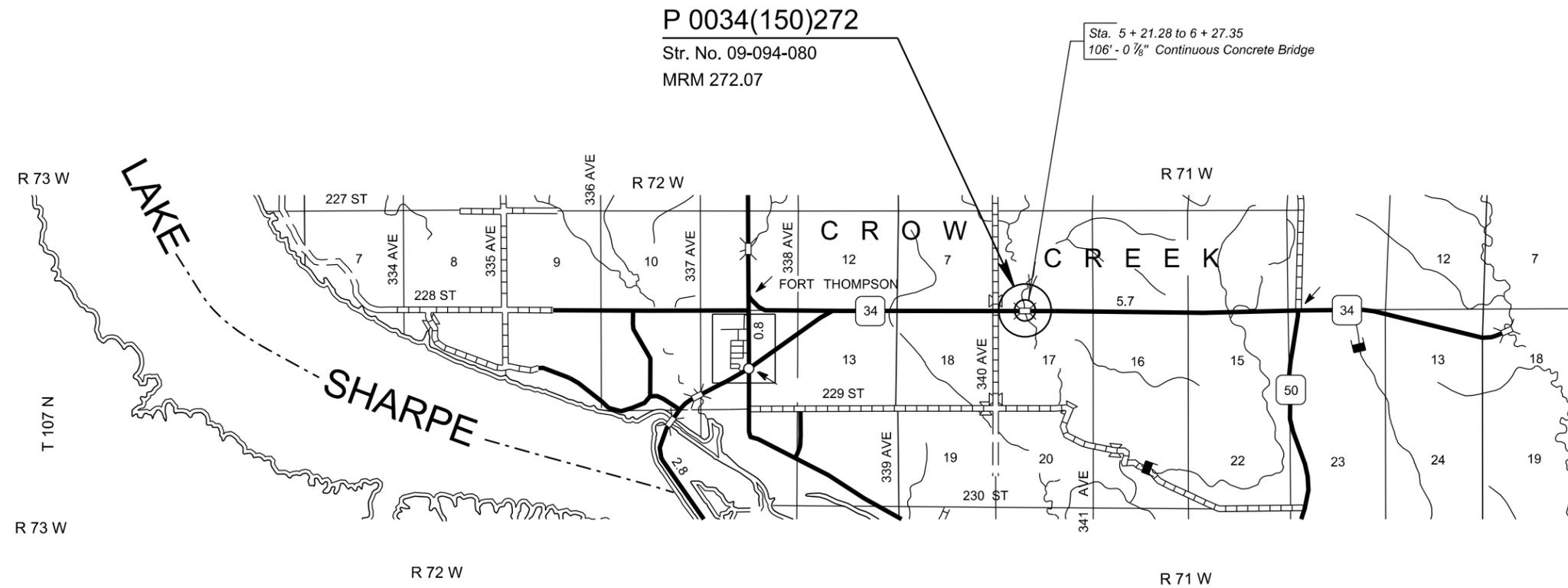
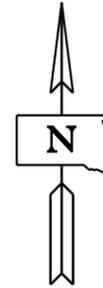


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E1	E20

Section E: Structure Plans

INDEX OF SHEETS -

Sheet E1 Layout Map and Index
Sheet E2 Estimate of Structure Quantities
Sheet E3 to E20 106' - 0 7/8" Continuous Concrete Bridge



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E2	E20

SECTION E - ESTIMATE OF STRUCTURE QUANTITIES

Str. No. 09-094-080
106' - 0 7/8" Continuous Concrete Bridge

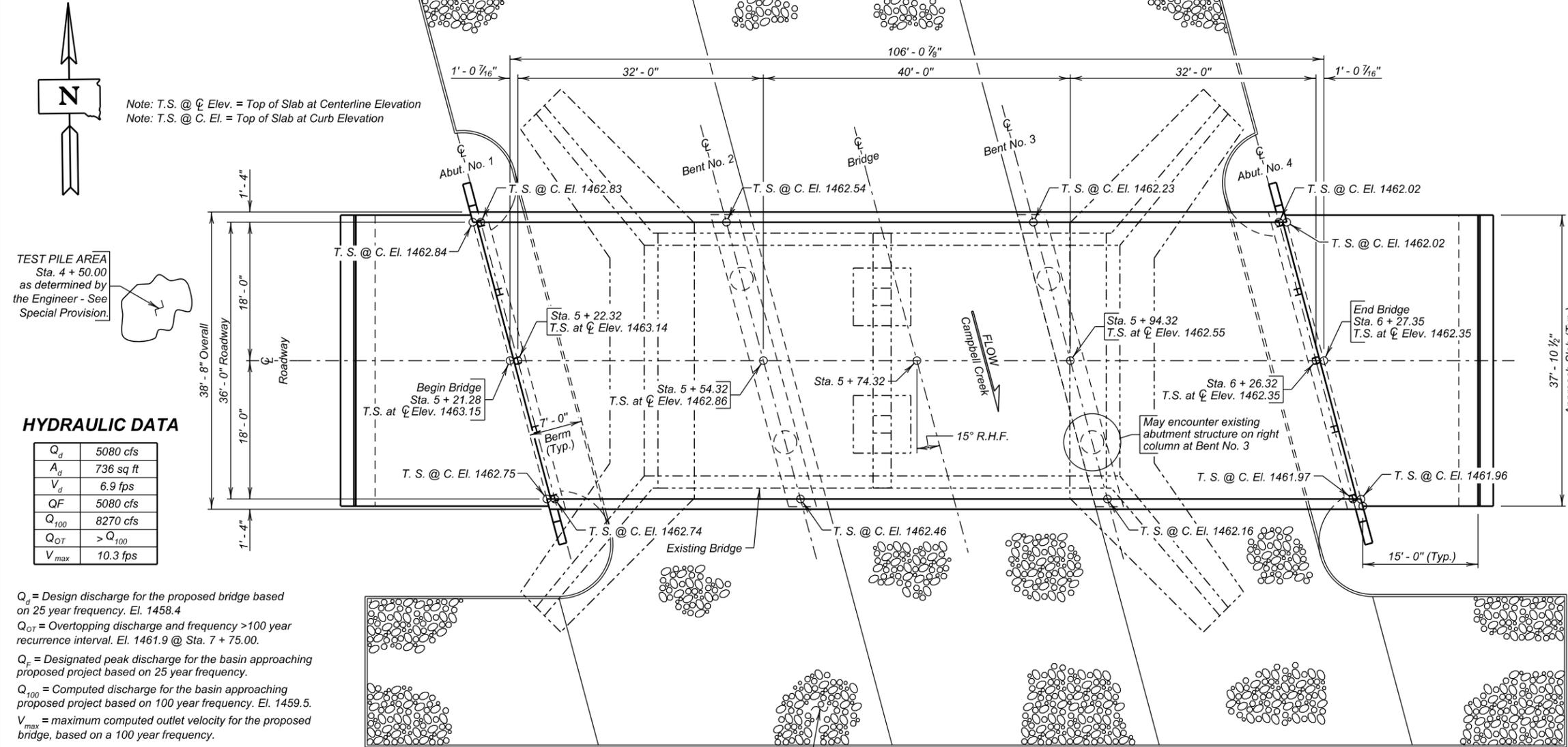
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	424.7	SqYd
250E0030	Incidental Work, Structure	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	75.8	Ft
420E0100	Structure Excavation, Bridge	18	CuYd
430E0200	Bridge End Embankment	630	CuYd
430E0300	Granular Bridge End Backfill	48.7	CuYd
430E0510	Approach Slab Underdrain Excavation	2.6	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	247.3	CuYd
460E0050	Class A45 Concrete, Bridge	39.3	CuYd
460E0150	Concrete Approach Slab for Bridge	173.1	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	37.9	SqYd
464E0100	Controlled Density Fill	7.4	CuYd
465E0100	Class A45 Concrete, Drilled Shaft	32.7	CuYd
465E0200	Drilled Shaft Excavation	32.0	CuYd
465E1030	30" Permanent Casing	39.0	Ft
480E0100	Reinforcing Steel	13,787	Lb
480E0200	Epoxy Coated Reinforcing Steel	69,373	Lb
480E0507	No. 7 Rebar Splice	96	Each
510E0300	Preboring Pile	100	Ft
510E3361	HP 10x42 Steel Test Pile, Furnish and Drive	285	Ft
510E3365	HP 10x42 Steel Bearing Pile, Furnish and Drive	400	Ft
510E4000	Dynamic Pile Test (during driving)	5	Each
510E4010	Dynamic Pile Test (during restrrike)	5	Each
510E4050	Static Pile Load Test	3	Each
680E0040	4" Underdrain Pipe	250	Ft
680E2500	Porous Backfill	24.7	Ton
700E0310	Class C Riprap	1,634.5	Ton
831E0110	Type B Drainage Fabric	1,406	SqYd

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

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E3	E20

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

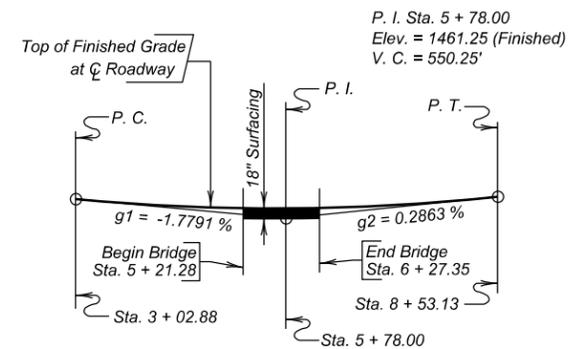
- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Subsurface Investigation, Piling, and Drilled Shaft Layout
- Sheet No. 6 - Abutment No. 1 Details
- Sheet No. 7 - Abutment No. 4 Details
- Sheet No. 8 - Bent Details
- Sheet No. 9 - Superstructure Details
- Sheet No. 10 - End Block and Barrier Curb Details
- Sheet No. 11 - Details of Bridge End Backfill (A)
- Sheet No. 12 - Details of Bridge End Backfill (B)
- Sheet No. 13 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 14 - Approach Slab Joint Details
- Sheet No. 15 - Riprap Details
- Sheet No. 16 - Standard Plate No's. 460.02 and 460.05
- Sheet No. 17 - Standard Plate No's. 510.40 and 620.18
- Sheet No. 18 - Standard Plate No's. 630.92 and 680.03



HYDRAULIC DATA

Q_d	5080 cfs
A_d	736 sq ft
V_d	6.9 fps
Q_F	5080 cfs
Q_{100}	8270 cfs
Q_{OT}	$> Q_{100}$
V_{max}	10.3 fps

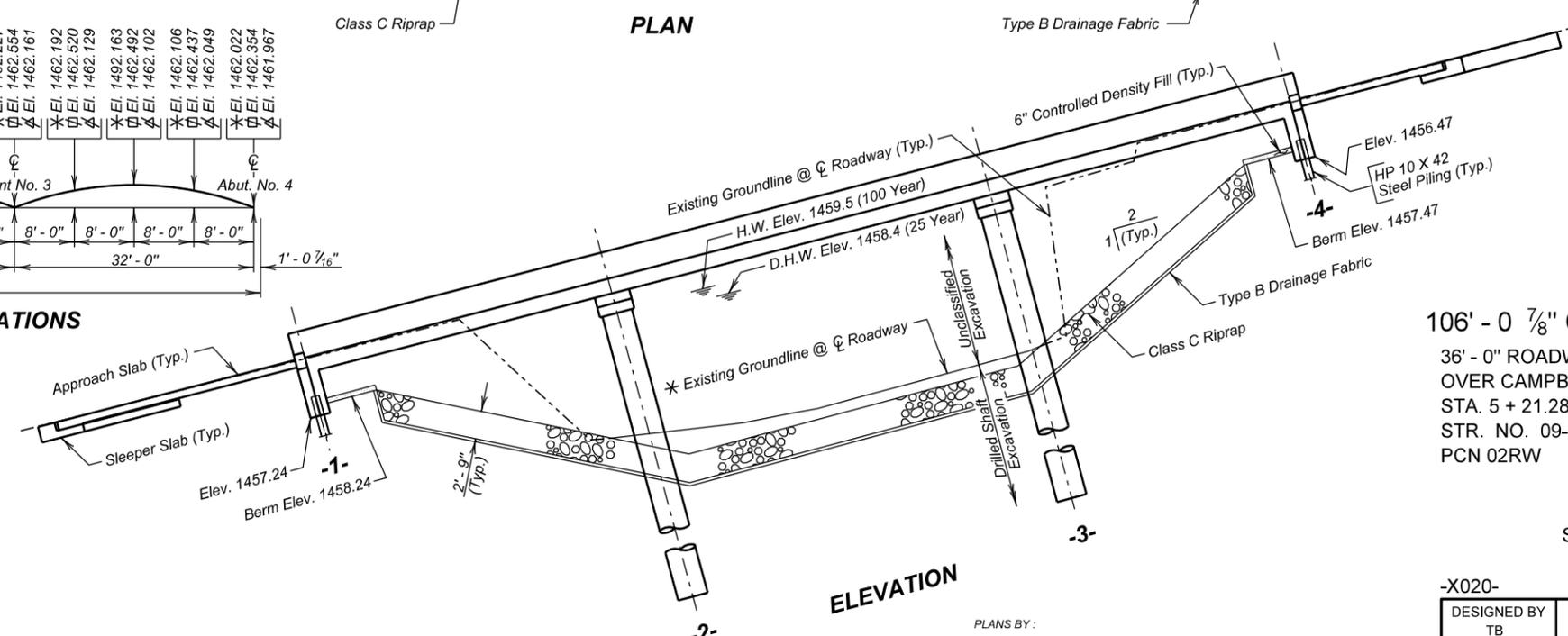
Q_d = Design discharge for the proposed bridge based on 25 year frequency. El. 1458.4
 Q_{OT} = Overtopping discharge and frequency > 100 year recurrence interval. El. 1461.9 @ Sta. 7 + 75.00.
 Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1459.5.
 V_{max} = maximum computed outlet velocity for the proposed bridge, based on a 100 year frequency.



CURB AND CENTERLINE ELEVATIONS

*El. 1462.831	*El. 1463.144	*El. 1462.739	*El. 1462.791	*El. 1463.106	*El. 1462.702	*El. 1462.723	*El. 1463.039	*El. 1462.637	*El. 1462.628	*El. 1462.946	*El. 1462.545	*El. 1462.539	*El. 1462.858	*El. 1462.458	*El. 1462.488	*El. 1462.809	*El. 1462.411	*El. 1462.433	*El. 1462.756	*El. 1462.360	*El. 1462.332	*El. 1462.657	*El. 1462.263	*El. 1462.227	*El. 1462.554	*El. 1462.161	*El. 1462.192	*El. 1462.520	*El. 1462.129	*El. 1462.163	*El. 1462.106	*El. 1462.102	*El. 1462.437	*El. 1462.049	*El. 1462.022	*El. 1462.354	*El. 1461.967
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Elevations with a * are Top of Finished Slab at Left Curb.
 Elevations with a □ are Top of Finished Slab at Centerline Roadway.
 Elevations with a ▽ Top of Finished Slab at Right Curb
 Camber for Dead Load Plus Plastic Flow, shown on SUPERSTRUCTURE DETAILS of the Bridge Plans have been included in the elevations shown above.



* NOTE:
 Riprap at channel bottom has been depressed 1' - 0" below channel flowline to accommodate aquatic organisms. The 1' - 0" depression will be allowed to fill in naturally over time.

