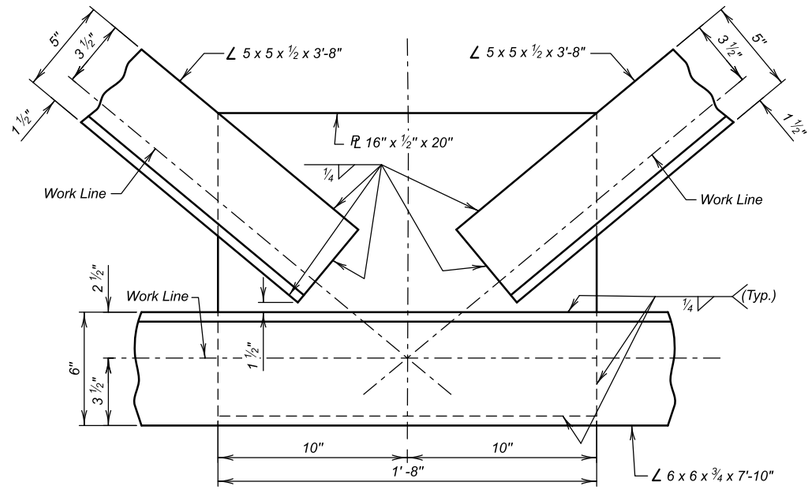
GENERAL NOTES

1. The Steel Diaphragms are included in the quantity for Structural Steel.
2. Use 1 1/16"∅ bolt holes in the ½" gusset plates. Use 15/16" ∅ bolt holes in the stiffener plates.
3. Install bolt heads on the side of the connection with the 15/16" ∅ bolt holes. Install direct tension indicators under the bolt heads.
4. The ⅞" High Strength bolts, nuts, and washers shall conform to ASTM A3125 Grade A325. The bolts shall be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.
5. Terminate all welds ½" from the edges of the bars and plates.

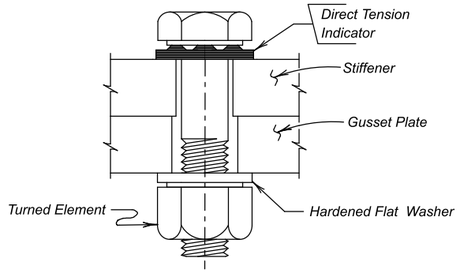


DIAPHRAGM DETAIL

(Weight of One Unit = 811 lbs.)



DETAIL "X"



DIRECT TENSION INDICATOR DETAIL

DIAHPRAGM DETAILS
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

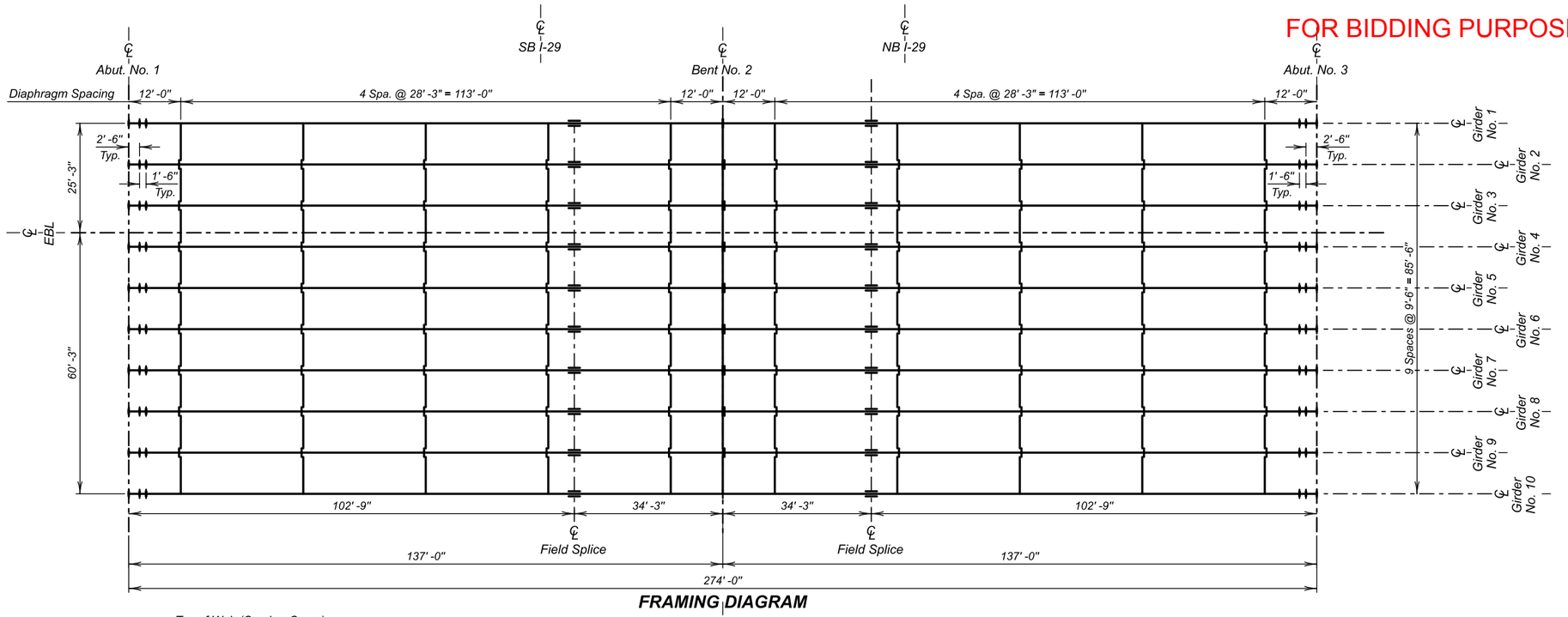
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

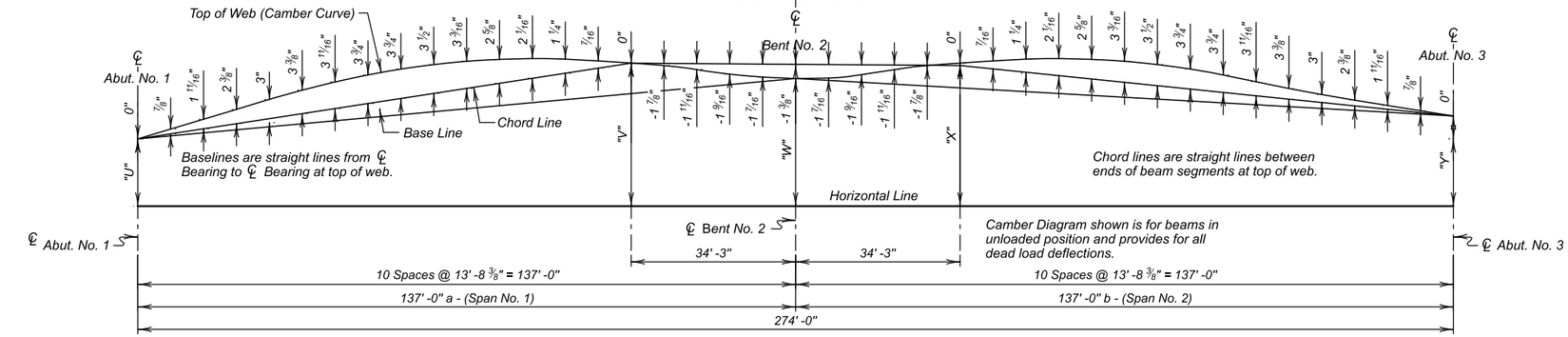
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_gir.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E28	E130

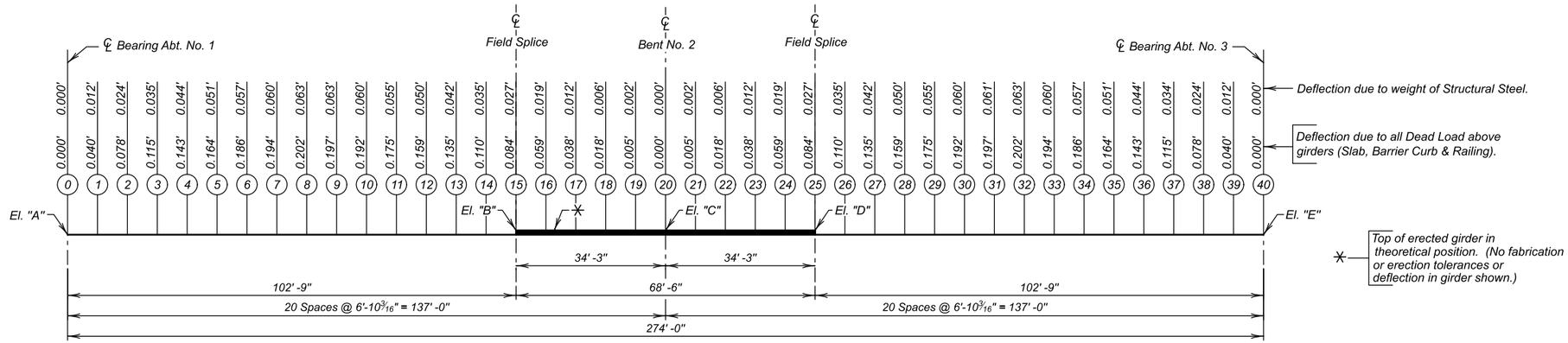


FRAMING DIAGRAM



CAMBER CUTTING DIAGRAM

(Cut camber into webs for all girders as shown)



GIRDER ERECTION DIAGRAM

CAMBER DIMENSIONS

Girder No.	"U"	"V"	"W"	"X"	"Y"
1	0.081'	1.083'	0.917'	1.063'	0'
2	0.081'	1.083'	0.917'	1.063'	0'
3	0.081'	1.083'	0.917'	1.063'	0'
4	0.081'	1.083'	0.917'	1.063'	0'
5	0.081'	1.083'	0.917'	1.063'	0'
6	0.081'	1.083'	0.917'	1.063'	0'
7	0.081'	1.083'	0.917'	1.063'	0'
8	0.081'	1.083'	0.917'	1.063'	0'
9	0.081'	1.083'	0.917'	1.063'	0'
10	0.081'	1.083'	0.917'	1.063'	0'

ϕ GIRDER ERECTION ELEVATIONS AND SLOPES

Girder No.	ELEVATIONS (Top of Girder) "A"	"B"	"C"	"D"	"E"	SLOPES (%) a	b
1	1545.57	1546.46	1546.51	1546.44	1545.49	0.6855	-0.7453
2	1545.76	1546.65	1546.70	1546.63	1545.68	0.6855	-0.7453
3	1545.95	1546.84	1546.89	1546.82	1545.87	0.6855	-0.7453
4	1546.14	1547.03	1547.08	1547.01	1546.06	0.6855	-0.7453
5	1546.33	1547.22	1547.27	1547.20	1546.25	0.6855	-0.7453
6	1546.52	1547.41	1547.46	1547.39	1546.44	0.6855	-0.7453
7	1546.38	1547.27	1547.32	1547.25	1546.30	0.6855	-0.7453
8	1546.19	1547.08	1547.13	1547.06	1546.11	0.6855	-0.7453
9	1546.00	1546.89	1546.94	1546.87	1545.92	0.6855	-0.7453
10	1545.81	1546.70	1546.75	1546.68	1545.73	0.6855	-0.7453

NOTE-
ϕ These elevations and slopes occur at a time after girder erection is completed but prior to any placement of concrete. Slopes shown are an imaginary straight line between points at beam ends and are (+) towards increasing stations.

FRAMING DIAGRAM, CAMBER, & ERECTION DATA (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_gir.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E29	E130

TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Girder No. 1	Elev. "M"	1546.397	1546.527	1546.649	1546.766	1546.870	1546.961	1547.049	1547.119	1547.183	1547.230	1547.272	1547.298	1547.320	1547.329	1547.332	1547.330	1547.324	1547.318	1547.307	1547.299	1547.295
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 2	Elev. "M"	1546.587	1546.717	1546.839	1546.956	1547.060	1547.151	1547.239	1547.309	1547.373	1547.420	1547.462	1547.488	1547.510	1547.519	1547.522	1547.520	1547.514	1547.508	1547.497	1547.489	1547.485
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 3	Elev. "M"	1546.777	1546.907	1547.029	1547.146	1547.250	1547.341	1547.429	1547.499	1547.563	1547.610	1547.652	1547.678	1547.700	1547.709	1547.712	1547.710	1547.704	1547.698	1547.687	1547.679	1547.675
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
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Girder No. 4	Elev. "M"	1546.967	1547.097	1547.219	1547.336	1547.440	1547.531	1547.619	1547.689	1547.753	1547.800	1547.842	1547.868	1547.890	1547.899	1547.902	1547.900	1547.894	1547.888	1547.877	1547.869	1547.865
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 5	Elev. "M"	1547.157	1547.287	1547.409	1547.526	1547.630	1547.721	1547.809	1547.879	1547.943	1547.990	1548.032	1548.058	1548.080	1548.089	1548.092	1548.090	1548.084	1548.078	1548.067	1548.059	1548.055
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 6	Elev. "M"	1547.347	1547.477	1547.599	1547.716	1547.820	1547.911	1547.999	1548.069	1548.133	1548.180	1548.222	1548.248	1548.270	1548.279	1548.282	1548.280	1548.274	1548.268	1548.257	1548.249	1548.245
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 7	Elev. "M"	1547.207	1547.337	1547.459	1547.576	1547.680	1547.771	1547.859	1547.929	1547.993	1548.040	1548.082	1548.108	1548.130	1548.139	1548.142	1548.140	1548.134	1548.128	1548.117	1548.109	1548.105
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 8	Elev. "M"	1547.017	1547.147	1547.269	1547.386	1547.490	1547.581	1547.669	1547.739	1547.803	1547.850	1547.892	1547.918	1547.940	1547.949	1547.952	1547.950	1547.944	1547.938	1547.927	1547.919	1547.915
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 9	Elev. "M"	1546.827	1546.957	1547.079	1547.196	1547.300	1547.391	1547.479	1547.549	1547.613	1547.660	1547.702	1547.728	1547.750	1547.759	1547.762	1547.760	1547.754	1547.748	1547.737	1547.729	1547.725
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 10	Elev. "M"	1546.637	1546.767	1546.889	1547.006	1547.110	1547.201	1547.289	1547.359	1547.423	1547.470	1547.512	1547.538	1547.560	1547.569	1547.572	1547.570	1547.564	1547.558	1547.547	1547.539	1547.535
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	(-) 0.688'																					
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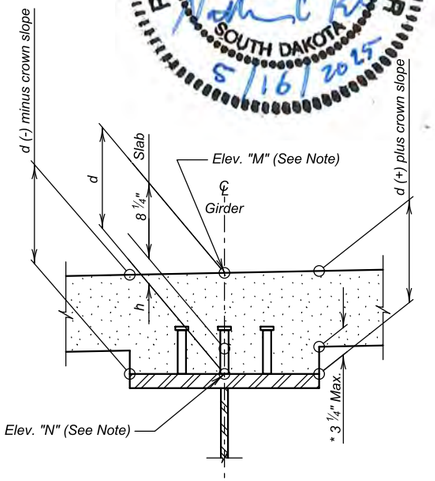


** If during construction, it is found that this dimension will be exceeded or is less than zero, corrective measures must be taken as approved by the engineer.*

NOTES:

This Table contains the necessary information to determine the depth of concrete, in feet, over the girders at the points shown. All calculations can be carried out in the space provided. Elevation "M" is theoretical top of slab elevation before any concrete has been poured. This elevation includes correction for deflection due to Dead Load above girders. Elevation "N" is a field measured elevation taken on top of girders at points shown. This elevation must be taken after girder erection is complete, but prior to placing any of the slab concrete. Girders will not be supported by construction shoring while elevations are taken.

This sheet is to be used in conjunction with FRAMING DIAGRAM, CAMBER, & ERECTION DATA sheet.

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

SLAB FORM ELEVATIONS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

27 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

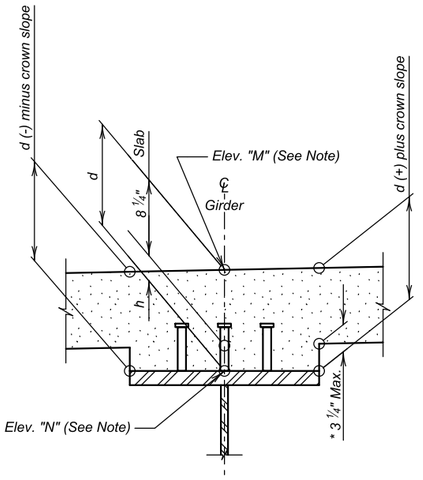
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_gir.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E30	E130

TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Girder No. 1	Elev. "M"	1547.295	1547.295	1547.299	1547.305	1547.308	1547.310	1547.308	1547.300	1547.287	1547.261	1547.231	1547.185	1547.134	1547.065	1546.992	1546.900	1546.804	1546.697	1546.576	1546.449	1546.315
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 2	Elev. "M"	1547.485	1547.485	1547.489	1547.495	1547.498	1547.500	1547.498	1547.490	1547.477	1547.451	1547.421	1547.375	1547.324	1547.255	1547.182	1547.090	1546.994	1546.887	1546.766	1546.639	1546.505
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 3	Elev. "M"	1547.675	1547.675	1547.679	1547.685	1547.688	1547.690	1547.688	1547.680	1547.667	1547.641	1547.611	1547.565	1547.514	1547.445	1547.372	1547.280	1547.184	1547.077	1546.956	1546.829	1546.695
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 4	Elev. "M"	1547.865	1547.865	1547.869	1547.875	1547.878	1547.880	1547.878	1547.870	1547.857	1547.831	1547.801	1547.755	1547.704	1547.635	1547.562	1547.470	1547.374	1547.267	1547.146	1547.019	1546.885
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 5	Elev. "M"	1548.055	1548.055	1548.059	1548.065	1548.068	1548.070	1548.068	1548.060	1548.047	1548.021	1547.991	1547.945	1547.894	1547.825	1547.752	1547.660	1547.564	1547.457	1547.336	1547.209	1547.075
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 6	Elev. "M"	1548.245	1548.245	1548.249	1548.255	1548.258	1548.260	1548.258	1548.250	1548.237	1548.211	1548.181	1548.135	1548.084	1548.015	1547.942	1547.850	1547.754	1547.647	1547.526	1547.399	1547.265
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 7	Elev. "M"	1548.105	1548.105	1548.109	1548.115	1548.118	1548.120	1548.118	1548.110	1548.097	1548.071	1548.041	1547.995	1547.944	1547.875	1547.802	1547.710	1547.614	1547.507	1547.386	1547.259	1547.125
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 8	Elev. "M"	1547.915	1547.915	1547.919	1547.925	1547.928	1547.930	1547.928	1547.920	1547.907	1547.881	1547.851	1547.805	1547.754	1547.685	1547.612	1547.520	1547.424	1547.317	1547.196	1547.069	1546.935
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 9	Elev. "M"	1547.725	1547.725	1547.729	1547.735	1547.738	1547.740	1547.738	1547.730	1547.717	1547.691	1547.661	1547.615	1547.564	1547.495	1547.422	1547.330	1547.234	1547.127	1547.006	1546.879	1546.745
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
Girder No. 10	Elev. "M"	1547.535	1547.535	1547.539	1547.545	1547.548	1547.550	1547.548	1547.540	1547.527	1547.501	1547.471	1547.425	1547.374	1547.305	1547.232	1547.140	1547.044	1546.937	1546.816	1546.689	1546.555
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					



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NOTES:

This Table contains the necessary information to determine the depth of concrete, in feet, over the girders at the points shown. All calculations can be carried out in the space provided. Elevation "M" is theoretical top of slab elevation before any concrete has been poured. This elevation includes correction for deflection due to Dead Load above girders. Elevation "N" is a field measured elevation taken on top of girders at points shown. This elevation must be taken after girder erection is complete, but prior to placing any of the slab concrete. Girders will not be supported by construction shoring while elevations are taken.

This sheet is to be used in conjunction with FRAMING DIAGRAM, CAMBER, & ERECTION DATA sheet.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

SLAB FORM ELEVATIONS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

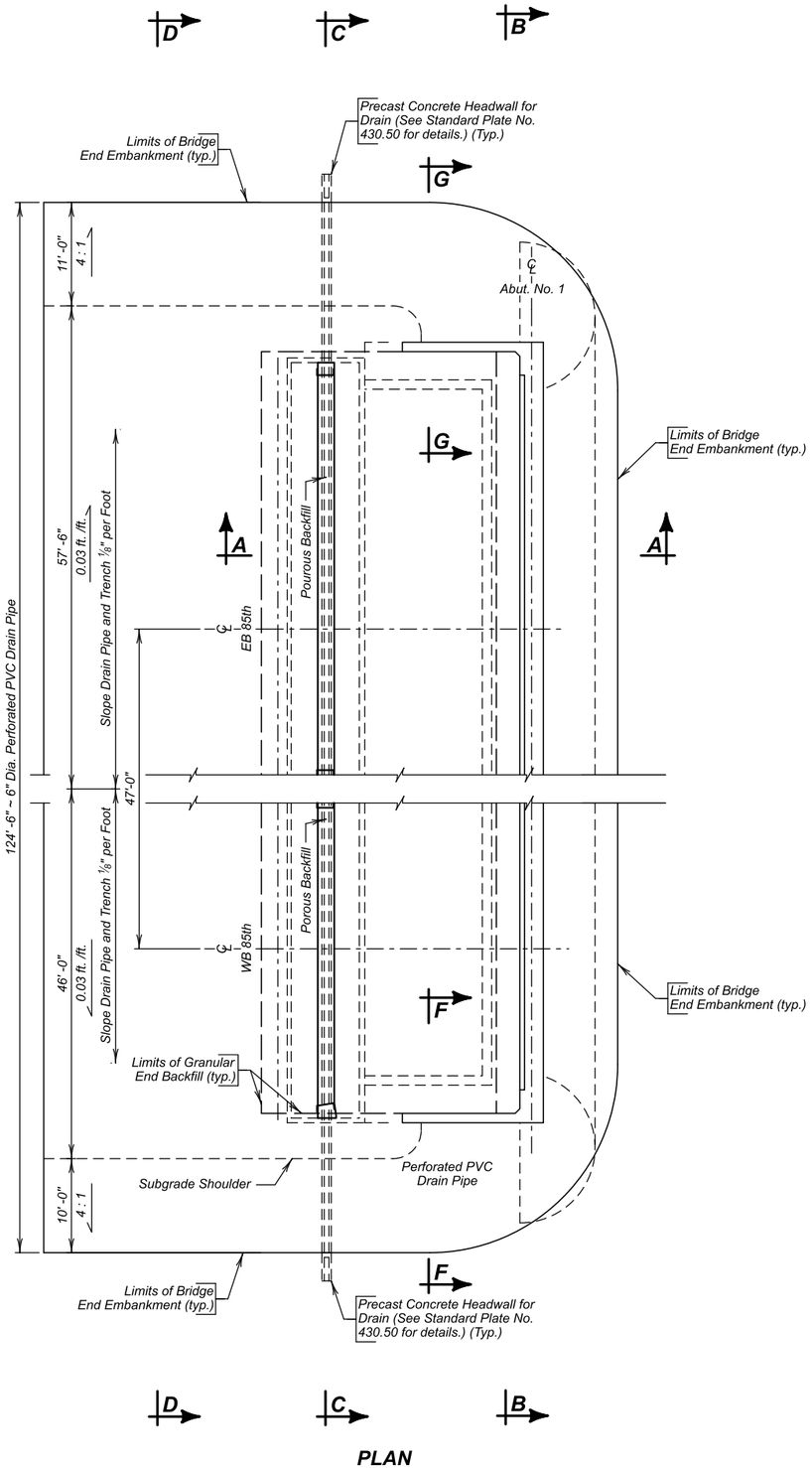
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

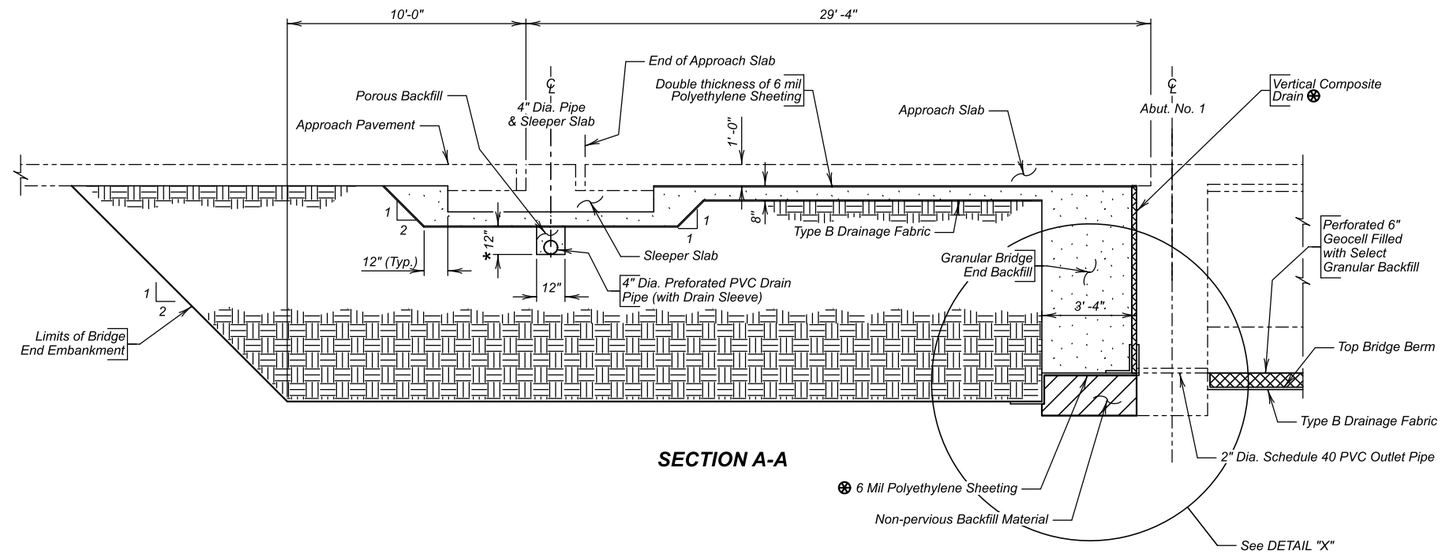
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_gir.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E31	E130



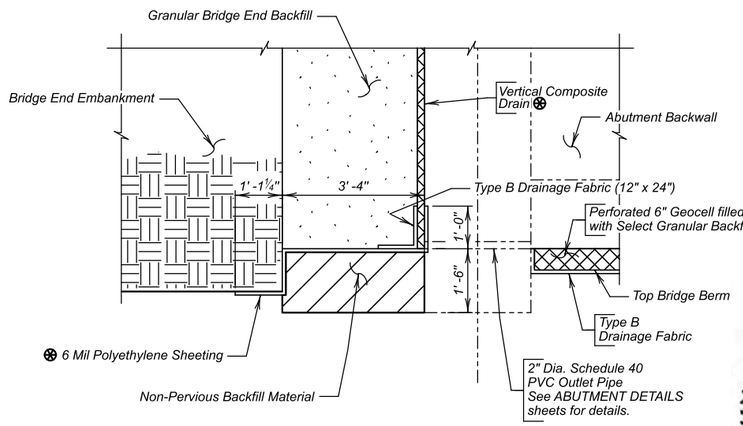
PLAN



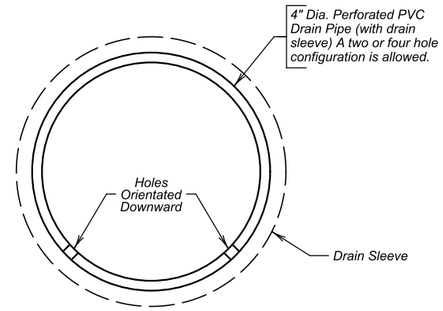
SECTION A-A

∗ 12" (min.) at edge of approach slab, slope bottom of trench and pipe ⅛" per foot.

⊛ Provide hole in vertical composite drain and 6 mil polyethylene sheeting to provide drainage through weep holes.



DETAIL "X"



DRAIN DETAIL

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENTS NO. 1 & 3 (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

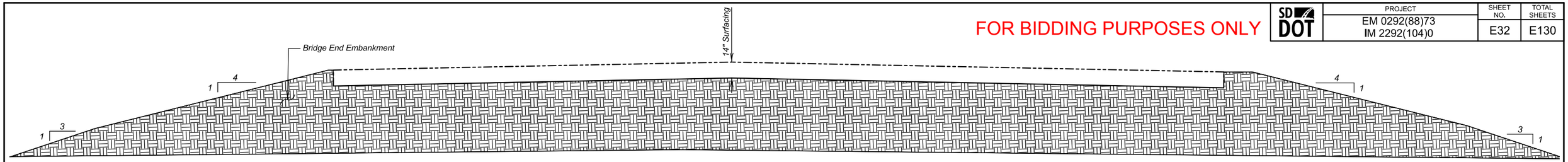
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

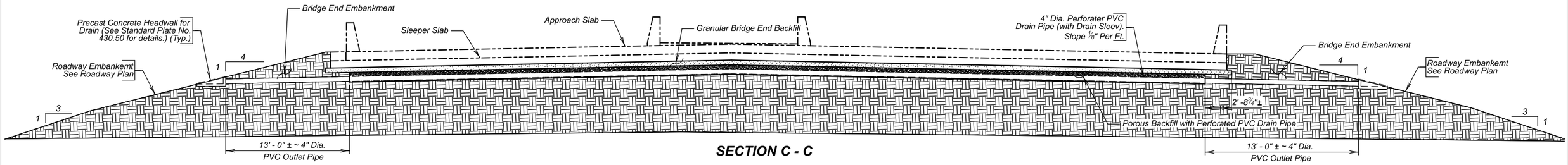
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_beb1.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

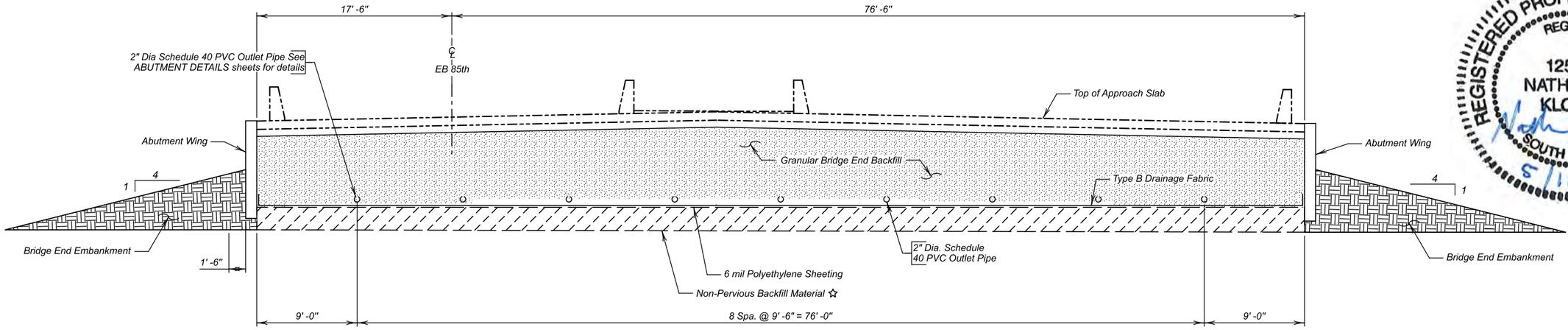
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E32	E130



SECTION D - D



SECTION C - C



SECTION B - B

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Granular Bridge End Backfill	Cu. Yd.	408
	Approach Slab Underdrain Excavation	Cu. Yd.	6
⊛ ☆	Bridge End Embankment	Cu. Yd.	2,980
= ∡	Porous Backfill	Ton	14
◇	4" Underdrain Pipe	Ft.	177
	Precast Concrete Headwall for Drain	Ea.	4

1. 63 Ft. 4" Dia. Perforated PVC Drain Pipe (with Drain Sleeve).
2. 26 Ft. 4" Dia. PVC Outlet Pipe.
3. 752 Sq. Ft. Vertical Composite Drain.

Items 1 thru 3 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.

4. 2444 Sq. Ft. 6 Mil Polyethylene Sheeting, not including laps.
5. 107 Sq. Yd. Type B Drainage Fabric.

Items 4 and 5 are approximate quantities contained in the Granular Bridge End Backfill and are for information only.

GENERL NOTES:

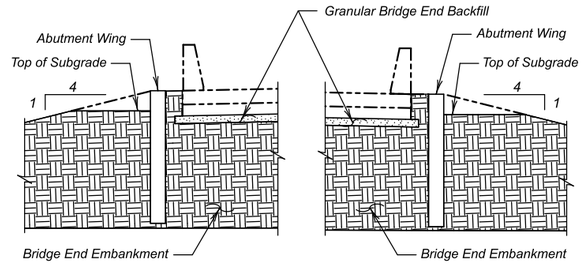
◇ *The exact lengths of the 4" Perforated PVC Drain Pipe (with Drain Sleeve), 4" Dia. PVC Outlet Pipe will be field determined.*

= *For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.*

⊛ *Shrinkage Factor of 1.25 used.*

∡ *Quantity under sleeper slab based on 12" wide trench.*

☆ *The quantity of Non-Pervious Backfill is included with Bridge End Embankment.*



SECTION F - F **SECTION G - G**

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENTS NO. 1 & 3 (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

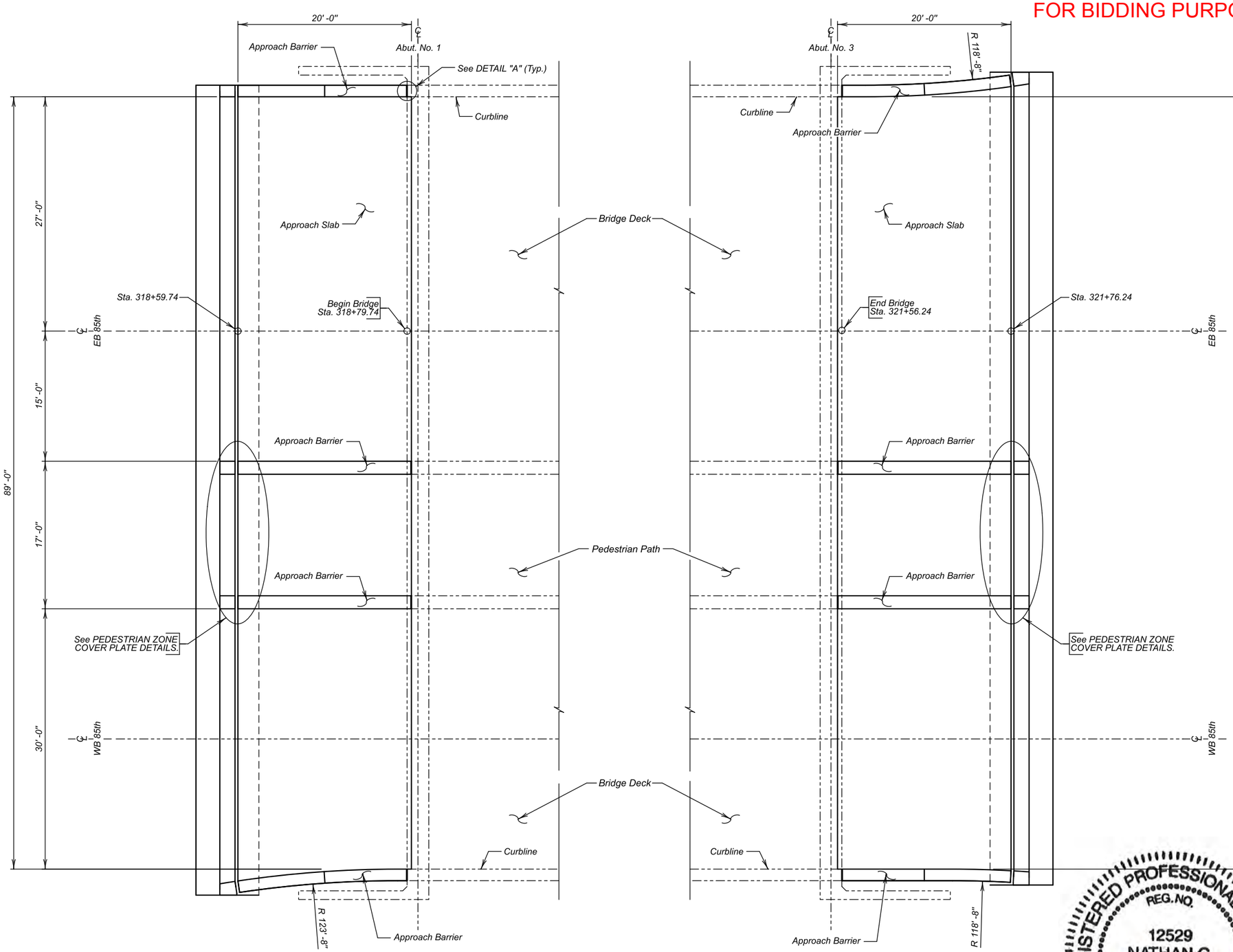
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

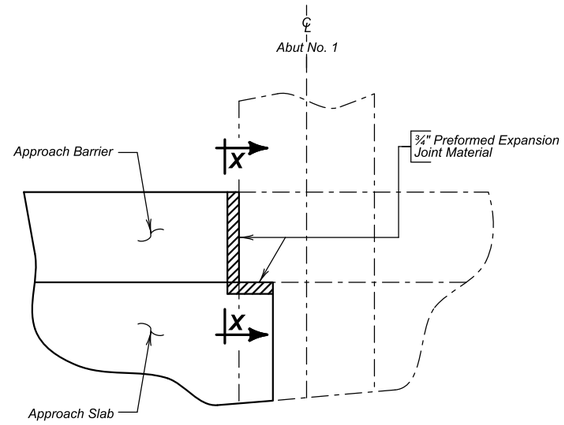
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_beb1.dgn Plotting Date: 5/16/2025

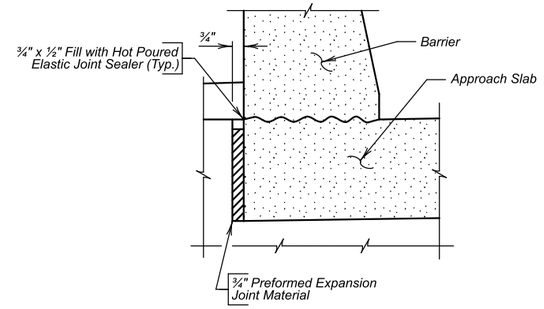
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E33	E130





DETAIL "A"



SECTION X - X

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (B) thru APPROACH SLAB DETAILS (J)

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

APPROACH SLAB DETAILS (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_app.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
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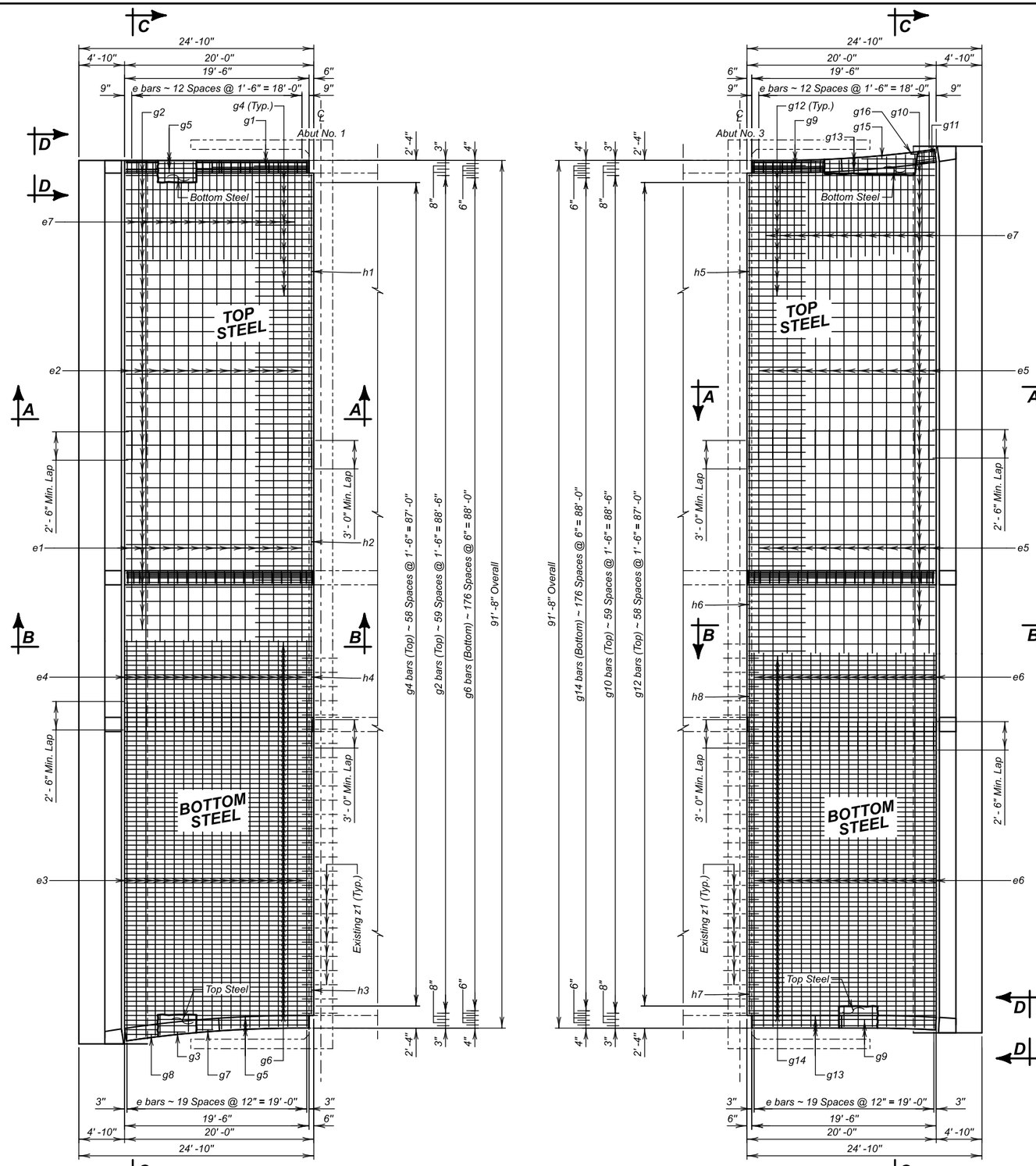
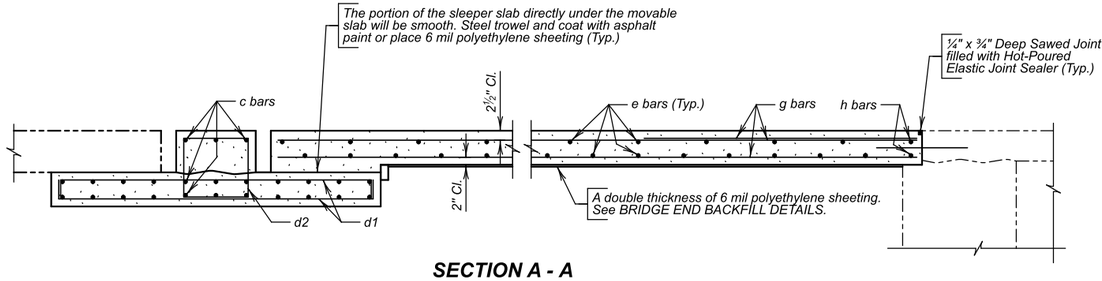
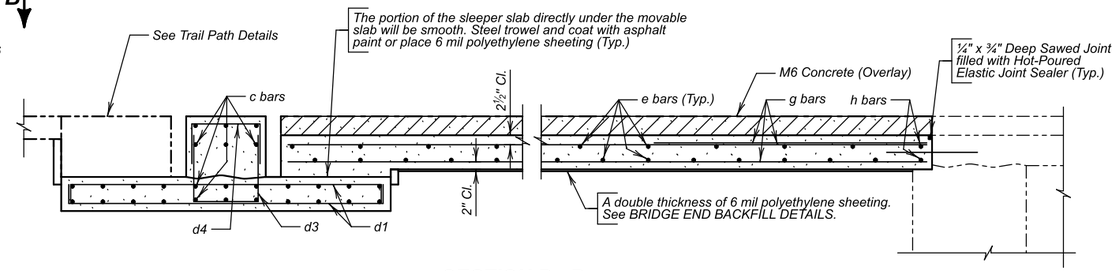


PLAN
(Shown adj. to Abut. No. 1)

PLAN
(Shown adj. to Abut. No. 3)



SECTION A - A



SECTION B - B

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

APPROACH SLAB DETAILS (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

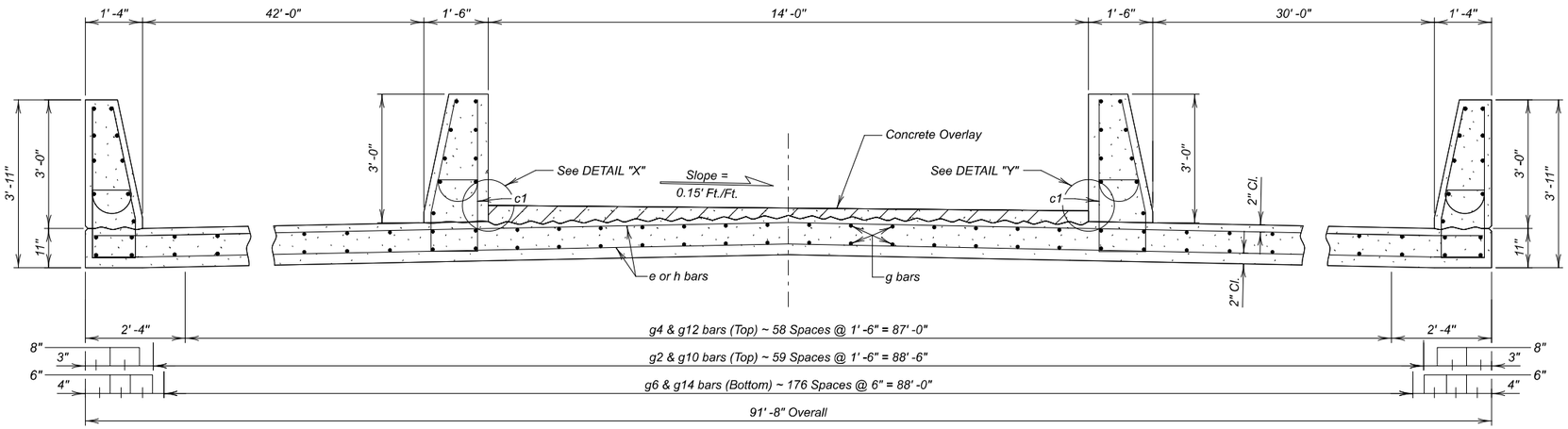
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_app.dgn

Plotting Date: 06/26/2025
Revised Date: 06/26/2025
Initials: NCK

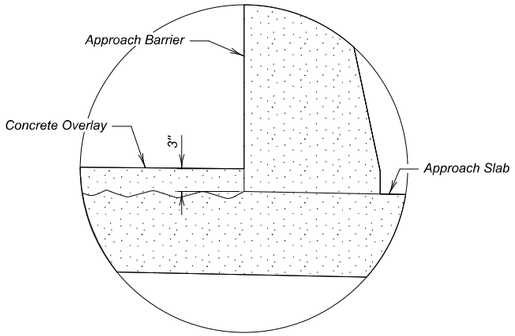
FOR BIDDING PURPOSES ONLY

SD DOT

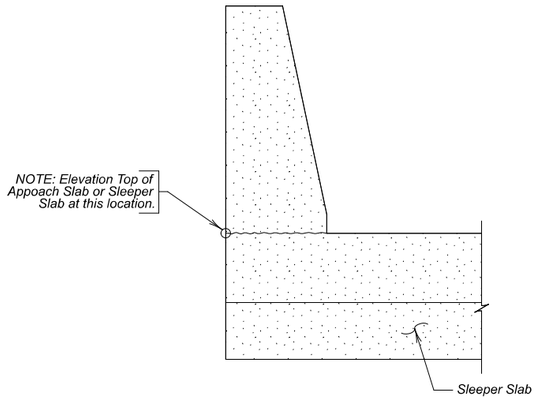
PROJECT	SHEET NO.	TOTAL SHEETS
EM 0292(88)73 IM 2292(104)0	E35	E130



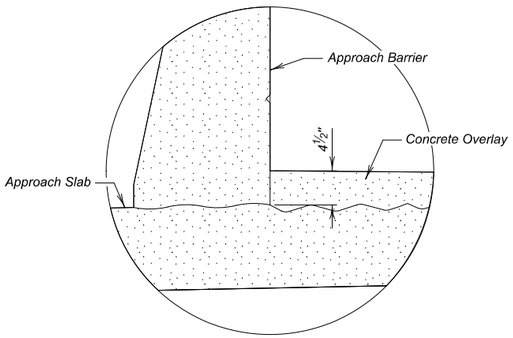
SECTION C - C



DETAIL "Y"
(Re-Steel not shown for clarity)



VIEW D - D



DETAIL "X"
(Re-Steel not shown for clarity)

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

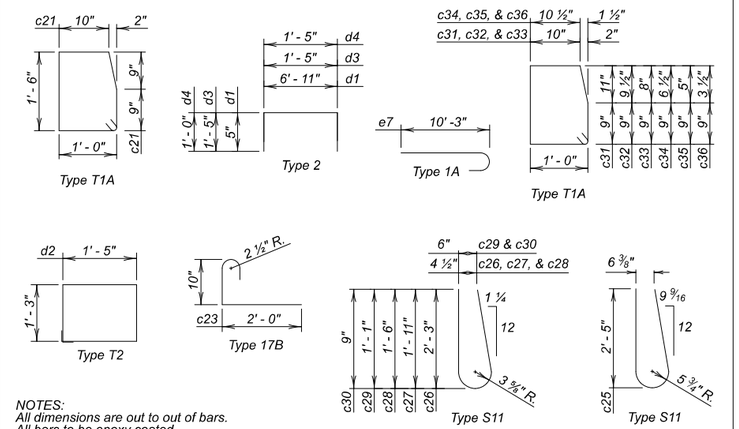
REINFORCING SCHEDULE
(For Approach and Sleeper Slabs Including Barriers on Each)

Mk.	No.	Size	Length	Type
Abut. No. 1 Approach Slab Steel				
e1	13	4	35' - 8"	Str.
e2	26	4	31' - 6"	Str.
e3	20	6	35' - 8"	Str.
e4	40	6	31' - 6"	Str.
e7	24	5	11' - 5"	1A
g1	4	4	19' - 2"	Str.
g2	60	4	19' - 8"	Str.
g3	1	4	6' - 3"	Str.
g4	59	4	6' - 0"	Str.
g5	6	8	19' - 2"	Str.
g6	177	8	19' - 8"	Str.
g7	1	8	9' - 3"	Str.
g8	1	8	3' - 11"	Str.
h1	2	6	31' - 1"	Str.
h2	1	6	32' - 6"	Str.
h3	2	6	31' - 1"	Str.
h4	1	6	32' - 6"	Str.
Abut. No. 1 Sleeper Slab Steel				
c1	75	5	34' - 3"	Str.
c3	3	5	13' - 8"	Str.
d1	186	4	7' - 9"	2
d2	79	4	6' - 5"	T2
d3	14	4	4' - 3"	2
d4	14	4	3' - 5"	2

Mk.	No.	Size	Length	Type
Abut. No. 3 Approach Slab Steel				
e5	39	4	32' - 4"	Str.
e6	60	6	32' - 4"	Str.
e7	24	5	11' - 5"	1A
g9	4	4	19' - 2"	Str.
g10	60	4	19' - 8"	Str.
g11	1	4	4' - 10"	Str.
g12	59	8	6' - 0"	Str.
g13	6	8	19' - 2"	Str.
g14	177	8	19' - 8"	Str.
g15	1	8	7' - 9"	Str.
g16	1	8	2' - 6"	Str.
h5	2	6	31' - 1"	Str.
h6	1	6	32' - 6"	Str.
h7	2	6	31' - 1"	Str.
h8	1	6	32' - 6"	Str.
Abut. No. 3 Sleeper Slab Steel				
c2	75	5	34' - 4"	Str.
c3	3	5	13' - 8"	Str.
d1	188	4	7' - 9"	2
d2	80	4	6' - 5"	T2
d3	14	4	4' - 3"	2
d4	14	4	3' - 5"	2

Mk.	No.	Size	Length	Type
Barrier Steel				
b20	4	4	19' - 2"	Str.
b21	4	4	19' - 8"	Str.
c21	136	5	6' - 1"	T1A
c25	80	5	5' - 5"	S11
c26	12	5	4' - 10"	S11
c27	12	5	4' - 2"	S11
c28	12	5	3' - 6"	S11
c29	12	5	2' - 10"	S11
c30	8	5	2' - 2"	S11
c31	4	5	5' - 10"	T1A
c32	4	5	5' - 7"	T1A
c33	4	5	5' - 4"	T1A
c34	4	5	5' - 1"	T1A
c35	4	5	4' - 10"	T1A
c36	4	5	4' - 7"	T1A
d8	32	4	19' - 8"	Str.
d10	8	4	19' - 3"	Str.
d11	8	4	5' - 8"	Str.
d12	8	4	10' - 0"	Str.
d13	8	4	16' - 0"	Str.
Sleeper Slab - Barrier Steel				
b22	4	4	1' - 6"	Str.
c21	6	5	6' - 1"	T1A
c23	12	4	3' - 3"	17B
c25	6	5	5' - 5"	S11
d13	40	4	1' - 6"	Str.

Bending Details



NOTES:
All dimensions are out to out of bars.
All bars to be epoxy coated

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	407.4
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	150.4

1. 101.9 Cu. Yds. Concrete in Approach Slabs.
2. 30279 Lbs. Epoxy Coated Re-Steel in Approach Slabs.
3. 49.8 Cu. Yds. Concrete in Sleeper Slabs.
4. 6920 Lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
5. 20.4 Cu. Yds. Concrete in Approach Slab Barriers and Sleeper Slab Barriers.
6. 1890 Lbs. Epoxy Coated Re-Steel in Approach Slab Barriers and Sleeper Slab Barriers.
7. 30.6 Sq. Ft. 6 Mil Polyethylene Sheeting.
8. 616 Sq. Ft. M6 Concrete

Items 1 thru 8 are approximate quantities contained in the above bid items and are for informaion only.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

APPROACH SLAB DETAILS (C)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

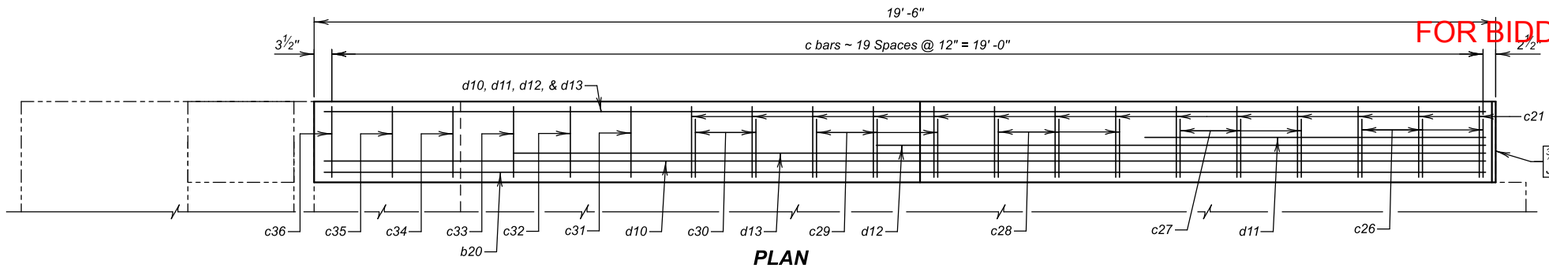
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

33 OF 49

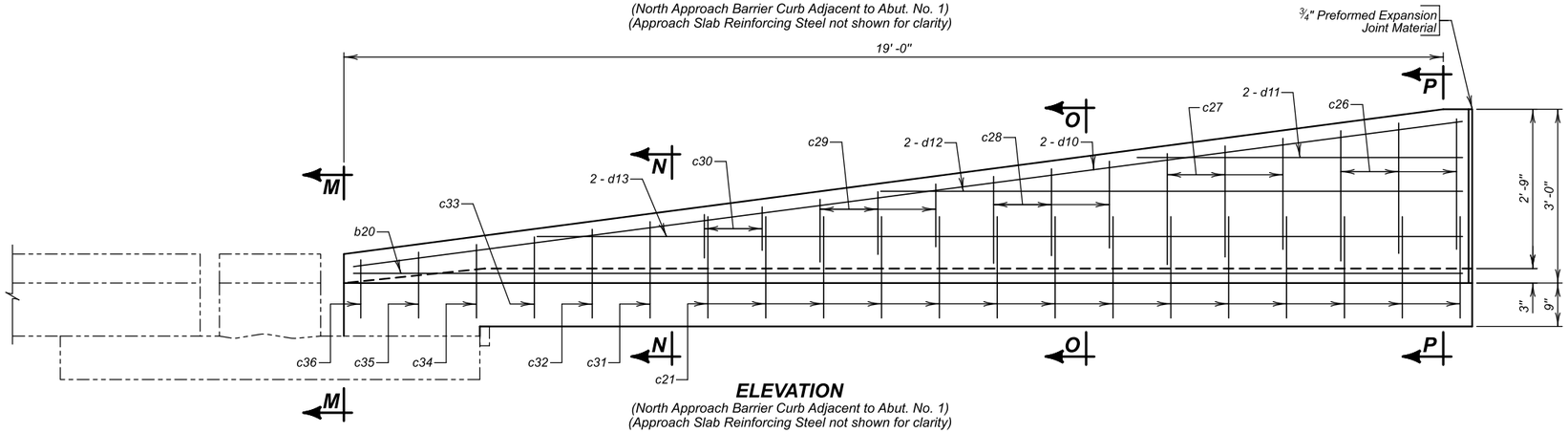
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

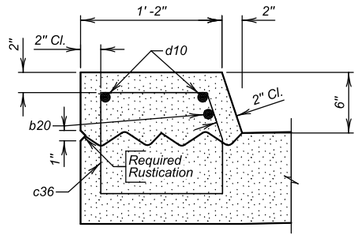
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E36	E130



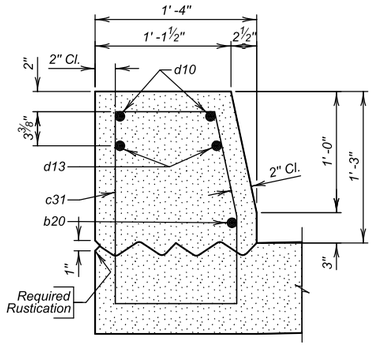
PLAN
(North Approach Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)



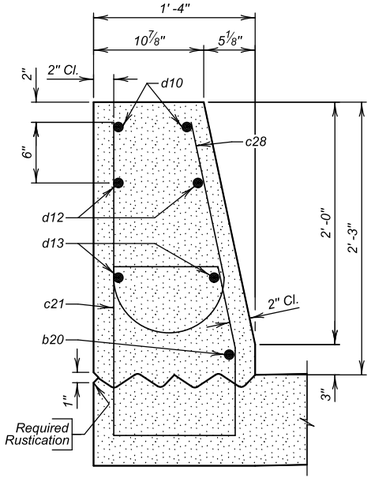
ELEVATION
(North Approach Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)



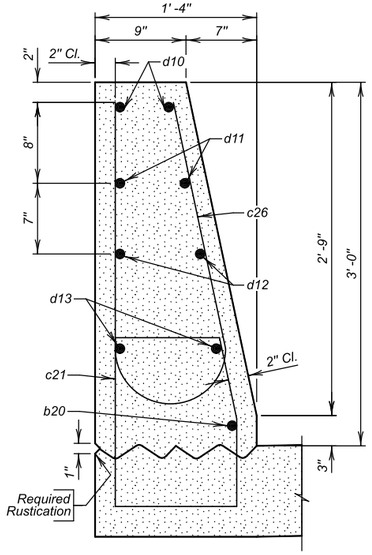
SECTION M - M



SECTION N - N



SECTION O - O



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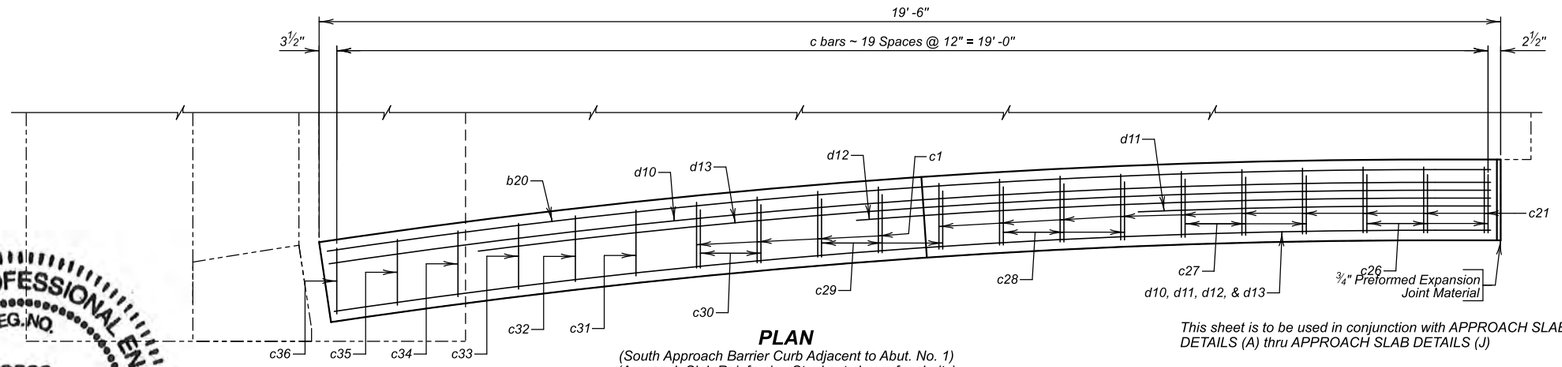
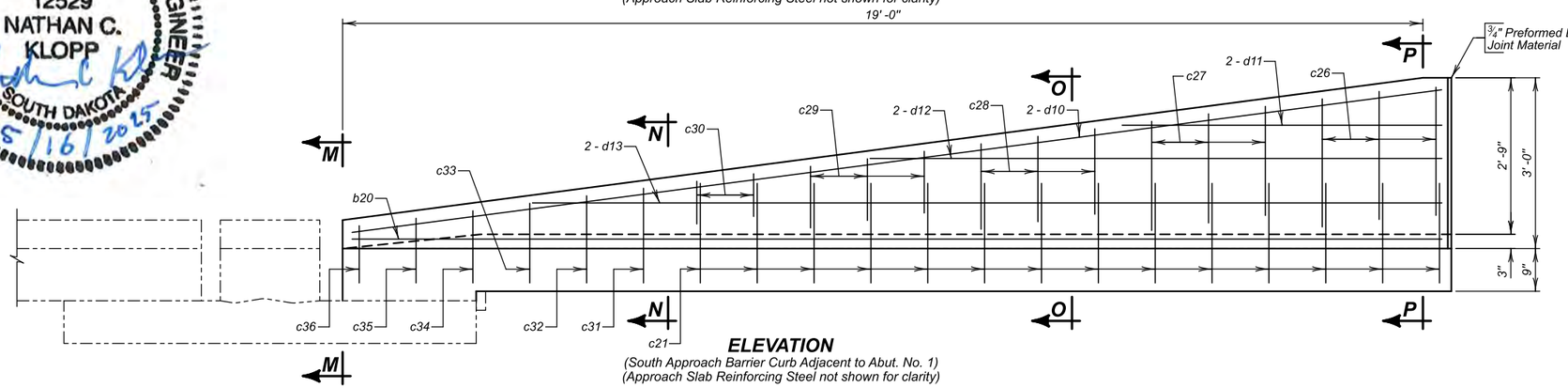


PLAN
(South Approach Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)



ELEVATION
(South Approach Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

APPROACH SLAB DETAILS (D)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

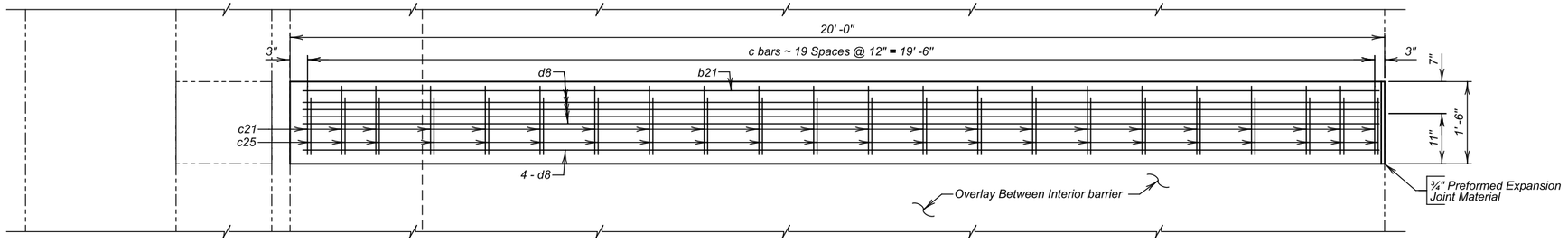
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

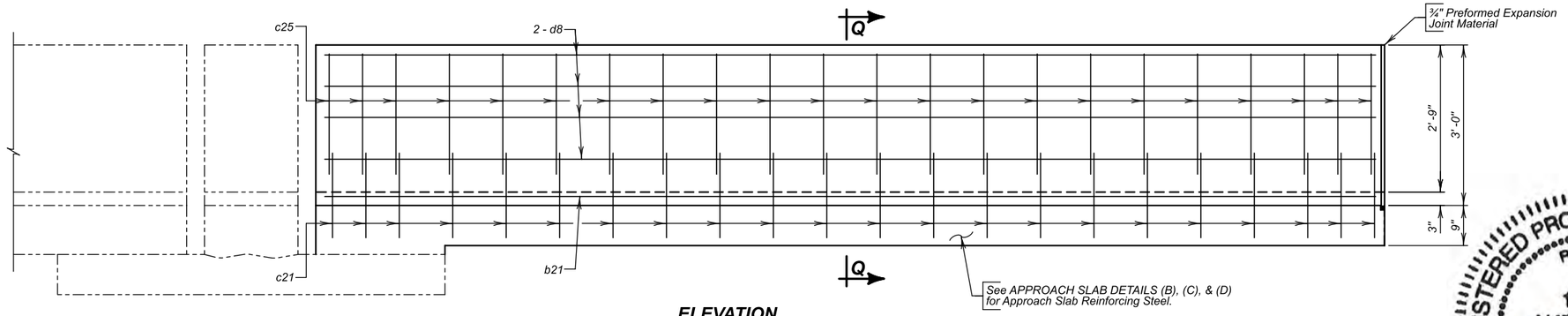
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_app.dgn

FOR BIDDING PURPOSES ONLY

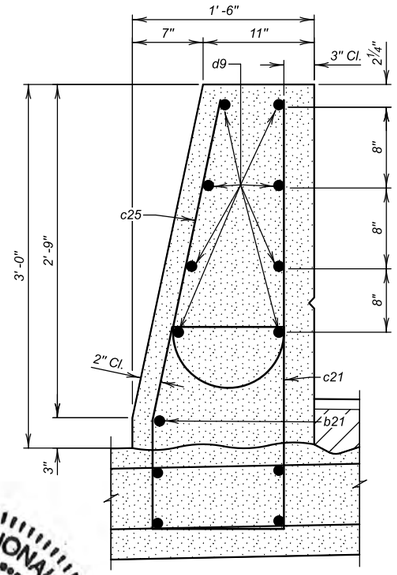
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E37	E130



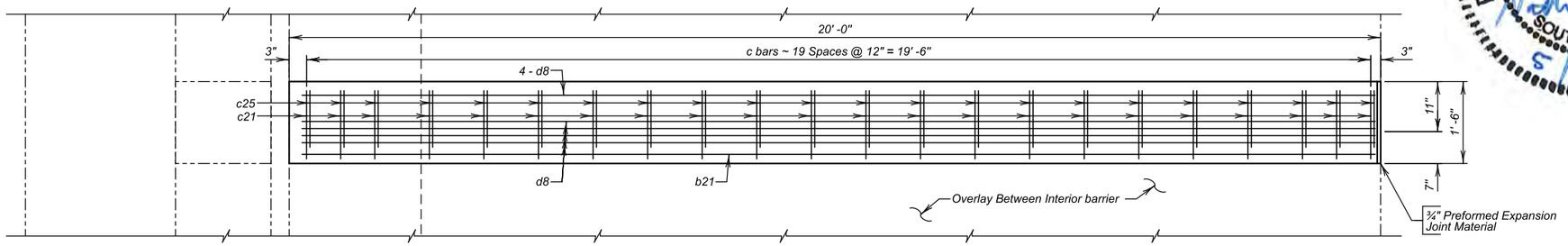
PLAN
(North Approach Pedestrian Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)



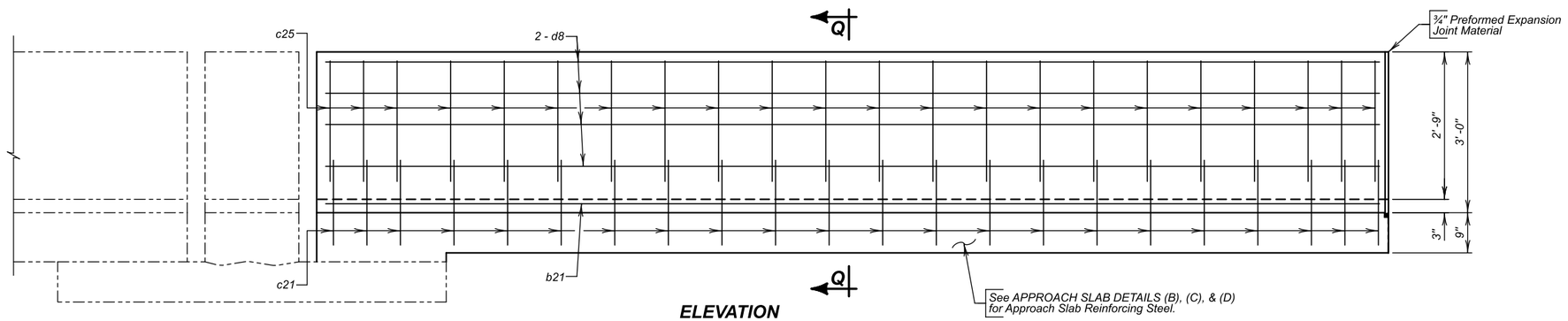
ELEVATION
(North Approach Pedestrian Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)



SECTION Q - Q



PLAN
(South Approach Pedestrian Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)



ELEVATION
(South Approach Pedestrian Barrier Curb Adjacent to Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

APPROACH SLAB DETAILS (E)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

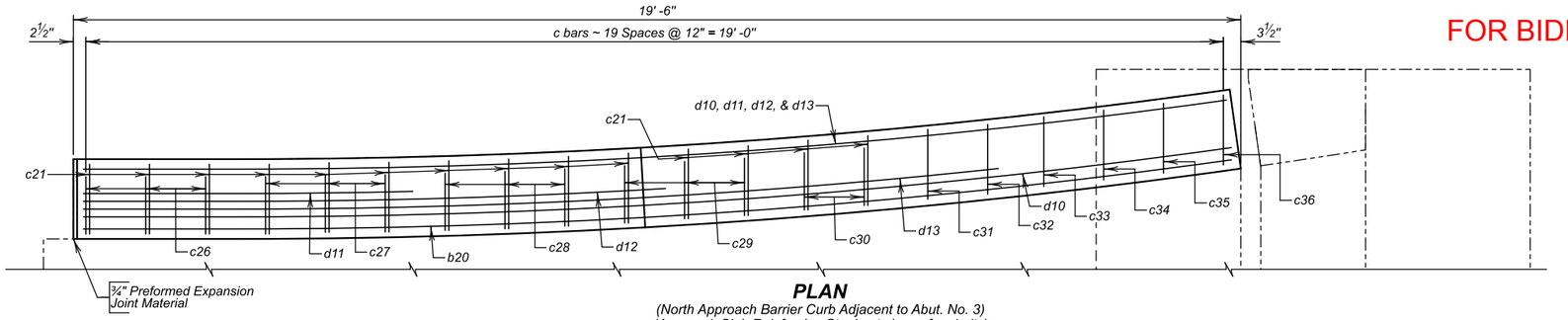
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

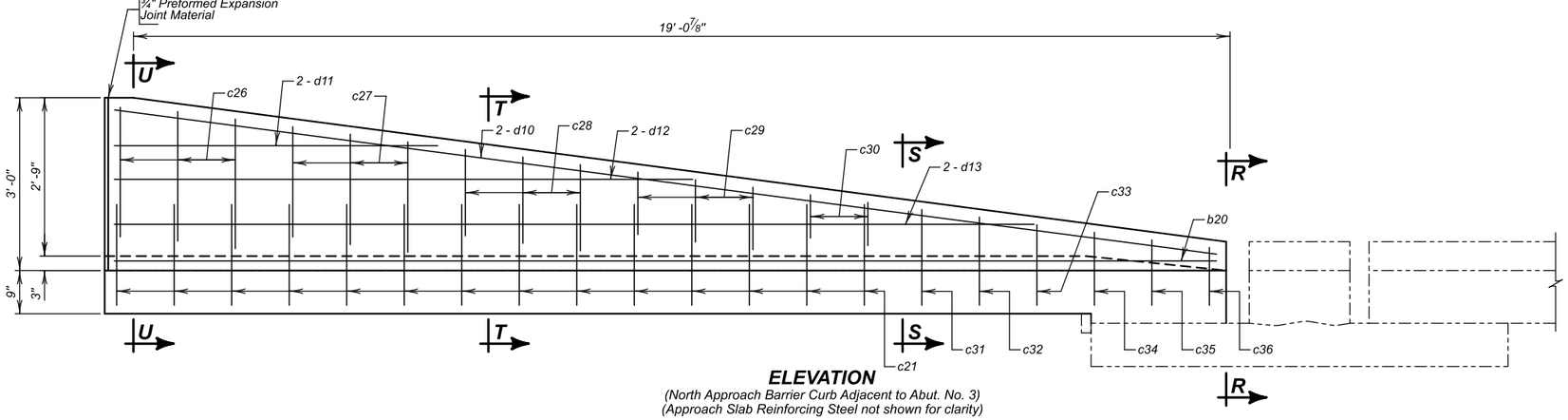
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_app.dgn

FOR BIDDING PURPOSES ONLY

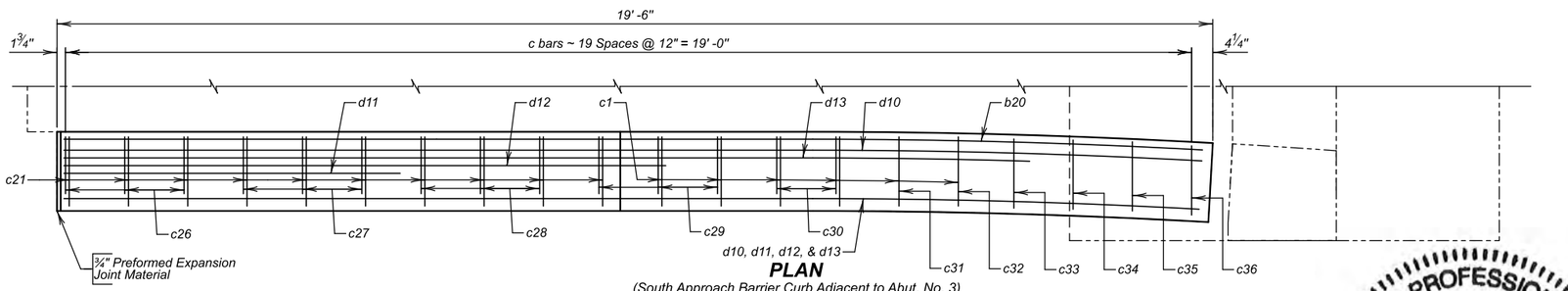
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E38	E130



