



Planning & Engineering
Office of Project Development
700 E Broadway Avenue
Pierre, South Dakota 57501-2586
O: 605.773.3275 | F: 605.773.2614
dot.sd.gov

November 22, 2024

ADDENDUM NO. 1

RE: Item #5, December 11, 2024 Letting - P 0079(84)232, PCN 06TD, Harding County - Structure (196' Prestressed Girder Bridge) & Approach Grading

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: NO CHANGE

SDEBS BID PROPOSAL: *The electronic bid proposal for this contract has been revised to include the changes associated with this addendum. Bidders must log in to the SDEBS to retrieve and incorporate these changes into their bid.*

Quantities for Bid Items were changed:

Bid Item 460E0030 "Class A45 Concrete, Bridge Deck" changed from 269.2 to 305.1 CuYd

Bid Item 460E0050 "Class A45 Concrete, Bridge" changed from 99.9 to 69.5 CuYd

PLANS: Please destroy sheets A2, E2, E4, E5, E11, E12, and E14 and replace with the enclosed sheets, dated 11/19/24 and 11/20/24.

Sheets A2, E2 & E4: Quantities were changed for Bid Item 460E0030 "Class A45 Concrete, Bridge Deck" changed from 269.2 to 305.1 CuYd and Bid Item 460E0050 "Class A45 Concrete, Bridge" changed from 99.9 to 69.5 CuYd.

Sheet E5: SUPERSTRUCTURE note 4 was revised.

Sheets E11 & E14: ESTIMATED QUANTITIES table was revised.

Sheet E12: SECTION D-D was revised to show 5 CSL Access Tubes.

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Todd Seaman, Rapid City Region Engineer
John Matthesen, Belle Fourche Area Engineer

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT P 0079(84)232	SHEET A2	TOTAL SHEETS A6
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Plotting Date: 11/20/2024
Revised 11-20-2024 RWB

Section E – Structure Structure No. 32-531-001

Section F - Surfacing

Section S - Permanent Signing

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	780.1	SqYd
120E7000	Select Granular Backfill	21.1	Ton
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	75.8	Ft
420E0100	Structure Excavation, Bridge	18	CuYd
430E0200	Bridge End Embankment	1,360	CuYd
430E0300	Granular Bridge End Backfill	97.9	CuYd
430E0510	Approach Slab Underdrain Excavation	6.6	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	305.1	CuYd
460E0050	Class A45 Concrete, Bridge	69.5	CuYd
460E0150	Concrete Approach Slab for Bridge	172.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	37.9	SqYd
465E0100	Class A45 Concrete, Drilled Shaft	71.3	CuYd
465E0200	Drilled Shaft Excavation	65.7	CuYd
465E1062	62" Permanent Casing	20.0	Ft
480E0100	Reinforcing Steel	30,284	Lb
480E0200	Epoxy Coated Reinforcing Steel	2,083	Lb
480E0300	Stainless Reinforcing Steel	63,317	Lb
510E0300	Preboring Pile	120	Ft
510E3130	HP 12 Pile Tip Reinforcement	12	Each
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	450	Ft
560E8054	54" Minnesota Shape Prestressed Concrete Beam	774	Ft
680E0040	4" Underdrain Pipe	124	Ft
680E2500	Porous Backfill	5.4	Ton
700E0210	Class B Riprap	1,484.6	Ton
700E1100	Overburden Excavation for Riprap	777	CuYd
734E2022	Bridge Berm Slope Protection, Quarried Aggregate	142.2	SqYd
831E0110	Type B Drainage Fabric	1,911	SqYd
831E1030	Perforated Geocell	604	SqFt

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E6200	Water for Granular Material	228.9	MGal
260E1010	Base Course	19,091.2	Ton
320E3000	Compaction Sample	9	Each
320E7012	Grind 12" Rumble Strip or Stripe in Asphalt Concrete	2.2	Mile
320E7028	Grind Centerline Rumble Stripe in Asphalt Concrete	1.1	Mile
330E0010	MC-70 Asphalt for Prime	33.5	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	14.6	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	11.8	Ton
330E2000	Sand for Flush Seal	123.8	Ton

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0130	Remove Traffic Sign	7	Each
110E7150	Remove Sign for Reset	8	Each
632E1320	2.0"x2.0" Perforated Tube Post	87.9	Ft
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	32	Each
632E2220	Guardrail Delineator	18	Each
632E2510	Type 2 Object Marker Back to Back	13	Each
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	19.5	SqFt
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	23.0	SqFt
632E3500	Reset Sign	8	Each

Section F – Alternate A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0008	PG 64-34 Asphalt Binder	344.2	Ton
320E1050	Class E Asphalt Concrete	5,932.8	Ton

SPECIFICATIONS

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

Section F – Alternate B

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
320E0008	PG 64-34 Asphalt Binder	304.6	Ton
320E1050	Class E Asphalt Concrete	6,093.0	Ton

Section M - Pavement Marking

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1200	High Build Waterborne Pavement Marking Paint, White	61	Gal
633E1205	High Build Waterborne Pavement Marking Paint, Yellow	37	Gal
633E5100	Grooving for Durable Pavement Marking, 4"	15,085	Ft

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0079(84)232	E2	E27

SECTION E - ESTIMATE OF STRUCTURE QUANTITIES

Rev 9/25/2024 JKK
Rev 11/19/24

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	780.1	SqYd
120E7000	Select Granular Backfill	21.1	Ton
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	75.8	Ft
420E0100	Structure Excavation, Bridge	18	CuYd
430E0200	Bridge End Embankment	1,360	CuYd
430E0300	Granular Bridge End Backfill	97.9	CuYd
430E0510	Approach Slab Underdrain Excavation	6.6	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	305.1	CuYd
460E0050	Class A45 Concrete, Bridge	69.5	CuYd
460E0150	Concrete Approach Slab for Bridge	172.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	37.9	SqYd
465E0100	Class A45 Concrete, Drilled Shaft	71.3	CuYd
465E0200	Drilled Shaft Excavation	65.7	CuYd
465E1062	62" Permanent Casing	20.0	Ft
480E0100	Reinforcing Steel	30,284	Lb
480E0200	Epoxy Coated Reinforcing Steel	2,083	Lb
480E0300	Stainless Reinforcing Steel	63,317	Lb
510E0300	Preboring Pile	120	Ft
510E3130	HP 12 Pile Tip Reinforcement	12	Each
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	450	Ft
560E8054	54" Minnesota Shape Prestressed Concrete Beam	774	Ft
680E0040	4" Underdrain Pipe	124	Ft
680E2500	Porous Backfill	5.4	Ton
700E0210	Class B Riprap	1,484.6	Ton
700E1100	Overburden Excavation for Riprap	777	CuYd
734E2022	Bridge Berm Slope Protection, Quarried Aggregate	142.2	SqYd
831E0110	Type B Drainage Fabric	1,911	SqYd
831E1030	Perforated Geocell	604	SqFt



ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Concrete Penetrating Sealer	780.1	SqYd	See Special Provision
Select Granular Backfill	21.1	Ton	
Incidental Work, Structure	Lump Sum	LS	
Structural Steel, Miscellaneous	Lump Sum	LS	
Membrane Sealant Expansion Joint	75.8	Ft	
Structure Excavation, Bridge	18	CuYd	
Bridge End Embankment	1,360	CuYd	
Granular Bridge End Backfill	97.9	CuYd	
Approach Slab Underdrain Excavation	6.6	CuYd	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	305.1	CuYd	
Class A45 Concrete, Bridge	69.5	CuYd	
Concrete Approach Slab for Bridge	172.3	SqYd	
Concrete Approach Sleeper Slab for Bridge	37.9	SqYd	
Class A45 Concrete, Drilled Shaft	71.3	CuYd	
Drilled Shaft Excavation	65.7	CuYd	
62" Permanent Casing	20	Ft	
Reinforcing Steel	30,284	Lb	
Epoxy Coated Reinforcing Steel	2,083	Lb	
Stainless Reinforcing Steel	63,317	Lb	See Special Provision
Preboring Pile	120	Ft	
HP 12x53 Pile Tip Reinforcement	12	Each	
HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft	
HP 12x53 Steel Bearing Pile, Furnish and Drive	450	Ft	
54" Minnesota Shape Prestressed Concrete Beam	774	Ft	
4" Underdrain Pipe	124	Ft	
Porous Backfill	5.4	Ton	
Class B Riprap	1,484.6	Ton	
Overburden Excavation for Riprap	777	CuYd	
Bridge Berm Slope Protecting, Quarried Aggregate	142.2	SqYd	
Type B Drainage Fabric	1,911	SqYd	
Perforated Geocell	604	Sq Ft	

BRIDGE SPECIFICATIONS

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

- Girders are designed simple for AASHTO HL-93 Live Load.
- 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

*For prestressed beams, see notes regarding Prestressed Girders.

GENERAL CONSTRUCTION

- All lap splices shown are contact lap splices unless noted otherwise.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
- Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
- The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
- Barrier Curbs and End blocks will be built perpendicular to the roadway grade line.
- 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.
- 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.
- The elevation of the bridge deck is 16 inches above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

Rev 11/19/24 JKK

- In place centerline Sta. 51+60.27, 52.86' LT to centerline Sta. 53+71.86, 53.00' LT is a 214 foot, 3-span continuous composite plate girder bridge with a 30'-0" clear roadway. The superstructure consists of 4 lines of steel girders with reinforced concrete deck with Standard Type RRA-1 steel railing faced with thrie beam continuous across the bridge. The substructure consists of pier wall reinforced concrete bents and reinforced concrete sill type abutments which are supported on pier walls on spread footings and timber piling.
- Break down and remove the existing bridge, and approach/sleeper slabs if applicable, to 1-foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Construction Specifications. All portions of the existing bridge will be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the Environmental Commitments found in Section A.
- During demolition of the structure, efforts will be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.
- The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid, it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing structure contains lead. The Contractor should plan operations accordingly and inform employees of the hazards of lead exposure.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 196' - 0" PRESTR. GIRDER BRIDGE

Str. No. 32-531-001

APRIL 2024

2 OF 25



DESIGNED BY: CTH	CK. DES. BY: DVB	DRAFTED BY: JKK
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0079(84)232	E5	E27

DESIGN MIX OF CONCRETE

- All structural concrete will be Class A45 Concrete unless otherwise indicated.
- Type II cement conforming to Section 750 is required except Type III cement may be used for prestressed beams.
- 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

- Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
- The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. Piling will develop a field verified nominal bearing resistance of 245 tons per pile.
- One test pile will be driven at each abutment and will become part of the pile group.
- The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40.
- 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.
- Abutment backwalls above the construction joint must be cast concurrently with the deck slab. The concrete used for the pile cap and wings will be Class A45 Concrete, Bridge. The concrete used for the backwall will be Class A45 Concrete, Bridge Deck. All abutment and bridge deck concrete will have attained design strength prior to backfilling. Abutment wing walls will not be cast until after the deck has been poured.
- Each finished abutment shall include a Bridge Survey Marker. See Standard Plate 460.05.
- Pile tip reinforcement will be required. See Standard Plate 510.30.

BENT

Spiral reinforcement may be fabricated from cold drawn wire conforming to ASTM A1064 or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.

DRILLED SHAFT

- The design of the drilled shafts is based upon encountering competent Ludlow Formation at elevation 2579.0. If competent Ludlow Formation is not encountered at or above this elevation, contact the Office of Bridge Design, through proper channels, before proceeding with the drilled shaft construction. Geotechnical Engineering Activity personnel will be present during the drilling operations to confirm these elevations and to observe placement of the drilled shafts. The Geotechnical Engineering Activity will be notified a minimum of two weeks prior to the start of excavation for the drilled shafts.
- The drilled shafts will be constructed using the permanent casing method in conformance with the Special Provision for Drilled Shaft Construction. A construction joint will be placed at the top of the permanent casing and the permanent casing will extend a minimum of 1'-0" above the groundline, waterline, or construction platform elevation, whichever is higher.
- Caving sand may be encountered during excavation of the drilled shafts requiring Wet Construction Methods. Removal of sandy material during drilling may require additional tooling and/or methods besides normal flight auger operations.
- The construction joint locations and quantities provided on the plans are based upon the estimated existing groundline and waterline elevations. It is the responsibility of the Contractor to verify the existing elevations and have a drilled shaft installation plan submitted and approved prior to ordering the casing. If the Contractor intends to use construction platforms, etc. that would require any of the construction joints to be at a location other than the location shown in the plans, the Contractor will include these proposed changes in the drilled shaft installation plan for approval by the Office of Bridge Design.
- The quantities for Drilled Shaft Excavation; 62-inch Permanent Casing; Class A45 Concrete, Drilled Shaft; and Class A45 Concrete, Bridge are based upon the construction joint locations as shown in the plans. Payment for these items will be at the contract unit price for the plans shown quantities regardless of any approved changes in the location of the construction joints as requested by the Contractor due to the construction of work platforms, etc. Measurement and payment will be made at the contract unit prices for any changes due to variations in the competent foundation soil or in the locations of the existing groundline and waterline elevations as ordered by the Engineer.

CSL ACCESS TUBES

Access tubes will be furnished and installed in each of the drilled shafts in accordance with the Special Provision for Drilled Shaft Construction.

SUPERSTRUCTURE

Rev 11/19/2024 JKK

- Girder lifting hooks will be cut off before placement of concrete deck slab.
- The diaphragm at the bent will be poured integrally with the deck slab. Placement of diaphragm at the bent shall not slow down the rate of deck concrete placement and finishing. The Contractor will place the concrete for the specified diaphragms ahead of the deck concrete in such a manner that advancement of the deck concrete reaches the diaphragm just as placement of concrete in the diaphragm is complete.
- 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.
- The concrete bridge deck will be placed and finished at a minimum rate of 49 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 78 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.
- 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.
- See Special Provision for Concrete Penetrating Sealer.

