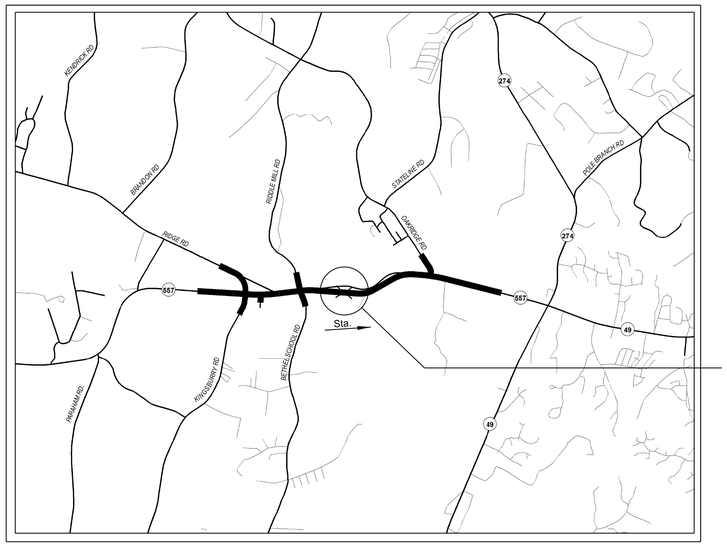
b41800ts.dgn

BRIDGE PLANS ID	SHEET NO.
0041800-B01	1

INDEX OF SHEETS

PROPOSED PLANS FOR

YORK COUNTY
PROJECT ID 0041800
YORK CO. PROJECT NO. 03-013/11-009
ROUTE SC 557 (SC HWY 557)
REPLACE BRIDGE OVER CROWDERS CREEK



SITE LOCATION

-N-

LAYOUT
SCALE 1 INCH = 3,000 FEET

Submit Shop Plans to:

NV5 Engineers & Consultants
7500 E. Independence Blvd.
Suite 100
Charlotte, NC 28227

Telephone: (704) 537-7300

Approximate Location of Bridge is

Latitude 35°- 07' - 13" N
Longitude 81°- 06' -48" W

SCDOT REVIEW	FOR CONSTRUCTION INITIAL	FOR CONSTRUCTION DATE
PRECONSTRUCTION SUPPORT - ROAD		
PRECONSTRUCTION SUPPORT - STRUCTURES		
RPG - DESIGN MANAGER		
RPG - PROGRAM MANAGER		

THE INITIALS ABOVE DO NOT RELIEVE THE ENGINEER OF RECORD OF THE RESPONSIBILITY TO DESIGN THIS PROJECT IN ACCORDANCE WITH ALL APPLICABLE CRITERIA.

H:\Project\2006\320.20 SC 557 Alt 4\CLIENT\Structures\b41800ts.dgn
11/7/2022

REVIEWED			
DR.	WBA	LKA	5-14 DATE
	BY	CHK	

TRAFFIC DATA

2024 ADT 16,100 V.P.D.

2044 ADT 19,600 V.P.D.

TRUCKS 7.5 %

ASSET ID 10297

3 DAYS BEFORE DIGGING IN SOUTH CAROLINA
CALL 811
SOUTH CAROLINA 811 (SC811)
WWW.SC811.COM
ALL UTILITIES MAY NOT BE A MEMBER OF SC811

NET LENGTH OF ROADWAY	0.000	MILES
NET LENGTH OF BRIDGES	0.066	MILES
NET LENGTH OF PROJECT	0.066	MILES
LENGTH OF EXCEPTIONS	0.000	MILES
GROSS LENGTH OF PROJECT	0.066	MILES

NOTE: EXCEPT AS MAY OTHERWISE BE SPECIFIED ON THE PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIALS AND WORKMANSHIP ON THIS PROJECT SHALL CONFORM TO THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (2007 EDITION) AND THE STANDARD DRAWINGS FOR ROAD CONSTRUCTION IN EFFECT AT THE TIME OF LETTING.

CONSULTING ENGINEERING FIRM

NV5

NV5 ENGINEERS & CONSULTANTS, INC.
7500 E. INDEPENDENCE BLVD, SUITE 100
CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com

SC License # 957

ENGINEER OF RECORD

SOUTH CAROLINA — MULKEY ENGINEERS AND CONSULTANTS, INC. — No. C00957 — CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA — REGISTERED PROFESSIONAL ENGINEER — No. 20591 — KEVIN L. AUSTIN

DocuSigned by: L. Kevin Austin — C24651110376480...

FOR CONSTRUCTION : 11/8/2022 DATE

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BRIDGE PLANS ID	SHEET NO.
0041800-B01	2

TABULATION OF ESTIMATED QUANTITIES (1 OF 2)

ITEM	REMOVAL & DISPOSAL OF EXISTING BRIDGE	2.0" SCHEDULE 80 PVC CONDUIT	CONCRETE FOR STRUCTURES CLASS 4000	COMPRESSION SEAL JOINT	GROOVED SURFACE FINISH	REINFORCING STEEL FOR STRUCTURES (BRIDGE)	HOOP REINF. STEEL FOR STRUCTURES (BRIDGE)	PRESTRESSED CONC. BEAMS TYPE IV	CONCRETE BRIDGE RAILING (3'-6" HT.)
	LS	L.F.	CY	LF	SY	LBS	LBS	LF	LF
End Bent 1			66.4			11,186			
Interior Bent 2			73.2			27,372	6,339		
Interior Bent 3			69.6			27,256	6,313		
Interior Bent 4			68.0			25,599	5,637		
End Bent 5			66.4			11,139			
350'-3" Superstructure		1565.0	1062.4		2449	249,793 *		3120	700.5
Approach Slabs			143.2	159.8		39,968 **			80.0
TOTALS	Necessary	1565.0	1549.2	159.8	2449	392,313	18,289	3120	780.5

*Includes reinforcing in Pedestrian Railing Wall and 1362 Lbs. for Tie Bar Assemblies.
**Includes reinforcing in Pedestrian Railing Wall.