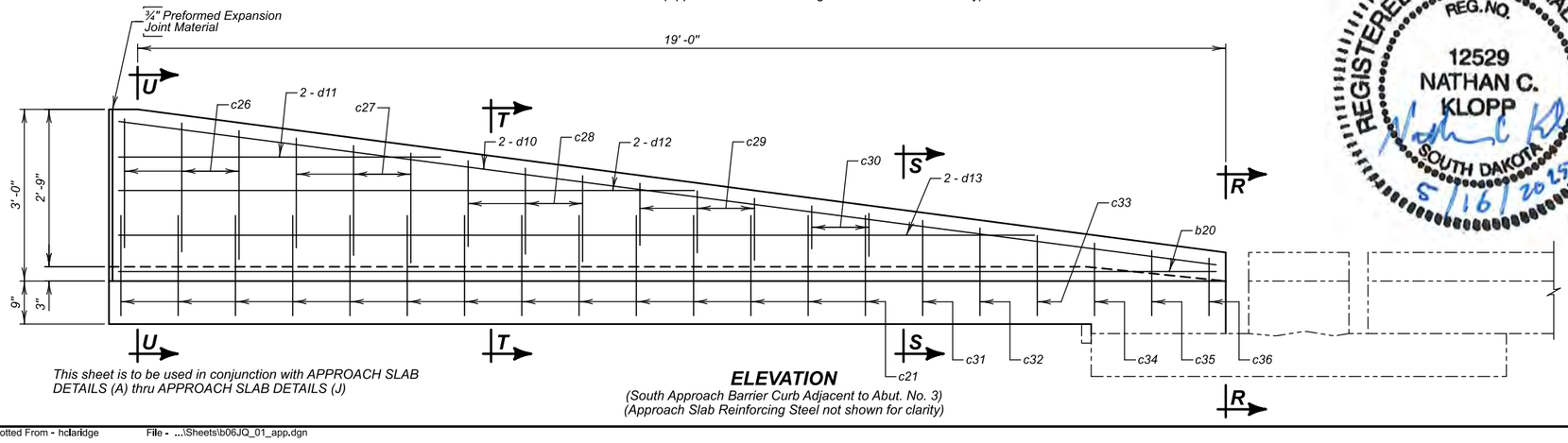
PLAN
(North Approach Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)



ELEVATION
(North Approach Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)

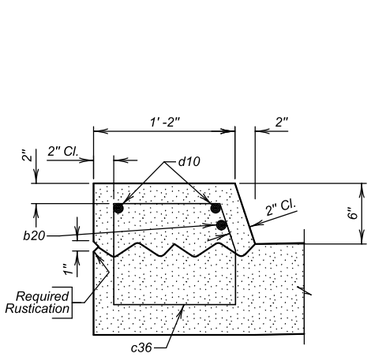


PLAN
(South Approach Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)

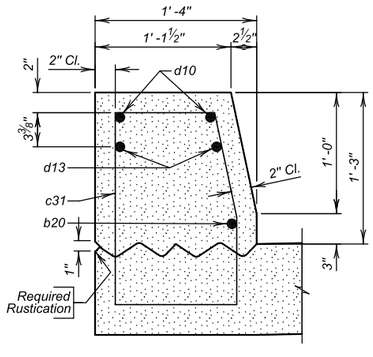


ELEVATION
(South Approach Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)

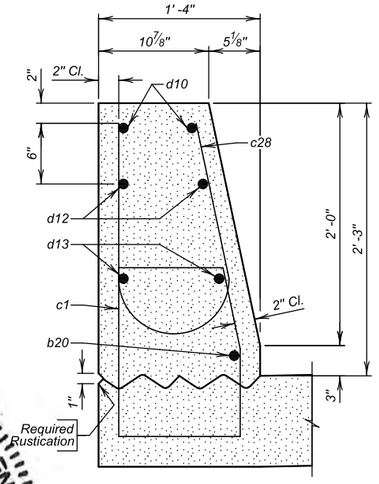
This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)



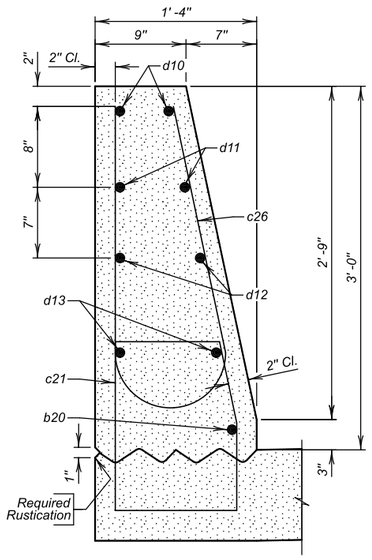
SECTION R - R



SECTION S - S



SECTION T - T



SECTION U - U

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

APPROACH SLAB DETAILS (F)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

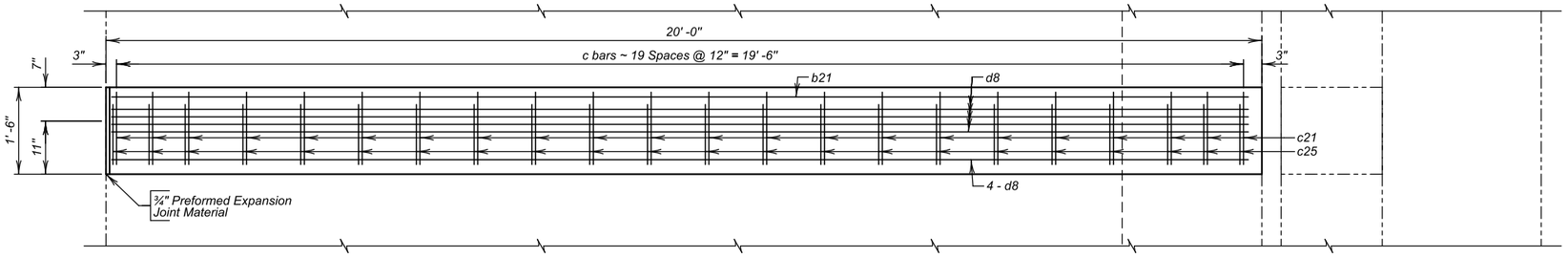
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

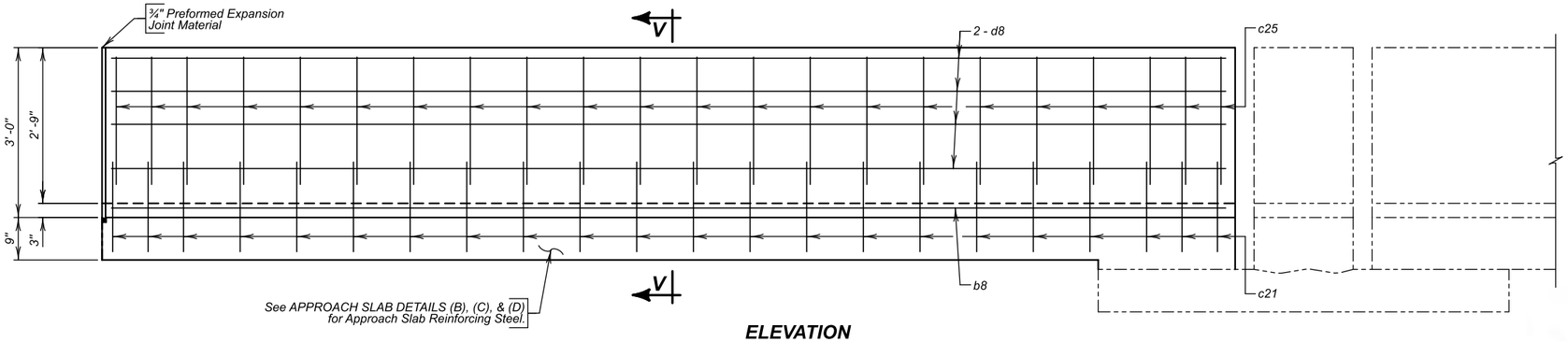
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_app.dgn

FOR BIDDING PURPOSES ONLY

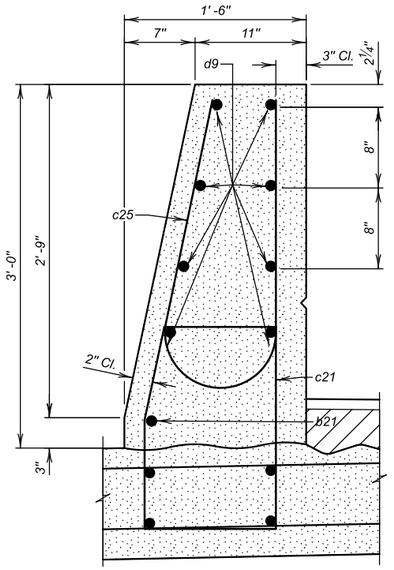
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E39	E130



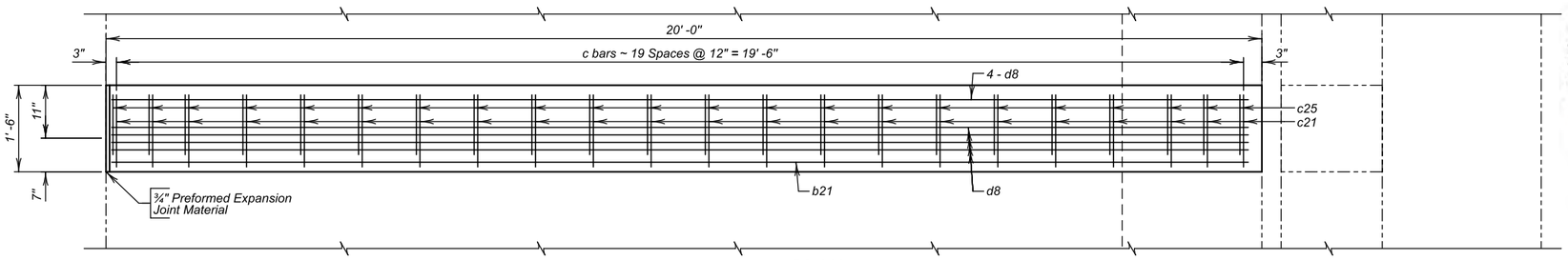
PLAN
(North Approach Pedestrian Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)



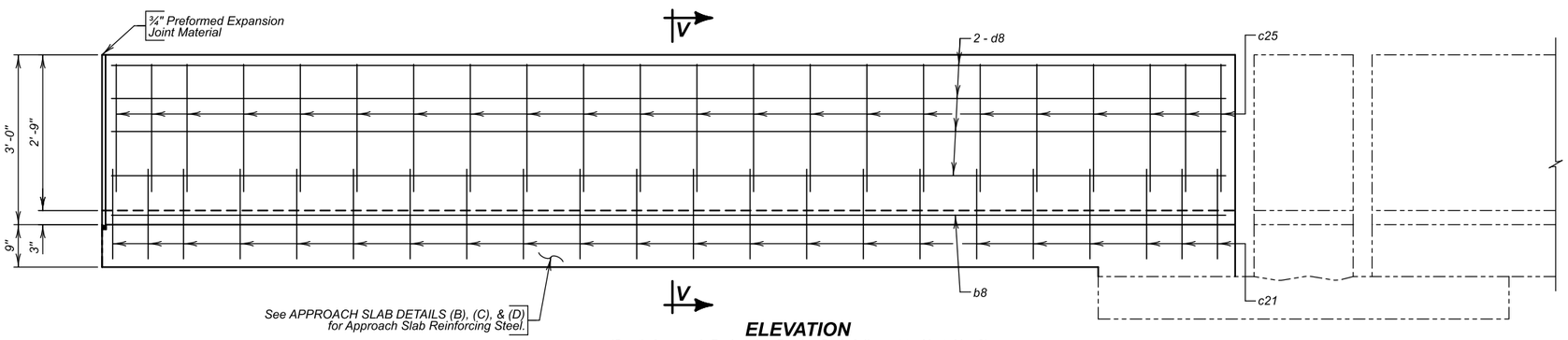
ELEVATION
(North Approach Pedestrian Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)



SECTION V - V



PLAN
(South Approach Pedestrian Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)



ELEVATION
(South Approach Pedestrian Barrier Curb Adjacent to Abut. No. 3)
(Approach Slab Reinforcing Steel not shown for clarity)

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

APPROACH SLAB DETAILS (G)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

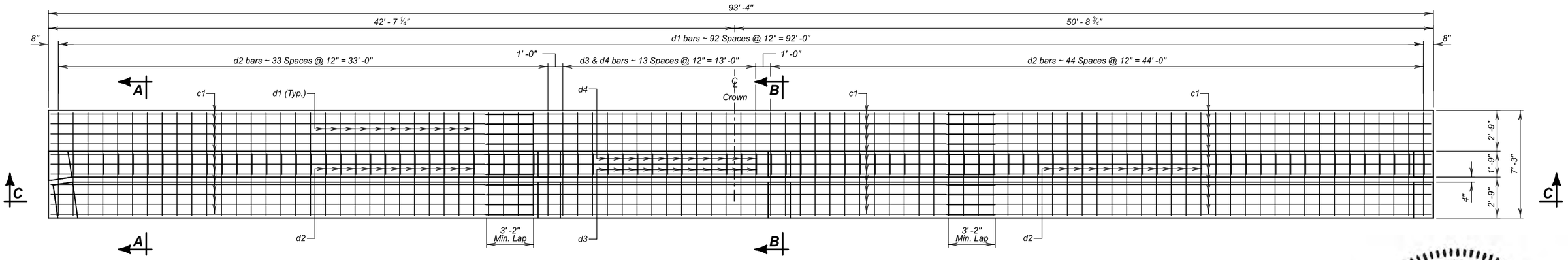
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

37 OF 49

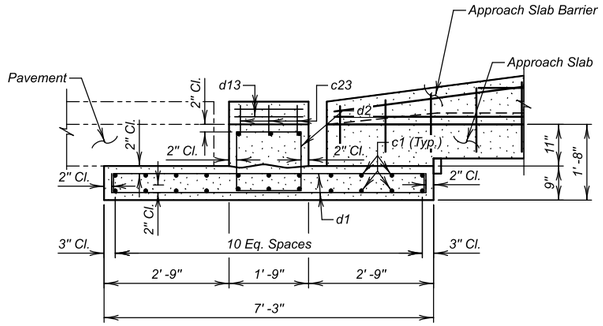
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

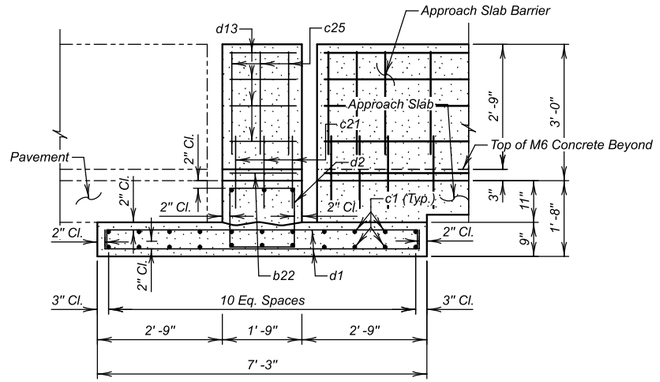
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E40	E130



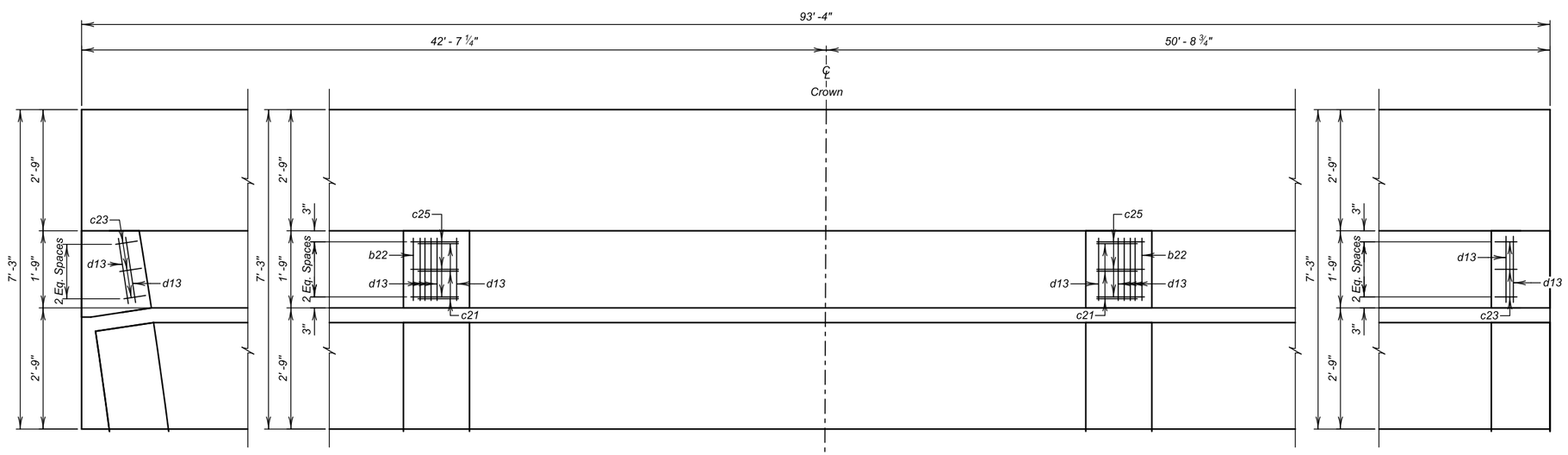
PLAN
(Abut. No. 1 Sleeper Slab)



SECTION A - A



SECTION B - B



PLAN
(Abut. No.1 Sleeper Slab) (Sleeper Slab Steel Not Shown for Clarity)

APPROACH SLAB DETAILS (H)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

38 OF 49

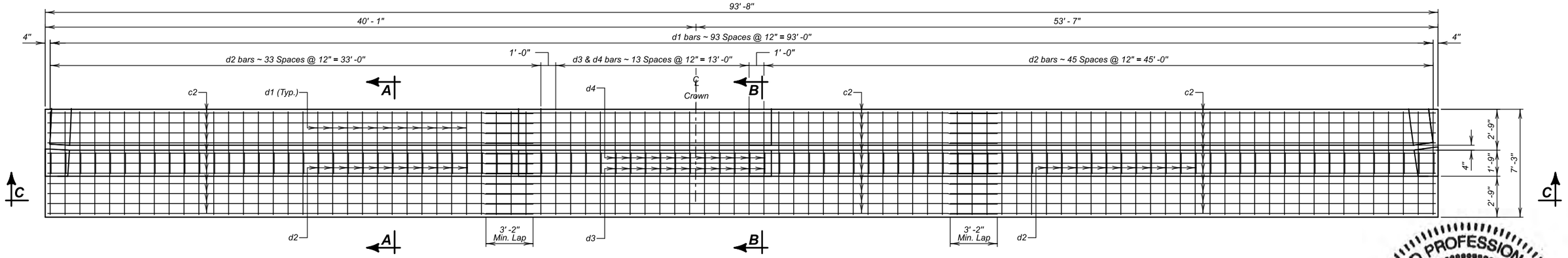
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

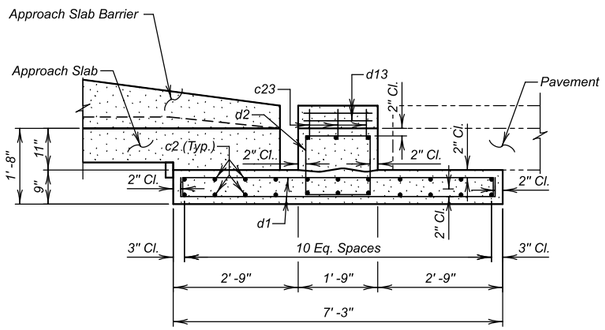
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

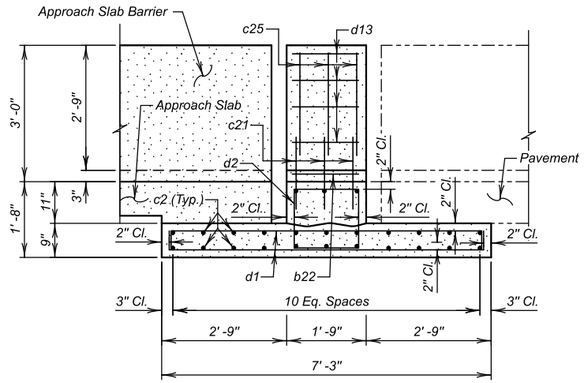
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E41	E130



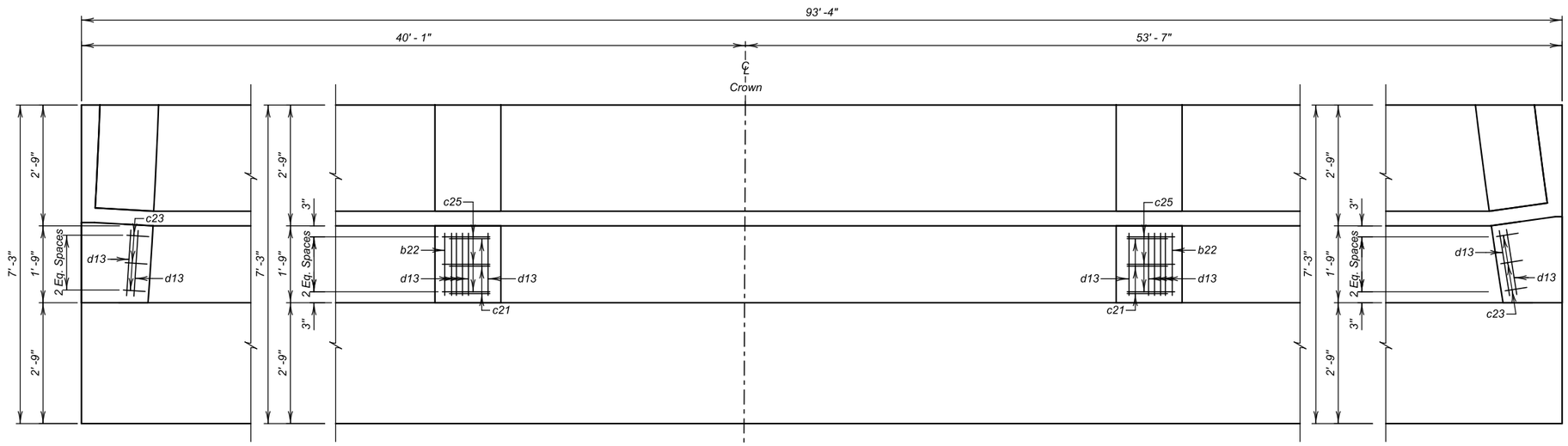
PLAN
(Abut. No. 3 Sleeper Slab)



SECTION A - A



SECTION B - B



PLAN
(Abut. No. 3 Sleeper Slab) (Sleeper Slab Steel Not Shown for Clarity)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

APPROACH SLAB DETAILS (I)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

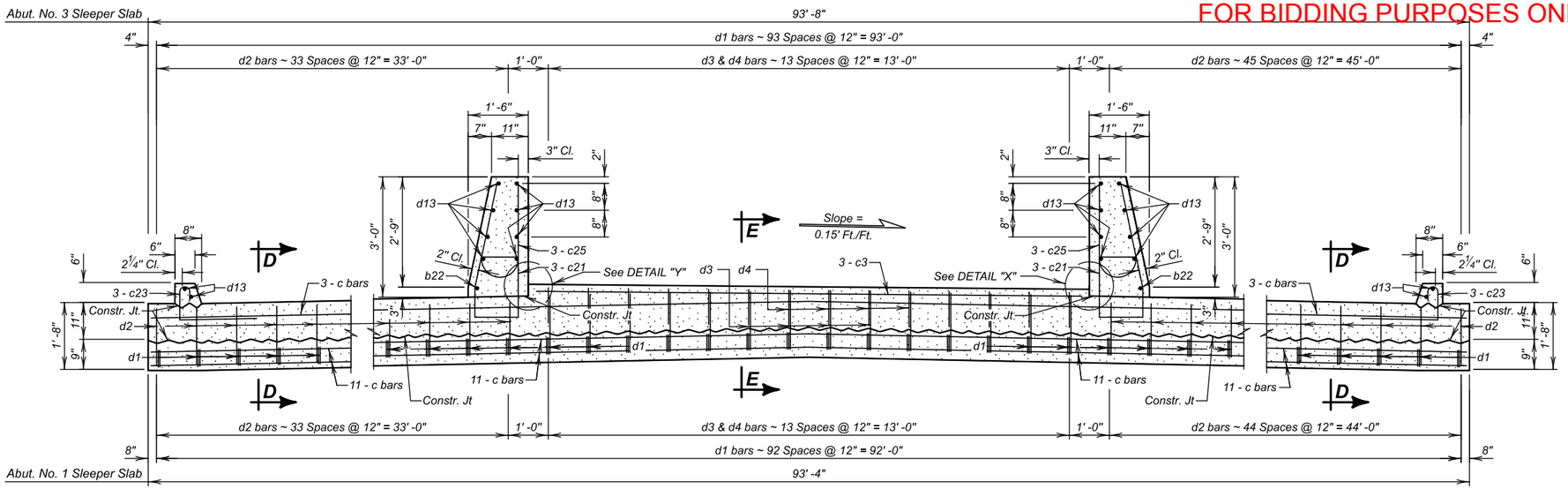
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

39 OF 49

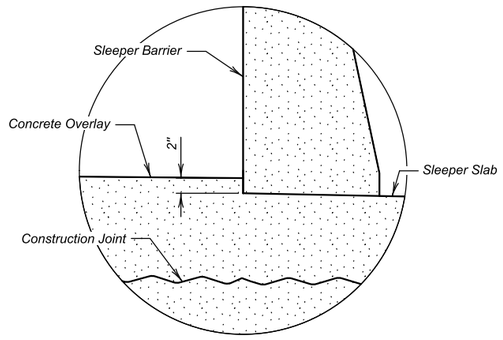
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

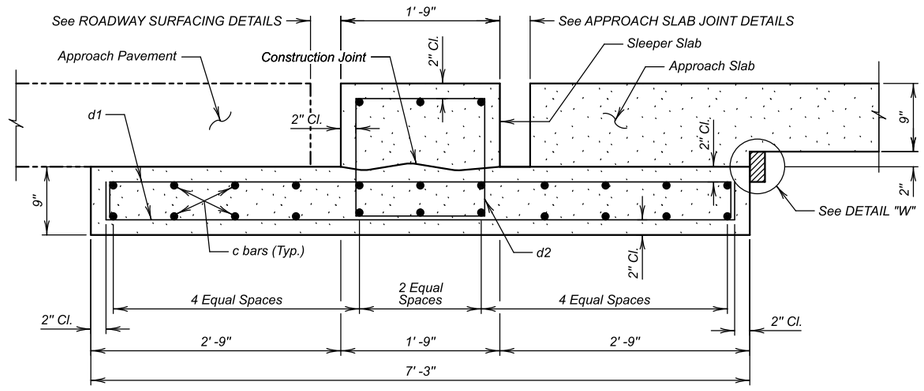
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E42	E130



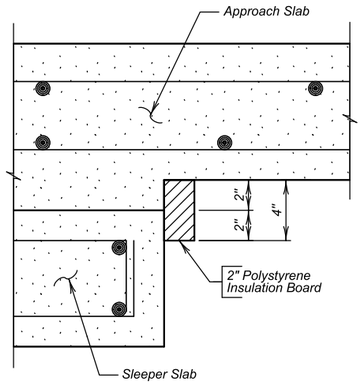
SECTION C - C



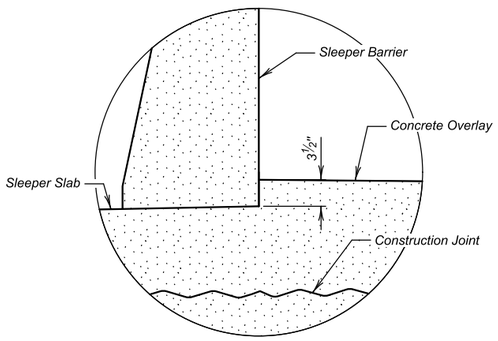
DETAIL "X"
(Re-Steel not shown for clarity)



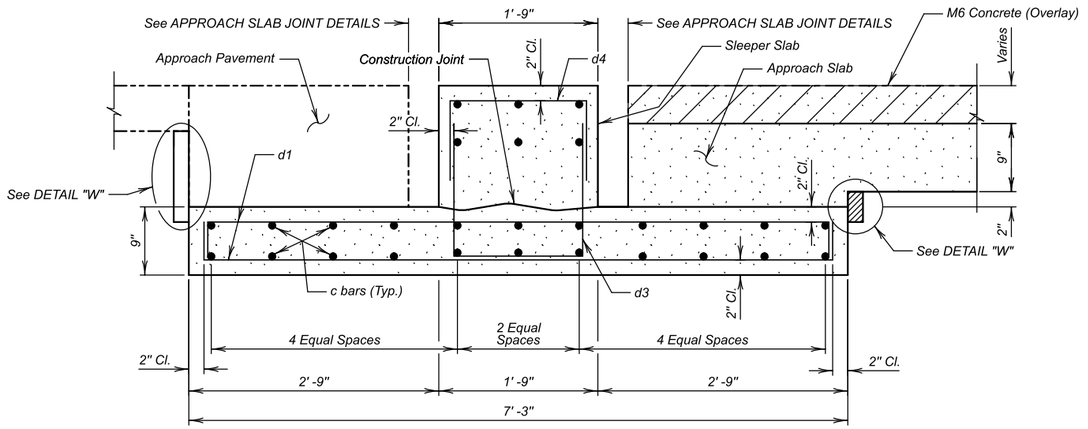
SECTION D - D



DETAIL "W"



DETAIL "Y"
(Re-Steel not shown for clarity)



SECTION E - E

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (A) thru APPROACH SLAB DETAILS (J)

APPROACH SLAB DETAILS (J)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

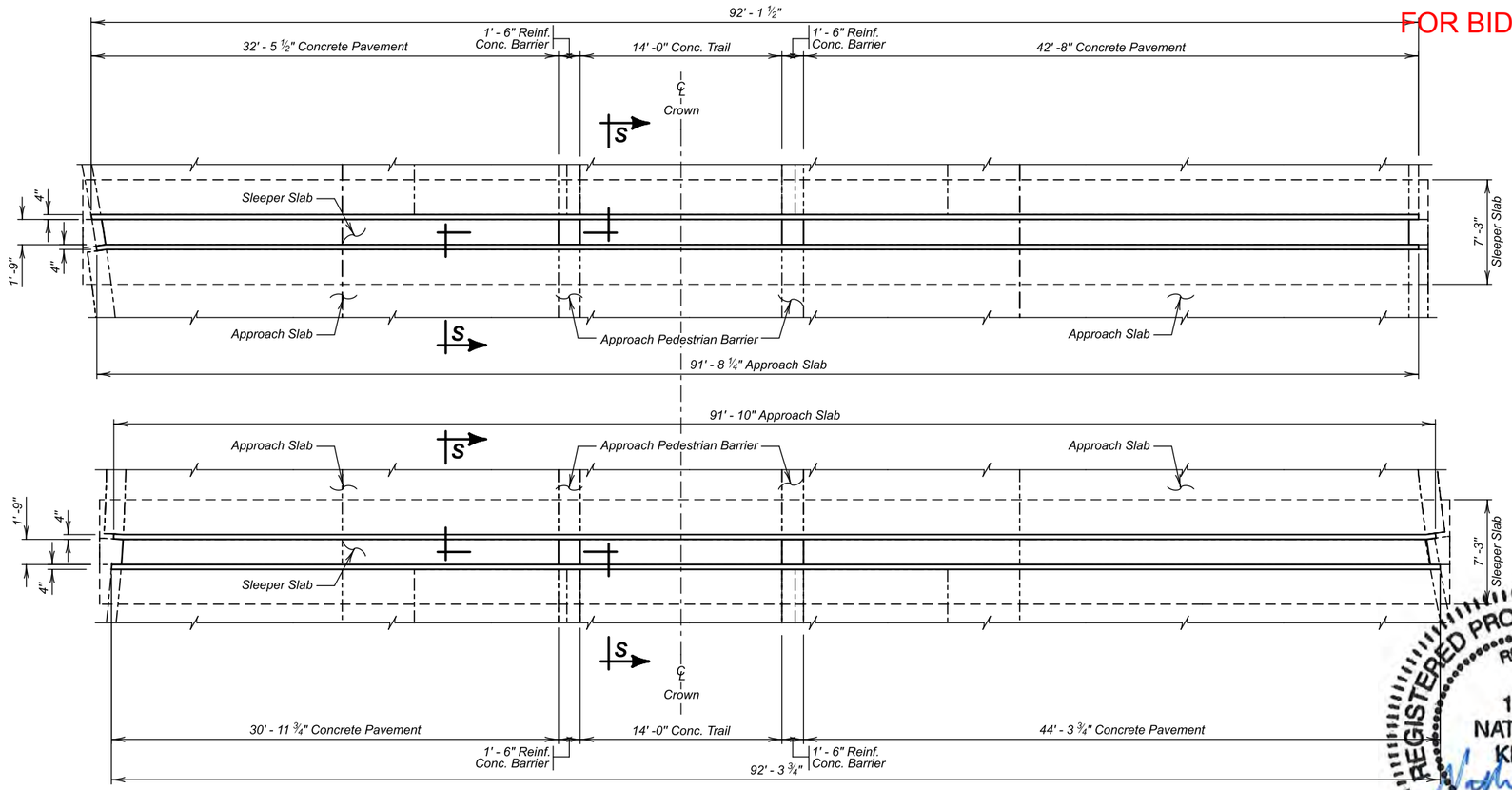
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

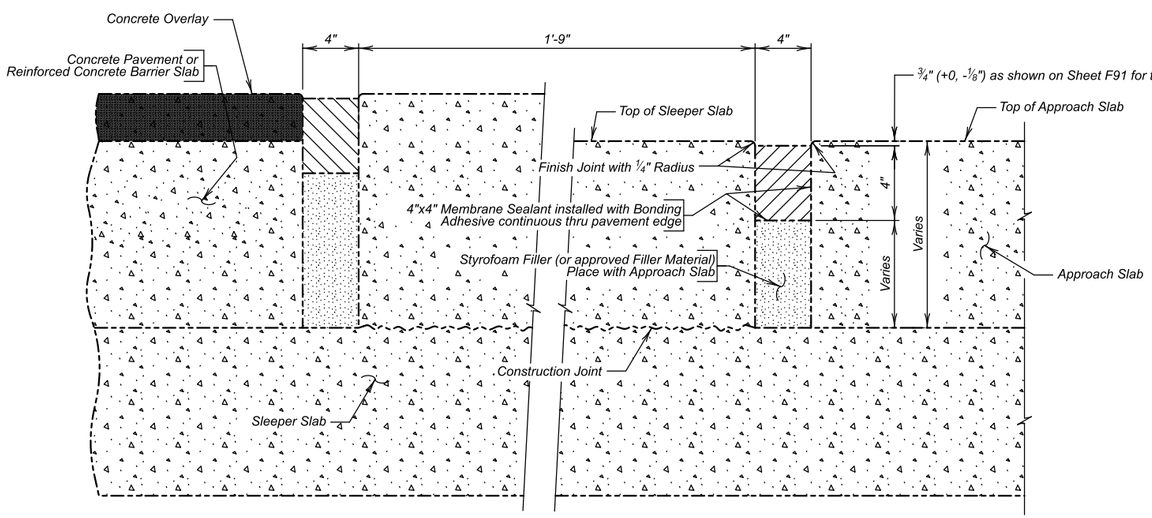
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_app.dgn

FOR BIDDING PURPOSES ONLY

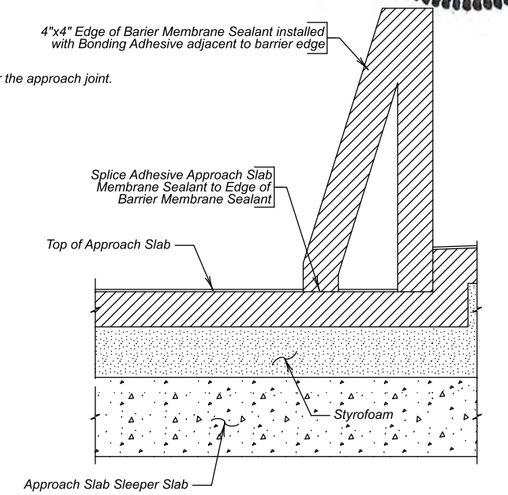
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E43	E130



PLAN



SECTION S - S



TYPICAL BARRIER JOINT

GENERAL NOTES

1. The Membrane Sealant will be on the approved product list for Membrane Sealant Expansion Joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer, however, in no case will the precompressed dimension exceed 75% of the joint opening width. The foam sealant will be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
3. The membrane sealant will provide a water tight seal throughout a joint movement range of+ 25% (minimum) from the specified joint opening dimension.
4. The membrane sealant will be supplied in pieces a minimum of 5 feet in length. The foam sealant will be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
6. Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
7. If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
8. The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40°F.
9. A technical representative of the membrane sealant manufacturer will be present at the jobsite during installation. The technical representative will be knowledgeable in the correct procedures for the preparation and installation of the joint material to ensure the Contractor installs the joint to the manufacturers' recommendations.
10. Surfaces that will be in contact with the membrane sealant will be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the surface. At a minimum, two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding will not be permitted.
11. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface will be air blasted. The air compressor used for joint cleaning will be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent surfaces must be dry and clean. The contact surfaces for the joint will be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
12. Individual spliced sections will be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer will submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
13. Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
14. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specification.

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	184.5

APPROACH SLAB JOINT DETAILS
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

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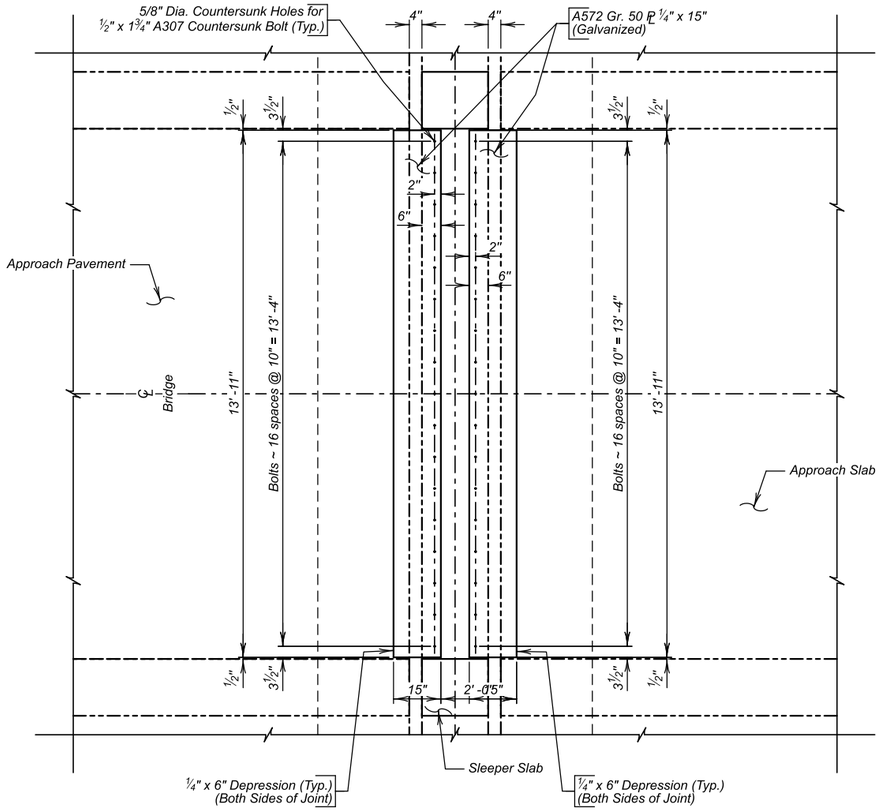
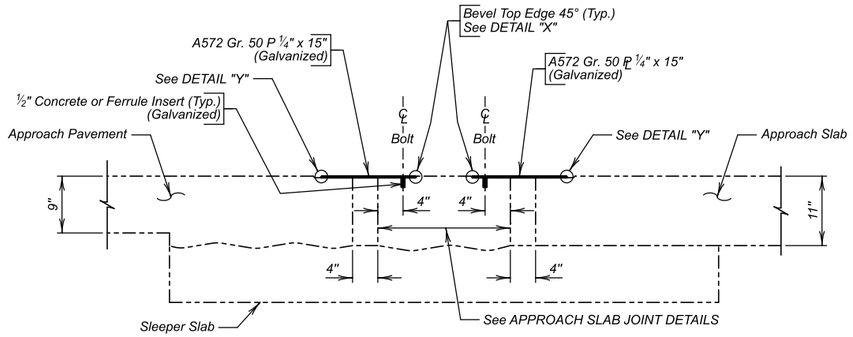
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E44	E130



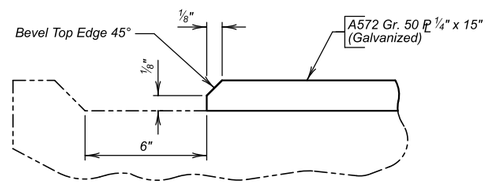
PLAN

(West Approach Slab Pedestrian Zone Cover Plates)
(East Appraoch Slab Pedestrian Zone Cover Plates are Similar)

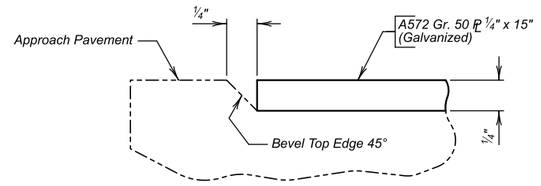


ELEVATION

(West Approach Slab Pedestrian Zone Cover Plates)
(East Appraoch Slab Pedestrian Zone Cover Plates are Similar)



DETAIL "X"



DETAIL "Y"

PEDESTRIAN ZONE COVER PLATE DETAILS
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

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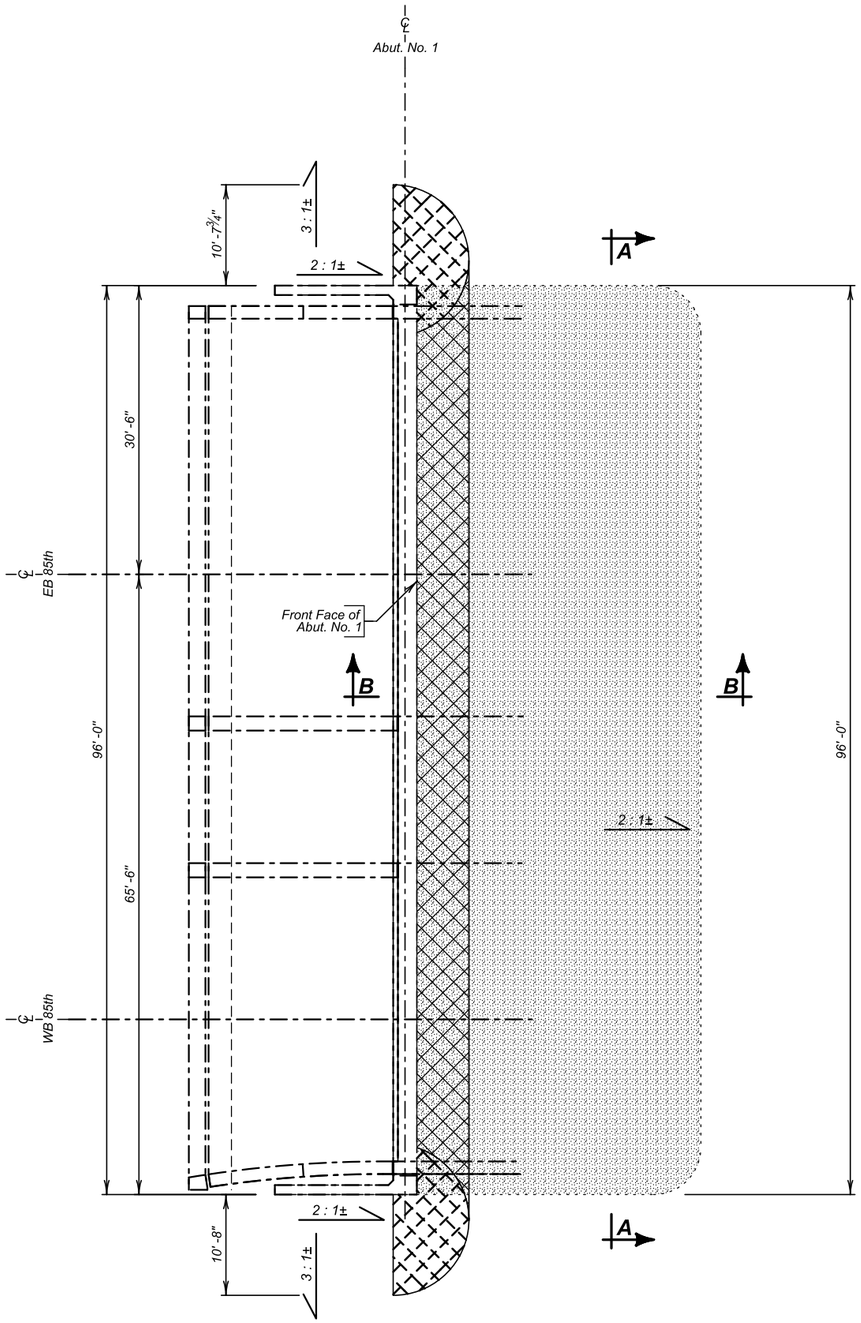
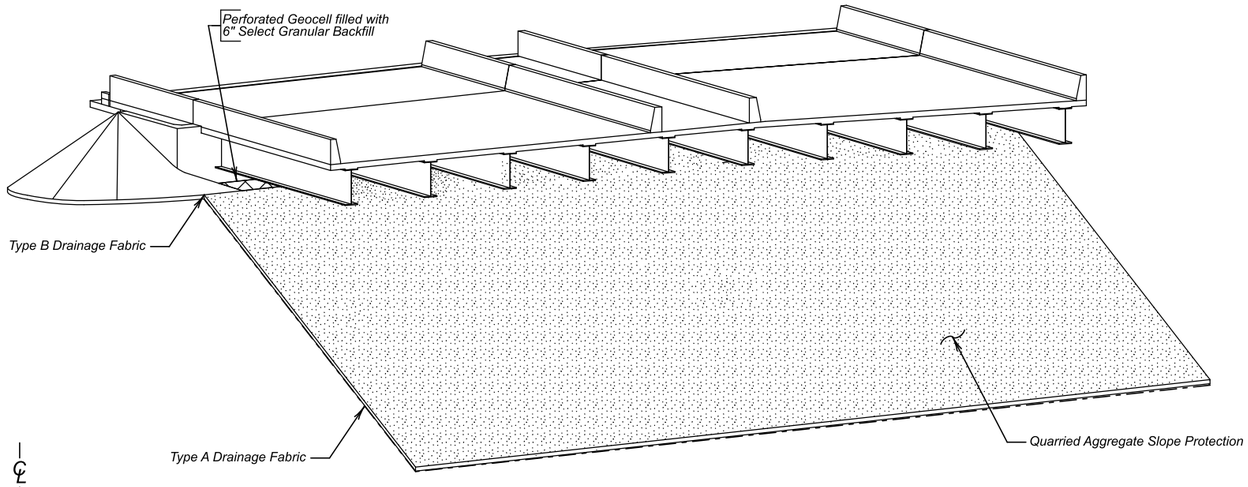
FOR BIDDING PURPOSES ONLY

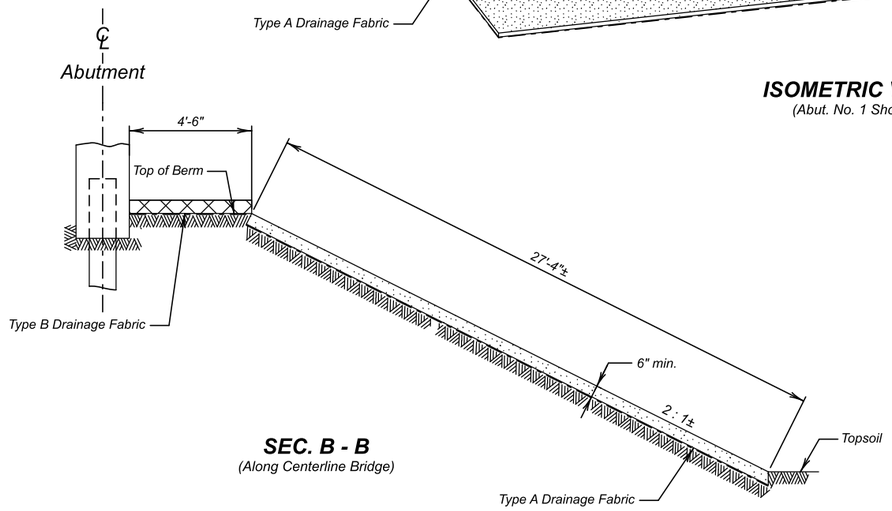
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E45	E130



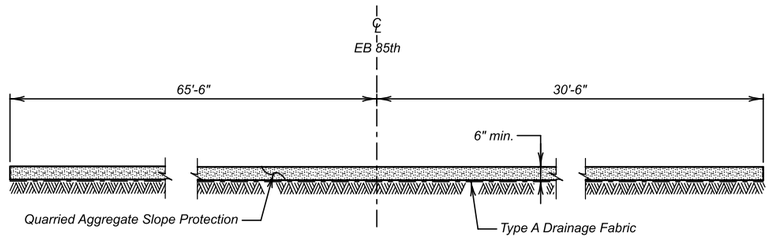
PLAN
(Shown adjacent to Abut. No. 1
Abut. No. 3 similar by opposite hand)



ISOMETRIC VIEW
(Abut. No. 1 Shown)



SEC. B - B
(Along Centerline Bridge)



SEC. A - A
(Abut. No. 1 Shown)

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Bridge Berm Slope Protection, Quarried Aggregate	Sq. Yd.	583
⏍	Select Granular Backfill	Ton	37.0
☆	Perforated Geocell	Sq. Ft.	1,056
	Type A Drainage Fabric	Sq. Yd.	584
	Type B Drainage Fabric	Sq. Yd.	118

☆ *See PERFORATED GEOCELL notes for payment information.*

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

SLOPE PROTECTION DETAILS
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS with 14'-0" PEDESTRIAN TRAIL
85TH STREET OVER I-29
STA. 318+79.74EB to STA. 321+55.24EB
STR. NO. 42-065-020

0° SKEW
SEC. 18/19 - T100N - R50W
EM 0292(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

43 OF 49

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

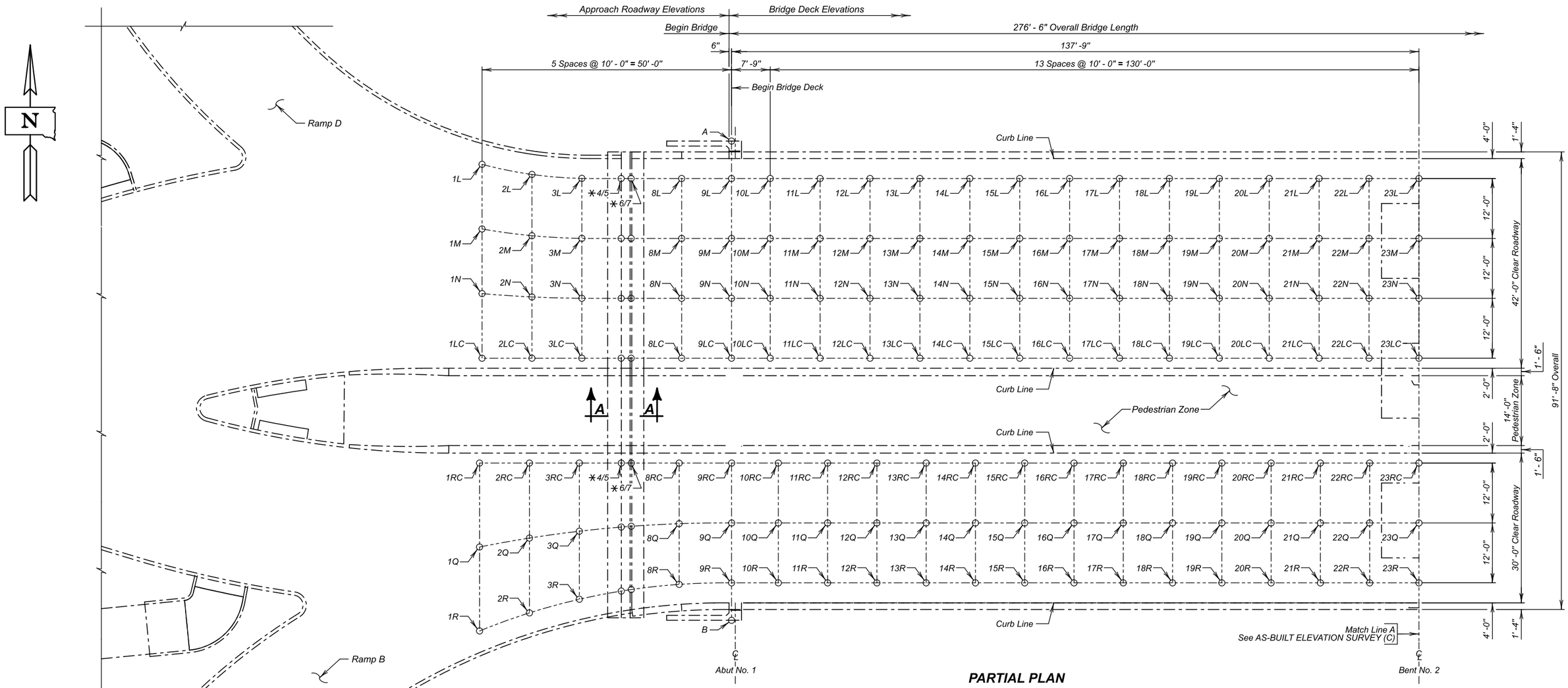
Plotted From - hclaridge File - ...\85th St\Sheets\b06JQ_01_sp.dgn

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT

PROJECT	SHEET NO.	TOTAL SHEETS
EM 0292(88)73 IM 2292(104)0	E46	E130

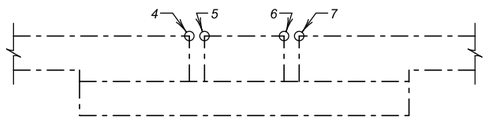


PARTIAL PLAN

Benchmark Description:

B.M #____
Location Description _____
Elevation _____

✳ *Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are shown in SECTION A - A.*



SECTION A - A

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

AS-BUILT ELEVATION SURVEY (A)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_asb.dgn Plotting Date: 5/16/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E47	E130

TABLE OF ELEVATIONS - APPROACH ROADWAY

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
1L		1M		1N		1LC		1RC		1Q		1R	
2L		2M		2N		2LC		2RC		2Q		2R	
3L		3M		3N		3LC		3RC		3Q		3R	
4L		4M		4N		4LC		4RC		4Q		4R	
5L		5M		5N		5LC		5RC		5Q		5R	
6L		6M		6N		6LC		6RC		6Q		6R	
7L		7M		7N		7LC		7RC		7Q		7R	
8L		8M		8N		8LC		8RC		8Q		8R	

TABLE OF ELEVATIONS - BRIDGE DECK

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
9L		9M		9N		9LC		9RC		9Q		9R	
10L		10M		10N		10LC		10RC		10Q		10R	
11L		11M		11N		11LC		11RC		11Q		11R	
12L		12M		12N		12LC		12RC		12Q		12R	
13L		13M		13N		13LC		13RC		13Q		13R	
14L		14M		14N		14LC		14RC		14Q		14R	
15L		15M		15N		15LC		15RC		15Q		15R	
16L		16M		16N		16LC		16RC		16Q		16R	
17L		17M		17N		17LC		17RC		17Q		17R	
18L		18M		18N		18LC		18RC		18Q		18R	
19L		19M		19N		19LC		19RC		19Q		19R	
20L		20M		20N		20LC		20RC		20Q		20R	
21L		21M		21N		21LC		21RC		21Q		21R	
22L		22M		22N		22LC		22RC		22Q		22R	
23L		23M		23N		23LC		23RC		23Q		23R	

BRIDGE ENDS	
Location	Elevation
A	
B	

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

AS-BUILT ELEVATION SURVEY (B)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

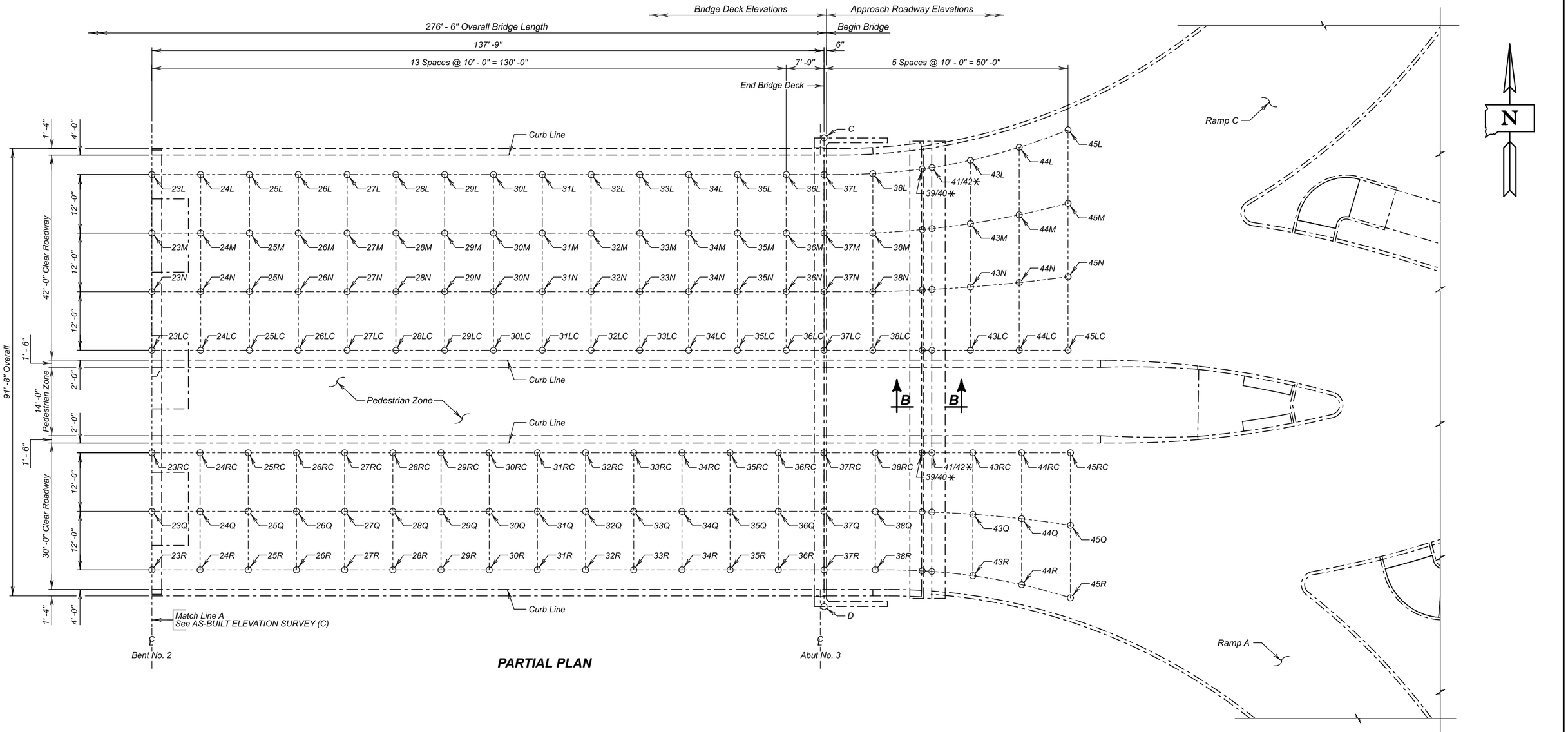
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_asb.dgn Plotting Date: 5/16/2025

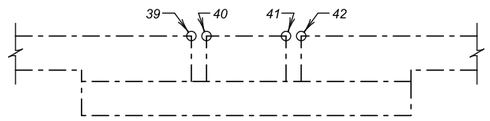
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E48	E130



PARTIAL PLAN



SECTION B - B

Benchmark Decription:

B.M #____
Location Decription _____
Elevation _____

** Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are shown in SECTION A - A.*

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

AS-BUILT ELEVATION SURVEY (C)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_01_asb.dgn Plotting Date: 5/16/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E49	E130

TABLE OF ELEVATIONS - BRIDGE DECK

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
23L		23M		23N		23LC		23RC		23Q		23R	
24L		24M		24N		24LC		24RC		24Q		24R	
25L		25M		25N		25LC		25RC		25Q		25R	
26L		26M		26N		26LC		26RC		26Q		26R	
27L		27M		27N		27LC		27RC		27Q		27R	
28L		28M		28N		28LC		28RC		28Q		28R	
29L		29M		29N		29LC		29RC		29Q		29R	
30L		30M		30N		30LC		30RC		30Q		30R	
31L		31M		31N		31LC		31RC		31Q		31R	
32L		32M		32N		32LC		32RC		32Q		32R	
33L		33M		33N		33LC		33RC		33Q		33R	
34L		34M		34N		34LC		34RC		34Q		34R	
35L		35M		35N		35LC		35RC		35Q		35R	
35L		36M		36N		36LC		36RC		36Q		36R	
37L		37M		37N		37LC		37RC		37Q		37R	

TABLE OF ELEVATIONS - APPROACH ROADWAY

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
38L		38M		38N		38LC		38RC		38Q		38R	
39L		39M		39N		39LC		39RC		39Q		39R	
40L		40M		40N		40LC		40RC		40Q		40R	
41L		41M		41N		41LC		41RC		41Q		41R	
42L		42M		42N		42LC		42RC		42Q		42R	
43L		43M		43N		43LC		43RC		43Q		43R	
44L		44M		44N		44LC		44RC		44Q		44R	
45L		45M		45N		45LC		45RC		45Q		45R	

BRIDGE ENDS	
Location	Elevation
C	
D	

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

AS-BUILT ELEVATION SURVEY (D)
FOR
276'-6" STEEL GIRDER BRIDGE

30'-0" & 42'-0" ROADWAYS — 0° SKEW
with 14'-0" PEDESTRIAN TRAIL — SEC. 18/19 - T100N - R50W
85TH STREET OVER I-29 — EM 0292(88)73
STA. 318+79.74EB to STA. 321+55.24EB — HL-93
STR. NO. 42-065-020

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
DKW	NCK	NCM	BRIDGE ENGINEER

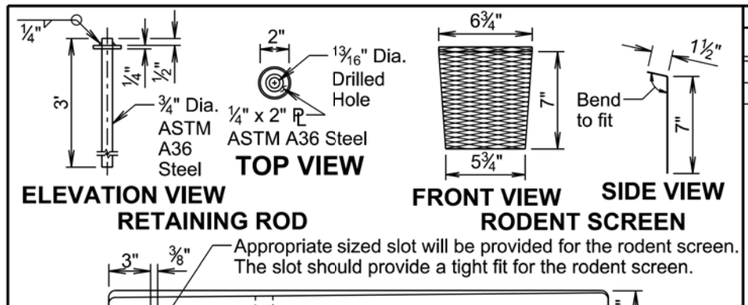
Plotted From - hclaridge File - ...\Sheets\b06JQ_01_asb.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E50	E130

Plotting Date: 06/26/2025

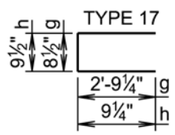
Revised Date: 06/26/2025
Initials: NCK

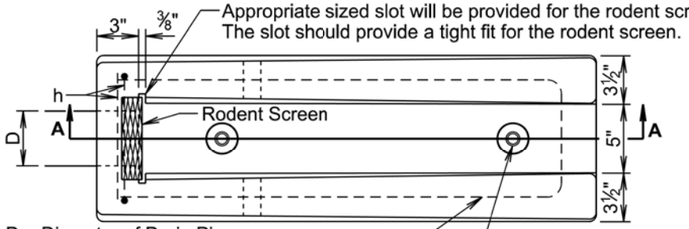


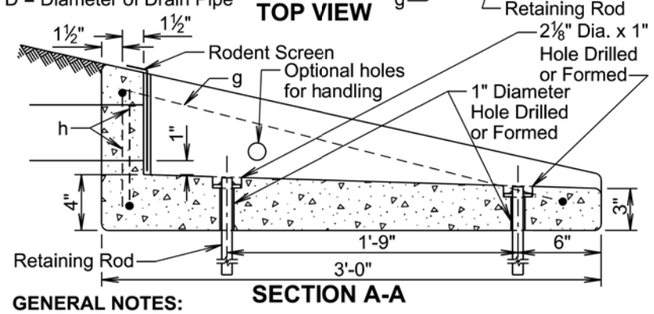
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

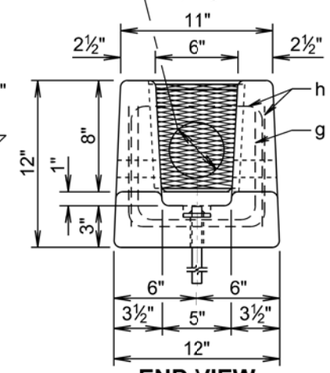
NOTE: All dimensions are out to out of bars.

Bending Details









GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

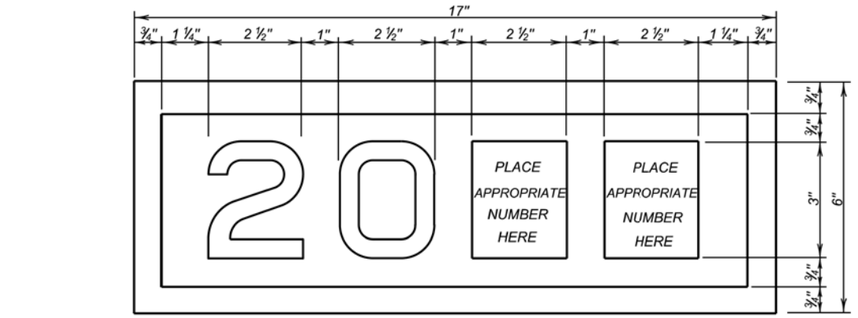
The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

November 19, 2021

Published Date: 2026	SDDOT	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50
			Sheet 1 of 1



YEAR PLATE DETAILS

GENERAL NOTES:

1. *Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.*

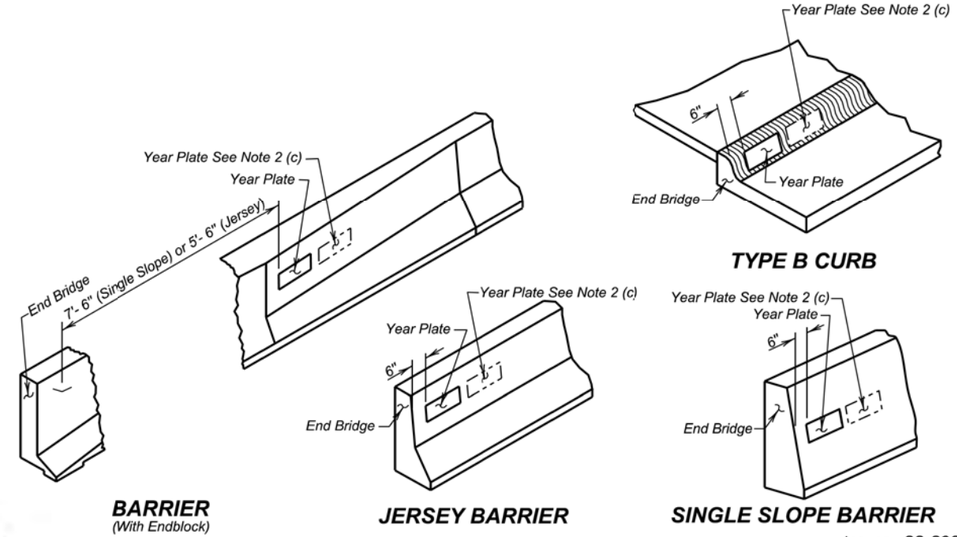
2. *Year plates will be located on structure(s) as follows:*

   a. *On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.*

   b. *On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.*

   c. *When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.*

3. *There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.*



January 22, 2021

Published Date: 2026	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

276'-6" STEEL GIRDER BRIDGE
STR. NO. 42-065-020
MAY 2025

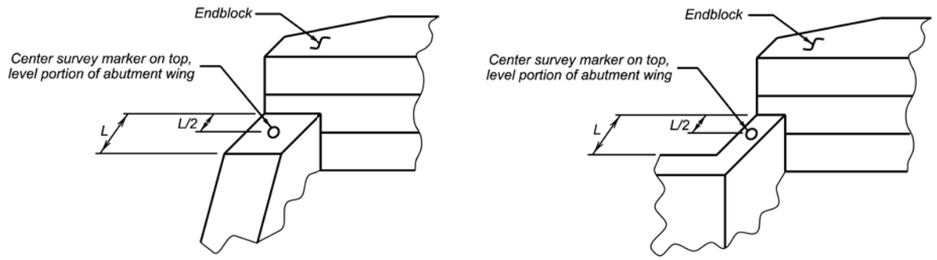
Plotted From - nmclaughlin File - ...\Sheets\b06JQ_01_std.dgn Plotting Date: 6/27/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E51	E130

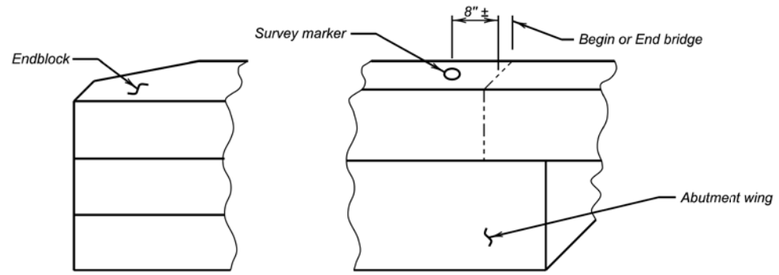
Plotting Date: 06/26/2025

Revised Date: 06/26/2025
Initials: NCK



ABUTMENT WITH "STRAIGHT" WINGS

ABUTMENT WITH "SWEPT BACK" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS

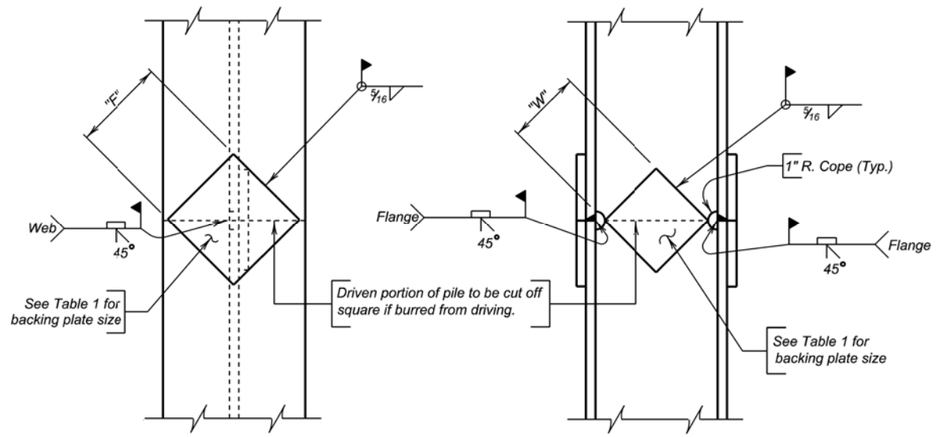
(Endblock on top of wings)

GENERAL NOTES:

1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
2. Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a ¾" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 ½" top diameter.
3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26,2012

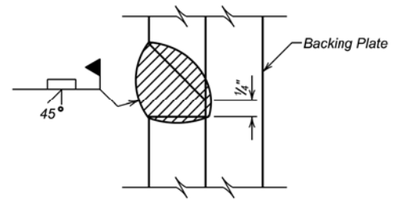
Published Date: 2026	SDDOT	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1



NOTE:

Prepare joint surfaces lower end of upper section on the ground and weld on backing plates; then place upper section on lower section and weld.

COMPLETE JOINT PENETRATION WELD DETAIL



GENERAL NOTES:

1. Steel for backing plates shall conform to ASTM A709 Grade 50.
2. Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
3. Welder must be certified and registered with the SDDOT.
4. Backing plate shall at a minimum be as thick as the web of the pile being spliced.
5. Web must be coped with 1 inch radius.
6. Submit Welding Procedure Specification (WPS) to Bridge Construction Engineer for approval prior to pile driving.

TABLE 1
(BACKING PLATES)

PILE	10"	12"	14"
"F" FLANGE	6 ½"	8"	10"
"W" WEB	4 ¾"	6 ¼"	7 ½"

December 23,2012

Published Date: 2026	SDDOT	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

276'-6" STEEL GIRDER BRIDGE
STR. NO. 42-065-020
MAY 2025

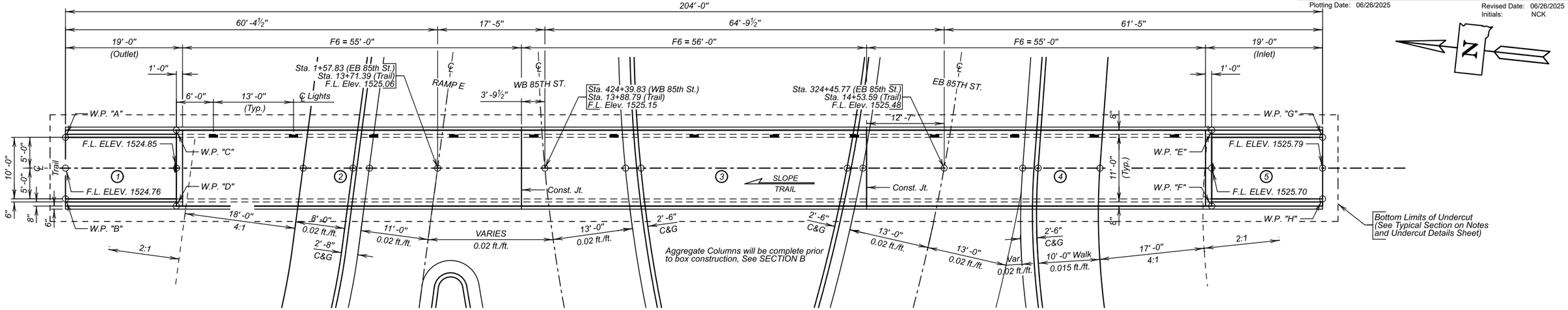
Plotted From - nmclaughlin File - ...\Sheets\b06JQ_01_std.dgn Plotting Date: 6/27/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

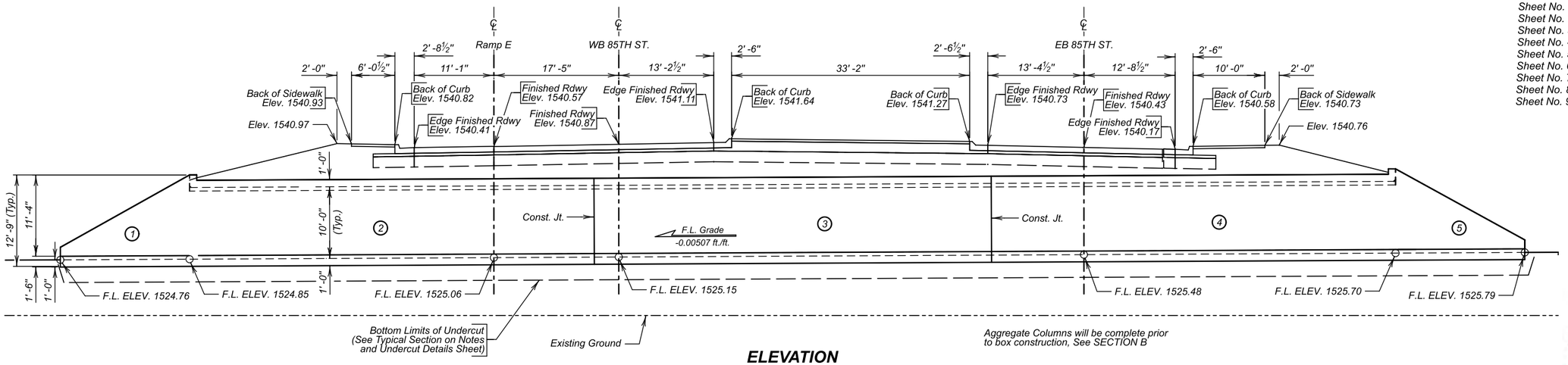
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E52	E130

Plotting Date: 06/26/2025
Revised Date: 06/26/2025
Initials: NCK



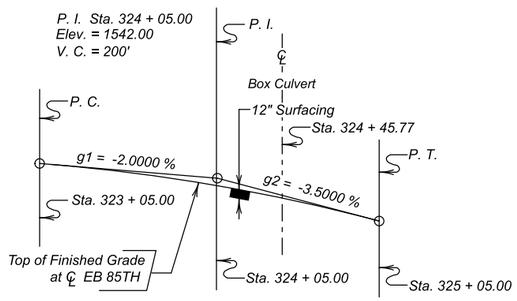
PLAN



ELEVATION

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - General Drawing
Sheet No. 2 - Notes and Undercut Details
Sheet No. 3 - Inlet and Outlet Details (A)
Sheet No. 4 - Inlet and Outlet Details (B)
Sheet No. 5 - Barrel Section Details (A)
Sheet No. 6 - Barrel Section Details (B)
Sheet No. 7 - Anti-Graffiti Details
Sheet No. 8 - Details of Standard Plate No's. 430.50 & 460.02
Sheet No. 9 - Details of Standard Plate No. 460.10



VERTICAL CURVE DATA EB 85TH

TABLE OF WORKING POINTS

W. P.	STATION	OFFSET
"A"	324 + 01.18	139.87' Lt.
"B"	323 + 89.68	136.56' Lt.
"C"	324 + 18.32	122.95' Lt.
"D"	323 + 98.58	119.26' Lt.
"E"	324 + 57.90	41.89' Rt.
"F"	324 + 47.24	43.82' Rt.
"G"	324 + 55.04	59.88' Rt.
"H"	324 + 50.79	61.37' Rt.