**NOTES (CONTINUED)
FOR
196' - 0" PRESTR. GIRDER BRIDGE**

Str. No. 32-531-001

APRIL 2024

3 OF 25

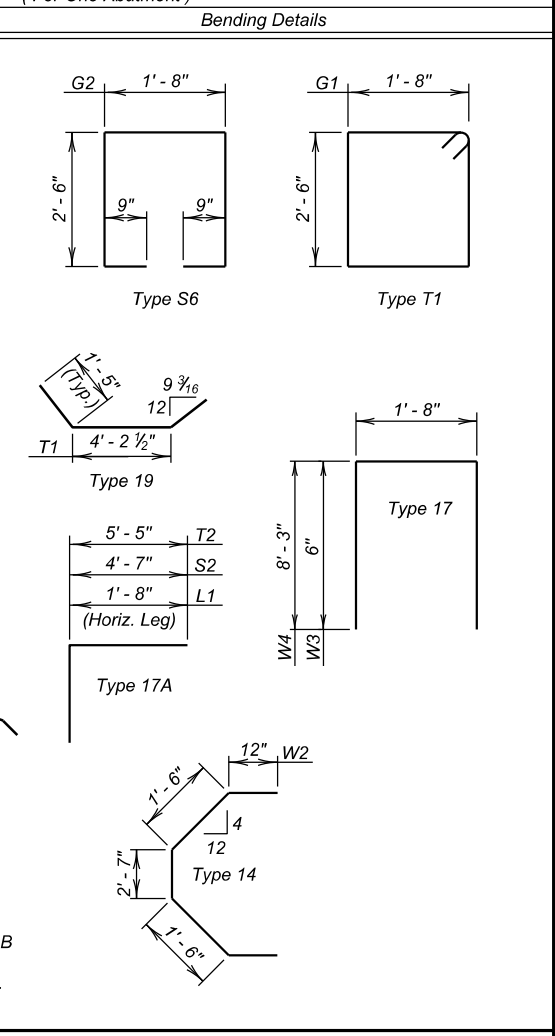


DESIGNED BY: CTH	CK. DES. BY: DVB	DRAFTED BY: JKK	BRIDGE ENGINEER
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Rev 11/19/24 JKK

REINFORCING SCHEDULE
(For One Abutment)

Mk.	No.	Size	Length	Type
E1	10	6	44'-8"	Str.
E2	18	6	9'-8"	Str.
E3	6	6	7'-5"	Str.
E4	6	6	7'-9"	Str.
E5	8	6	5'-2"	Str.
E6	3	7	44'-8"	Str.
E7	4	4	44'-8"	Str.
E8	2	9	44'-8"	Str.
E9	56	6	7'-2"	Str.
E10	12	6	6'-2"	Str.
G1	44	4	8'-4"	T1
G2	6	5	8'-2"	S6
L1	28	4	3'-4"	17A
M1	34	5	7'-6"	T9B
M2	34	5	7'-1"	Str.
M3	32	5	6'-3"	Str.
S1	2	9	44'-8"	Str.
S2	40	5	8'-3"	17A
T1	26	6	7'-3"	19
T2	26	6	6'-5"	17A
T3	26	6	6'-1"	1A
W1	4	5	4'-8"	Str.
W2	8	4	7'-7"	14
W3	72	5	2'-8"	17
W4	8	6	18'-2"	17