TABULATION OF ESTIMATED QUANTITIES (2 OF 2)

ITEM	PILE DRIVING SETUP	REINF. PILE TIPS (HP 14 X 89)	STEEL H BEARING PILING (HP 14 X 89)	DRILLED SHAFT SETUP	DRILLED SHAFT WITH ROCK EXCAVATION 42" DIAMETER	DRILLED SHAFT WITH WET & DRY EXCAVATION 48" DIAMETER	CONSTRUCTION CASING 48" DIAMETER	ELASTOMERIC BEARING	CROSSHOLE SONIC LOGGING SETUP
	EA	EA	LF	EA	LF	LF	LF	EA	EA
End Bent 1	17	17	678						
Interior Bent 2				5	27.5	132.3	132.3		5
Interior Bent 3				5	27.5	140.4	140.4		5
Interior Bent 4				5	27.5	119.0	119.0		5
End Bent 5	17	17	550						
350'-3" Superstructure								72	
Approach Slabs									
TOTALS	34	34	1228	15	82.5	391.7	391.7	72	15

Note:
HP14x89 steel piling shall conform to the latest AASHTO specification for M270 steel and have a minimum yield strength of 50 ksi.

SUMMARY OF ESTIMATED QUANTITES

ITEM NO.	BID ITEM	UNIT	QUANTITY
2028100	REMOVAL & DISPOSAL OF EXISTING BRIDGE	LS	NECESSARY
6750278	2.0" SCHEDULE 80 PVC CONDUIT	LF	1565.0
7011400	CONCRETE FOR STRUCTURES - CLASS 4000	CY	1549.2
7020300	COMPRESSION SEAL JOINT	LF	159.8
7023200	GROOVED SURFACE FINISH	SY	2449
7031200	REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LBS	392,313
7031220	HOOP REINFORCING STEEL FOR STRUCTURES (BRIDGE)	LBS	18,289
7044000	PRESTRESSED CONCRETE BEAM (TYPE IV)	LF	3120
7054000	CONCRETE BRIDGE RAILING (3'-6" HT.)	LF	780.5
7110010	PILE DRIVING SET-UP	EA	34
7111565	REINF. PILE TIPS (HP 14 X 89)	EA	34
7112230	STEEL H BEARING PILING (HP 14 X 89)	LF	1228
7120006	DRILLED SHAFT SET-UP	EA	15
7120152	DRILLED SHAFT WITH ROCK EXCAVATION - 42" DIAMETER	LF	82.5
7120161	DRILLED SHAFT WITH WET & DRY EXCAVATION - 48" DIAMETER	LF	391.7
7120165	CONSTRUCTION CASING-48" DIAMETER	LF	391.7
7243100	ELASTOMERIC BEARING	EA	72
7270010	CROSSHOLE SONIC LOGGING SETUP	EA	15
8011210	AGGREGATE UNDERDRAIN #789 W/ 4" PERF. PIPE FOR STRUCTURES	TON	312
8142100	WATERPROOFING (SUBSTRUCTURE - SECOND METHOD)	SY	45.5

NV5 ENGINEERS & CONSULTANTS, INC.
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CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
SC License # 957
formerly CALYX Engineers & Consultants

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

DocuSigned by: K. Kevin Austin C2465111037F480... 11/8/2022

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	WBA	LKA	9-14
DES.	ZHB	LKA	5-14
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

SUMMARY OF ESTIMATED QUANTITIES
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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b41800gn.dgn

BRIDGE PLANS ID	SHEET NO.
0041800-B01	3

MATERIAL & WORKMANSHIP

Provide all material and workmanship in accordance with the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction, unless otherwise specified on the Plans or in the Special Provisions.

COORDINATION OF PLANS, SPECIFICATIONS, AND SPECIAL PROVISIONS

Generally, in case of discrepancy, this General Notes sheet governs over the Standard Specifications but the remainder of the plans govern over notes on this sheet and Special Provisions govern over all. See Subsection 105.4 of the Standard Specifications.

WATER ELEVATIONS

The water elevations shown in the plans are for information only and the actual water elevation during construction may vary depending on weather conditions and seasonal fluctuations.

COMPLETION DATES

On inside face of right side barrier parapet/railing at beginning of bridge and on left side barrier parapet/railing at end of bridge, place year of completion adjacent to guardrail attachment. Place this completion date so that it will not be covered by the guardrail connector when it is installed. Recess numbers in the concrete using numbers fabricated from reusable/durable material that is approved by the RCE. Provide numbers in accordance with SCDOT Standard Drawing No. 702-305-00.

REINFORCING STEEL

Fabricate reinforcing bars in accordance with the current C.R.S.I. Manual of Standard Practice except for ties, stirrups, and welded hoops.

Provide all ties and stirrups with 135° hooks that have extensions no less than the larger of ten bar diameters or six inches. This 135° hook requirement does not apply to stirrups extending from prestressed concrete beams.

The fabrication tolerance for out-to-out dimension of welded hoop diameter is $\pm$ $1/2$ inch.

Do not use lap splices in column and shaft reinforcing steel.

PRESTRESSED CONCRETE BEAMS

Beam lengths given are based on horizontal span only. Increase lengths to correct for concrete shrinkage, concrete shortening when the strands are cut, and for beams being on a grade.

All overhang brackets in the top flange of exterior beams shall be galvanized in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as appropriate and shall be detailed accordingly in the shop plans.

CONCRETE

Provide the class of concrete as noted in the contract documents. For cast-in-place structural elements, use Class 4000 concrete where the class of concrete is not specified in the contract documents.