GENERAL DRAWING
 FOR
106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE
 36' - 0" ROADWAY
 OVER CAMPBELL CREEK
 STA. 5 + 21.28 TO 6 + 27.35
 STR. NO. 09-094-080
 PCN 02RW

15° SKEW R.H.F.
 SEC. 8/17-T107N-R71W
 P 0034(150)272
 HL-93

BUFFALO COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 2014

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

DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA01	DRAFTED BY BT	Kevin N. Goeden BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Concrete Penetrating Sealer	424.7	SqYd	See Special Provision
Incidental Work, Structure	1	LS	
Membrane Sealant Expansion Joint	75.8	Ft	
Structure Excavation, Bridge	18	CuYd	
Bridge End Embankment	630	CuYd	
Granular Bridge End Backfill	48.7	CuYd	
Approach Slab Underdrain Excavation	2.6	CuYd	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	247.3	CuYd	
Class A45 Concrete, Bridge	39.3	CuYd	
Concrete Approach Slab for Bridge	173.1	SqYd	
Concrete Approach Sleeper Slab for Bridge	37.9	SqYd	
Controlled Density Fill	7.4	CuYd	
Class A45 Concrete, Drilled Shaft	32.7	CuYd	
Drilled Shaft Excavation	32.0	CuYd	
38" Permanent Casing	39.0	Ft	
Reinforcing Steel	13,787	Lb	
Epoxy Coated Reinforcing Steel	69,373	Lb	
No. 7 Rebar Splice	96	Each	
Preboring Pile	100	Ft	
HP 10x42 Steel Test Pile, Furnish and Drive	285	Ft	
HP 10x42 Steel Bearing Pile, Furnish and Drive	400	Ft	
Dynamic Pile Test (during driving)	5	Each	See Special Provision
Dynamic Pile Test (during restrrike)	5	Each	See Special Provision
Static Pile Load Test	3	Each	See Special Provision
4" Underdrain Pipe	250	Ft	
Porous Backfill	24.7	Ton	
Class C Riprap	1,634.5	Ton	
Type B Drainage Fabric	1,406	SqYd	

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2014 Edition with 2015 interims.
- 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

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

DESIGN MATERIAL STRENGTHS

Concrete $f'c = 4,500$ psi
Reinforcing Steel $fy = 60,000$ psi
Piling (ASTM A572 Grade 50) $fy = 50,000$ psi

GENERAL CONSTRUCTION

- All mild reinforcing steel shall conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.
- Use 2" clear cover on all reinforcing steel except as shown.
- Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02.
- Barrier Curbs and End blocks shall be built normal to the grade.
- Request for construction joints or resteel 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 resteel.
- The elevation of the bridge deck is 18" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 5+38.78 to centerline Sta. 6+00.78 is a 60.0' 2 span I Beam Viaduct with a 30'-0" clear roadway. The superstructure consists of a 6" concrete deck supported on 9 lines of girders, with concrete pigeon hole railing faced with steel W-beam continuous across the bridge. The deck has been overlaid with 2 inches of low slump dense concrete. The substructure consists of a 2 column reinforced concrete bent and reinforced concrete vertical abutments, all of which are supported on spread footings.
- 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 Specifications. All portions of the existing bridge not salvaged for future highway related use shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the COMMITMENT H: WASTE DISPOSAL NOTES found in Section A.
- The 18 - 29'-11" long existing 21" WF 59 steel I-Beams shall be salvaged for future highway related use. The salvaged beams shall be stockpiled at the SDDOT Highmore Maintenance yard located west of the intersection of Highways SD47 and US14 on Highway US14. Care shall be taken during the dismantling, transporting and stockpiling operations not to damage the structural properties of the salvaged items.
- During demolition of the structure, efforts shall be taken to prevent material from falling into Campbell 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 shall be 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 his/her operations accordingly, and inform his/her employees of the hazards of lead exposure.

DESIGN MIX OF CONCRETE

- All structural concrete shall be Class A45 unless otherwise indicated.
- Type II cement is required.
- Coarse aggregate to be used in concrete shall consist of either crushed quartzite or other crushed ledge rock. If crushed ledge rock other than quartzite is to be used, it shall be from a source approved by the Engineer.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR

106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE

STR. NO. 09-094-080

JUNE 2014

2 OF 18

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E5	E20

ABUTMENTS

1. Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
2. The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.
3. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40. The Contractor shall review the subsurface sheet to determine pile splice sequencing based on anticipated pile contact with the shale. It will be required that the shorter section of pile is driven first so false bearing and setup is not obtained during welding operations.
4. Piles shall not be driven out of position by more than two inches in the direction normal to the abutment centerline. A pile-driving template shall be used to insure this accuracy.
5. One test pile shall be driven at each abutment and will become part of the pile group. The 3 remaining test pile shall be used for the dynamic and static testing being done in accordance with the special provision for dynamic pile monitoring and static pile load testing.
6. Each finished abutment shall include a Bridge Survey Marker. See Standard Plate No. 460.05.

BENTS

1. The design of the drilled shafts is based upon encountering competent Pierre Shale at elevation 1435. If competent Pierre Shale 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 shall be present during the drilling operations to confirm these elevations and to observe placement of the drilled shafts. The Geotechnical Engineering Activity shall be notified a minimum of two weeks prior to the start of excavation for the drilled shafts.
2. The drilled shafts shall be constructed using the permanent casing method in conformance with Section 465 of the Specifications. A construction joint shall be placed at the top of the permanent casing and the permanent casing shall extend a minimum of 1'-0" above the groundline, waterline, or construction platform elevation, whichever is higher.
3. The construction joint locations and quantities provided on the plans are based upon the estimated existing groundline and/or 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 shall include these proposed changes in the drilled shaft installation plan for approval by the Office of Bridge Design.
4. The quantities for Drilled Shaft Excavation, 38" 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 shall 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/or waterline elevations as ordered by the Engineer.
5. The H1 & H2 bars are detailed full length of the Drilled Shaft and Column and are provided in the reinforcing schedule with an additional length of bar sufficient to provide one lap splice. Once the construction joint elevations have been verified and/or established, lap splice details showing location and lap length shall be submitted with the drilled shaft installation plan for approval. Any costs involved in cutting reinforcing steel and any other items incidental to providing the lap splice shall be included in the contract unit price per pound for Reinforcing Steel.

PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The pile hammers listed below were evaluated and found to produce acceptable driving stresses. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity.

Delmag D19-32 Delmag 19-42 MVE M-19 APE D19-42
2. See Special Provision for Dynamic Pile Monitoring and Static Pile Load Test.
3. The Contractor shall submit a layout for static pile load testing site shown on the General Drawing, including reaction piles, to be approved by the Engineer

ACCESS TUBES

1. Access tubes shall be furnished and installed in each of the drilled shafts in accordance with Section 465 of the Specifications.
2. These access tubes are to be used for crosshole sonic log testing of the drilled shaft in the event that the Department deems that the quality of the drilled shaft is suspect. In order for the Department to determine if crosshole sonic log testing is necessary, no subsequent work above the construction joint will be allowed for 7 days or until authorized by the Engineer, whichever comes first. Upon authorization by the Engineer and prior to any subsequent concrete placement above the construction joint, the Contractor shall remove the water from the access tubes, cut the access tubes off flush with the top of the drilled shaft and completely fill the access tubes with grout.

NOTES (CONTINUED)

FOR

106' - 0 ⁷/₈" CONTINUOUS CONCRETE BRIDGE

STR. NO. 09-094-080

JUNE 2014

3 OF 18

DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA03	DRAFTED BY BT <i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E6	E20

SUPERSTRUCTURE

1. Preplanned construction joints may be used in accordance with Section 460.3 of the Specifications. Contact the Office of Bridge Design for joint configuration and allowable location. Emergency slab construction joints shall be as shown with the superstructure details. If an emergency slab joint is used, contact the Office of Bridge Design before proceeding with deck pour.
2. The deck-finishing machine shall be adjusted and operated in such a manner that the roller screed or screeds are parallel with the centerline of the bridge and the finish machine is parallel to the skew of the bridge. Concrete placement in front of the finish machine shall be kept parallel to the machine.
3. Barrier curbs shall be poured after all the slab has been poured. Superstructure falsework shall not be removed until bridge deck concrete, including barrier curbs, has attained a strength of 2400 psi.
4. The bridge deck must be placed and finished continuously at a minimum rate of 22 ft. of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer shall order a header installed and operations stopped. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a minimum rate of 22 ft. of deck per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi.
5. Snap ties, if used in barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.

FALSEWORK

The Contractor shall be required to include with the Falsework Plans, details for the construction of an adequate "Walk-Way" including railing.

CLASS A45 CONCRETE, BRIDGE DECK

See Special Provision for Concrete Penetrating Sealer.

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish shall be applied to the following areas:
 - a) **Barrier Rail:** all exposed surfaces (front, top and back).
 - b) **Slab:** edge of slab.
2. The Class B commercial texture finish shall be applied in accordance with Section 460.3 L.1.c of the Specifications.
3. Where the Class B commercial texture finish is to be applied, concrete curing shall be accomplished with cotton or burlap mats and polyethylene sheeting. Curing shall continue for not less than seven days after placing concrete before the commercial texture finish is applied. The commercial texture finish shall be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.

APPROACH SLABS

1. Sleeper slab riser shall be cast with the approach slab or cast after the approach slab is placed. Care shall be taken to ensure the correct grade is maintained across the joint.
2. 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 shall be kept parallel to the screed.
3. The concrete in the approach slab shall be tined normal to centerline roadway.
4. Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete 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.
5. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling and placing all materials including concrete, asphalt paint or 4 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.

NOTES (CONTINUED)

FOR

106' - 0 ⁷/₈" CONTINUOUS CONCRETE BRIDGE

STR. NO. 09-094-080

JUNE 2014

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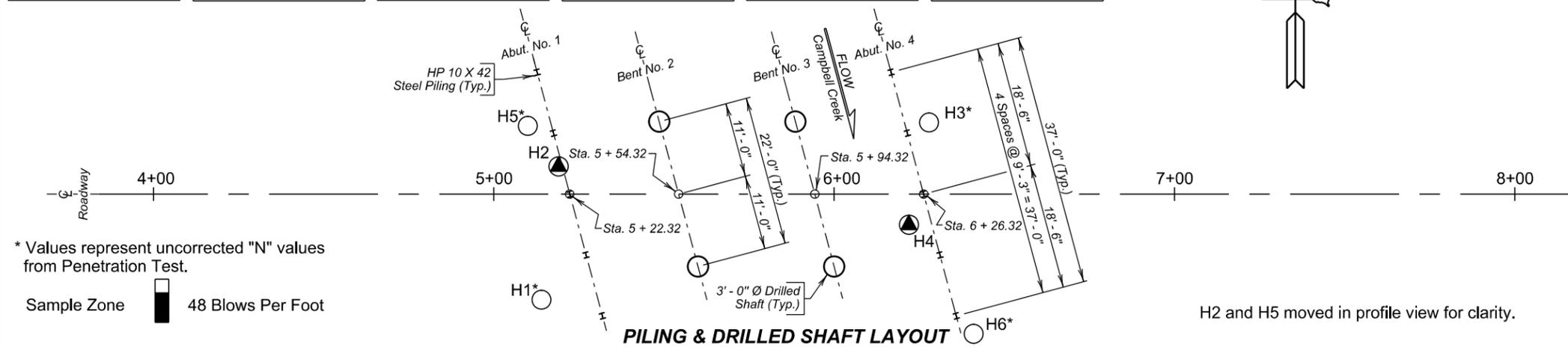
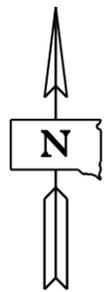
DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA04	DRAFTED BY BT <i>Kevin N. Coeden</i> BRIDGE ENGINEER
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Hole Number H3 Station 6+27.89 Depth 10.5 ft Soil Color Brown Classification Clay Strength (Q _u) 1,124 psf Dry Density 71.2 pcf Wet Density 89.5 pcf Moisture 25.7 % Pass No. 10 100.0 % Pass No. 40 99.9 % Pass No. 200 94.2 % Sand Content 5.8 % Silt Content 31.6 % Clay Content 62.6 %	Hole Number H5 Station 5+10 Depth 10.16 ft Soil Color Brown Classification Clay Sand Strength (Q _u) 877 psf Dry Density 77.8 pcf Wet Density 100.0 pcf Moisture 28.5 % Pass No. 10 100.0 % Pass No. 40 44.6 % Pass No. 200 32.2 % Sand Content 67.8 % Silt Content 7.6 % Clay Content 24.6 %	Hole Number H1 Station 5+14 Depth 10.5 ft Soil Color Brown Classification Sand Strength (Q _u) ----- psf Dry Density ----- pcf Wet Density ----- pcf Moisture 20.4 % Pass No. 10 94.8 % Pass No. 40 32.9 % Pass No. 200 19.9 % Sand Content 74.9 % Silt Content 9.9 % Clay Content 10.0 %	Hole Number H5 Station 5+10 Depth 35.5 ft Soil Color Blue-Gray Classification Clay Strength (Q _u) 5,003 psf Dry Density 94.7 pcf Wet Density 119.6 pcf Moisture 26.3 % Pass No. 10 100.0 % Pass No. 40 99.5 % Pass No. 200 98.7 % Sand Content 1.3 % Silt Content 18.1 % Clay Content 80.6 %	Hole Number H1 Station 5+14 Depth 50.16 ft Soil Color Blue-Gray Classification Clay Strength (Q _u) 9,071 psf Dry Density 107.4 pcf Wet Density 130.4 pcf Moisture 21.5 % Pass No. 10 99.9 % Pass No. 40 99.4 % Pass No. 200 97.0 % Sand Content 2.8 % Silt Content 28.5 % Clay Content 68.5 %	Hole Number H3 Station 6+27.89 Depth 65.16 ft Soil Color Blue-Gray Classification Clay Strength (Q _u) 18,510 psf Dry Density 102.5 pcf Wet Density 125.7 pcf Moisture 22.7 % Pass No. 10 100.0 % Pass No. 40 99.9 % Pass No. 200 99.6 % Sand Content 0.4 % Silt Content 19.0 % Clay Content 80.6 %
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E7	E20

Pierre Shale is a marine shale with a textural classification that varies from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain concretion zones that are normally thin but occasionally are massive. These zones may be considered hard and dense. Thin zones may be present that are cemented resulting in claystone or siltstone seams. Bentonite zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be "Soft Rock".

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.



* Values represent uncorrected "N" values from Penetration Test.
Sample Zone 48 Blows Per Foot

LEGEND

- Penetration Test
- ▽ Water
- Drive Test
- ⊖ Caved
- Sample Zone

Drive test are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6 5/8 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.