*From EB 85th Street Alignment

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	139
Precast Concrete Headwall for Drain	Ea.	1
Class A45 Concrete, Box Culvert	Cu. Yd.	268.5
Anti-Graffiti Coating	Sq. Ft.	7530
Reinforcing Steel	Lb.	49688
4" Underdrain Pipe	Ft.	610
Porous Backfill	Ton	660

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

GENERAL DRAWING
FOR
11'x10' BOX CULVERT

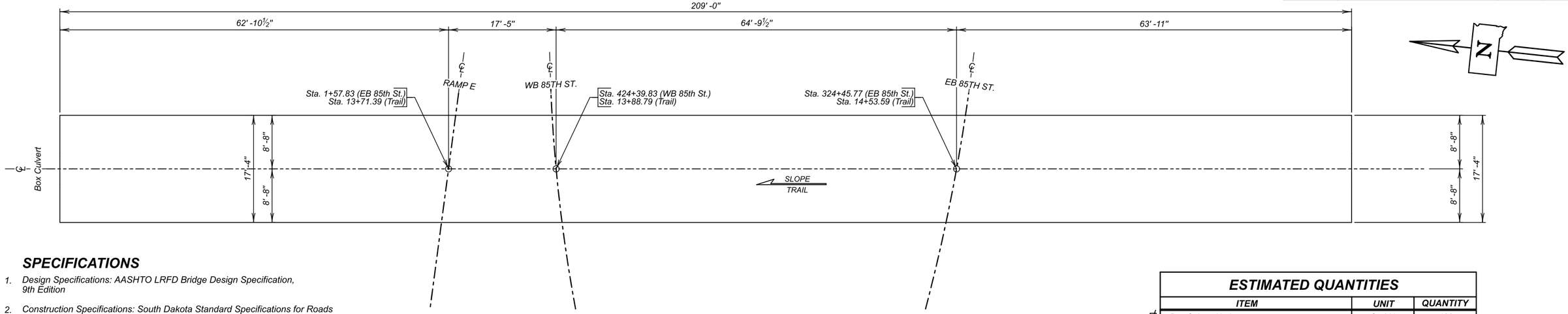
BOX CULVERT UNDER 85TH ST. — 0° SKEW
STA. 324+45.77 (EB 85th St.) — SEC. 18 - T100N - R50W
STR. NO. 42-066-020 — EM 0282(88)73
PCN 06JQ — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

1 OF 9

Plans Prepared By:
Short Elliott Hendrickson
5016 S Bur Oak Place, Suite 1
Sioux Falls, SD 57108

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER



UNDERCUT LAYOUT
(Bottom Dimensions)

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⏍	Box Culvert Undercut	Cu. Yd.	139
	Precast Concrete Headwall for Drain	Each	1
⏃	4" Underdrain Pipe	Ft.	610
ϕ	Porous Backfill	Ton.	660

ϕ *For estimating purposes only, a factor of 1.89 Ton / Cu Yd was used.*

⏍ *For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.*

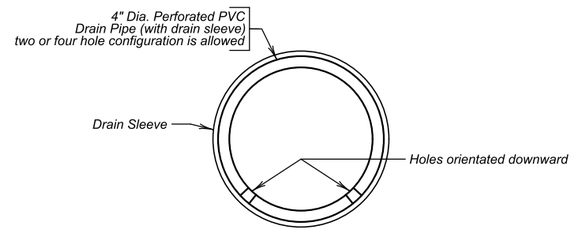
1. 322 ft. 4" Dia. Perforated PVC Pipe
2. 80 ft. Dia. solid PVC Pipe
3. 2933 sq. ft. Vertical composite Drain
4. 66 6 Mil Polyethylene Sheeting

⏃ *Items 1 through 3 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.*

⊗ *Provide over construction joint.Quantity assumes 2' - 0" width.*

✳ *Vertical Composite drain to be applied to entire length of box culvert plus wingwalls.*

TYPICAL SECTION
(For Limits of Undercut)



DRAIN DETAIL

SPECIFICATIONS

1. *Design Specifications: AASHTO LRFD Bridge Design Specification, 9th Edition*
2. *Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2025 Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.*

GENERAL NOTES

1. *Design Live Load: HL-93. The construction load shall not be applied until a minimum of 4 ft. of fill has been placed over the Box Culvert. Other construction loads in excess of legal load must be submitted thru proper channels to the Office of Bridge Design for analysis.*
2. *The design of the barrel section is based on a minimum fill height of 2 feet and includes all subsequent fill heights up to and including the maximum fill height of 6 ft.*
3. *Design Material Strengths: Concrete fc = 4,500 p.s.i*
   Reinforcing Steel fy = 60,000 p.s.i
4. *All concrete shall be Class A45 conforming to Section 460 of the Construction Specifications.*
5. *All reinforcing steel shall conform to ASTM A615 Grade 60.*
6. *All exposed edges shall be chamfered ¾inch, unless noted otherwise in plans.*
7. *Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.*
8. *The Contractor shall imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.*
9. *Care shall be taken to establish Working Points (W.P.) as shown on the wings.*
10. *Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).*
11. *All lap splices shown are contact lap splices unless noted otherwise.*
12. *Aggregate Columns will be complete prior to box construction, See SECTION B*
13. *The Reinforced Concrete Box Culvert pedestrian/bike will be built on 1 foot of box culvert undercut backfill.*

UNDERDRAIN

1. *The 4-inch diameter Perforated PVC Drain Pipe will be PS46 Solvent Weld PVC pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4" Dia. PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 Designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement Conforming to ASTM D2564. The Drain Sleeve will conform to ASTM D6707.*
2. *Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.*
3. *Outlet drains to daylight. Maintain positive drainage.*
4. *All labor, tools, equipment, and any incidentals necessary for the installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch Diameter PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price foot for 4" Underdrain Pipe.*

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
8/28/25

NOTES AND UNDERCUT DETAILS
FOR
11'x10' BOX CULVERT

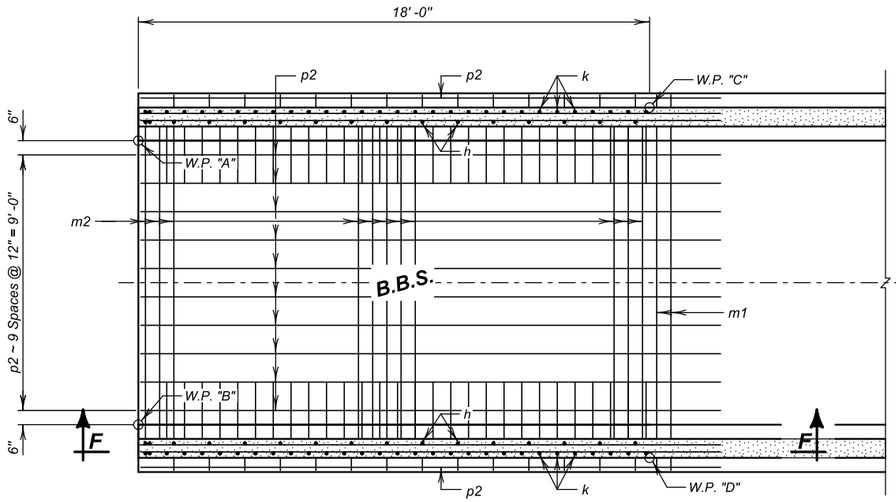
BOX CULVERT UNDER 85TH ST. 0° SKEW
STA. 324+45.77 (EB 85th St.) SEC. 18 - T100N - R50W
STR. NO. 42-066-020 EM 0282(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

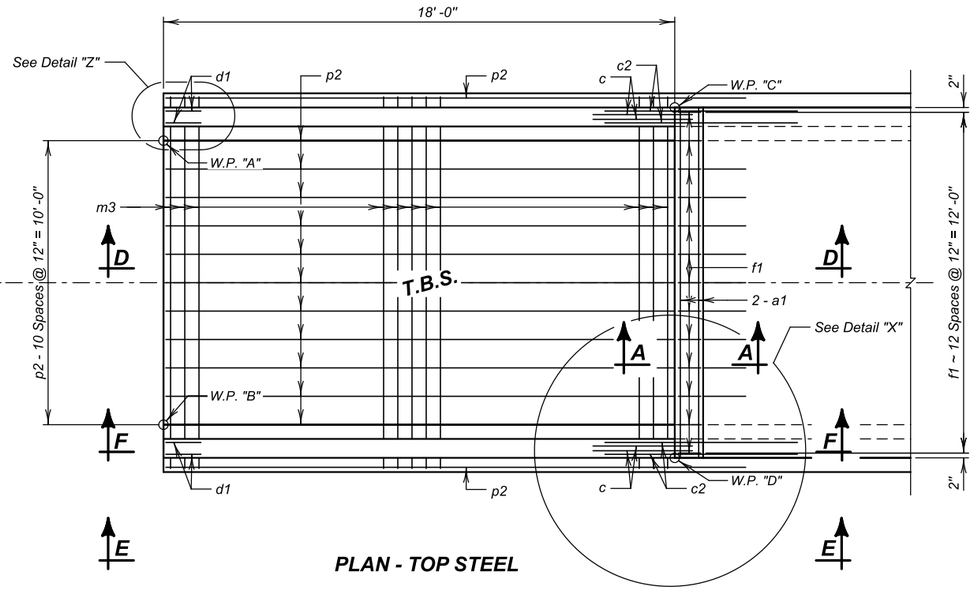
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E54	E130



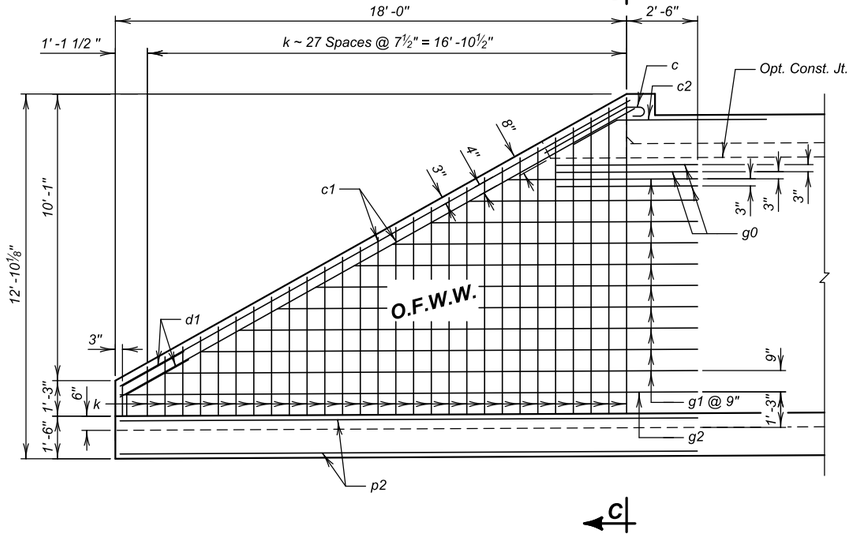
PLAN - BOTTOM STEEL



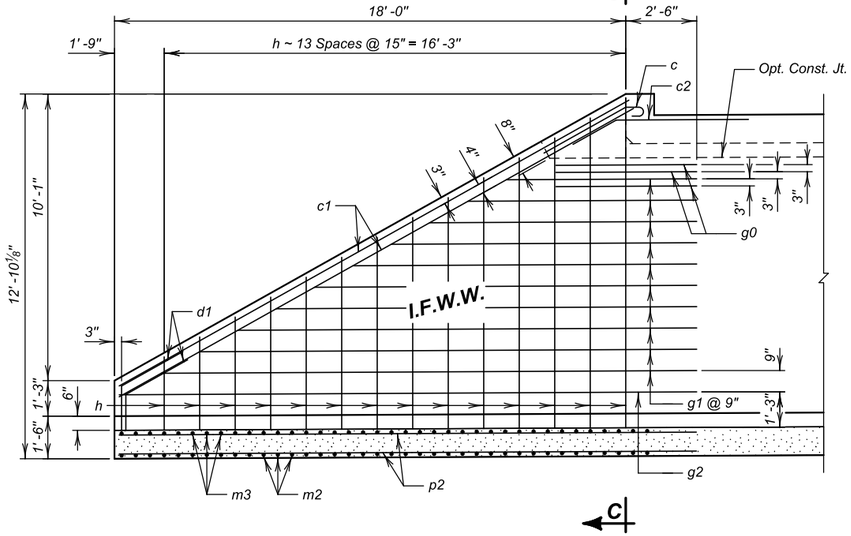
PLAN - TOP STEEL

LEGEND FOR PLACING RE-STEEL
B.B.S. - Bottom of Bottom Slab
T.B.S. - Top of Bottom Slab
O.F.W.W. - Outside Face of Wingwall
I.F.W.W. - Inside Face of Wingwall

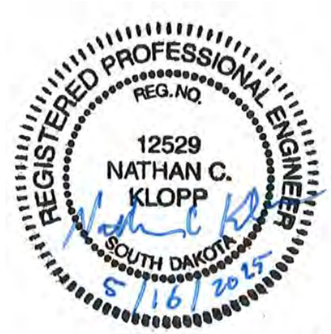
Outlet is shown. Inlet is similar but opposite handed.



VIEW E-E



VIEW F-F



INLET AND OUTLET DETAILS (A)
FOR
11'x10' BOX CULVERT

BOX CULVERT UNDER 85TH ST.
STA. 324+45.77 (EB 85th St.)
STR. NO. 42-066-020

0° SKEW
SEC. 18 - T100N - R50W
EM 0282(88)73
HL-93

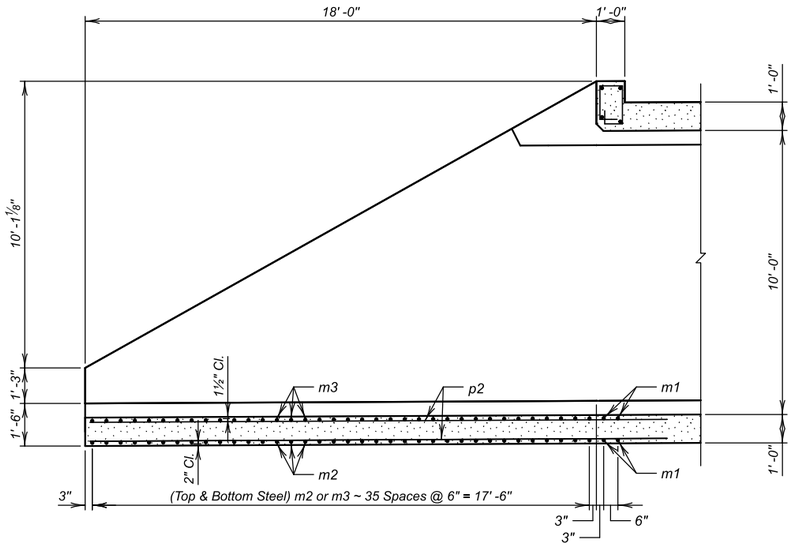
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

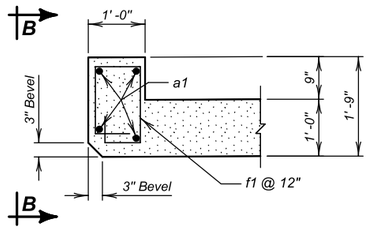
Plotted From - hclaridge File - ...\b06JQ_03_InletDetails.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

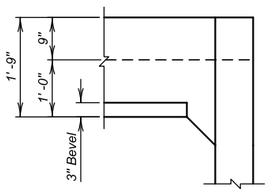
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E55	E130



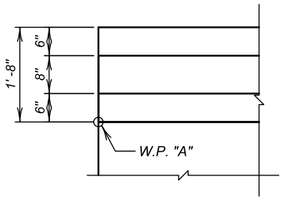
SECTION D-D



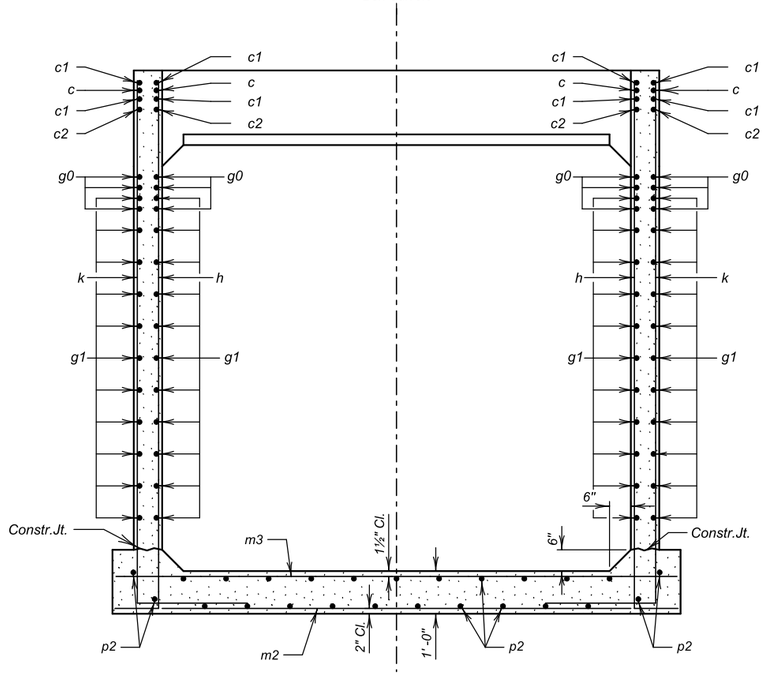
SECTION A-A



VIEW B-B



DETAIL Z

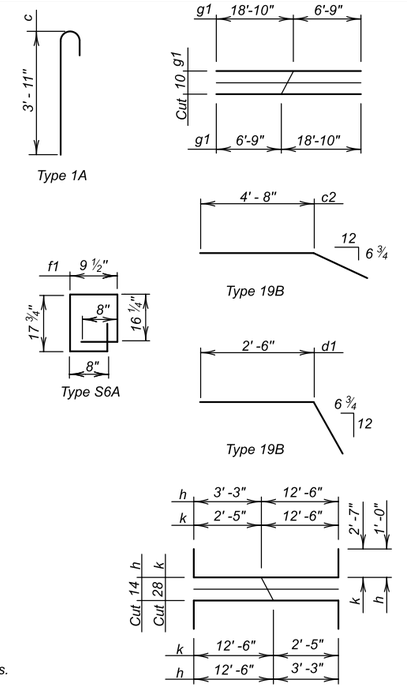


SECTION C-C

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	Inlet				
	a1	4	6	12' - 0"	Str.
✳	c	4	5	4' - 6"	A1
✳	c1	8	5	20' - 5"	Str.
✳	c2	4	5	7' - 0"	19B
✳	d1	4	5	3' - 9"	Str.
	f1	13	4	5' - 0"	S6A
	g0	12	4	5' - 0"	Str.
⌀	g1	20	4	25' - 7"	Str.
	g2	4	4	20' - 4"	Str.
⌀	h	14	5	17' - 9"	17A
⌀	k	28	5	19' - 5"	17A
	m1	4	6	13' - 0"	Str.
	m2	36	4	11' - 6"	Str.
	m3	36	4	13' - 0"	Str.
	p2	25	5	20' - 5"	Str.
	Outlet				
	a1	4	6	12' - 0"	Str.
✳	c	4	5	4' - 6"	A1
✳	c1	8	5	20' - 5"	Str.
✳	c2	4	5	7' - 0"	19B
✳	d1	4	5	3' - 9"	Str.
	f1	13	4	5' - 0"	S6A
	g0	12	4	5' - 0"	Str.
⌀	g1	20	4	25' - 7"	Str.
	g2	4	4	20' - 4"	Str.
⌀	h	14	5	17' - 9"	17A
⌀	k	28	5	19' - 5"	17A
	m1	4	6	13' - 0"	Str.
	m2	36	4	11' - 6"	Str.
	m3	36	4	13' - 0"	Str.
	p2	25	5	20' - 5"	Str.

Bending Details



NOTES:
All dimensions are out to out of bars.
⌀ See cutting diagram.
✳ Bend in field as necessary to fit.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete Box Culvert	Reinforcing Steel
UNIT	Cu. Yd.	Lb.
Inlet	14.1	2812
Outlet	14.1	2812

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

INLET AND OUTLET DETAILS (B)
FOR
11'x10' BOX CULVERT

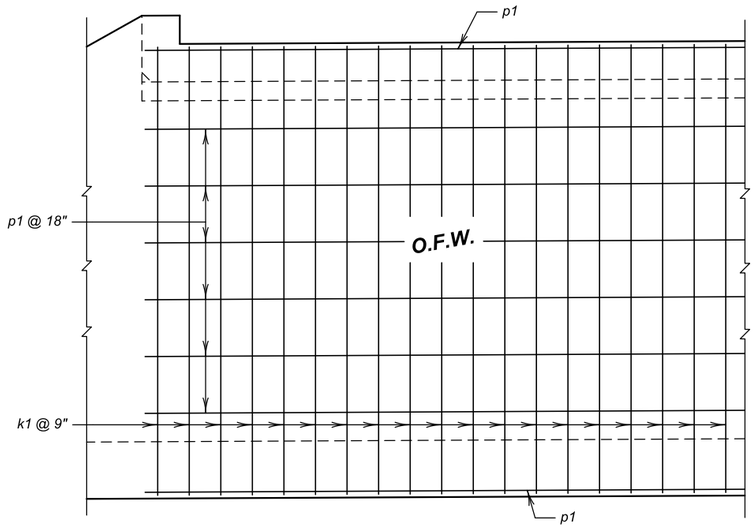
BOX CULVERT UNDER 85TH ST.
STA. 324+45.77 (EB 85th St.)
STR. NO. 42-066-020

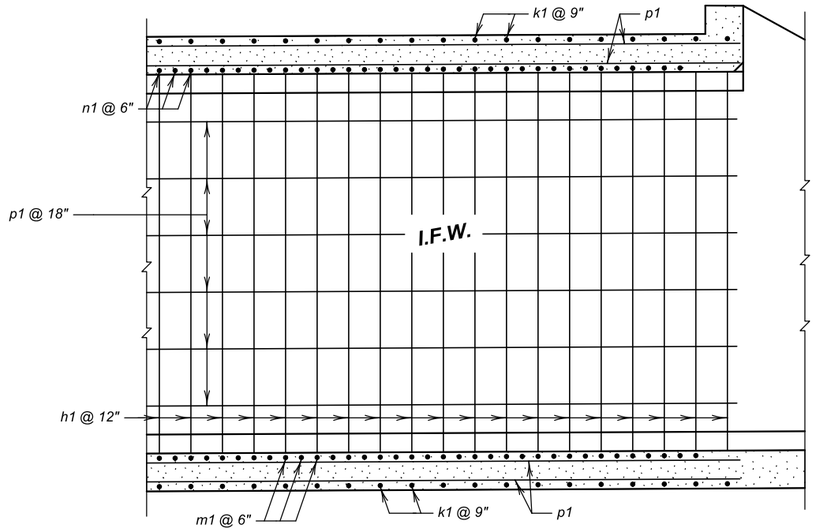
0° SKEW
SEC. 18 - T100N - R50W
EM 0282(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

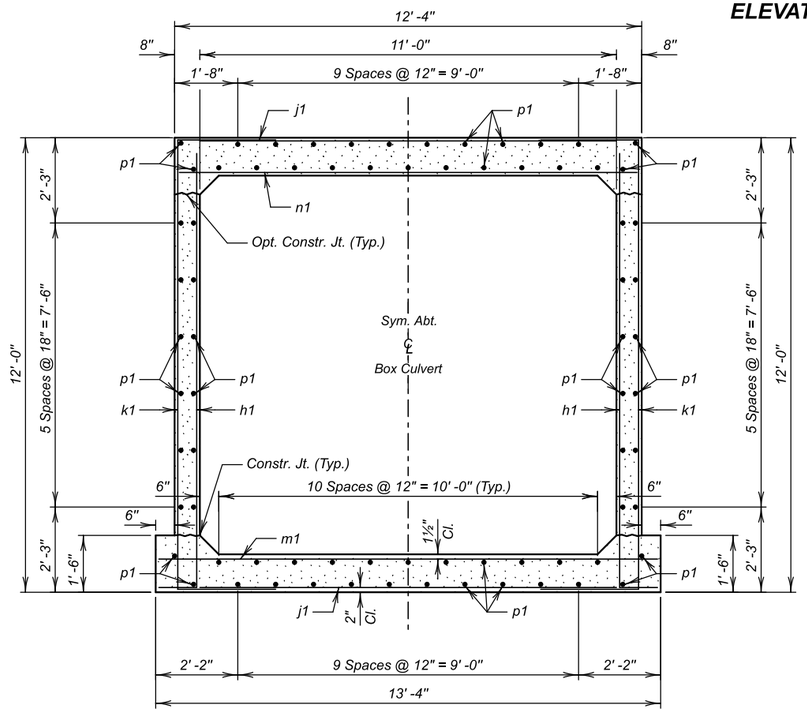
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\b06JQ_03_InletDetails.dgn Plotting Date: 5/16/2025

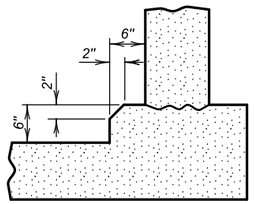




ELEVATION



TYPICAL SECTION



OPTIONAL FILLET DETAIL

(At Bottom Slab)

Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.

OPTIONAL POUR - BOTTOM SLAB

The Bottom Slab may be poured continuously, at the option of the Contractor, with the use of a Preformed Metal keyway conforming to the keyway dimensions and location as shown on the plans. The keyway length shall be full width of the bottom slab. Care shall be taken to maintain proper alignment of the keyway during the pour sequence. All additional costs of this option shall be borne by the Contractor.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

LEGEND FOR PLACING RE- STEEL

O.F.W. - Outside Face of Wall
I.F.W. - Inside Face of Wall

BARREL SECTION DETAILS (A)
FOR
11'x10' BOX CULVERT

BOX CULVERT UNDER 85TH ST. — 0° SKEW
STA. 324+45.77 (EB 85th St.) — SEC. 18 - T100N - R50W
STR. NO. 42-066-020 — EM 0282(88)73
HL-93

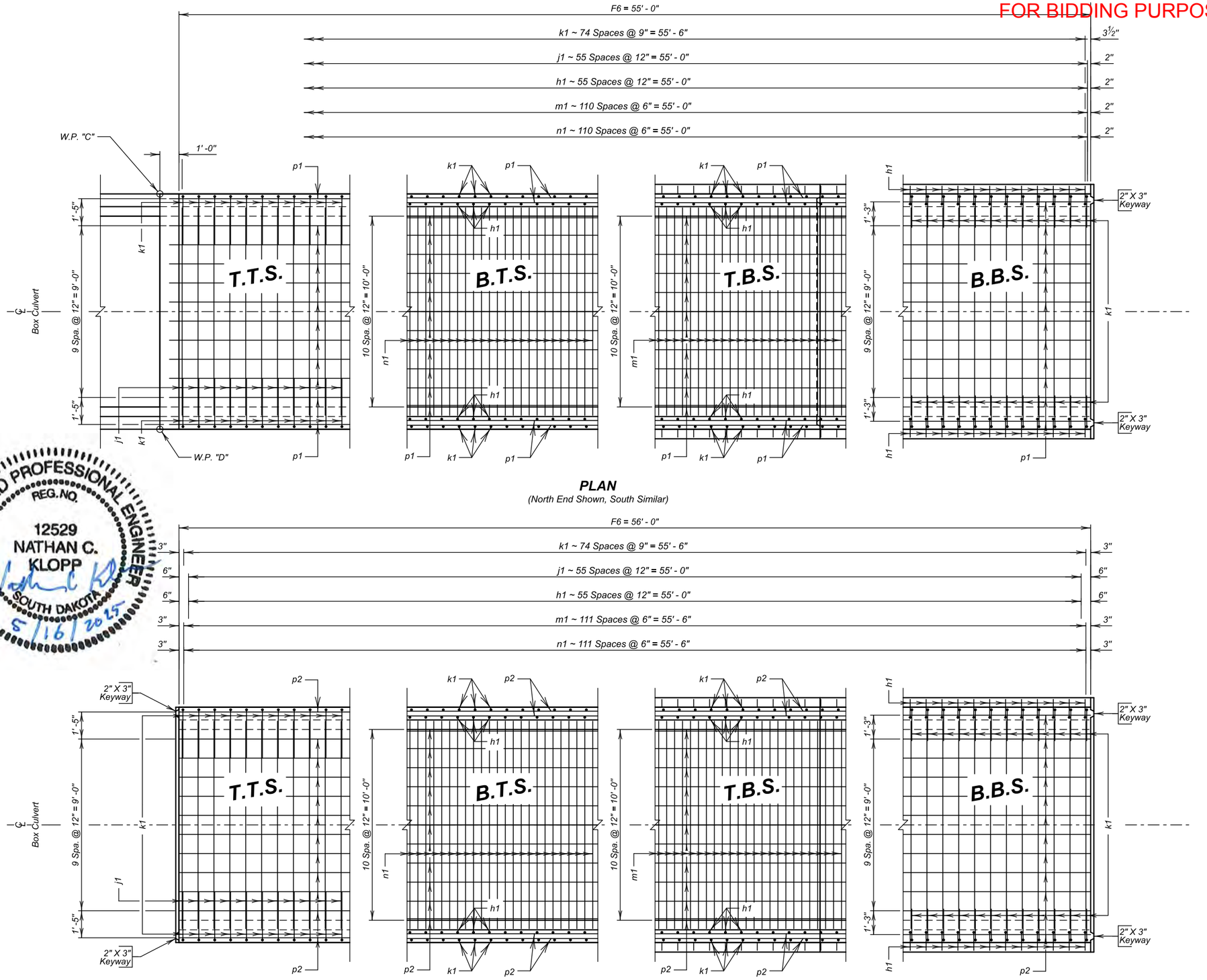
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

5 OF 9

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E57	E130



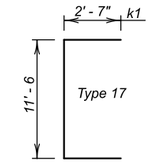
PLAN
(North End Shown, South Similar)

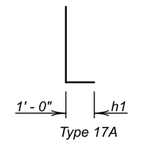
PLAN

△ *Place z1 bars thru construction joint between barrel sections as shown on Standard Plate No. 460.10. Quantity of z1 bars are for two construction joints.*

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
2 - F6 Barrel Sections @ 55' - 0"					
h1	224	6	11' - 6"	17A	
j1	224	6	11' - 0"	Str.	
k1	300	6	16' - 8"	17	
m1	222	5	13' - 0"	Str.	
n1	222	5	12' - 0"	Str.	
p1	148	5	54' - 8"	Str.	
z1	34	5	3' - 6"	Str.	
1 - F6 Barrel Sections @ 56' - 0"					
h1	112	6	11' - 6"	17A	
j1	112	6	11' - 0"	Str.	
k1	150	6	16' - 8"	17	
m1	112	5	13' - 0"	Str.	
n1	112	5	12' - 0"	Str.	
p2	74	5	55' - 8"	Str.	
z1	34	5	3' - 6"	Str.	





NOTES:
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete Box Culvert	Reinforcing Steel
UNIT	Cu. Yd.	Lb.
2 - Barrel Sections @ 55' -0"	160.2	29307
1 - Barrel Section @ 56' -0"	80.1	14757

LEGEND FOR PLACING RE- STEEL

T.T.S.	- Top of Top Slab
B.T.S.	- Bottom of Top Slab
T.B.S	- Top of Bottom Slab
B.B.S	- Bottom of Bottom Slab

BARREL SECTION DETAILS (B)
FOR
11'x10' BOX CULVERT

BOX CULVERT UNDER 85TH ST.
STA. 324+45.77 (EB 85th St.)
STR. NO. 42-066-020

0° SKEW
SEC. 18 - T100N - R50W
EM 0282(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

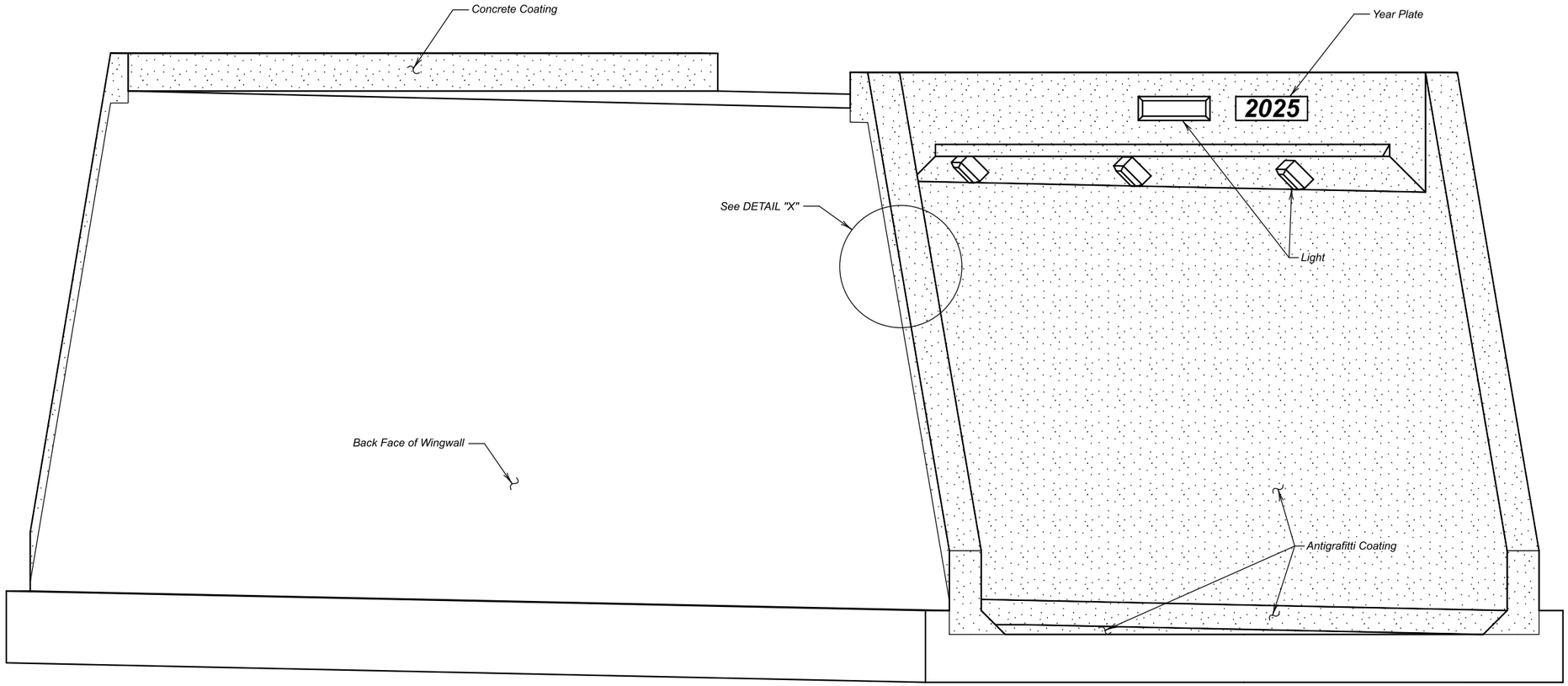
6 OF 9

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E58	E130



ANTIGRAFITTI COATING

(Inlet End Shown, Outlet Similar)
Not to scale.

ANTIGRAFITTI COATING

1. *Use one of the following systems, or an Engineer approved equal:*

   TK-Products:

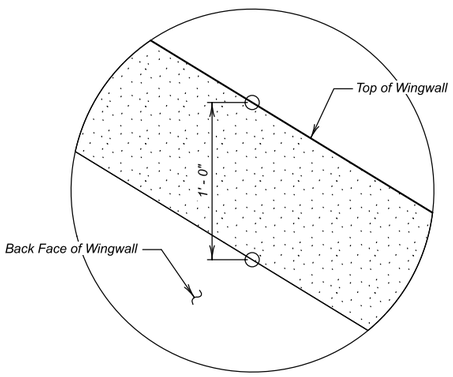
   Base Coat 1st Coat: TK-Tri-Sheen Pigment Stain 5276 applied at 250 to 350 SF/Gal.
   Base Coat 2nd Coat: TK-Tri-Sheen Pigment Stain 5276 applied at 250 to 350 SF/Gal.
   Topcoat Prime: TK-Anti-Graffiti Primer 1450 clear applied at 225 to 335 SF/Gal.
   Topcoat Finish: TK-PERMACLEAN VOC 1496 clear applied at 350 to 450 SF/Gal. (matte finish).

   Tnemec:

   Base Coat 1st Coat: Tnemec Series Elasto-Grip FC applied at 180 to 400 SF/Gal.
   Base Coat 2nd Coat: Tnemec Series 156 Enviro-Crete applied at 102 to 204 SF/Gal.
   Topcoat Finish: Tex-Cote (Tnemec) Graffiti Gard S clear applied at 75 to 125 SF/Gal. (satin to semi-gloss finish).

2. *Concrete Coating is to be applied to the front, floor, top, and top of the one foot back of the parapet and wingwalls and the walls, fillets, and ceiling of the barrel as shown above.*

3. *All costs in furnishing and applying the Concrete Coating will be included in the contract unit price per square foot for Anti-Graffiti Coating.*



DETAIL "X"

ESTIMATED QUANTITIES		
ITEM	***UNIT***	***QUANTITY***
Anti-Graffiti Coating	*Sq. Ft.*	*7530*

ANTI-GRAFFITI DETAILS
FOR
11'x10' BOX CULVERT

BOX CULVERT UNDER 85TH ST. — 0° SKEW
STA. 324+45.77 (EB 85th St.) — SEC. 18 - T100N - R50W
STR. NO. 42-066-020 — EM 0282(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

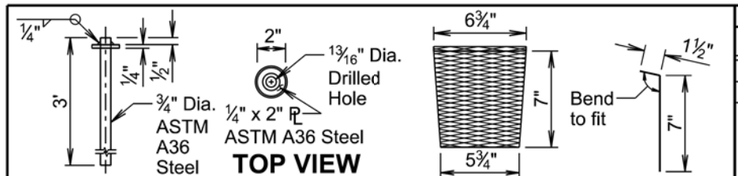
Plotted From - hclaridge File - ...\b06JQ_03_AntiGraffiti.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E59	E130

Plotting Date: 06/26/2025

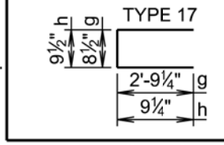
Revised Date: 06/26/2025
Initials: NCK

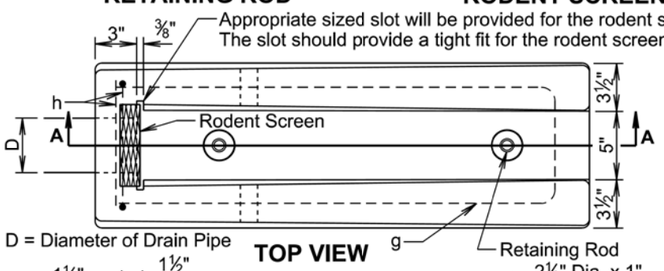


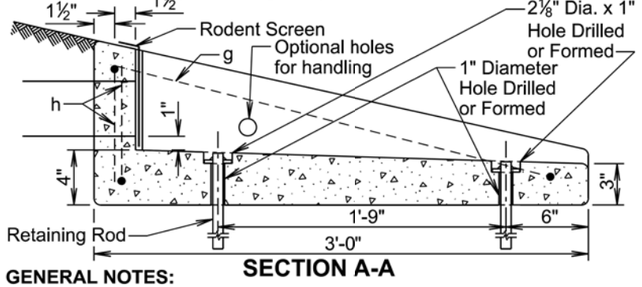
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

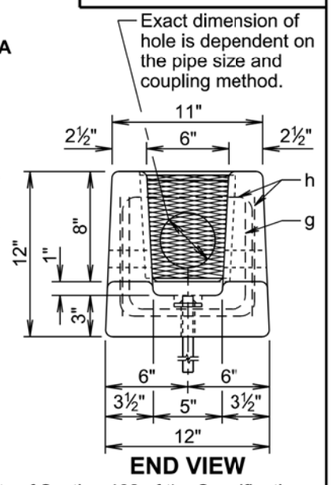
NOTE: All dimensions are out to out of bars.

Bending Details









GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

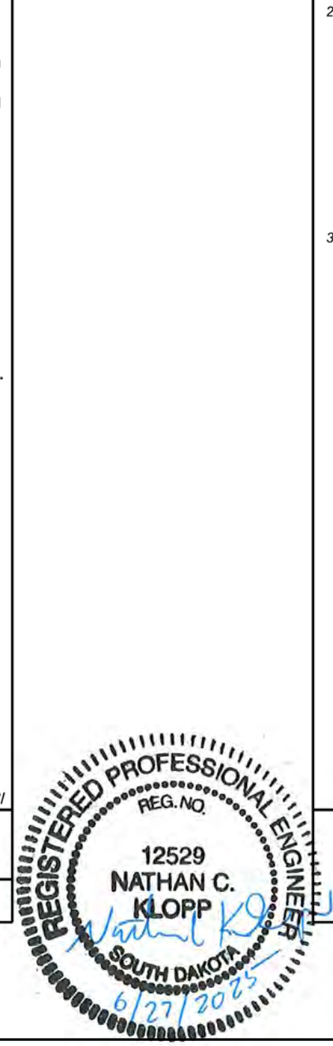
The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

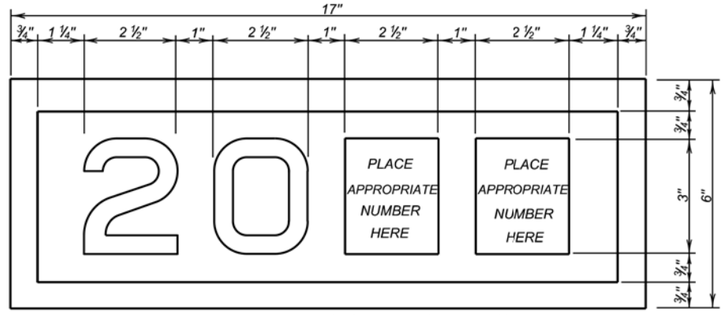
The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

November 19, 2021

Published Date: 2026	SDDOT	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50
			Sheet 1 of 1





YEAR PLATE DETAILS

GENERAL NOTES:

1. *Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.*

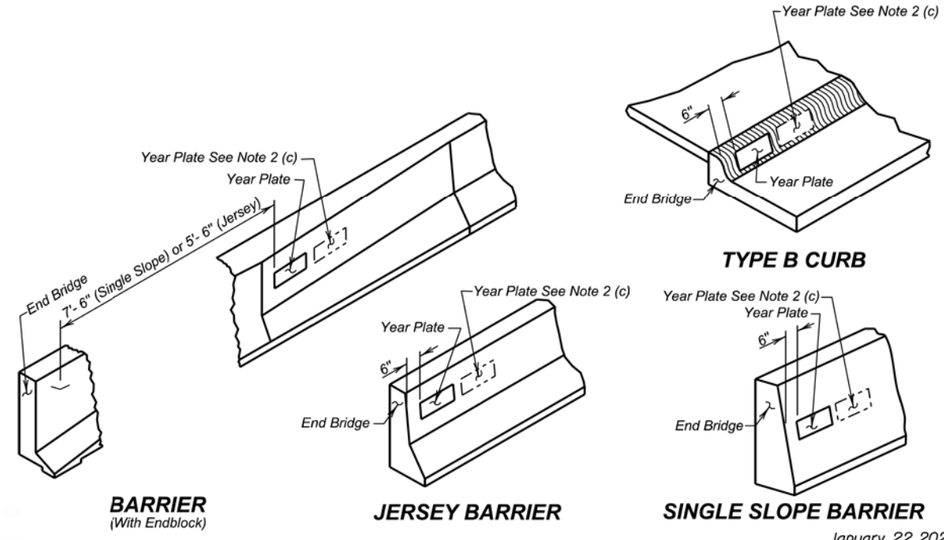
2. *Year plates will be located on structure(s) as follows:*

   a. *On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.*

   b. *On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.*

   c. *When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end oi the bridge on opposite sides.*

3. *There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.*



January 22, 2021

Published Date: 2026	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1

11'x10' BOX CULVERT (C.I.P.)
STR. NO. 42-066-020
MAY 2025

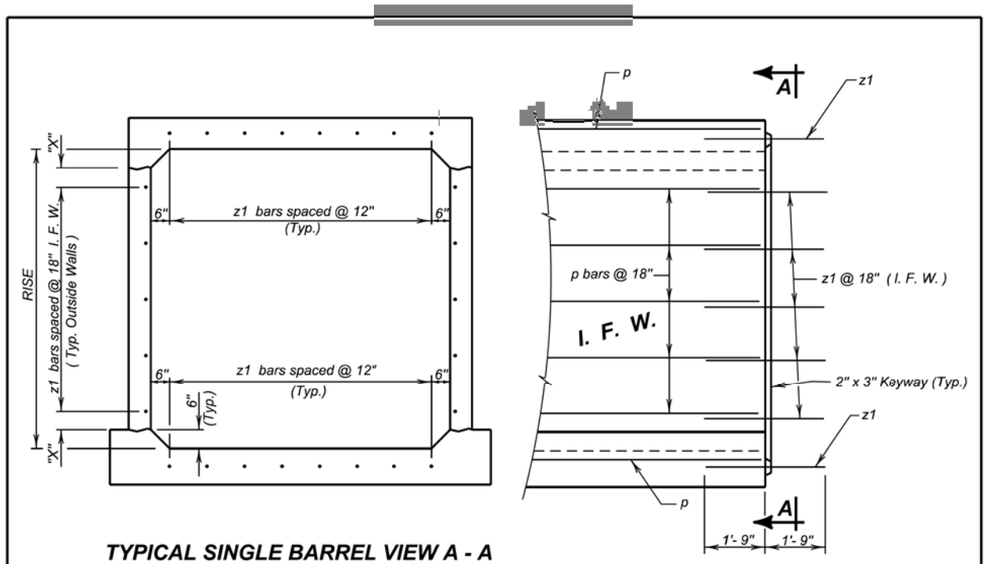
Plotted From - nmclaughlin File - ...\Sheet\b06JQ_03_StdPlates.dgn Plotting Date: 6/27/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E60	E130

Plotting Date: 06/26/2025

Revised Date: 06/26/2025
Initials: NCK

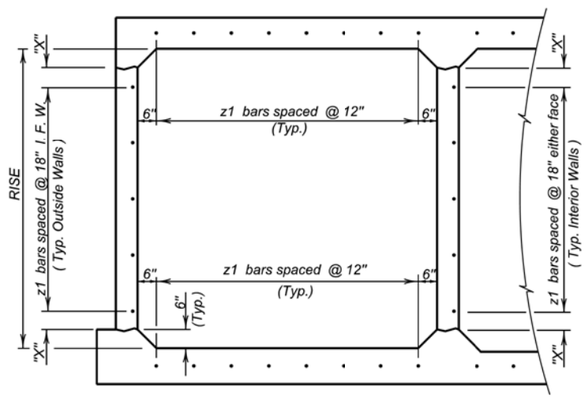


TYPICAL SINGLE BARREL VIEW A - A

ELEVATION

LEGEND FOR PLACING RE-STEEL
I. F. W. - Inside Face Wall

RISE	" X "
3'- 0"	3"
4'- 0"	9"
5'- 0"	6"
6'- 0"	3"
7'- 0"	9"
8'- 0"	6"
9'- 0"	3"
10'- 0"	9"
11'- 0"	6"
12'- 0"	3"
13'- 0"	9"
14'- 0"	6"



TYPICAL MULTIPLE BARREL VIEW A - A

GENERAL NOTES:

1. z1 bars will be placed in the middle of the 2" X 3" keyway in the top and bottom slabs. z1 bars will be lapped with the longitudinal p bars in the inside face of the wall for outside walls and in either face for interior walls. z1 bars are listed and included elsewhere in plans.
2. Drainage Fabric Protection will be placed in accordance with Section 422, or Section 560, whichever is applicable.

June 1, 2022

Published Date: 2026	SDDOT	BOX CULVERT BARREL TIE REINFORCEMENT	PLATE NUMBER 460.10
			Sheet 1 of 1

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
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KLOPP
SOUTH DAKOTA
6/27/2025

11'x10' BOX CULVERT (C.I.P.)
STR. NO. 42-066-020
MAY 2025

Plotted From - nmclaughlin File - ...\Sheet\b06JQ_03_StdPlates.dgn Plotting Date: 6/27/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

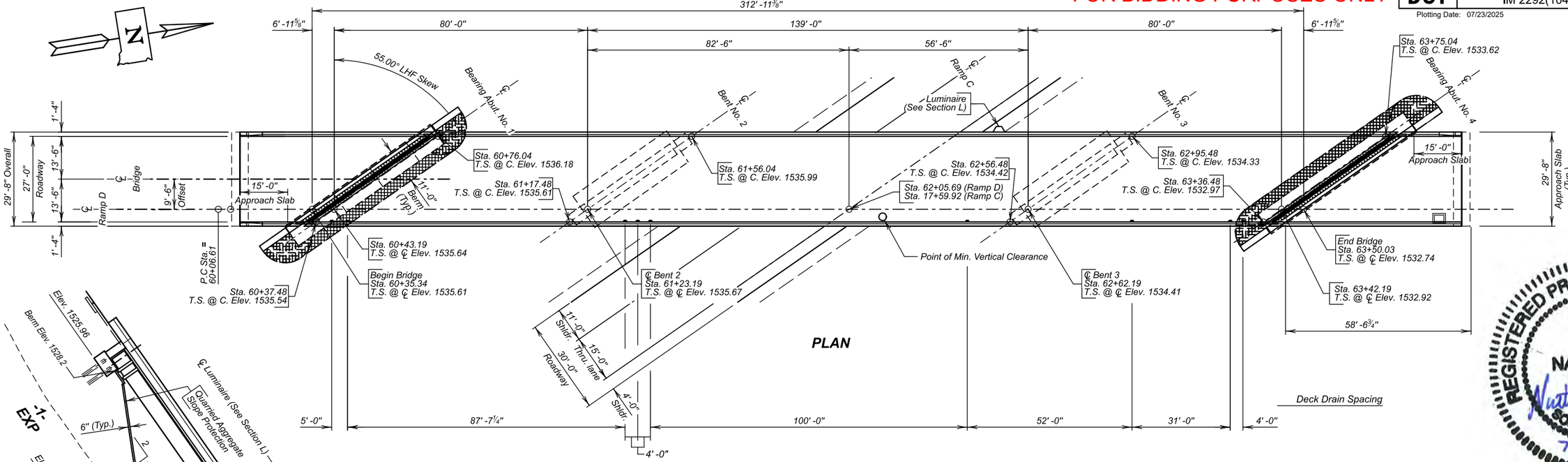
T. S. at ℄ Elev = Top of Slab at Centerline Elevation
T. S. at ℄ Elev = Top of Slab at Curbline Elevation

FOR BIDDING PURPOSES ONLY

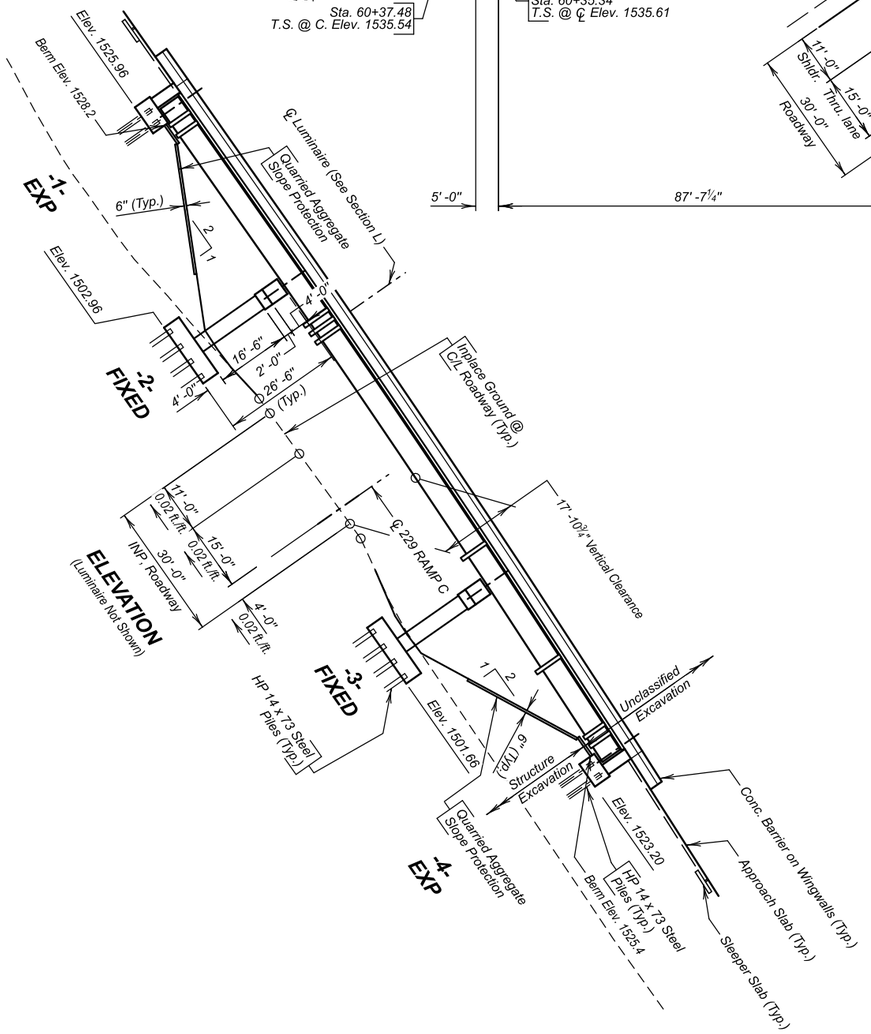
SD DOT

PROJECT	SHEET NO.	TOTAL SHEETS
EM 0292(88)73 IM 2292(104)0	E61	E130

Plotting Date: 07/23/2025
Revised Date: 07/23/2025
Initials: NCK



PLAN



-X271-
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Sheet No. 3 - Notes (Continued)
Sheet No. 4 - Notes (Continued)
Sheet No. 5 - Notes (Continued)
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Sheet No. 7 - Piling and Footing Layout
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Sheet No. 36 - Details of Bolted Field Splices
Sheet No. 37 - Bearing Details
Sheet No. 38 - Diaphragm Details
Sheet No. 39 - End Diaphragm Details
Sheet No. 40 - Framing Diaphragm, Camber, & Erection Data
Sheet No. 41 - Slab Form Elevations
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Sheet No. 43 - Details of Bridge End Backfill Abut No. 1 & 4 (B)

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Sheet No. 45 - Approach Slab Details (B)
Sheet No. 46 - Approach Slab Details (C)
Sheet No. 47 - Approach Slab Details (D)
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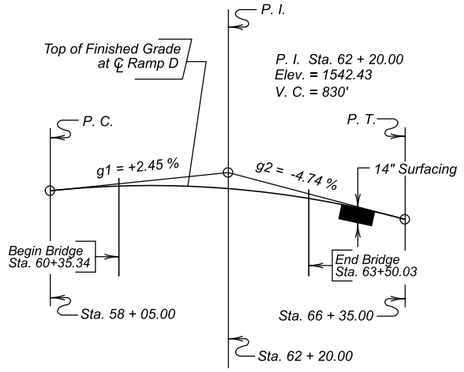
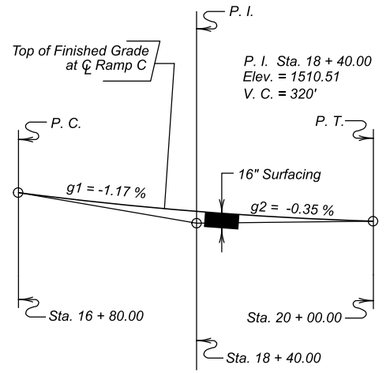
Sheet No. 49 - As Built Elevation Survey (A)
Sheet No. 50 - As Built Elevation Survey (B)
Sheet No. 51 - Details of Standard Plate No.'s
Sheet No. 52 - Details of Standard Plate No.'s
Sheet No. 53 - Intentionally Left Blank



VERTICAL CURVE DATA
RAMP D



VERTICAL CURVE DATA
RAMP C

GENERAL DRAWING
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93
PCN 06JQ

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

1 OF 53

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
7/23/2025

Plans Prepared By:
Short Elliott Hendrickson
5016 S Bur Oak Place, Suite 1
Sioux Falls, SD 57108

-X271-

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotting Date: 08/28/2025
Revised Date: 08/28/2025
Initials: NCK

FOR BIDDING PURPOSES ONLY

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	L.S.	
Concrete Penetrating Sealer	939.0	Sq. Yd.	See Special Provisions
Select Granular Backfill	14.9	Ton	
Structural Steel	Lump Sum	L.S.	See Special Provisions
Abutment Joint Drain	2	Each	
Finger Type Expansion Joint Assembly	2	Each	
Structure Excavation, Bridge	465	Cu. Yd.	
Bridge End Embankment	1720	Cu. Yd.	
Granular Bridge End Backfill	156.0	Cu. Yd.	
Approach Slab Underdrain Excavation	2.0	Cu. Yd.	
Precast Concrete Headwall for Drain	6	Each	
Class A45 Concrete, Bridge Deck	340.1	Cu. Yd.	
Class A45 Concrete, Bridge	560.6	Cu. Yd.	
Concrete Approach Slab for Bridge	238.5	Sq. Yd.	
Concrete Approach Sleeper Slab for Bridge	34.6	Sq. Yd.	
Deck Drain, Girder Bridge	9	Each	
Reinforcing Steel	73,346	Lb.	
Epoxy Coated Reinforcing	8,496	Lb.	
Stainless Reinforcing Steel	67,897	Lb.	See Special Provisions
HP 14 x 73 Steel Test Pile, Furnish and Drive	420	Ft.	
HP 14 x 73 Steel Bearing Pile, Furnish and Drive	7,120	Ft.	
2" Galvanized Steel Conduit	313	Ft.	
4" Underdrain Pipe	380	Ft.	
Porous Backfill	32.0	Ton	
Bridge Berm Slope Protection, Quarried Aggregate	442.1	Sq. Yd.	
Type A Drainage Fabric	443	Sq. Yd.	
Type B Drainage Fabric	47	Sq. Yd.	
Perforated Geocell	425	Sq. Ft.	

BRIDGE SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2025 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
3. All welding and welding inspections will be in conformance with the latest edition of AASHTO/AWS D1.5/D1.5M Bridge Welding Code unless noted otherwise in the plans.

BRIDGE DESIGN LOADING

1. AASHTO HL-93.
2. Dead Load includes 22 psf for future wearing surface on the roadway.

DESIGN MATERIAL STRENGTHS

Class A45 Concrete	f'_c = 4,500 psi
Reinforcing Steel (ASTM A615, Gr. 60)	f_y = 60,000 psi
Piling (ASTM A572 Grade 50)	f_y = 50,000 psi
Structural Steel (ASTM A709 Gr. 50T2)	f_y = 50,000 psi

GENERAL CONSTRUCTION

1. All lap splices shown are contact lap splices unless noted otherwise.
2. All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
4. The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
5. Barrier curbs, and end blocks will be built perpendicular to the roadway grade line.
6. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
7. Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.11. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
8. The elevation of the bridge deck is 14 inches above subgrade elevation.

DESIGN MIX OF CONCRETE

1. All structural concrete will be Class A45 Concrete unless otherwise indicated.
2. Grout design mix will be as specified in Section 460.2 K of the Construction Specifications. A compressive strength of 2000 psi will be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4-inch. The quantity of grout is included in and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

ABUTMENTS

1. The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling will develop a field verified nominal bearing resistance of 335 tons per pile.
2. One test pile will be driven at each abutment and will become part of the pile group. The test pile will be driven before any other pile and will be driven to the required field verified nominal resistance or as directed by the Engineer prior to driving any portion of the bearing piles.
3. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40.
4. Each finished abutment will include a Bridge Survey Marker. See Standard Plate 460.05.

REGISTERED PROFESSIONAL ENGINEER
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NATHAN C. KLOPP
SOUTH DAKOTA
8/28/2025

ESTIMATE OF STRUCTURE QUANTITES AND NOTES
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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BENTS

1. All Swedge Bolts will be 1 1/2-inch diameter x 2'-6" F1554, Grade 55 bolts with heavy hex nut and cut washer (listed with structural steel in Superstructure quantities). A minimum of 20% of the embedded bolt surface will be covered with deformations whose radial dimensions are 15 to 20% of the bolt diameter.

2. The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling will develop a field verified nominal bearing resistance of 335 tons per pile.

5. One test pile will be driven at each bent and will become part of the pile group. The test pile will be driven before any other pile and will be driven to the required field verified nominal resistance or as directed by the Engineer prior to driving any portion of the bearing piles.

3. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40

SUPERSTRUCTURE

1. Structural steel will conform to ASTM A709 Gr. 50T2. Steel for diaphragms and stiffeners will conform to ASTM A709 Gr. 50T2. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.

2. Bolts, nuts and washers will conform to ASTM F3125, Grade A325.

3. Shear connectors will be field welded to the girders in accordance with the Shear Connector Field Installation Special Provision.

4. All butt-welded girder splices will be ultrasonically inspected.

5. The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel.

6. The girders will be painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).

7. Structural steel used in all girder web plates, girder flanges, and girder splice plates will comply with the Charpy-V-Notch toughness requirements set forth in Section 970 of the Construction Specifications. Material greater than 1 1/2 inches in thickness will require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension and stress reversal areas of girder flanges.

8. The use of an approved deck finishing machine will be required during placement of bridge deck concrete. The deck finishing machine will be adjusted and operated in such a manner that the screed or screeds are parallel with the centerline of the bridge. The finish machine and concrete placement will be parallel to the skew of the bridge. If the deck finish machine cannot match the exact skew of the bridge, the difference will need be approved by the Engineer.

9. The concrete bridge deck will be placed and finished at a minimum rate of 45 feet of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. If a header is required sometime during the pour operation, its location will be at or as near as possible to the three-quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 45 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.

10. Dead Load camber will be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.

11. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.

12. The Contractor is required to submit a detailed plan showing the proposed girder erection. The girder erection plan will be designed and stamped by a Professional Engineer registered with the State of South Dakota. The plan must be submitted 30 days prior to the start of work for approval by the Office of Bridge Design. The plan will include. But not limited to, complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details, and temporary bracing details.

13. All single girder segments will be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully installed and bolts fully tightened. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected. At no time will a single girder segment be allowed over traffic.

14. See Special Provision for Concrete Penetrating Sealer.

15. Any concrete mortar that gets on all surfaces of all the superstructure components will be washed off or removed before it is dry.

BEARINGS

1. All steel for the bearings will conform to ASTM A709, Gr. 50.

2. The pre-formed fabric pads will be composed of multiple layers of 8-ounce cotton duck impregnated and bonded with high quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness, after compression and vulcanization. The finished pads will withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 psi without detrimental reduction in thickness or extrusion.

3. The bearing plates will be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).

4. Tolerances and surface finish for Rocker Plates will be as follows:

Convex Radius Dimension	+0.000-inch to -0.010-inch
Surface Finish, Machined Surfaces	125 RMS or Better
Surface Finish, Other Surfaces	230 RMS or Better

5. Payment for furnishing and installing the bearings, including the pre-formed fabric pads under the bearing plates and painting, will be incidental to the contract lump sum price for Structural Steel.

FIELD BOLTED GIRDER SPLICES

1. Steel for splice and filler plates will conform to ASTM A709 Gr. 50T2.

2. Bolts in flange splices will be placed with the heads down.

3. Bolts in web splices of exterior girders will be placed with the heads on the exterior face of girders.

4. All bolts will be fully tightened prior to removing temporary supports.

WELDING AND WELD INSPECTION

Main members referred to in Section 6.7 Nondestructive Testing of the Bridge Welding Code are identified as follows: girder webs, girder flanges, and bearing stiffeners. Ultrasonic testing of groove welds will be used in lieu of radiography. See girder layout for locations of tension and stress reversal areas of the girder flanges.

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/16/2025

NOTES (CONTINUED)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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FALL PROTECTION

1. The Contractor will install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system will be installed. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.

2. Modifications to any bridge components used to accommodate the Fall Protection System will be shown on the Falsework Plans and the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System will be incidental to the other contract items.

BOLT TESTING

The certified mill test reports for all bolts used on the project will include the test results for all the testing specified in section 972.2 D of the Construction Specifications. Some of these tests are supplemental tests that must be requested at the time the bolts are ordered. It is the responsibility of the Contractor to notify the bolt supplier of these requirements.

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish will be applied to the following areas:

   a. **Abutments:** all exposed surfaces to an elevation 1-foot below finished ground line.*
   b. **Barrier:** Inside face and Top..**
   c. **Slab:** edge of slab.*
   d. **Bents/Piers:** All exposed surfaces.*

   * Color will be AMS – STD - 595 33690
   ** Color will be AMS – STD - 595 36622

2. The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications.

SHOP PLANS

Shop plans will be required as specified by the Construction Specifications.

The fabricator will submit shop plans in accordance with the Construction Specifications. Send shop plan submittals to Short Elliott Hendrickson Inc. (SEH®), 5016 S Bur Oak Place, Suite 1, Sioux Falls, SD 57108 (amurra@sehinc.com) After review, corrections (if necessary), and approval by SEH®, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

SHEAR STUD CONNECTOR

1. Prior to the welding of the studs to the girders, the top surface of the girders that are to have studs welded on will be clean of all dirt, rust, and any other foreign matter.

2. The shear connectors that will be attached to the girder will be 7/8-inch diameter x 5 inches long and will conform to ASTM 108, Gr. 1015, 1018, or 1020. The connector will meet the following minimum mechanical property requirements for Type B studs,

Tensile	60 ksi
Yield Strength	60 ksi
Elongation	20%
Reduction of Area	50%

3. The shear connector will be installed in accordance with the Special Provision for Shear Connector Field Installation (Incidental).

PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The following pile hammers were evaluated and found to produce acceptable driving stresses:

   Delmag D46-32

2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity. Requests for evaluation of hammers not listed will be submitted a minimum of 5 business days prior to installation of piles.

AS - BUILT ELEVATION SURVEY

The Contractor will be responsible for producing an as-built elevation survey soon after construction is completed but before the bridge is opened to traffic. The Contractor will be responsible for recording the as-built elevation shown in the plans. The completed table will be given to the Engineer and copies forwarded to the Office of Bridge Design and the Senior Region Bridge Engineer. The elevations will be based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88). The Engineer will provide the Contractor with a description, elevation, and location of the nearest benchmark that has a NAVD88 established elevation for the Contractor's use. The benchmark shown in the plans has not been tied to the NAVD88. The Contractor will be responsible for establishing a NAVD88 elevation for the benchmark provided in the plans. All cost associated with obtaining the NAVD88 elevations at the locations shown in the table and for the benchmark shown in the plans, including all equipment, labor, and any incidentals required will be incidental to the contract lump sum price for Bridge Elevation Survey.

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 in accordance with Section 850 of the Construction Specifications.

4. Perforated Geocell will be paid for at the contract unit price per square foot. Payment will be full compensation for furnishing and installing 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.

QUARRIED AGGREGATE SLOPE PROTECTION

1. This work will consist of paving the bridge berm slopes with crushed aggregate slope protection for control and prevention of berm erosion.

2. The aggregate used in the crushed aggregate slope protection will be composed of durable fragments of quarried quartzite or an approved alternative. The material will be pink in color and well graded with 90 to 100% passing a 6-inch sieve and 0 to 10% passing a 2-inch sieve.

3. The Type A Drainage Fabric will be non-woven.

4. The surface upon which the slope protection is to be placed will be smooth, uniform, and free from foreign material. The top surface of the slope protection will conform to the dimensions, elevations, and slopes shown in the plans.

5. The crushed aggregate will be shaped and compacted to provide a stable, smooth, and uniform surface.

6. Payment for crushed aggregate slope protection will be at the contract unit price per square yard for Bridge Berm Slope Protection, Crushed Aggregate and will include furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work. Payment will be for plans quantity.

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
6/27/2025

NOTES (CONTINUED)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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APPROACH SLAB UNDERDRAIN SYSTEM

1. An underdrain system will be placed underneath the sleeper slabs and behind the abutments as shown in the plans in accordance with Section 435 of the Construction Specifications.

2. The 4-inch diameter Perforated PVC Drain Pipe will be PS 46 Solvent Weld PVC Pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve shall conform to ASTM D6707.

3. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.

4. All labor, tools, equipment, and any incidentals necessary for the Installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, 5-inch diameter schedule 40 steel pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

2" RIGID GALVANIZED STEEL CONDUIT

1. Conduit, with expansion fittings, junction boxes and pull tape will be provided at the location detailed in the plans.

2. Expansion devices are required at each Abutment. Fittings will be waterproof with insulating bushings and bonding jumper. Expansion devices will accommodate the full range of bridge joint movement shown in the plans. Junction boxes will be provided at spacing not to exceed 1000 ft.

3. Pull tape will be 1" tubular wave polyester pull tape with a minimum breaking strength of 6000 lbs.

4. Cast in place concrete inserts for conduit attachment will be Dayton Superior ¼" bolt diameter stainless steel F-42 Loop Ferrule Inserts with ¼" stainless steel bolts conforming to ASTM F593.

5. Conduit, fittings and attaching hardware will meet the requirements of NFPA 70 National Electrical Code (NEC). All steel components will be hot dip galvanized in accordance with ASTM A123 or A153 as applicable. Isolate the galvanized conduit brackets from the stainless steel insert and bolt with fiber washers.

6. All costs to provide the 2" diameter conduit, including concrete inserts, conduit, attaching hardware, junction boxes, expansion devices, pull tape, labor, equipment and any incidentals necessary to install the conduit will be included in the contract unit price per foot for 2" Rigid Galvanized Steel Conduit.

DECK DRAINS

1. Deck Drains will be 4-inch diameter x 6'- 6" Fiberglass Pipe conforming to the requirements of ASTM D2996.

2. The Fiberglass Pipe Sleeves can be made from a 4-inch diameter Fiberglass Pipe Fitting. They will be attached to the 4-inch diameter Fiberglass Pipe, as shown in the plans, per the manufacturer's recommendation.

3. All fiberglass pipe and pipe fittings will be handled and installed according to the guidelines and procedures recommended by the manufacturer. Pipe and pipe fittings must be from the same manufacturer..

4. Use fiberglass wear pads to protect against contact with supports or U-bolts..

5. The 1/2-inch diameter U-bolts, nuts and washers will conform to ASTM A307 and will be galvanized in accordance with ASTM F2329 then painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).

6. Steel for the bent plates and washers will conform to ASTM A36 and will be painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045)

7. Washers will be plate washers or a continuous bar at least 5/16-inch thick with standard holes and completely cover the slot after installation.

8. The 1/2-inch diameter bolts and nuts will conform to ASTM F3125, Gr. A325 and will be galvanized in accordance with ASTM F2329. The nut and bolts will be painted brown(AMS STD 595 Color 30045).

9. The deck drains to girder connection as shown in the plans allows the deck drain location to be adjusted slightly to clear transverse slab reinforcement.

10. All fiberglass pipes and pipe fittings will use pigmented resin throughout the wall. The color will be an approved brown (AMS STD 595 Color 30045).

11. Payment for deck drains will be at the contract unit price per each for Deck Drains, Girder Bridge, and will be full compensation for furnishing, fabricating, and installing the deck drains and all attaching hardware in accordance with the plans and Construction Specifications.

APPROACH SLABS

1. Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the top pf the sleeper slab riser.

2. The portion of the sleeper slab below the construction joint may be precast. If the bottom portion of the sleeper slab is precast, the Contractor will submit proposed lifting and setting plans to the Bridge Construction Engineer for approval. In addition, if reinforcing or other details differ from those shown in the plans, the Contractor will submit proposed alternate details for approval.

3. The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine will be kept parallel to the screed.

4. Concrete Approach Sleeper Slab for Bridge, whether cast-in-place or precast, will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.

5. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer, and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment and any incidentals necessary to complete this item of work.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
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SOUTH DAKOTA
5/16/2025

NOTES (CONTINUED)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
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LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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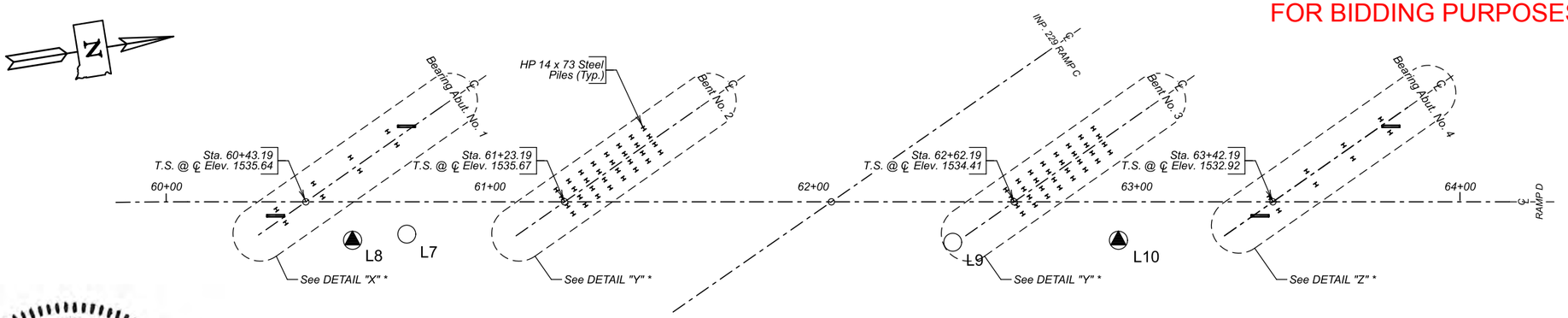


See PILING AND FOOTING LAYOUT for DETAILS "X", "Y" and "Z"

PILING LAYOUT

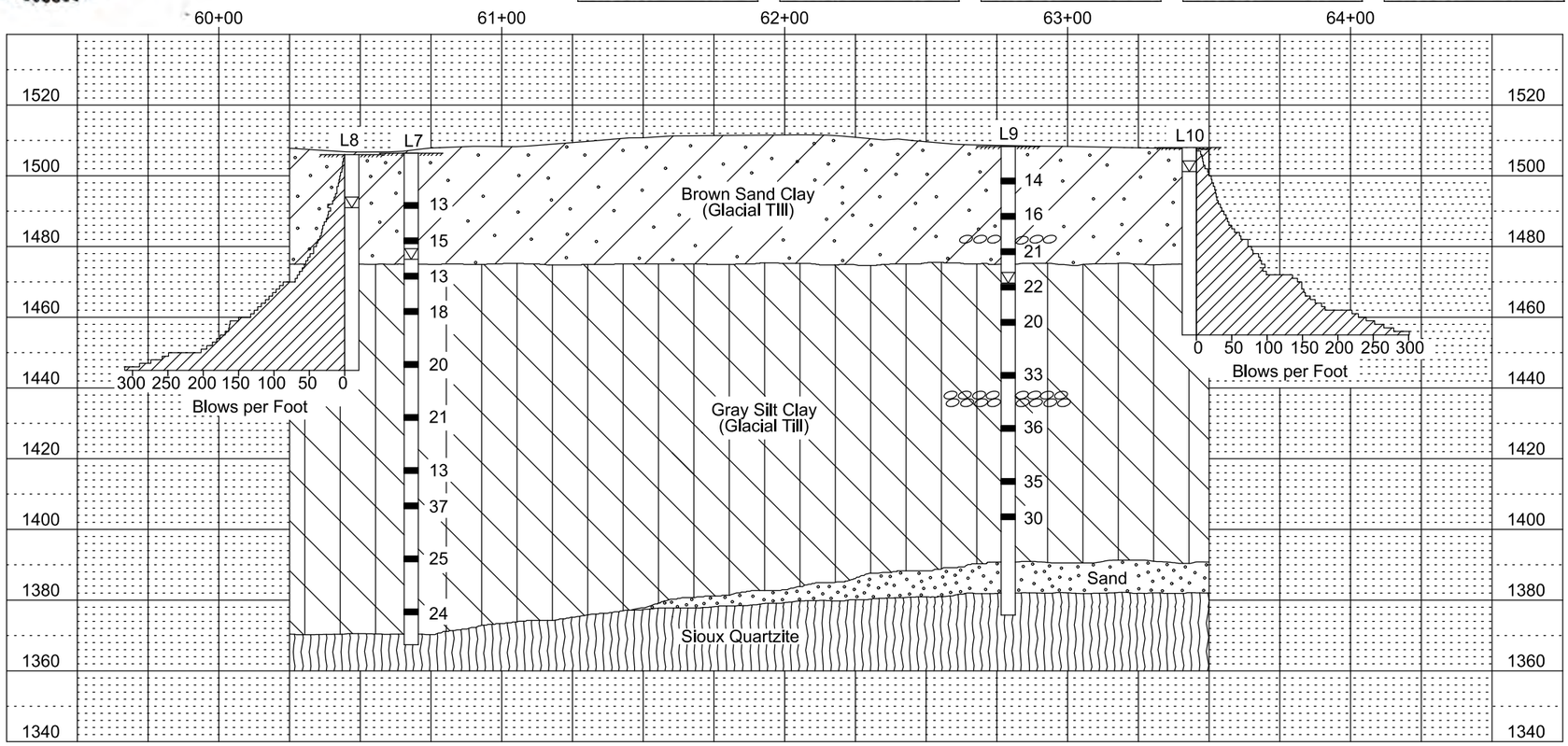
Hole Number	L7	
Station	60+68	
Depth	25.5	ft
Soil Color	Brown	
Classification	Sandy Clay	
Strength (Qu)	4,714	psf
Dry Density	100.3	pcf
Wet Density	121.7	pcf
Moisture	21.3	%
Pass No. 10	98.2	%
Pass No. 40	87.8	%
Pass No. 200	67.4	%
Sand Content	30.8	%
Silt Content	26.1	%
Clay Content	41.3	%

Hole Number	L7	
Station	60+68	
Depth	60.5	ft
Soil Color	Gray	
Classification	Sandy Clay	
Strength (Qu)	3,200	psf
Dry Density	104.4	pcf
Wet Density	125.2	pcf
Moisture	20.0	%
Pass No. 10	97.3	%
Pass No. 40	86.7	%
Pass No. 200	65.0	%
Sand Content	32.3	%
Silt Content	29.0	%
Clay Content	36.0	%

Hole Number	L7	
Station	60+68	
Depth	75.5	ft
Soil Color	Gray	
Classification	Sandy Clay	
Strength (Qu)	2,831	psf
Dry Density	104.4	pcf
Wet Density	125.2	pcf
Moisture	20.0	%
Pass No. 10	97.3	%
Pass No. 40	88.1	%
Pass No. 200	66.4	%
Sand Content	31.0	%
Silt Content	33.3	%
Clay Content	33.1	%

Hole Number	L9	
Station	62+79	
Depth	80.2	ft
Soil Color	Gray	
Classification	Silt C ay	
Strength (Qu)	3,697	psf
Dry Density	99.2	pcf
Wet Density	121.4	pcf
Moisture	22.4	%
Pass No. 10	100.0	%
Pass No. 40	99.5	%
Pass No. 200	91.2	%
Sand Content	8.8	%
Silt Content	53.8	%
Clay Content	37.4	%

Hole Number	L9	
Station	62+79	
Depth	105.5	ft
Soil Color	Brown	
Classification	Silt Clay	
Strength (Qu)	9,635	psf
Dry Density	116.0	pcf
Wet Density	135.6	pcf
Moisture	16.9	%
Pass No. 10	99.1	%
Pass No. 40	92.2	%
Pass No. 200	75.7	%
Sand Content	23.3	%
Silt Content	40.7	%
Clay Content	35.1	%



ELEVATION

Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The borings shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

LEGEND

- ○ Penetration Test
- ▲ Drive Test
- ▽ Water
- ⊖ Caved
- ▮ Sample Zone

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2⅞ inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6⅝ inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil. Penetration Test results are listed as uncorrected "N" values in blows per foot. Blows over inches are listed if refusal is achieved, which is 50 blows within one 6 inch set.