When holes are cast in beams to accommodate falsework, fill the holes with a non-shrink structural grout suitable for overhead repairs after falsework is removed.

After erection of the beams and prior to the erection of the deck slab falsework, measure beam cambers. Compare the measured beam cambers to the values shown on the Plans to aid in determining if field adjustments are needed. Submit beam camber measurements and any proposed field adjustments to the RCE for approval. All cost of performing this work is considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for concrete in slab is based on theoretical plan quantity. No adjustment is made for variation in camber.

Chamfer all exposed edges $3/4$" unless otherwise noted.

The minimum acceptable concrete cover for reinforcing steel is $1/2$" less than the plan dimensions when required by reinforcing bar fabrication tolerances.

Cast build-ups and shear keys on bent caps monolithic with the cap unless indicated otherwise in these plans. Construct the top of each build-up level.

GRINDING & TEXTURING CONCRETE DECKS

For bridge stage construction projects, grind and texture the bridge decks as necessary near the stage longitudinal construction joints in order to meet the longitudinal and transverse rideability and rolling straightedge requirements of the Contract.

Prior to casting any closure pour, grinding, or texturing, make profile line surveys (2 to 6 as determined by the RCE) of each stage of the bridge decks. Make one of these profile line surveys for each stage along the edge of the deck adjacent to the closure pour. Compare the surveys within each stage and compare the surveys of each stage to surveys of the adjacent stage to aid in determining the amount of grinding and texturing needed to meet the rideability and rolling straightedge requirements. Submit all grinding and texturing procedures, plotted survey profiles, and proposed grinding depths to the RCE for approval. Maintain a final cover of 2"minimum over the bridge deck reinforcing steel.

Follow the above procedures for all stages of the work. For all surveys performed on the same bridge, use identical stations for survey shots in order to facilitate survey comparisons. All costs for performing, evaluating, and submitting the surveys are considered incidental to the Contract and no additional compensation is allowed for the performance of this work.

Payment for grinding and texturing concrete bridge decks at the junction of new and existing bridge deck slabs is determined in accordance with Subsection 702.6 of the Standard Specifications. No payment is made for grinding and texturing of new bridge decks to correct irregularities and excessive deviations.

ALLOWANCE FOR DEAD LOAD DEFLECTION & SETTLEMENT

In setting forms for structural steel or prestressed concrete beam spans, apply an allowance to the design finished grade to compensate for computed dead load deflections.

Prior to making deck pours on any stage construction work, and bridge widening projects, consider and make adjustments as necessary for partially loaded beams adjacent to closure pour areas. Verify that any proposed adjustment on partially loaded beams does not create a change in the deck thickness or a reduction in the concrete cover over the reinforcing steel. Welded studs on steel beams and reinforcing steel extending up out of prestressed beams shall meet the requirements for a composite section (extend up into the deck past the bottom mat of reinforcing steel) regardless of any adjustments.

In setting falsework for reinforced concrete spans, make an allowance for the deflection of the falsework, for any settlement of the falsework, for the instantaneous dead load deflection of the span, and for the long-time dead load deflection of the span such that on removal of the falsework the top of the structure shall conform to theoretical finished grade plus the allowance for long-time deflection.

For instantaneous and long-time dead load deflection, use a camber of $1/8$" for concrete flat slab spans 22 feet in length, $3/16$" for concrete flat slab spans 30 feet in length, and $3/8$" for concrete flat slab spans 40 feet in length, unless otherwise directed by the RCE. Adjust these cambers as necessary to allow for falsework deflection, falsework settlement, and vertical curve ordinates.

PERMANENT STEEL BRIDGE DECK FORMS

Permanent stay-in-place steel bridge deck forms for concrete deck slabs may be used at the Contractor's option.

Notify the Department and the Fabricator of the beams if using this option so that shop plans can be properly detailed.

DRIVEN PILE FOUNDATIONS

Where piles occur in fill, place fill before driving piles.

Where prestressed concrete piles are to be driven through fill, install piles in pre-bored holes extending to the original ground. For square prestressed concrete piles, bore holes having a minimum diameter of 1.25 times the nominal pile size. Include all cost of pre-boring fills for pile installation in the unit price bid for the piles.

EXCAVATION FOR END BENTS

Include all cost of excavation necessary to construct end bents and to remove material under superstructure to an elevation twelve inches below tops of end bent caps, in the unit price bid for class of concrete specified in the Plans.

If a concrete footing is used for the end bent, the excavation below that included for the cap and berm in the above paragraph is paid for at the unit price bid for excavation. Include excavation above this in the unit price bid for class of concrete specified in the Plans.

STRUCTURAL STEEL

Layout dimensions and standard lengths of beams shown are horizontal dimensions which must be increased when bridge is on grade.

When holes are placed in webs to accommodate falsework, install high strength bolts in the holes after falsework is removed.

Notify the Department of the name and address of the Fabricator of the structural steel as soon as the Fabricator has been given the contract to fabricate so that the inspection procedure can be set up.

Do not field or shop weld erection hardware to the structural steel members.

Make all bolted connections with $7/8$" dia. ASTM F3125, Grade A325 bolts unless otherwise indicated.

Generally, holes for $7/8$" dia. bolts shall be $15/16$" dia. However,for straight girder spans, oversized holes, $3/16$" larger than bolt dia. may be used in diaphragms and/or crossframes and their connection plates provided hardened washers are installed over oversize holes in the outer ply of the material gripped.Hardened washers are required under DTIs on oversized holes. In every case install a hardened washer under the element turned for each bolt of a bolted connection. Indicate on the Shop Plans which holes are to be oversize and where hardened washers are required. No additionalpayment is made for the costs associated with the use of oversize holes and furnishing additional hardened washers as necessary.