GROUND WATER ELEVATIONS
as of JULY 2014

H1	1415.1
H2 (CAVED)	1424.0
H3	1389.3
H4	1443.5
H5 (CAVED)	1438.3
H6	1433.1

MEASURED SKIN FRICTION

	ELEV.	PSF
H2	1423.3	1552
H4	1424.6	1690

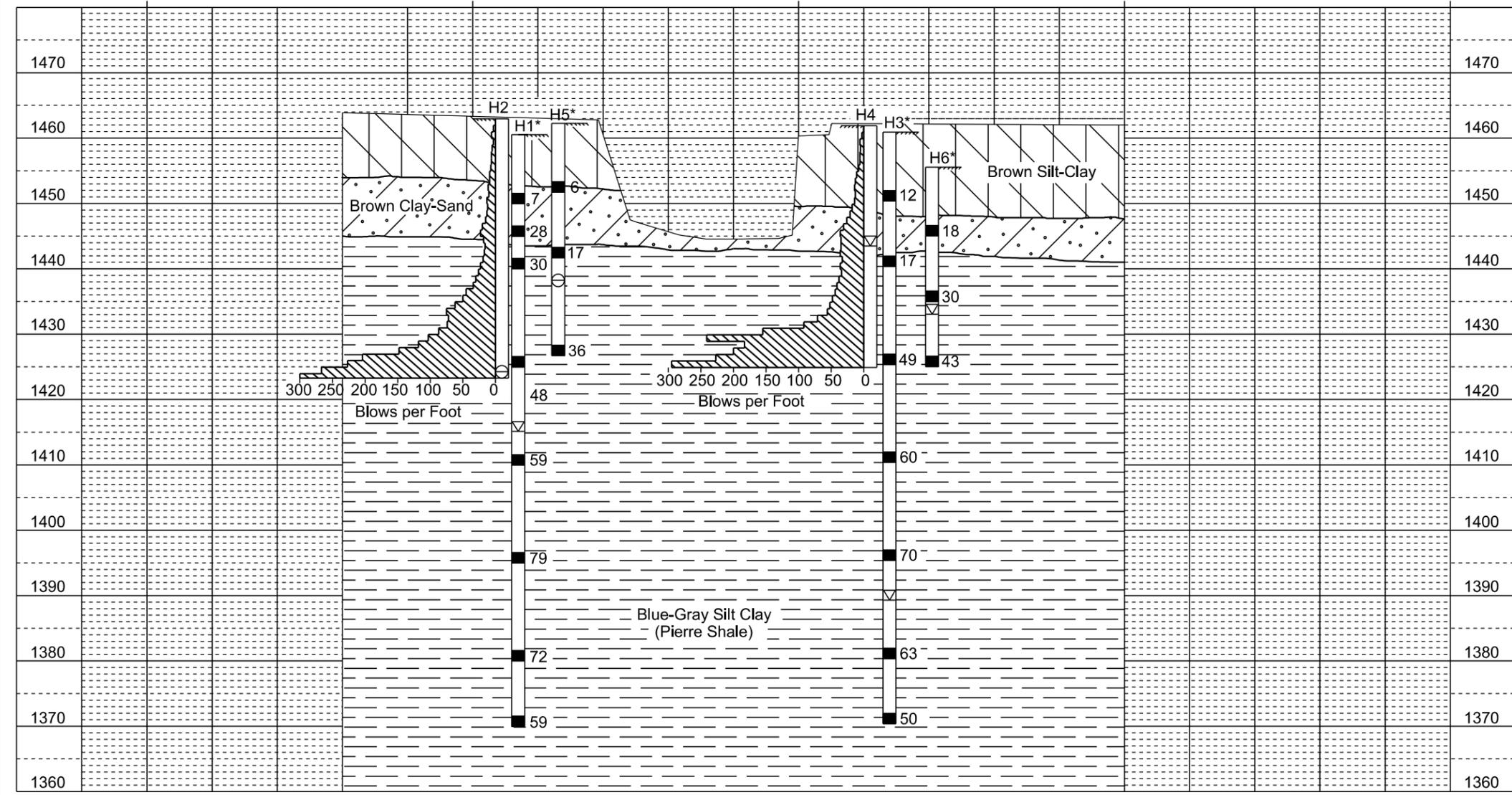
SUBSURFACE INVESTIGATION, PILING, AND DRILLED SHAFT LAYOUT

FOR 106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE

36' - 0" ROADWAY 15° SKEW R.H.F.
OVER CAMPBELL CREEK SEC. 8/17-T107N-R71W
STA. 5 + 21.28 TO 6 + 27.35 P 0034(150)272
STR. NO. 09-094-080 HL-93

BUFFALO COUNTY
S. D. DEPT. OF TRANSPORTATION

JUNE 2014 5 OF 18



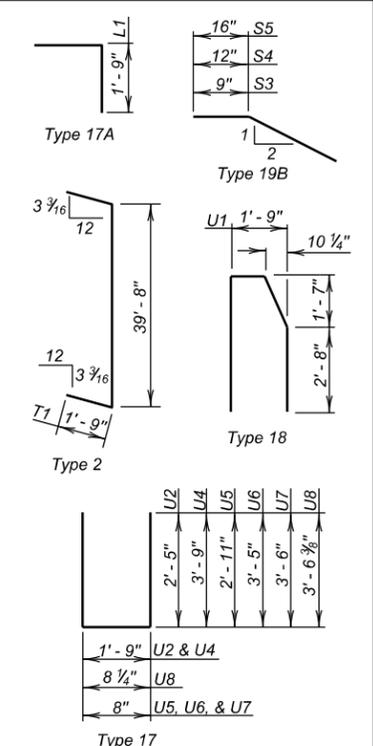
TRPR14453

DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA05	DRAFTED BY JL/BT <i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E9	E20

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
Δ	L1	36	4	3'-6"	17A
	S0	1	9	48'-2"	Str.
	S1	1	9	39'-8"	Str.
≠ Δ	S2	2	9	39'-8"	Str.
	S3	1	9	4'-0"	19B
	S4	2	9	4'-3"	19B
	S5	1	9	4'-7"	19B
≠	T1	5	5	43'-2"	2
≠	T2	4	5	48'-2"	Str.
	T3	14	5	5'-6"	Str.
≠ Δ	T4	2	5	39'-8"	Str.
	T5	4	5	4'-9"	Str.
Δ	U1	36	6	9'-9"	18
	U2	38	4	6'-7"	17
	U3	38	4	2'-11"	S12A
Δ	U4	2	6	9'-3"	17
	U5	8	4	6'-6"	17
	U6	8	4	7'-6"	17
	U7	4	4	7'-8"	17
	U8	4	4	7'-9"	17



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

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	13.4
Reinforcing Steel	Lb.	1166
Epoxy Coated Reinforcing Steel	Lb.	1066
Structure Excavation, Bridge	Cu. Yd.	9.2
HP 10 X 42 Steel Test Pile, Furnish & Drive	Ft.	1 @ 55' = 55'
HP 10 X 42 Steel Bearing Pile, Furnish & Drive	Ft.	4 @ 50' = 200'
Preboring Pile	Ft.	5 @ 10' = 50'

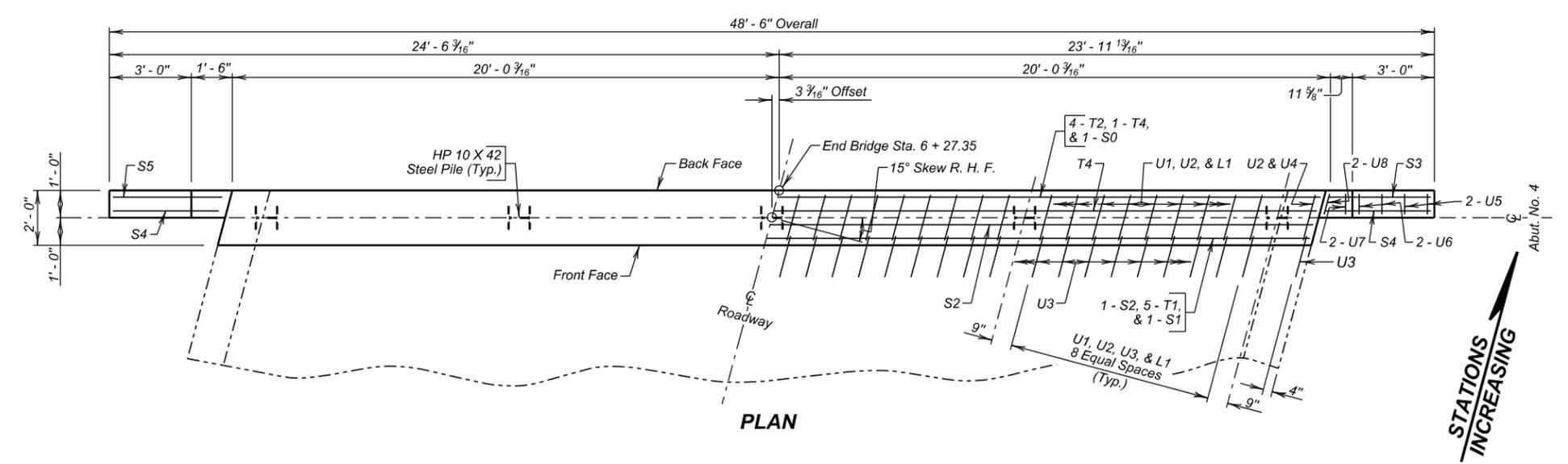
ABUTMENT NO. 4 DETAILS

FOR
106'-0 7/8" CONTINUOUS CONCRETE BRIDGE
 36'-0" ROADWAY
 OVER CAMPBELL CREEK
 STA. 5 + 21.28 TO 6 + 27.35
 STR. NO. 09-094-080

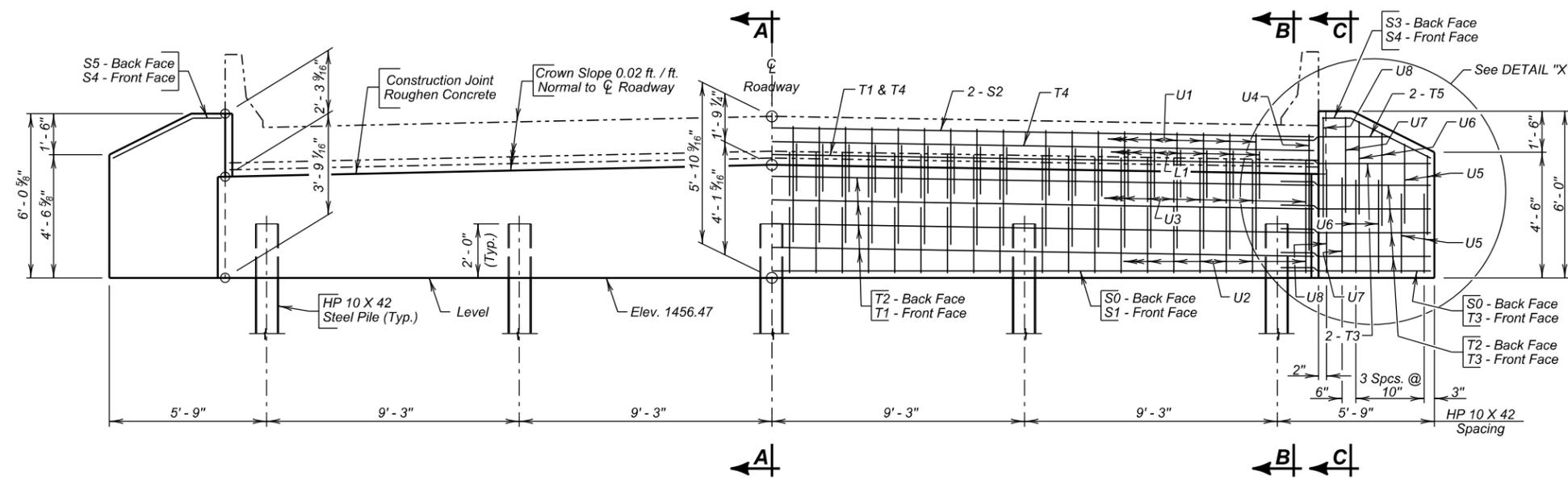
15° SKEW R.H.F.
 SEC. 8/17-T107N-R71W
 P 0034(150)272
 HL-93

BUFFALO COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 2014

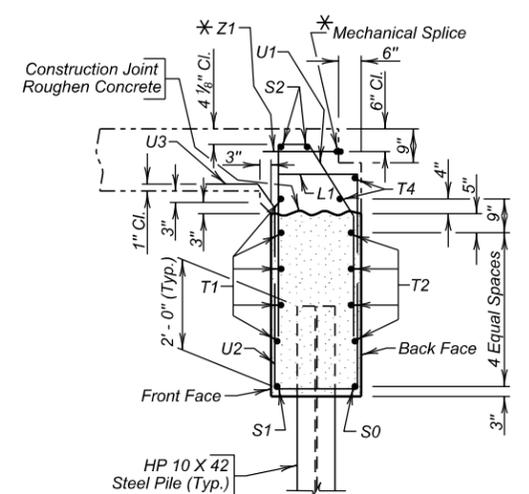
DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA07	DRAFTED BY BT Kevin N. Goeden BRIDGE ENGINEER
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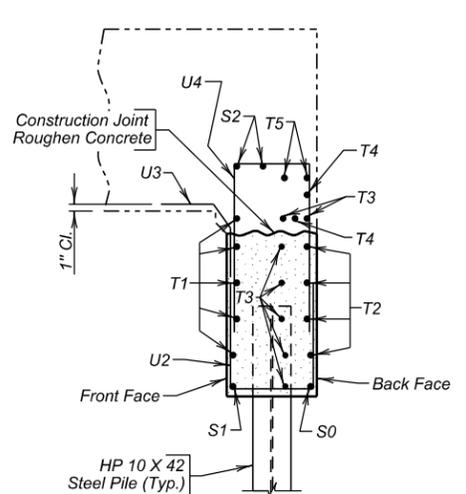
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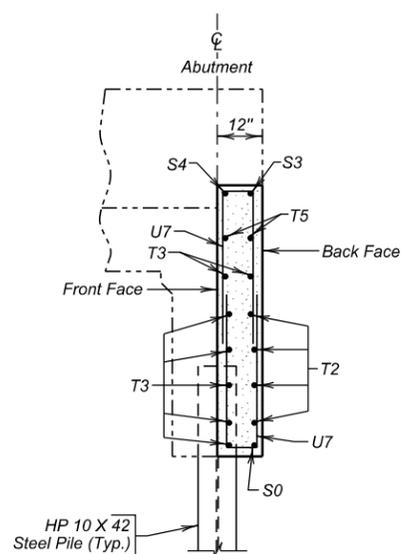
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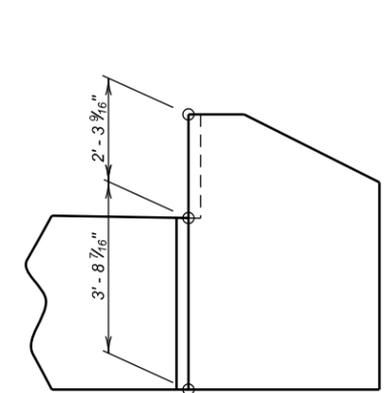
SEC. A - A