GROUNDWATER ELEVATIONS
NOVEMBER 2020

L7	1476.4
L8	1491.0
L9	1469.7
L10	1501.2

MEASURED SKIN FRICTION

	ELEV.	PSF
L8	1445.0	754
L10	1455.0	901

SUBSURFACE INVESTIGATION AND PILING LAYOUT
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

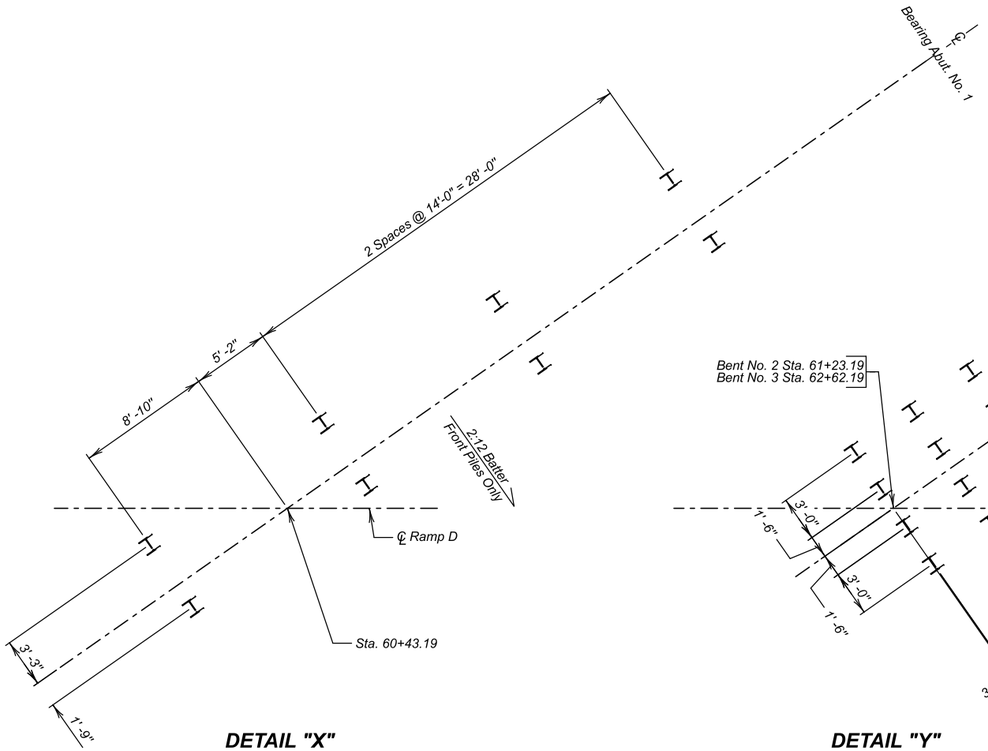
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

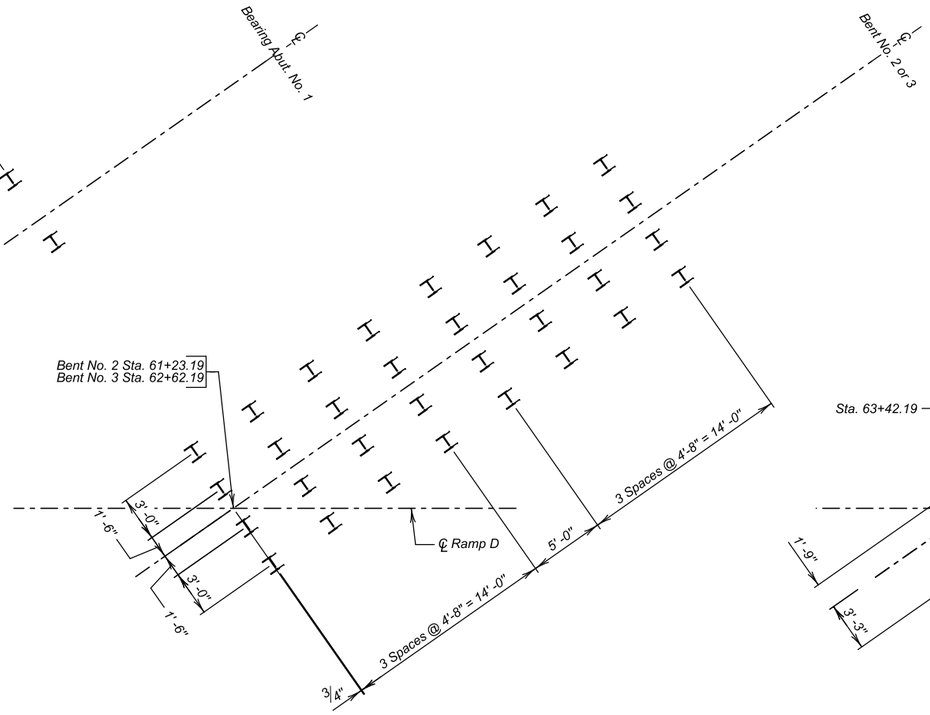
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_bor.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E67	E130



DETAIL "X"



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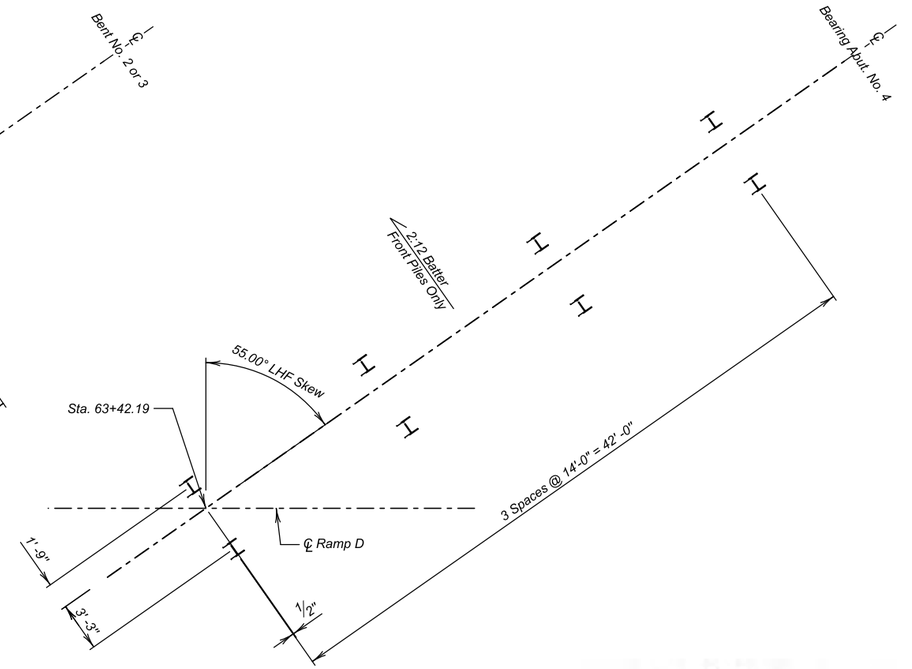


DETAIL "Z"

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

PILING AND FOOTING LAYOUT
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_bor.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E68	E130

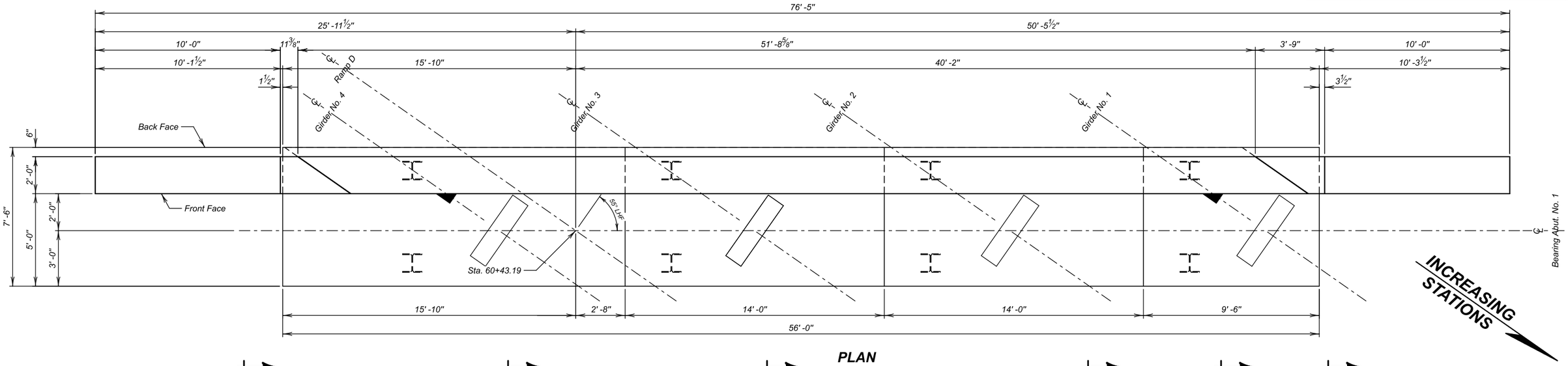


TABLE OF ELEVATIONS

Elev. "A"	Elev. "B"	Elev. "C"	Elev. "E"	Elev. G1	Elev. G2	Elev. G3	Elev. G4
1535.64	1535.54	1536.18	1525.96	1530.08	1529.91	1529.72	1529.52

NOTE - Elev. G1, G2, G3, and G4 are top of grout pad elevations at ℄ Bearing.

Elevations are along back face of the abutment backwall.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 1 DETAILS (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

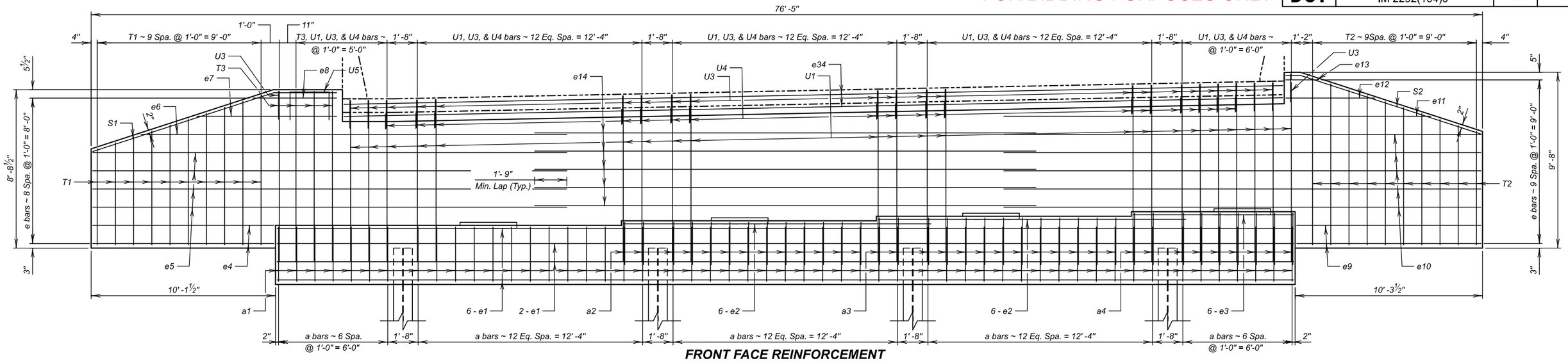
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

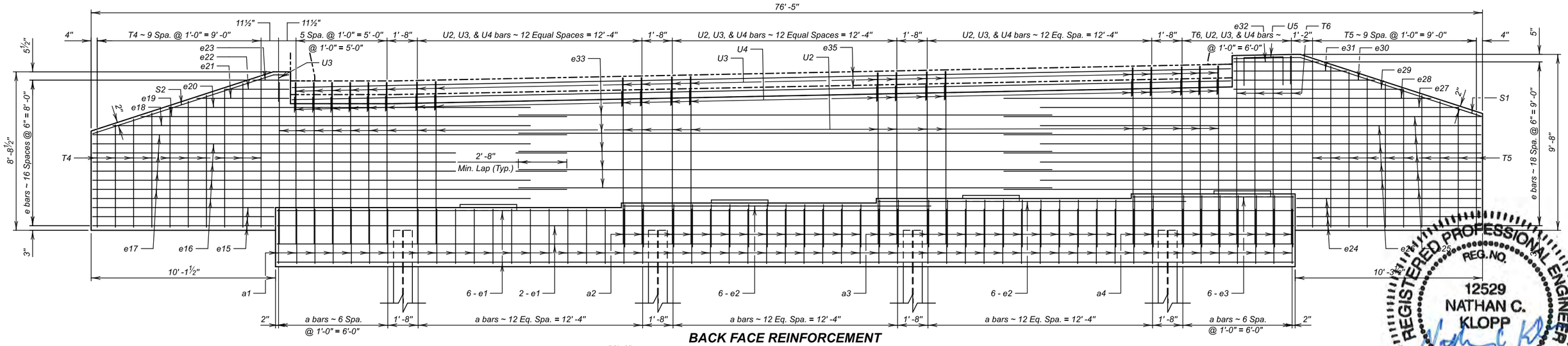
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ab1.dgn

FOR BIDDING PURPOSES ONLY

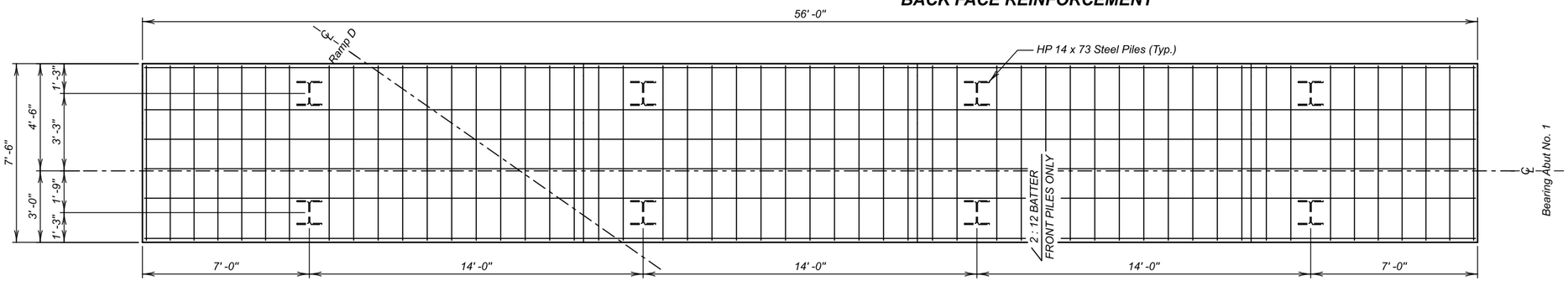
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E69	E130



FRONT FACE REINFORCEMENT



BACK FACE REINFORCEMENT



PLAN

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 1 DETAILS (BA)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

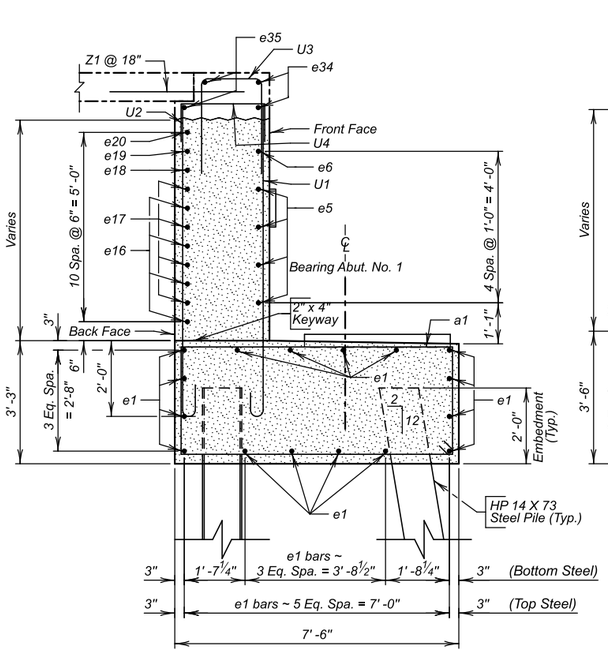
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

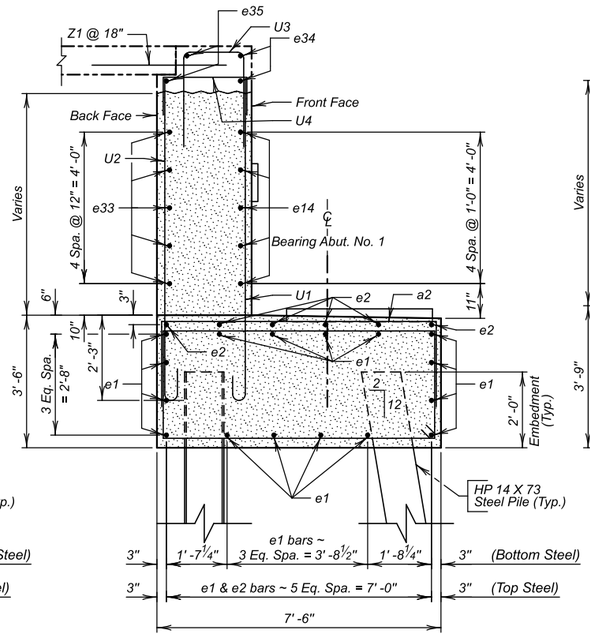
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ab1.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E70	E130



SECTION B-B



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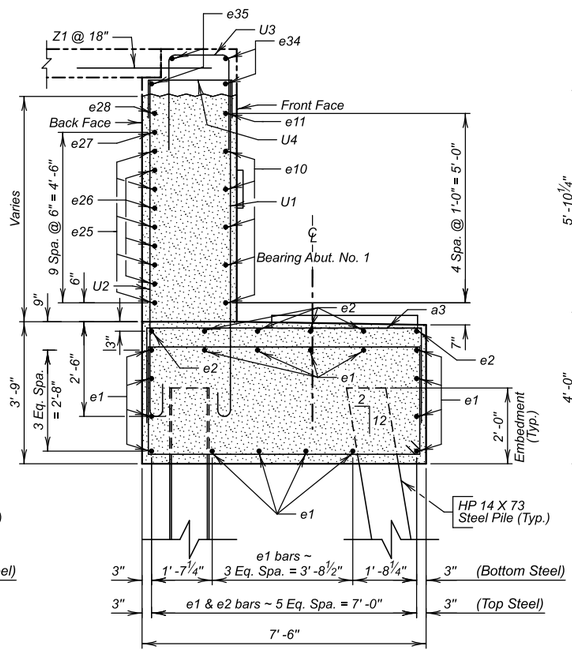

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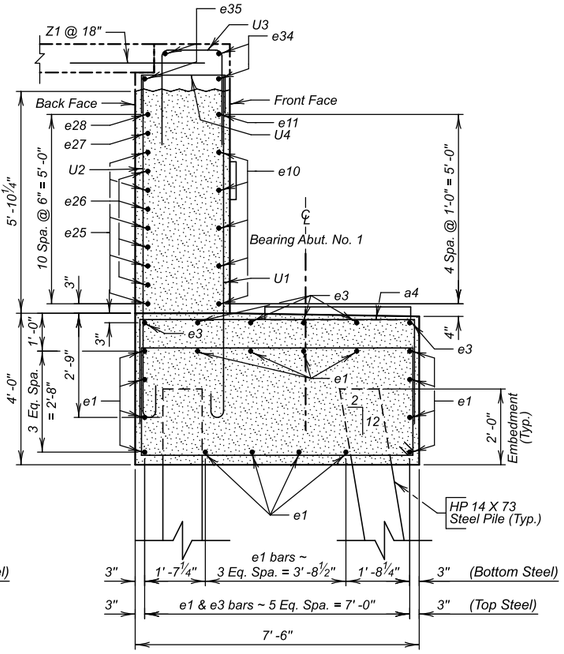

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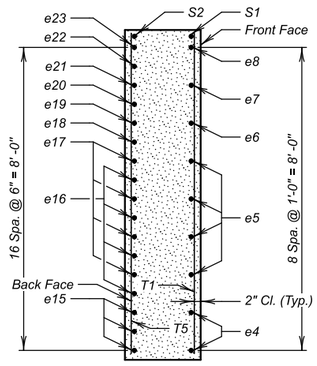
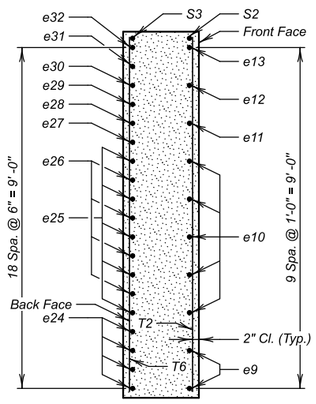


SECTION A-A



SECTION F-F

NOTE:
For expansion joint details see SEC. B-B on EXAPANSION FINGER JOINT DETAILS sheet.

For location and spacing of Z1 bars, see SUPERSTRUCTURE DETAILS (A) sheet.

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 1 DETAILS (C)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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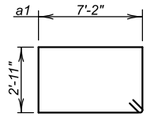
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E71	E130

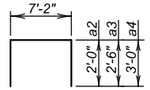
REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
△	a1	53	5	21' - 0"	T1
△	a2	13	5	11' - 2"	17
△	a3	13	5	12' - 2"	17
△	a4	9	5	13' - 2"	17
△	e1	16	8	55' - 8"	str.
△	e2	12	8	16' - 11"	str.
△	e3	6	8	8' - 10"	str.
	e4	2	6	9' - 9"	str.
	e5	4	6	26' - 0"	str.
	e6	1	6	23' - 4"	str.
	e7	1	6	7' - 8"	str.
	e8	1	6	4' - 7"	str.
	e9	2	6	9' - 11"	str.
	e10	5	6	26' - 2"	str.
	e11	1	6	23' - 5"	str.
	e12	1	6	4' - 10"	str.
	e13	1	6	1' - 9"	str.
	e14	5	4	27' - 8"	str.
	e15	3	6	9' - 11"	str.
	e16	4	6	24' - 0"	str.
	e17	4	6	26' - 0"	str.
	e18	1	6	23' - 0"	str.
	e19	1	6	23' - 5"	str.
	e20	1	6	19' - 11"	str.
	e21	1	6	5' - 1"	str.
	e22	1	6	3' - 6"	str.
	e23	1	6	2' - 0"	str.
	e24	8	6	10' - 2"	str.
	e25	5	6	26' - 3"	str.
	e26	4	6	24' - 3"	str.
	e27	1	6	23' - 0"	str.
	e28	1	6	23' - 6"	str.
	e29	1	6	9' - 4"	str.
	e30	1	6	7' - 9"	str.
	e31	1	6	6' - 3"	str.
	e32	1	6	4' - 8"	str.
	e33	9	6	29' - 4"	str.
△	e34	4	4	24' - 4"	str.
△	e35	4	6	26' - 6"	str.
	S1	2	5	13' - 11"	19B
	S2	2	5	11' - 3"	19B
⌀	T1	5	4	13' - 5"	str.
⌀	T2	5	4	15' - 5"	str.
	T3	4	4	9' - 10"	1A
⌀	T4	5	5	13' - 4"	str.
⌀	T5	5	5	15' - 4"	str.
	T6	4	6	10' - 11"	1A
	U1	49	4	9' - 4"	1A
	U2	49	6	9' - 8"	1A
△	U3	49	5	8' - 8"	17
△	U4	49	5	8' - 2"	17
	U5	2	5	7' - 8"	17
△	Z1	18	7	4' - 0"	str.

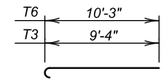
Bending Details



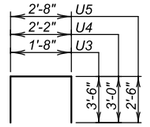
Type T1



Type 17



Type 1A



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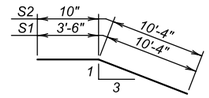
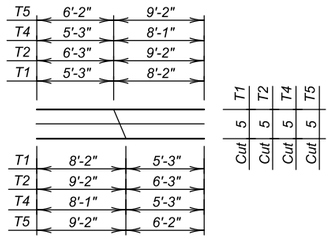
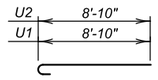


Type 19B



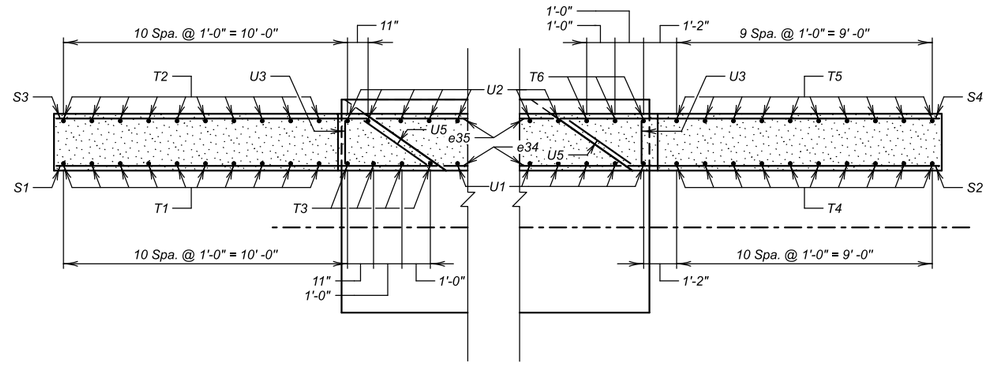


Type 1A

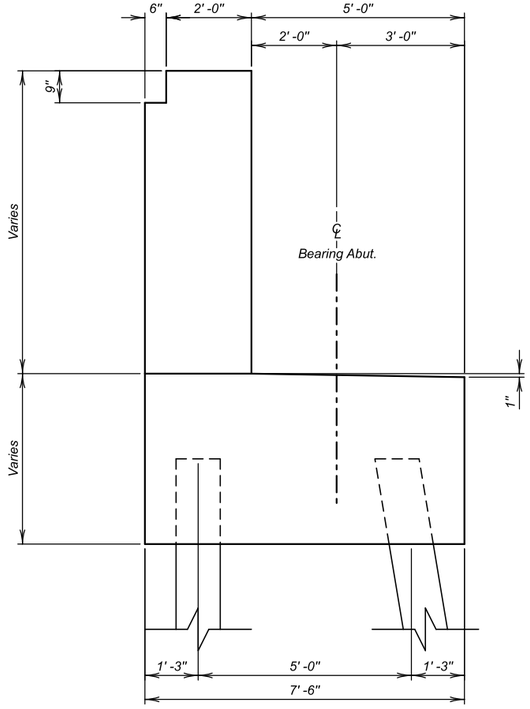
NOTES:
All dimensions are out to out of bars.
△ Bars to be Epoxy Coated.
⌀ See cutting diagram.

ESTIMATED QUANTITIES

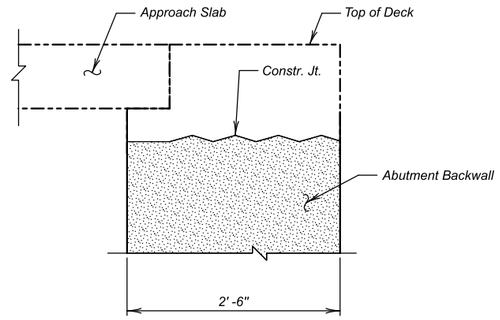
ITEM	UNIT	QUANTITY
Structure Excavation, Bridge	Cu. Yd.	96
Class A45 Concrete Bridge	Cu. Yd.	130.1
Reinforcing Steel	Lb.	4544
Epoxy Coated Reinforcing Steel	Lb.	4810
HP 14 x 73 Steel Test Pile, Furnish and Drive	Ft.	1 @ 115' = 115'
HP 14 x 73 Steel Bearing Pile, Furnish and Drive	Ft.	7 @ 110' = 770'



Wing Wall Plan



TYPICAL SECTION



DETAIL "X"
(Resteel not shown)

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 1 DETAILS (D)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ab1.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E72	E130

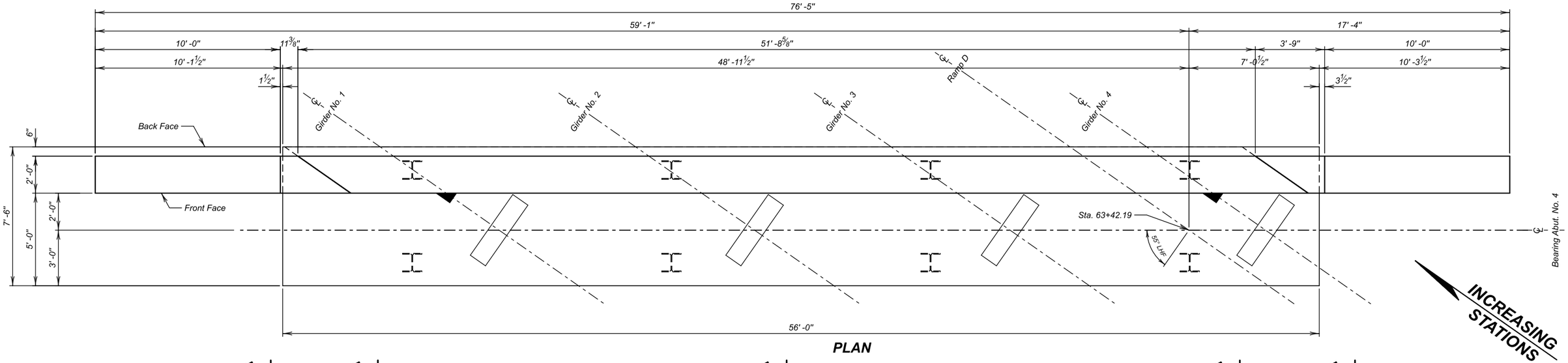


TABLE OF ELEVATIONS							
Elev. "A"	Elev. "B"	Elev. "C"	Elev. "E"	Elev. G1	Elev. G2	Elev. G3	Elev. G4
1532.92	1532.61	1532.80	1523.20	1526.58	1526.69	1526.80	1526.89

NOTE - Elev. G1, G2, G3, and G4 are top of grout pad elevations at ℄ Bearing.

Elevations are along back face of the abutment backwall.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 4 DETAILS (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

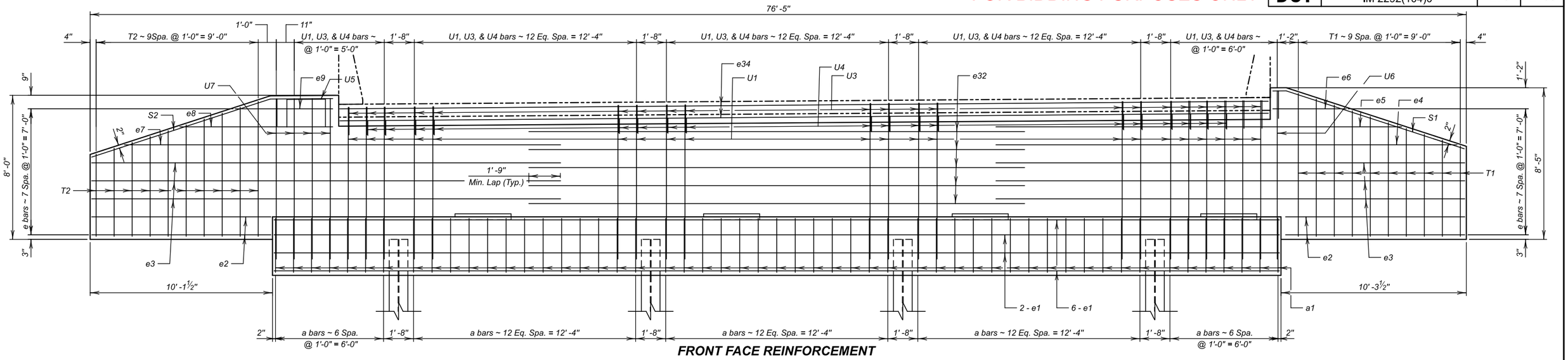
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

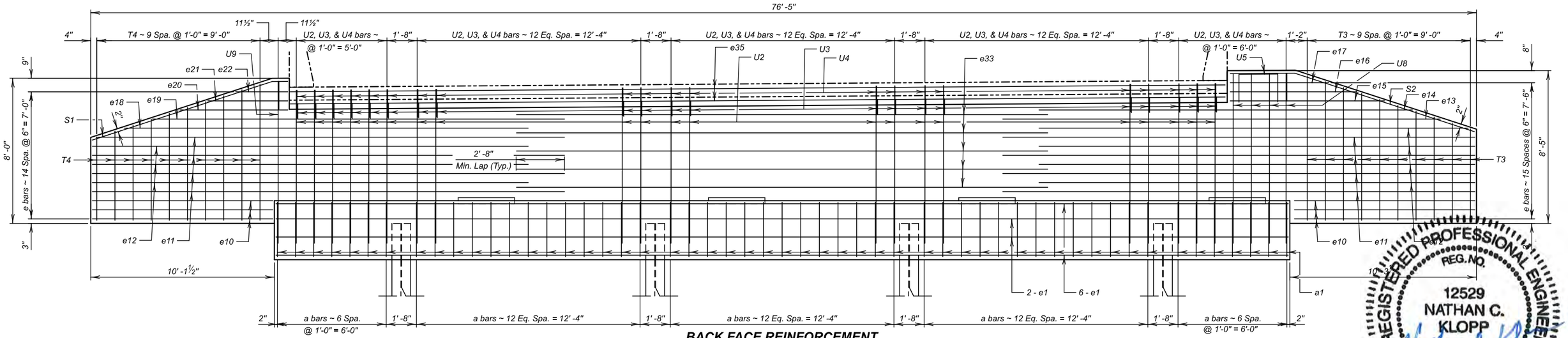
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ab2.dgn

FOR BIDDING PURPOSES ONLY

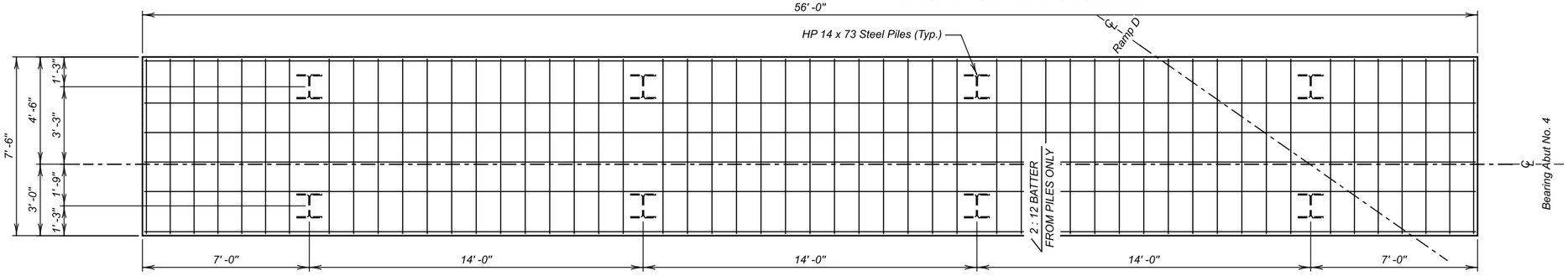
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E73	E130



FRONT FACE REINFORCEMENT



BACK FACE REINFORCEMENT



PLAN

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 4 DETAILS (SB)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
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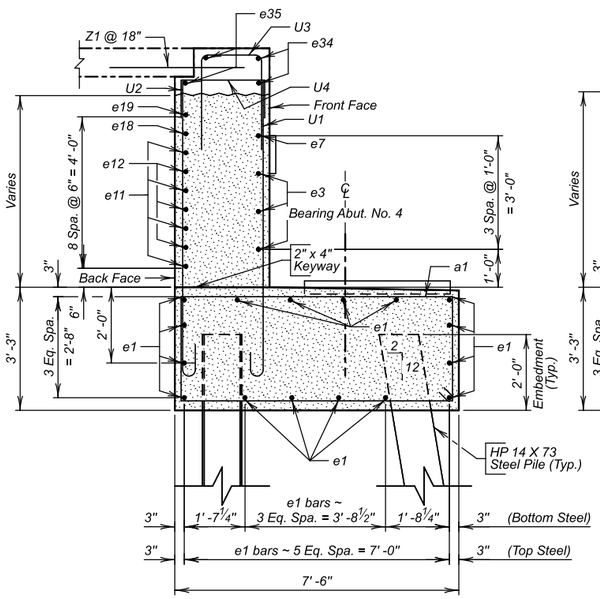
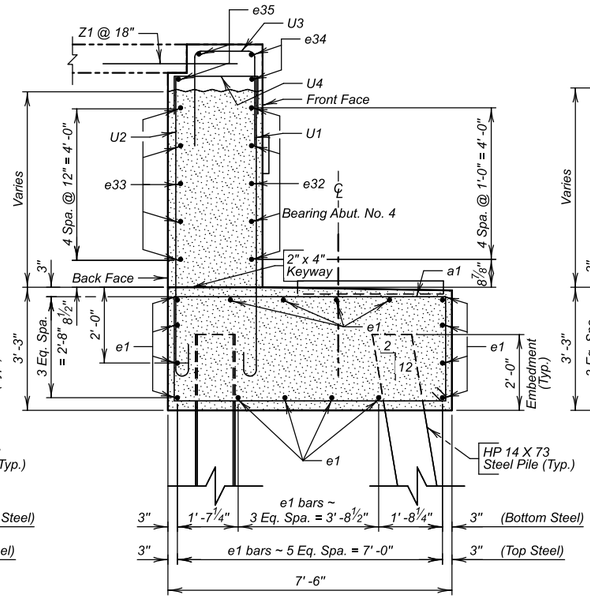
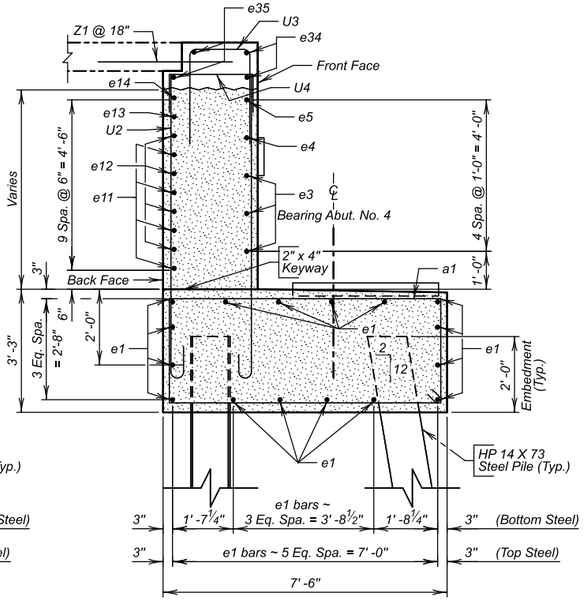


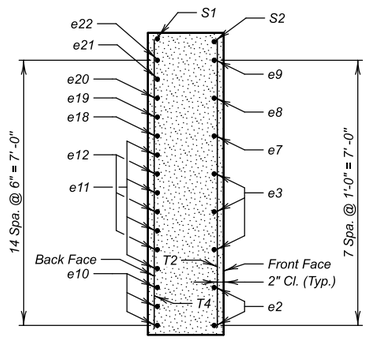
SECTION B-B



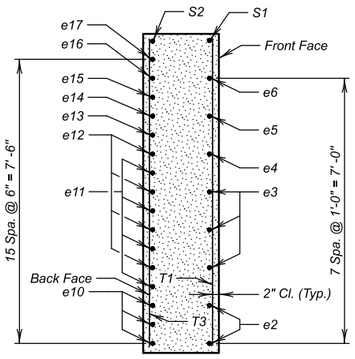
SECTION C-C



SECTION D-D



SECTION A-A



SECTION E-E

NOTE:
For expansion joint details see SEC. B-B on EXAPANSION FINGER JOINT DETAILS sheet.

For location and spacing of Z1 bars, see SUPERSTRUCTURE DETAILS (A) sheet.

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT NO. 4 DETAILS (C)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ab2.dgn

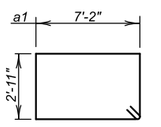
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E75	E130

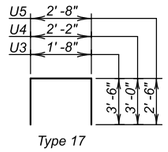
REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
△	a1	53	5	21' - 0"	T1
△	e1	16	8	55' - 8"	str.
	e2	4	6	9' - 11"	str.
	e3	6	6	26' - 0"	str.
	e4	1	6	25' - 6"	str.
	e5	1	6	22' - 6"	str.
	e6	1	6	4' - 1"	str.
	e7	1	6	24' - 3"	str.
	e8	1	6	8' - 6"	str.
	e9	1	6	5' - 5"	str.
	e10	6	6	9' - 11"	str.
	e11	8	6	26' - 0"	str.
	e12	7	6	24' - 0"	str.
	e13	1	6	24' - 2"	str.
	e14	1	6	20' - 7"	str.
	e15	1	6	8' - 6"	str.
	e16	1	6	7' - 0"	str.
	e17	1	6	5' - 5"	str.
	e18	1	6	22' - 3"	str.
	e19	1	6	22' - 9"	str.
	e20	1	6	5' - 11"	str.
	e21	1	6	4' - 5"	str.
	e22	1	6	2' - 10"	str.
	e32	5	5	27' 6"	str.
	e33	5	6	29' - 4"	str.
△	e34	4	4	24' - 4"	str.
△	e35	4	6	26' - 6"	str.
	S1	2	5	11' - 3"	19B
	S2	2	5	13' - 11"	19B
⌀	T1	5	4	13' - 0"	str.
⌀	T2	5	4	12' - 1"	str.
⌀	T3	5	5	13' - 0"	str.
⌀	T4	5	5	12' - 1"	str.
⌀	U1	48	4	8' - 11"	17
⌀	U2	48	6	9' - 1"	17
△	U3	48	5	8' - 8"	17
△	U4	48	5	8' - 2"	17
	U5	4	5	7' - 8"	17
	U6	1	4	9' - 10"	1A
	U7	4	4	9' - 5"	1A
	U8	4	6	10' - 0"	1A
	U9	1	6	9' - 7"	1A
△	Z1	18	7	4' - 0"	str.

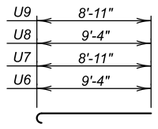
Bending Details



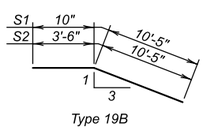
Type T1



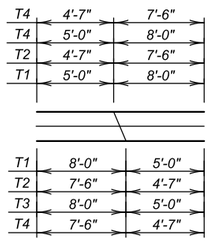
Type 17

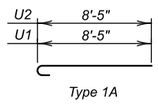


Type 1A



Type 19B



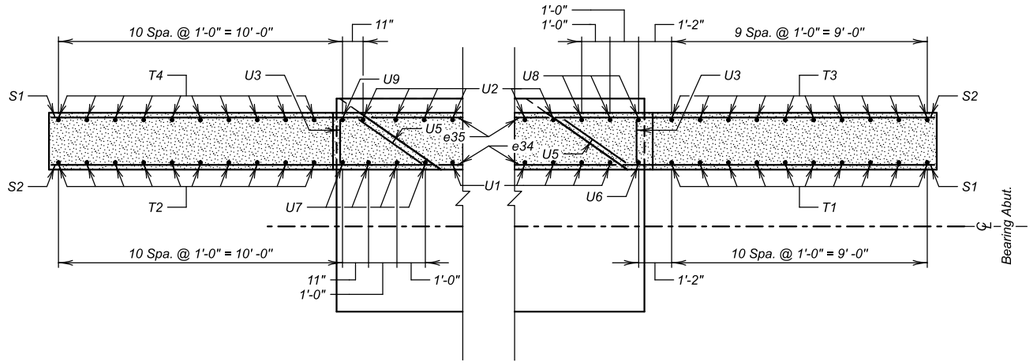


Type 1A

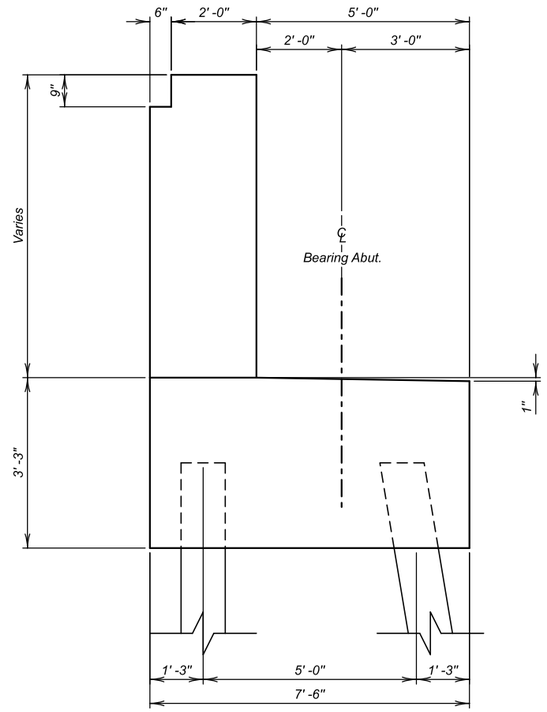
NOTES:
All dimensions are out to out of bars.
△ Bars to be Epoxy Coated.
⌀ See cutting diagram.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structure Excavation, Bridge	Cu. Yd.	73
Class A45 Concrete Bridge	Cu. Yd.	130.1
Reinforcing Steel	Lb.	4046
Epoxy Coated Reinforcing Steel	Lb.	3686
HP 14 x 73 Steel Test Pile, Furnish and Drive	Ft.	1 @ 115' = 115'
HP 14 x 73 Steel Bearing Pile, Furnish and Drive	Ft.	7 @ 110' = 770'

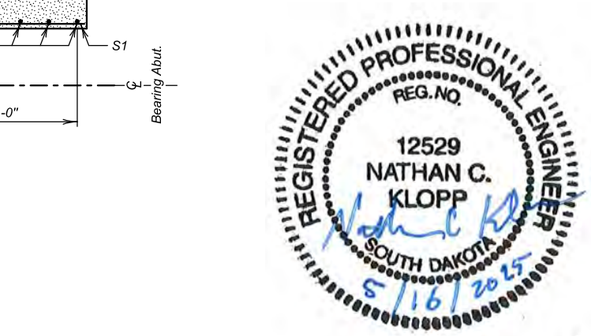


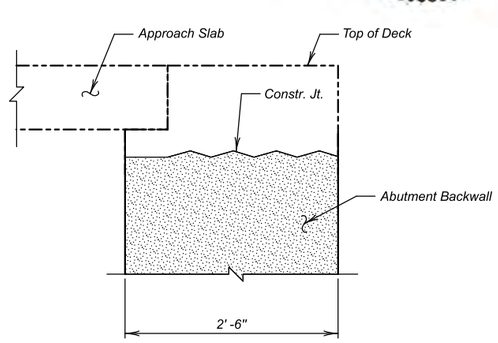
Wing Wall Plan



TYPICAL SECTION

NOTE:
Concrete shall be placed in the space under the beams (within the backwall width) during the pour. Care shall be taken to get the concrete vibrated into this area. If upon form removal the space is not completely filled and consolidated, the contractor shall grout in the remaining voids.





DETAIL "X"
(Resteel not shown)

ABUTMENT NO. 4 DETAILS (D)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

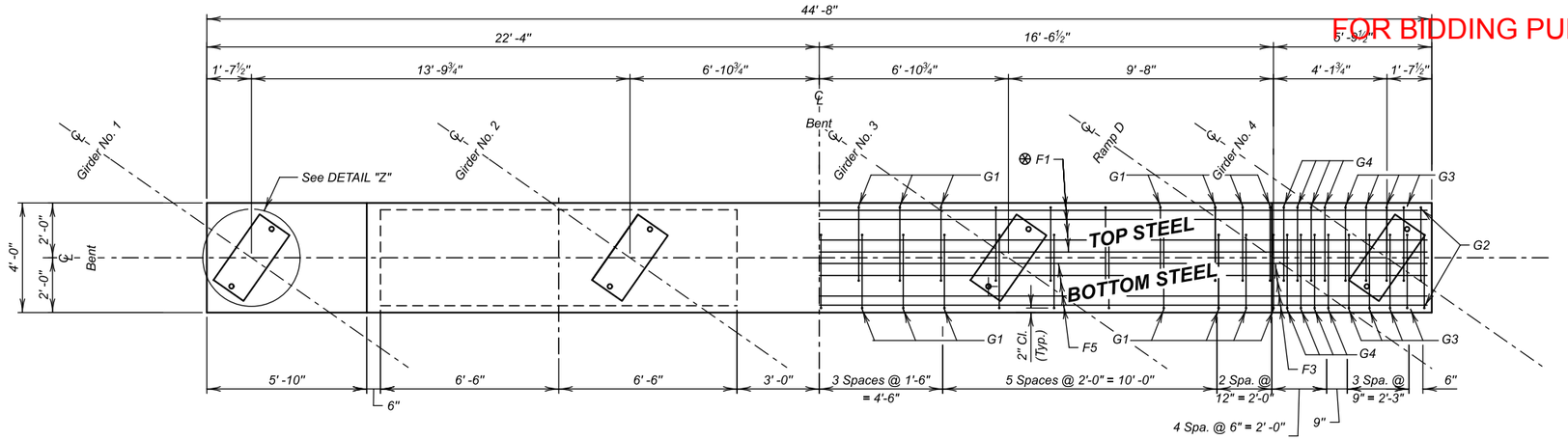
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ab2.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E76	E130



PLAN
(Looking North)

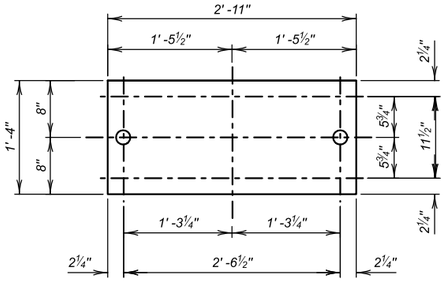
STATIONS INCREASING

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

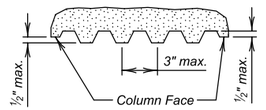
★TABLE OF ELEVATIONS

Location	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"
Bent No. 2	1529.91	1529.81	1529.70	1529.58
Bent No. 3	1528.28	1528.32	1528.35	1528.36

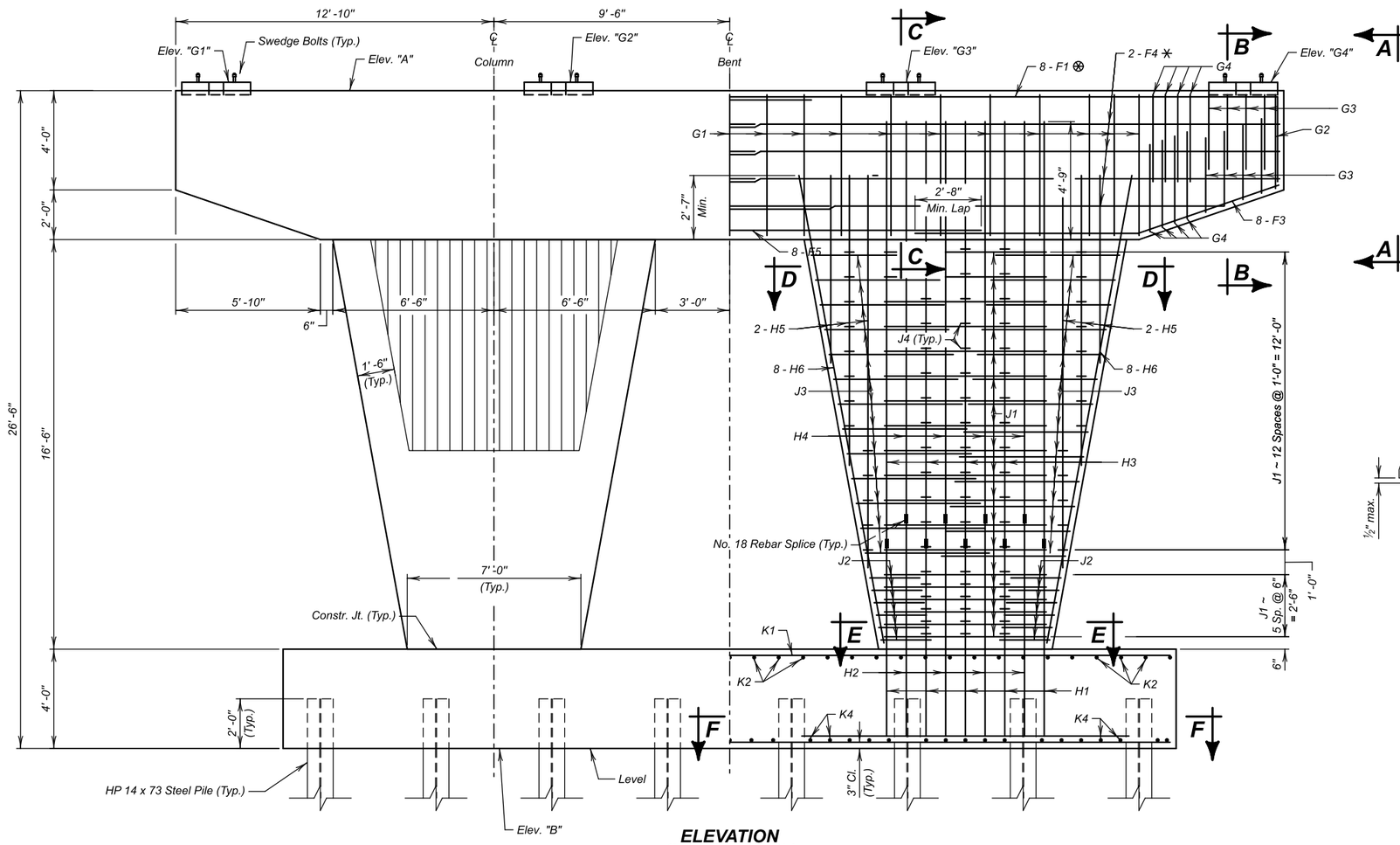
NOTE: Top of Grout Pad shall be level and smooth.
★ Elevations are Top of Grout Pad at centerline of bent
✳ Min. Lap = 2' -8"
⊛ Min. Lap = 6' -7"



DETAIL "Z"



DETAIL "Y"



ELEVATION
(Looking North)

TABLE OF ELEVATIONS

Location	Elev. "A"	Elev. "B"
Bent No. 2	1529.46	1502.96
Bent No. 3	1528.16	1501.66

BENT NO. 2 & 3 DETAILS (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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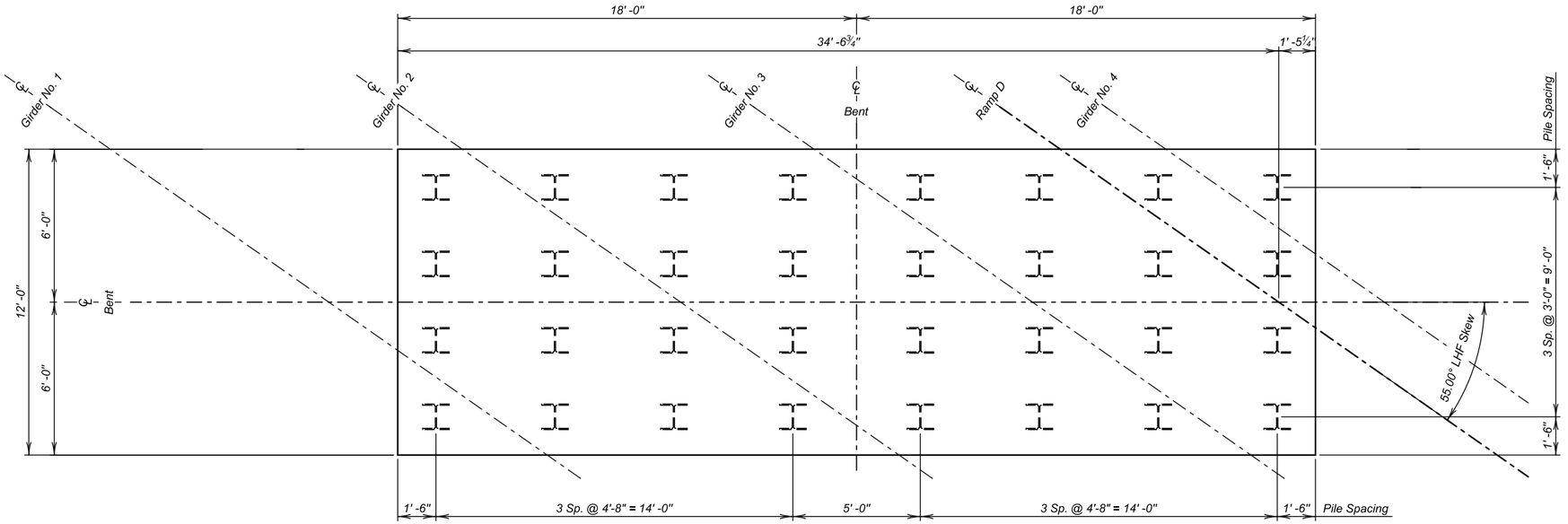
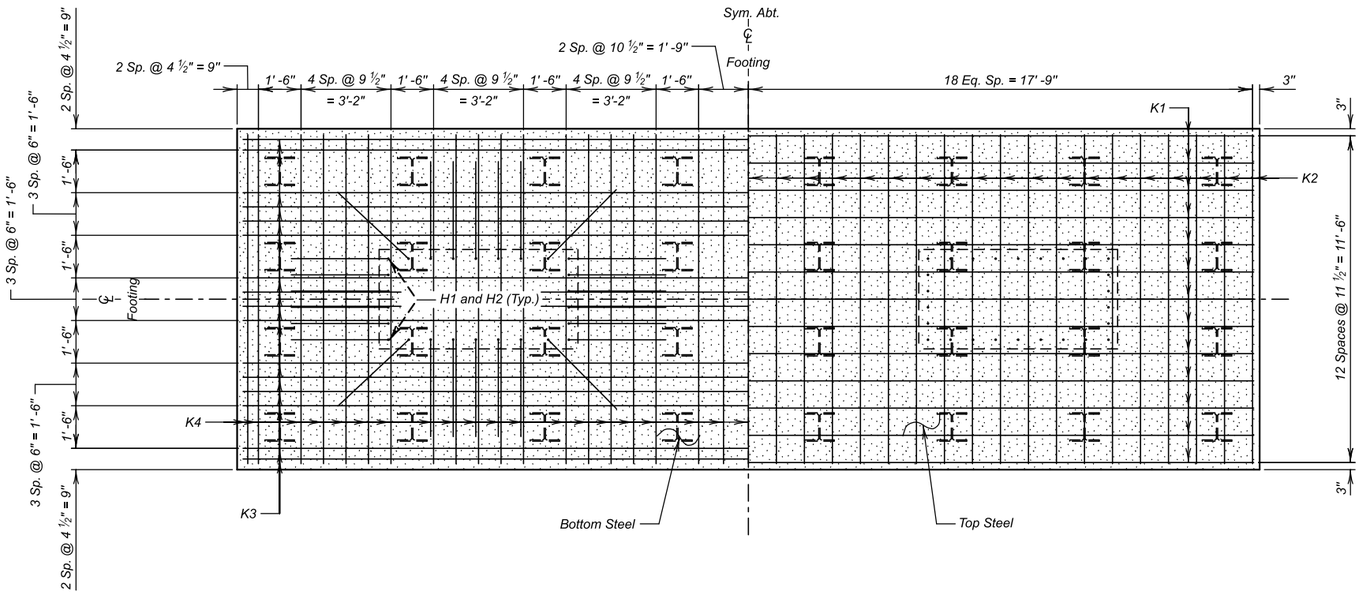
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E77	E130



PLAN

STATIONS INCREASING



SEC. F - F

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

BENT NO. 2 & 3 DETAILS (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

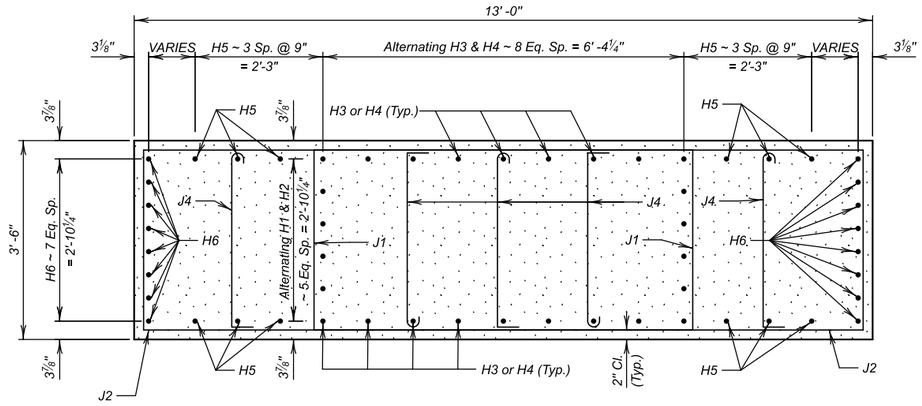
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_02_pir2.dgn

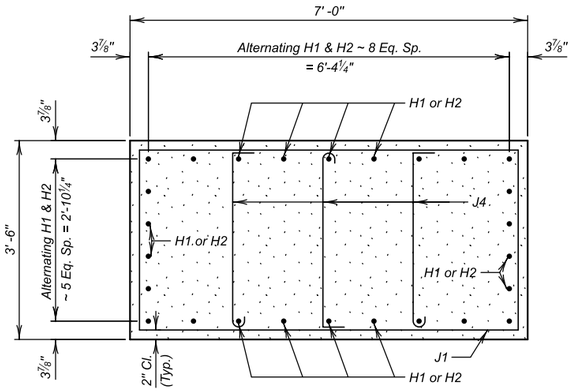
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E78	E130

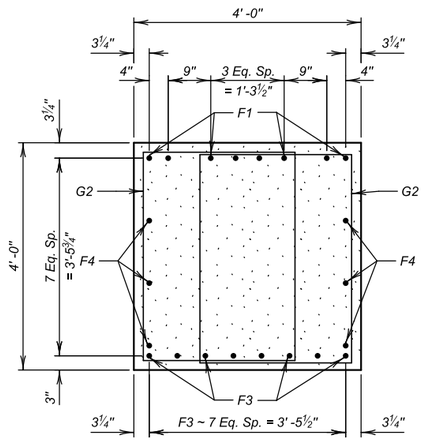
NOTE:
This sheet is to be used in conjunction with Bent No. 2 (A) and (B).



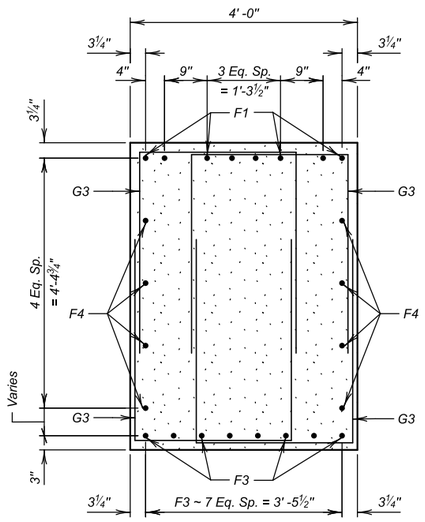
SEC. D-D



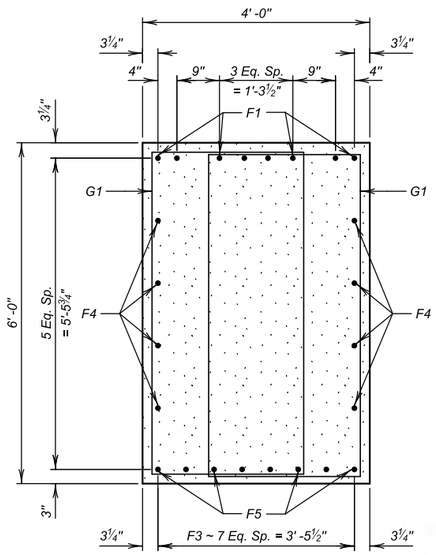
SEC. E-E



VIEW A-A



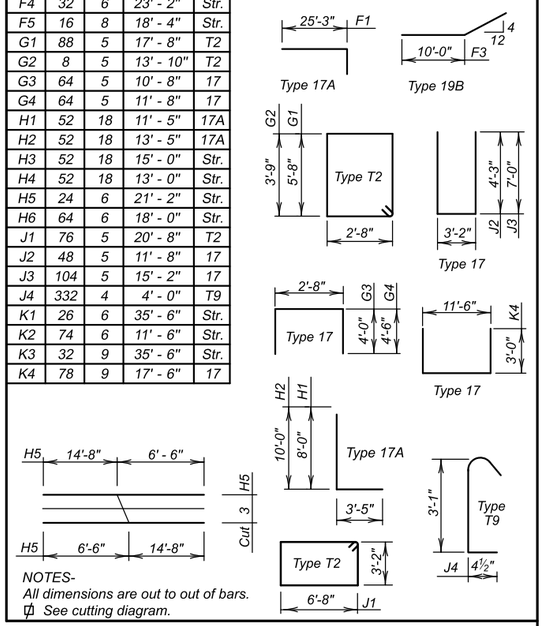
SEC. B-B



SEC. C-C

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
F1	32	9	28' - 9"	17A	
F3	32	6	15' - 1"	19B	
F4	32	6	23' - 2"	Str.	
F5	16	8	18' - 4"	Str.	
G1	88	5	17' - 8"	T2	
G2	8	5	13' - 10"	T2	
G3	64	5	10' - 8"	17	
G4	64	5	11' - 8"	17	
H1	52	18	11' - 5"	17A	
H2	52	18	13' - 5"	17A	
H3	52	18	15' - 0"	Str.	
H4	52	18	13' - 0"	Str.	
H5	24	6	21' - 2"	Str.	
H6	64	6	18' - 0"	Str.	
J1	76	5	20' - 8"	T2	
J2	48	5	11' - 8"	17	
J3	104	5	15' - 2"	17	
J4	332	4	4' - 0"	T9	
K1	26	6	35' - 6"	Str.	
K2	74	6	11' - 6"	Str.	
K3	32	9	35' - 6"	Str.	
K4	78	9	17' - 6"	17	



NOTES-
All dimensions are out to out of bars.
⌀ See cutting diagram.

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY	
			Bent No. 2	Bent No. 3
✳	Class A45 Concrete Bridge	Cu. Yd.	150.2	150.2
	Reinforcing Steel	Lb.	32378	32378
	Structure Excavation, Bridge	Cu. Yd.	148	143
	HP 14 x 73 Steel Test Pile, Furnish and Drive	Ft.	1 @ 95' = 95'	1 @ 95' = 95'
	HP 14 x 73 Steel Bearing Pile, Furnish and Drive	Ft.	31 @ 90' = 2790'	31 @ 90' = 2790'

✳ *Includes 0.4 Cu. Yds. for Grout Pads for each Bent.*

REGISTERED PROFESSIONAL ENGINEER
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NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

BENT NO. 2 & 3 DETAILS (C)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

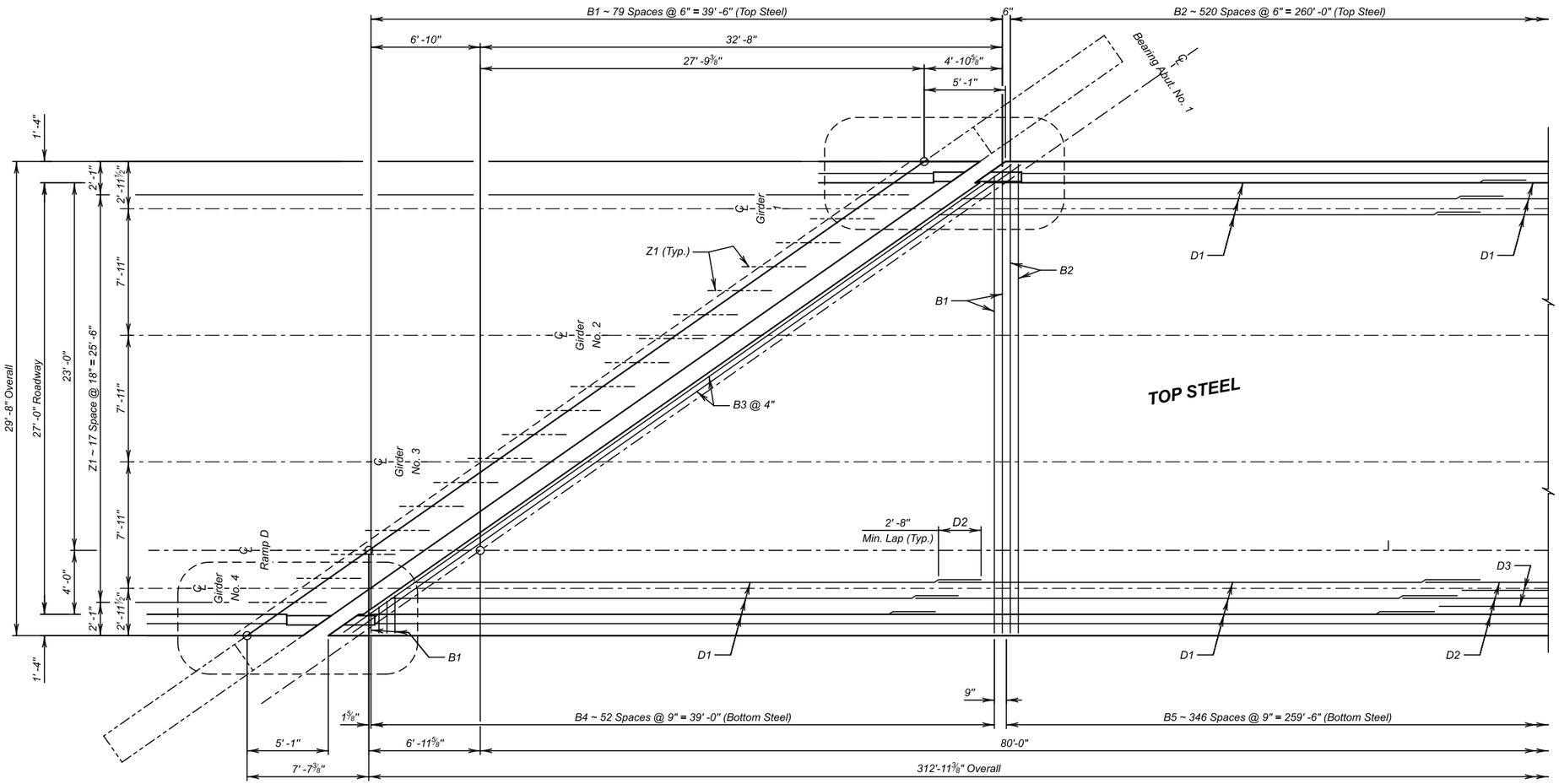
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

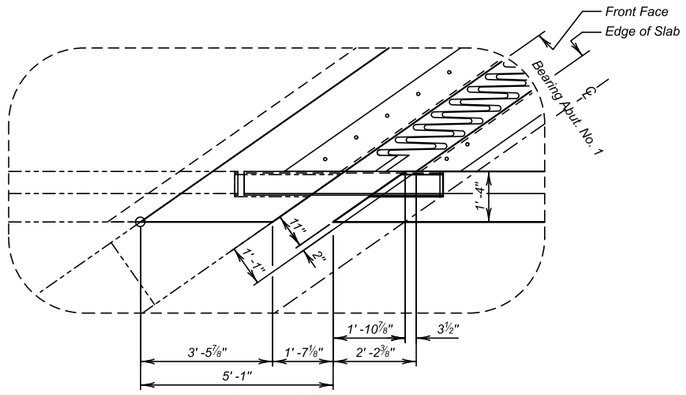
Plotted From - hclaridge File - ...\Sheets\b06JQ_02_pir2.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E79	E130

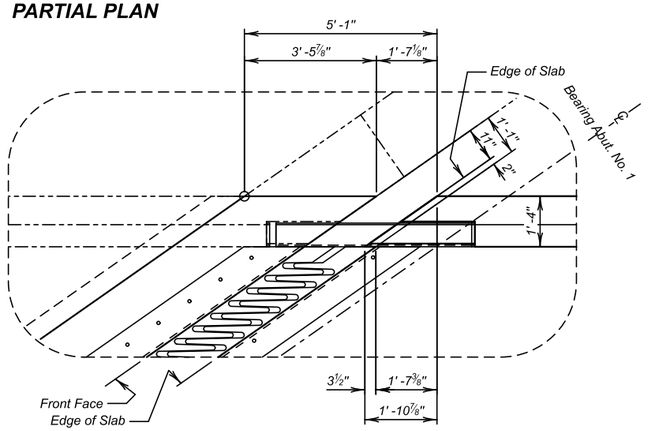


PARTIAL PLAN



Detail "X"

Abut. No.1 Shown, Abut. No. 3 Sim.



Detail "Y"

Abut. No.1 Shown, Abut. No. 3 Sim.