PAINT FOR STRUCTURAL STEEL

Paint structural steel in accordance with Section 710 of the Standard Specifications.

BEARING ASSEMBLIES

If bearing assemblies support weathering steel beams or girders, fabricate bearing assembly components from weathering steel and paint them using the NS2 Paint System. Galvanize all other bearing assemblies in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as applicable.

After the required field welding of painted bearing assemblies, field repair the weld areas and/or any damaged areas to the paint in accordance with Subsection 710.4.2 of the Standard Specifications. After the required field welding of galvanized bearing assemblies, field repair the weld areas and/or damaged areas of the galvanized coating in accordance with ASTM A 780.

Include all cost of furnishing and installing steel bearing assembly components in the lump sum price bid for structural steel if a bid item for structural steel is included in the project. Otherwise, include the cost in the unit price bid for prestressed beams.

ANCHOR BOLTS

Galvanize all components of anchor bolt assemblies in accordance with AASHTO M 232 or ASTM F 2329 as applicable. The weight of anchor bolt assemblies is included in the bent quantities for reinforcing steel. Include all costs of furnishing and installing anchor bolt assemblies in the unit price bid for reinforcing steel.

ORIENTATION IN RELATION TO STATIONING

Left and right sides, where referred to in these plans, are in relation to direction of stationing.

FINAL FINISH OF EXPOSED CONCRETE SURFACES

Apply the final surface finish on the bridge(s) only to the following checked and designated bridge areas:

- ☐ A) Entire surface of all barrier rails, parapet walls, approach slab curbs, concrete utility supports, and wing walls; outside vertical edge of bridge deck slabs and sidewalks.
- ☐ B) Outside face of exterior prestressed girders.
- ☐ C) Entire surface of designated substructure units, except top of bent caps and piers.
  - ☐ All Units ☐ Designated Units:
- ☒ D) No final surface finish required.

SPECIFICATIONS

AASHTO 2017 LRFD Bridge Design Specifications, 8th Edition.

ANSI/AASHTO/AWS D1.5 Bridge Welding Code (Latest Edition) with additions and revisions as stated in the Standard Specifications.

DESIGN DATA

Load and Resistance Factor Design (LRFD) Method

Live Load: AASHTO HL-93 Loading

The top $1/4$" of all concrete slabs is considered as a wearing surface and is not included in the slab depth used for the calculation of section properties.

All bolted connections, except for steel diaphragm members used with prestressed concrete beams, are designed as slip-critical connections having Class "B" contact surfaces.

An extra dead load of 0.016 KSF is incorporated into the design of this structure to accommodate the use of steel stay-in-place forms.

An extra dead load of 0.015 KSF is incorporated into the design of this structure as an allowance for a future wearing surface.

Seismic Design is in accordance with the 2008 SCDOT "Seismic Design Specifications for Highway Bridges", Version 2.0, with the following parameters:

Seismic Design Category: A

Analysis Method: No Detailed Analysis

Operational Classification: II

Site Class: C

Design Acceleration Coefficients:

PGA	(FEE):	0.04 g
S_{DS}	(FEE):	0.08 g
S_{D1}	(FEE):	0.04 g
PGA	(SEE):	0.11 g
S_{DS}	(SEE):	0.17 g
S_{D1}	(SEE):	0.10 g

FEE Acceleration Design Response Spectrum Data

	Period (Sec)	S_a (g)	Period (Sec)	S_a (g)
	0.00	0.04	0.83	0.05
	0.02	0.05	0.97	0.04
	0.04	0.06	1.12	0.04
	0.05	0.06	1.26	0.03
	0.07	0.07	1.41	0.03
	0.09	0.07	1.55	0.03
T_0	0.11	0.08	1.70	0.02
	0.14	0.08	1.84	0.02
	0.18	0.08	1.99	0.02
	0.21	0.08	2.13	0.02
	0.25	0.08	2.28	0.02
	0.29	0.08	2.42	0.02
	0.32	0.08	2.57	0.02
	0.36	0.08	2.71	0.02
	0.39	0.08	2.86	0.01
	0.43	0.08	3.00	0.01
	0.46	0.08		
	0.50	0.08		
T_S	0.54	0.08		
	0.68	0.06		

SEE Acceleration Design Response Spectrum Data

	Period (Sec)	S_a (g)	Period (Sec)	S_a (g)
	0.00	0.11	0.86	0.11
	0.02	0.12	1.00	0.10
	0.04	0.13	1.14	0.08
	0.06	0.14	1.28	0.08
	0.08	0.15	1.43	0.07
	0.10	0.16	1.57	0.06
T_0	0.11	0.17	1.71	0.06
	0.15	0.17	1.86	0.05
	0.19	0.17	2.00	0.05
	0.23	0.17	2.14	0.05
	0.27	0.17	2.29	0.04
	0.30	0.17	2.43	0.04
	0.34	0.17	2.57	0.04
	0.38	0.17	2.71	0.04
	0.42	0.17	2.86	0.03
	0.46	0.17	3.00	0.03
	0.49	0.17		
	0.53	0.17		
T_S	0.57	0.17		
	0.71	0.14		

Values determined from: Three-Point Method

NV5 ENGINEERS & CONSULTANTS, INC.
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CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
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SOUTH CAROLINA NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C2465111037F480... 11/8/2022

REV.	WBA	LKA	3-21
	0041800		
REV.	PCW	HL	09-20
	ASTM F3125		
REV.	PCW	HL	07-20
	AASHTO 8th Ed.		
REVIEWED			
QUAN.			
DR.	GFD	SAN	8-07
DES.			
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