SEC. B - B

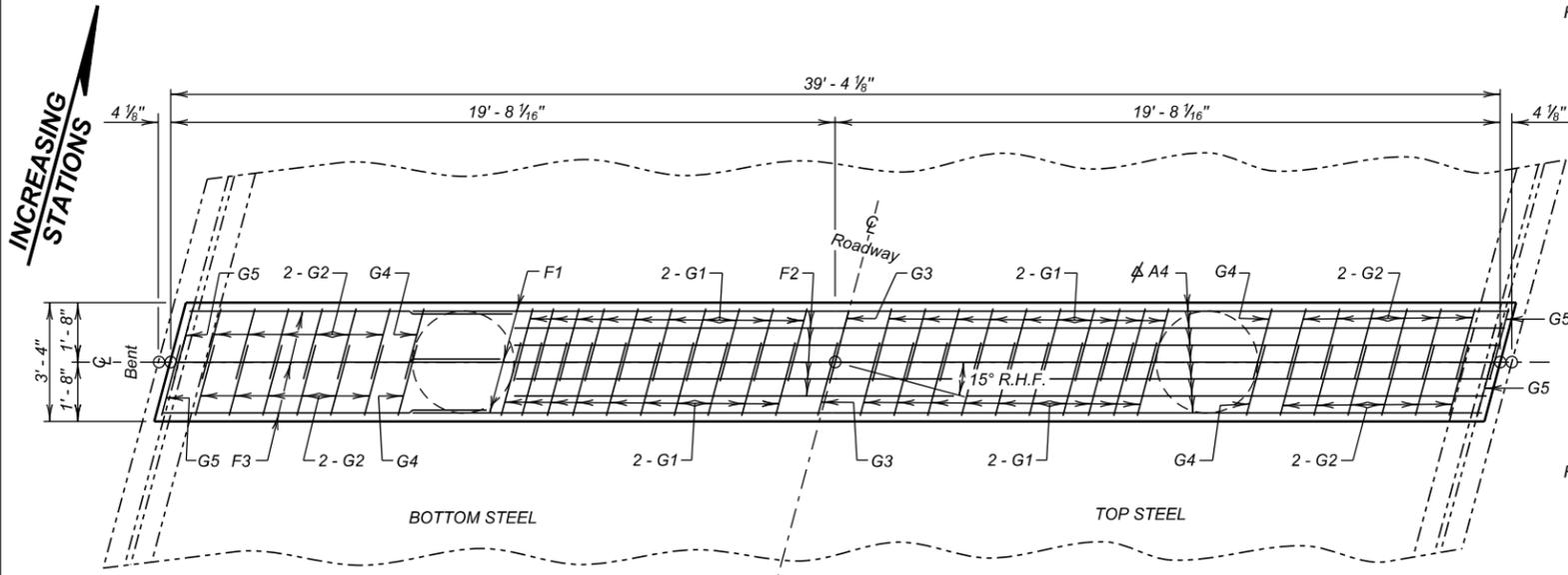


SEC. C - C



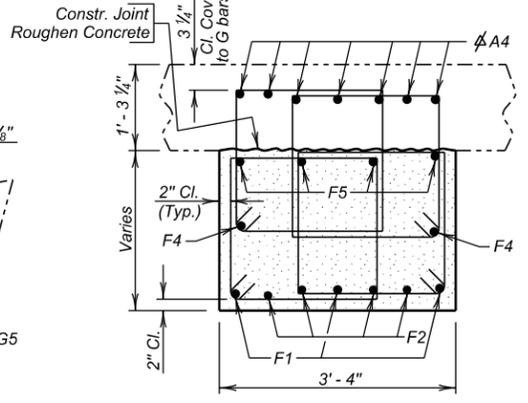
DETAIL "X"

NOTE:
 * Z1 bars and mechanical splices are listed and included in superstructure quantities.

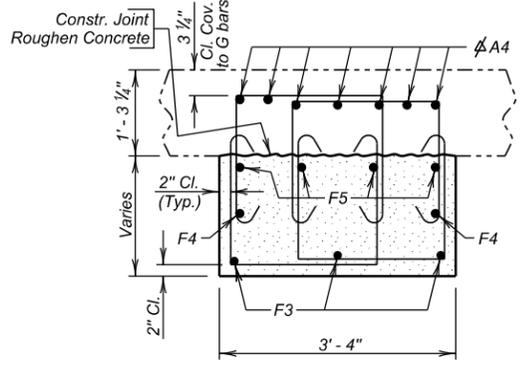


SEC. A - A

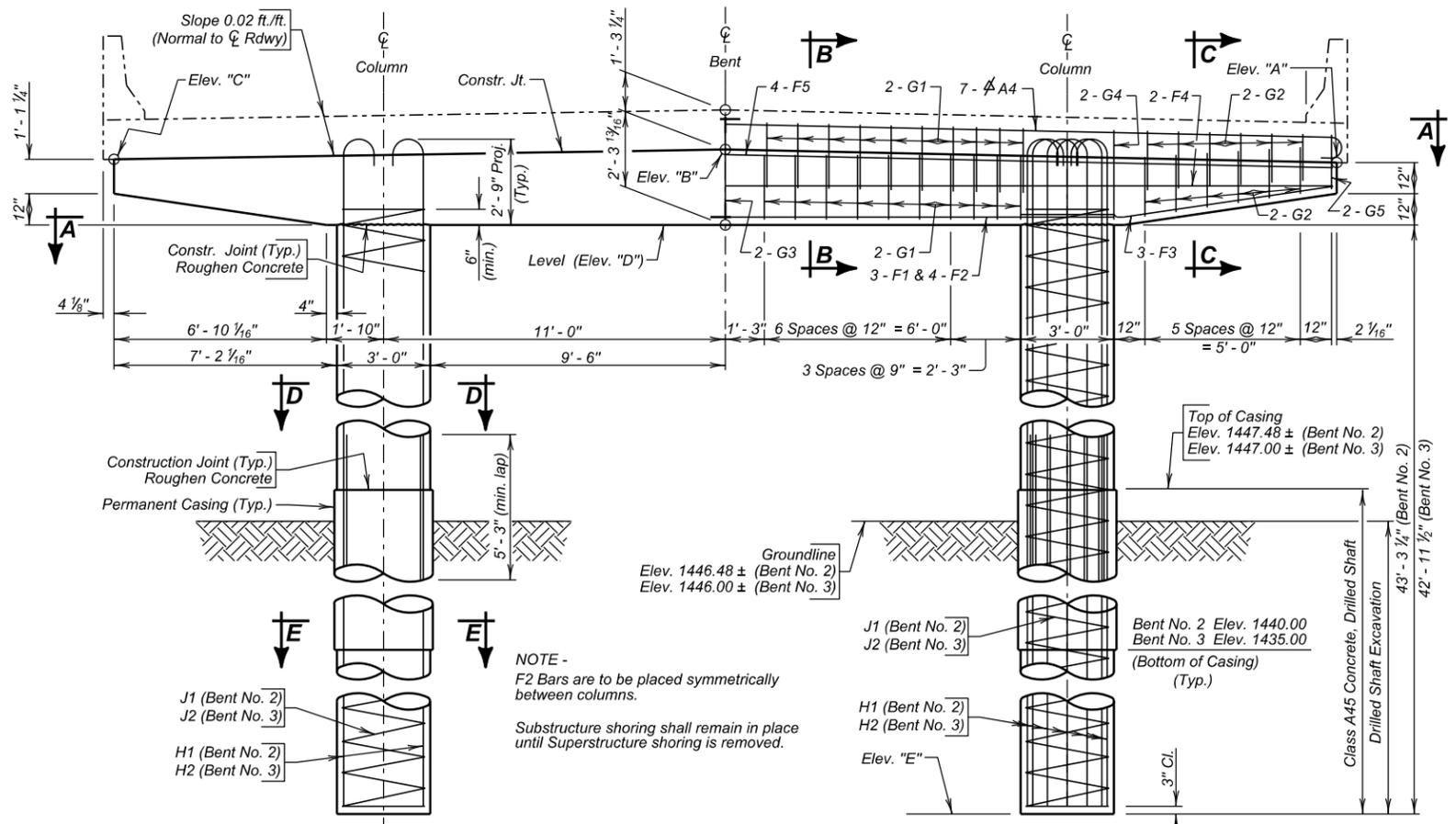
NOTE:
The A4 bars may be difficult to place after columns and cap have been poured. The bar hooks will need to be tilted to fit in the space provided.



SEC. B - B



SEC. C - C



ELEVATION

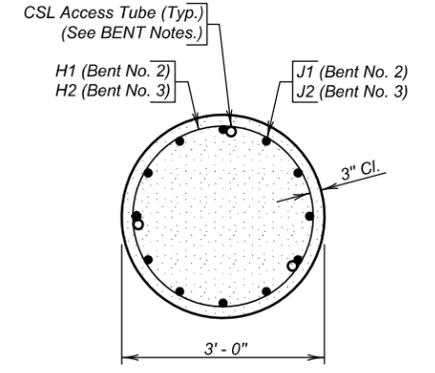
NOTE:
May encounter existing abutment structure on right column at Bent No. 3.

REINFORCING SCHEDULE					Bending Details	
Mk.	No.	Size	Length	Type		
A4	7	8	41'-6"	1		
F1	3	8	25'-0"	Str.		
F2	4	8	19'-0"	Str.		
F3	6	4	10'-1"	19B	Type 19B	
F4	2	4	39'-1"	Str.		
F5	4	6	39'-1"	Str.		
G1	40	4	7'-1"	S3		
G2	12	4	6'-10"	S3		
G3	2	4	11'-6"	T1		
G4	4	4	11'-1"	T1		
G5	4	4	8'-11"	T1		
Bent No. 2	H1	24	9	52'-4"	1A	
Bent No. 3	H2	24	9	52'-0"	1A	
Bent No. 2	J1	2	3	727'-3"	Spiral	
Bent No. 3	J2	2	3	722'-5"	Spiral	

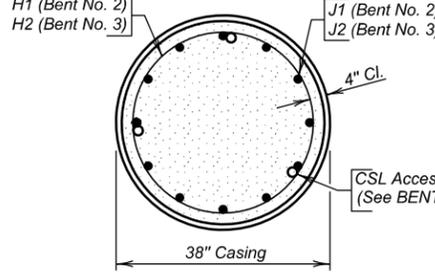
NOTES:
All dimensions are out to out of bars.
* Length shown for the H1 & H2 bars is the total length required including one 5'-3" lap splice and one Standard Hook. The Contractor shall determine the location of the lap splice and include details in the Drilled Shaft Installation Plan.
□ Bars to be Epoxy Coated.
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	
		Bent No. 2	Bent No. 3
Class A45 Concrete, Bridge	Cu. Yd.	6.2	6.3
Class A45 Concrete, Drilled Shaft	Cu. Yd.	16.5	16.2
Reinforcing Steel	Lb.	5743	5712
Epoxy Coated Reinforcing Steel	Lb.	1253	1253
Drilled Shaft Excavation	Cu. Yd.	16.0	16.0
38" Permanent Casing	Ft.	15	24

Δ Includes Spacer Bars: 195 lbs. per Bent. Each spacer bar is computed at 3/4 lbs. per lin. ft. regardless of type furnished.
* 3' - 2" Column equals 0.292 Cu. Yds./Ft. and 3' - 0" Column equals 0.262 Cu. Yds./Ft.



SEC. D - D

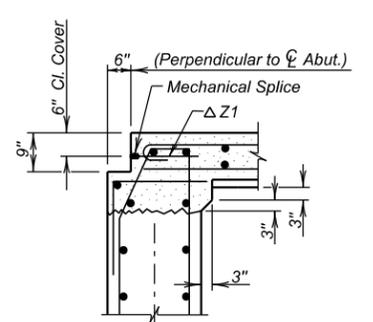
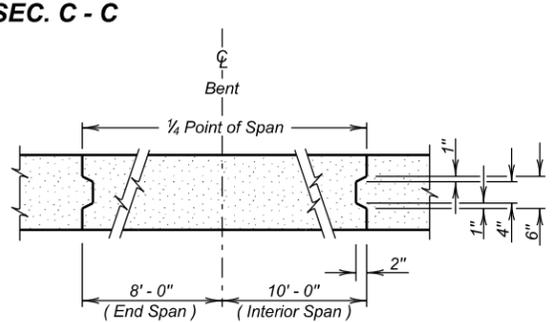
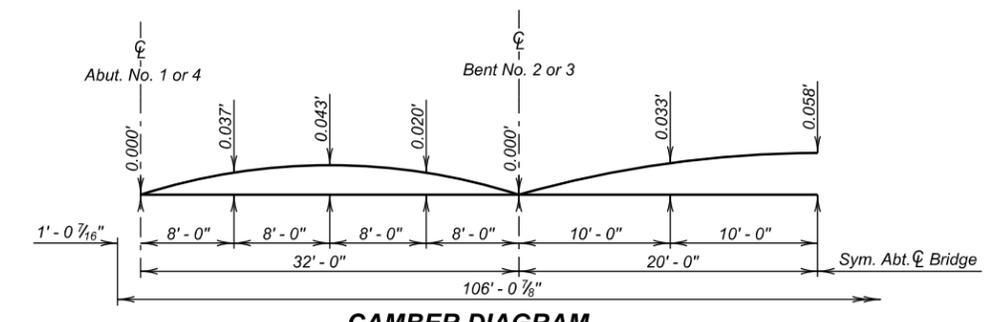
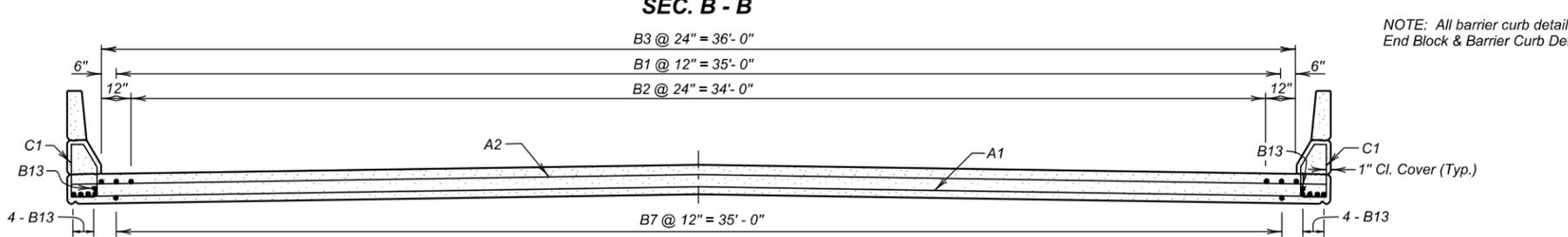
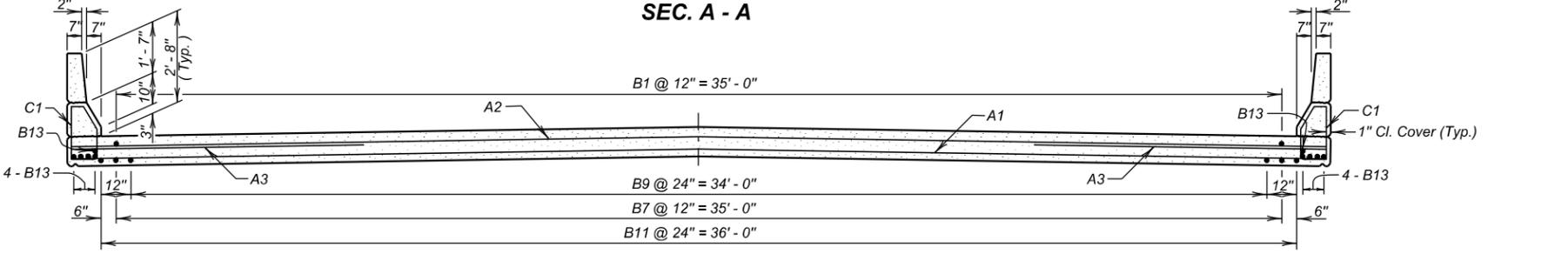
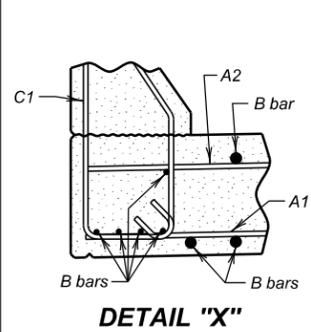
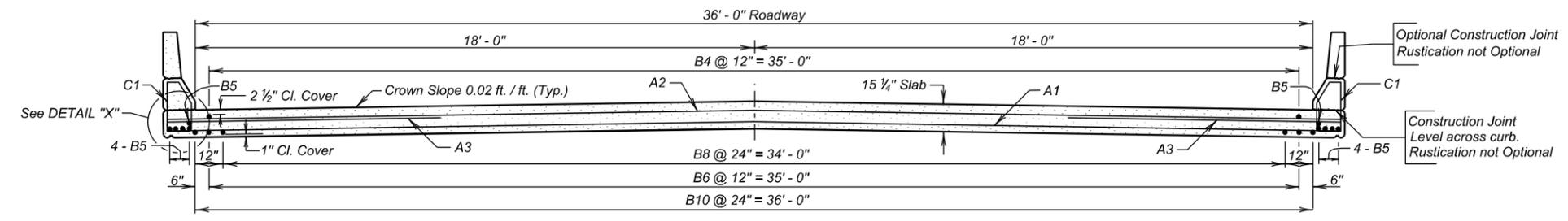
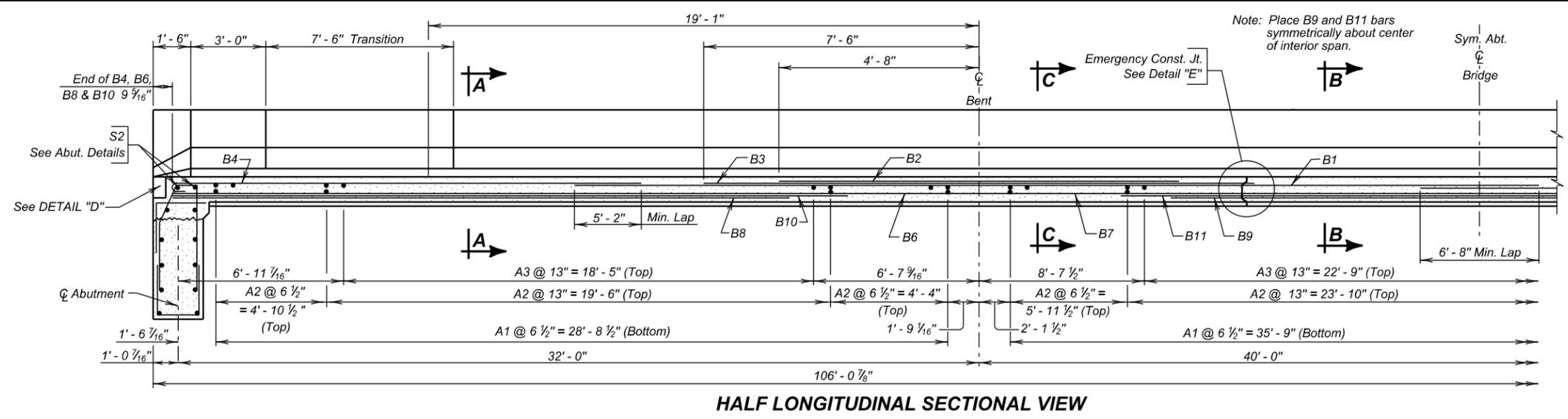