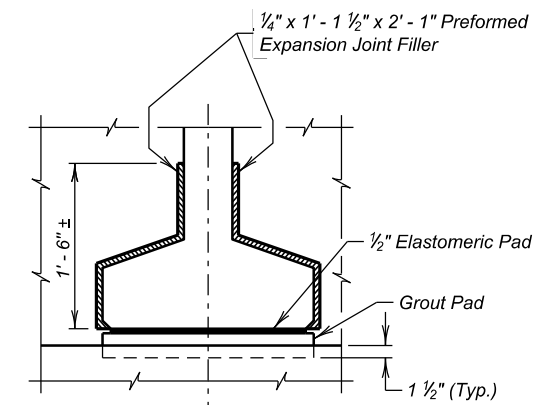
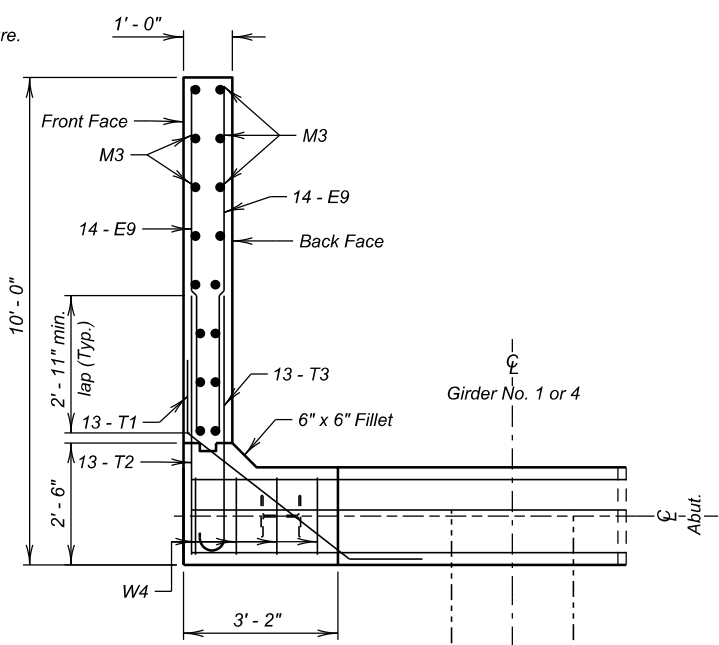
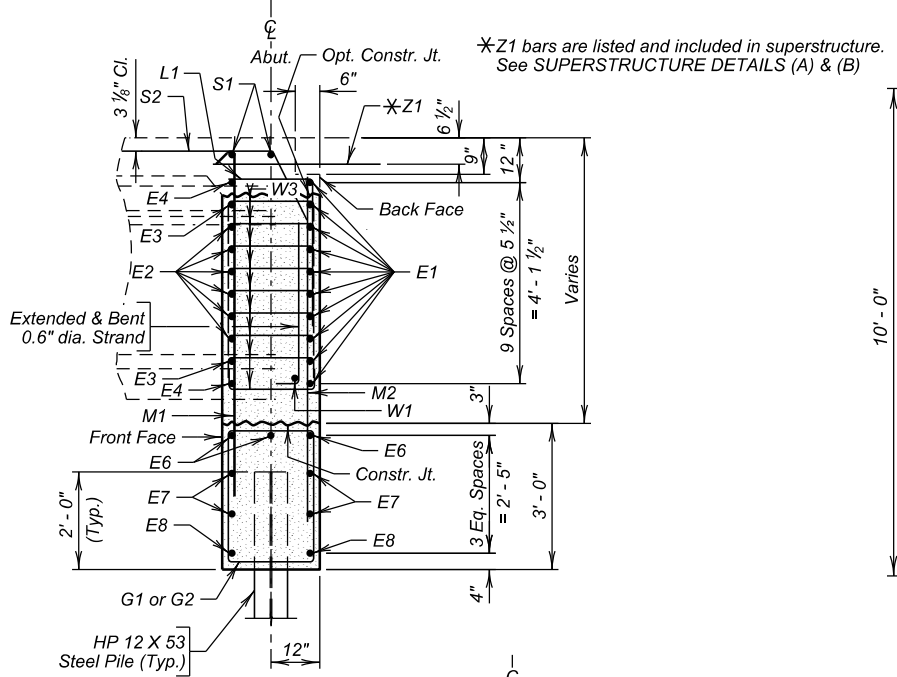
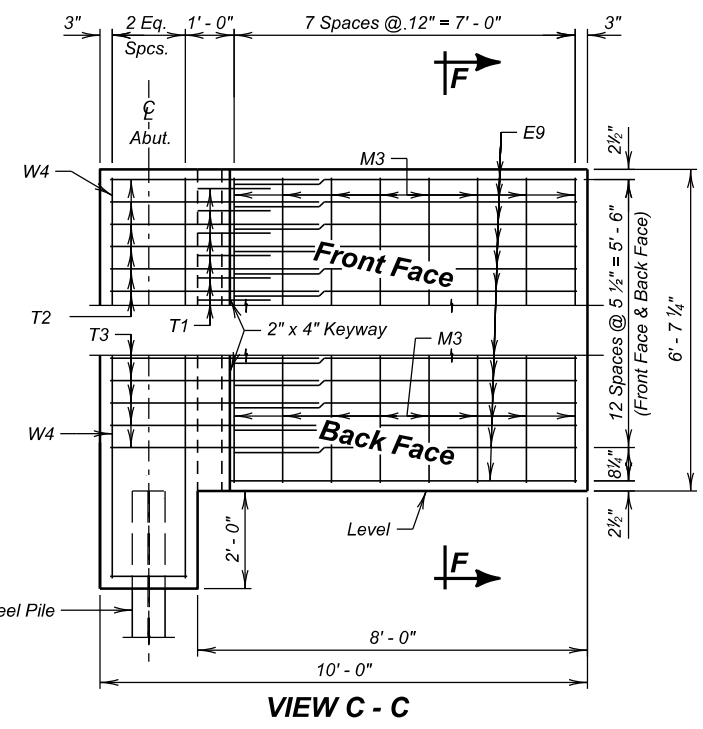
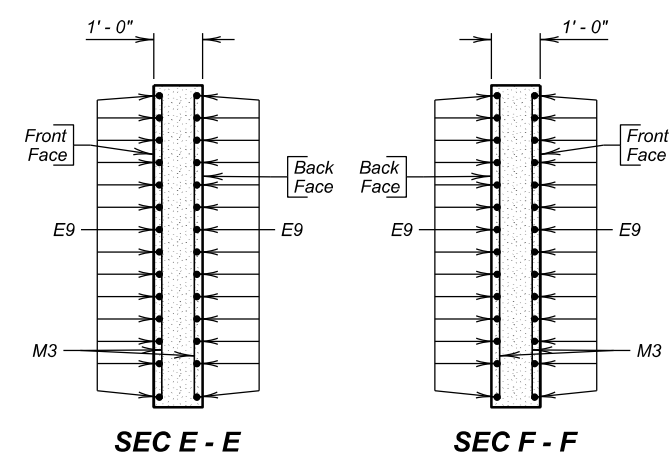
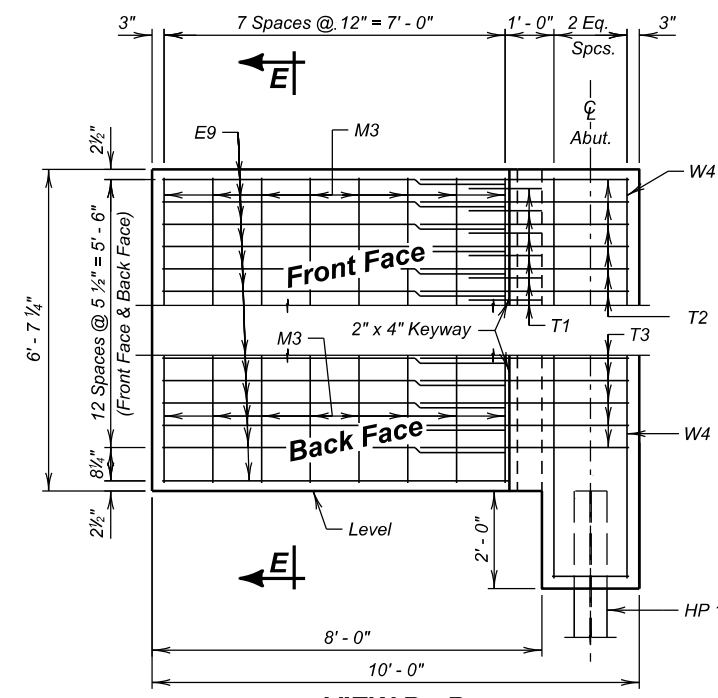


NOTES:
All dimensions are out to out of bars.
Δ Bars to be epoxy coated.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Abut. No. 1	Abut. No. 3
Class A45 Concrete, Bridge	Cu. Yd.	13.8	13.8
Reinforcing Steel	Lb.	4,548	4,548
Epoxy Coated Reinforcing Steel	Lb.	976	976
Structure Excavation, Bridge	Cu. Yd.	8.9	8.9
HP 12 Pile Tip Reinforcement	Each	6	6
HP 12 x 53 Steel Test Pile, Furnish & Drive	Ft.	1 @ 50' = 50'	1 @ 50' = 50'
HP 12 x 53 Steel Bearing Pile, Furnish & Drive	Ft.	5 @ 45' = 225'	5 @ 45' = 225'
Preboring Pile	Ft.	6 @ 10' = 60'	6 @ 10' = 60'

∅ Includes 0.06 cu. yds. for grout pads.



DETAIL "Y"
(Typical at girder ends; abutments only)

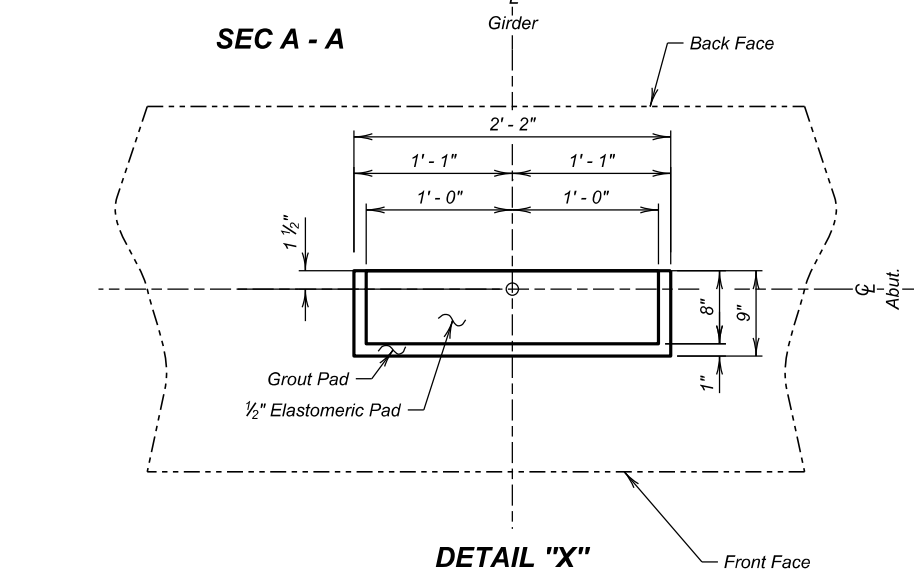


TABLE OF ELEVATIONS

Abut. No.	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	Elev. "F"
1	2616.06	2615.70	2615.70	2607.10	2615.76	2615.76
3	2614.78	2614.42	2614.42	2605.82	2614.36	2614.36

TABLE OF ELEVATIONS

Abut. No.	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"
1	2610.22	2610.48	2610.48	2610.22
3	2608.94	2609.20	2609.20	2608.94

NOTE -
Elev. "A", "B" and "C" are top of slab at C of Abutment.
Elev. "E" & "F" are top of wingwall at the end of wingwall
Elev. "G1", "G2", "G3", and "G4" are top of grout pad elevations at C Abutment. Top of Grout Pads will be Level and Smooth.