GENERAL NOTES
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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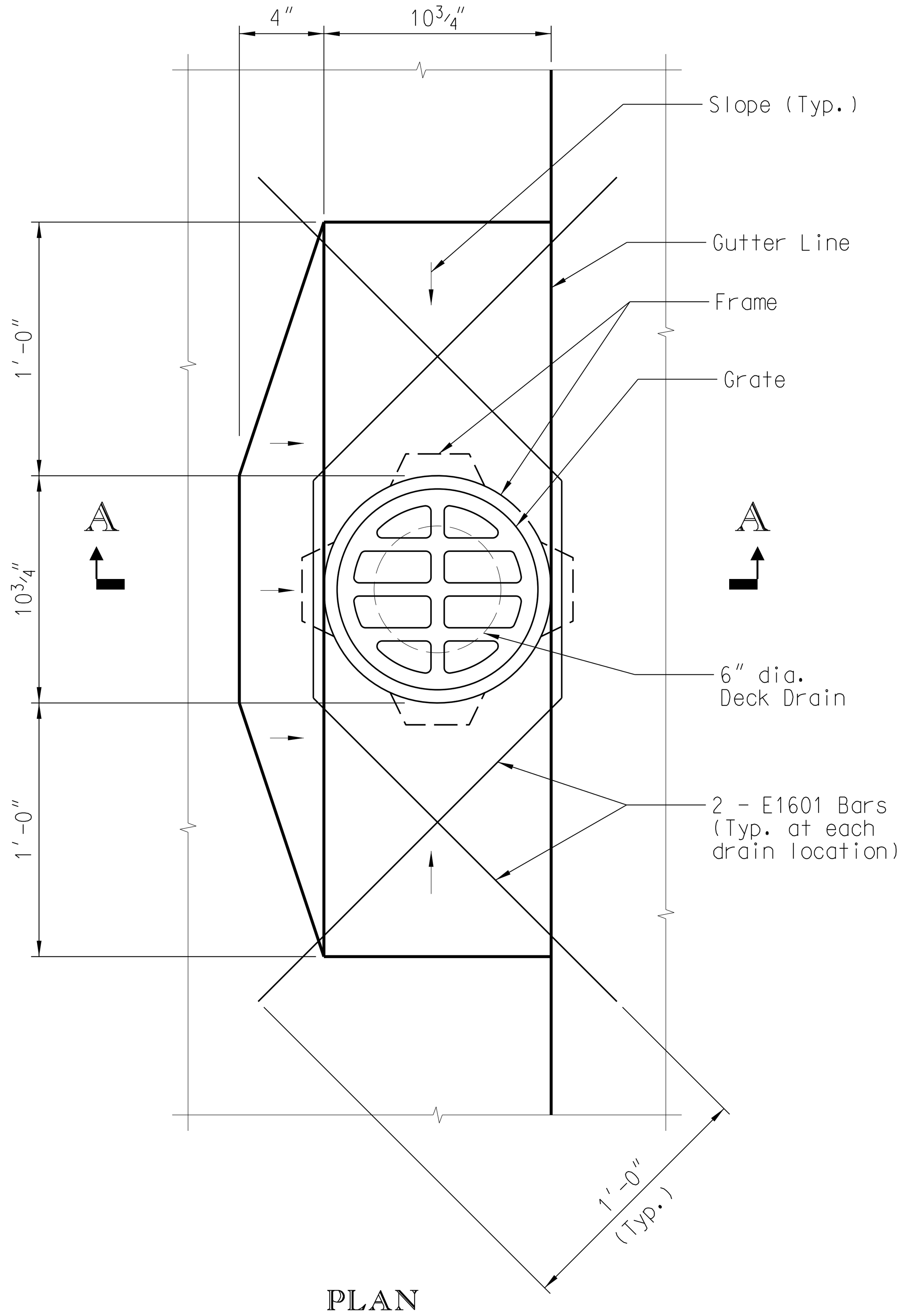
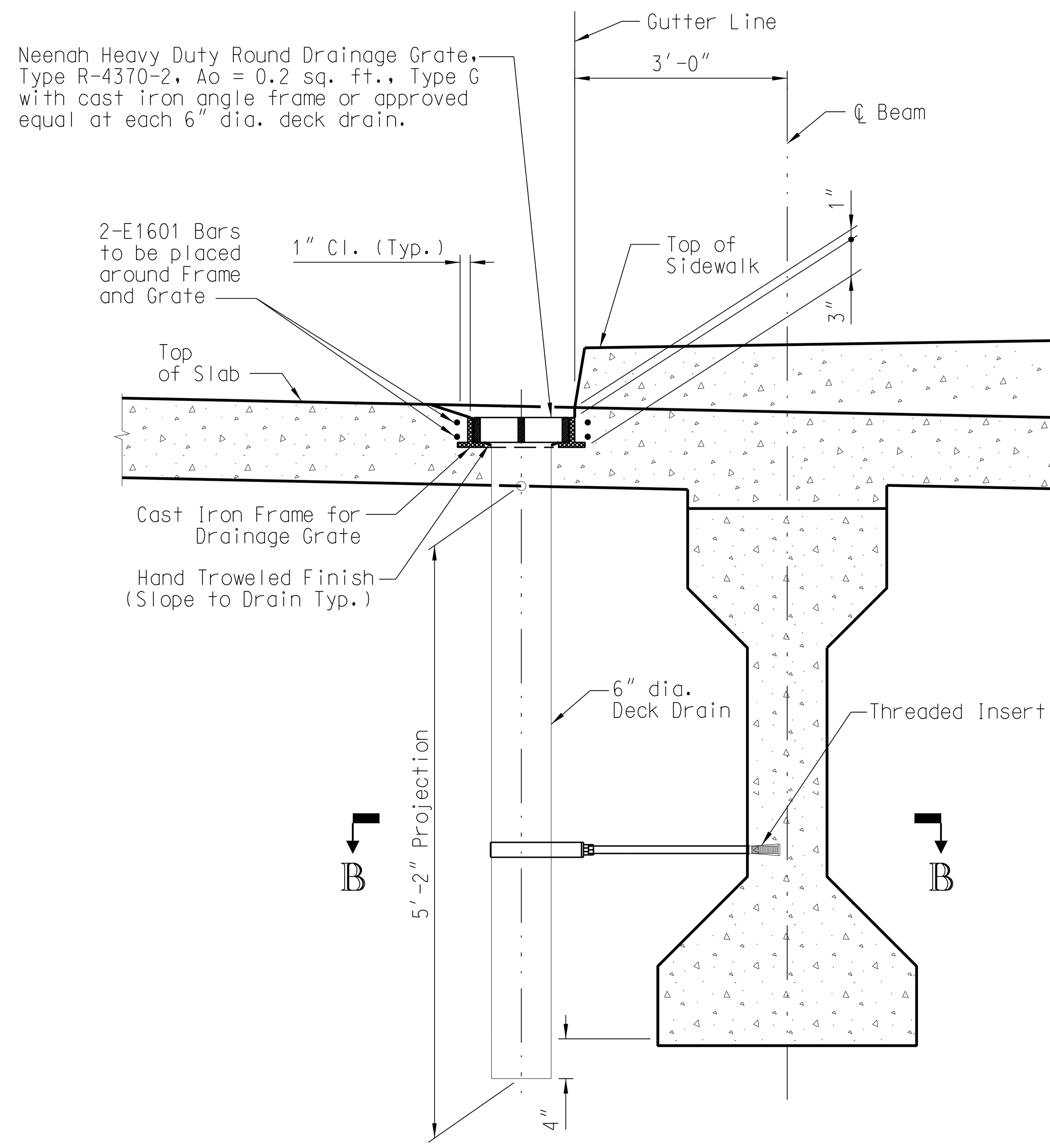
BRIDGE PLANS ID	SHEET NO.
0041800-B01	4