REGISTERED PROFESSIONAL ENGINEER
REG.NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

SUPERSTRUCTURE DETAILS (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
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DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

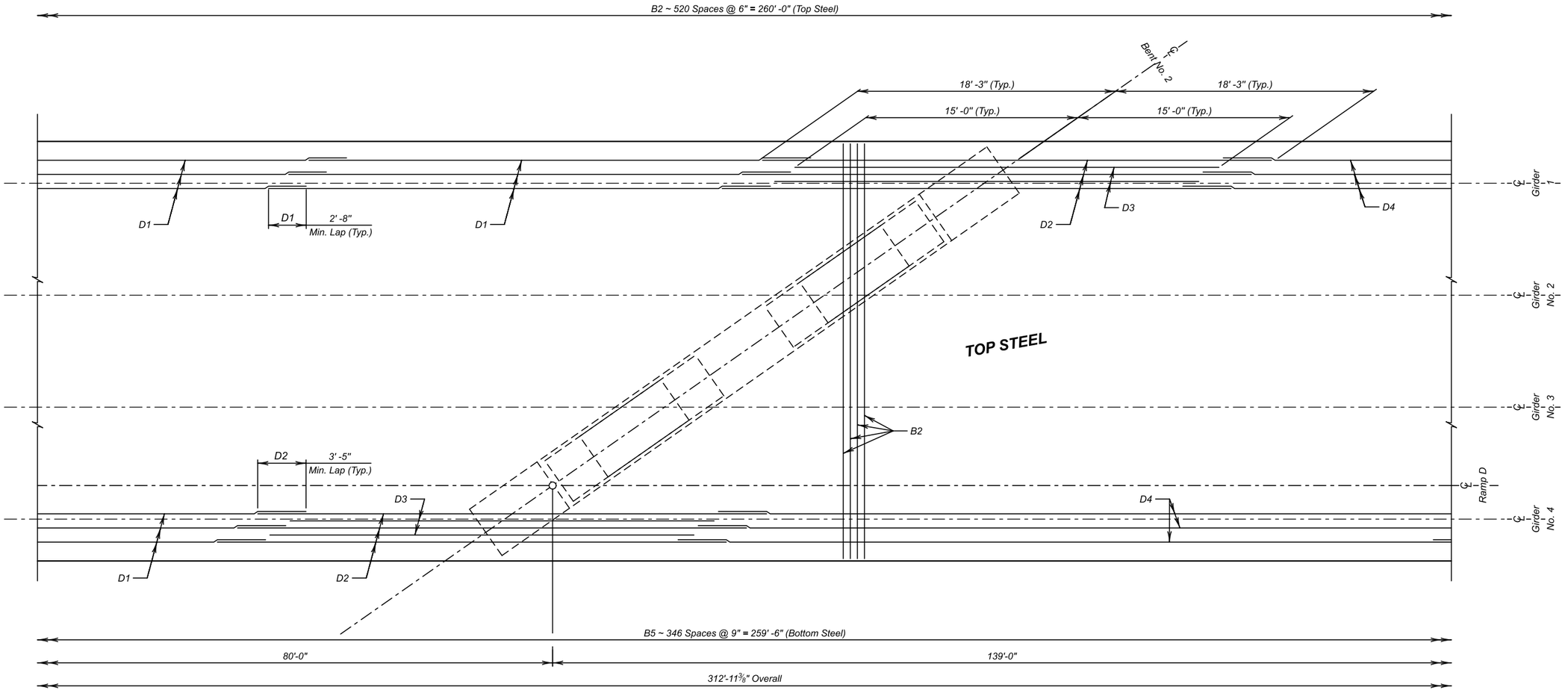
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ss.dgn

Plotting Date: 07/23/2025
Revised Date: 07/23/2025
Initials: NCK

FOR BIDDING PURPOSES ONLY

SD DOT

PROJECT	SHEET NO.	TOTAL SHEETS
EM 0292(88)73 IM 2292(104)0	E80	E130



PARTIAL PLAN

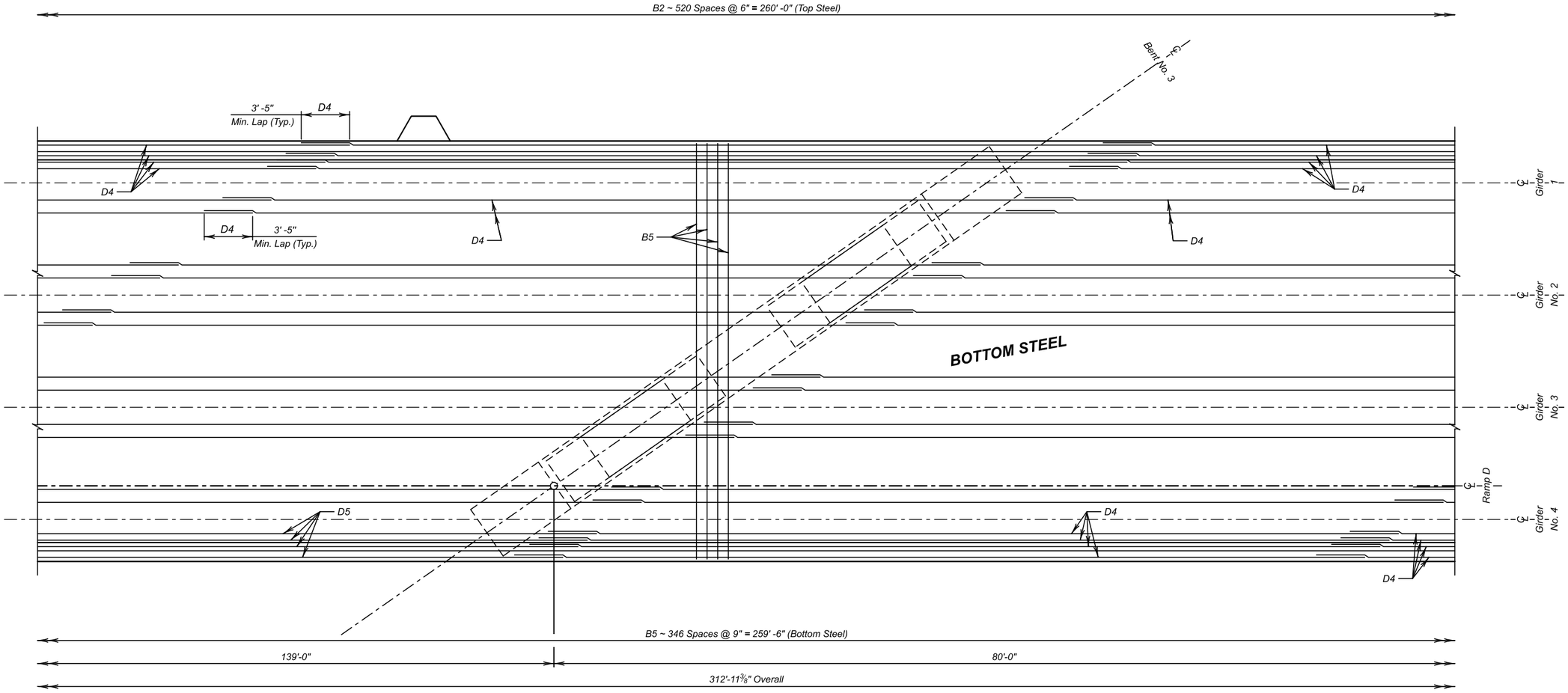
REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
7/23/2025

SUPERSTRUCTURE DETAILS (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER



PARTIAL PLAN

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
7/23/2025

SUPERSTRUCTURE DETAILS (C)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

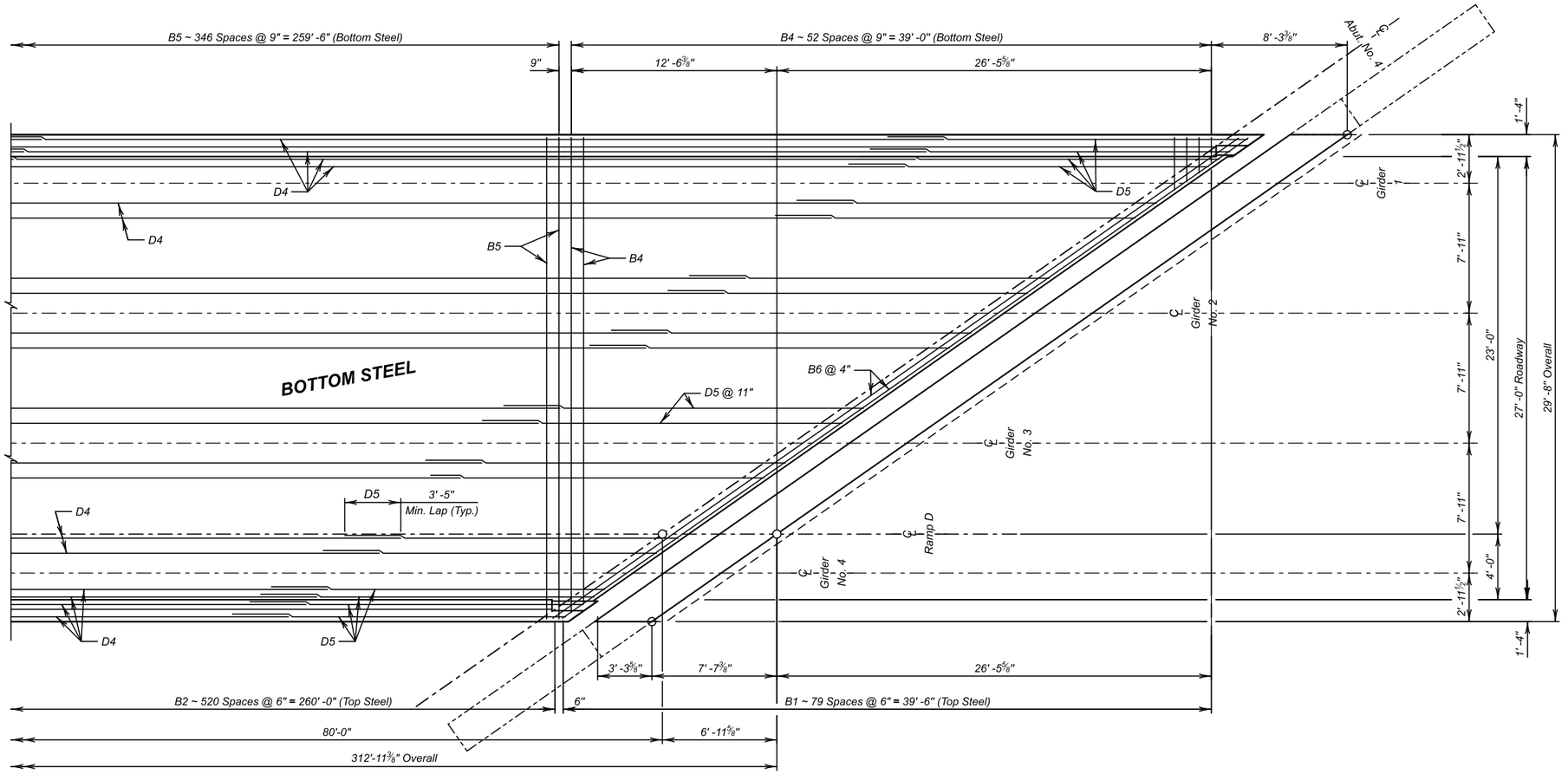
27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E82	E130



PARTIAL PLAN

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

SUPERSTRUCTURE DETAILS (D)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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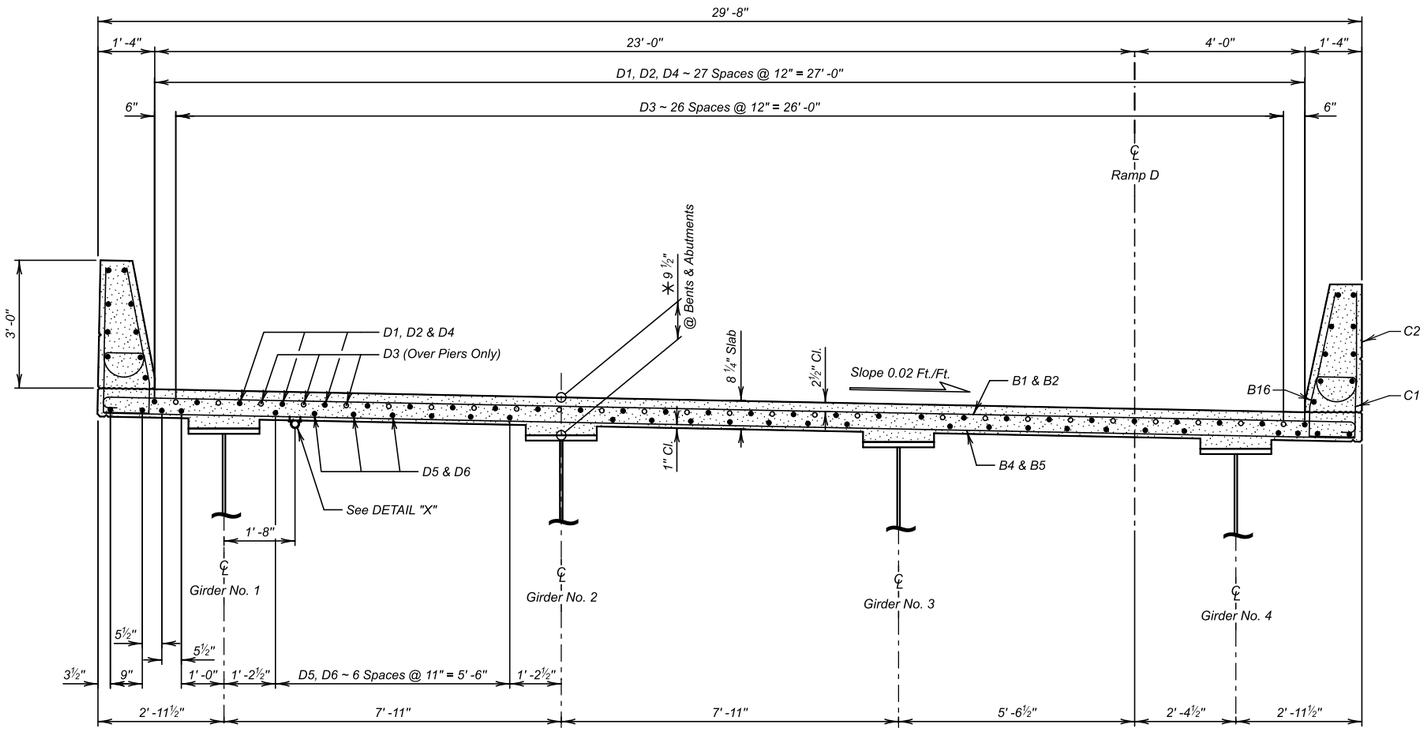
FOR BIDDING PURPOSES ONLY

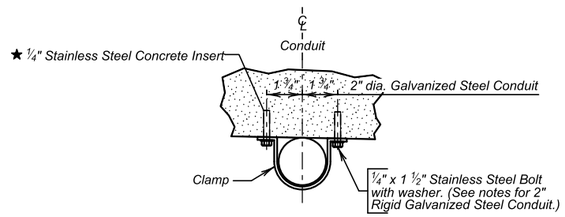
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E83	E130

NOTE:
See sheets ABUTMENT NO. 1 DETAILS and ABUTMENT NO. 4 DETAILS for Z1 bar location and spacing .



SEC. C - C

★ Space Stainless Steel Concrete Inserts @ 5'-0" Maximum Spacing



DETAIL "X"

✳ Dimensions are at ℄ bearing: at other points along the girders this dimension shall be computed as shown on the SLAB FORM ELEVATIONS & ERECTION DATA sheets.

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
⊛	Class A45 Concrete, Bridge Deck	Cu. Yd.	340.1
	Stainless Reinforcing Steel	Lb.	67897
✠	Structural Steel	L.S.	Lump Sum
	Concrete Penetrating Sealer	Sq. Yd.	939
	Deck Drain, Girder Bridge	Ea.	9
	2" Galvanized Steel Conduit	Ft.	313

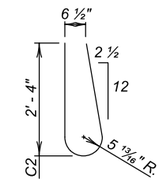
⊛ Concrete quantity for the Barrier is 0.1184 Cu. Yd. per foot.

✠ For informational purposed only, the estimated weight of the structural steel is 485570 pounds. Incudes beams, splice plates, bolts, and diaphragms. For informational purposes only, the number of shear connectors is 5784 and the estimated weight of the shear connectors is 5564 pounds. For informational purposes only, the estimated area of structural steel to be painted is 25740 square feet. Includes beams, splice plates, and diaphragms.

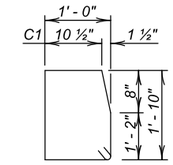
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
B1	80	5	31' - 5"	1A
B2	521	5	30' - 6"	1
B3	4	5	51' - 0"	Str.
B4	53	5	30' - 3"	Str.
B5	347	5	29' - 4"	Str.
B6	4	5	51' - 0"	Str.
B16	12	4	52' - 6"	Str.
C1	606	5	6' - 1"	T1A
C2	606	5	5' - 5"	S11
D1	112	5	35' - 6"	Str.
D2	56	5	36' - 0"	Str.
D3	54	6	30' - 0"	Str.
D4	56	6	56' - 5"	Str.
D5	145	5	60' - 0"	Str.
D6	29	5	21' - 11"	Str.
D7	24	5	52' - 10"	Str.
D8	96	4	52' - 10"	Str.
P1	10	5	3' - 4"	Str.
P2	8	4	3' - 5"	1
P3	3	4	8' - 5"	7
P4	3	4	8' - 10"	7
P5	6	4	7' - 5"	T1
P6	4	4	4' - 0"	19B
Z1	36	7	4' - 0"	Str.

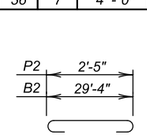
Bending Details



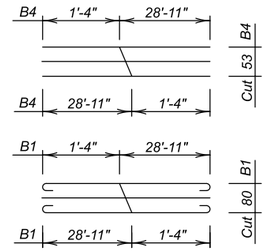
Type S11



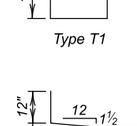
Type T1A



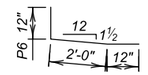
Type 1



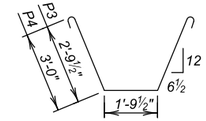
Type 1A



Type T1



Type 19B



Type 7

NOTE-
All dimensions are out to out of bars.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

SUPERSTRUCTURE DETAILS (E)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

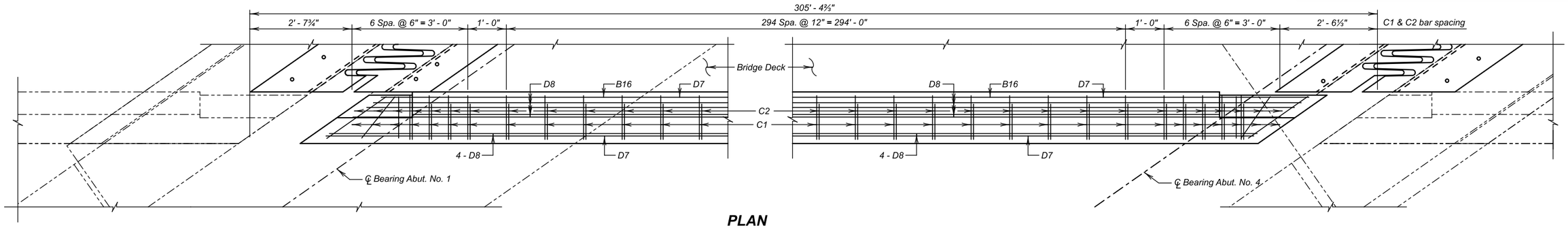
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_ss.dgn

Plotting Date: 07/23/2025 Revised Date: 07/23/2025 Initials: NCK

FOR BIDDING PURPOSES ONLY

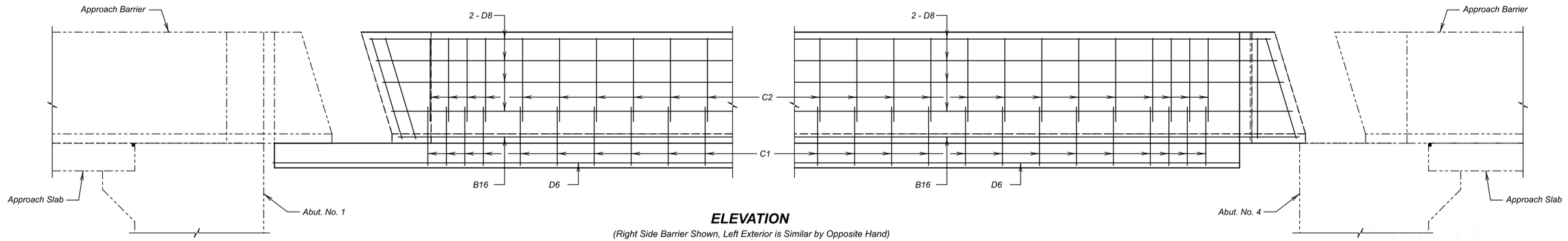
SD DOT

PROJECT	SHEET NO.	TOTAL SHEETS
EM 0292(88)73 IM 2292(104)0	E84	E130



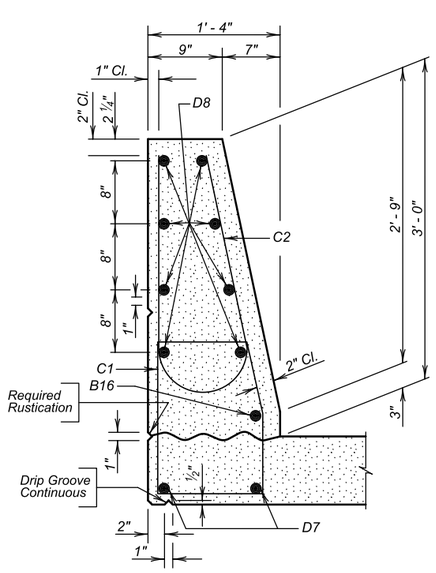
PLAN

(Right Side Barrier Shown, Left Exterior is Similar by Opposite Hand)



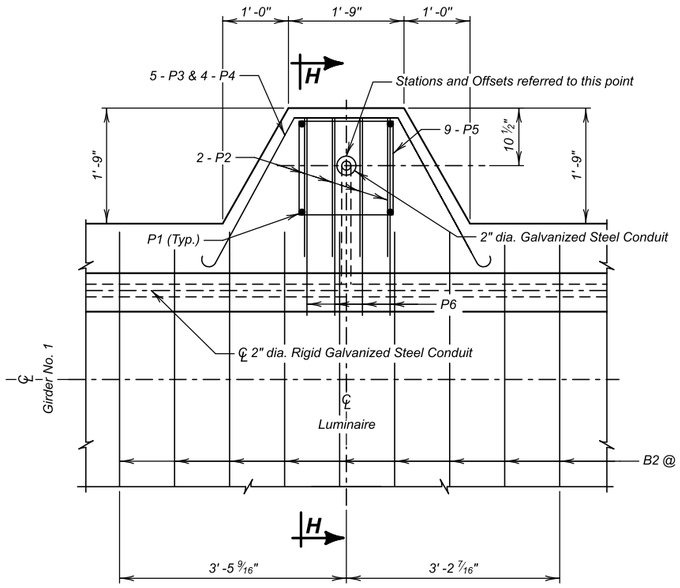
ELEVATION

(Right Side Barrier Shown, Left Exterior is Similar by Opposite Hand)



SINGLE SLOPE BARRIER

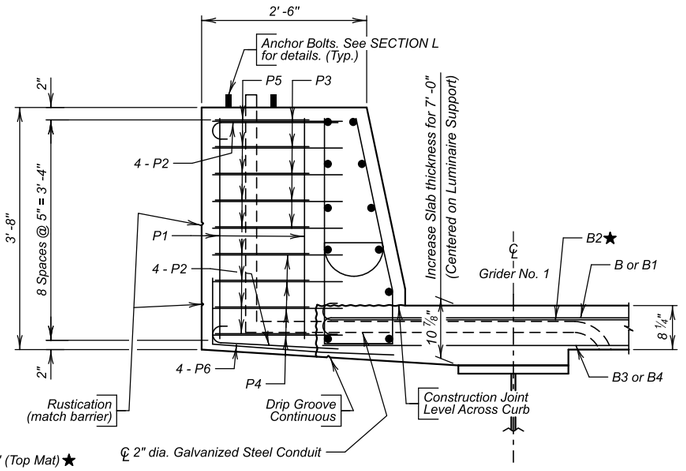
(Typical Cross-Section)



Detail "Y"

Sta 62+53.00 Offset 24.33' Left

★ *At Luminaire Locations only*



Section H-H

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
7/23/2025

ENDBLOCK AND BARRIER CURB AND DECK DRAIN DETAILS (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

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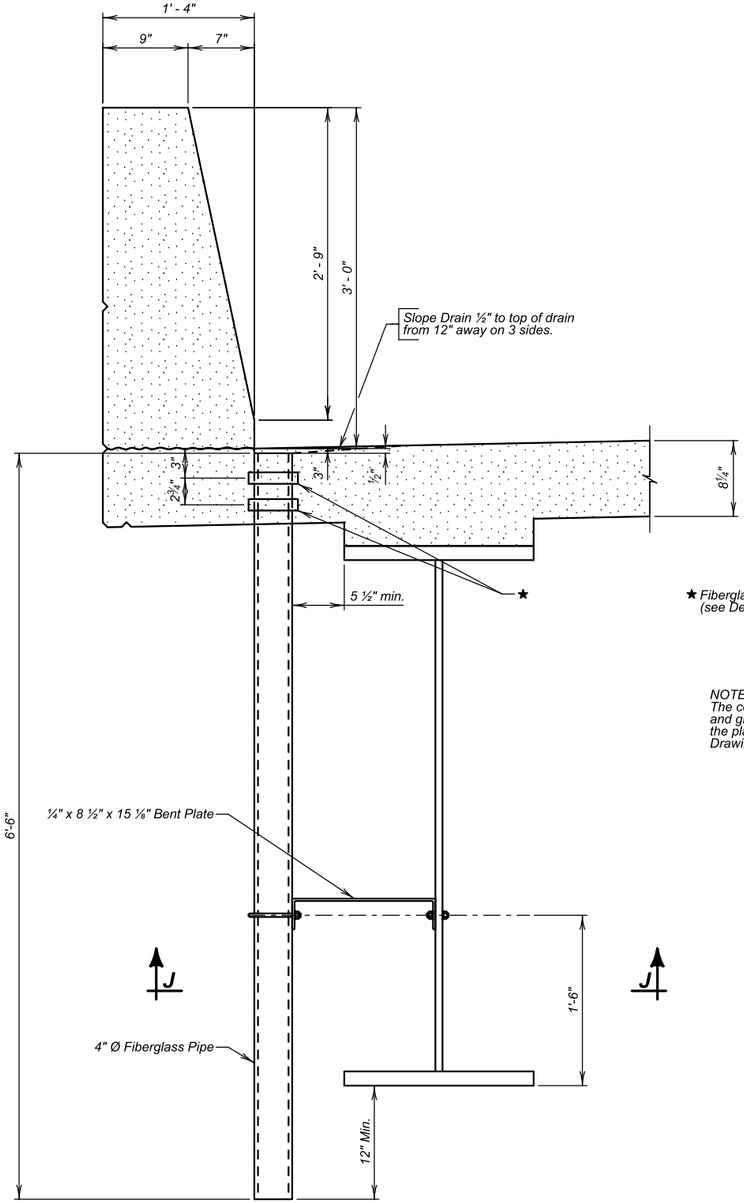
CAK	NCK	NCM	BRIDGE ENGINEER

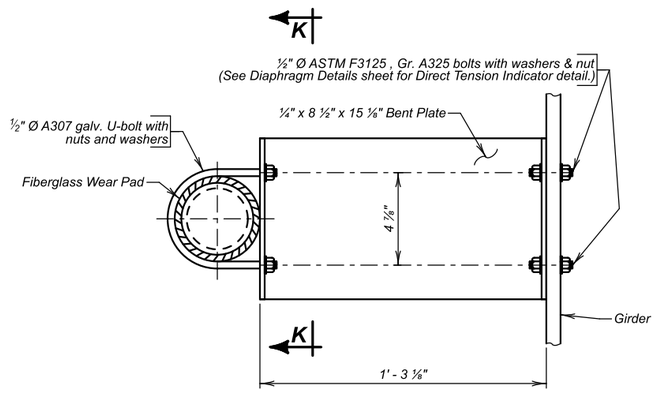
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E85	E130

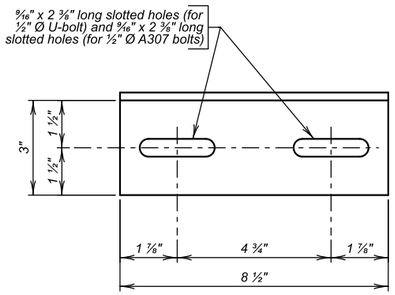


DECK DRAIN DETAILS

NOTE:
The connection between the drop tube and girder flange shall be made prior to the placing of the deck slab. See General Drawing for spacing of deck drains.



SECTION J - J



SECTION K - K

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ENDBLOCK AND BARRIER CURB AND DECK DRAIN DETAILS (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

25 OF 53

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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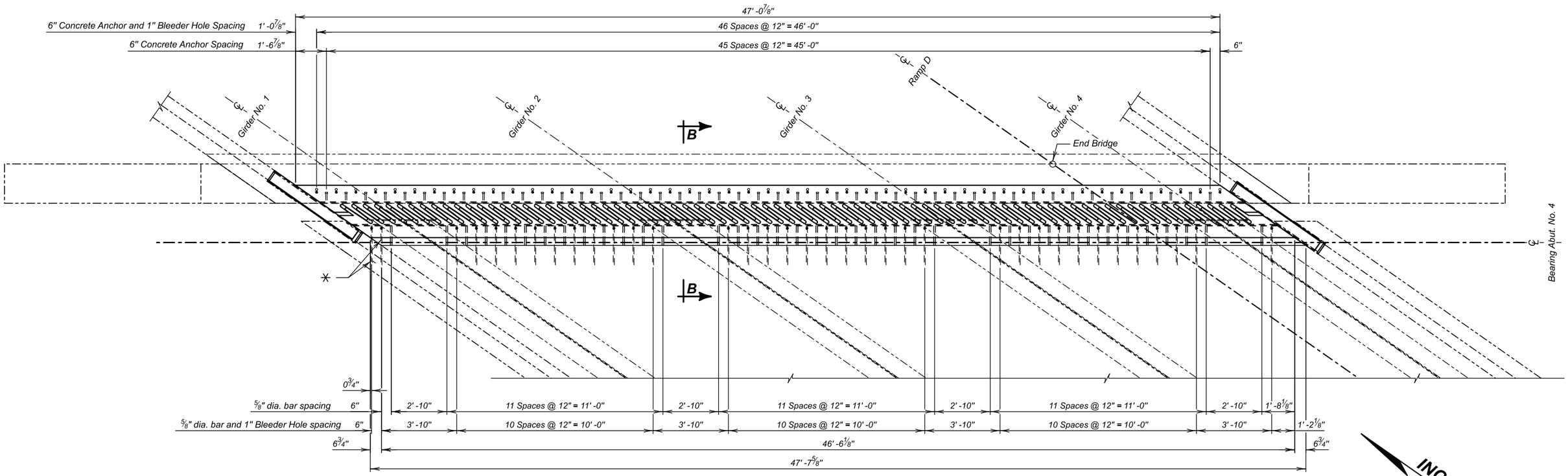
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E86	E130

Plotting Date: 06/26/2025

Revised Date: 06/26/2025
Initials: NCK



PLAN

(Abut. No. 4 shown, Abut. No. 1 similar by rotation)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

✳ *Bend bar to maintain 2" Cl. Cover*

EXPANSION FINGER JOINT PLAN
FOR
312'-11 3/8" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

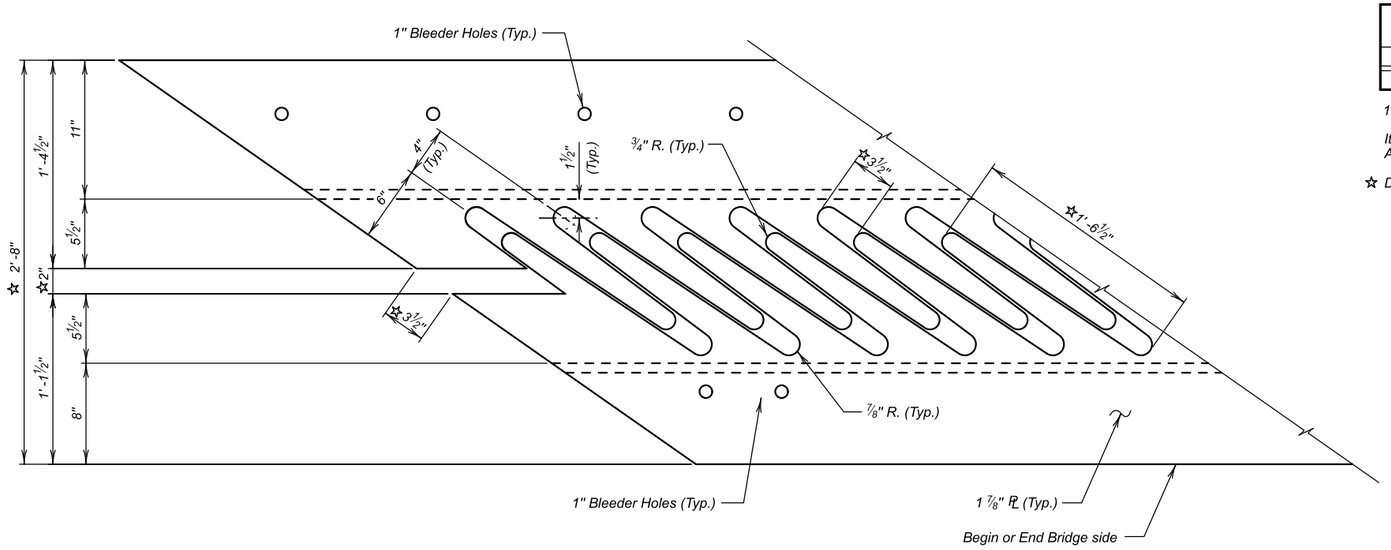
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - nmclaughlin File - ...\Ramp D\Sheets\b06JQ_02_exp.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E87	E130

Plotting Date: 06/26/2025 Revised Date: 06/26/2025
Initials: NCK



FINGER DETAILS

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Finger Type Expansion Joint Assembly	Each	2

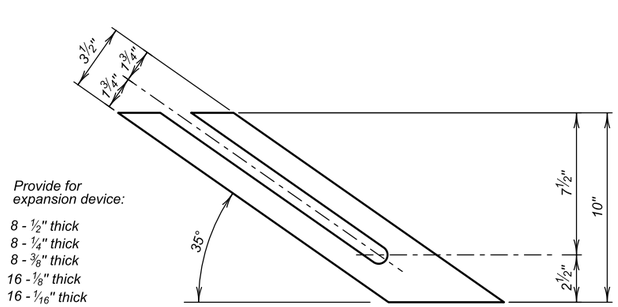
1. 11093 lbs. Structural Steel for Finger Type Expansion Joint Assembly.

Item 1 is an approximate quantity contained Finger Type Expansion Joint Assembly and is for information only.

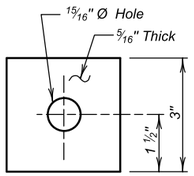
☆ Dimensions shown at 70° F

TABLE - B	
Temp.	Dimension "X"
30°	3 15/16"
40°	3 7/8"
50°	3 3/4"
60°	3 5/8"
70°	3 1/2"
80°	3 3/8"
90°	3 1/4"
100°	3 1/8"

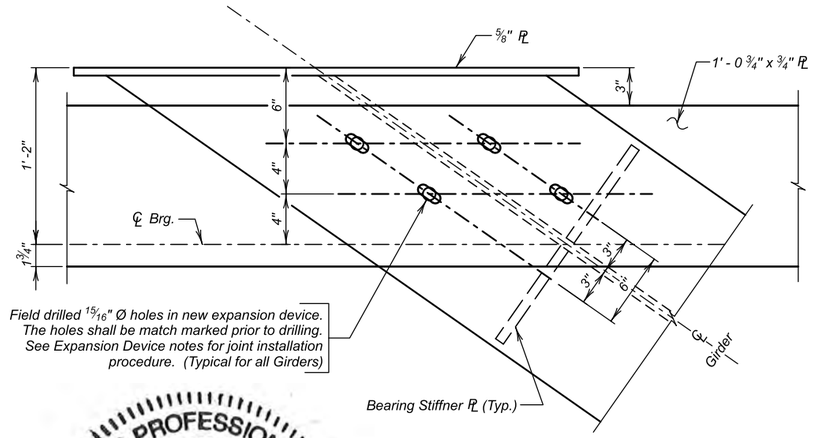
Note: Temperature in above Table Corresponds to Girder Temperature.



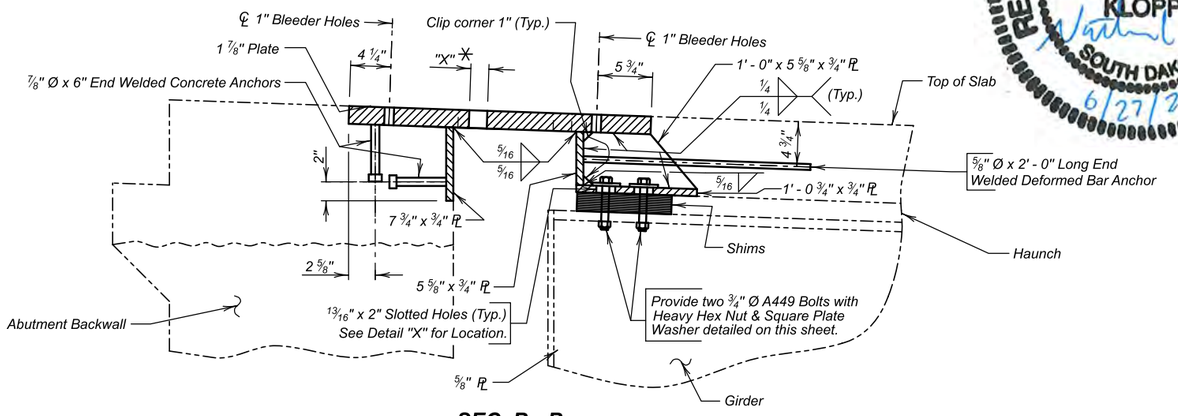
SHIM DETAIL



SQUARE PLATE WASHER



DETAIL "X"



SEC. B - B

✳ Dimension is parallel to girder.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
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NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

EXPANSION FINGER JOINT DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - nmclaughlin File - ...\Ramp D\Sheets\b06JQ_02_exp.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E88	E130

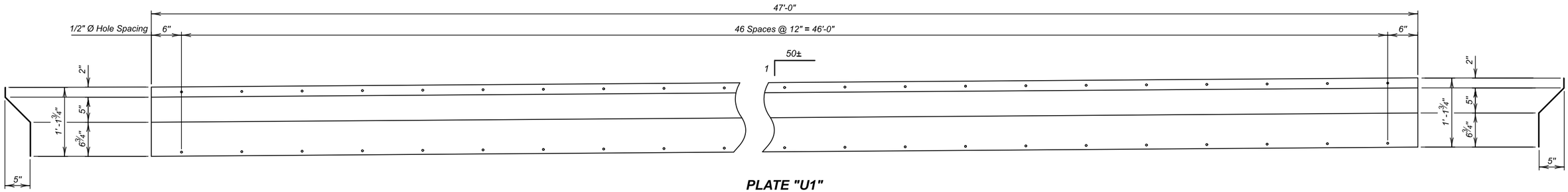


PLATE "U1"

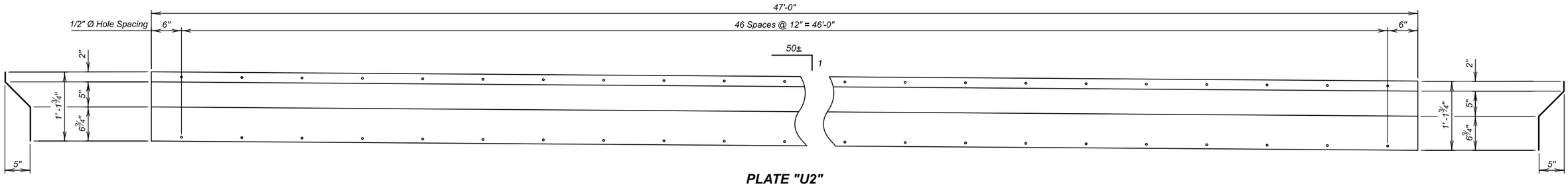
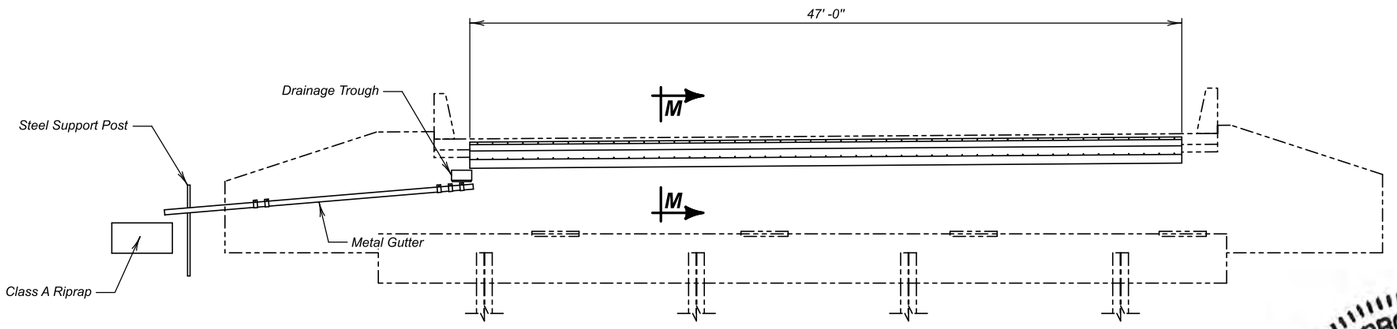


PLATE "U2"



JOINT DRAIN LAYOUT
(Abut No. 1 Shown, Abut No. 4 Similar Opposite Hand)

ESTIMATED QUANTITIES
(For Two Abutments)

ITEM	UNIT	QUANTITY
Abutment Joint Drain	Each	2

Items 1 thru 3 are approximate quantities contained in the above bid item and are for imformation only.

1. Structural Steel — 284 lbs.
2. Neoprene Sheet — 146 sq. ft.
3. Class A Riprap — 4.5 tons

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

ABUTMENT JOINT DRAIN LAYOUT
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

NOTE:
This sheet is to be used in conjunction with ABUTMENT JOINT DRAIN DETAILS sheet.

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

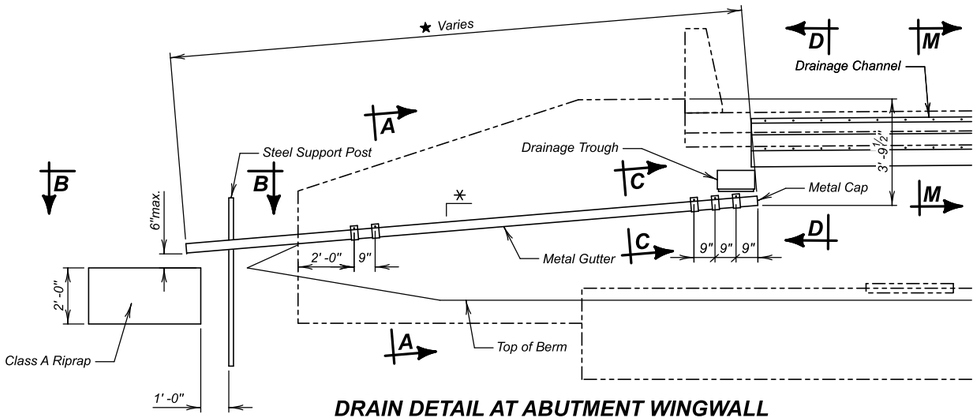
Plotted From - hclaridge File - ...\Sheets\b06JQ_02_exp2.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E89	E130

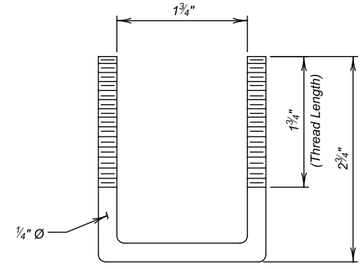
★ *The length of metal gutter will need to be determined in the field for each location individually prior to fabrication.*

⚹ *Slope will be set in the field prior to fabrication to clear the berm spill cone.*

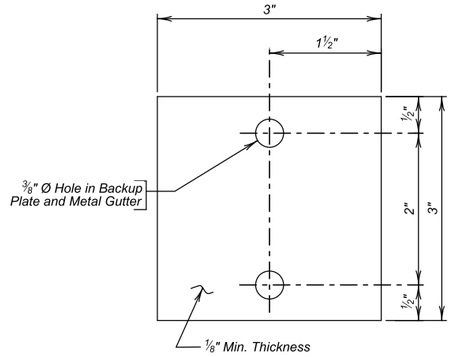


DRAIN DETAIL AT ABUTMENT WINGWALL

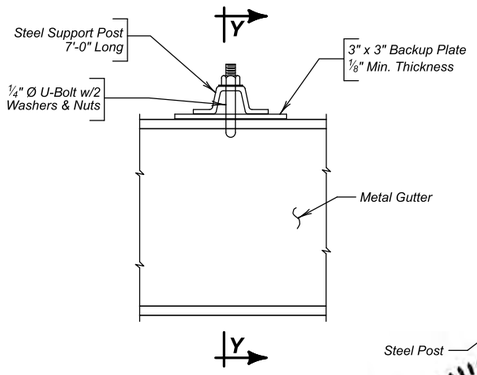
(Abut. No 1 shown, Abut. No. 4 Similar opposite hand)



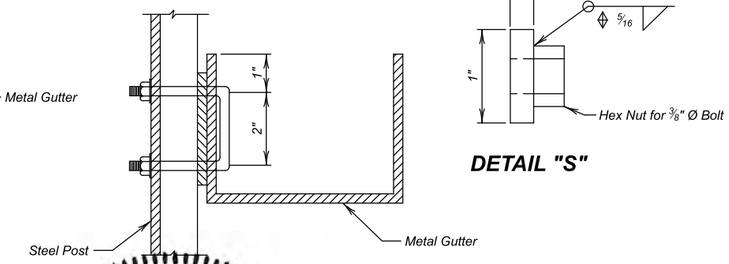
U-BOLT



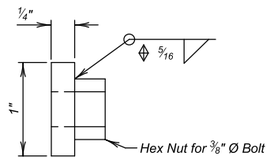
BACKUP PLATE



DETAIL "X"



SEC. Y-Y



DETAIL "S"

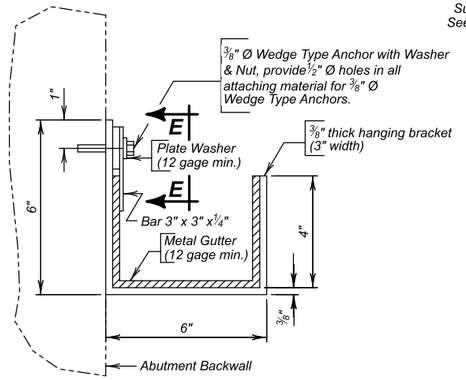
NOTE:
Joint Drain System is designed to be installed independent of Finger Type Expansion Joint Assembly following the procedure below.

1. *Install plates "U1 & U2" using bolts as shown below.*
2. *Install Neoprene Sheet and Plate "T1" (with welded hardware) by inserting bolts through Plate "U1 & U2" and threading bolts into nuts welded to plate "T1" as shown.*
3. *Place Neoprene Sheet and Plate "T1" on bolts welded to Plates "U1 & U2" and tighten nuts as shown.*

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

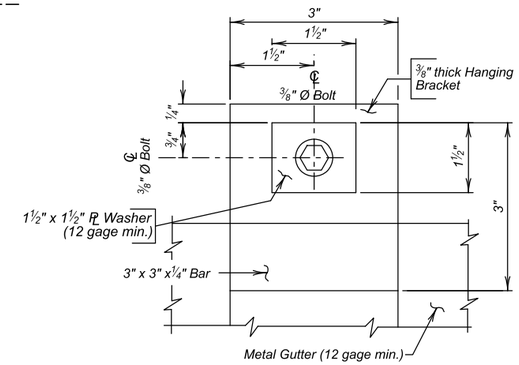
⊠ *Bolts shall be welded to Plate "U2" and Plate "U1" as shown on Deck Side only.*

⧫ *Nuts shall be welded to ¼" Plate as shown on Abutment side only*

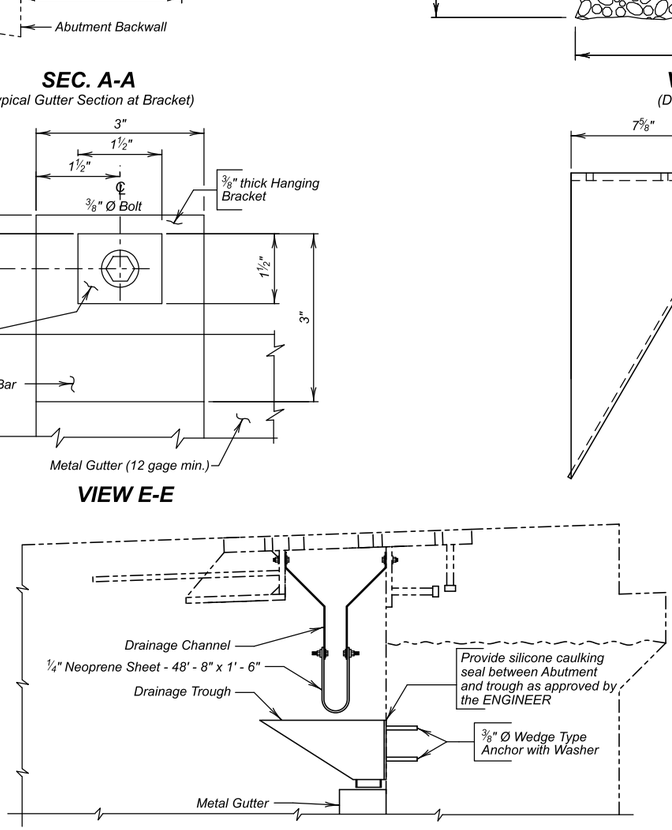


SEC. A-A

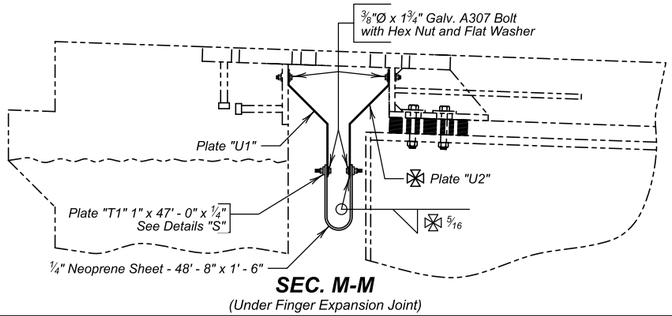
(Typical Gutter Section at Bracket)



VIEW E-E

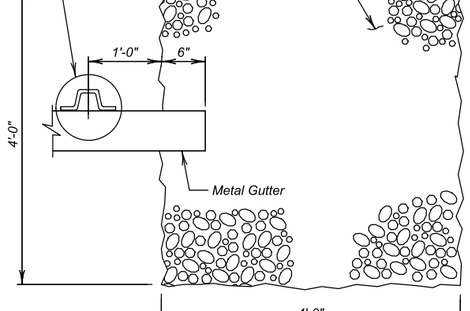


SEC. D-D



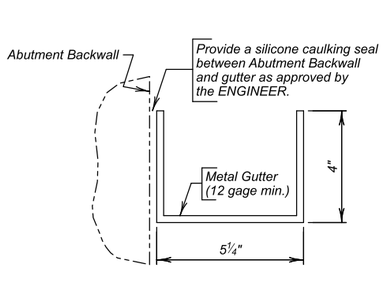
SEC. M-M

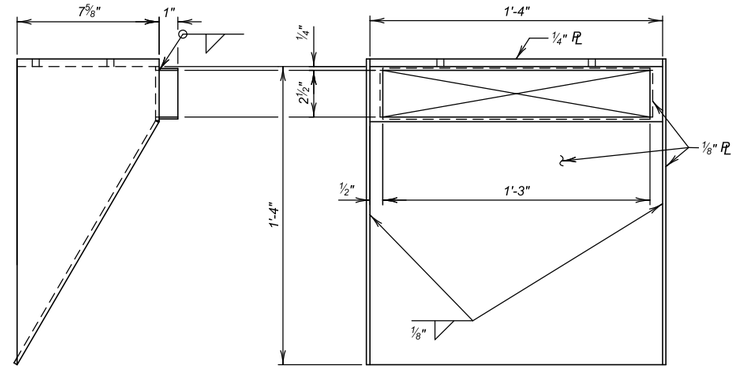
(Under Finger Expansion Joint)



VIEW B-B

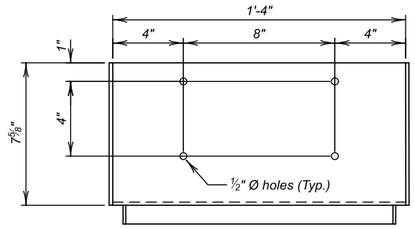
(Detail of Rockpile)





SEC. C-C

(Typical Gutter Section)



DRAINAGE TROUGH DETAILS

ABUTMENT JOINT DRAIN DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

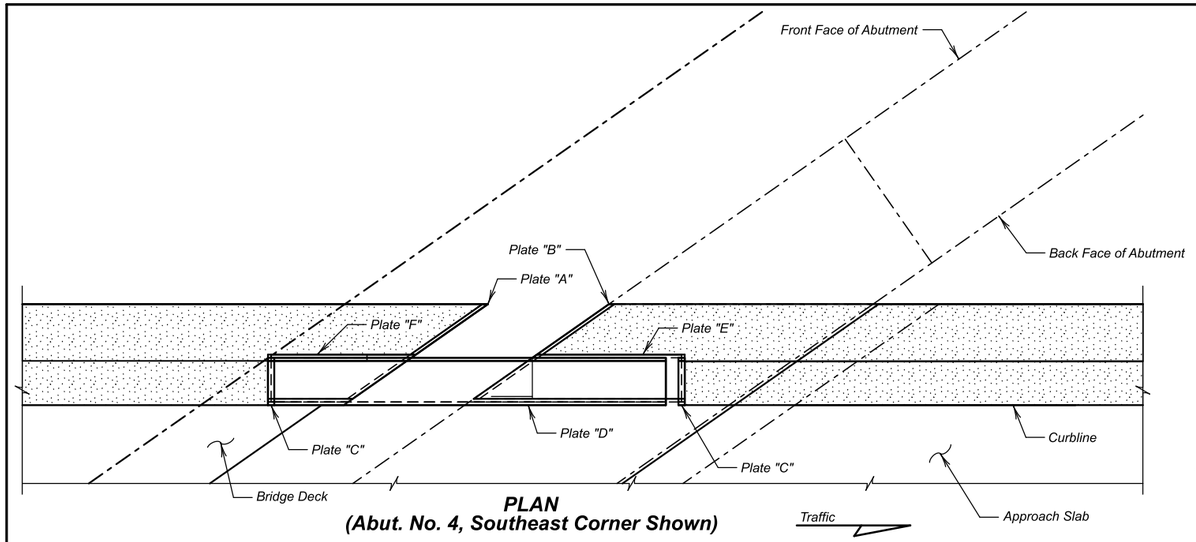
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

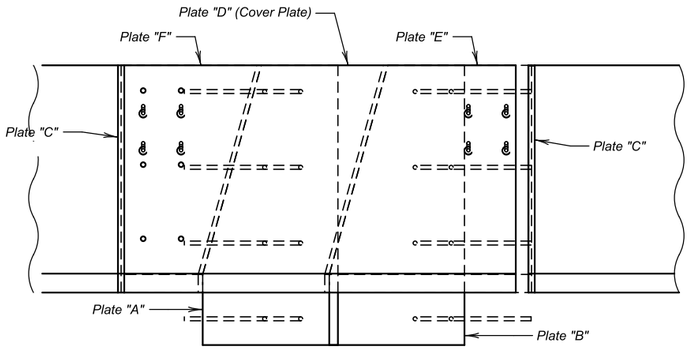
Plotted From - hclaridge File - ...\Sheets\b06JQ_02_exp2.dgn

FOR BIDDING PURPOSES ONLY

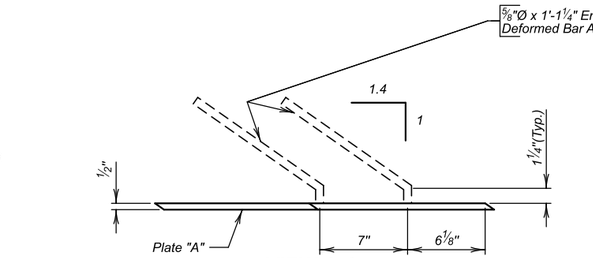
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E90	E130



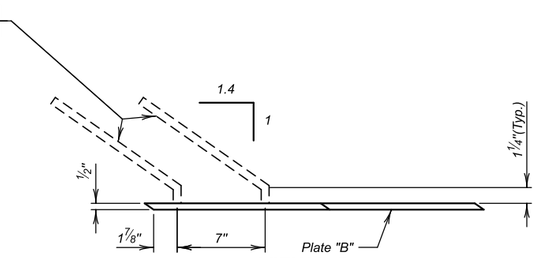
PLAN
(Abut. No. 4, Southeast Corner Shown)



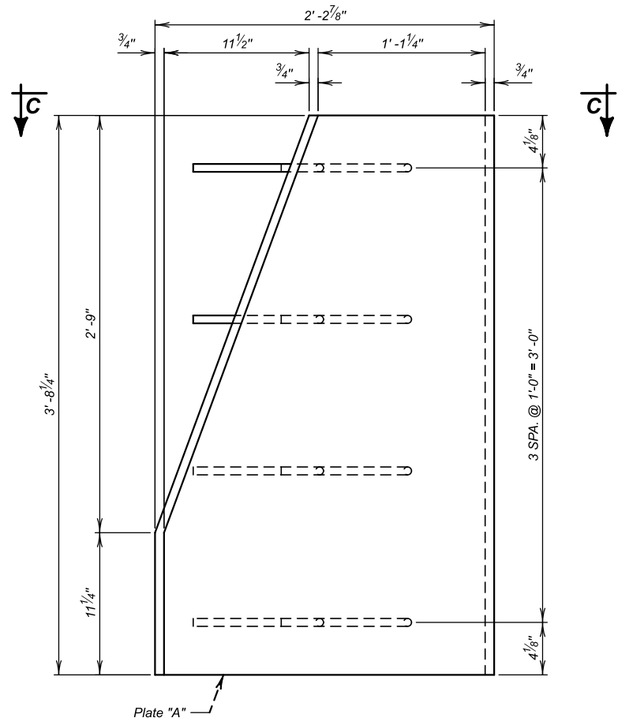
ELEVATION



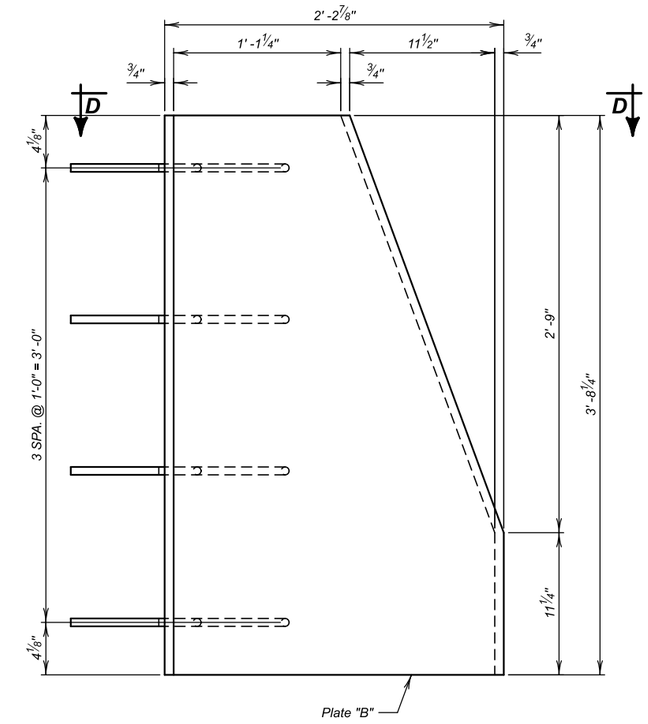
VIEW C-C



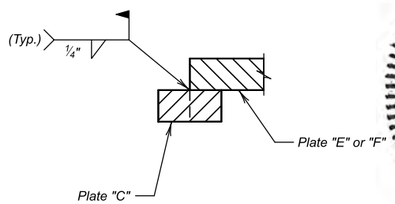
VIEW D-D



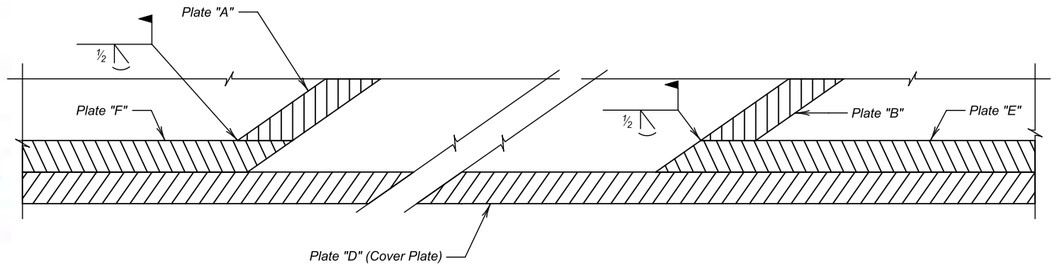
VIEW A-A



VIEW B-B



DETAIL "Y"
(Plate "D" not shown)



DETAIL "X"

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

NOTES:
This sheet to be used in conjunction with DETAIL OF BARRIER COVER PLATES (B)

DETAILS OF BARRIER COVER PLATES (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

30 OF 53

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

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SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E91	E130

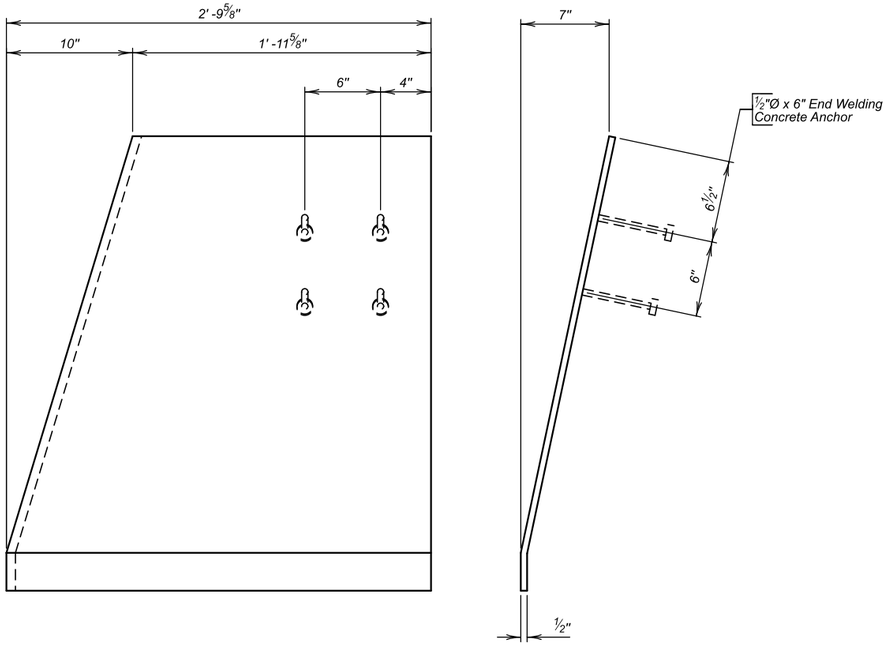


PLATE "E"

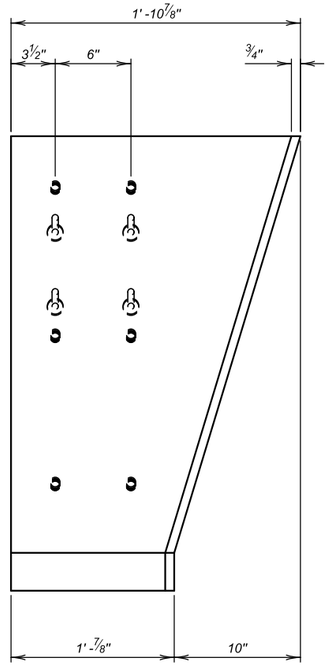
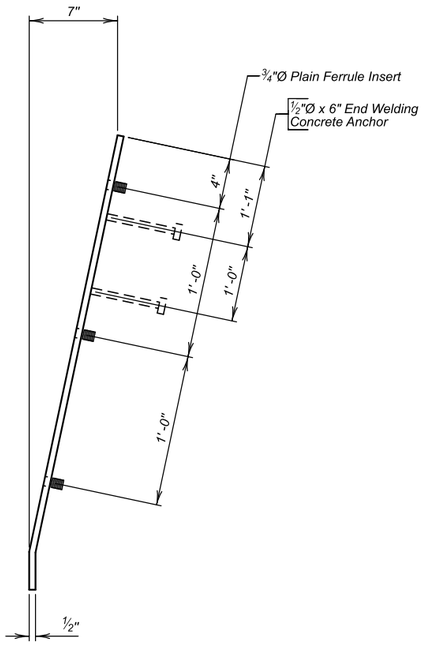
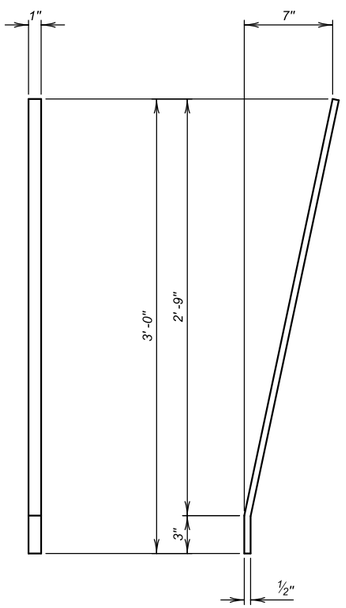


PLATE "F"





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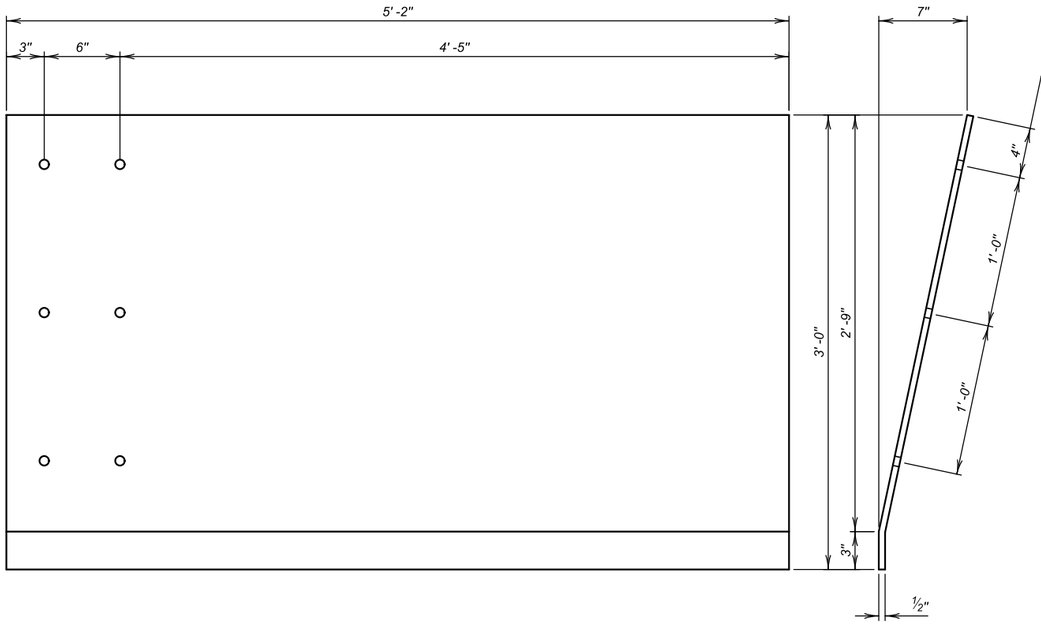
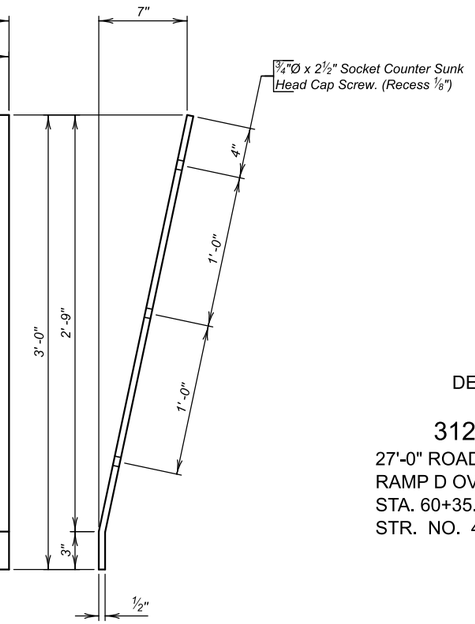


PLATE "D"



NOTES:

This sheet to be used in conjunction with DETAIL OF BARRIER COVER PLATES (A)

DETAILS OF BARRIER COVER PLATES (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
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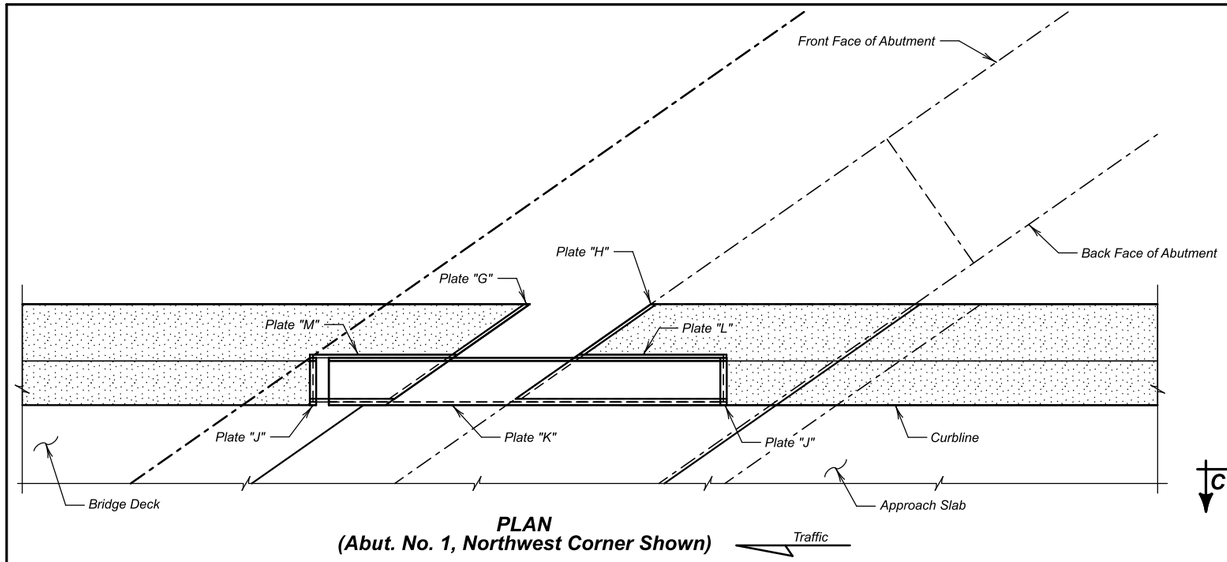
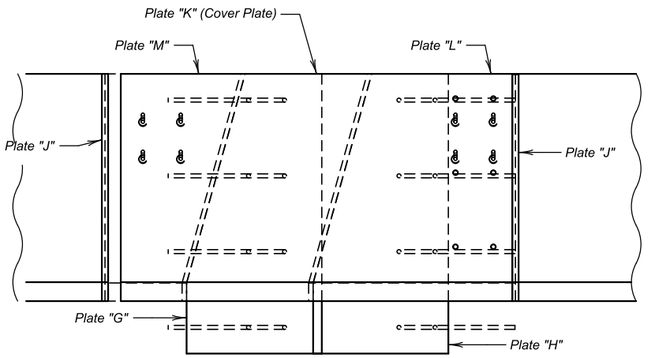
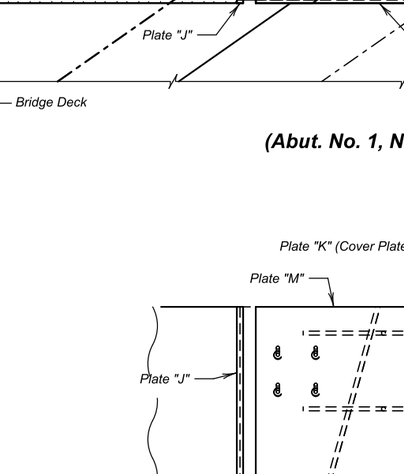
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E92	E130



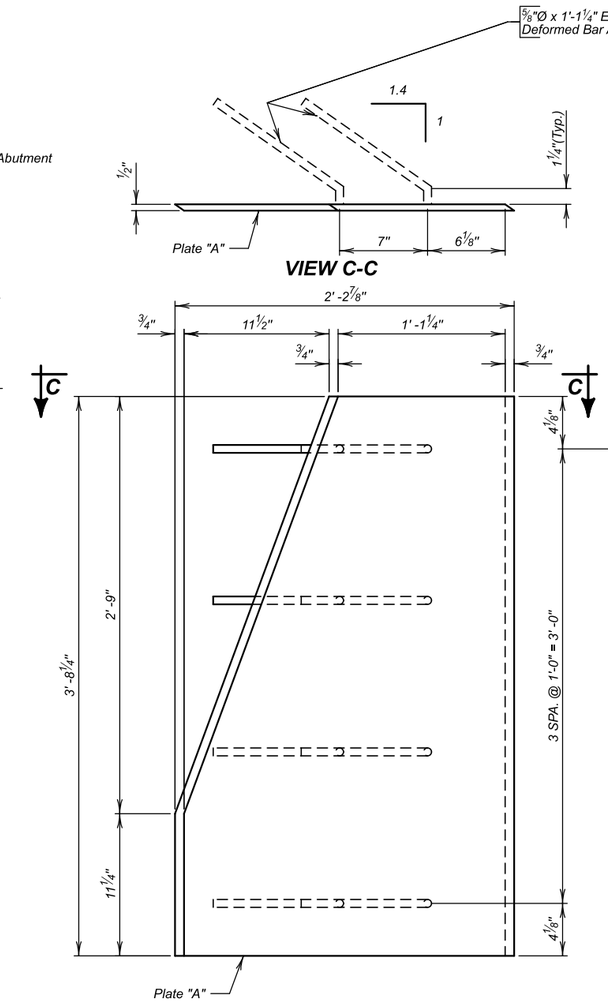
PLAN
(Abut. No. 1, Northwest Corner Shown)

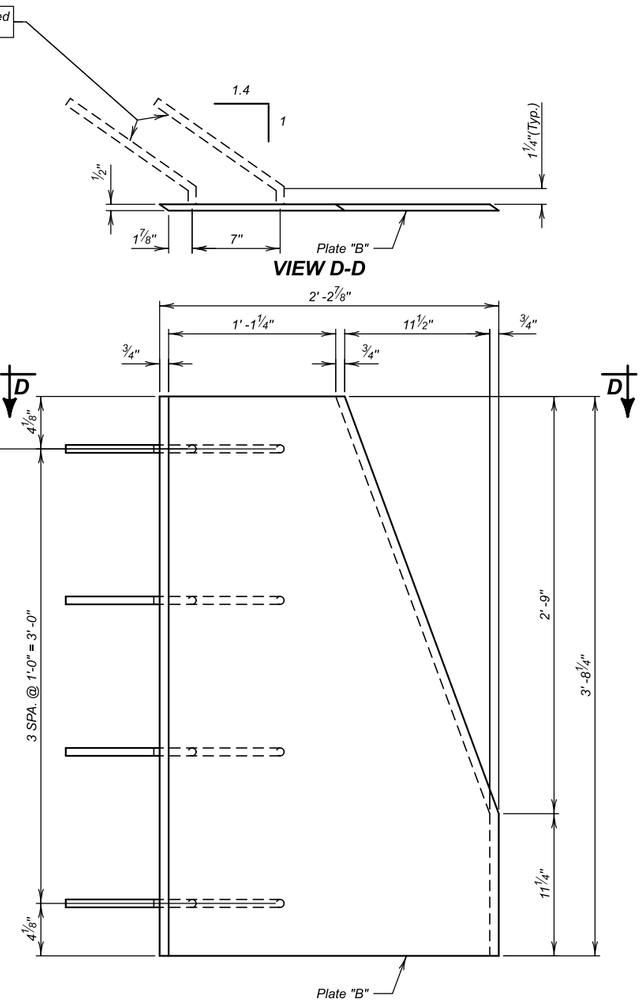


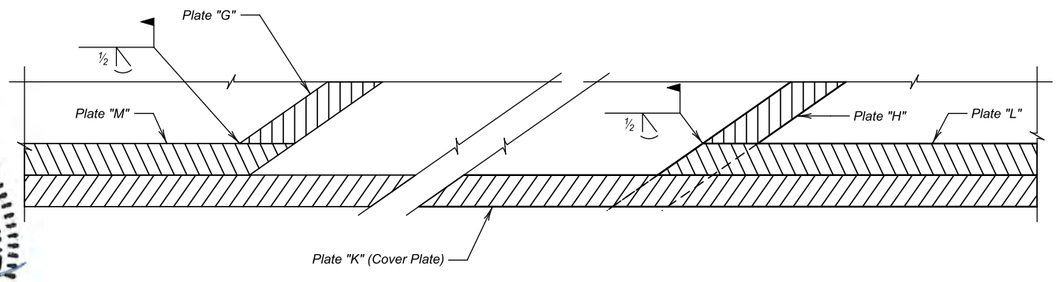
ELEVATION



DETAIL "Y"
(Plate "K" not shown)