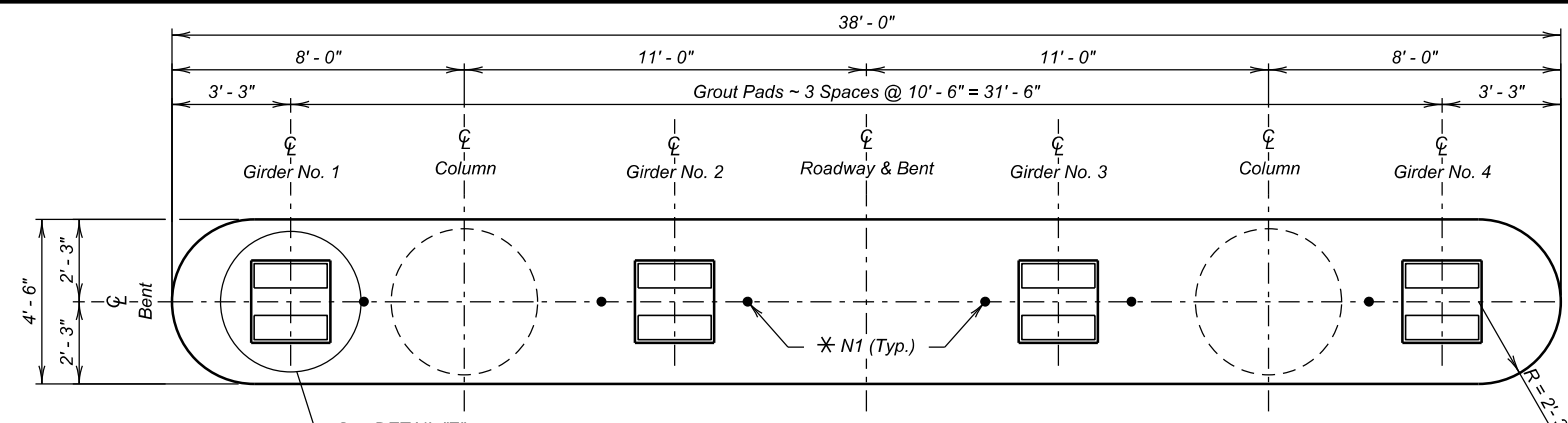
ABUTMENT DETAILS (B)
FOR
196' - 0" PRESTR. GIRDER BRIDGE
36' - 0" ROADWAY
OVER NORTH FORK GRAND RIVER
STA. 51 + 68.42 TO 53 + 64.42
STR. NO. 32-531-001