SEC. E - E

TABLE OF ELEVATIONS		
Elev.	Bent No. 2	Bent No. 3
"A"	1461.27	1460.96
"B"	1461.59	1461.28
"C"	1461.37	1461.06
"D"	1459.27	1458.96
"E"	1416.00	1416.00

BENT DETAILS
FOR
106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE
36' - 0" ROADWAY
OVER CAMPBELL CREEK
STA. 5 + 21.28 TO 6 + 27.35
STR. NO. 09-094-080

15° SKEW R.H.F.
SEC. 8/17-T107N-R71W
P 0034(150)272
HL-93



REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
A1	175	5	39' - 8"	Str.
A2	116	4	39' - 8"	Str.
A3	116	5	8' - 5"	Str.
A4	(See Bent Details)			
B1	72	10	42' - 5"	Str.
B2	36	9	9' - 4"	Str.
B3	38	9	15' - 0"	Str.
B4	72	9	19' - 8"	1A
B5	20	6	32' - 11"	Str.
B6	72	9	32' - 3"	Str.
B7	36	9	40' - 0"	Str.
B8	36	8	19' - 10"	Str.
B9	18	8	23' - 5"	Str.
B10	38	8	24' - 7"	Str.
B11	19	8	27' - 5"	Str.
B12	24	4	42' - 6"	Str.
B13	8	4	40' - 0"	Str.
B15	12	5	15' - 0"	Str.
B16	6	4	35' - 0"	Str.
B17	8	4	8' - 6"	19B
B18	12	8	4' - 3"	19B
B19	12	5	2' - 4"	Str.
B20	12	6	3' - 11"	17A
B21	6	4	35' - 10"	Str.
C1	196	5	7' - 2"	T1A
C2	168	5	5' - 1"	S11
C3	4	5	5' - 0"	S11
C4	4	5	5' - 0"	S11
C5	4	5	5' - 0"	S11
C6	4	5	6' - 8"	T1
C7	4	5	6' - 9"	T1
C8	4	5	6' - 11"	T1
C9	4	5	7' - 0"	T1
C10	16	6	7' - 5"	T1A
C11	16	5	7' - 1"	T1
C12	4	6	6' - 4"	17
C13	4	5	5' - 4"	17
Z1	96	7	2' - 0"	Str.

NOTES:

All reinforcing steel shall be epoxy coated.

All dimensions are out to out of bars.

Δ See Details of Approach Slab Adjacent to Bridge sheet for location of Z1 bars.

≠ Bend in field as necessary to fit.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu. Yd.	247.3
Epoxy Coated Reinforcing Steel	Lb.	64735
No. 7 Rebar Splice	Ea.	96
Concrete Penetrating Sealer	Sq. Yd.	424.7

SUPERSTRUCTURE DETAILS

FOR

106' - 0 7/16" CONTINUOUS CONCRETE BRIDGE

36' - 0" ROADWAY

15° SKEW R.H.F.

OVER CAMPBELL CREEK

SEC. 8/17-T107N-R71W

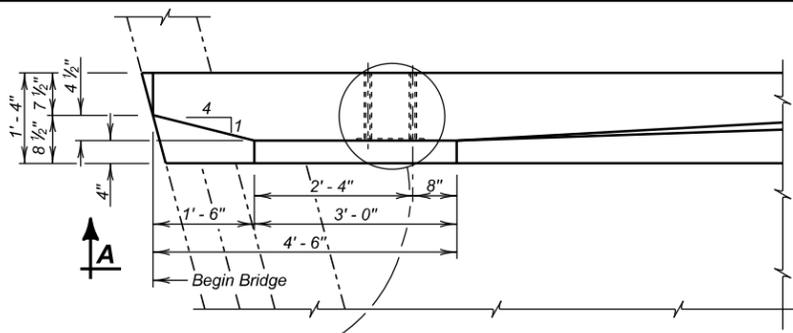
STA. 5 + 21.28 TO 6 + 27.35

P 0034(150)272

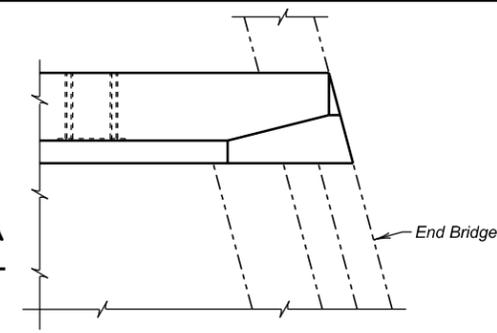
STR. NO. 09-094-080

HL-93

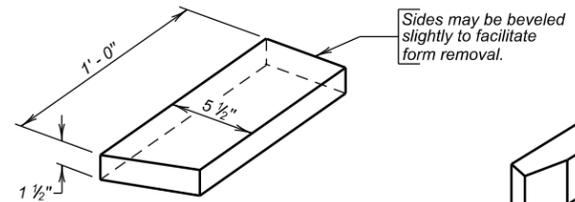
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S.D.	P 0034(150)272	E12	E20



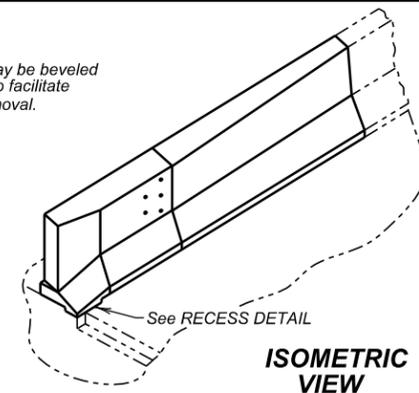
PART PLAN



PART PLAN

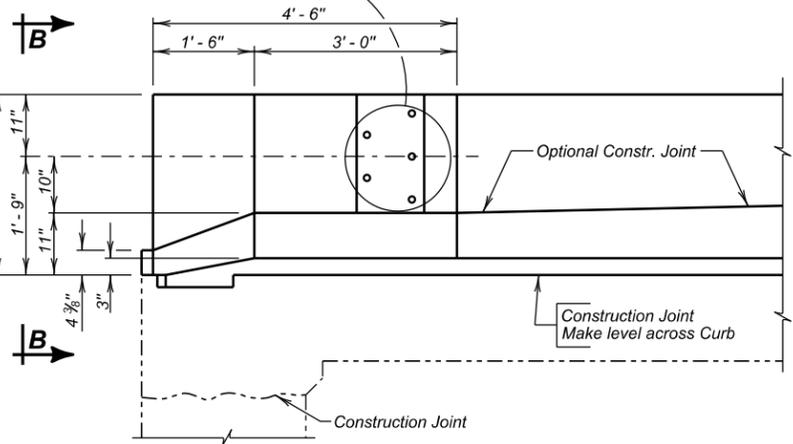


RECESS DETAIL

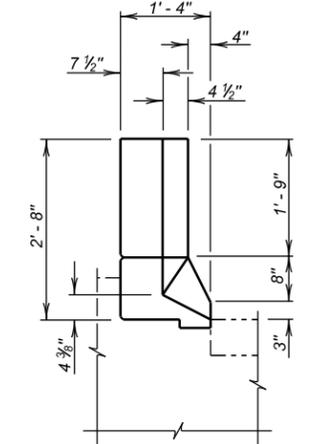


ISOMETRIC VIEW

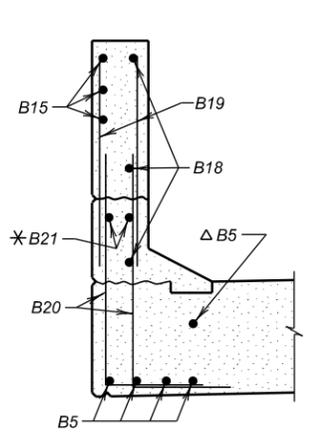
See Std. P No. 630. 92



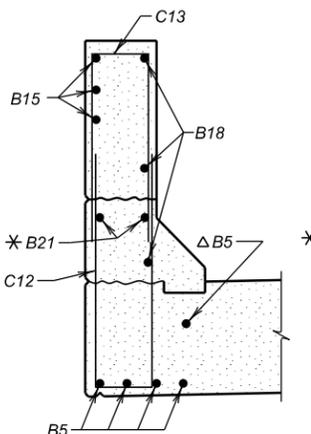
VIEW A - A



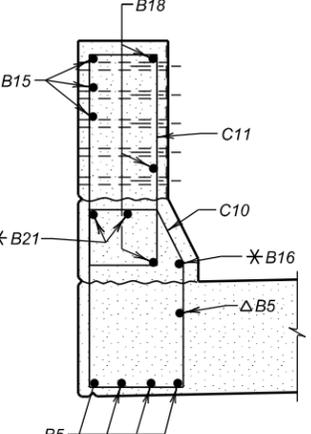
VIEW B - B



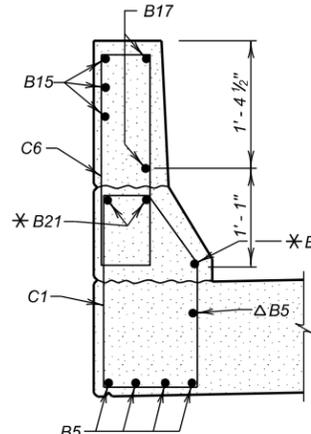
SEC. C - C



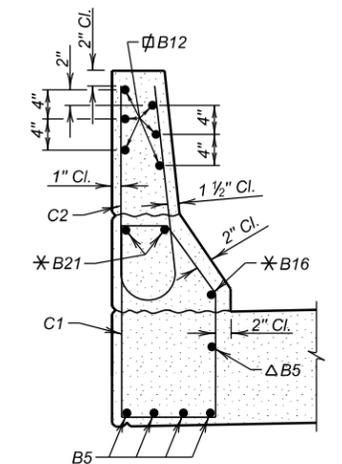
SEC. D - D



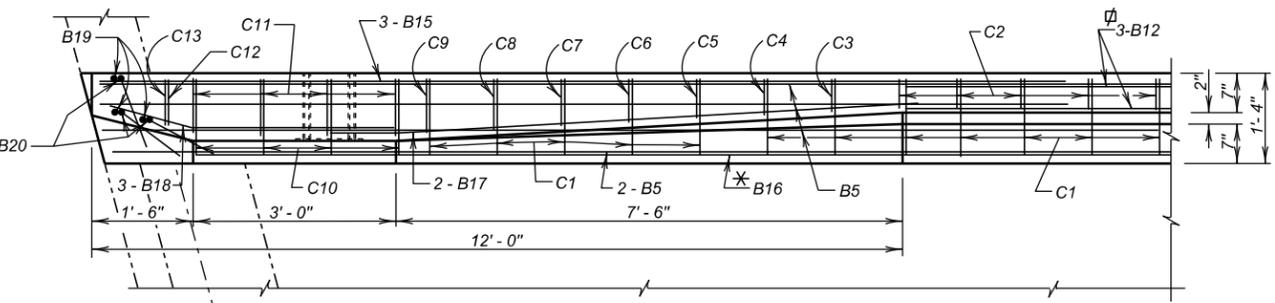
SEC. E - E



SEC. F - F



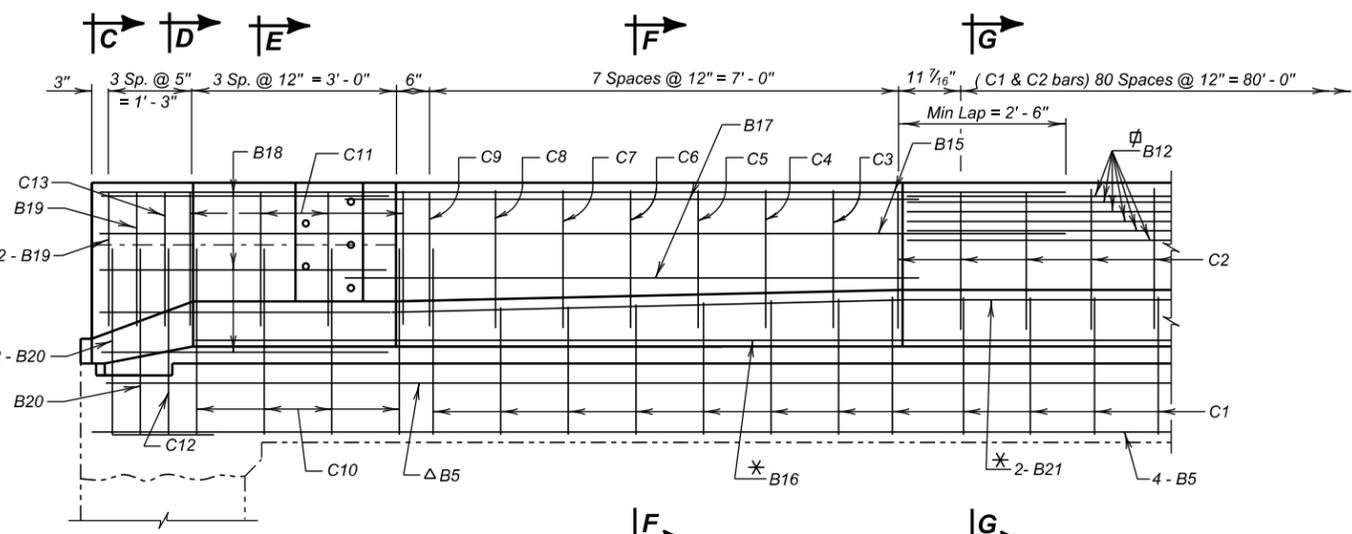
SEC. G - G



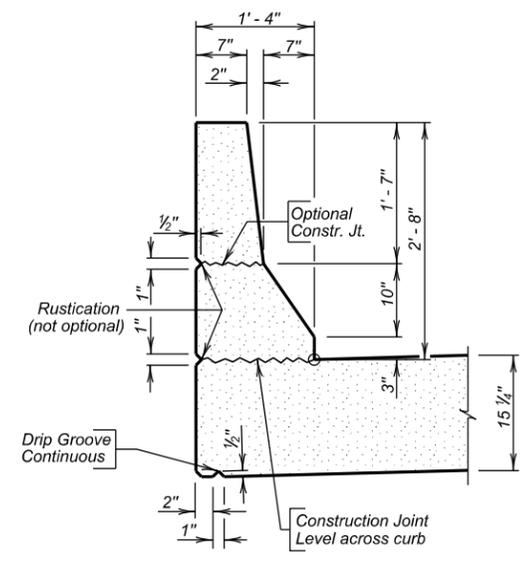
PLAN

* Min. Lap = 1'-0"
 ∅ Min. Lap = 3'-0"

Δ Place as shown in SUPERSTRUCTURE DETAILS.