DETAIL "X"

NOTES:

This sheet to be used in conjunction with DETAIL OF BARRIER COVER PLATES (B)

DETAILS OF BARRIER COVER PLATES (C)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY	55° LHF SKEW
RAMP D OVER 229 RAMP C	SEC. 18 - T100N - R50W
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STR. NO. 42-065-016	HL-93

LINCOLN COUNTY
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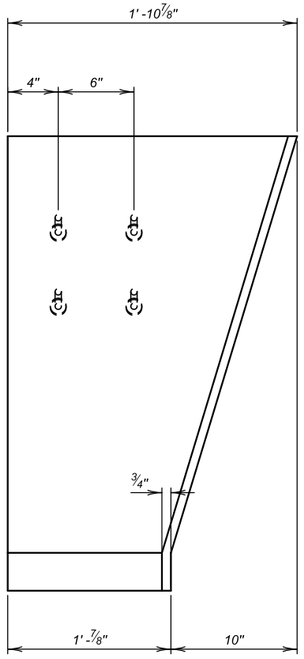


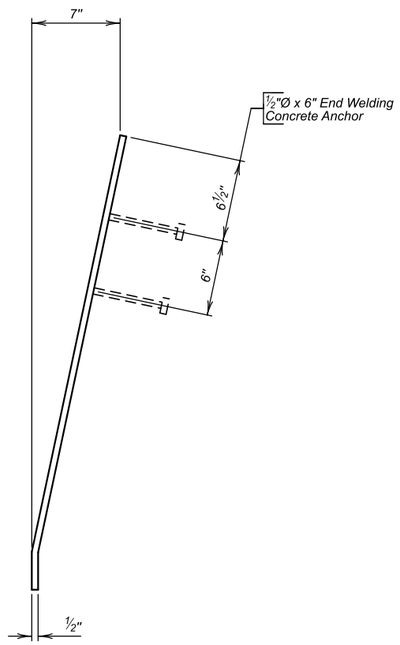
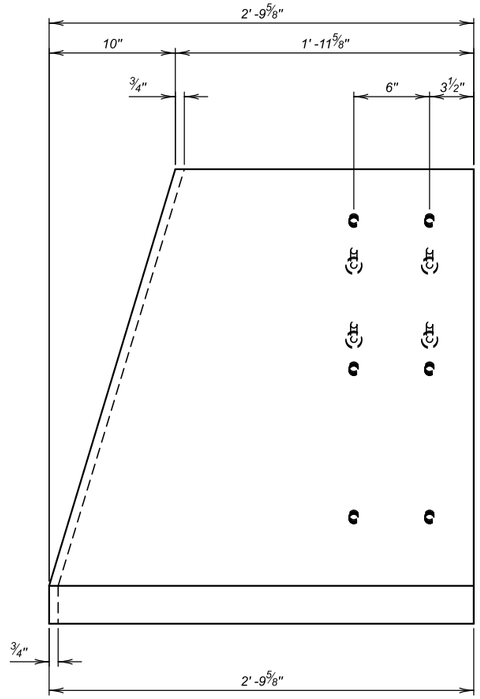
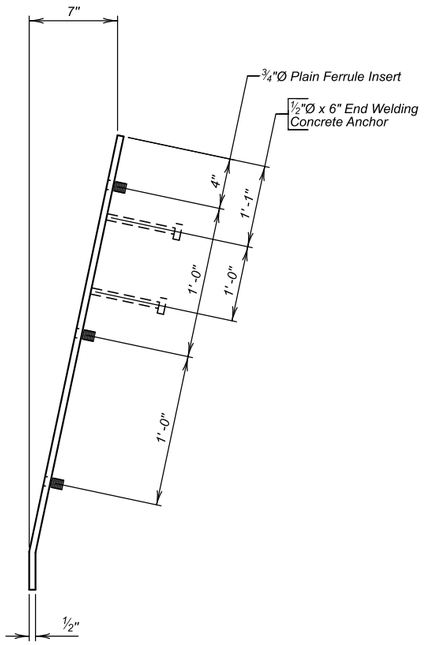


PLATE "M"





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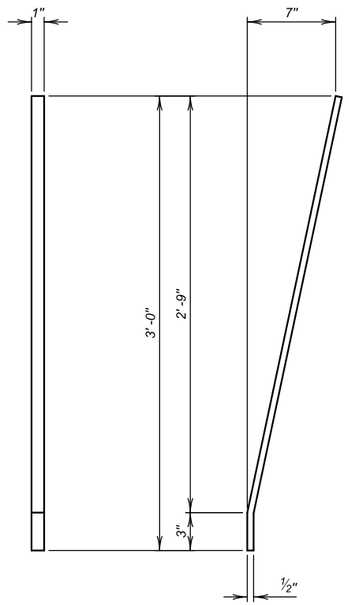

PLATE "J"

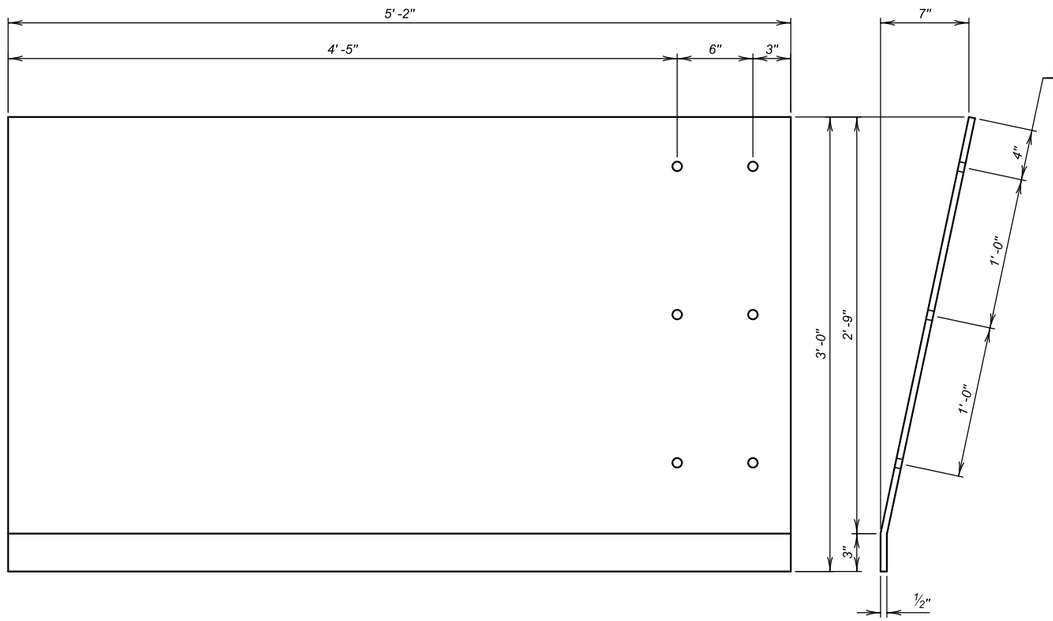

PLATE "K"

NOTES:

This sheet to be used in conjunction with DETAIL OF BARRIER COVER PLATES (A)

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DETAILS OF BARRIER COVER PLATES (D)
FOR
312'-11 3/8" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
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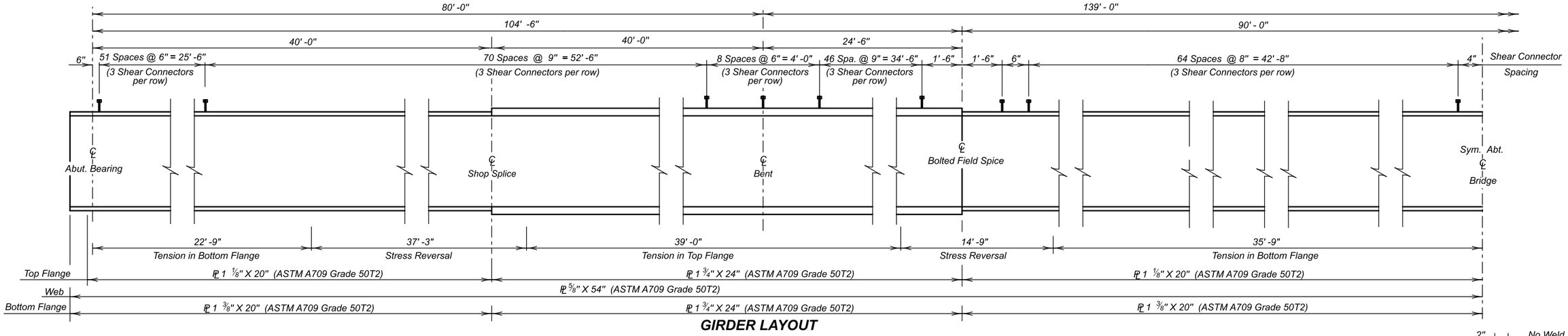
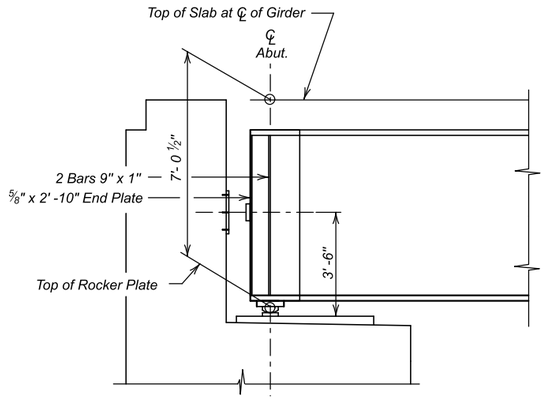
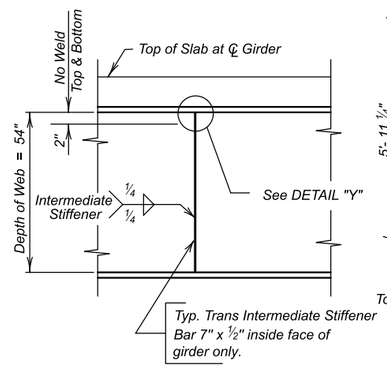


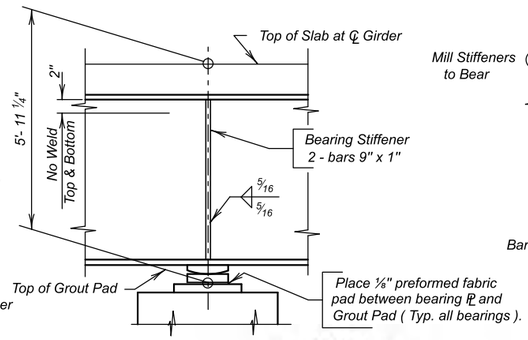
GIRDER LAYOUT



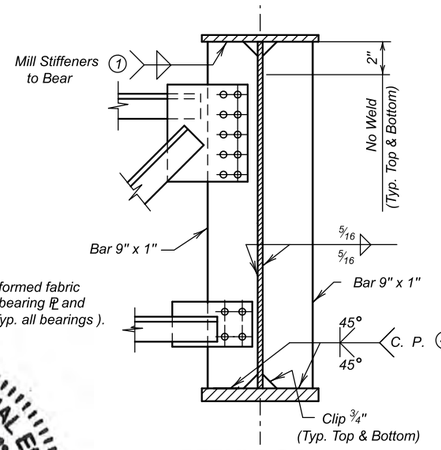
TYPICAL SECTION AT ABUTMENTS



INTERMEDIATE STIFFENER

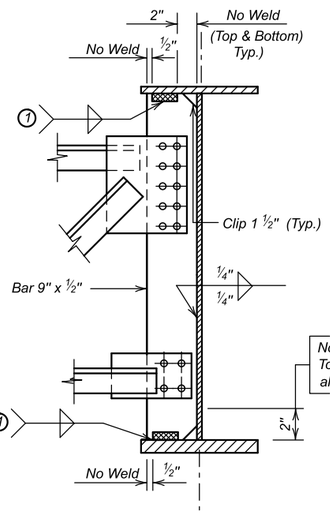


TYPICAL SECTION AT BENTS

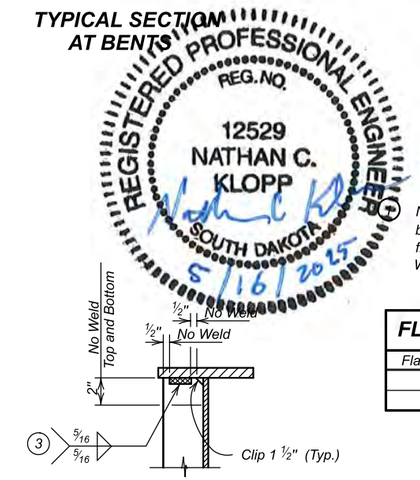


DETAILS OF STIFFENERS AT ℄ BEARINGS

(Exterior Girder shown)

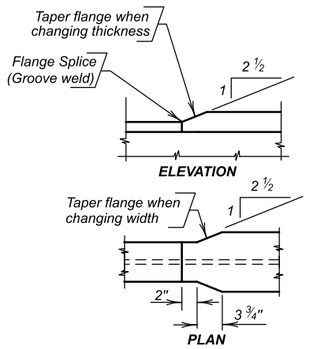


DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS

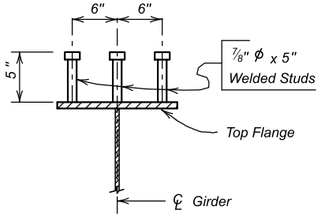


DETAIL "Y"

3 *Transverse Intermediate Stiffeners shall be welded to the compression flange as shown in DETAIL "Y". In zones of stress reversal the Transverse Intermediate Stiffener shall not be attached to either flange. Ends of Stiffeners not welded shall fit tight enough to exclude water. See Girder Layout above for location of tension flange and zones of stress reversal.*

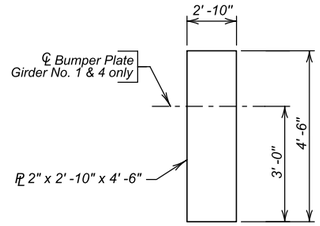


TYPICAL SECTION AT SHOP SPLICE



SHEAR CONNECTOR DETAILS

Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Shear Connectors will be included in the Lump Sum bid for Structural Steel. 987 Shear Connectors per Girder.



END PLATE

NOTES -

1. *See DIAPHRAGM DETAILS Sheet and END DIAPHRAGM DETIALS Sheet for Diaphragm Details.*
2. *See FRAMING DIAGRAM, CAMBER, & ERECTION DATA for spacing of Diaphragms and Stiffeners.*
3. *All dimensions shown are horizontal or vertical.*
4. *All Stiffeners and Girder Ends shall be made normal to flanges, except bearing stiffeners at abutments and bents shall be vertical.*
5. *Stiffeners to have tight fit top and bottom.*
6. *Dimensions shown are for steel temperature of 45 F.*

NOTE: All fillet welds attaching diaphragm or bearing stiffeners to girder flanges, shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.

4 *Alternately, Mill Stiffeners to Bear & use 5/16" Fillet Weld, same as at Top Flange.*

FLANGE TO WEB WELDS

Flange Thickness	Fillet Welds
1 3/4"	5/16"
1 1/2"	5/16"

GIRDER LAYOUT & DETAILS
FOR
312'-11 3/8" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

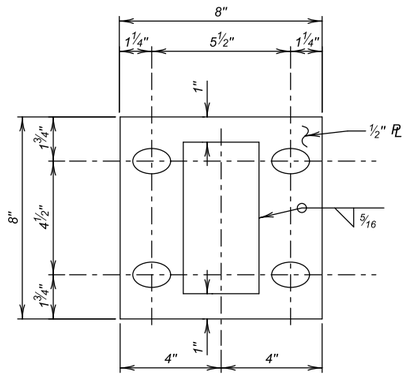
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

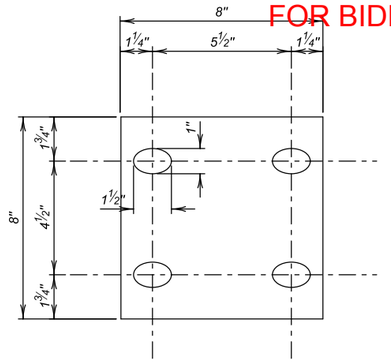
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

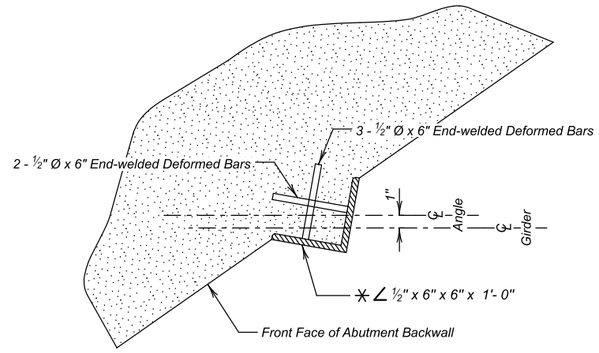
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E95	E130



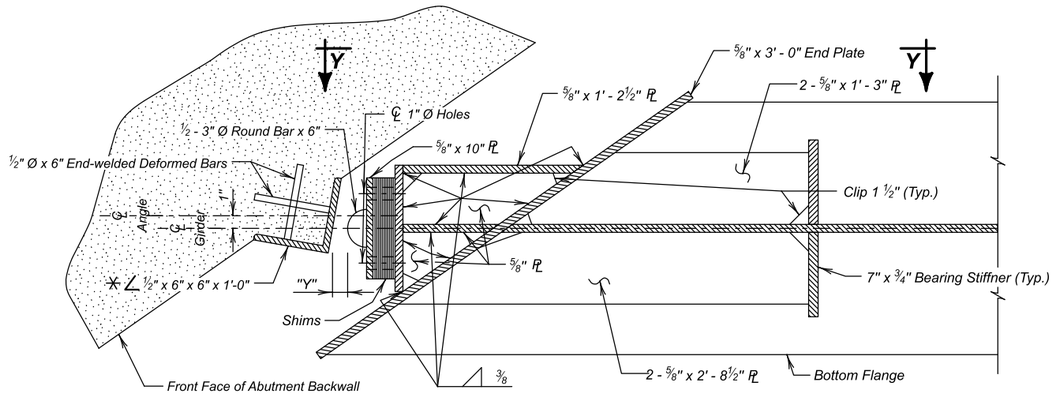
GIRDER END BUMPER PLATE



SHIM PLATE

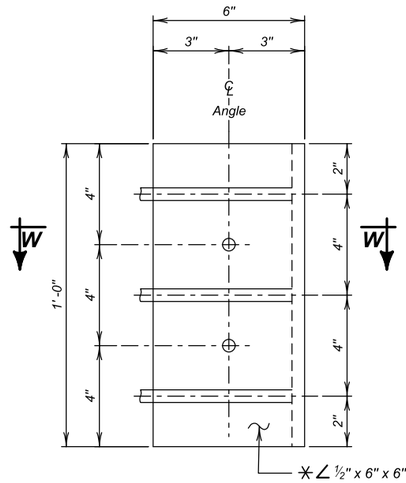


SEC. W - W



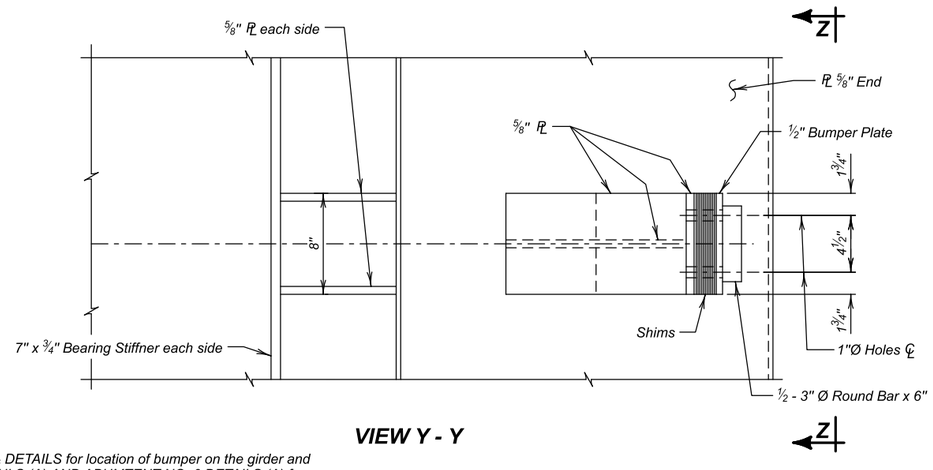
PLAN

NOTE :
Place bumpers at Girder No. 1 and 5 at each Abutment. Make final setting of bumpers after all Slab concrete has been poured. Adjust shim plates so that dimension "Y" is one inch shorter than dimension "X" as found on the FINGER JOINT DETAILS sheet.



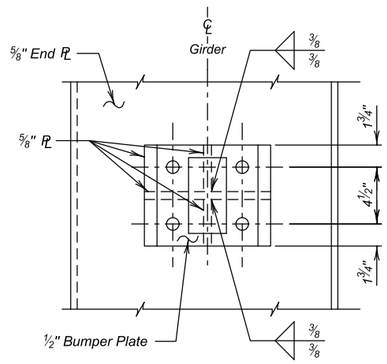
ABUTMENT BUMPER ANGLE

Temp.	Dimension "Y"
30°	3 7/16"
40°	3 3/8"
50°	3 ¼"
60°	3 1/8"
70°	3"
80°	2 7/8"
90°	2 ¾"
100°	2 5/8"



VIEW Y - Y

NOTE :
See GIRDER LAYOUT & DETAILS for location of bumper on the girder and ABUTMENT NO. 1 DETAILS (A) AND ABUMTENT NO. 6 DETAILS (A) for location of angle on Abutment Backwall.



VIEW Z - Z

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

BUMPER DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

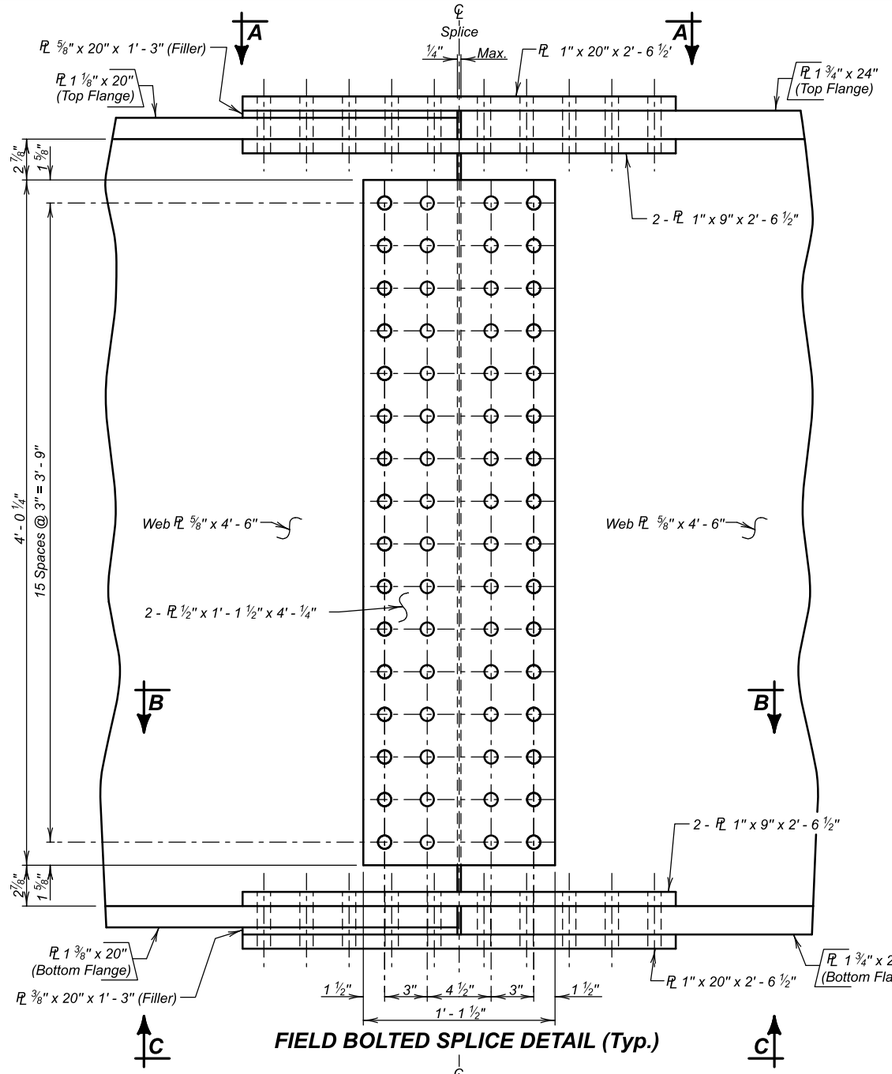
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

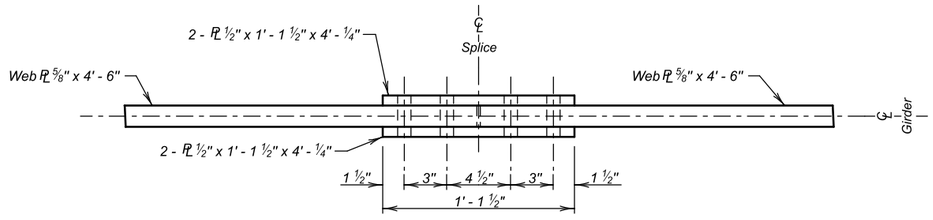
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

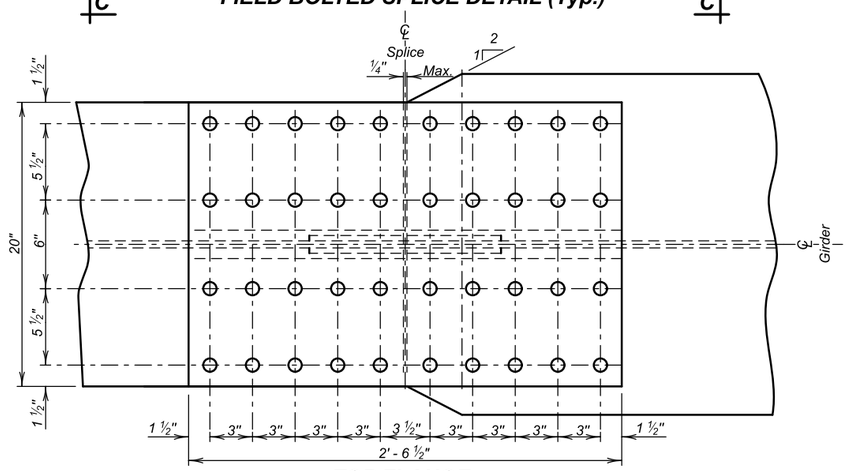
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E96	E130



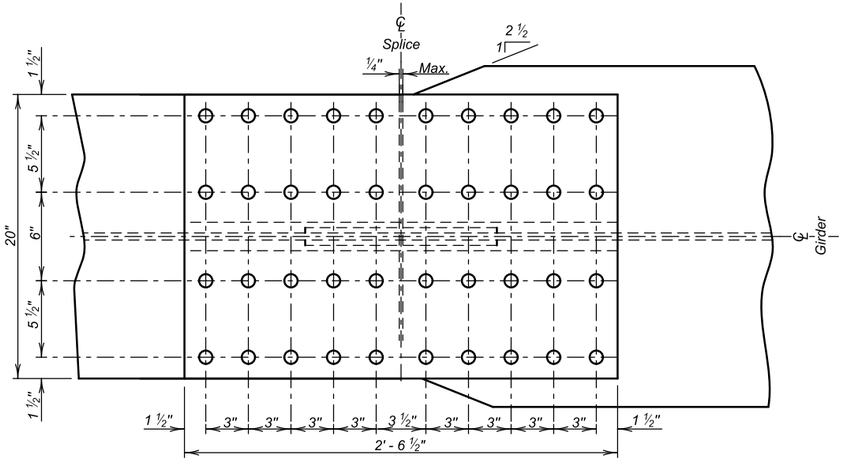
FIELD BOLTED SPLICE DETAIL (Typ.)



SECTION B - B



TOP FLANGE (VIEW A - A)



BOTTOM FLANGE (VIEW C - C)

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

NOTE:
All bolts in splices shall be ⅞" High Strength bolts, nuts and washers and conform to ASTM 3125 Grade A325. The bolts shall be the heavy hexagon head structural type with semi-finished hexagon nut and hardened washer. (See DIAPHRAGM DETAILS sheet for Direct Tension Indicator Details.)

DETAILS OF BOLTED FIELD SPLICES
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

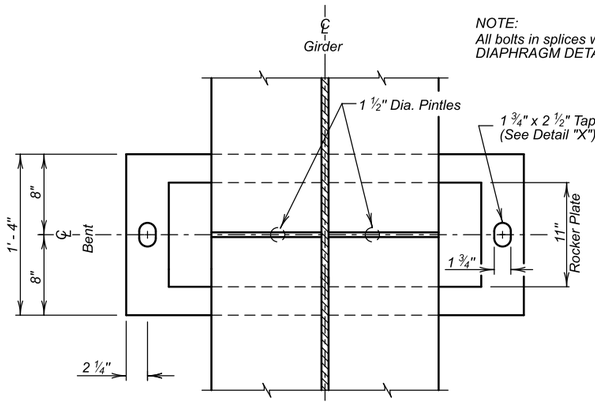
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

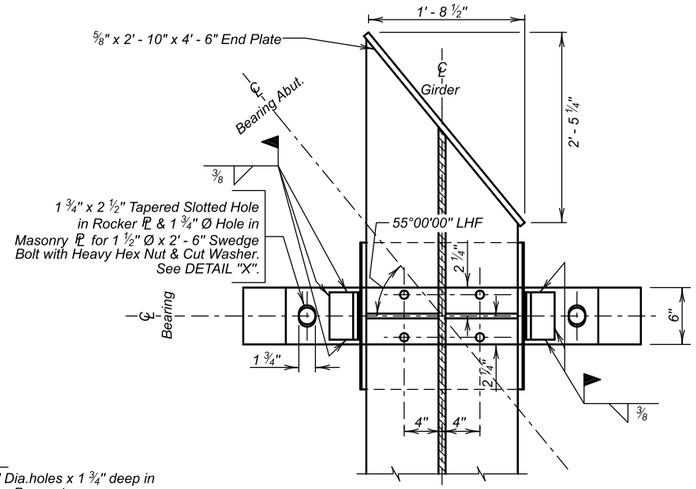
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E97	E130



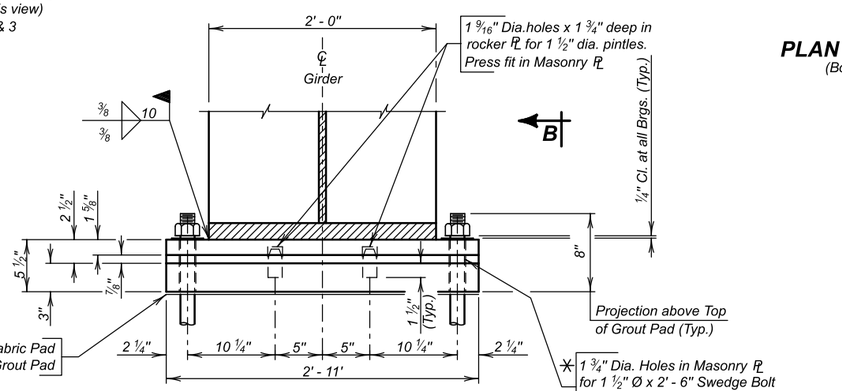
NOTE:
All bolts in splices will be ⅞" ASTM 3125 Grade A325
DIAPHRAGM DETAILS sheet for Details

PLAN - FIXED BEARINGS
(Bolts & washers not shown this view)
Fixed Bearing Bent No. 2 & 3

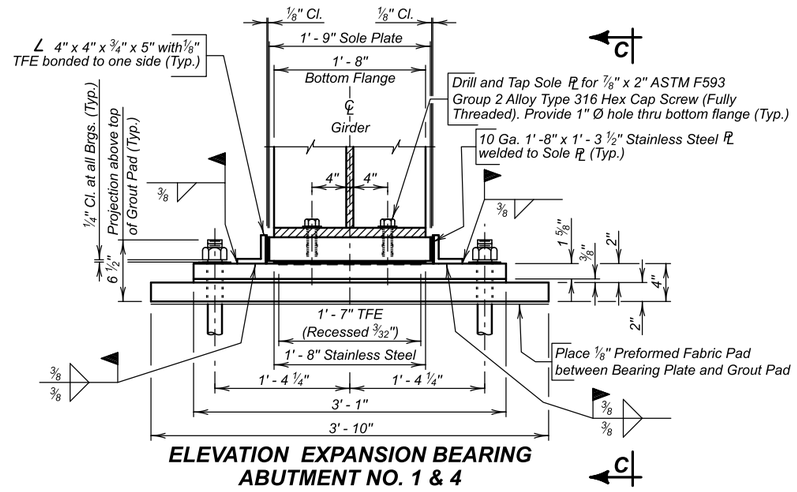


PLAN - EXPANSION BEARINGS
(Bolts & washers not shown this view)

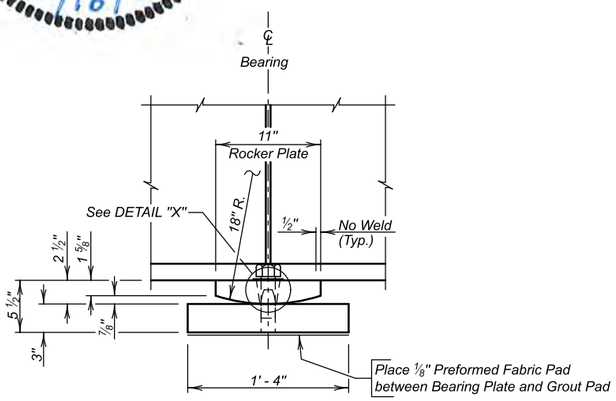
AT ABUTMENTS		
TEMP.	"A"	"B"
30°	7 ¼"	8 ¼"
40°	7 ⅜"	8 ⅛"
50°	7 ½"	8"
60°	7 ⅝"	7 ⅞"
70°	7 ¾"	7 ¾"
80°	7 ⅞"	7 ⅝"
90°	8"	7 ½"
100°	8 ⅛"	7 ⅜"



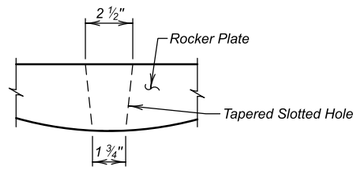
ELEVATION FIXED BEARING
BENT NO. 2 & 3



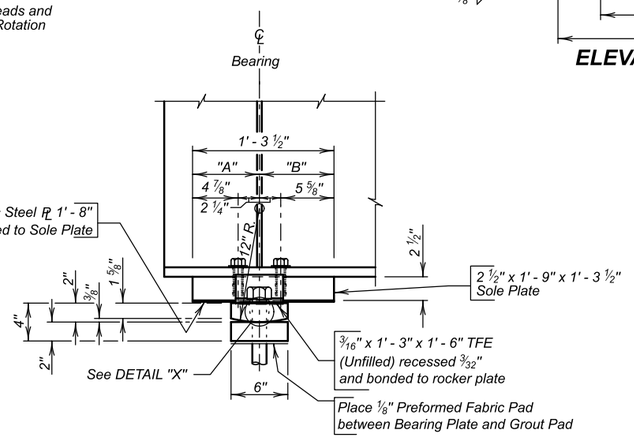
ELEVATION EXPANSION BEARING
ABUTMENT NO. 1 & 4



VIEW B - B



DETAIL "X"



VIEW C - C

BEARING DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

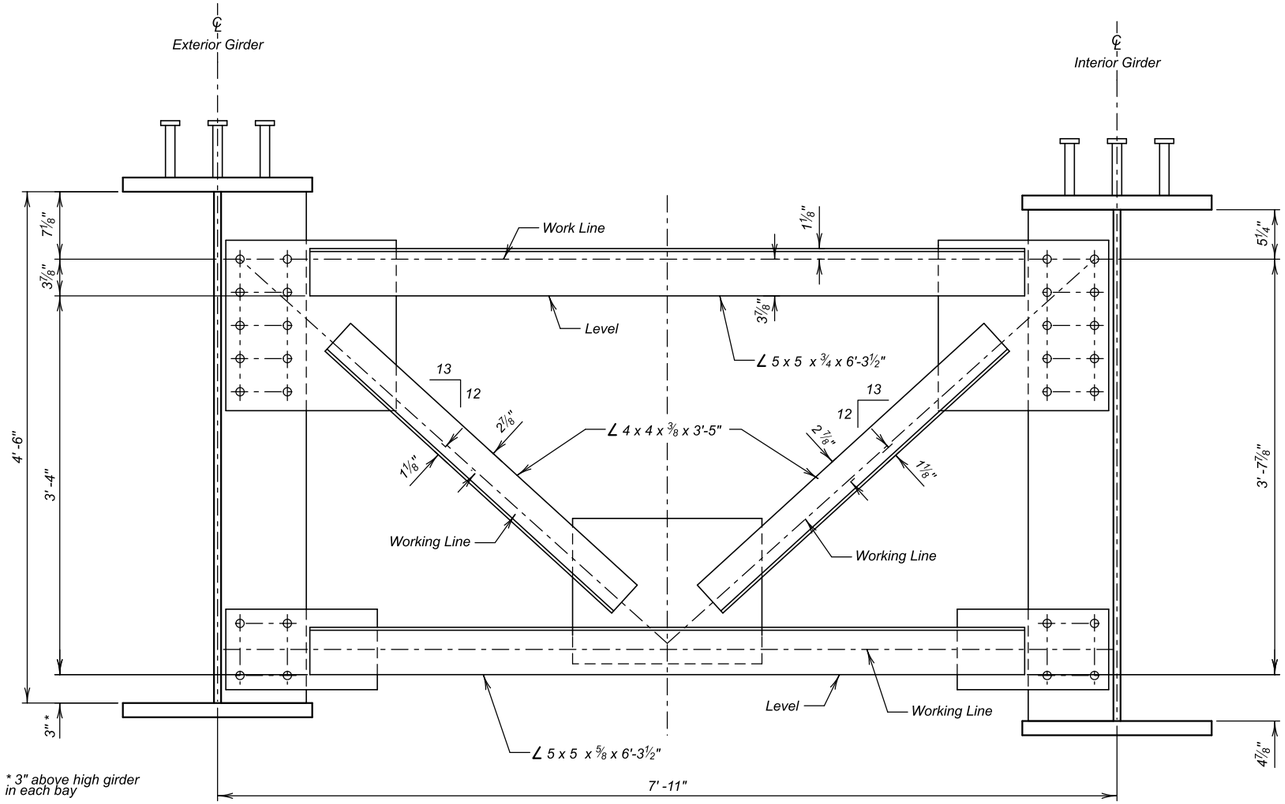
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

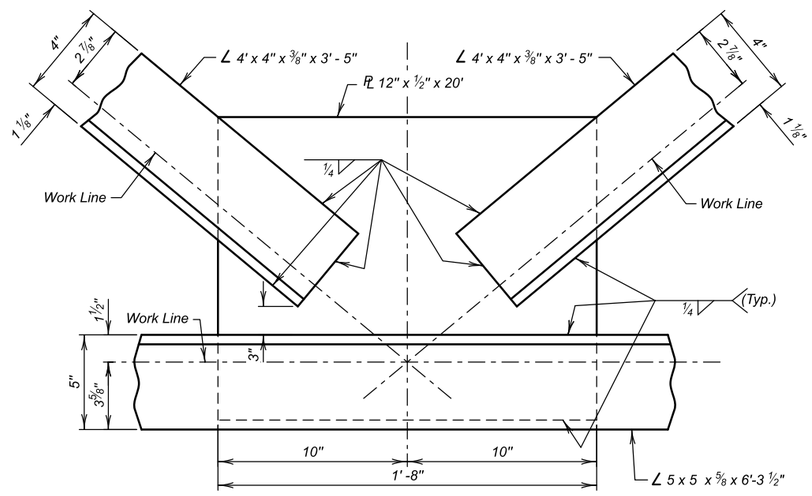
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E98	E130



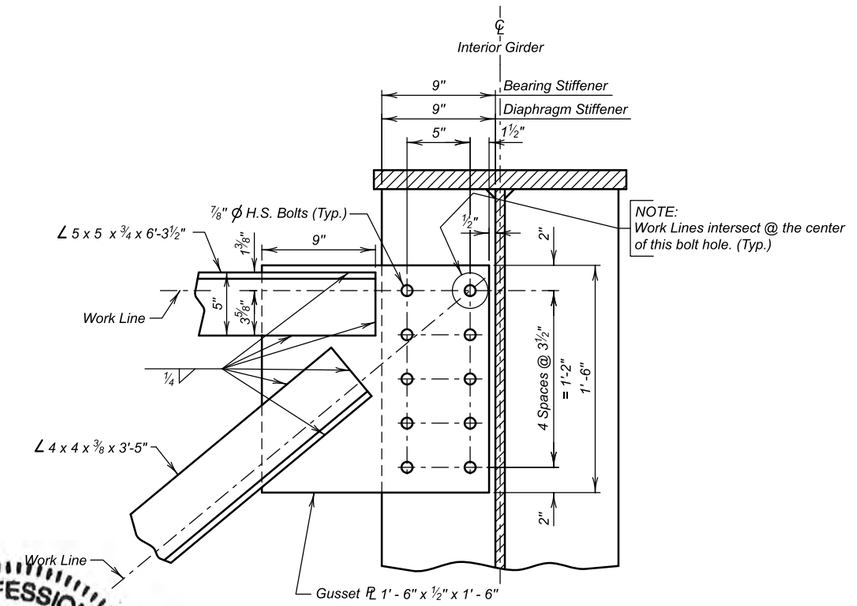
* 3" above high girder in each bay

DIAPHRAGM DETAIL

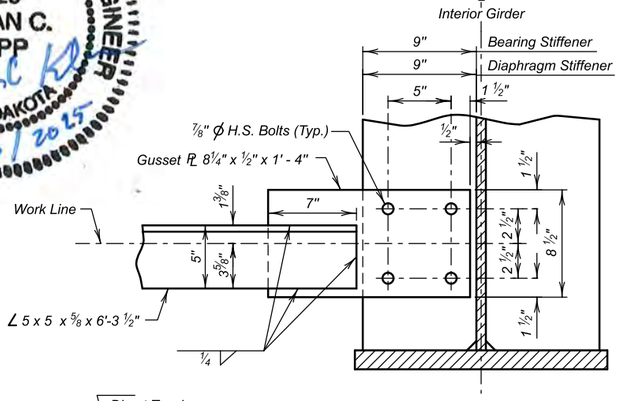
(Weight of One Unit = 506 lbs.)



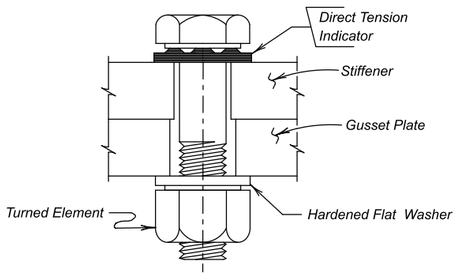
DETAIL "X"



DETAIL "Z"



DETAIL "Y"



DIRECT TENSION INDICATOR DETAIL

GENERAL NOTES

1. The Steel Diaphragms are included in the quantity for Structural Steel.
2. Use 1 1/16"∅ bolt holes in the ½" gusset plates. Use 15/16" ∅ bolt holes in the stiffener plates.
3. Install bolt heads on the side of the connection with the 15/16" ∅ bolt holes. Install direct tension indicators under the bolt heads.
4. The ⅞" High Strength bolts, nuts, and washers shall conform to ASTM A3125 Grade A325. The bolts shall be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.
5. Terminate all welds ½" from the edges of the bars and plates.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DIAPHRAGM DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

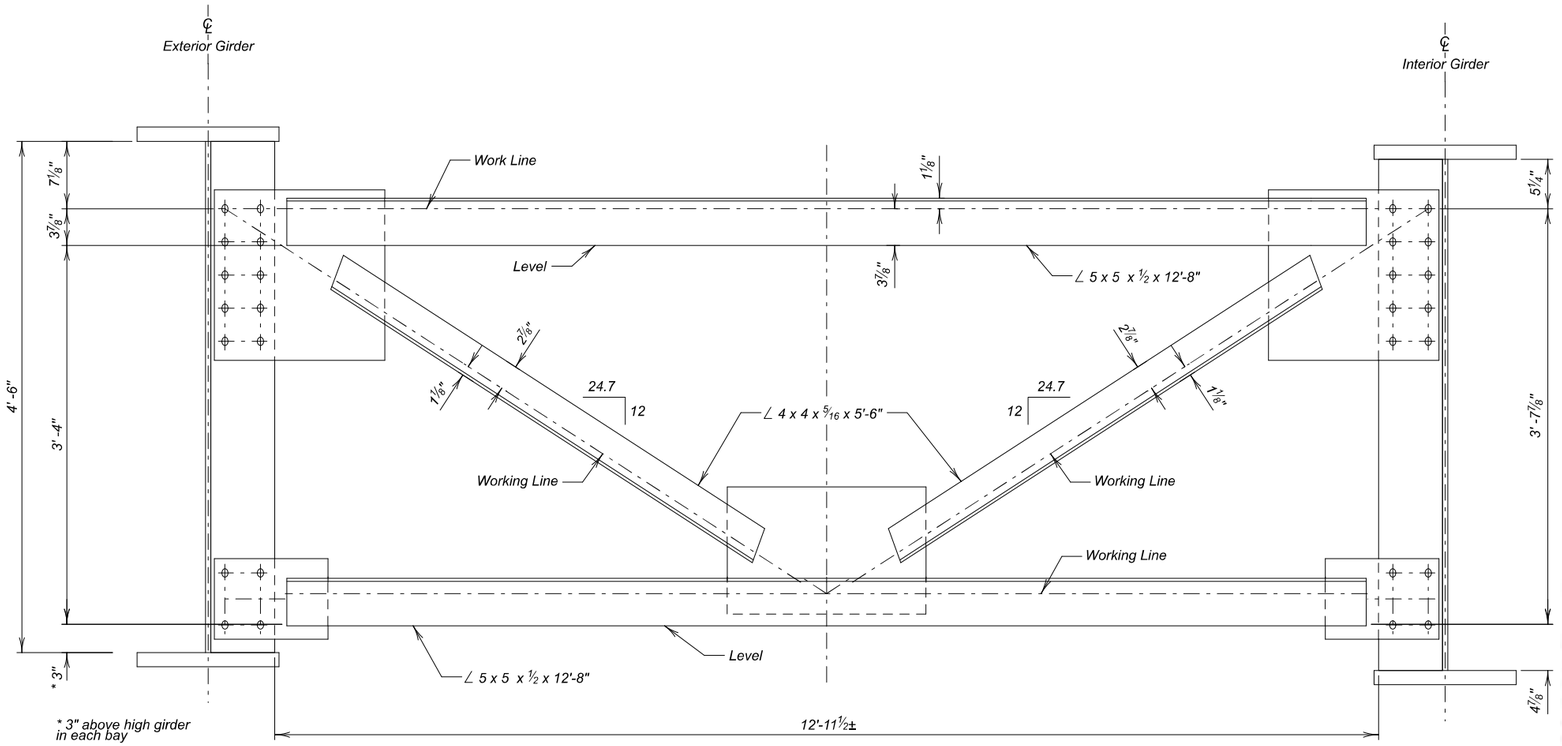
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

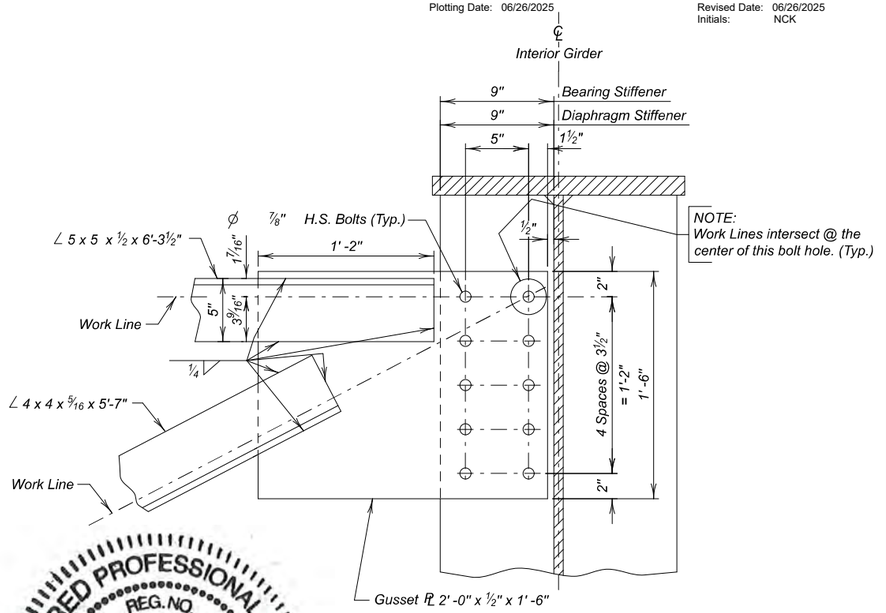
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

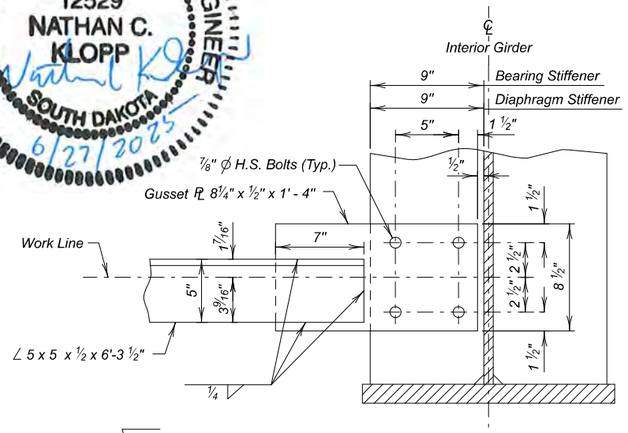
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E99	E130

Plotting Date: 06/26/2025 Revised Date: 06/26/2025
Initials: NCK

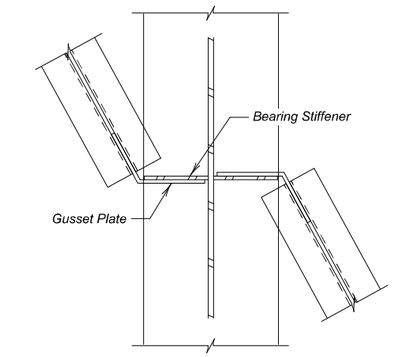




DETAIL "Z"



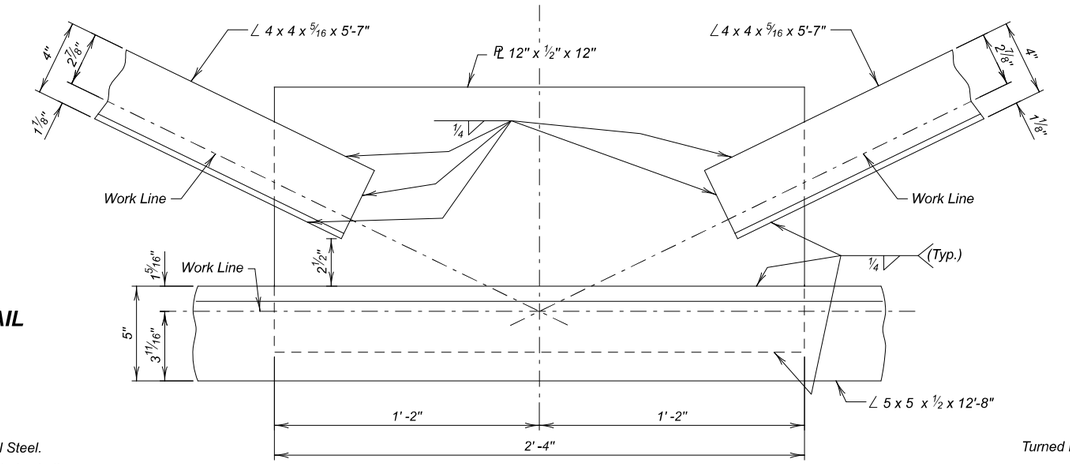
DETAIL "Y"



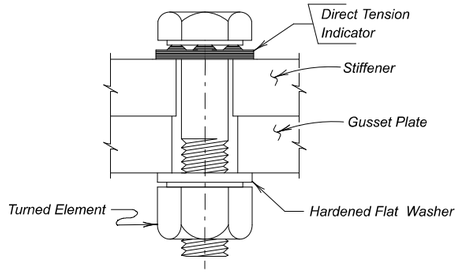
END DIAPHRAGM CONNECTION DETAIL

END DIAPHRAGM DETAIL

(Weight of One Unit = 679 lbs.)



DETAIL "X"



DIRECT TENSION INDICATOR DETAIL

GENERAL NOTES

1. The Steel Diaphragms are included in the quantity for Structural Steel.
2. Use 1 1/16"Ø bolt holes in the ½" gusset plates. Use 15/16" Ø bolt holes in the stiffener plates.
3. Install bolt heads on the side of the connection with the 15/16" Ø bolt holes. Install direct tension indicators under the bolt heads.
4. The ⅞" High Strength bolts, nuts, and washers shall conform to ASTM A3125 Grade A325. The bolts shall be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.
5. Terminate all welds ½" from the edges of the bars and plates.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

END DIAPHRAGM DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

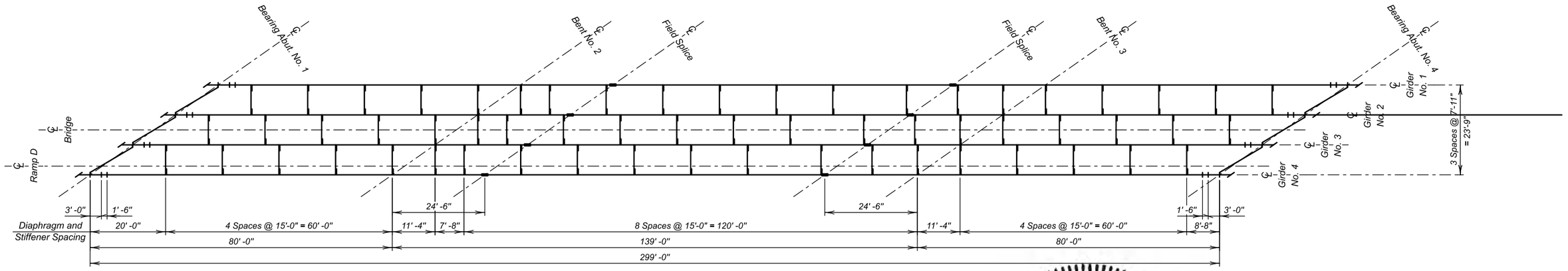
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

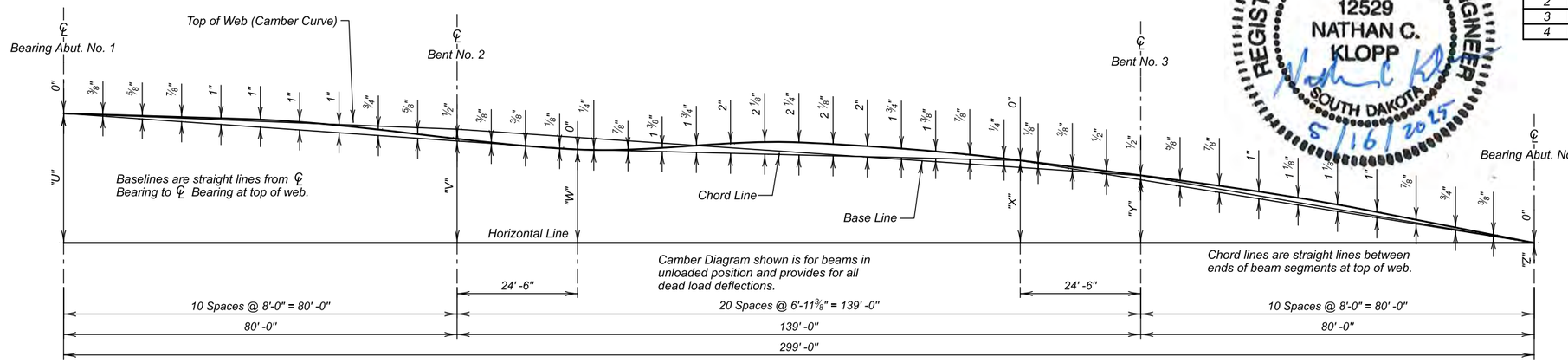
Plotted From - hdaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E100	E130

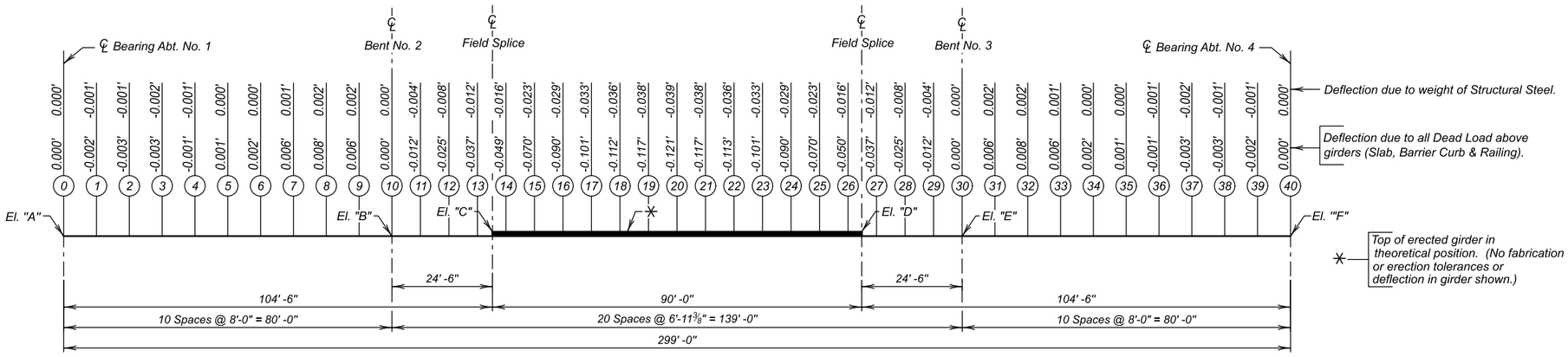


FRAMING DIAGRAM



CAMBER CUTTING DIAGRAM

(Cut camber into webs fo all girders as shown)



GIRDER ERECTION DIAGRAM

ø GIRDER ERECTION ELEVATIONS AND SLOPES

Girder No.	ELEVATIONS (Top of Girder) "A"	"B"	"C"	"D"	"E"	"F"	SLOPES (%) a	b	c
1	1535.32	1535.20	1535.03	1533.98	1533.57	1531.82	-0.334	-1.160	2.023
2	1535.15	1535.10	1534.95	1533.99	1533.60	1531.93	-0.236	-1.063	1.924
3	1534.96	1534.99	1534.87	1534.00	1533.63	1532.04	-0.137	-0.966	1.826
4	1534.76	1534.86	1534.77	1533.99	1533.64	1532.13	-0.039	-0.869	1.728

ø NOTE-
These elevations and slopes occur at a time after girder erection is completed but prior to any placement of concrete. Slopes shown are an imaginary straight line between points at beam ends and are (+) towards increasing stations.

CAMBER DIMENSIONS

Girder No.	"U"	"V"	"W"	"X"	"Y"	"Z"
1	3.507	3.327	3.163	2.118	1.697	0.000
2	3.214	3.113	2.973	2.016	1.619	0.000
3	2.921	2.898	2.782	1.913	1.540	0.000
4	2.628	2.684	2.592	1.810	1.462	0.000

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

FRAMING DIAGRAM, CAMBER, & ERECTION DATA
FOR
312'-11 3/8" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
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CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

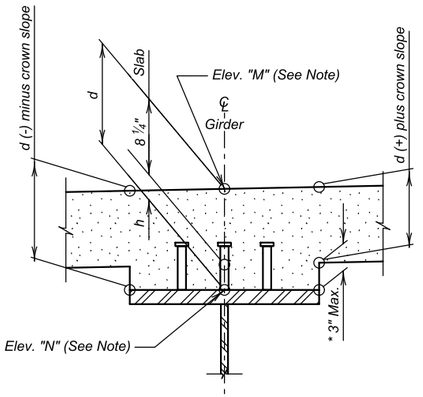
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E101	E130

TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Girder No. 1	Elev. "M"	1535.209	1535.215	1535.216	1535.211	1535.200	1535.184	1535.162	1535.135	1535.125	1535.089	1535.050	1535.014	1534.973	1534.930	1534.882	1534.829	1534.752	1534.689	1534.622	1534.548	1534.469
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 2	Elev. "M"	1535.031	1535.046	1535.055	1535.058	1535.056	1535.047	1535.033	1535.014	1535.011	1534.983	1534.951	1534.920	1534.886	1534.849	1534.807	1534.761	1534.690	1534.634	1534.574	1534.507	1534.436
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 3	Elev. "M"	1534.842	1534.865	1534.882	1534.894	1534.899	1534.899	1534.893	1534.881	1534.886	1534.865	1534.840	1534.817	1534.789	1534.758	1534.724	1534.684	1534.620	1534.571	1534.518	1534.457	1534.393
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 4	Elev. "M"	1534.642	1534.674	1534.699	1534.717	1534.730	1534.738	1534.739	1534.736	1534.750	1534.738	1534.722	1534.705	1534.685	1534.662	1534.635	1534.602	1534.545	1534.502	1534.455	1534.400	1534.341
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					

TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Girder No. 1	Elev. "M"	1534.469	1534.384	1534.294	1534.197	1534.097	1534.011	1533.901	1533.786	1533.667	1533.545	1533.420	1533.273	1533.122	1532.945	1532.785	1532.619	1532.447	1532.270	1532.086	1531.897	1531.702
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 2	Elev. "M"	1534.436	1534.357	1534.275	1534.186	1534.092	1534.014	1533.910	1533.803	1533.690	1533.576	1533.456	1533.317	1533.174	1533.005	1532.852	1532.694	1532.530	1532.361	1532.185	1532.004	1531.817
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 3	Elev. "M"	1534.393	1534.322	1534.246	1534.164	1534.078	1534.006	1533.909	1533.808	1533.703	1533.595	1533.482	1533.350	1533.215	1533.053	1532.908	1532.758	1532.602	1532.441	1532.273	1532.100	1531.921
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 4	Elev. "M"	1534.341	1534.275	1534.204	1534.130	1534.053	1533.986	1533.894	1533.799	1533.700	1533.599	1533.494	1533.421	1533.291	1533.134	1532.994	1532.849	1532.692	1532.530	1532.363	1532.190	1532.015
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					



** If during construction, it is found that this dimension will be exceeded or is less than zero, corrective measures must be taken as approved by the engineer.*

NOTES:

This Table contains the necessary information to determine the depth of concrete, in feet, over the girders at the points shown. All calculations can be carried out in the space provided. Elevation "M" is theoretical top of slab elevation before any concrete has been poured. This elevation includes correction for deflection due to Dead Load above girders. Elevation "N" is a field measured elevation taken on top of girders at points shown. This elevation must be taken after girder erection is complete, but prior to placing any of the slab concrete. Girders will not be supported by construction shoring while elevations are taken.

This sheet is to be used in conjunction with FRAMING DIAGRAM, CAMBER, & ERECTION DATA sheet.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

SLAB FORM ELEVATIONS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

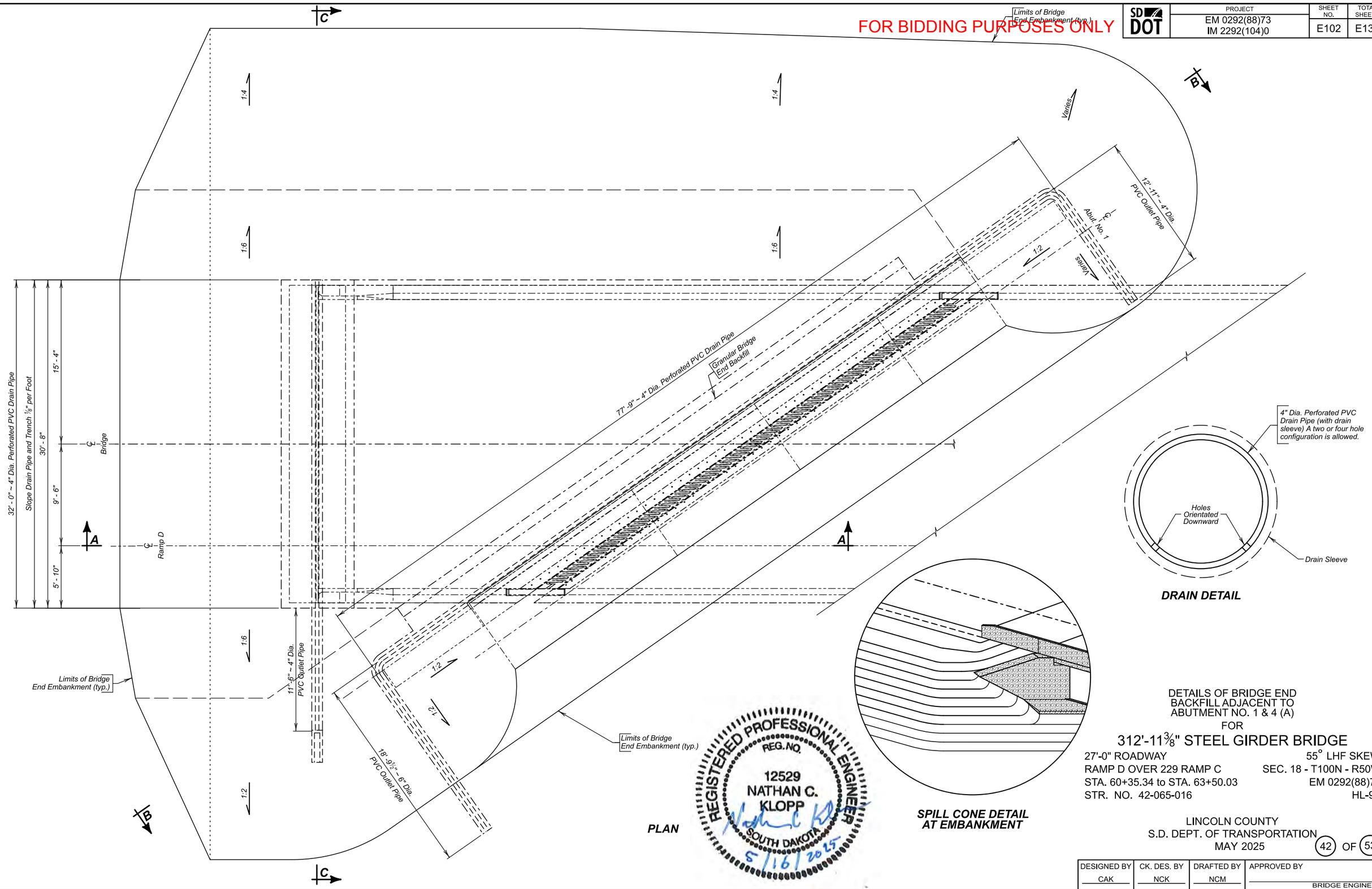
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_gir.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E102	E130



PLAN

DRAIN DETAIL

SPILL CONE DETAIL AT EMBANKMENT

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENT NO. 1 & 4 (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

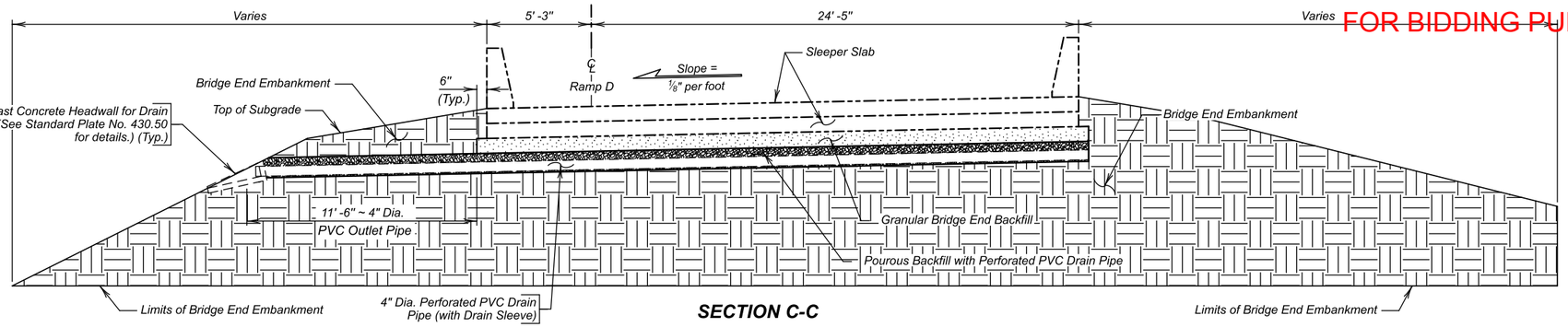
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

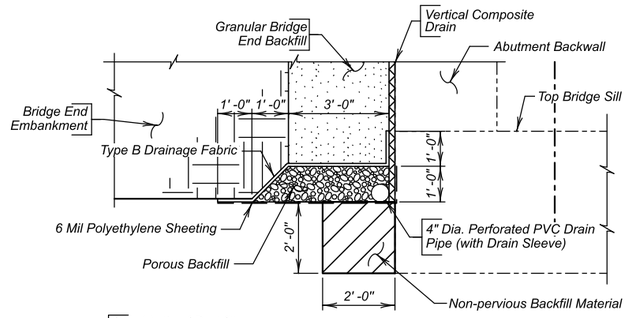
Plotted From - hclaridge File - ...\Sheets\b06JQ_02_beb1.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

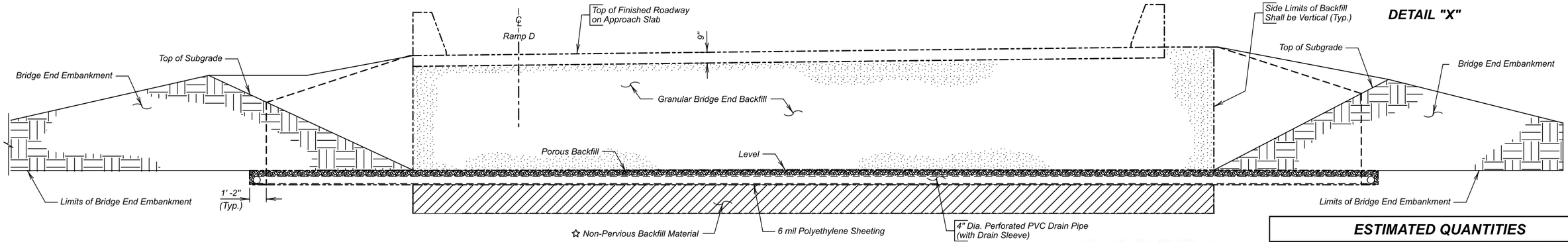
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E103	E130



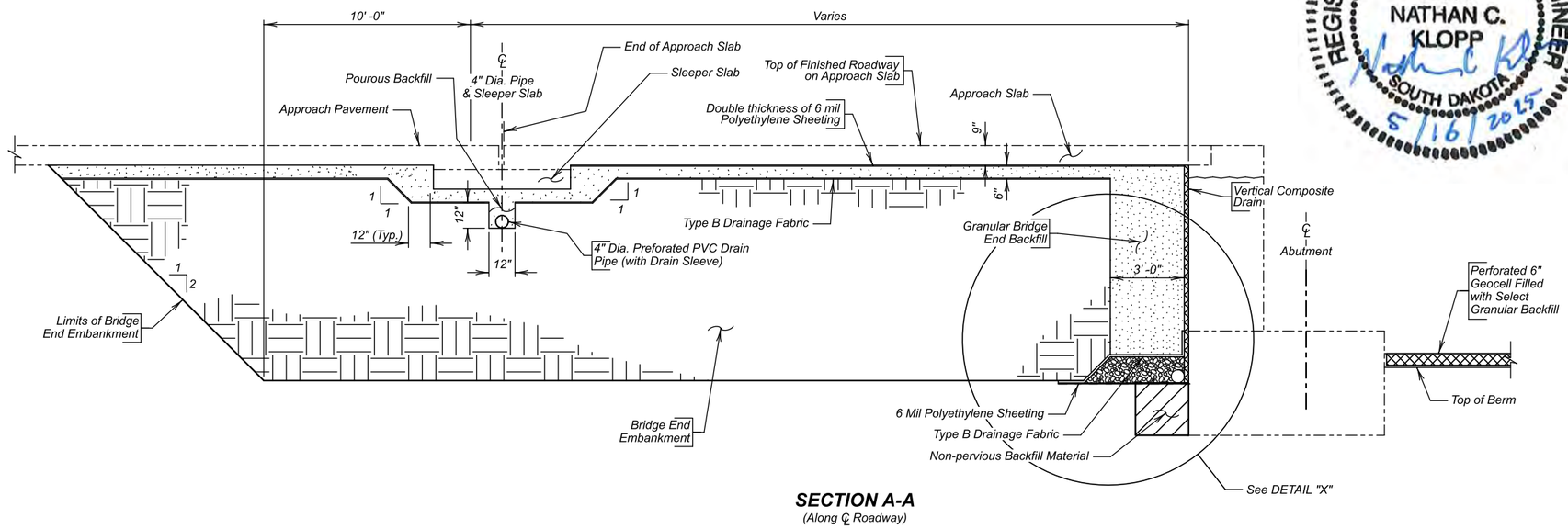
SECTION C-C



DETAIL "X"



SECTION B-B



SECTION A-A
(Along ℄ Roadway)

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Granular Bridge End Backfill	Cu. Yd.	156
∡	Approach Slab Underdrain Excavation	Cu. Yd.	2
☆ ⊛	Bridge End Embankment	Cu. Yd.	1720
=∡	Porous Backfill	Ton	32
	4" Underdrain Pipe	Ft.	380
	Precast Concrete Headwall for Drain	Ea.	6

1. 4" dia. Perforated PVC Drain Pipe (with Drain Sleeve). 192 Ft.
2. 4" dia. PVC Outlet Pipe with Rodent Screens. 98 Ft.
3. Vertical Composite Drain. 1008 Sq. Ft.

Items 1 thru 3 are approximate quantities contained in the 4" Underdrain for information only.

4. 6 mil Polyethylene Sheeting, not including laps. 2935 Sq. Ft.
5. Type B Drainage Fabric. 392 Sq. Yd.

Items 4 and 5 are approximate quantities contained in the Granular Bridge end Backfill and are for information only.