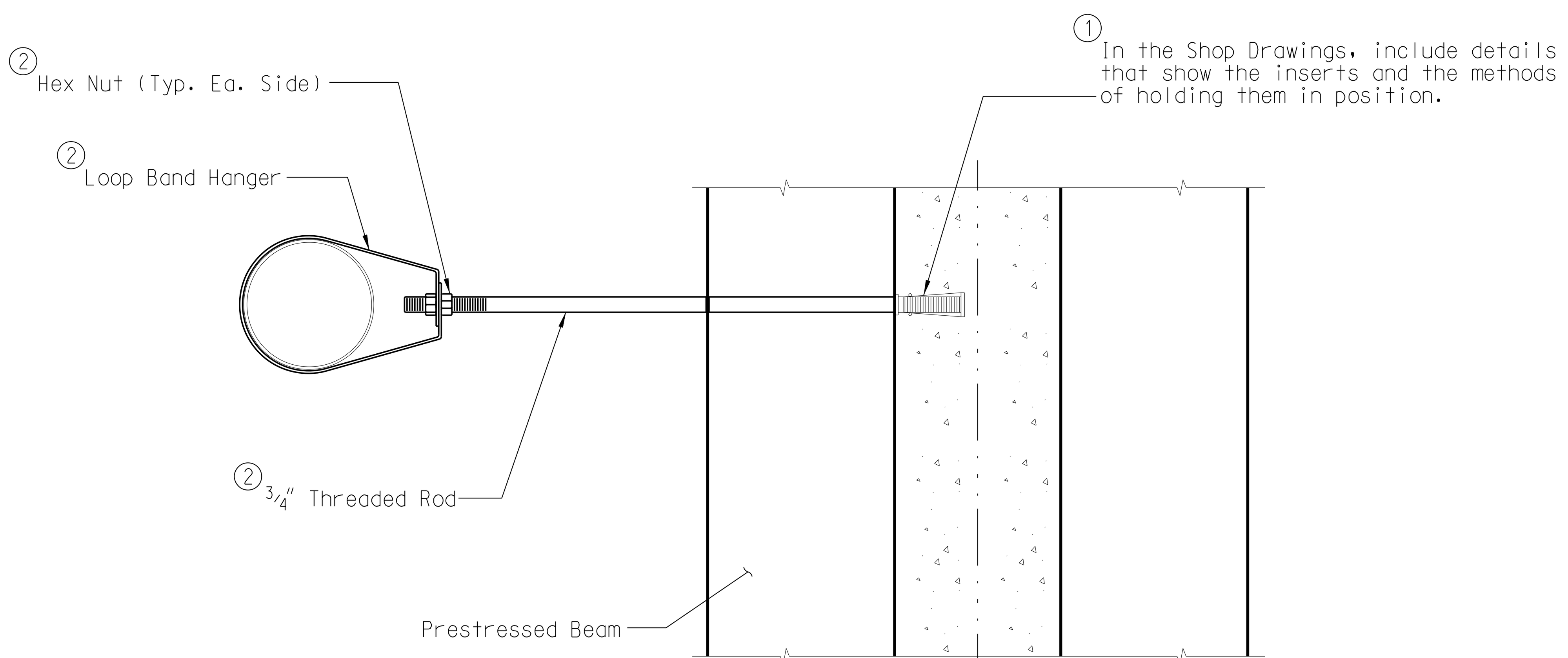


PLAN



SECTION A-A

DRAIN DETAILS WITH GRATE



SECTION B-B

① ¾" zinc electroplated ferrule wing nut, UNC threads, 1/0 minimum gage wire not more than 4" in depth with a minimum ultimate tensile strength of 2.0 kips in 5,000 psi concrete.

② Loop band hanger, threaded rod, and nuts are to be galvanized in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as applicable.