ELEVATION



BARRIER DETAILS

NOTE:
 For listing of re-bars see SUPERSTRUCTURE DETAILS sheet.

END BLOCK & BARRIER CURB DETAILS
 FOR
106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE
 36' - 0" ROADWAY
 OVER CAMPBELL CREEK
 STA. 5 + 21.28 TO 6 + 27.35
 STR. NO. 09-094-080

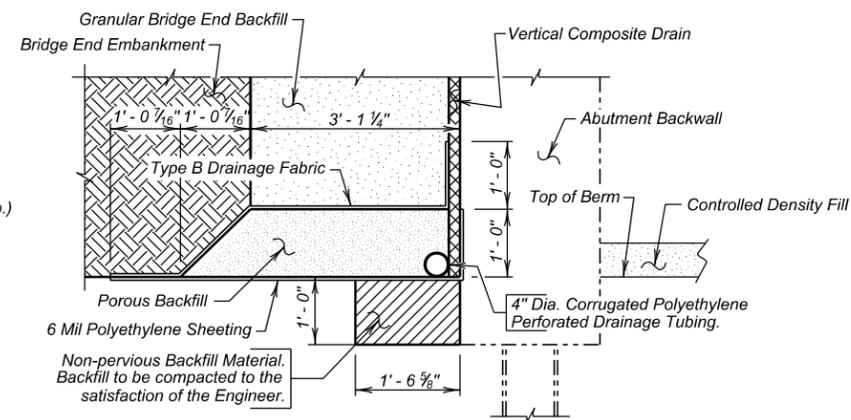
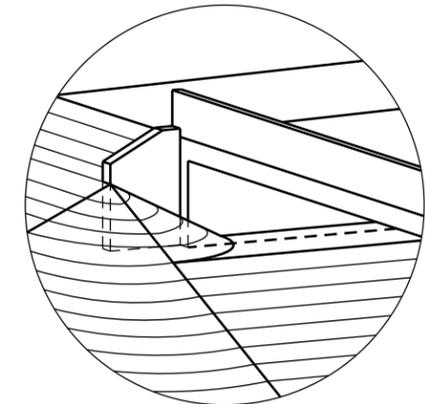
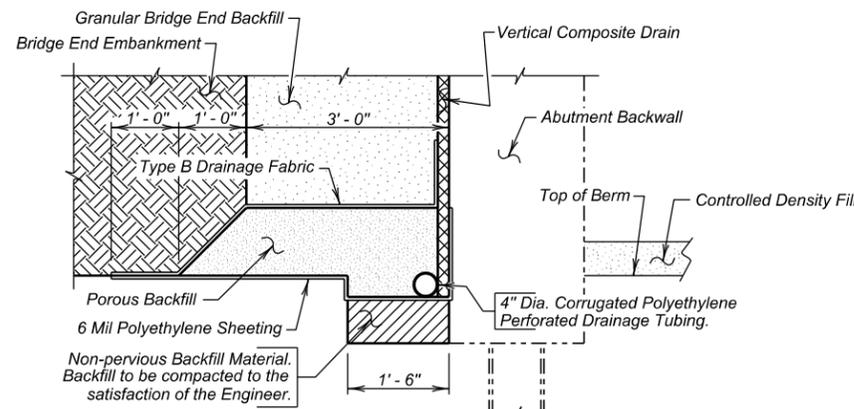
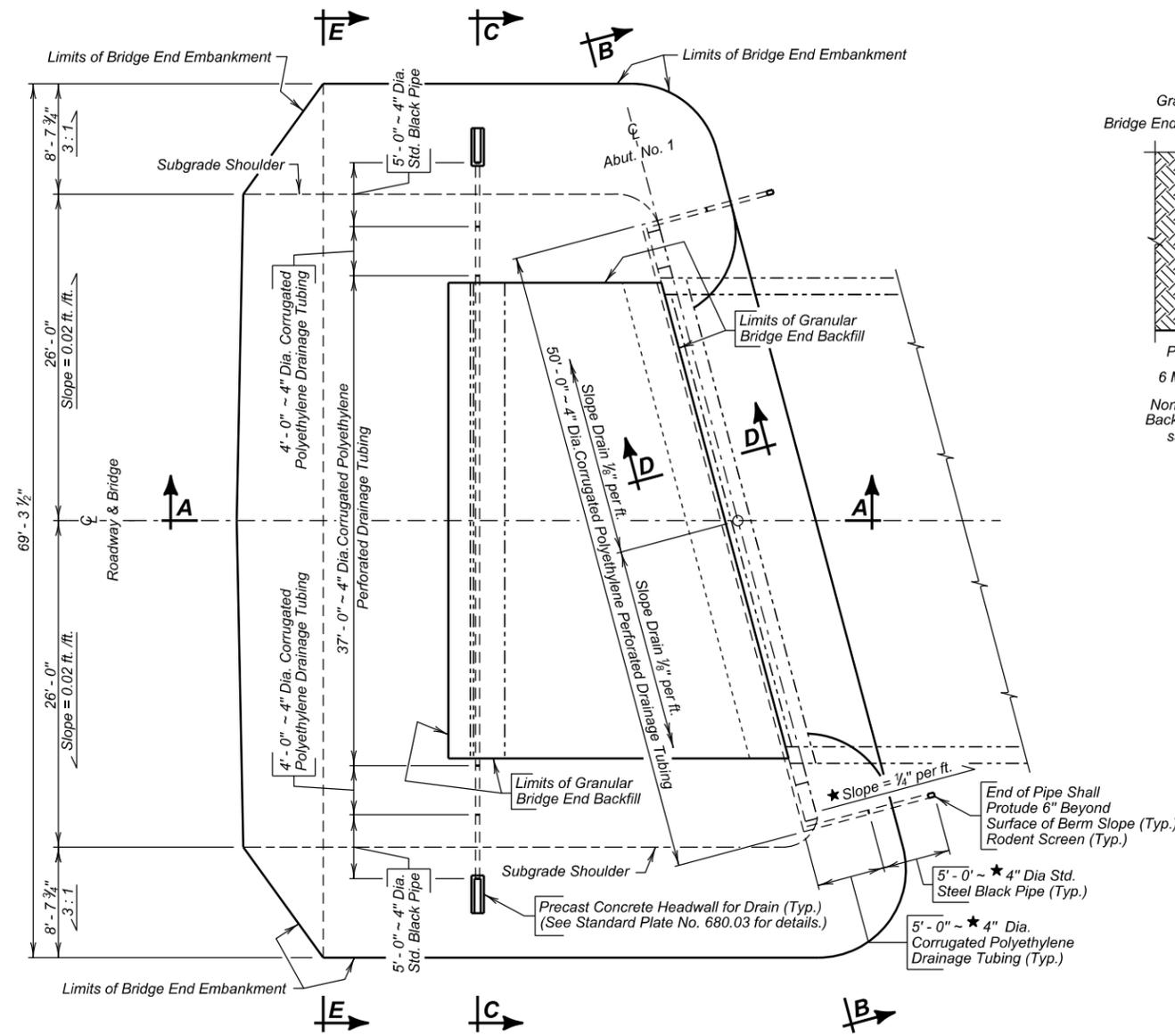
15° SKEW R.H.F.
 SEC. 8/17-T107N-R71W
 P 0034(150)272
 HL-93

BUFFALO COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 2014

DESIGNED BY TB BUFF02RW
 CK. DES. BY BS 02RWGA10
 DRAFTED BY BT

Kevin N. Coeden
 BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E13	E20



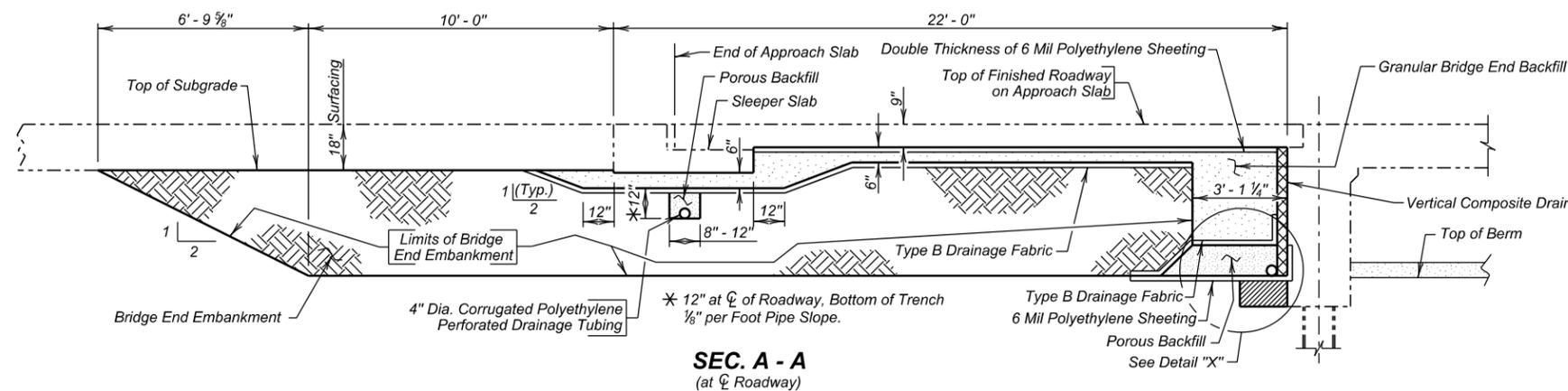
ESTIMATED QUANTITIES (For Two Abutments)		
ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	48.7
Bridge End Embankment	Cu. Yd.	630
Porous Backfill	Ton	24.7
4" Underdrain Pipe	Ft.	250
Approach Slab Underdrain Excavation	Cu. Yd.	2.6
Precast Concrete Headwall for Drain	Each	4

- 174 ft. 4" dia. Corrugated Polyethylene Perforated Drainage Tubing.
 - 36 ft. 4" dia. Corrugated Polyethylene Drainage Tubing.
 - 40 ft. 4" dia. Std. Black Steel Pipe with Rodent Screens.
 - 262 sq. ft. Vertical Composite Drain
- Items 1 thru 4 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.
- 3133 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
 - 238 sq. yd. Type B Drainage Fabric.
- Items 5 and 6 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 based on a 12" wide trench.



DETAILS OF BRIDGE END BACKFILL (A)

FOR
106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE
36' - 0" ROADWAY
OVER CAMPBELL CREEK
STA. 5 + 21.28 TO 6 + 27.35
STR. NO. 09-094-080

15° SKEW R.H.F.
SEC. 8/17-T107N-R71W
P 0034(150)272
HL-93

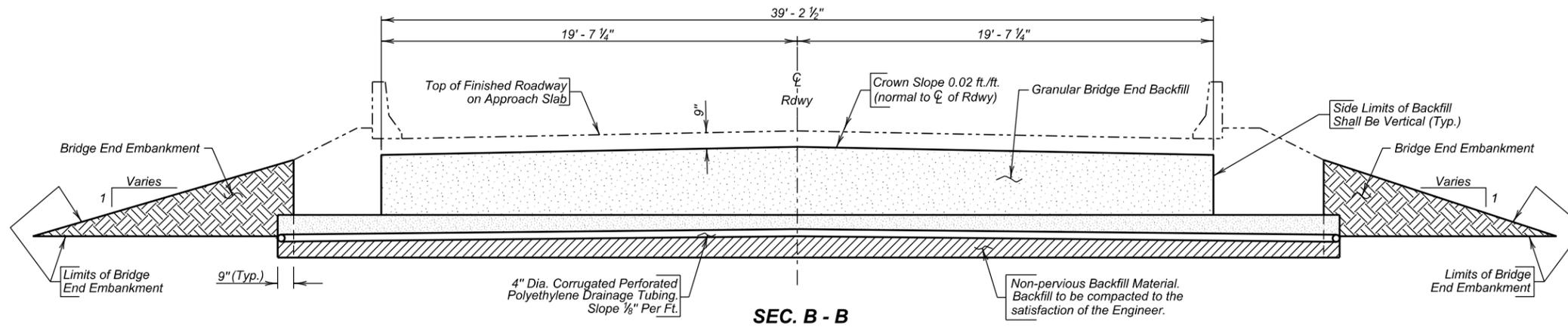
BUFFALO COUNTY
S. D. DEPT. OF TRANSPORTATION

JUNE 2014

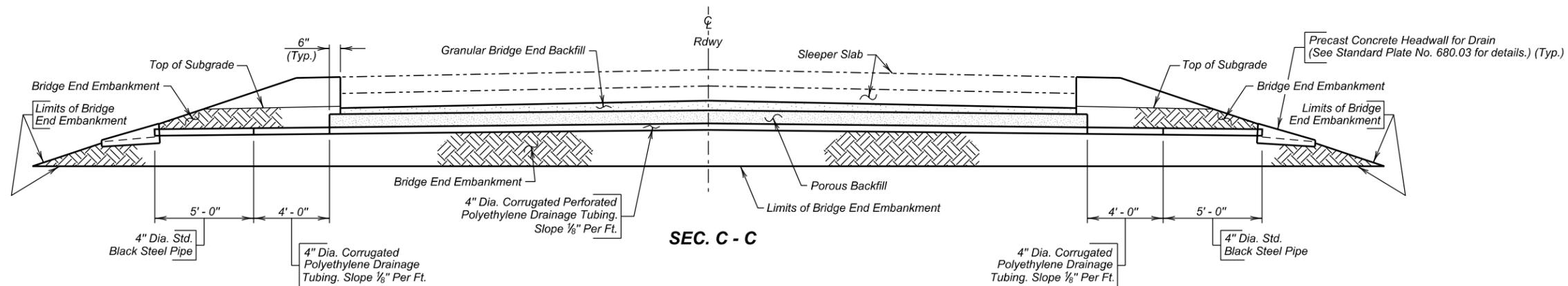
11 OF 18

DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA11	DRAFTED BY BT	Kevin N. Coeden BRIDGE ENGINEER
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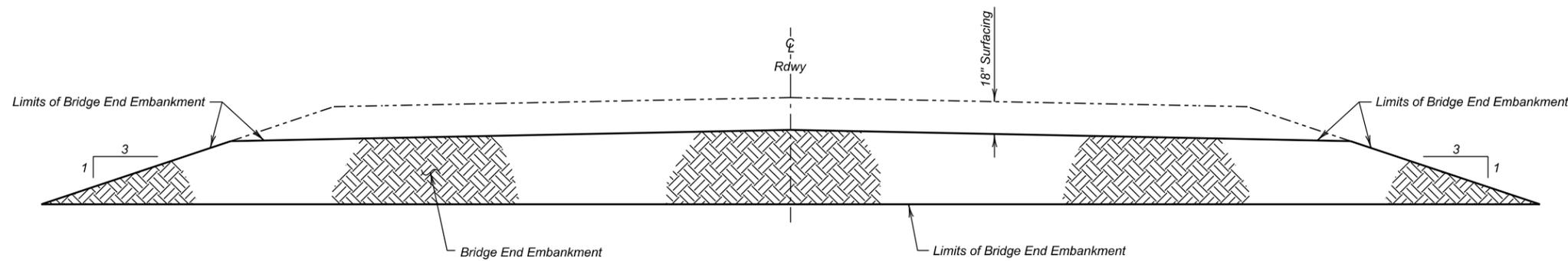
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0034(150)272	E14	E20