=∡ *For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.*

⊛ *Shrinkage Factor of 1.25 used.*

∡ *Quantity under sleeper slab based on 12" wide trench.*

☆ *The quantity of Non-Pervious Backfill is included with Bridge End Embankment.*

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/16/2025

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENT NO. 1 & 4 (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

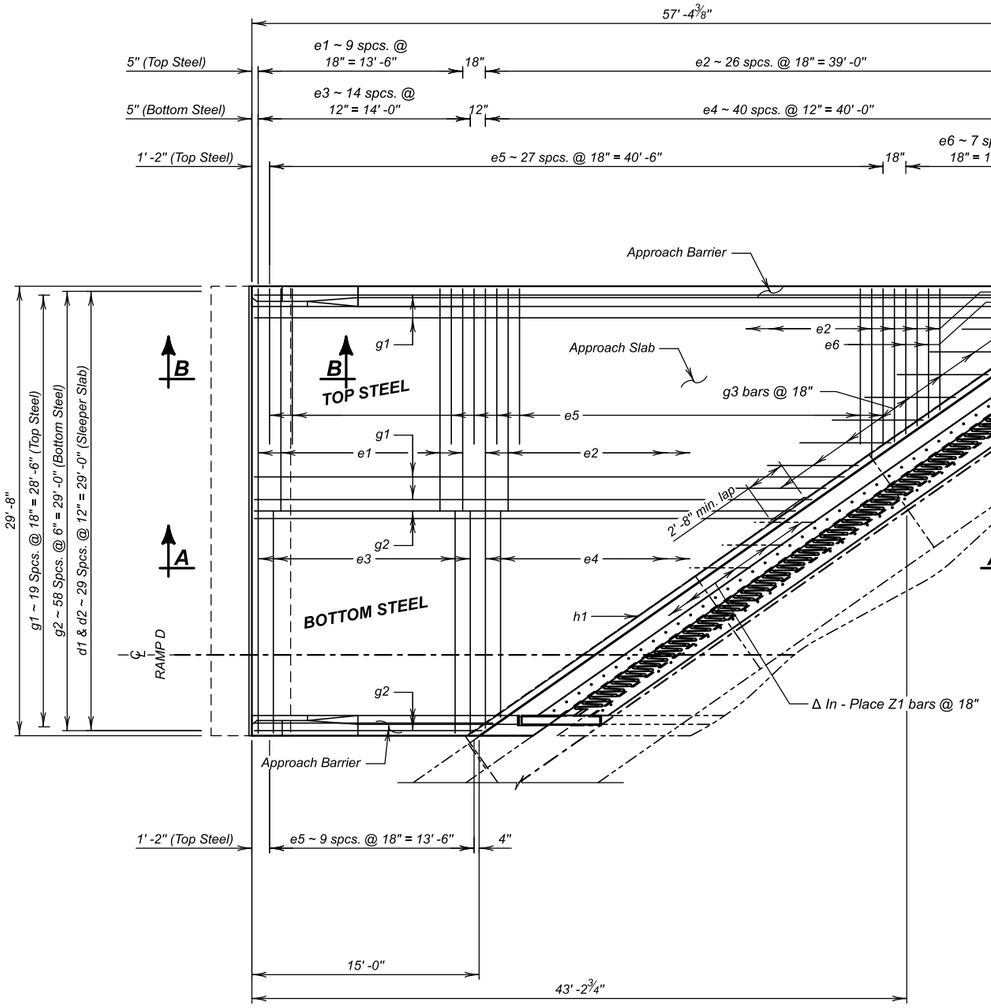
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

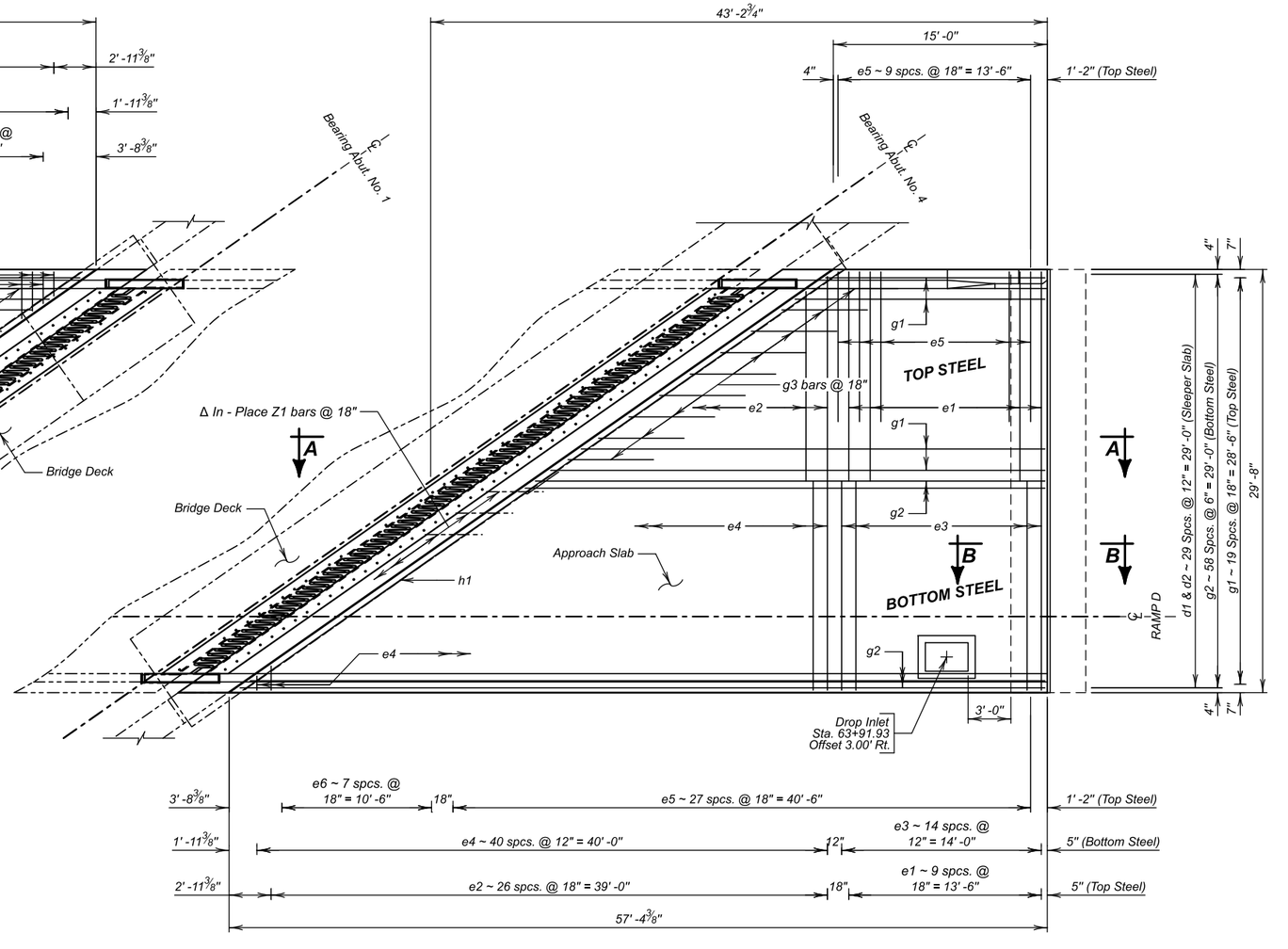
Plotted From - hclaridge File - ...\Sheets\b06JQ_02_beb1.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E104	E130



PLAN
(Begin Bridge)



PLAN
(End Bridge)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

Δ *In-Place Z1 bars and Mechanical splices are listed and included in superstructure quantities. See SUPERSTRUCTURE DETAILS.*

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (B) and APPROACH SLAB DETAIL (C)

APPROACH SLAB DETAILS (A)
FOR
312'-11 3/8" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

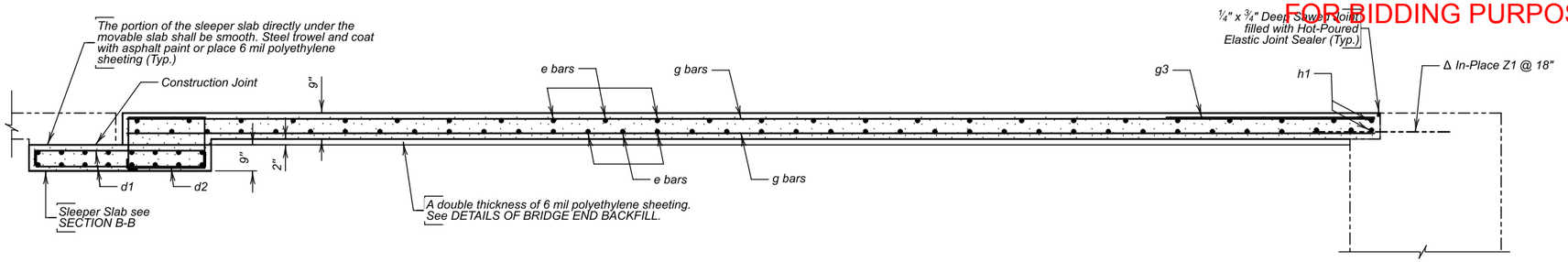
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_app.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E105	E130

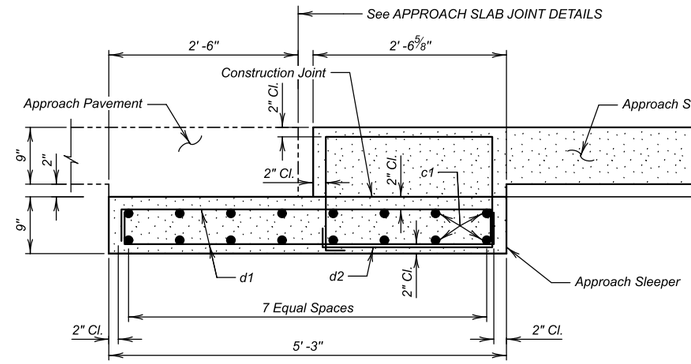
Plotting Date: 06/26/2025 Revised Date: 06/26/2025
Initials: NCK



SECTION A - A

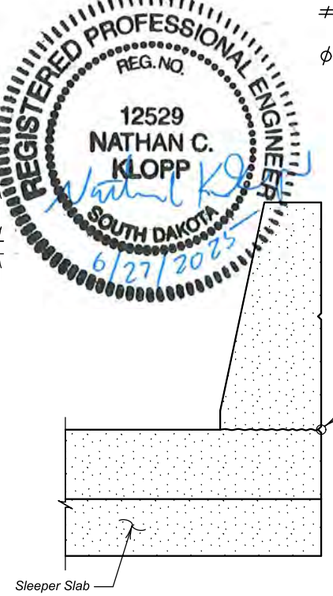
(Approach Slab barriers not shown for clarity)

Δ In-Place Z1 bars and Mechanical Splices are listed and included in superstructure quantities. See SUPERSTRUCTURE DETAILS.



SECTION B - B

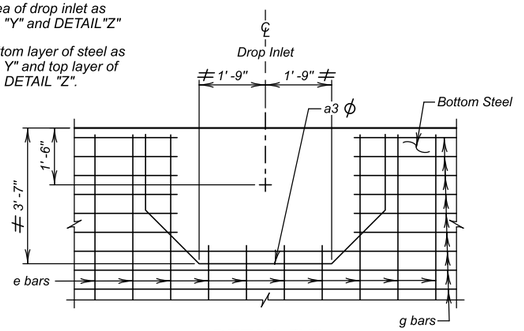
(Sleeper Slab)



VIEW C - C

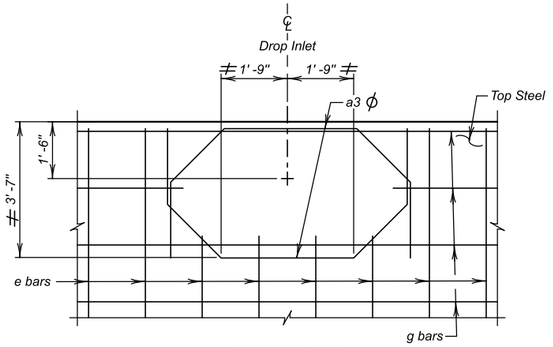
≠ Cut all bars in area of drop inlet as shown in DETAIL "Y" and DETAIL"Z"

ϕ Add a3 bar to bottom layer of steel as shown in DETAIL Y" and top layer of steel as shown in DETAIL "Z".



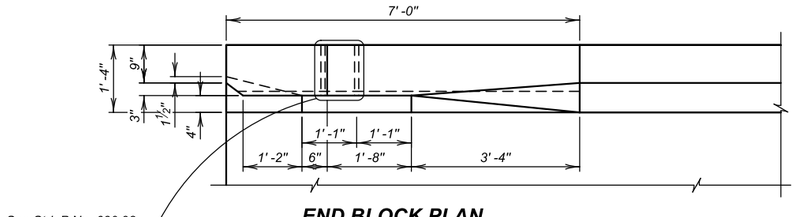
DETAIL "Y"

(Plan for Bottom Steel when drop inlet is used.)

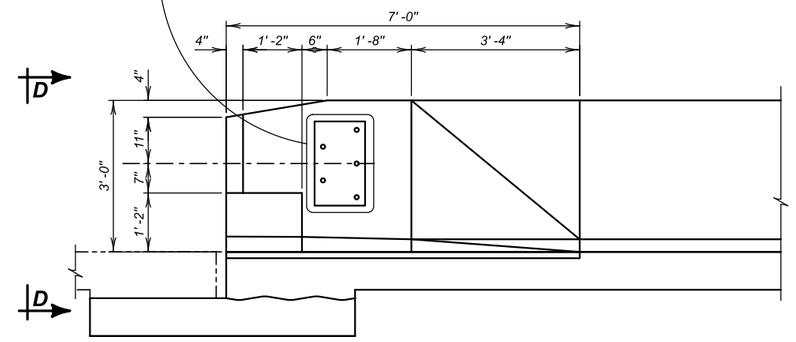


DETAIL "Z"

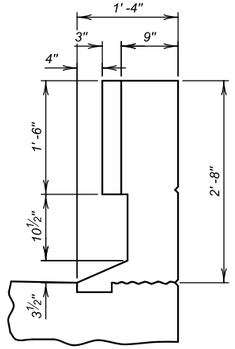
(Plan for Top Steel when drop inlet is used.)



END BLOCK PLAN



END BLOCK ELEVATION



VIEW D - D

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	238.5
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	34.6

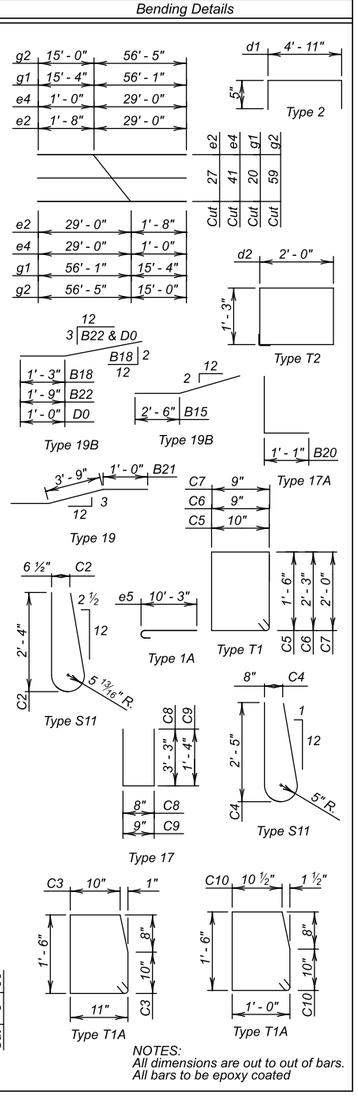
1. 59.6 Cu. Yds. Concrete in Approach Slabs.
2. 17573 Lbs. Epoxy Coated Re-Steel in Approach Slabs.
3. 17.1 Cu. Yds. Concrete in Sleeper Slabs.
4. 1702 Lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
5. 8.7 Cu. Yds. Concrete in Approach Slab Barriers and Sleeper Slab Barriers.
6. 3125 Lbs. Epoxy Coated Re-Steel in Approach Slab Barriers and Sleeper Slab Barriers.
7. 24.7 Sq. Ft. 6 Mil Polyethylene Sheeting.

Items 1 thru7 are approximate quantities contained in the above bid items and are for information only.

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
Approach Slabs				
a3	3	4	11' - 6"	14
e1	20	4	29' - 4"	Str.
e2	27	4	30' - 8"	Str.
e3	30	6	29' - 4"	Str.
e4	41	6	30' - 0"	Str.
e5	76	5	11' - 5"	1A
e6	8	5	14' - 0"	1A
g1	20	4	71' - 5"	Str.
g2	59	8	71' - 5"	Str.
g3	18	4	6' - 0"	Str.
h1	4	6	26' - 10"	Str.
Sleeper Slabs				
c1	32	5	29' - 4"	Str.
d1	120	4	5' - 9"	2
d2	60	4	7' - 0"	T2
Barrier				
B15	3	5	9' - 6"	19B
B16	2	4	53' - 0"	Str.
B17	3	4	5' - 8"	Str.
B18	3	8	3' - 0"	19B
B19	9	5	2' - 0"	Str.
B20	9	6	3' - 6"	17A
B21	3	5	5' - 9"	19
B22	3	8	3' - 3"	19B
B23	2	4	12' - 4"	Str.
C2	142	5	5' - 3"	S11
C3	3	5	5' - 8"	T1A
C4	6	5	5' - 3"	S11
C5	6	5	5' - 7"	T1
C6	9	6	7' - 4"	T1
C7	9	5	6' - 5"	T1
C8	3	7	7' - 3"	17
C9	3	5	3' - 5"	17
C10	142	5	5' - 10"	T1A
D0	3	4	2' - 6"	19B
D4	12	4	53' - 0"	Str.
D5	4	4	55' - 6"	Str.
D6	12	4	12' - 4"	Str.
D7	4	4	14' - 10"	Str.
D8	4	4	58' - 0"	Str.
D9	4	4	18' - 8"	Str.

Bending Details



APPROACH SLAB DETAILS (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

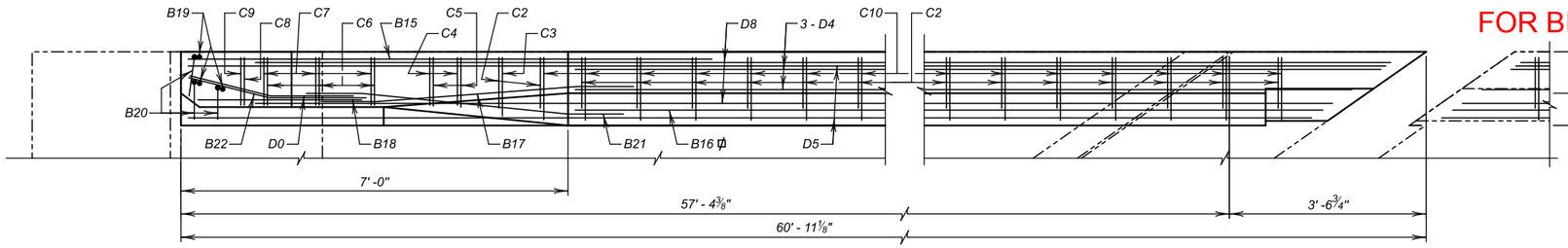
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

FOR BIDDING PURPOSES ONLY

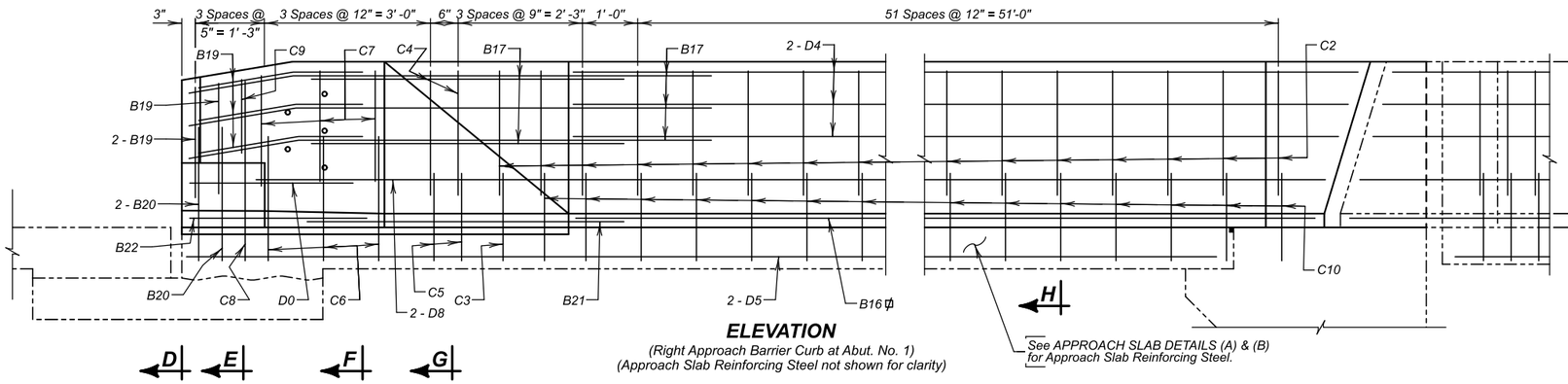
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E106	E130



PLAN

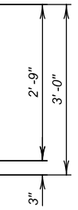
(Right Approach Barrier Curb at Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)

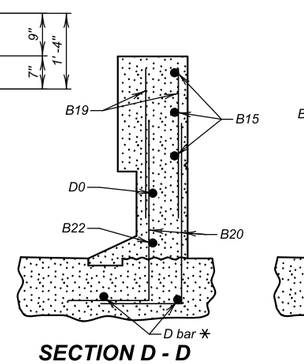
∗ Min. Lap = 2' -3"
ϕ Min. Lap = 1' -6"



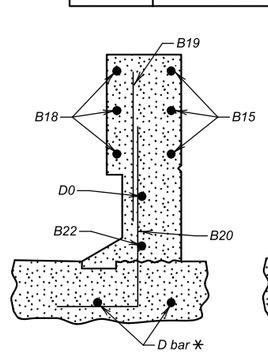
ELEVATION

(Right Approach Barrier Curb at Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)





SECTION D - D



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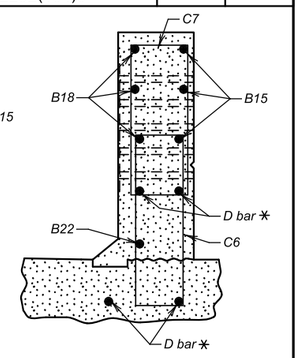

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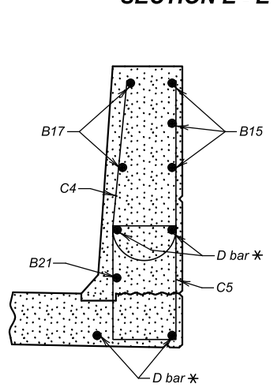

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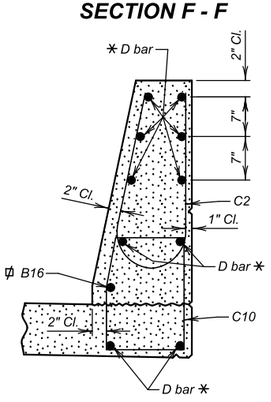
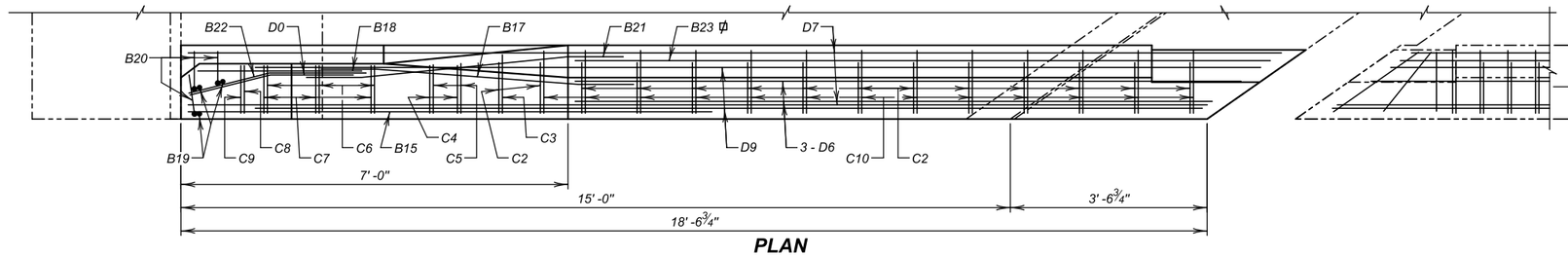
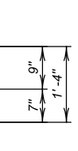


SECTION H - H



PLAN

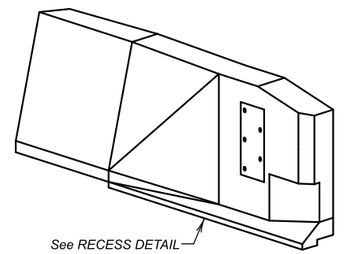
(Left Approach Barrier Curb at Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)



ELEVATION

(Left Approach Barrier Curb at Abut. No. 1)
(Approach Slab Reinforcing Steel not shown for clarity)

RECESS DETAIL



ISOMETRIC VIEW

∗ Min. Lap = 2' -3"
ϕ Min. Lap = 1' -6"

This sheet is to be used in conjunction with APPROACH SLAB DETAILS (B) and APPROACH SLAB DETAIL (C)

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

APPROACH SLAB DETAILS (C)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

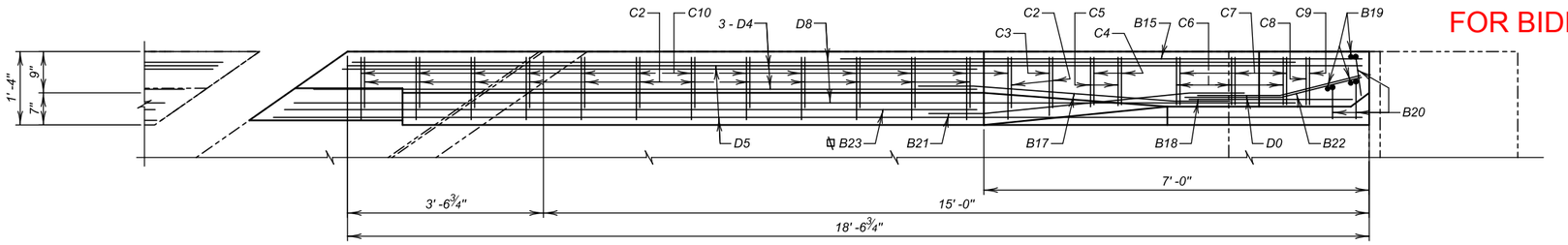
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

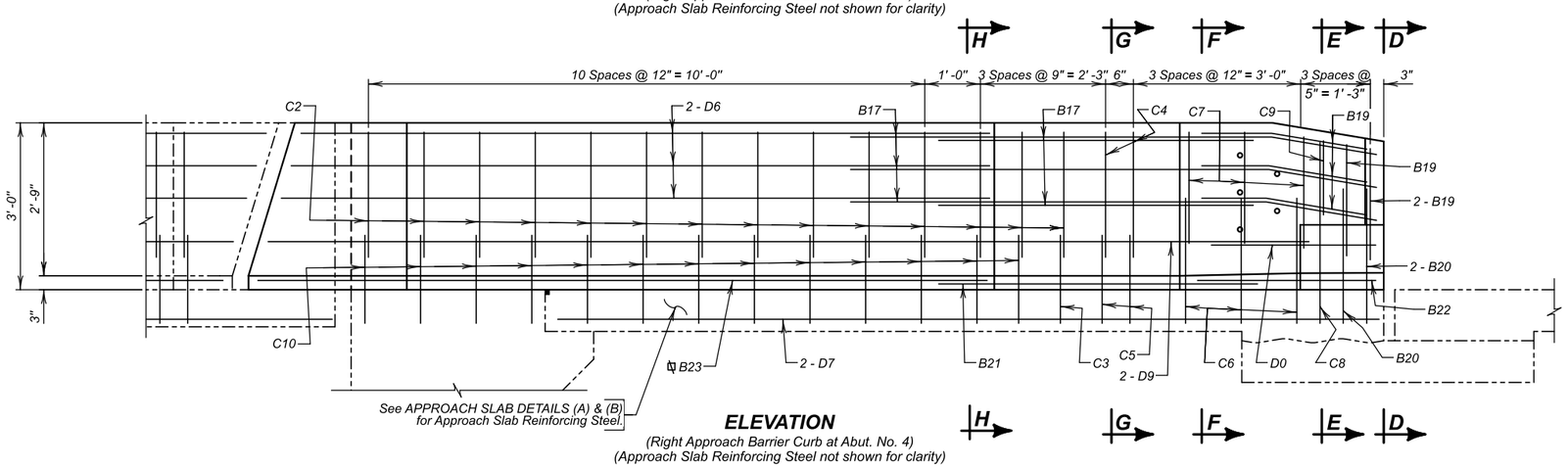
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_app.dgn

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E107	E130

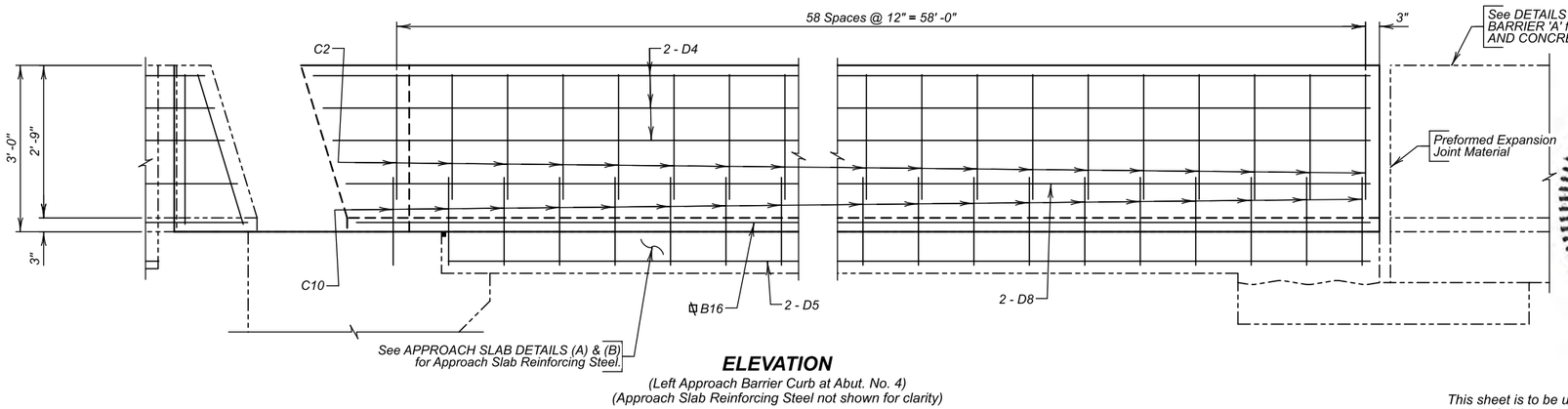


PLAN
(Right Approach Barrier Curb at Abut. No. 4)
(Approach Slab Reinforcing Steel not shown for clarity)

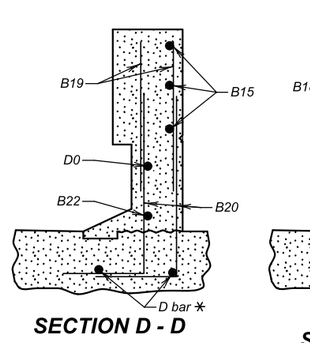


ELEVATION
(Right Approach Barrier Curb at Abut. No. 4)
(Approach Slab Reinforcing Steel not shown for clarity)

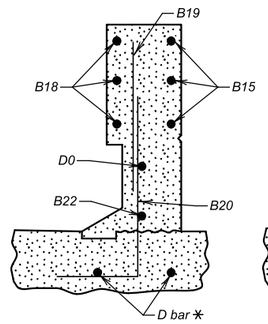
PLAN
(Left Approach Barrier Curb at Abut. No. 4)
(Approach Slab Reinforcing Steel not shown for clarity)



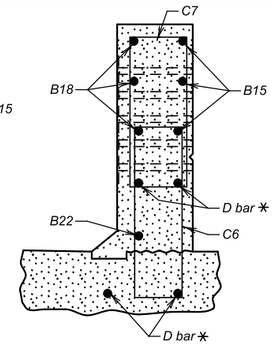
ELEVATION
(Left Approach Barrier Curb at Abut. No. 4)
(Approach Slab Reinforcing Steel not shown for clarity)



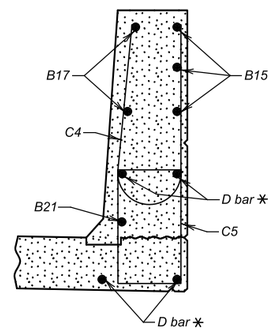
SECTION D - D



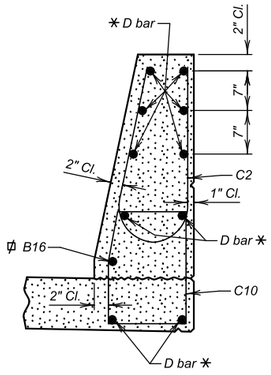
SECTION E - E



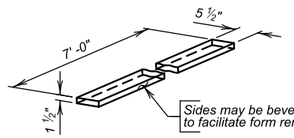
SECTION F - F



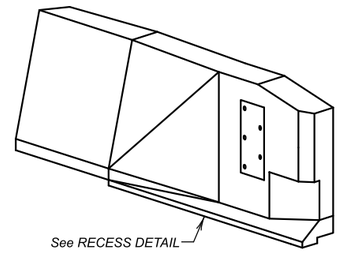
SECTION G - G



SECTION H - H



RECESS DETAIL



ISOMETRIC VIEW

See DETAILS FOR REINFORCED CONCRETE BARRIER 'A' for M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

Preformed Expansion Joint Material

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

APPROACH SLAB DETAILS (D)
FOR
312'-11 3/8" STEEL GIRDER BRIDGE

27'-0" ROADWAY
RAMP D OVER 229 RAMP C
STA. 60+35.34 to STA. 63+50.03
STR. NO. 42-065-016

55° LHF SKEW
SEC. 18 - T100N - R50W
EM 0292(88)73
HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

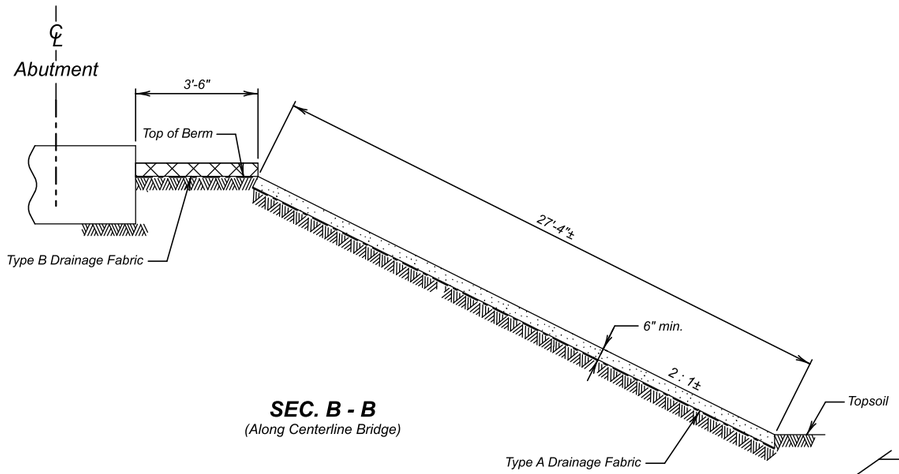
This sheet is to be used in conjunction with APPROACH SLAB DETAILS (B) and APPROACH SLAB DETAIL (C)

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

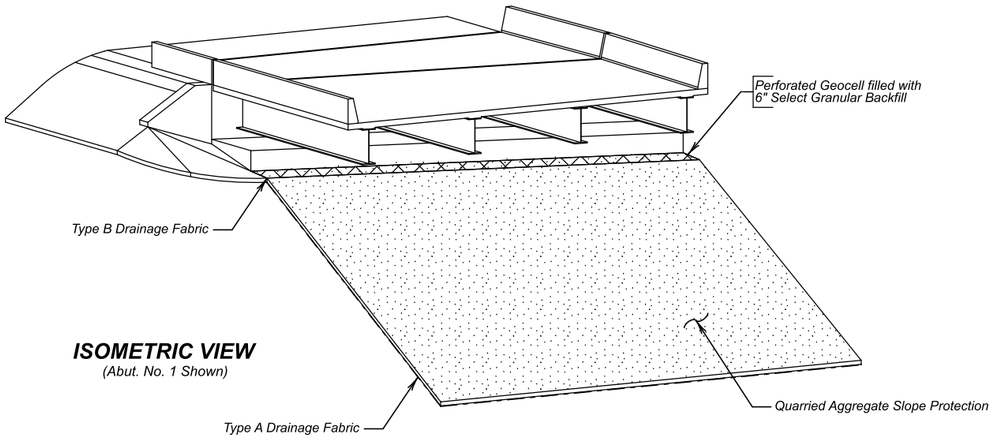
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_app.dgn

FOR BIDDING PURPOSES ONLY

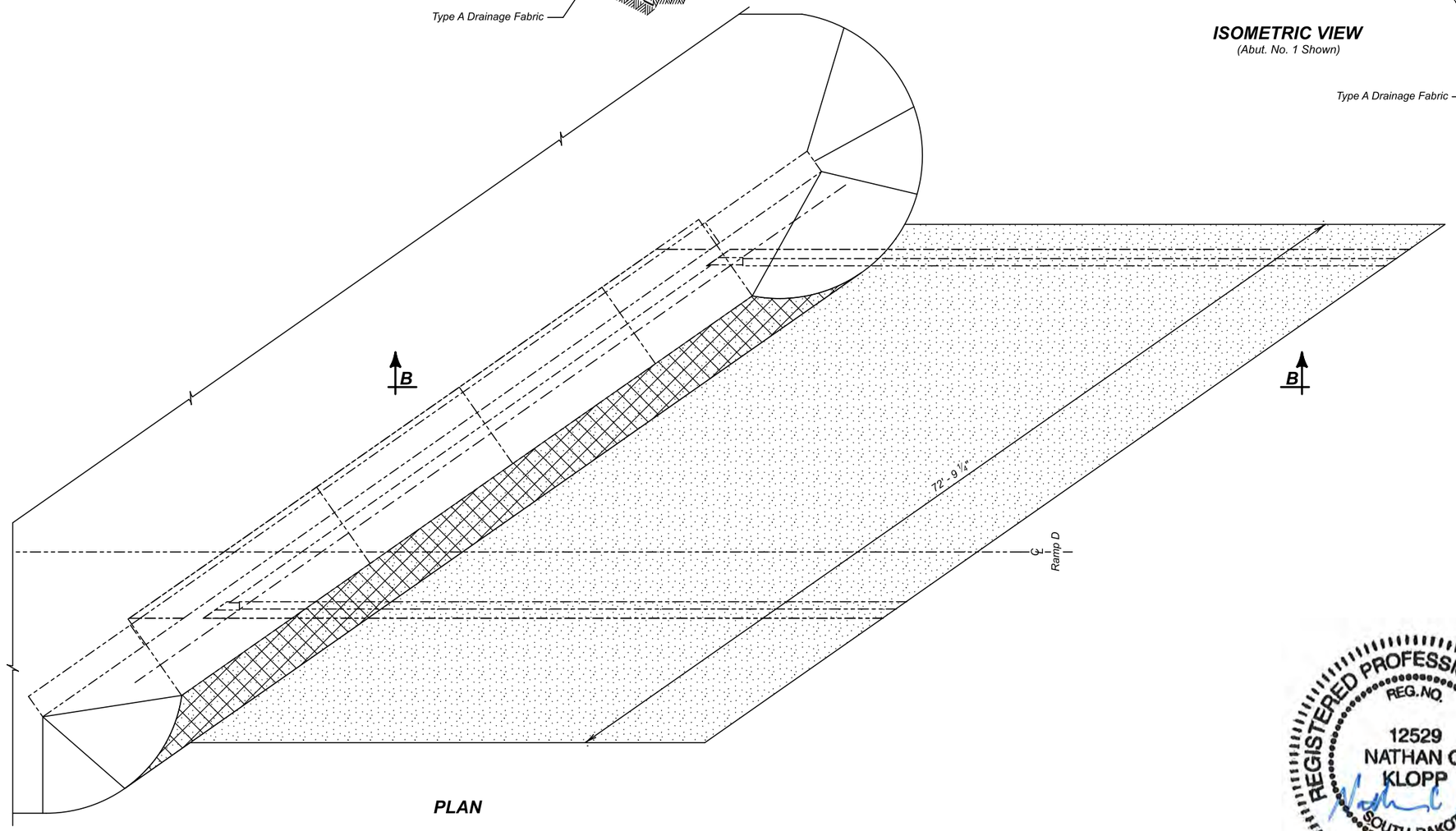
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E108	E130



SEC. B - B
(Along Centerline Bridge)



ISOMETRIC VIEW
(Abut. No. 1 Shown)



PLAN

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Bridge Berm Slope Protection, Quarried Aggregate	Sq. Yd.	442.1
⏍	Select Granular Backfill	Ton	14.9
☆	Perforated Geocell	Sq. Ft.	425
	Type A Drainage Fabric	Sq. Yd.	443
	Type B Drainage Fabric	Sq. Yd.	47

☆ *See PERFORATED GEOCELL notes for payment information.*

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

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

SLOPE PROTECTION DETAILS
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

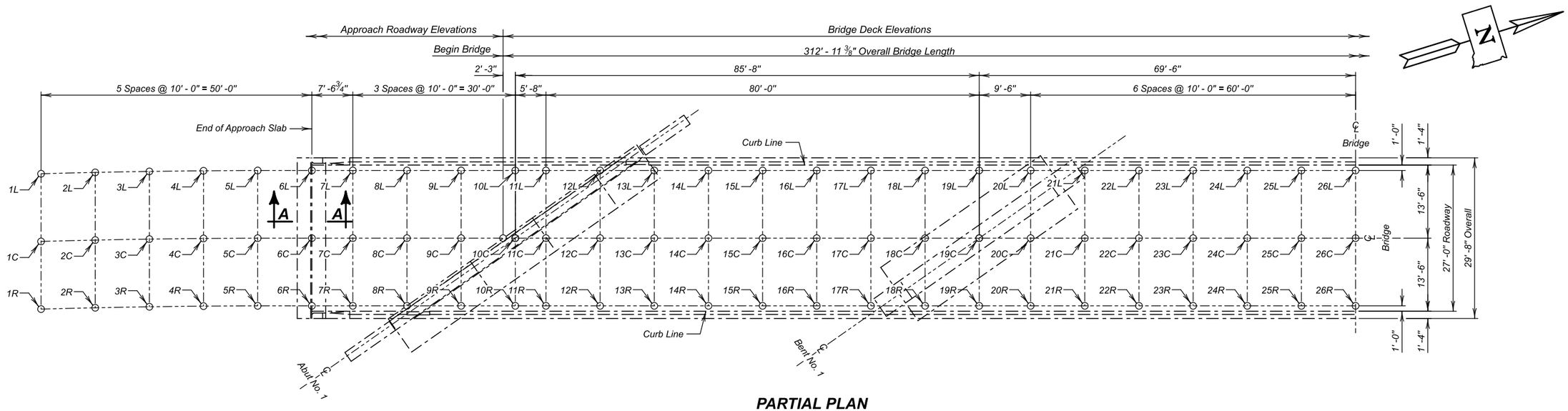
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_sp.dgn Plotting Date: 5/16/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E109	E130



PARTIAL PLAN

TABLE OF ELEVATIONS - APPROACH ROADWAY

Location	Elevation	Location	Elevation	Location	Elevation
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
6L		6C		6R	
7L		7C		7R	
8L		8C		———	
9L		9C		———	
10L		———		———	
11L		———		———	

TABLE OF ELEVATIONS - BRIDGE DECK

Location	Elevation	Location	Elevation	Location	Elevation
———		———		8R	
———		———		9R	
———		10C		10R	
———		11C		11R	
12L		12C		12R	
13L		13C		13R	
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	
22L		22C		22R	
23L		23C		23R	
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Bridge Elevation Survey	L.S.	Lump Sum

TABLE OF ELEVATIONS - BRIDGE SURVEY MARKERS

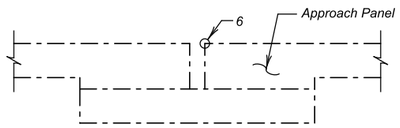
Location	Station - Offset	Elevation
Begin Bridge		

Benchmark Decription:

B.M # ____
Location Decription _____
Elevation _____

✳ Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are shown in SECTION A - A.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025



SECTION A - A

AS-BUILT ELEVATION SURVEY (A)
FOR
312'-11⅜" STEEL GIRDER BRIDGE
27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

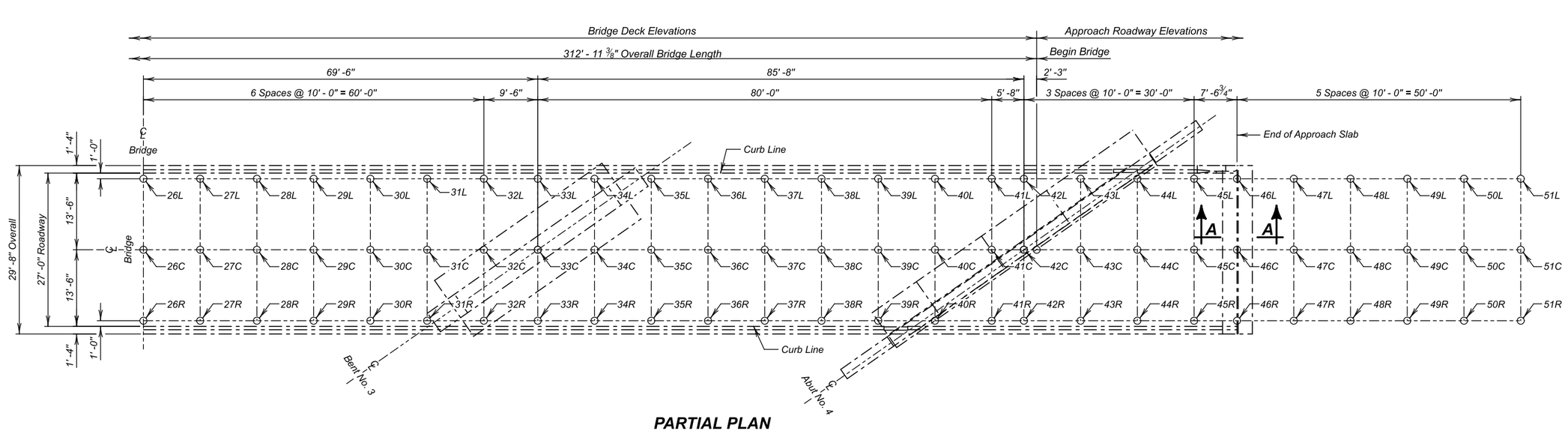
Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_asb.dgn Plotting Date: 5/16/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT

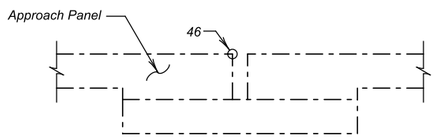
PROJECT	SHEET NO.	TOTAL SHEETS
EM 0292(88)73 IM 2292(104)0	E110	E130



PARTIAL PLAN

TABLE OF ELEVATIONS - BRIDGE DECK

Location	Elevation	Location	Elevation	Location	Elevation
26L		26C		26R	
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		31R	
32L		32C		32R	
33L		33C		33R	
34L		34C		34R	
35L		35C		35R	
36L		36C		36R	
37L		37C		37R	
38L		38C		38R	
39L		39C		39R	
40L		40C		40R	
41L		41C		———	
42L		42C		———	
43L		———		———	
44L		———		———	



SECTION A - A

TABLE OF ELEVATIONS - APPROACH ROADWAY

Location	Elevation	Location	Elevation	Location	Elevation
———		———		41R	
———		———		42R	
———		43C		43R	
———		44C		44R	
45L		45C		45R	
46L		46C		46R	
47L		47C		47R	
48L		48C		48R	
49L		49C		49R	
50L		50C		50R	
51L		51C		51R	

TABLE OF ELEVATIONS - BRIDGE SURVEY MARKERS

Location	Station - Offset	Elevation
Begin Bridge		

Benchmark Decription:

B.M # ___
Location Decription _____
Elevation _____

✳ *Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are shown in SECTION A - A.*

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

AS-BUILT ELEVATION SURVEY (B)
FOR
312'-11⅜" STEEL GIRDER BRIDGE

27'-0" ROADWAY — 55° LHF SKEW
RAMP D OVER 229 RAMP C — SEC. 18 - T100N - R50W
STA. 60+35.34 to STA. 63+50.03 — EM 0292(88)73
STR. NO. 42-065-016 — HL-93

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

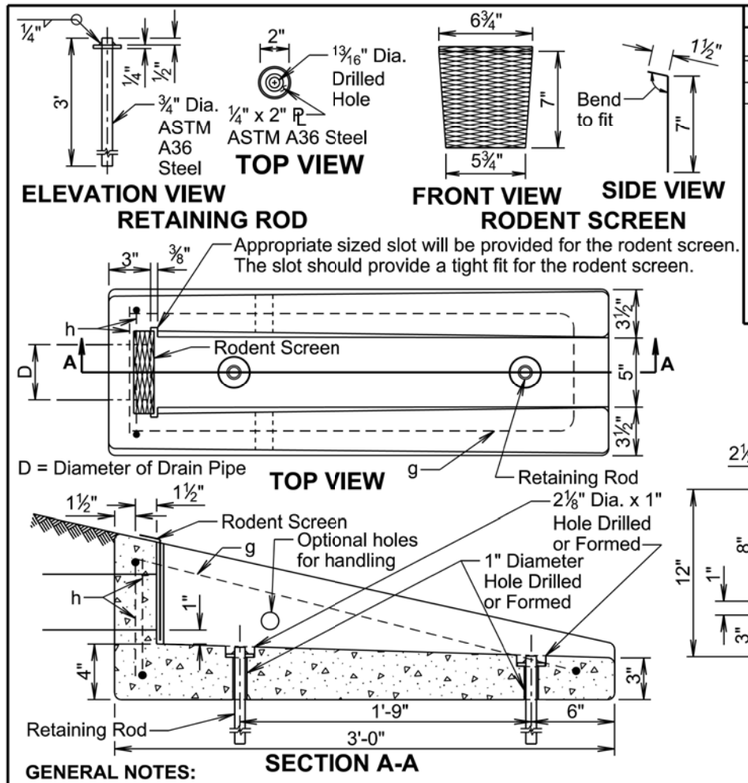
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
CAK	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Ramp D\Sheets\b06JQ_02_asb.dgn Plotting Date: 5/16/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E111	E130

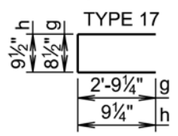
Plotting Date: 06/26/2025 Revised Date: 06/26/2025 Initials: NCK



REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

NOTE: All dimensions are out to out of bars.

Bending Details



GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

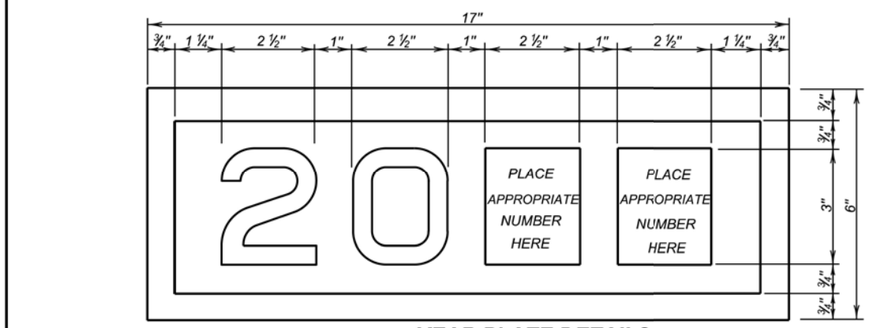
The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

November 19, 2021

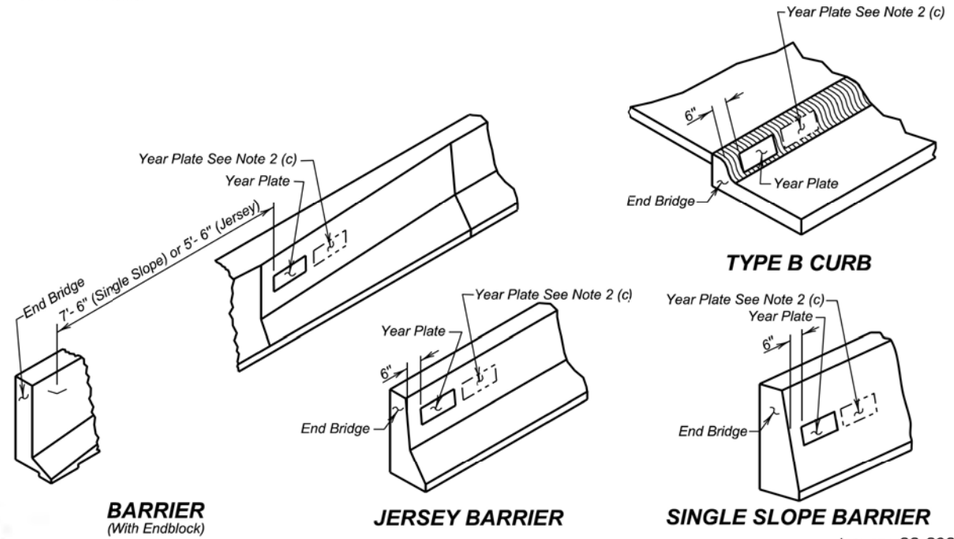
Published Date: 2026	SDDOT	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50
			Sheet 1 of 1



YEAR PLATE DETAILS

GENERAL NOTES:

1. *Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.*
2. *Year plates will be located on structure(s) as follows:*
   a. *On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.*
   b. *On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.*
   c. *When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.*
3. *There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.*



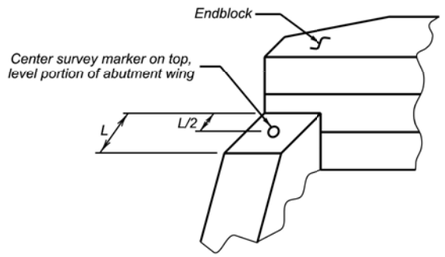
January 22, 2021

Published Date: 2026	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1

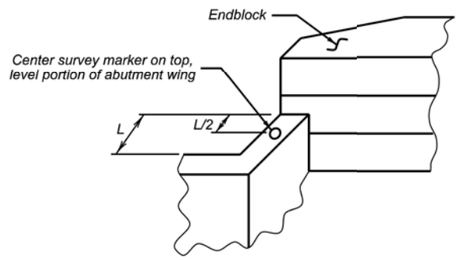
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

312'-11⅜" STEEL GIRDER BRIDGE
STR. NO. 42-065-016
MAY 2025

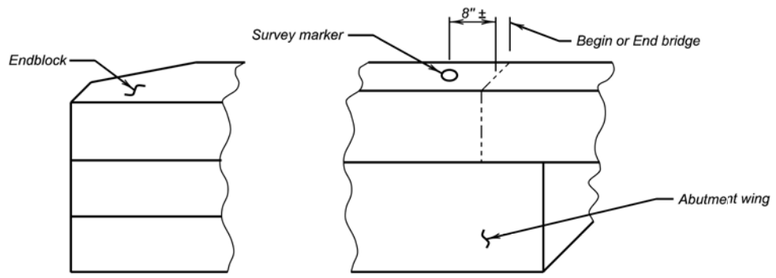
Plotted From - hdaridge File - ...\Ramp D\Sheets\b06JQ_02_std.dgn Plotting Date: 7/31/2025



ABUTMENT WITH "STRAIGHT" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS

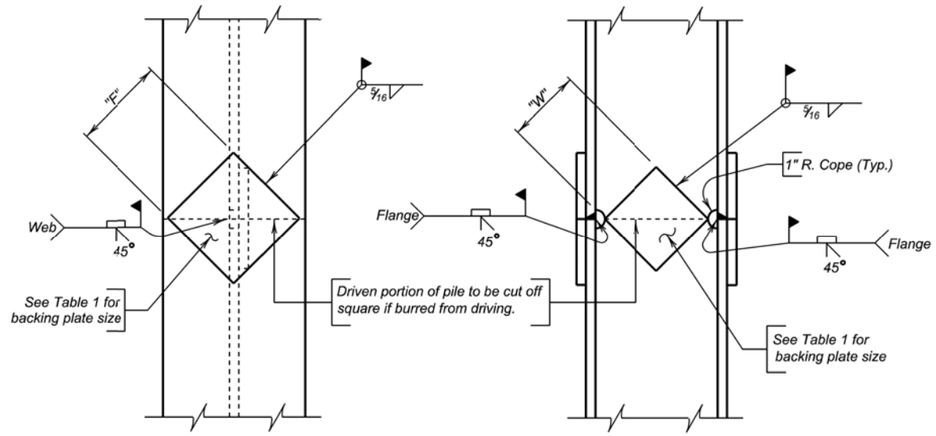
(Endblock on top of wings)

GENERAL NOTES:

1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
2. Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a ¾" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 ½" top diameter.
3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26,2012

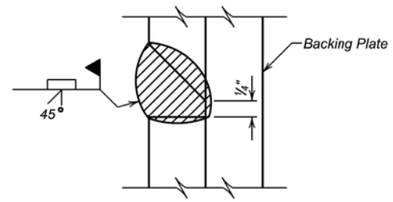
Published Date: 2026	SDDOT	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05	Sheet 1 of 1



NOTE:

Prepare joint surfaces lower end of upper section on the ground and weld on backing plates; then place upper section on lower section and weld.

COMPLETE JOINT PENETRATION WELD DETAIL



GENERAL NOTES:

1. Steel for backing plates shall conform to ASTM A709 Grade 50.
2. Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
3. Welder must be certified and registered with the SDDOT.
4. Backing plate shall at a minimum be as thick as the web of the pile being spliced.
5. Web must be coped with 1 inch radius.
6. Submit Welding Procedure Specification (WPS) to Bridge Construction Engineer for approval prior to pile driving.

TABLE 1
(BACKING PLATES)

PILE	10"	12"	14"
"F" FLANGE	6 ½"	8"	10"
"W" WEB	4 ¾"	6 ¼"	7 ½"

December 23,2012

Published Date: 2026	SDDOT	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40	Sheet 1 of 1

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

312'-11⅜" STEEL GIRDER BRIDGE
STR. NO. 42-065-016
MAY 2025

Plotted From - hdaridge File - ...\Ramp D\Sheets\b06JQ_02_std.dgn Plotting Date: 7/31/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E113	E130

Plotting Date: 06/26/2025

Revised Date: 06/26/2025
Initials: NCK

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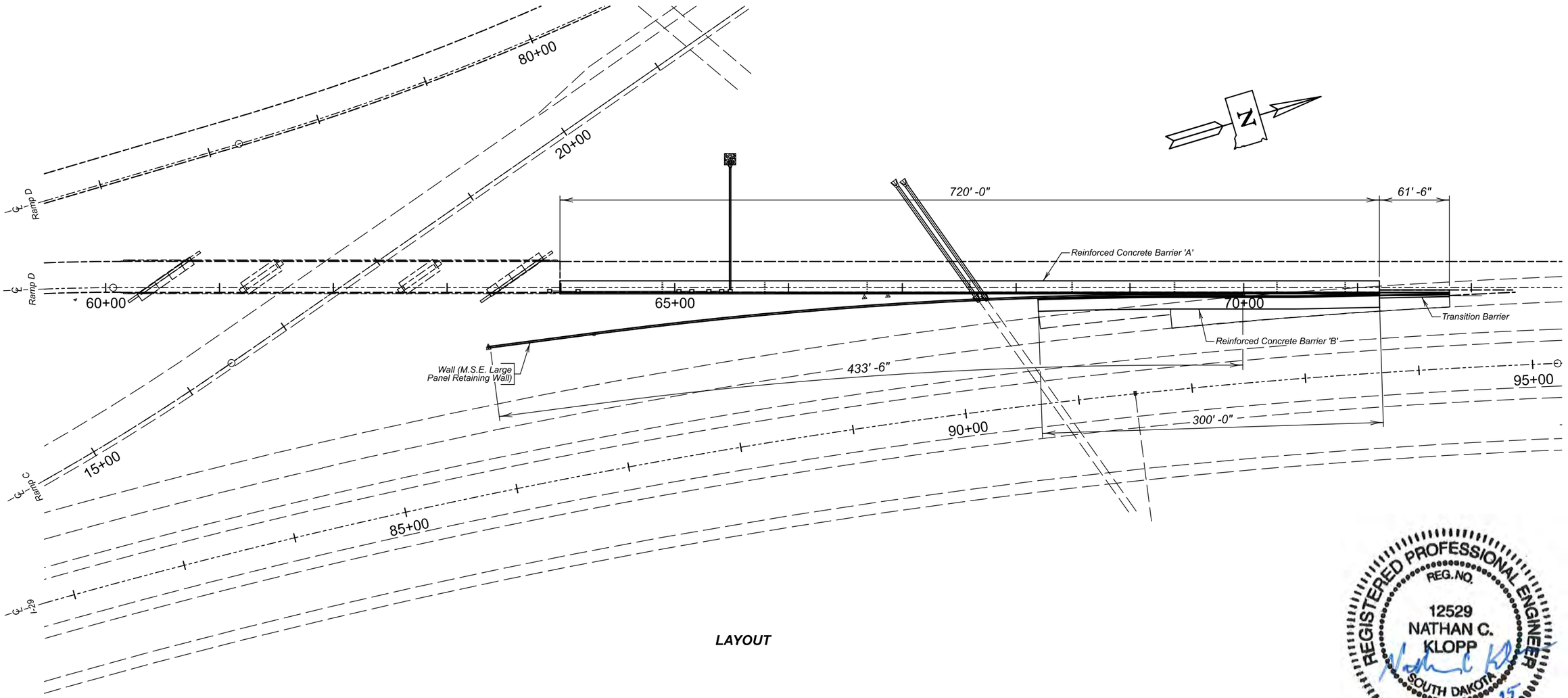
312'-11⅜" STEEL GIRDER BRIDGE
STR. NO. 42-065-016
MAY 2025

Plotted From - nmclaughlin File - ...\Ramp D\Sheets\b06JQ_02_std.dgn Plotting Date: 6/27/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E114	E130



LAYOUT

INDEX OF RETAINING WALL & CONCRETE BARRIER SHEETS -

Sheet No. 1 - Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Notes (Continued)
Sheet No. 4 - Subsurface Investigation Wall
Sheet No. 5 - Details of M.S.E. Wall
Sheet No. 6 - Details of Reinforced Concrete Barrier 'B'
Sheet No. 7 - Typical Sections
Sheet No. 8 - Details of Reinforced Concrete Barrier 'A'
Sheet No. 9 - Concrete Slab Details
Sheet No. 10 - Concrete Barrier Details
Sheet No. 11 - Transition Barrier Details

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

LAYOUT
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D — SEC. 18 - T100N - R50W
STA. 0+01.50 to STA. 6+65.00 — EM 0292(88)73
PCN 06JQ

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

Plans Prepared By:
Short Elliott Hendrickson
5016 S Bur Oak Place, Suite 1
Sioux Falls, SD 57108

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_04_layout.dgn Plotting Date: 5/16/2025

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Structure Excavation, Retaining Wall	2,750	Cu. Yd.	
Foundation Preparation, Retaining Wall	1,277	Cu. Yd.	
Bridge End Embankment	1878	Cu. Yd.	
Class A45 Concrete, Misc	550.6	Cu. Yd.	
Anti-Graffiti Coating	17,717	Sq Ft	
Epoxy Coated Reinforcing	84, 863	Lb.	
MSE Large Panel Wall, Furnish	10,140	Sq. Ft.	See Special Provision
MSE Large Panel Wall, Install	10,140	Sq. Ft.	
Granular Backfill for MSE Large Panel Wall	6,009.0	Cu. Yd.	
4" Concrete Sidewalk	164	Sq. Ft.	
4" Underdrain Pipe	735	Ft.	

SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.

2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2025 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES

1. Concrete will be Class A45 in accordance with Section 460.

2. Design Material Strengths: Concrete fc = 4,500 psi
   Reinforcing Steel fy = 60,000psi

3. Reinforcing steel will conform to ASTM A615, Grade 60.

4. Use 1" clear cover on all reinforcing steel except as shown.

5. All exposed concrete corners and edges will be chamfered 3/4" unless noted otherwise.

6. The Concrete Barrier Curb and Gutter may be either cast-in-place or slipformed. If slipformed, the finished Concrete Barrier Curb will be true to the specified line and grade within a tolerance of ± 14" in 10 feet.

7. The transverse sawed or formed joints in the Concrete Barrier Curb and Gutter will align with the transverse joints in the PCC pavement. The joint grooves may either be formed or saw cut. If saw cut, the concrete will have attained a compressive strength of 2,000 psi prior to sawing. Keyed joints will be used between concrete barrier curb and gutter and concrete barrier curb and gutter end section and between separate pours. Saw cut and seal same as adjacent PCC pavement.

8. Snap ties, if used, will be epoxy coated. The epoxy coating will concrete and compatible with the coating applied to the new epoxy reinforcing steel.

MOMENT SLAB BARRIERS

1. All cost for furnishing and installing the preformed expansion joint filler and bituminous paint will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Misc.

2. The cost of the barrier form liners will be in the contract unit price per cubic yard for Class A45 Concrete, Misc. as appropriate to the panel being constructed. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the installation of Form Liner.

COMMERCIAL TEXTURE FINISH

1. A commercial texture finish will be applied to the front, and top face of the barrier curbs.

2. The commercial texture finish used will be on the Department's approved list.

3. The commercial texture finish will be applied in accordance with Section 460.3 L.1.C

4. Where the commercial texture finish is to be applied, curing will be accomplished with cotton or burlap mats and polyethylene sheeting. Curing will continue for not less than seven days after placing concrete before the commercial texture finish is applied. Various commercial texture finish products require that the concrete be 28 days old before application. Therefore, the commercial texture surface finish will be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.

5. No separate payment will be made for the commercial texture. All costs for the surface preparation, furnishing, and installing the commercial texture finish will be incidental to the Concrete Curb and Gutter and Concrete Curb and Gutter End Section items to which the finish is applied.

6. The color of the back face will be AMS - STD - 595 33690 to match the barrier on the bridge.

7. The color of the top and inside face will be AMS - STD - 595 33690 to match the barrier on the bridge.

RETAINING WALL

1. The Mechanically Stabilized Earth (MSE) Large Panel Retaining Wall will be on the current approved products list located at the following website address:

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

2. See Special Provision for MECHANICALLY STABILIZED EARTH (LARGE PANEL) WALLS

3. The wall panel front face surface texture will be intended to simulate a natural rock wall. Wall panels color will resemble pink quartzite. The wall coping will be colored tan. Color may be achieved by using colored concrete or surface staining. Submit wall panel pattern, colors, and method of achieving colors to the Engineer for approval a minimum of 2 weeks prior to fabrication.

4. The minimum embedment depth to the bottom of the MSE Large Panel retaining wall will be 2.0-foot.

5. Required minimum reinforcement length will be 8 feet as per AASHTO 11.10.2.1 or as determined by the wall designer.

6. Horizontal dimensions shown are measured along the front face of the wall.

7. Top of wall elevations shown are at the top of the concrete coping.

8. The retaining wall will be installed in accordance to the selected wall companies' instructions, specifications, and approved shop drawings.

9. Construction of the wall will begin at the lowest course and proceed upward. An underdrain will be placed prior to wall backfill placement and will be functional to prevent water from backing up into the wall backfill. The lowest course of the wall must be placed and backfilled in its entirety prior to construction of any subsequent courses. Backfill must be placed in successive horizontal lifts.

10. A layer of Type B Drainage Fabric will be placed over the top of the Granular Backfill for MSE Large Panel Wall prior to placing any soil over the granular backfill. The intent of the fabric is to act as a separator and keep fines from intruding into the granular material. All costs in furnishing and installing the Type B Drainage Fabric will be incidental to the contract unit price per cubic yard for "Granular Backfill for MSE Large Panel Wall."

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
8/28/2025

ESTIMATE OF QUANTITIES AND NOTES
FOR
M.S.E. RETAINING WALLS
AND CONCRETE BARRIERS

ADJACENT TO RAMP D — SEC. 18 - T100N - R50W
STA. 0+01.50 to STA. 6+65.00 — EM 0292(88)73
PCN 06JQ

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

UNDERDRAIN

1. An underdrain system will be placed behind the MSE Large Panel retaining wall as shown in the plans.

2. The 4-inch diameter Perforated PVC Drain Pipe will be PS 46 Solvent Weld PVC pipe conforming ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4" Dia. PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve will conform to ASTM D6707.

3. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.

4. All labor, tools, equipment, and any incidentals necessary for the Installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

FOUNDATION PREPARATION

Foundation preparation for the retaining wall will consist of excavating the wall footprint to two feet below the bottom of the leveling pad elevation as shown on the typical section. Granular material conforming to the gradation requirements of Base Course in Section 882 of the Specifications will be placed in six inch lifts to the bottom of wall elevation and be compacted according to Section 260.3.B. Prior to placing any granular material, all spoil or loose material will be removed, and the area wetted then proof rolled to ensure adequate density.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

NOTES (CONTINUED)
FOR
M.S.E. RETAINING WALLS
AND CONCRETE BARRIERS

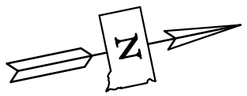
ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

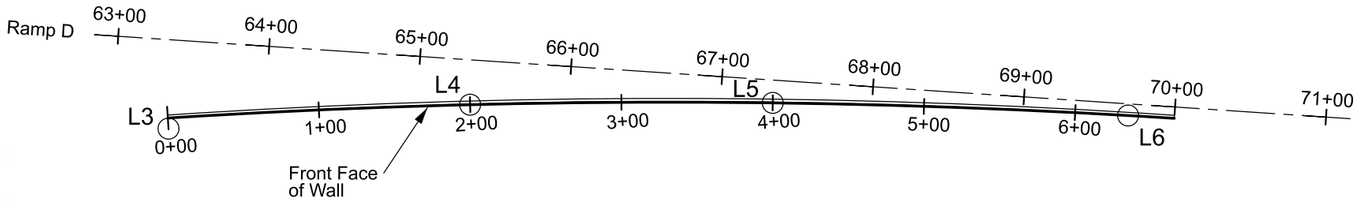
3 OF 11

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER



Retaining Wall Soil Parameters

	Factored Bearing Resistance, R_r	Friction Angle, ϕ	Cohesion, C	Wet Unit Weight, γ_w
Base Course	6,000 psf	32°	0 psf	135 pcf
Foundation Soils (Glacial Till)	6,000 psf	26°	500 psf	124 pcf
Reinforced Soils	-	34°	0 psf	105 pcf
Retained Soils	-	24°	100 psf	120 pcf



Hole Number	L3	
Station	0+00	
Depth	3.5	ft
Soil Color	Brown	
Classification	Silt Clay	
Strength (Qu)	8,472	psf
Dry Density	104.6	pcf
Wet Density	122.4	pcf
Moisture	17.0	%
Pass No. 10	97.5	%
Pass No. 40	88.9	%
Pass No. 200	70.2	%
Sand Content	27.3	%
Silt Content	29.3	%
Clay Content	40.9	%

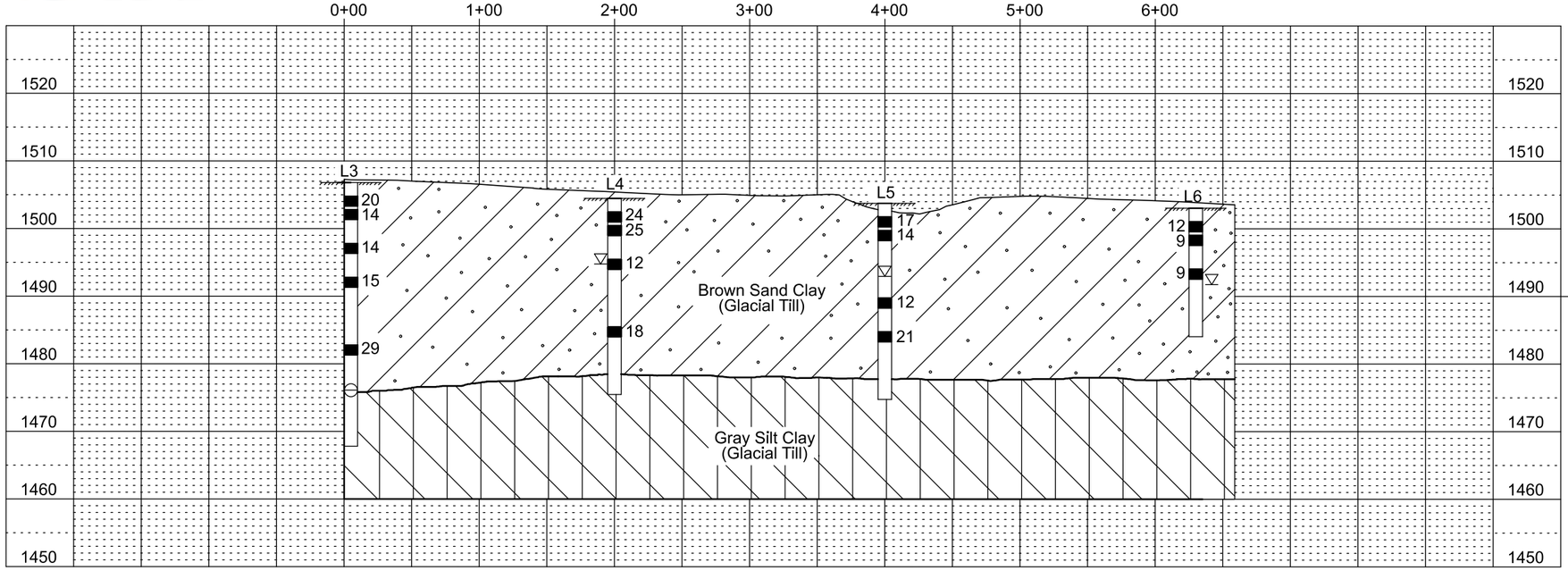
Hole Number	L3	
Station	0+00	
Depth	5.5	ft
Soil Color	Brown	
Classification	Sandy Clay	
Strength (Qu)	5,445	psf
Dry Density	102.9	pcf
Wet Density	123.3	pcf
Moisture	19.8	%
Pass No. 10	92.8	%
Pass No. 40	83.6	%
Pass No. 200	63.5	%
Sand Content	29.3	%
Silt Content	25.5	%
Clay Content	38.1	%

Hole Number	L4	
Station	2+00	
Depth	3.5	ft
Soil Color	Tan	
Classification	Sandy Clay	
Strength (Qu)	6,175	psf
Dry Density	101.9	pcf
Wet Density	116.2	pcf
Moisture	14.1	%
Pass No. 10	97.0	%
Pass No. 40	87.8	%
Pass No. 200	67.6	%
Sand Content	29.4	%
Silt Content	26.8	%
Clay Content	40.8	%

Hole Number	L5	
Station	4+00	
Depth	3.5	ft
Soil Color	Brown	
Classification	Silt Clay	
Strength (Qu)	7,189	psf
Dry Density	100.2	pcf
Wet Density	115.5	pcf
Moisture	15.2	%
Pass No. 10	95.2	%
Pass No. 40	87.6	%
Pass No. 200	73.0	%
Sand Content	22.2	%
Silt Content	34.0	%
Clay Content	39.0	%

Hole Number	L6	
Station	6+35	
Depth	3.5	ft
Soil Color	Brown	
Classification	Sandy Clay	
Strength (Qu)	1,752	psf
Dry Density	100.6	pcf
Wet Density	118.1	pcf
Moisture	17.4	%
Pass No. 10	94.8	%
Pass No. 40	83.6	%
Pass No. 200	64.1	%
Sand Content	30.8	%
Silt Content	29.9	%
Clay Content	34.1	%

Hole Number	L6	
Station	6+35	
Depth	5.5	ft
Soil Color	Brown	
Classification	Silt Clay	
Strength (Qu)	2,193	psf
Dry Density	94.3	pcf
Wet Density	117.8	pcf
Moisture	24.9	%
Pass No. 10	99.7	%
Pass No. 40	99.5	%
Pass No. 200	93.3	%
Sand Content	6.5	%
Silt Content	50.4	%
Clay Content	42.9	%



Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The borings shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

LEGEND

Penetration Test

▽ Water

⊖ Caved

Sample Zone

Penetration test holes are drilled with a 6⅝ inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil. Penetration Test results are listed as uncorrected "N" values in blows per foot. Blows over inches are listed if refusal is achieved, which is 50 blows within one 6 inch set.