DRAIN DETAILS

Provide drain pipes that are 6" nominal diameter fiberglass pipe meeting the requirements of ASTM D 2996 and the accelerated UV weathering performance requirements of ASTM G 154.

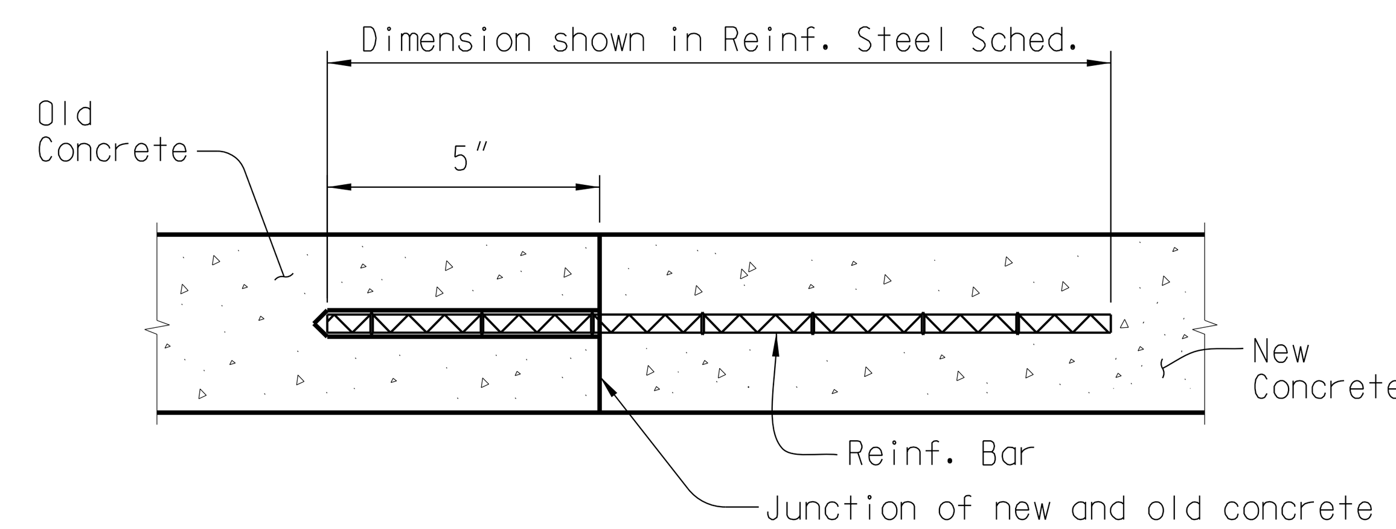
Provide pipe that has pigmented resin throughout the wall. Paint, gel-coat, or exterior coating will not be accepted. Color shall be light gray (Federal Shade No. 26622) for concrete.

Galvanize plate, bolts, and nuts in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as applicable. Paint U-bolt assemblies Federal Shade No. 26622 to match the beam.

To anchor the pipe, cement at least two suitable lugs of a satisfactory size to the portion of the pipe to be embedded in the concrete slab.

Include all costs of furnishing and placing drains in the unit price bid for Class 4000 concrete. Include all costs of furnishing and painting U-bolt assemblies in the lump sum bid for structural steel.

A1601/ A1610 Bars mat be shifted slightly as necessary to avoid deck drains. A Bars may not be cut.

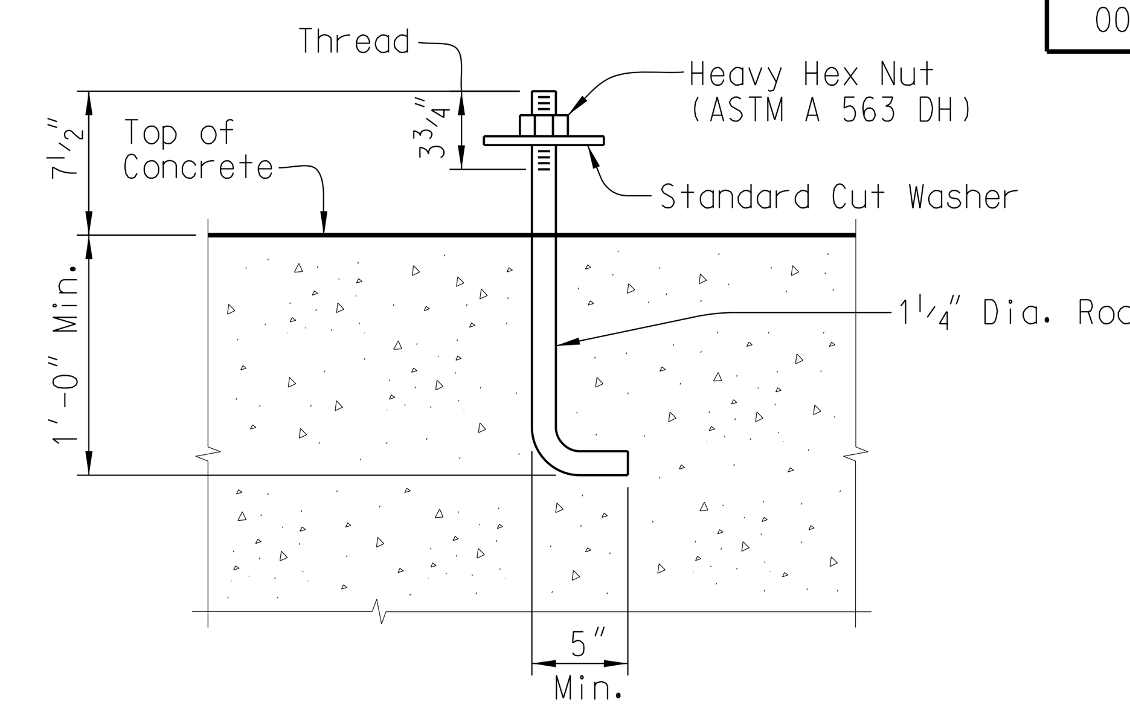


ADHESIVELY BONDED DOWEL DETAIL

Clean contact surface of old concrete. Ensure that the surface is free of laitance and roughen the surface to an amplitude of ¼".