SEC. B - B



SEC. C - C



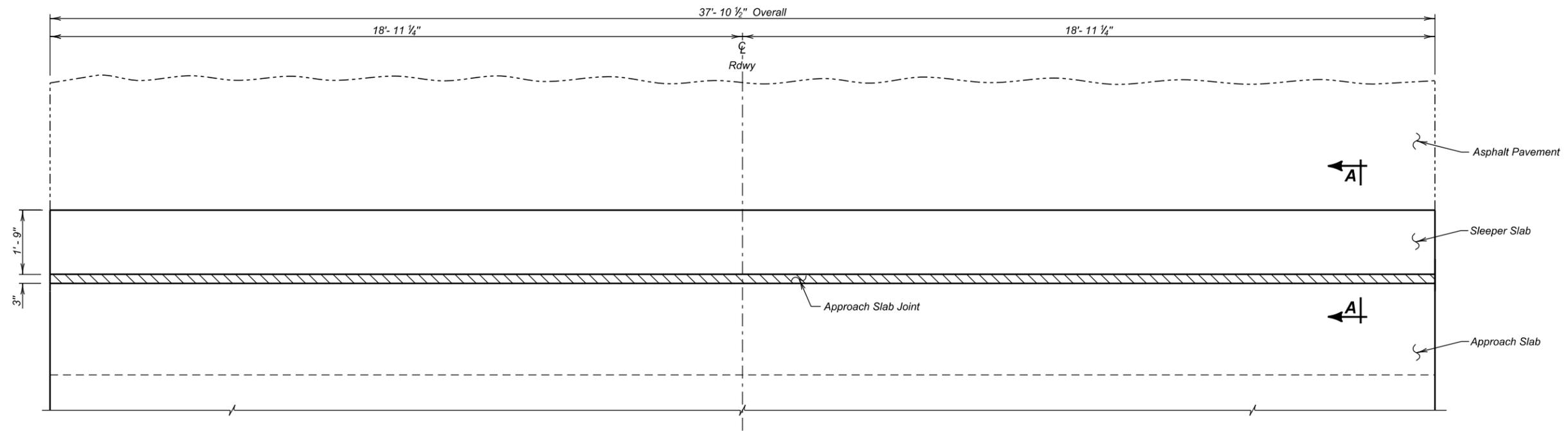
SEC. E - E

DETAILS OF BRIDGE END BACKFILL (B)
 FOR
106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE
 36' - 0" ROADWAY
 OVER CAMPBELL CREEK
 STA. 5 + 21.28 TO 6 + 27.35
 STR. NO. 09-094-080

15° SKEW R.H.F.
 SEC. 8/17-T107N-R71W
 P 0034(150)272
 HL-93

BUFFALO COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 2014

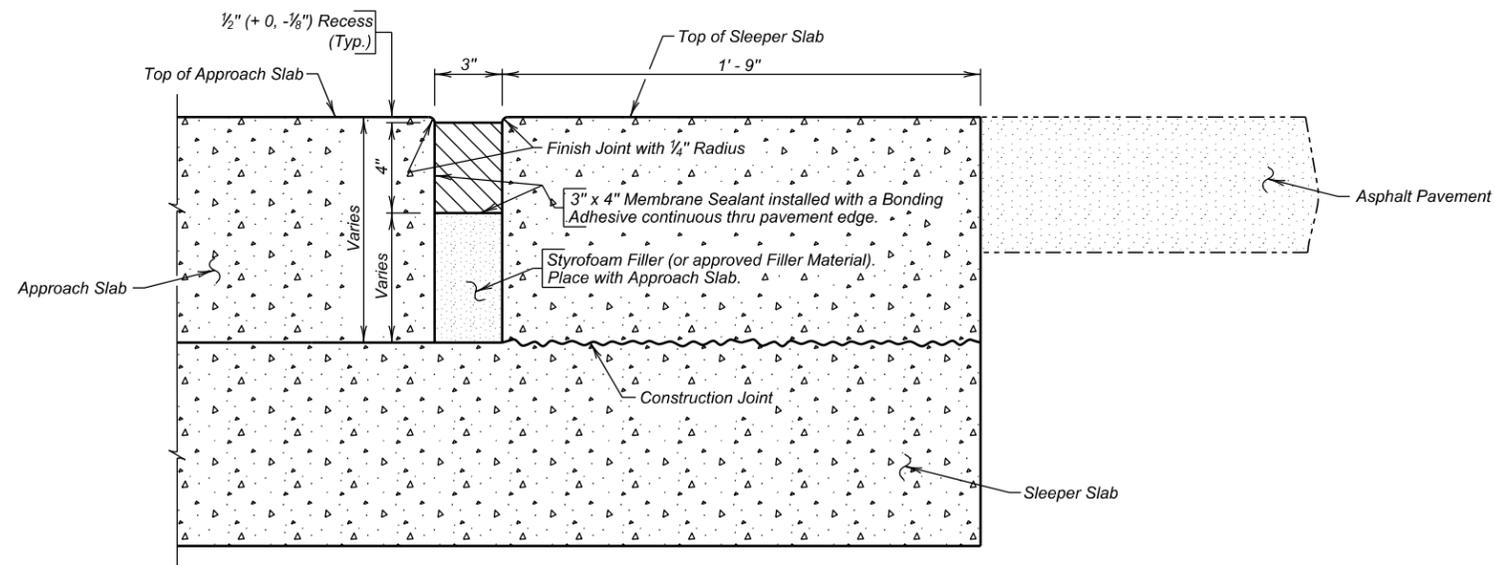
DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA12	DRAFTED BY BT	Kevin N. Goeden BRIDGE ENGINEER
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PLAN

GENERAL NOTES

- The Membrane Sealant shall be on the approved product list for Membrane Sealant Expansion Joints.
- The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer, however, in no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
- The membrane sealant shall provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension.
- The membrane sealant shall be supplied in pieces a minimum of 5 feet in length. The foam sealant shall be ultra-violet and ozone resistant.
- The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.
- Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
- If styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.
- The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.
- A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall 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.
- Surfaces that will be in contact with the membrane sealant shall 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 shall not be permitted.
- After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall 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 shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
- Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
- Traffic shall not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
- 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.
- 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 shall 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 specifications.



SEC. A - A

APPROACH SLAB JOINT DETAILS

FOR

106' - 0 7/8" CONTINUOUS CONCRETE BRIDGE

36' - 0" ROADWAY
OVER CAMPBELL CREEK
STA. 5 + 21.28 TO 6 + 27.35
STR. NO. 09-094-080

15° SKEW R.H.F.
SEC. 8/17-T107N-R71W
P 0034(150)272
HL-93

ESTIMATED QUANTITIES

(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	75.8

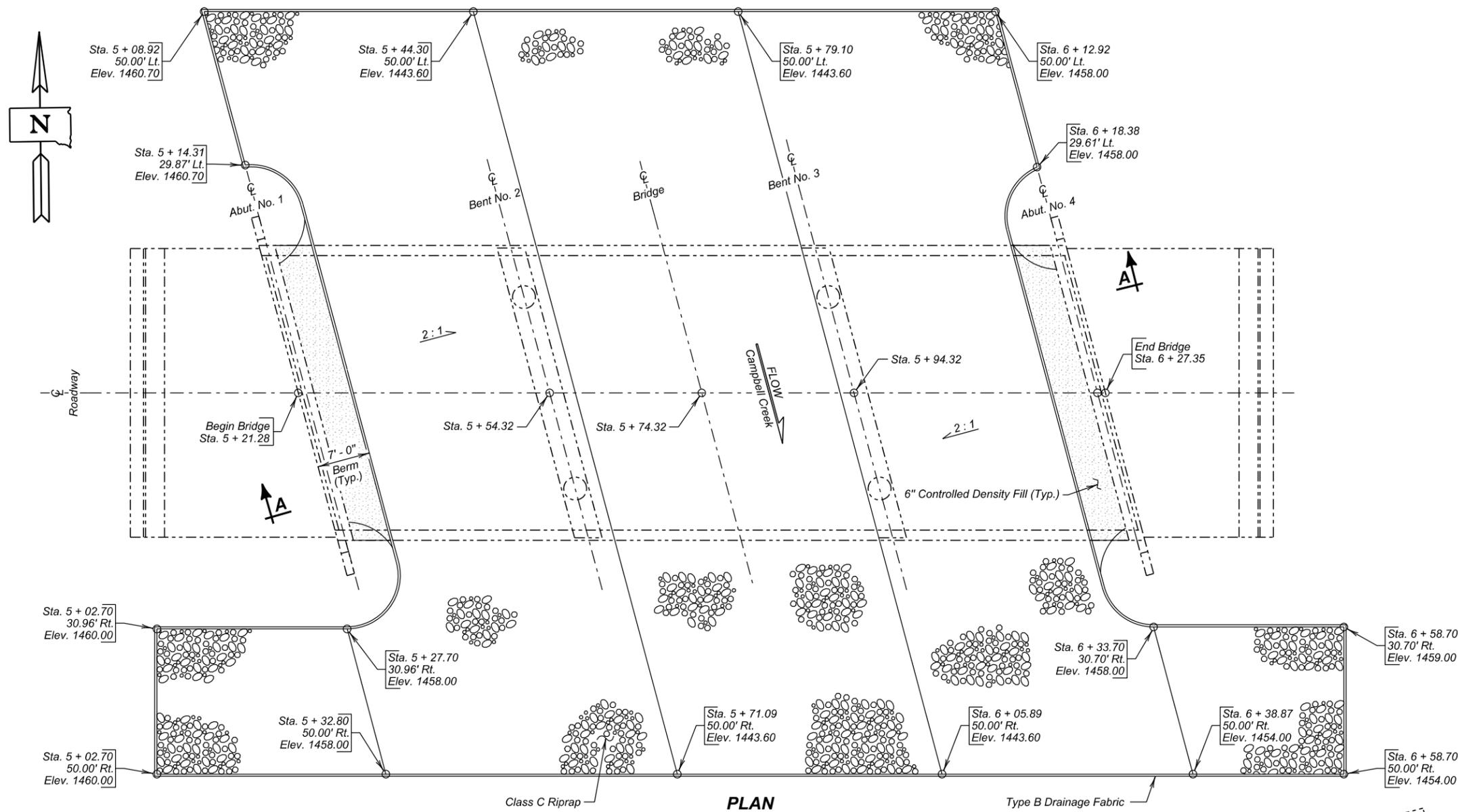
BUFFALO COUNTY

S. D. DEPT. OF TRANSPORTATION

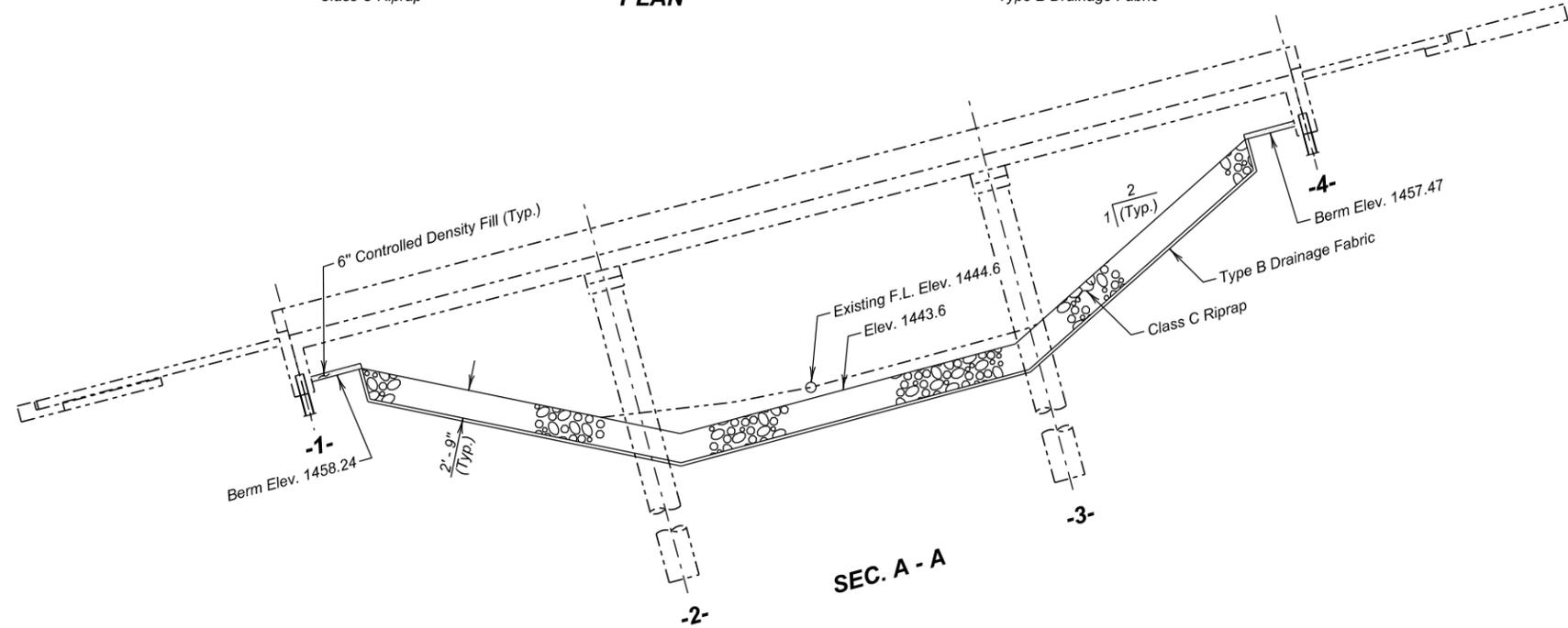
JUNE 2014

14 OF 18

DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA14	DRAFTED BY BT	Kevin N. Coeden BRIDGE ENGINEER
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PLAN



SEC. A - A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class C Riprap	Ton	1634.5
Type B Drainage Fabric	Sq. Yd.	1406
Controlled Density Fill	Cu. Yd.	7.4

* For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yds. to Tons.