GROUNDWATER ELEVATIONS

NOVEMBER 2020

L3	(DRY)	1476.1
L4		1494.8
L5		1493.0
L6		1491.7

P 2292(104)ON LINCOLN COUNTY PCN 06JQ
EAST SIDE OF I-229 OFF RAMP TO I-29
SEC. 18 - T100N - R50W
RETAINING WALL

SUBSURFACE INVESTIGATION WALL
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D — SEC. 18 - T100N - R50W
STA. 0+01.50 to STA. 6+65.00 — EM 0292(88)73
PCN 06JQ

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

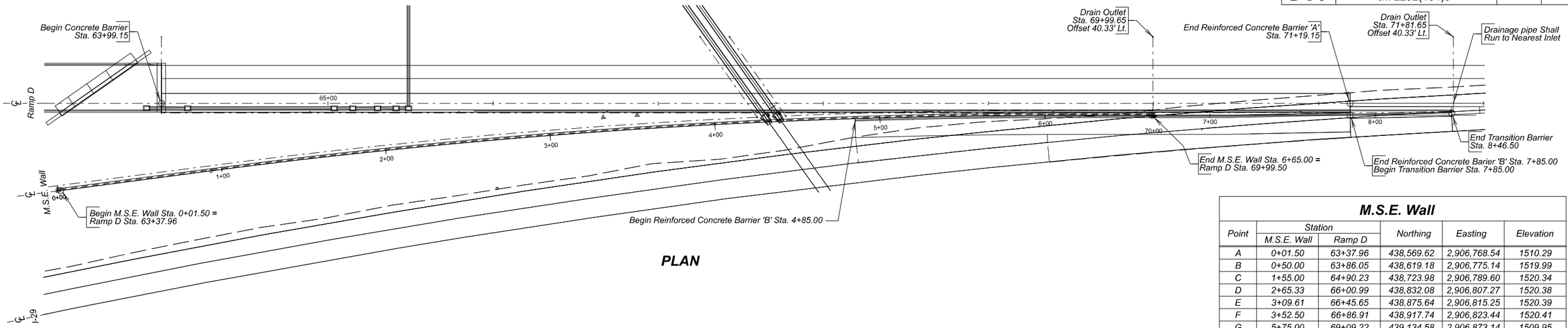
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_04_bor.dgn Plotting Date: 5/16/2025

Plotting Date: 06/26/2025
Revised Date: 06/26/2025
Initials: NCK

FOR BIDDING PURPOSES ONLY

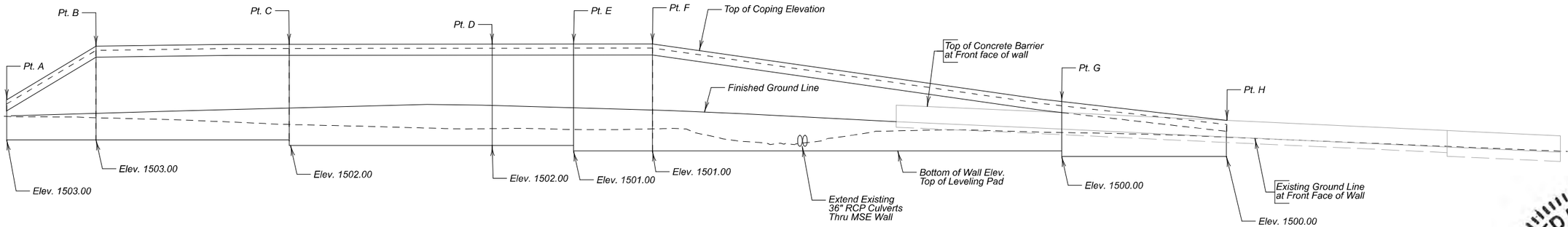
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E118	E130



PLAN

M.S.E. Wall

Point	Station		Northing	Easting	Elevation
	M.S.E. Wall	Ramp D			
A	0+01.50	63+37.96	438,569.62	2,906,768.54	1510.29
B	0+50.00	63+86.05	438,619.18	2,906,775.14	1519.99
C	1+55.00	64+90.23	438,723.98	2,906,789.60	1520.34
D	2+65.33	66+00.99	438,832.08	2,906,807.27	1520.38
E	3+09.61	66+45.65	438,875.64	2,906,815.25	1520.39
F	3+52.50	66+86.91	438,917.74	2,906,823.44	1520.41
G	5+75.00	69+09.22	439,134.58	2,906,873.14	1509.95
H	6+64.50	69+98.72	439,220.03	2,906,895.91	1506.54



⧖ ELEVATION

Note:
Existing Drainage pipes will be replace during construction.
Contractor shall coordinate the construction sequencing.
Leveling pad and 4" Underdrain shall be placed prior to new drainage pipes.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structure Excavation, Retaining Wall	Cu. Yd.	2750
Foundation Preparation, Retaining Wall	Cu. Yd.	1277
⊛ Bridge End Embankment	Cu. Yd.	1878
MSE Large Panel Wall, Furnish	Sq. Ft.	10140
MSE Large Panel Wall, Install	Sq. Ft.	10140
Granular Backfill for MSE Large Panel Wall	Cu. Yd.	6009
4" Concrete Sidewalk	Sq. Ft.	164
4" Underdrain Pipe	Ft.	735
Anti-Graffiti Coating	Sq. Ft.	10140

≠ 1. 4" Dia. Perforated PVC Drain Pipe (with Drain Sleeve) 725 Ft.

≠ 2. 4" Dia. PVC Outlet Pipe 10 Ft.

Items 1 thru 2 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.

3. Type B Drainage Fabric, not including laps 768 Sq. Ft.

Item 3 is an approximated quantity contained in the Granular Backfill for MSE Large Panel Wall and is for information only.

≠ The exact length of the 4" Dia Perforated PVC Drain Pile shall be field determined. The length shown is a best estimated based on the construction plans.

⨯ The minimum embedment depth to bottom of wall will be 2 feet from the finished ground in front of wall and a minimum horizontal bench width of 4 feet will be provided in front of walls.

⧖ Elevations shown in the elevation view are taken at the top of leveling pad and top of coping.

ϕ The existing soil will be retained for Bridge End Embankment and any additional soil required for the fill included in the contract unit price per cubic yard for Bridge End Embankment.

⊛ Shrinkage Factor of 1.25 used.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

DETAILS OF M.S.E. WALL
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

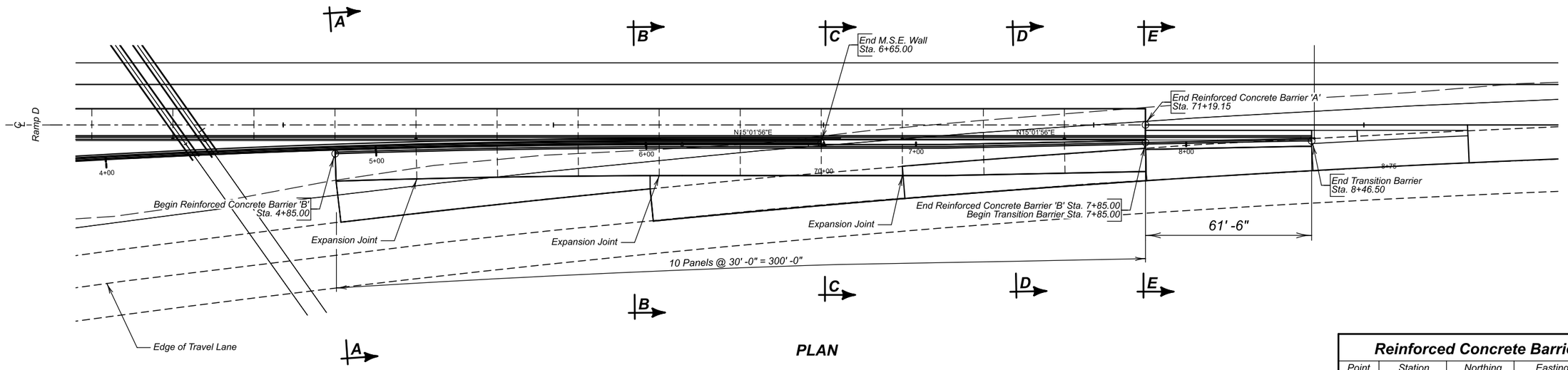
5 OF 11

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

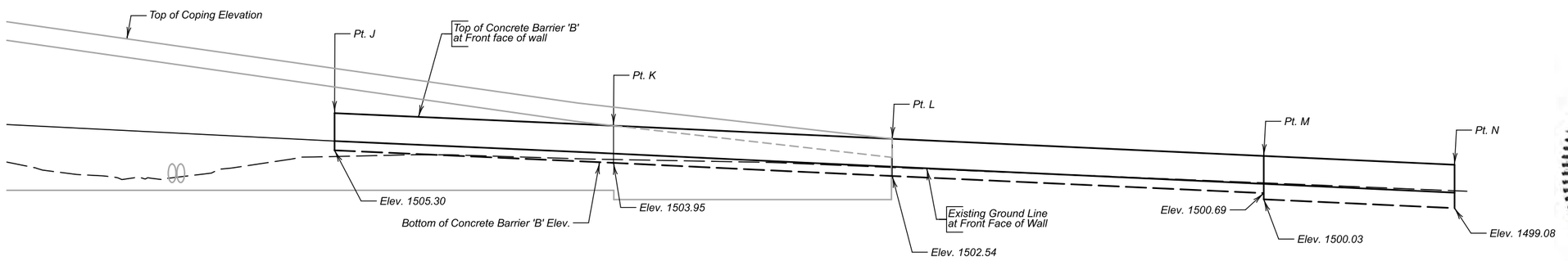
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E119	E130



PLAN



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

Reinforced Concrete Barrier 'B'

Point	Station	Northing	Easting	Elevation
J	4+85.00	438,576.72	2,906,763.12	1509.30
K	5+75.00	438,593.08	2,906,770.38	1507.95
L	6+64.50	438,680.40	2,906,783.18	1506.54
M	7+84.50	438,697.93	2,906,785.93	1504.69
N	8+46.00	438,766.01	2,906,797.19	1503.75

DETAILS OF REINFORCED CONCRETE BARRIER 'B'
FOR
M.S.E. RETAINING WALLS
AND CONCRETE BARRIERS

ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

6 OF 11

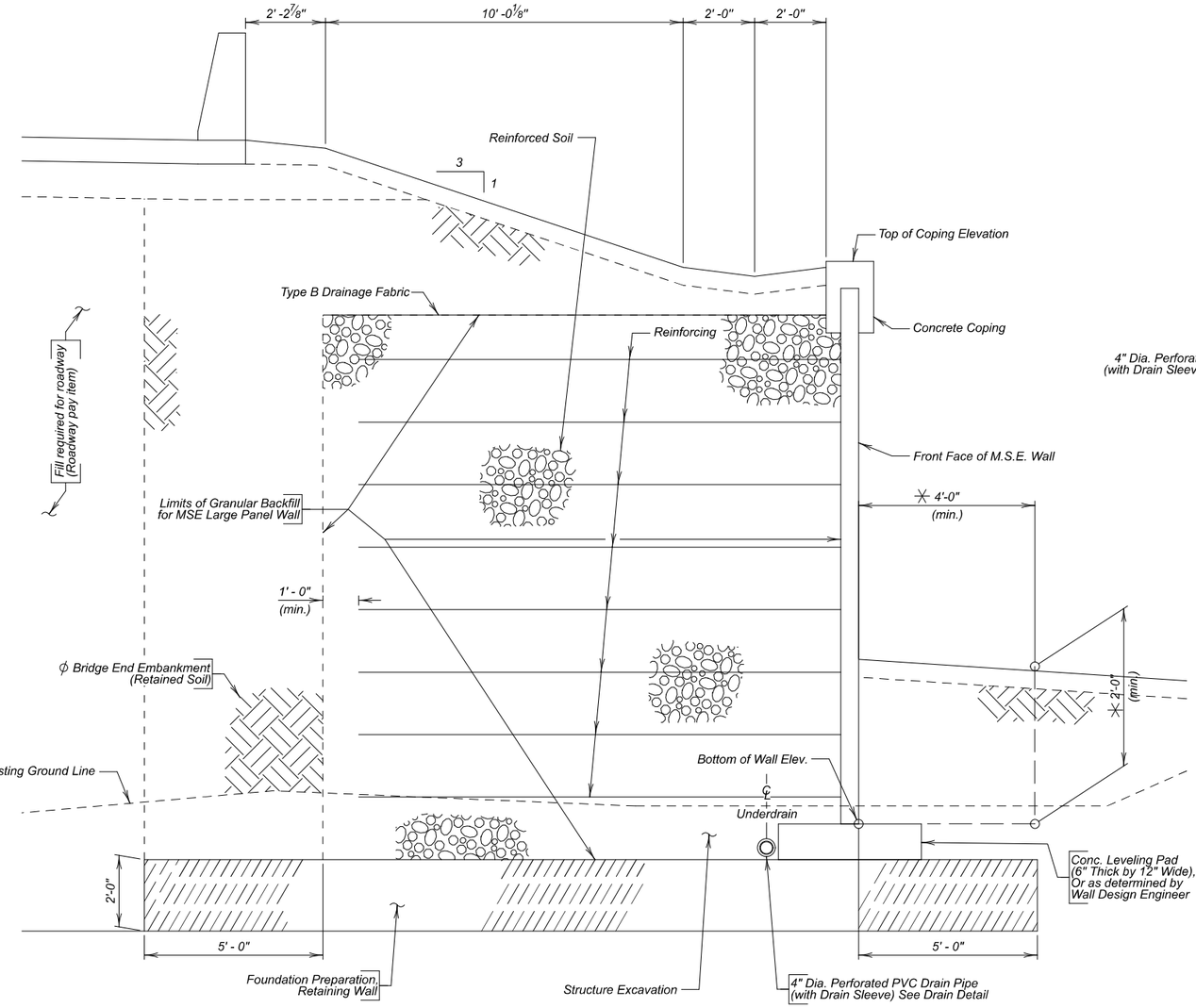
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\b06JQ_04_gp_wall barrier.dgn Plotting Date: 5/16/2025

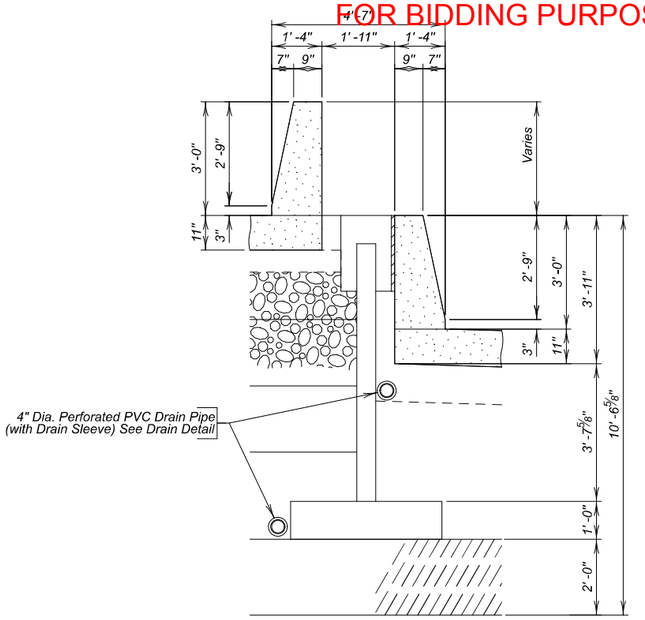
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E120	E130

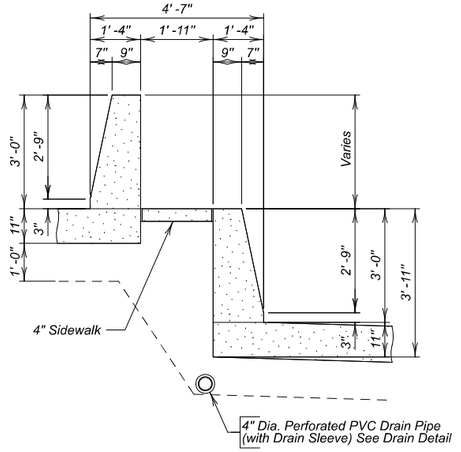
Plotting Date: 06/26/2025 Revised Date: 06/26/2025
Initials: NCK



SECTION A - A

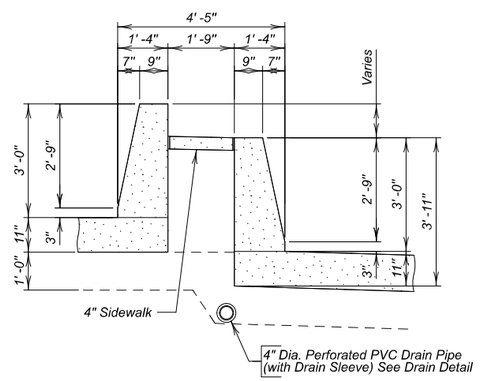


SECTION B - B

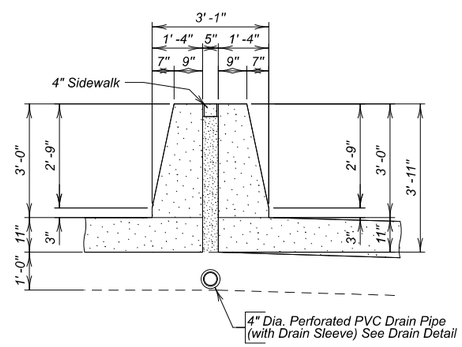


SECTION C - C

Note:
Apply Anti-Graffiti Coating to exposed faces of barrier and retaining wall.



SECTION D - D



SECTION E - E

ANTIGRAFITTI COATING

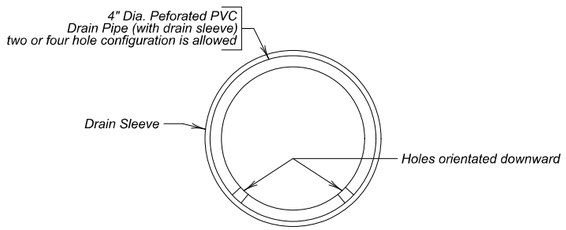
1. *Use one of the following systems, or an Engineer approved equal.*

   TK-Products:
   Base Coat 1st Coat: TK-Tri-Sheen Pigment Stain 5276 applied at 250 to 350 SF/Gal.
   Base Coat 2nd Coat: TK-Tri-Sheen Pigment Stain 5276 applied at 250 to 350 SF/Gal.
   Topcoat Prime: TK-Anti-Graffitti Primer 1450 clear applied at 225 to 335 SF/Gal.
   Topcoat Finish: TK-PERMACLEAN VOC 1496 clear applied at 350to 450 SF/Gal. (Matte Finish).

   Tnemec:
   Base Coat 1st Coat: Tnemec Series Elasto-Grip FC applied at 180 to 400 SF/Gal.
   Base Coat 2nd Coat: Tnemec Series 156 Enviro-Crete FC applied at 102 to 204 SF/Gal.
   Topcoat Finish: Tex-Cote (Tnemec) Graffiti Gard S clear applied at 75 to 125 SF/Gal. (Satin to Semi-Gloss Finish).

2. *Concrete Coating is to be applied to the front, floor top, and top of the one foot back of the parapet and wingwalls and the walls, fillets, and ceiling of the barrel as shown above.*

3. *All costs in furnishing and applying the Concrete Coating will be included in the contract unit prices per square foot the Anti-Graffitti Coating.*



DRAIN DETAIL

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 12529
NATHAN C. KLOPP
SOUTH DAKOTA
6/27/2025

TYPICAL SECTIONS
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

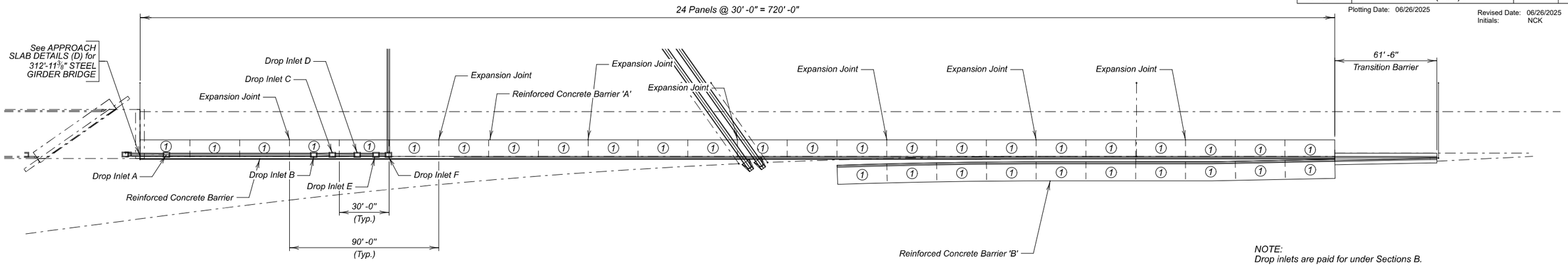
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hdaridge File - ...\b06JQ_04_section_wall.dgn Plotting Date: 7/31/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E121	E130

Plotting Date: 06/26/2025
Revised Date: 06/26/2025
Initials: NCK

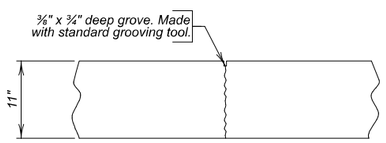


PLAN

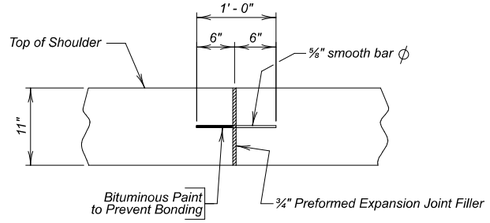
NOTE:
Drop inlets are paid for under Sections B.

DROP INLETS

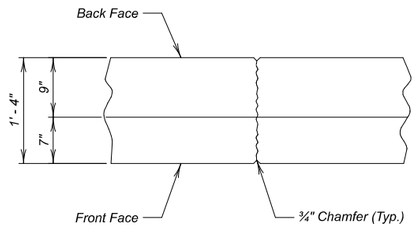
ID	STATION	OFFSET	ALIGNMENT
DI#A	64+15.00	3.00' Rt.	Ramp D
DI#B	65+03.75	3.00' Rt.	Ramp D
DI#C	65+15.00	3.00' Rt.	Ramp D
DI#D	65+30.00	3.00' Rt.	Ramp D
DI#E	65+41.25	3.00' Rt.	Ramp D
DI#F	65+48.75	3.00' Rt.	Ramp D



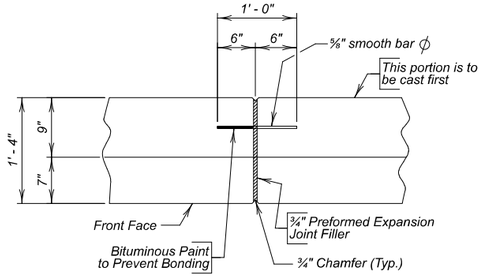
ELEVATION VIEW
CONTRACTION JOINT FOR FOOTING
(Footing reinforcing steel not shown for clarity.)



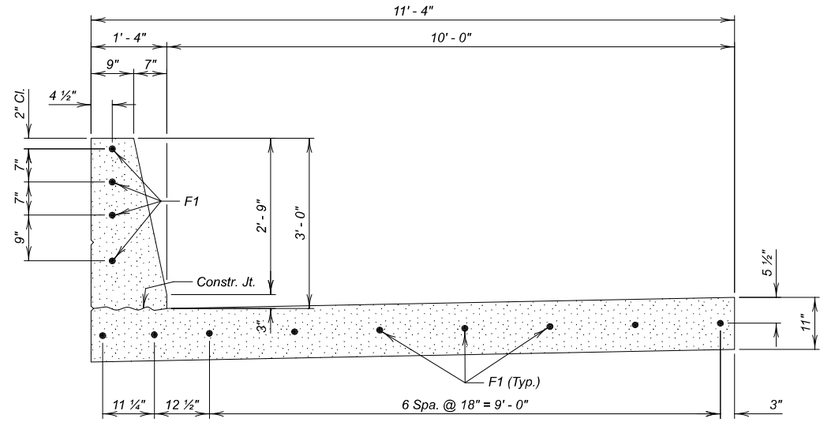
ELEVATION VIEW
EXPANSION JOINT FOR FOOTING
(Footing reinforcing steel not shown for clarity.)



PLAN VIEW
CONTRACTION JOINT FOR BARRIER
(Footing reinforcing steel not shown for clarity.)



PLAN VIEW
EXPANSION JOINT FOR BARRIER
(Footing reinforcing steel not shown for clarity.)



CONCRETE BARRIER AND 10' CONTINUOUSLY REINFORCED CONCRETE SHOULDER EXPANSION JOINT TYPICAL SECTION
(Apply Anti-Graffiti Coating to exposed faces of barrier.)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
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SOUTH DAKOTA
6/27/2025

DETAILS FOR REINFORCED CONCRETE BARRIER 'A'
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

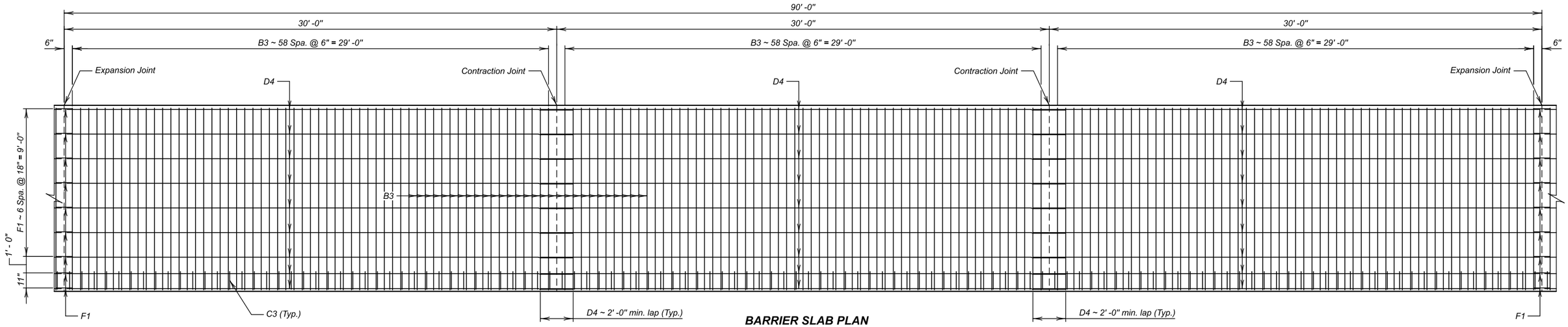
8 OF 11

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

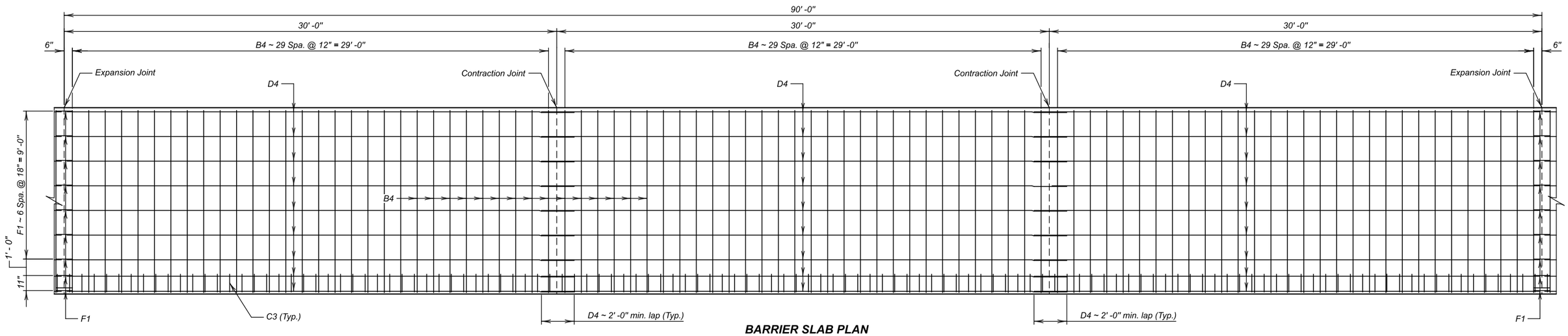
Plotted From - hclaridge File - ...\Sheets\b06JQ_04_gp_barrier.dgn Plotting Date: 7/31/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E122	E130



BARRIER SLAB PLAN
(Top Steel; 3 panels shown, others similar)



BARRIER SLAB PLAN
(Bottom Steel; 3 panels shown, others similar)

REGISTERED PROFESSIONAL ENGINEER
REG.NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
5/16/2025

CONCRETE BARRIER SLAB DETAILS
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D — SEC. 18 - T100N - R50W
STA. 0+01.50 to STA. 6+65.00 — EM 0292(88)73
PCN 06JQ

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

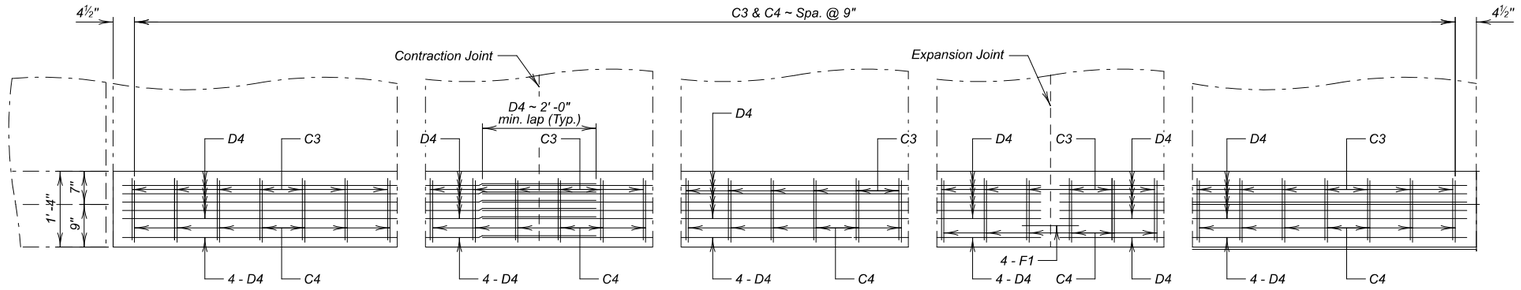
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\b06JQ_04_moment slab details.dgn Plotting Date: 5/16/2025

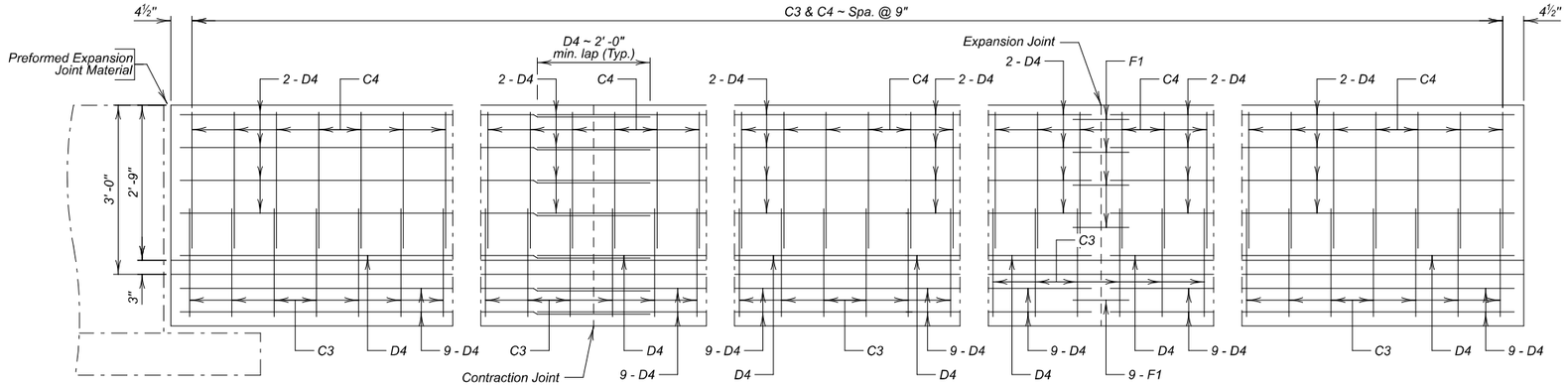
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E123	E130

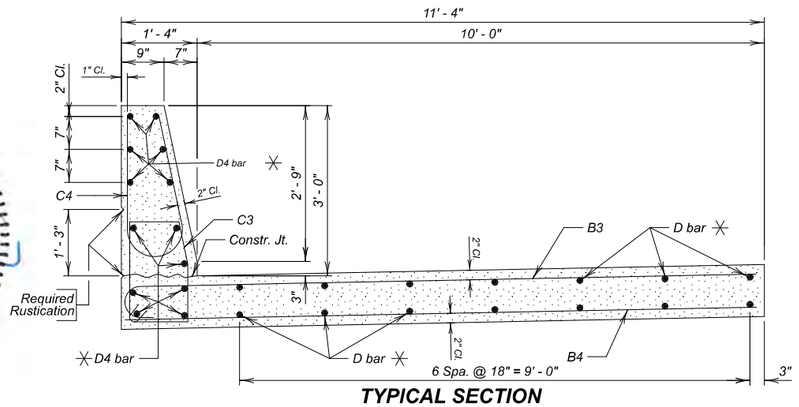
Plotting Date: 06/26/2025 Revised Date: 06/26/2025
Initials: NCK



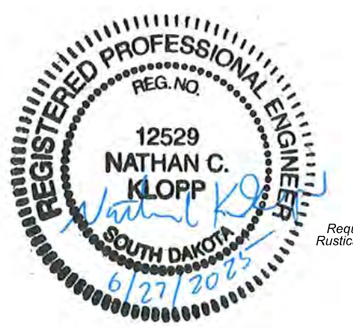
BARRIER PLAN



BARRIER ELEVATION



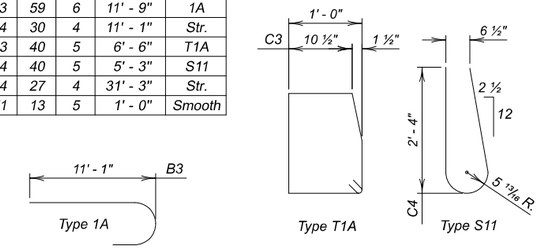
TYPICAL SECTION
(34 Required)



REINFORCING SCHEDULE
(For 1 Concrete Barrier Panel 1 - 34 required)

Mk.	No.	Size	Length	Type
a3	36	4	11 - 5"	19A
B3	59	6	11' - 9"	1A
B4	30	4	11' - 1"	Str.
C3	40	5	6' - 6"	T1A
C4	40	5	5' - 3"	S11
D4	27	4	31' - 3"	Str.
F1	13	5	1' - 0"	Smooth

Bending Details



NOTES:
All dimensions are out to out of bars.
All bars to be Epoxy Coated.

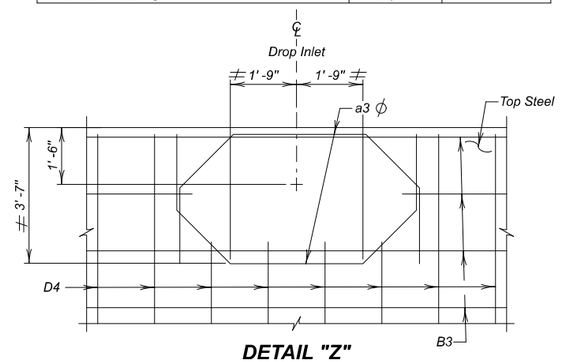
NOTES:
Place a3 and F1 bar as shown on the TYPICAL SECTION on the CONTRACTION AND EXPANSION JOINT DETAILS sheet.
See GENERAL LAYOUT for number of expansion joints required.

2' -0" minimum lap

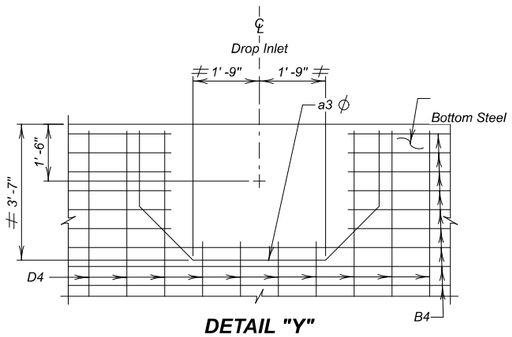
Apply Anti-Graffiti Coating to exposed faces of barrier.

ESTIMATED QUANTITIES
(For 34 Concrete Barrier Panels)

ITEM	UNIT	QUANTITY
Class A45 Concrete, Misc.	Cu. Yd.	513.4
Epoxy-Coated Reinforcing	Lb.	79648
Anti-Graffiti Coating	Sq. Ft.	7118



DETAIL "Z"
(Plan for Top Steel when drop inlet is used.)



DETAIL "Y"
(Plan for Bottom Steel when drop inlet is used.)

CONCRETE BARRIER DETAILS
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

10 OF 11

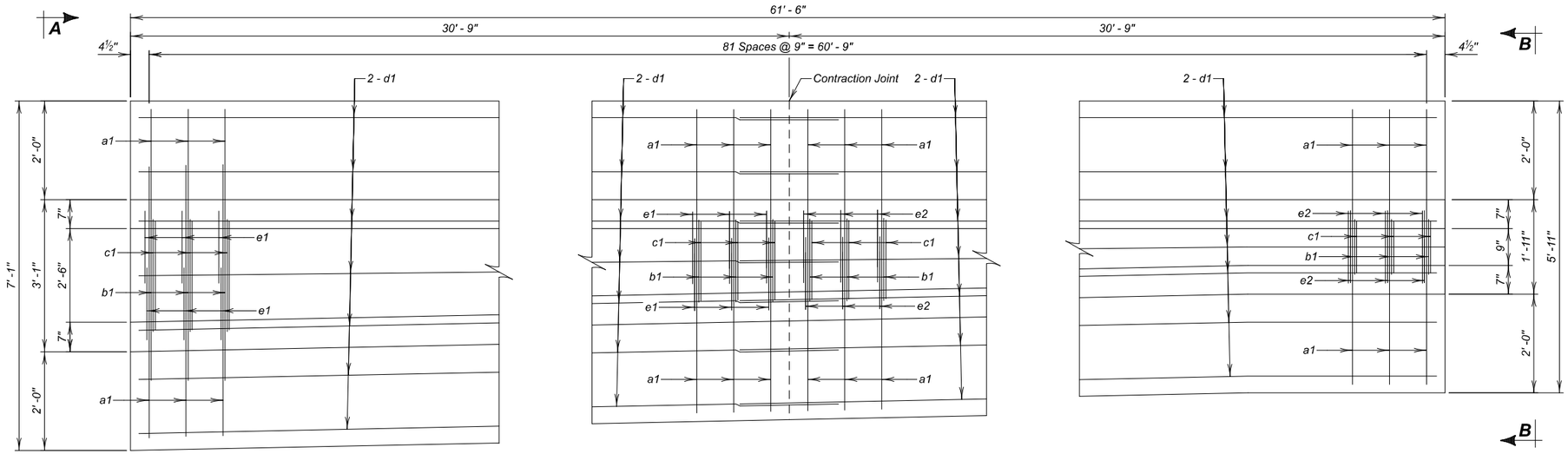
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hdaridge File - ...\b06JQ_04_moment slab details.dgn Plotting Date: 7/31/2025

FOR BIDDING PURPOSES ONLY

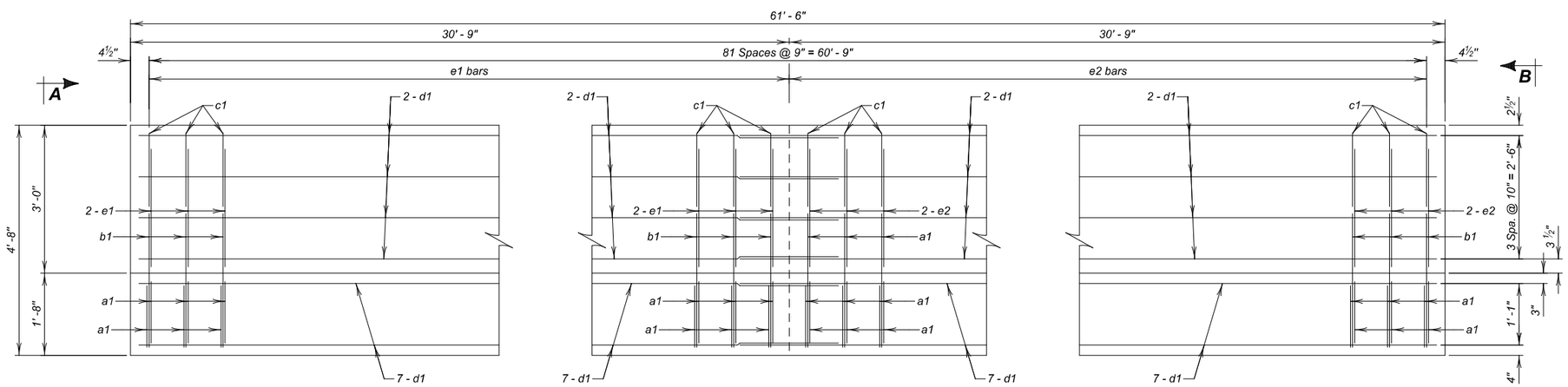
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E124	E130

Plotting Date: 06/26/2025 Revised Date: 06/26/2025
Initials: NCK

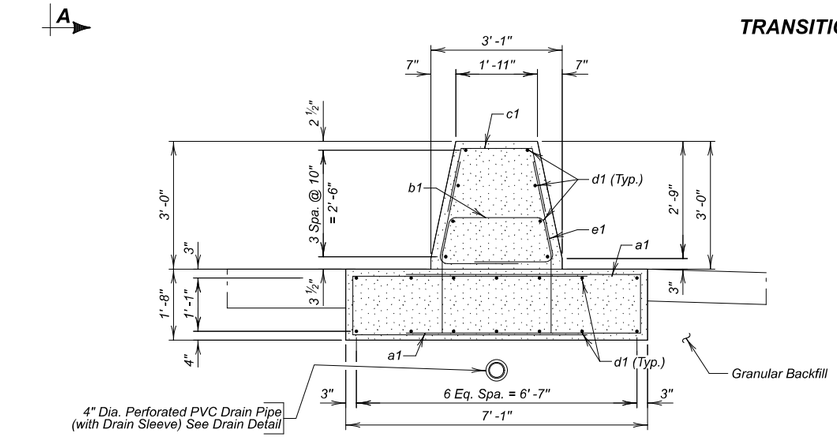


TRANSITION BARRIER LAYOUT

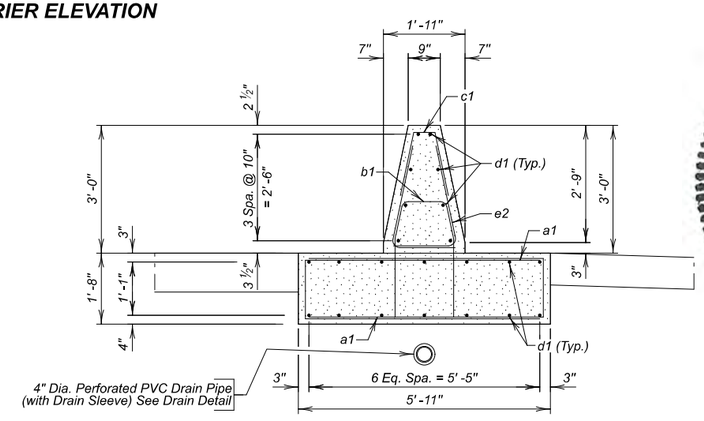
(Barrier longitudinal steel not shown for clarity)



TRANSITION BARRIER ELEVATION



SECTION A - A

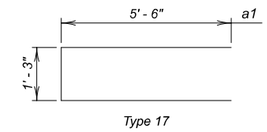


VIEW B - B

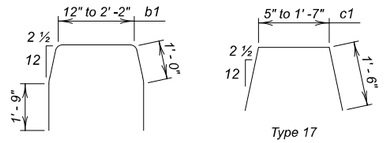
REINFORCING SCHEDULE

Transition Barrier

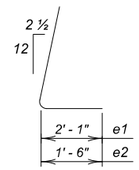
Mk.	No.	Size	Length	Type	Bending Details
a1	164	5	12' - 3"	17	
b1	41	5	14' - 2"	17	
c1	41	5	8' - 0"	17	
d1	44	5	31' - 7"	str.	
e1	82	5	4' - 6"	17A	
e2	82	5	3' - 11"	17A	



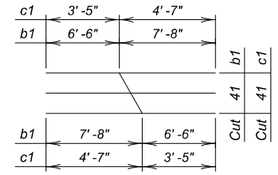
Type 17



Type 17 Type 17



Type 17A



NOTES:
All dimensions are out to out of bars.
All bars to be Epoxy Coated.

NOTES:
Place F1 bar as shown on the TYPICAL SECTION on the CONTRACTION AND EXPANSION JOINT DETAILS sheet. See GENERAL LAYOUT for number of expansion joints required.
2' - 0" minimum lap
Apply Anti-Graffiti Coating to exposed faces of barrier.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Misc.	Cu. Yd.	37.2
Epoxy-Coated Reinforcing Steel	Lb.	5215
Anti-Graffiti Coating	Sq. Ft.	459

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C.
KLOPP
SOUTH DAKOTA
6/27/2025

TRANSITION BARRIER DETAILS
FOR
M.S.E. RETAINING WALLS AND CONCRETE BARRIERS

ADJACENT TO RAMP D
STA. 0+01.50 to STA. 6+65.00
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

11 OF 11

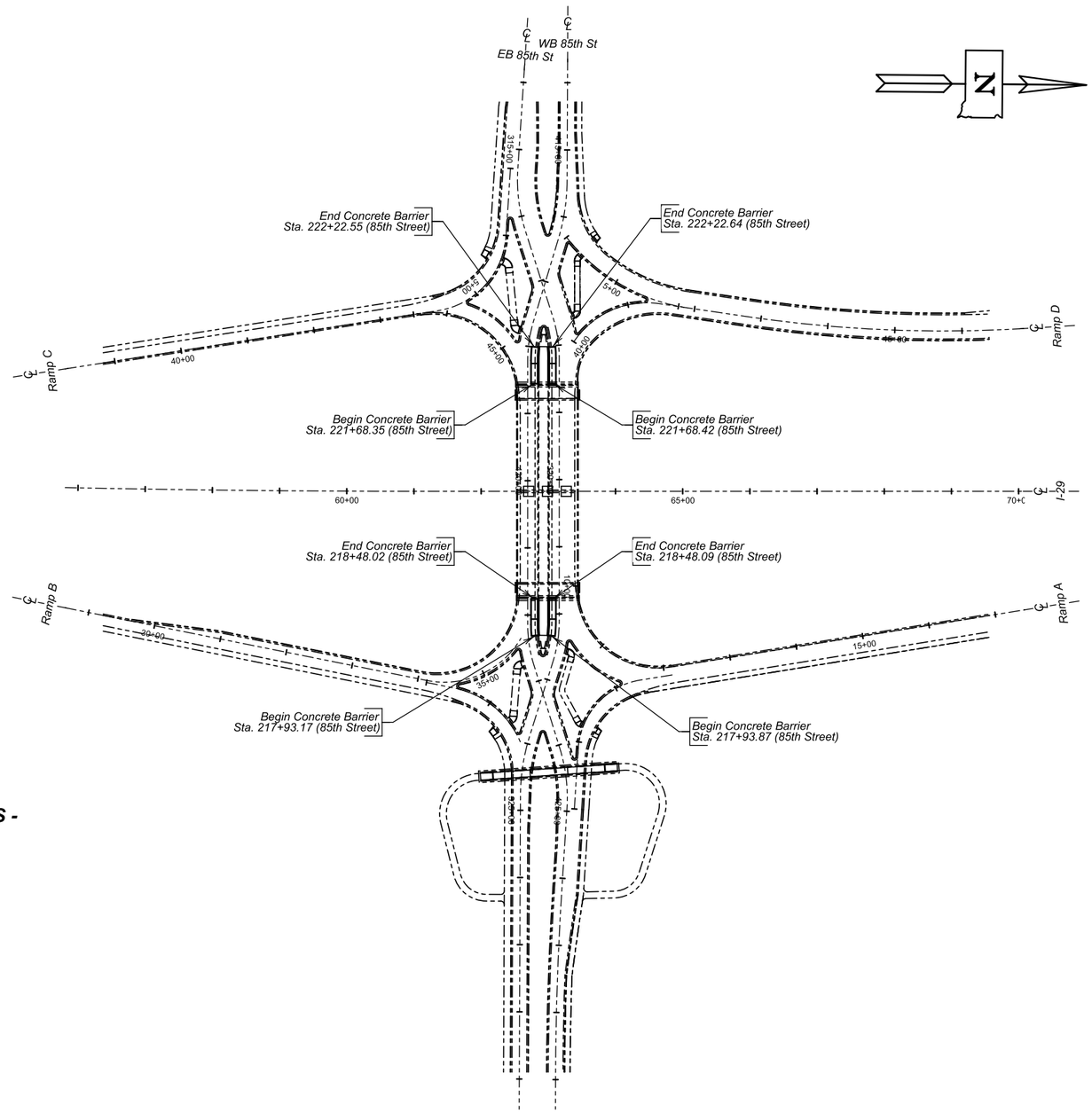
DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hdaridge File - ...\b06JQ_04_Transition Barrier details.dgn Plotting Date: 7/31/2025

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E125	E130



INDEX OF CONCRETE BARRIER SHEETS -

Sheet No. 1 - General Layout
Sheet No. 2 - Estimate of Quantities and Notes
Sheet No. 3 - General Plan
Sheet No. 4 - Concrete Barrier and Joint Details
Sheet No. 5 - Concrete Pedestrian Barrier Panel Details
Sheet No. 6 - Tapered Barrier and Concrete Barrier Panel Details

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
12529
NATHAN C. KLOPP
SOUTH DAKOTA
5/16/2025

GENERAL LAYOUT
FOR
REINFORCED CONCRETE BARRIERS

ADJ. TO 85TH STREET
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

1 OF 6

Plans Prepared By:
Short Elliott Hendrickson
5016 S Bur Oak Place, Suite 1
Sioux Falls, SD 57108

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

Plotted From - hclaridge File - ...\Sheets\b06JQ_05_Layout.dgn Plotting Date: 5/16/2025

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARK
Class A45 Concrete, Misc.	109.2	Cu. Yd.	
Anti-Graffiti Coating	1296	Sq. Ft,	
Epoxy Coated Reinforcing Steel	15,240	Lb.	

SPECIFICATIONS

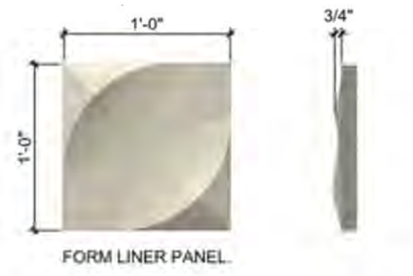
1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2025 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES

1. Concrete will be Class A45 in accordance with Section 460.
2. Design Material Strengths: Concrete fc = 4,500 psi
   Reinforcing Steel fy = 60,000psi
3. Reinforcing steel will conform to ASTM A615, Grade 60.
4. Use 1" clear cover on all reinforcing steel except as shown.
5. All exposed concrete corners and edges will be chamfered 3/i" unless noted otherwise.
6. The Concrete Barrier Curb and Gutter may be either cast-in-place or slipformed. If slipformed, the finished Concrete Barrier Curb will be true to the specified line and grade within a tolerance of ± 14" in 10 feet.
7. The transverse sawed or formed joints in the Concrete Barrier Curb and Gutter will align with the transverse joints in the PCC pavement. The joint grooves may either be formed or saw cut. If saw cut, the concrete will have attained a compressive strength of 2,000 psi prior to sawing. Keyed joints will be used between concrete barrier curb and gutter and concrete barrier curb and gutter end section and between separate pours. Saw cut and seal same as adjacent PCC pavement.
8. Snap ties, if used, will be epoxy coated. The epoxy coating will concrete and compatible with the coating applied to the new epoxy reinforcing steel.

MOMENT SLAB BARRIERS

1. All cost for furnishing and installing the preformed expansion joint filler and bituminous paint will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Misc.
2. The concrete barrier back face adjacent to the pedestrian zone and pedestrian barrier front face surface texture will be intended to simulate a weave design. The barriers will be a natural concrete color of uniform appearance. Submit barrier pattern, color, and method of achieving colors to the Engineer for approval a minimum of 2 weeks prior to fabrications.



FORM LINER PANEL

3. The cost of the barrier form liners will be in the contract unit price per cubic yard for Class A45 Concrete, Misc. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the installation of Form Liner.

COMMERCIAL TEXTURE FINISH

1. A commercial texture finish will be applied to the front, top, and back face of the barrier curbs.
2. The commercial texture finish used will be on the Department's approved list.
3. The commercial texture finish will be applied in accordance with Section 460.3 L.1.C
4. Where the commercial texture finish is to be applied, curing will be accomplished with cotton or burlap mats and polyethylene sheeting. Curing will continue for not less than seven days after placing concrete before the commercial texture finish is applied. Various commercial texture finish products require that the concrete be 28 days old before application. Therefore, the commercial texture surface finish will be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.
4. No separate payment will be made for the commercial text. All costs for the surface preparation, furnishing, and installing the commercial texture finish will be incidental to the contract unit price per for Class A45 Concrete, Misc items to which the finish is applied.
5. The color of the back face will be AMS - STD - 595 33690 to match the barrier on the bridge.
6. The color of the top and inside face will be AMS - STD - 595 33690 to match the barrier on the bridge.

CONCRETE BARRIER ESTIMATE OF QUANTITIES AND NOTES
FOR
REINFORCED CONCRETE BARRIERS

ADJ. TO 85TH STREET
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

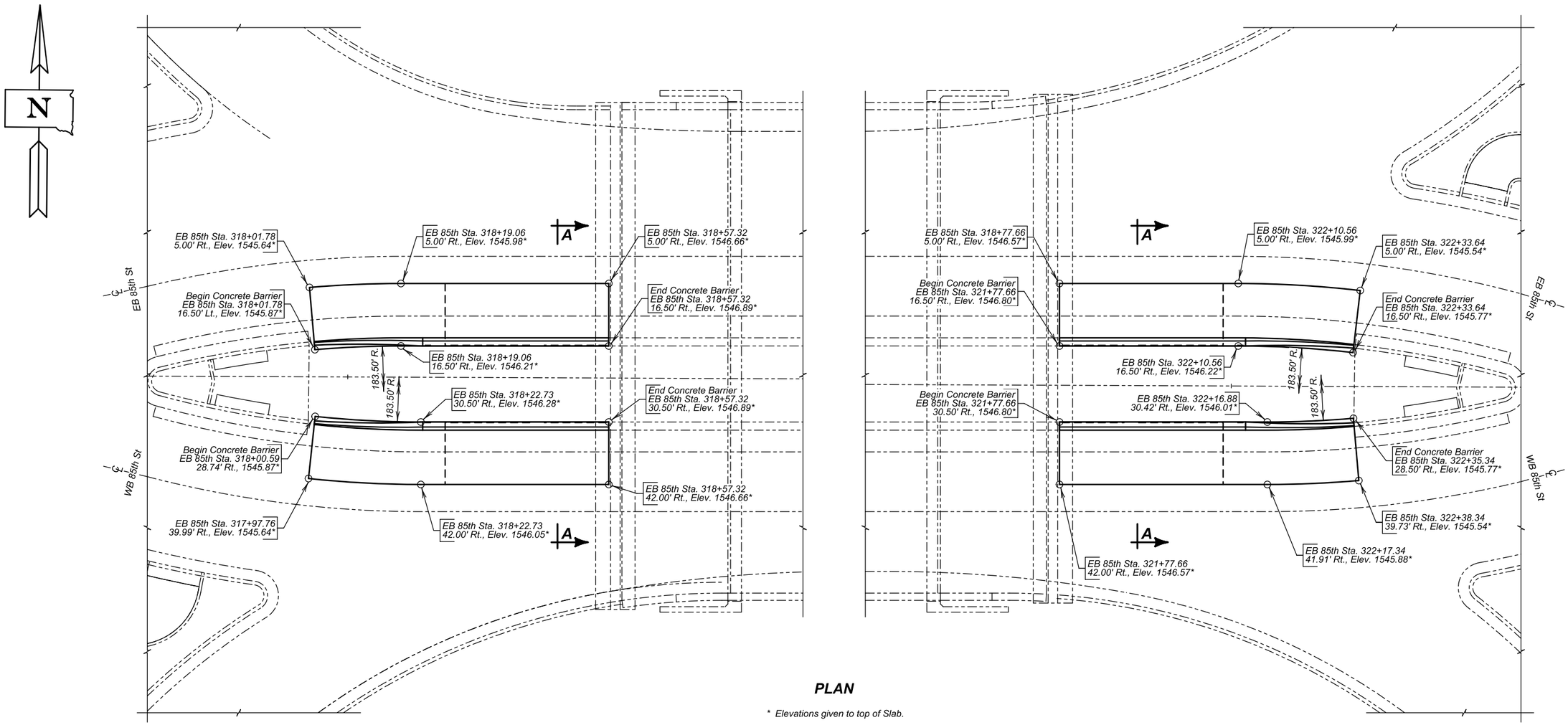
LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E127	E130



PLAN

** Elevations given to top of Slab.*

FORM LINER DETAIL
(Adjacent to Pedestrian Zone - See Panel for Extent)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
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NATHAN C.
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SOUTH DAKOTA
5/16/2025

GENERAL LAYOUT
FOR
REINFORCED CONCRETE BARRIERS

ADJ. TO 85TH STREET
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

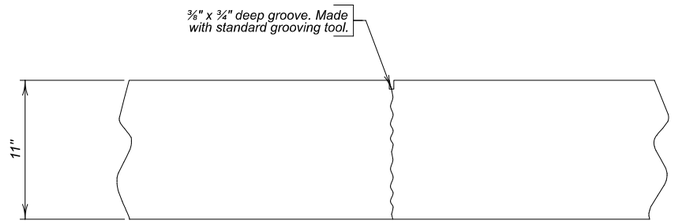
Plotted From - hclaridge File - ...\Sheets\b06JQ_05_gp.dgn Plotting Date: 5/16/2025

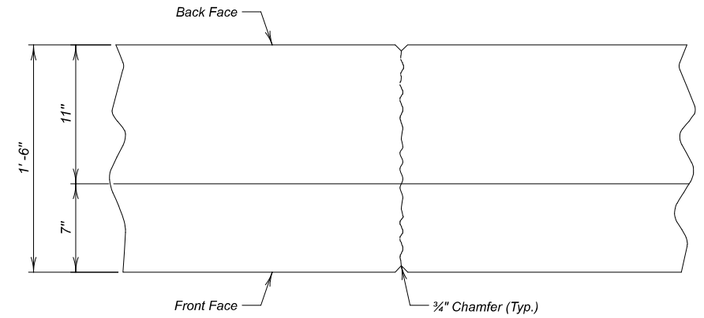
FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E128	E130

Plotting Date: 06/26/2025

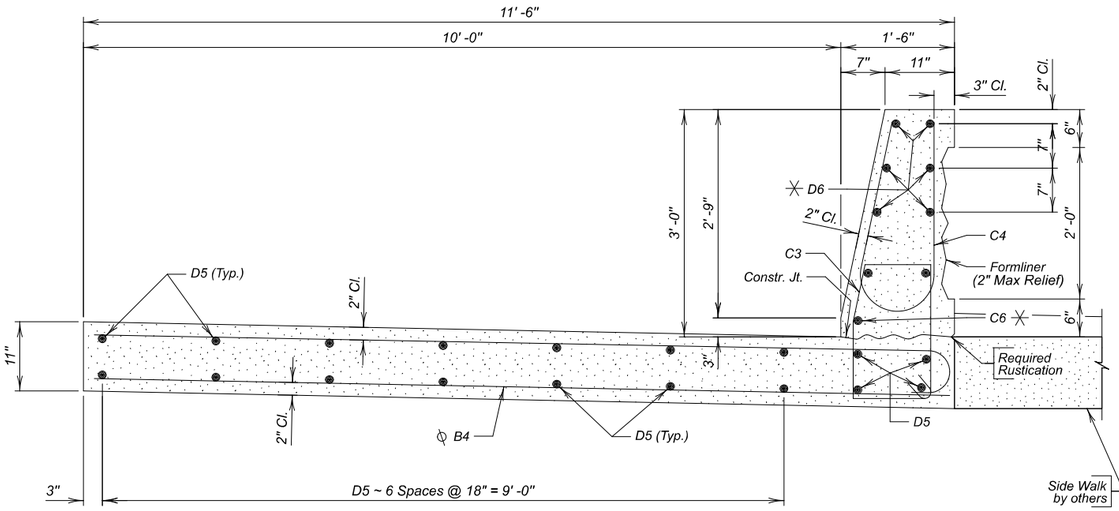
Revised Date: 06/26/2025
Initials: NCK

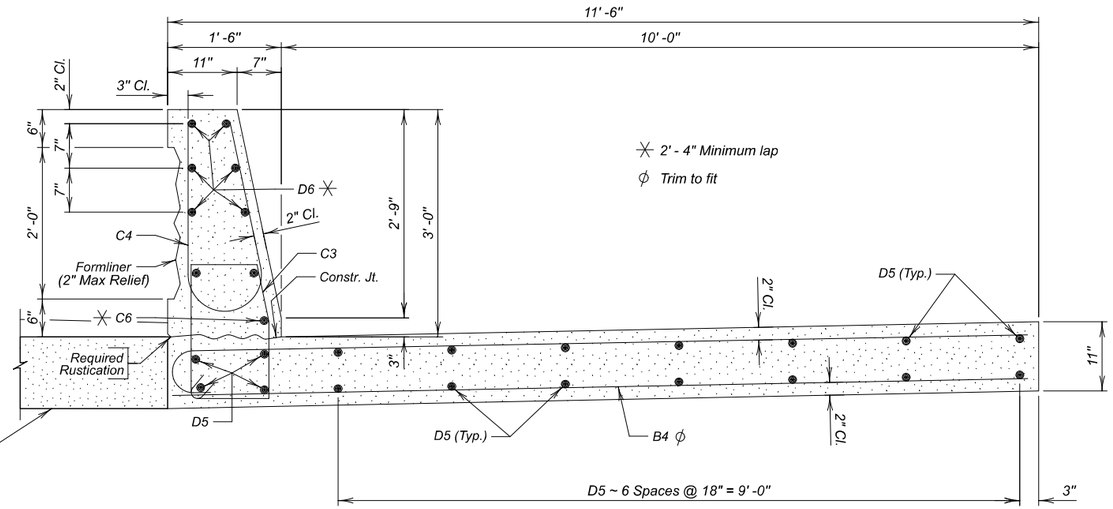




ELEVATION VIEW
CONTRACTION JOINT FOR BARRIER
(Footing reinforcing steel not shown for clarity.)

PLAN VIEW
CONTRACTION JOINT FOR BARRIER
(Footing reinforcing steel not shown for clarity.)





SECTION A - A
(Apply Anti-Graffiti Coating to exposed faces of barrier)

ANTIGRAFITTI COATING

1. *Use one of the following systems, or an Engineer approved equal.*

   TK-Products:
   Base Coat 1st Coat: TK-Tri-Sheen Pigment Stain 5276 applied at 250 to 350 SF/Gal.
   Base Coat 2nd Coat: TK-Tri-Sheen Pigment Stain 5276 applied at 250 to 350 SF/Gal.
   Topcoat Prime: TK-Anti-Graffitti Primer 1450 clear applied at 225 to 335 SF/Gal.
   Topcoat Finish: TK-PERMACLEAN VOC 1496 clear applied at 350to 450 SF/Gal. (Matte Finish).

   Tnemec:
   Base Coat 1st Coat: Tnemec Series Elasto-Grip FC applied at 180 to 400 SF/Gal.
   Base Coat 2nd Coat: Tnemec Series 156 Enviro-Crete FC applied at 102 to 204 SF/Gal.
   Topcoat Finish: Tex-Cote (Tnemec) Graffiti Gard S clear applied at 75 to 125 SF/Gal. (Satin to Semi-Gloss Finish).

2. *Concrete Coating is to be applied to the front, floor top, and top of the one foot back of the parapet and wingwalls and the walls, fillets, and ceiling of the barrel as shown above.*

3. *All costs in furnishing and applying the Concrete Coating will be included in the contract unit prices per square foot the Anti-Graffitti Coating.*

CONCRETE BARRIER AND JOINT DETAILS
FOR
REINFORCED CONCRETE BARRIERS

ADJ. TO 85TH STREET
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

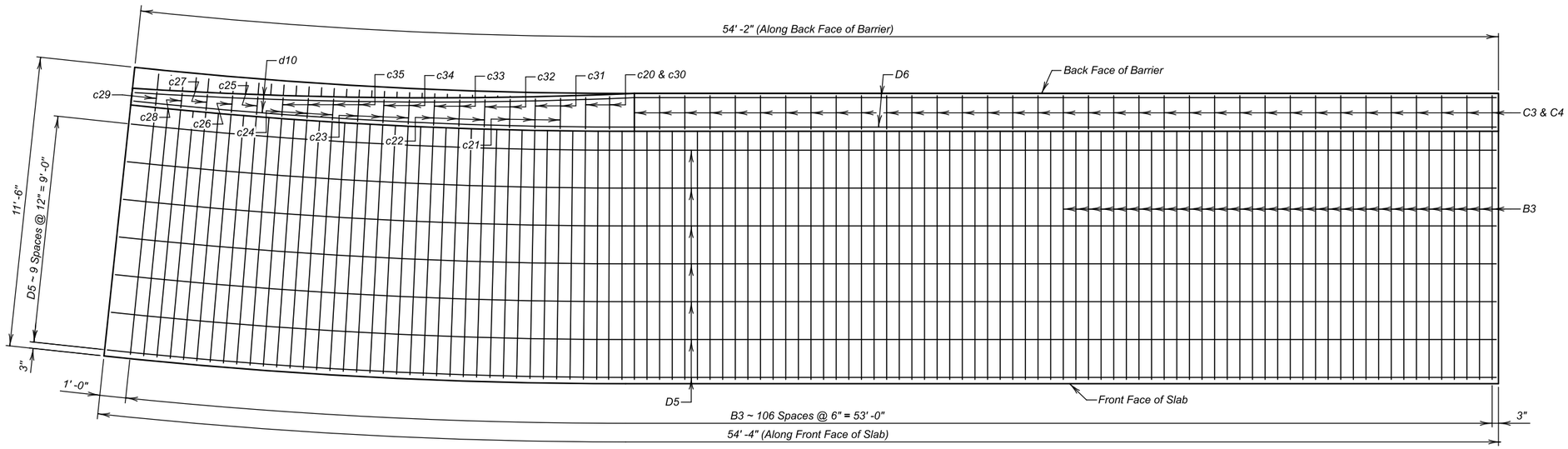
4 OF 6

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

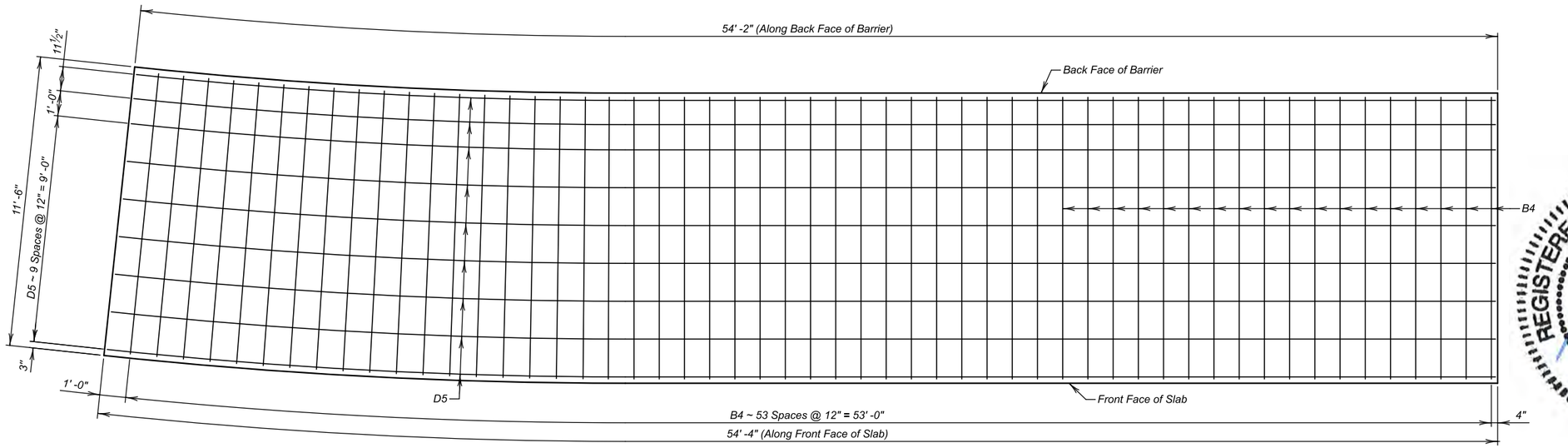
Plotted From - hclaridge File - ...\Sheets\b06JQ_05_Details.dgn Plotting Date: 7/31/2025

FOR BIDDING PURPOSES ONLY

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E129	E130



PLAN
(Top Steel)



PLAN
(Bottom Steel)

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
5/16/2025

CONCRETE PEDESTRIAN BARRIER PANEL DETAILS
FOR
REINFORCED CONCRETE BARRIERS

ADJ. TO 85TH STREET
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

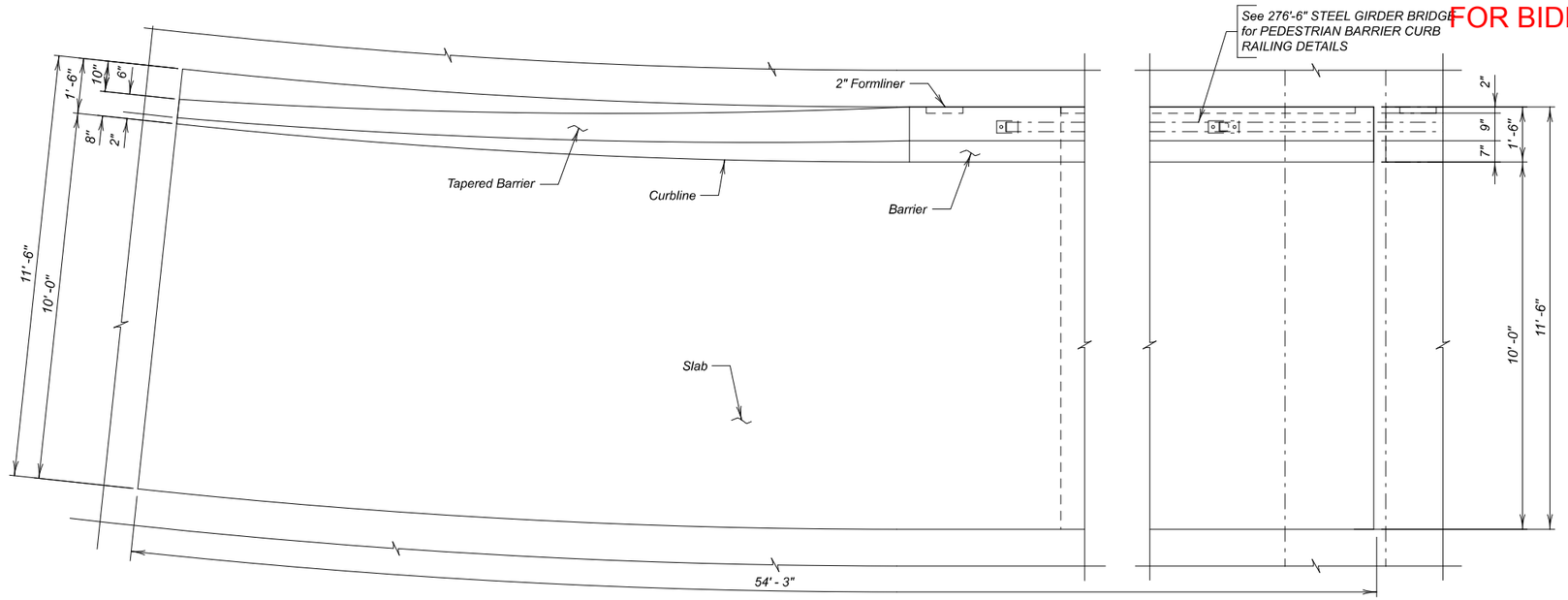
5 OF 6

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER

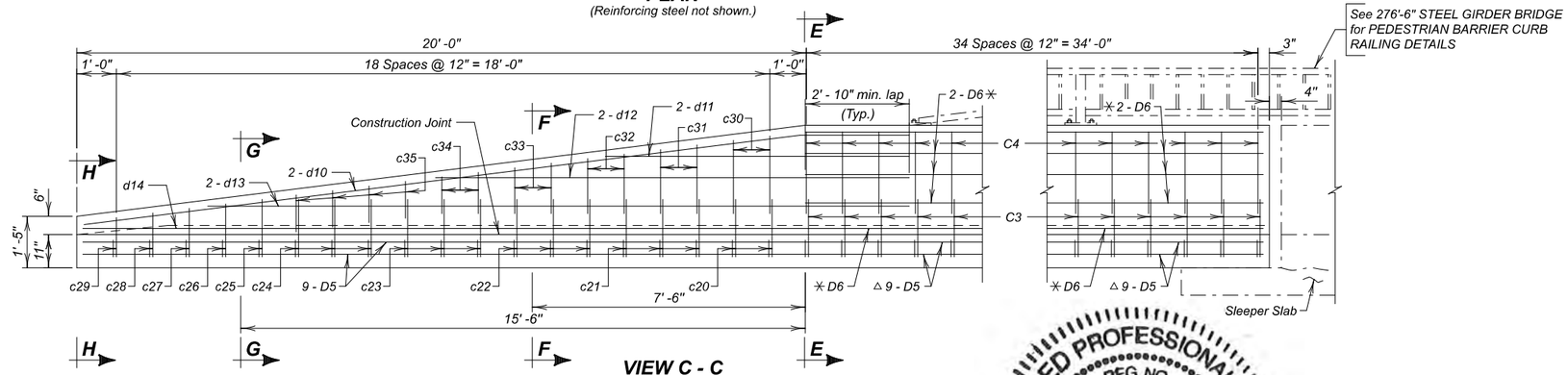
Plotting Date: 06/26/2025
Revised Date: 06/26/2025
Initials: NCK

FOR BIDDING PURPOSES ONLY

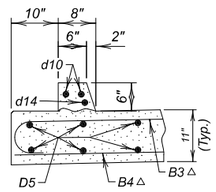
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	EM 0292(88)73 IM 2292(104)0	E130	E130



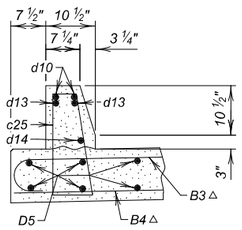
PLAN
(Reinforcing steel not shown.)



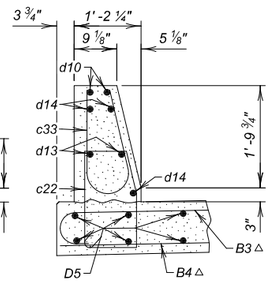
VIEW C - C
(Slab reinforcing steel not shown)
(Apply Anti-Graffitti Coating to exposed faces of barrier)



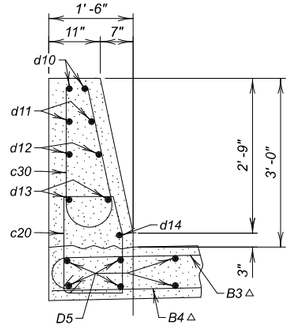
SECTION H - H



SECTION G - G



SECTION F - F



SECTION E - E

△ Trim to fit

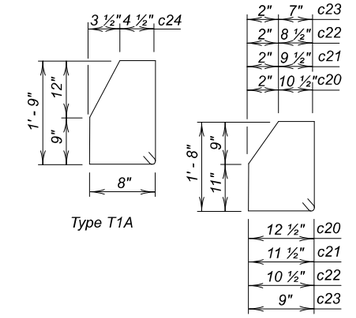
ESTIMATED QUANTITIES

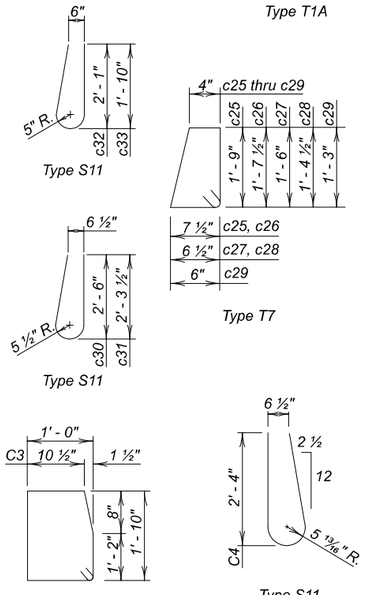
ITEM	UNIT	QUANTITY
Class A45 Concrete, Misc.	Cu. Yd.	27.3
Epoxy Coated Reinforcing Steel	Lb.	3810
Anti-Graffitti Coating	Sq. Ft.	324

Quantities are for 1 Barrier/Slab

REINFORCING SCHEDULE
(For 1 Barrier & 1 Slab)

Mk.	No.	Size	Length	Type
Tapered Barrier				
c20	2	5	6' - 3"	T1A
c21	3	5	6' - 1"	T1A
c22	3	5	5' - 11"	T1A
c23	3	5	5' - 8"	T1A
c24	3	5	5' - 10"	T1A
c25	1	5	5' - 5"	T7
c26	1	5	5' - 2"	T7
c27	1	5	4' - 10"	T7
c28	1	5	4' - 7"	T7
c29	1	5	4' - 4"	T7
c30	2	5	5' - 7"	S11
c31	2	5	5' - 2"	S11
c32	2	5	4' - 8"	S11
c33	2	5	4' - 2"	S11
c34	2	5	3' - 8"	S11
c35	4	5	3' - 2"	S11
△ d10	2	5	22' - 11"	Str.
△ d11	2	5	8' - 4"	Str.
d12	2	5	13' - 0"	Str.
d13	2	5	19' - 3"	Str.
d14	1	4	22' - 9"	Str.
Slab				
B3	107	6	11' - 9"	1A
B4	54	4	11' - 1"	Str.
D5	22	4	54' - 0"	Str.
Barrier				
C3	34	5	6' - 6"	T1A
C4	34	5	5' - 3"	S11
D6	10	4	34' - 0"	Str.





NOTES:
All dimensions are out to out of bars.
All bars to be epoxy coated

TAPERED BARRIER AND CONCRETE BARRIER PANEL DETAILS FOR REINFORCED CONCRETE BARRIERS

ADJ. TO 85TH STREET
PCN 06JQ

SEC. 18 - T100N - R50W
EM 0292(88)73

LINCOLN COUNTY
S.D. DEPT. OF TRANSPORTATION
MAY 2025

6 OF 6

DESIGNED BY	CK. DES. BY	DRAFTED BY	APPROVED BY
HWC	NCK	NCM	BRIDGE ENGINEER