0° SKEW
SEC. 24-T23N-R9E
P 0079(84)232
HL-93

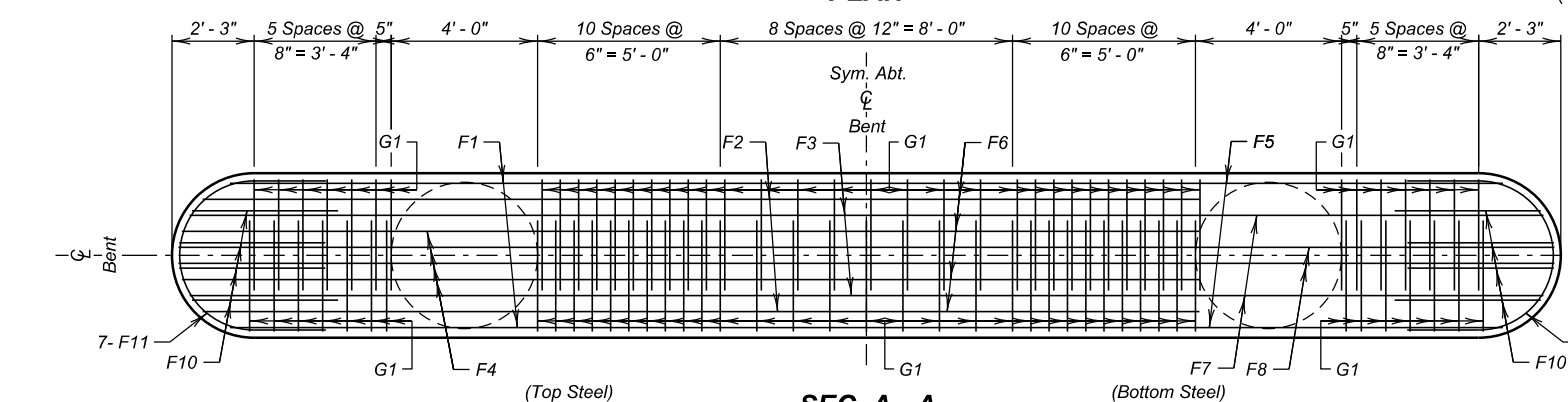


HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2024

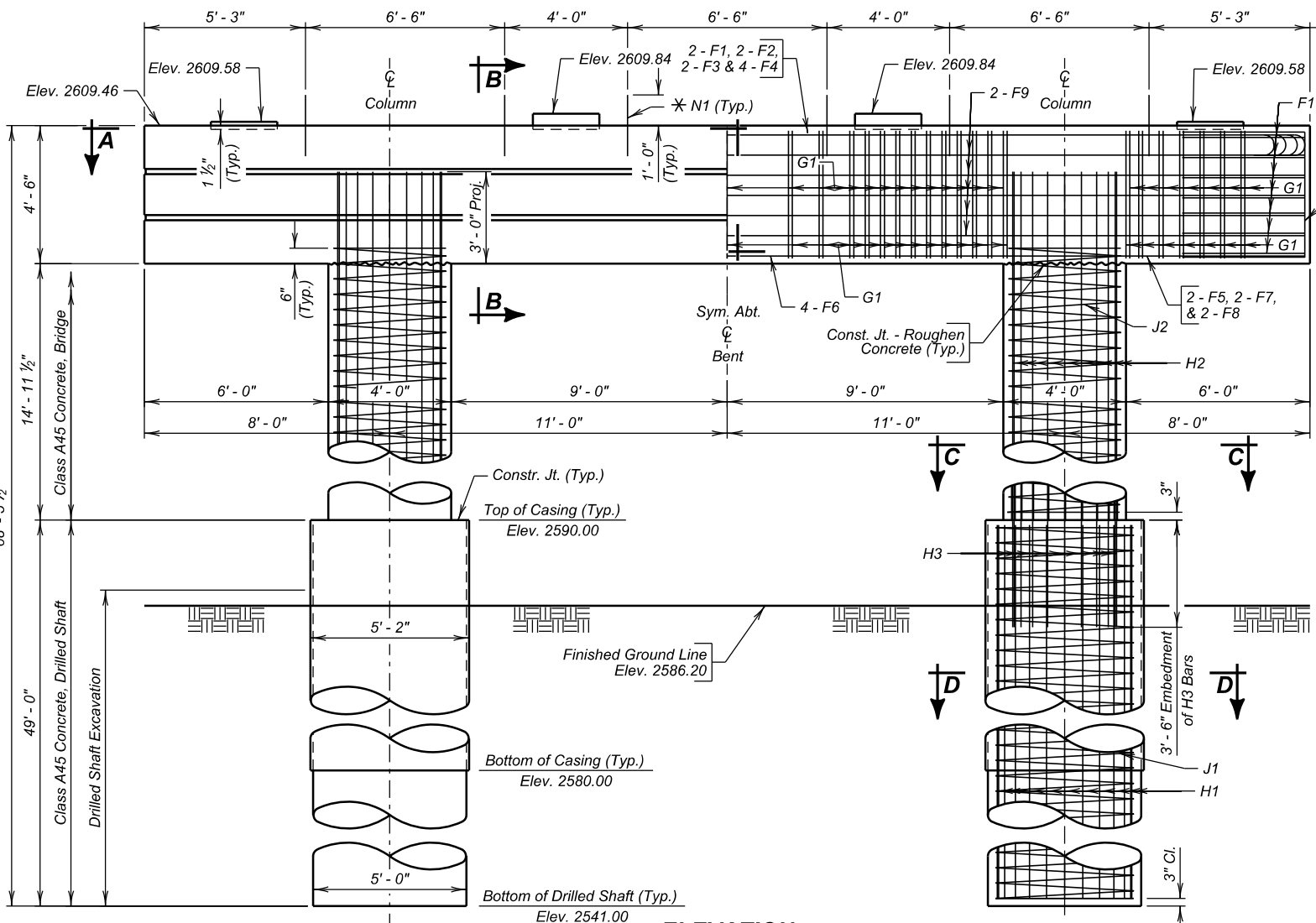
DESIGNED BY	CK. DES. BY	DRAFTED BY	
			BRIDGE ENGINEER



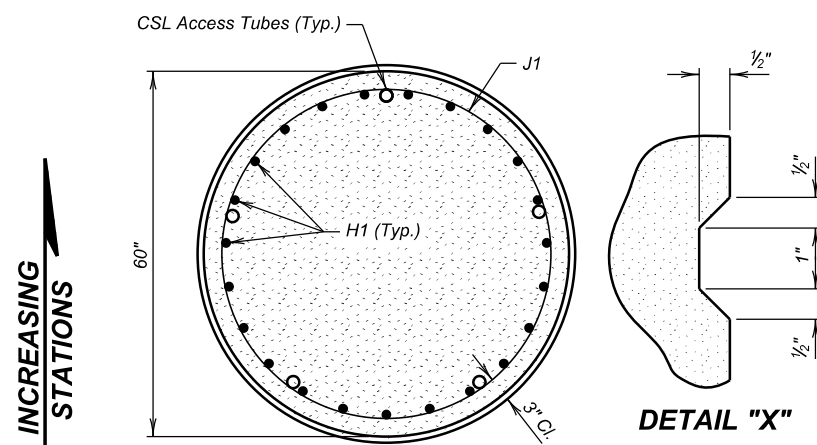
PLAN



SEC. A - A

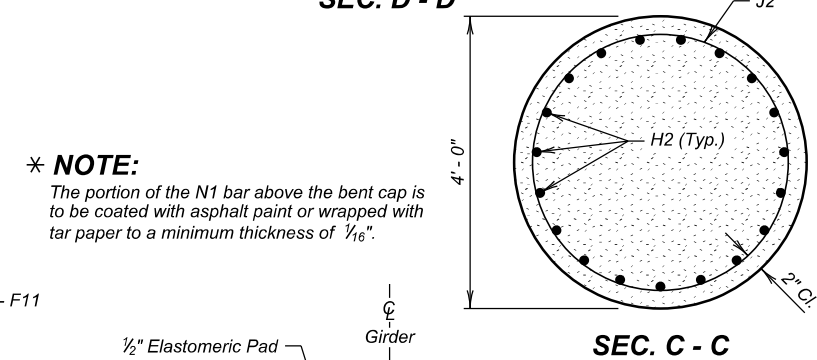


ELEVATION

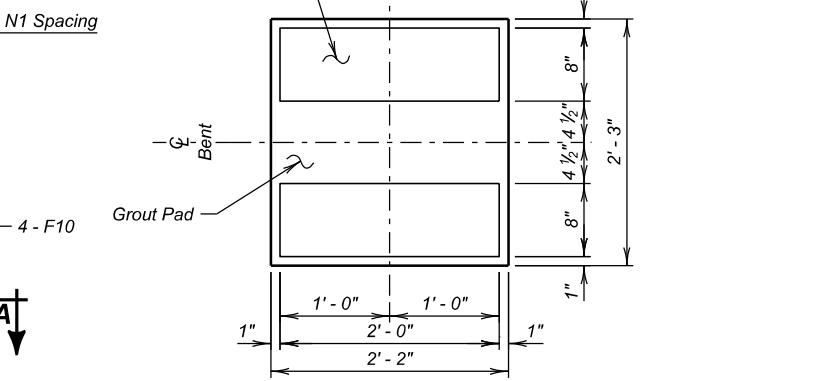


SEC. D - D

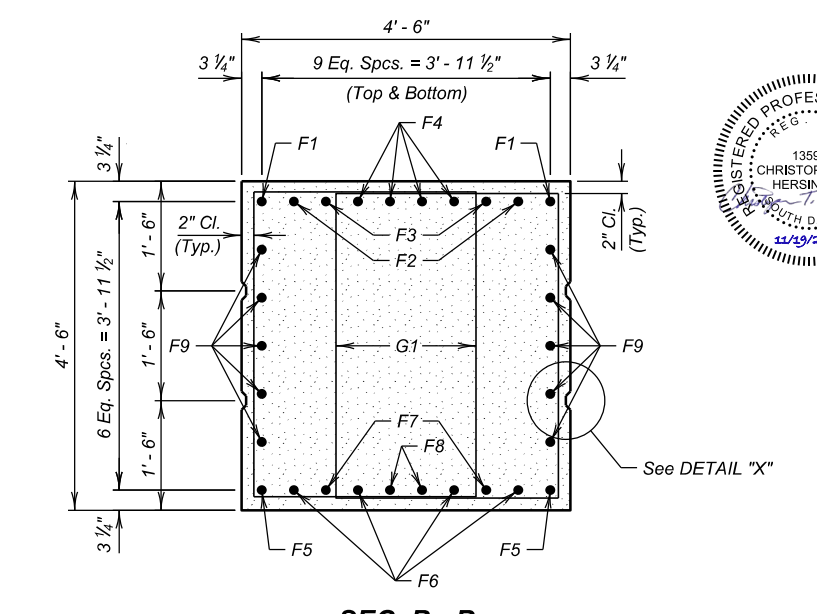
*** NOTE:**
The portion of the N1 bar above the bent cap is to be coated with asphalt paint or wrapped with tar paper to a minimum thickness of 1/16".