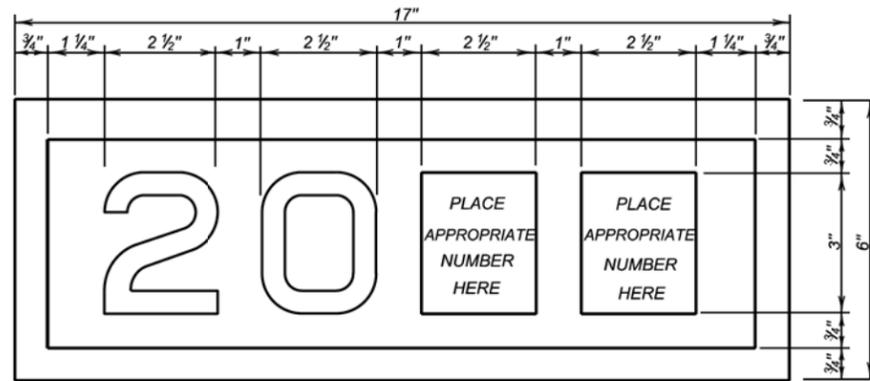
RIPRAP DETAILS
 FOR
106' - 0" 7/8" CONTINUOUS CONCRETE BRIDGE
 36' - 0" ROADWAY
 OVER CAMPBELL CREEK
 STA. 5 + 21.28 TO 6 + 27.35
 STR. NO. 09-094-080

15° SKEW R.H.F.
 SEC. 8/17-T107N-R71W
 P 0034(150)272
 HL-93

BUFFALO COUNTY
 S. D. DEPT. OF TRANSPORTATION

JUNE 2014 15 OF 18

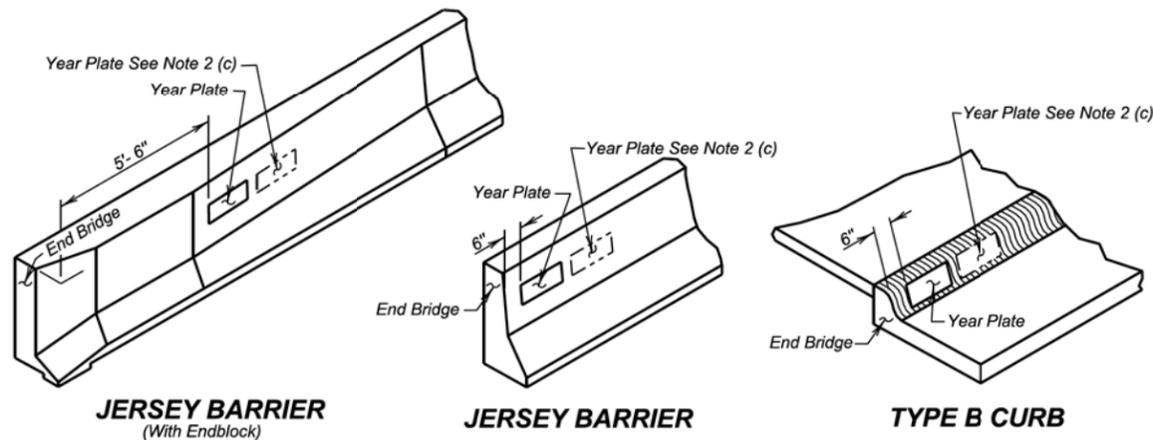
DESIGNED BY TB BUFF02RW	CK. DES. BY BS 02RWGA15	DRAFTED BY BT <i>Kevin N. Coeden</i>	BRIDGE ENGINEER
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YEAR PLATE DETAILS

GENERAL NOTES:

- Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall 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.
- Year plates shall be located on structure (s) as follows:
 - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
 - On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall 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 "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
 - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



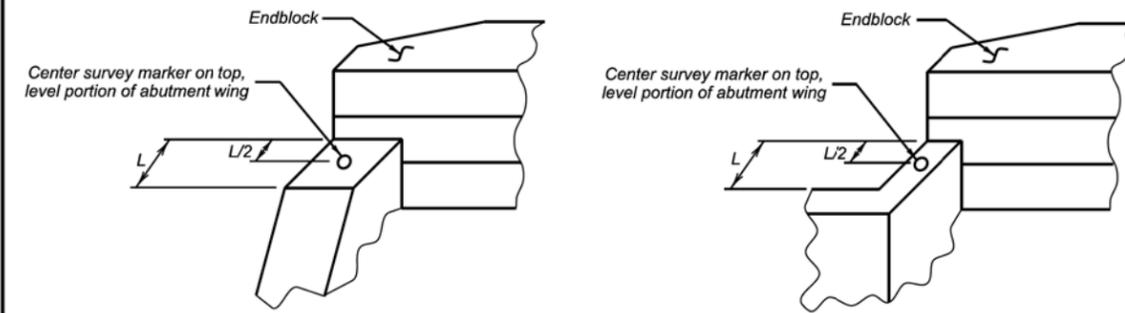
JERSEY BARRIER
(With Endblock)

JERSEY BARRIER

TYPE B CURB

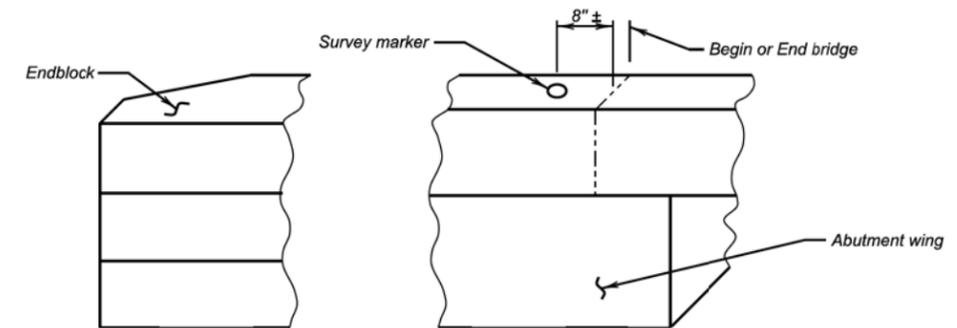
June 26, 2012

S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
	Published Date: 3rd Qtr. 2015	Sheet 1 of 1



ABUTMENT WITH "STRAIGHT" WINGS

ABUTMENT WITH "SWEEP BACK" WINGS



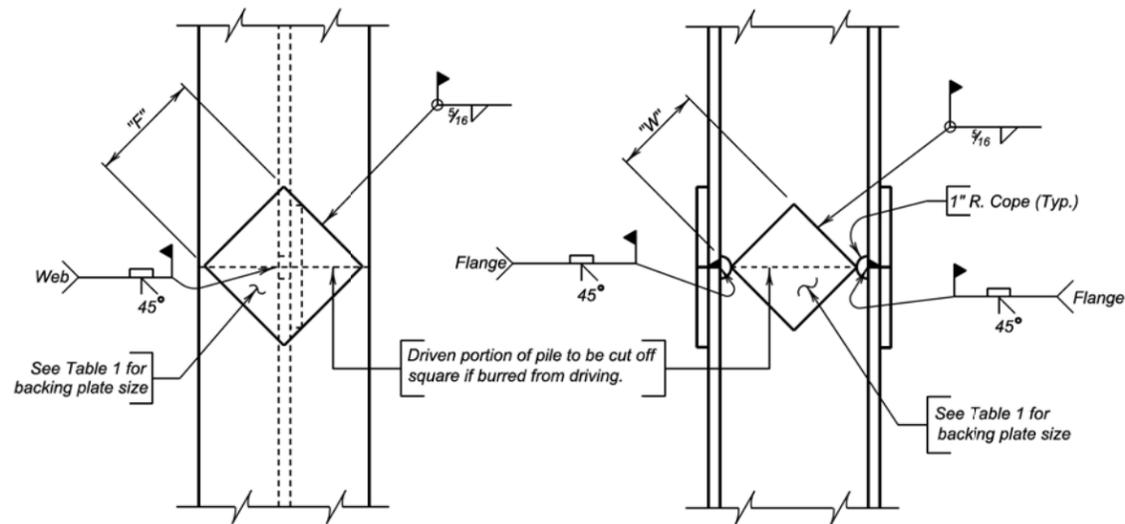
ABUTMENT WITH "SWEEP BACK" WINGS
(Endblock on top of wings)

GENERAL NOTES:

- 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.
- 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 3/4" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 1/2" top diameter.
- 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.

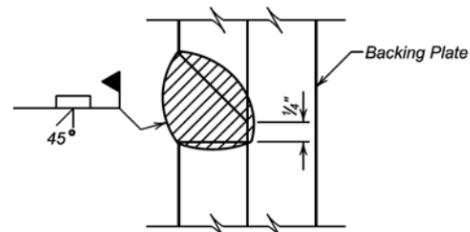
June 26, 2012

S D D O T	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
	Published Date: 3rd Qtr. 2015	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



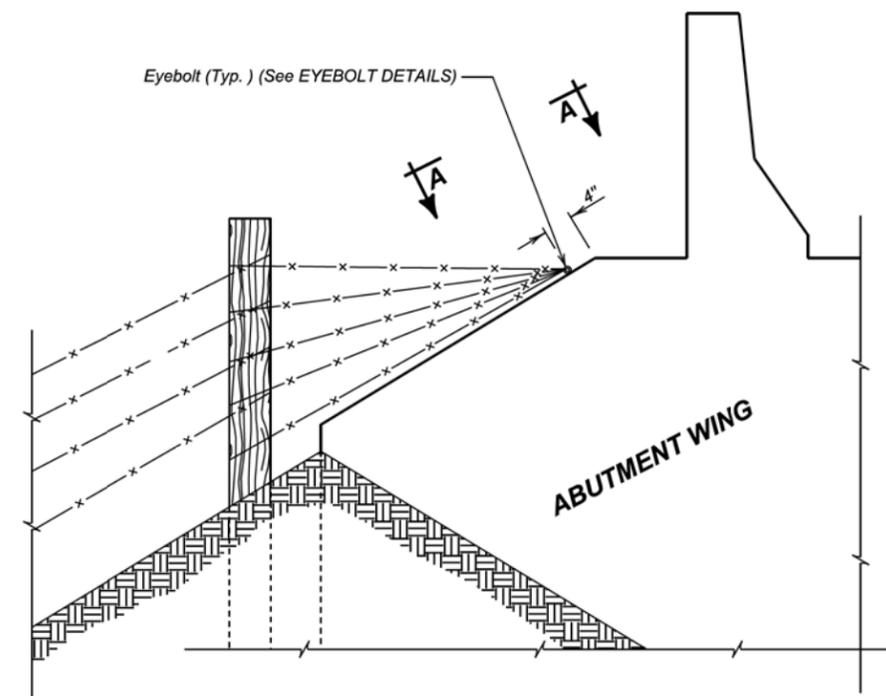
GENERAL NOTES:

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 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

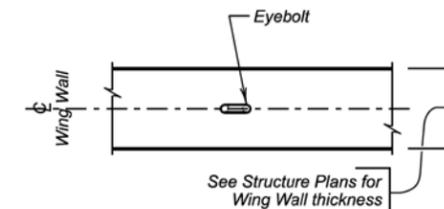
S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
	Published Date: 3rd Qtr. 2015	Sheet 1 of 1



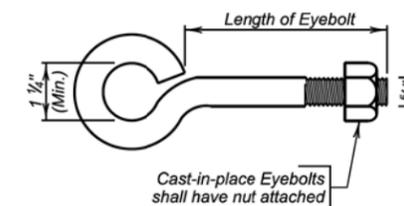
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the bridge abutment wings.
3. Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



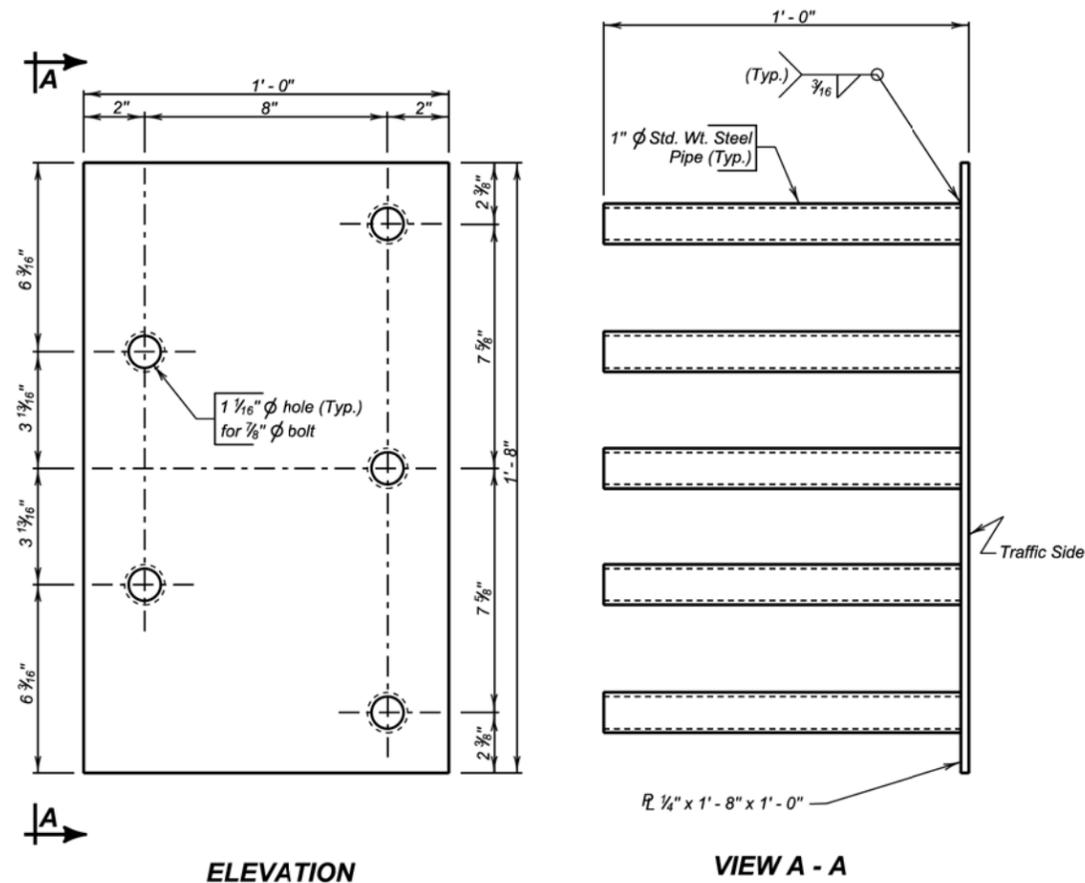
VIEW A - A



EYEBOLT DETAILS

December 23, 2012

S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS 6' AND SHORTER)	PLATE NUMBER 620.18
	Published Date: 3rd Qtr. 2015	Sheet 1 of 1



ELEVATION

VIEW A - A

GENERAL NOTES:

1. Steel plate for the insert assembly shall conform to ASTM A709 Grade 36. The steel pipes shall conform to ASTM A53 or ASTM A500 Grade B.
2. Welding and weld inspection shall be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.
3. After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).
4. Bolts, nuts, and washers shall be provided with each assembly. Bolts shall be galvanized and conform to the requirements of ASTM A307, A325, or A449. Plain washers shall be galvanized and conform to ASTM F844.
5. Bolt heads shall be placed on the traffic side of the endblock. Bolt projection at the back side of the insert shall not exceed 1 inch beyond the nut.
6. The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing shall be incidental to the contract unit price per Cubic Yard for "Class A45 Concrete, Miscellaneous ", "Class A45 Concrete, Bridge Deck ", or "Class A45 Concrete, Bridge Repair ", as applicable.

December 23, 2013

S D D O T	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92
		Sheet 1 of 1

Published Date: 3rd Qtr. 2015