SEC. C - C

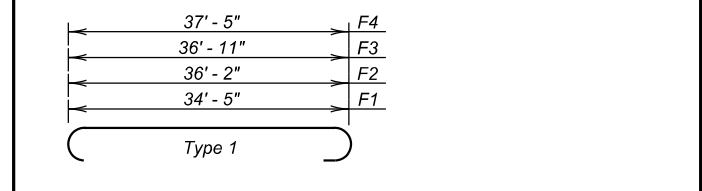


DETAIL "Z"



SEC. B - B

REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
F1	2	9	37'-0"	1
F2	2	9	38'-9"	1
F3	2	9	39'-6"	1
F4	4	9	40'-0"	1
F5	2	9	34'-5"	Str.
F6	4	9	18'-0"	Str.
F7	2	9	36'-11"	Str.
F8	2	9	37'-5"	Str.
F9	10	5	34'-5"	Str.
F10	8	5	10'-8"	17
F11	14	5	11'-3"	S11
G1	86	5	15'-2"	T1
H1	46	10	48'-6"	Str.
H2	38	9	17'-11"	Str.
H3	38	9	7'-3"	Str.
J1	2	5	1382'-10"	Spiral
J2	2	4	415'-8"	Spiral
N1	6	8	2'-0"	Str.



NOTES -
All dimensions are out to out of bars.
Spirals - Use 6" pitch and 1 1/2 extra turns at each end. Use 1 1/2 turns for lap at splice as required, or weld as approved by the Office of Bridge Design. Use 3 vertical spacer bars per column. Spirals may be smooth bars. Bar length shown does not include splices.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	41.9
Class A45 Concrete, Drilled Shaft	Cu. Yd.	71.3
Drilled Shaft Excavation	Cu. Yd.	65.7
62" Permanent Casing	Ft.	20
Reinforcing Steel	Lb.	20,609

Includes 0.2 Cu. Yds. for Grout Pads
NOTES:
1. Top of Grout Pad shall be level and smooth.
2. Lap splice length between H2 and H3 bars shall be 3'-6" min.
3. Include details for installation of reinforcing steel at drilled shaft/column interface in Drilled Shaft Installation Plan.

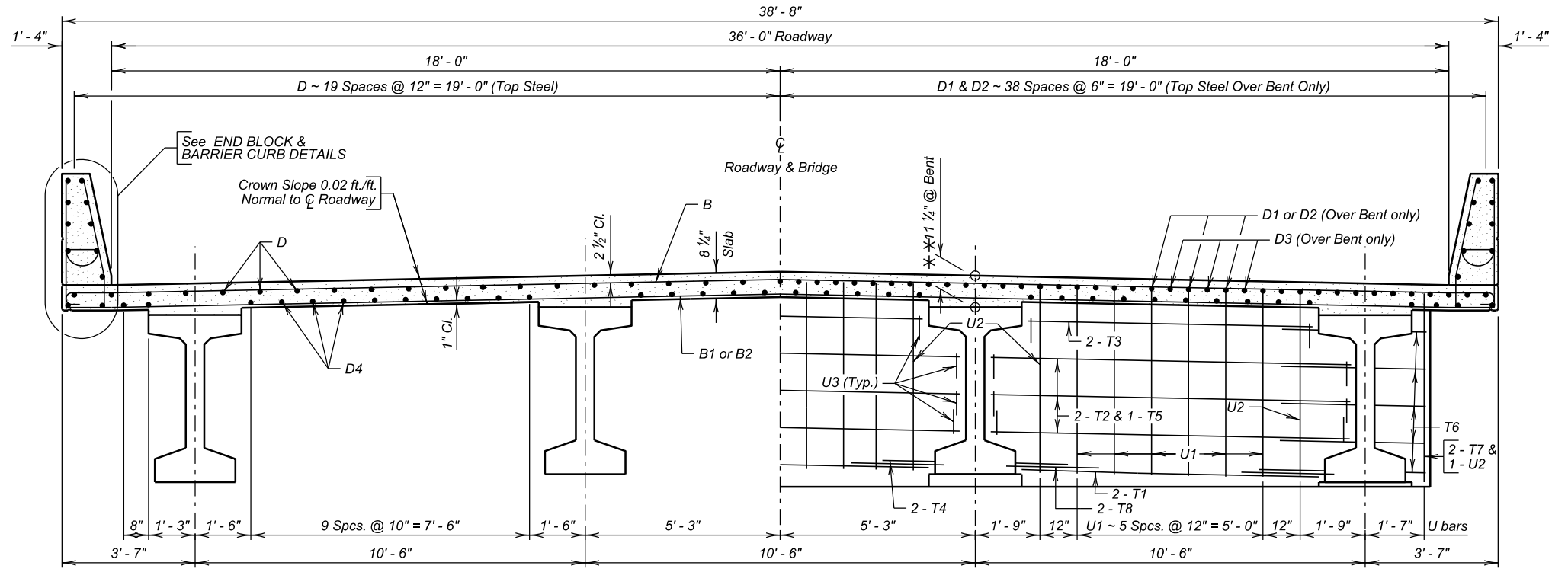


BENT DETAILS FOR
196' - 0" PRESTR. GIRDER BRIDGE
36' - 0" ROADWAY
OVER NORTH FORK GRAND RIVER
STA. 51 + 68.42 TO 53 + 64.42
STR. NO. 32-531-001
0° SKEW
SEC. 24-T23N-R9E
P 0079(84)232
HL-93

HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2024

REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
B	329	6	39'-8"	1
B1	193	4	38'-4"	Str.
B2	192	5	34'-0"	Str.
B15	12	5	9'-6"	19B
B16	8	4	46'-8"	Str.
B17	8	4	5'-8"	Str.
B18	12	8	3'-0"	19B
B19	12	5	2'-0"	Str.
B20	12	6	3'-6"	17A
B21	4	4	5'-9"	19
B22	4	4	3'-3"	19B
C1	370	5	5'-10"	T1A
C2	374	5	5'-3"	S11
C3	4	5	5'-8"	T1A
C4	8	5	5'-3"	S11
C5	8	5	5'-7"	T1
C6	12	6	7'-4"	T1
C7	12	5	6'-5"	T1
C8	4	6	7'-3"	17
C9	4	5	3'-5"	17
D	156	5	33'-10"	Str.
D1	39	8	44'-0"	Str.
D2	39	8	27'-0"	Str.
D3	38	8	30'-0"	Str.
D4	152	5	50'-2"	Str.
D5	48	4	47'-0"	Str.
D6	16	4	49'-9"	Str.
D7	4	4	2'-6"	19B
T1	6	6	8'-0"	Str.
T2	18	5	9'-8"	Str.
T3	6	5	7'-8"	Str.
T4	4	5	5'-0"	Str.
T5	3	6	34'-8"	Str.
T6	20	5	5'-3"	17A
T7	4	5	5'-0"	Str.
T8	12	6	2'-6"	Str.
U1	18	4	13'-11"	S4
U2	8	6	14'-5"	S4
U3	24	4	3'-6"	17
Z1	48	7	4'-0"	Str.

NOTES:
 All reinforcing steel will be stainless steel except as noted.
 All dimensions are out to out of bars.
 * Bars to be epoxy coated.
 ♦ Bars to be plain reinforcing steel.

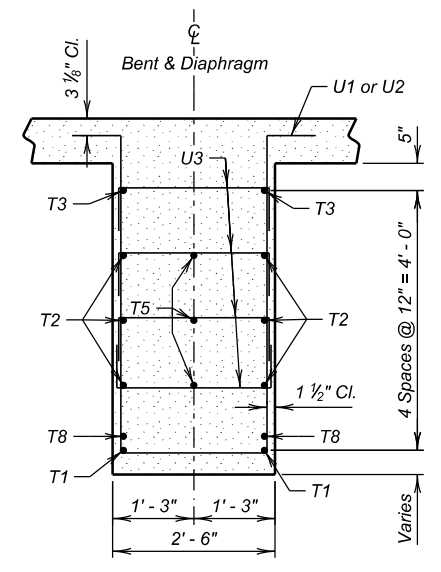


* * * Dimensions are at bearing; at other points along the girders this dimension will be computed as shown on the Slab Form Elevations & Erection Data sheet.

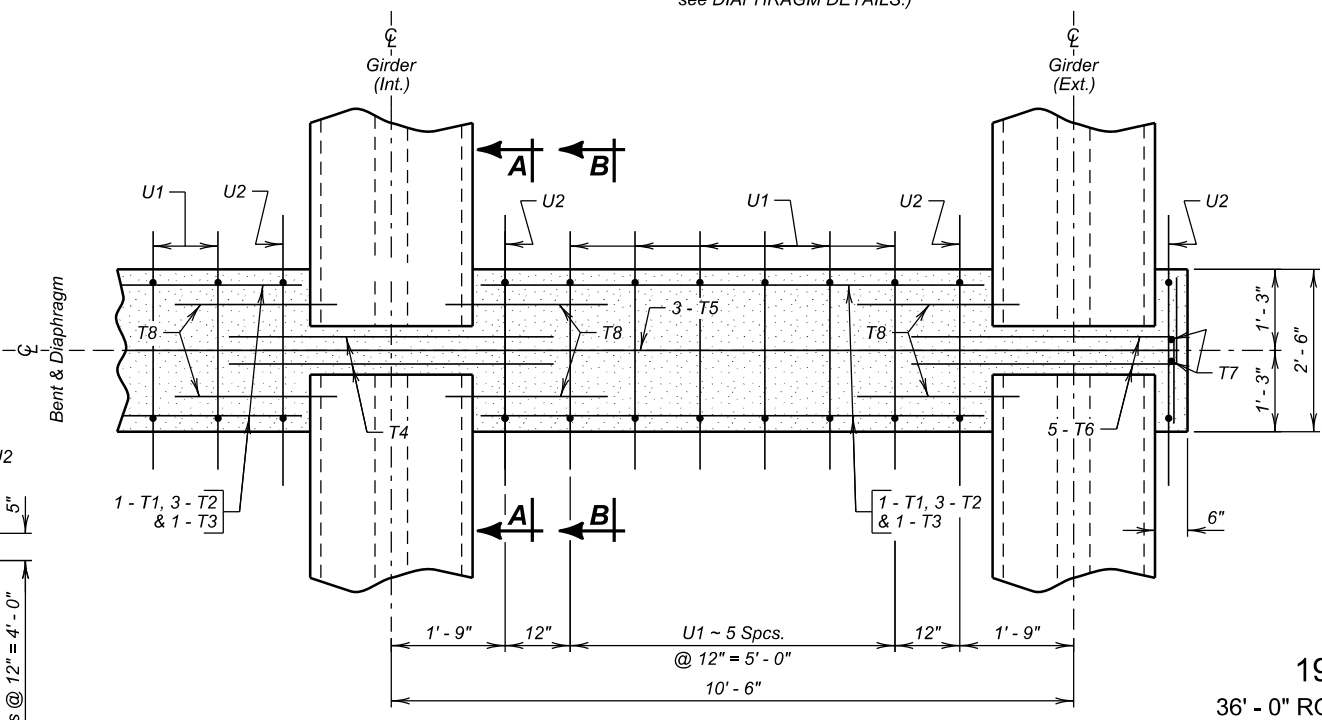
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu. Yd.	305.1
Reinforcing Steel	Lb.	579
Epoxy Coated Reinforcing Steel	Lb.	131
Stainless Reinforcing Steel	Lb.	63,317
54" Minnesota Shape Prestressed Concrete Beam	Ft.	774
Concrete Penetrating Sealer	Sq. Yd.	780.1

♦ Includes quantities for Barrier Curbs and Slab.
 ♦ Includes quantities for Bent Diaphragm
 ☆ Includes quantities for Bent Diaphragm, Barrier Curbs, Slab, and Haunch. (Average depth of 2 1/4" used for Haunch Quantity.) Concrete quantity for Barrier Curb is 0.1184 Cu. Yd. per foot and for End Block is 0.7184 Cu. Yd. each.

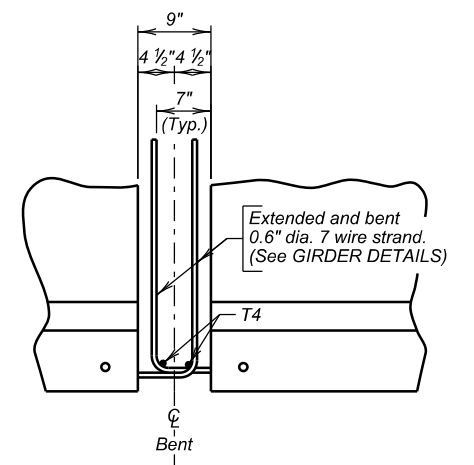
NOTE -
 Concrete will be placed in the space under the beams at Bent No. 2 (within the diaphragm width) during the diaphragm pour. If upon form removal the space is not completely filled and consolidated, the contractor will grout in the remaining voids.



SEC B - B
 (Girders Not Shown)



BENT DIAPHRAGM
 (Slab Not Shown)



SEC A - A
 (Showing extended and bent strand detail and T4 bar placement at Bent. T6 similar at exterior girder.)

SUPERSTRUCTURE DETAILS (B)
 FOR

196' - 0" PRESTR. GIRDER BRIDGE
 36' - 0" ROADWAY 0° SKEW
 OVER NORTH FORK GRAND RIVER SEC. 24-T23N-R9E
 STA. 51 + 68.42 TO 53 + 64.42 P 0079(84)232
 STR. NO. 32-531-001 HL-93

HARDING COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2024



DESIGNED BY CTH	CK. DES. BY DVB	DRAFTED BY JKK	BRIDGE ENGINEER
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