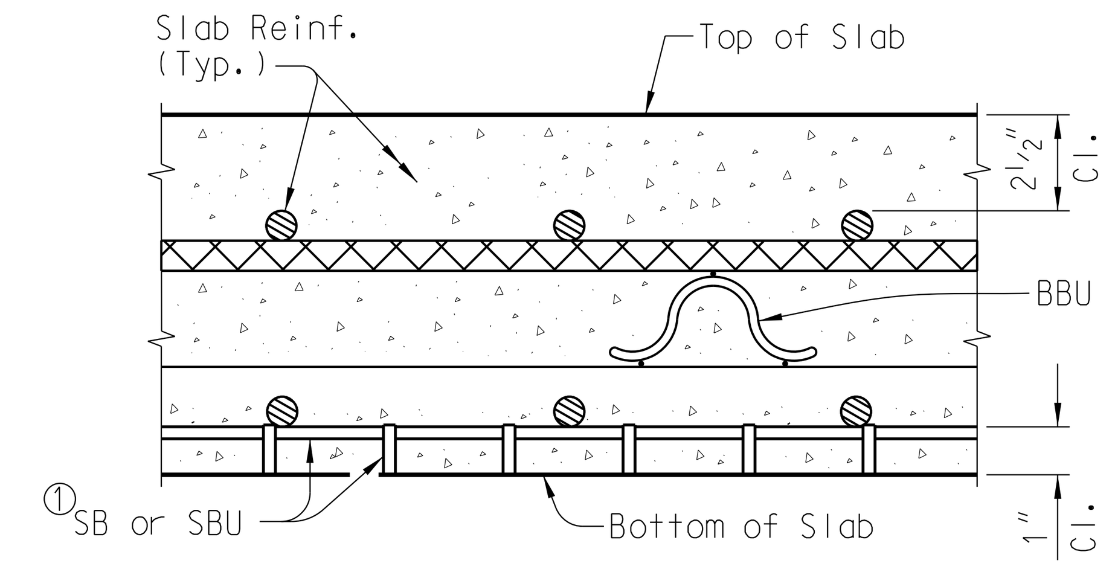
Provide and install anchorages in accordance with the requirements of the Supplemental Specification for Adhesively Bonded Anchors and Dowels. Use an adhesive bonding system that has a minimum bond strength of 1.5 ksi. Field testing of the anchorages is not required.

Include all costs of adhesively bonded dowels in the contract unit price bid for reinforcing steel. Include all costs of cleaning and roughening the existing concrete surface in the contract unit price bid for Class 4000 Concrete.



ANCHOR BOLT DETAILS

See reinforcing steel schedule on bent sheets for length and number of anchor bolt assemblies required. Provide anchor bolts that conform with ASTM F 1554 (Gr. 36). Ship anchor bolts and nuts assembled.



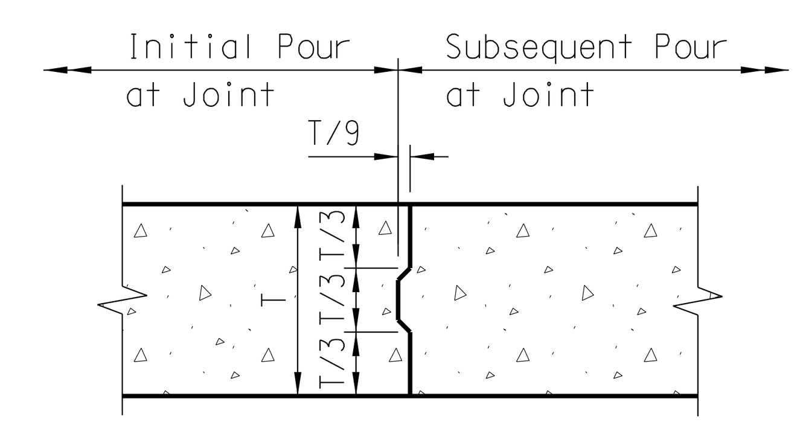
BAR SUPPORT DETAIL

(Section parallel to ℄ roadway)

For bar supports that contact forms or floor surfaces, use plastic bar supports that conform to the requirements of the Standard Specifications. Protect the plastic bar supports from exposure to sunlight until placed in the form. Where removable forms are used, do not use continuous legs or rails that are in contact with the forms.

For supports that do not contact forms or floor surfaces, use wire bar supports that conform to the requirements of the Standard Specifications. In applications where galvanized bars are used, use galvanized wire supports.

① Use SBU where steel stay-in-place forms used, use SB elsewhere.



CONST. JT. DETAIL

Before making subsequent pour, wait either a minimum of 96 hours after placement of the initial pour or until the initial pour concrete has attained a minimum of 75% of the specified 28-day compressive strength as verified by testing extra cylinders.

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SC License # 957
formerly CALYX Engineers & Consultants

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — L. KEVIN AUSTIN No. 20591

DocuSigned by: L. Kevin Austin 11/8/2022

	BY	CHK.	DATE
REV.	WBA	LKA	7-19
	0041800		
REV.	PCW	LEM	9-17
	Bar Support Det.		
REV.	BMH	JXY	12-14
	Const. Jt.		
REVIEWED			
QUAN.			
DR.	SRM/PNP	GFO/SAN	8-07
DES.			

YORK COUNTY
PENNIES FOR PROGRESS

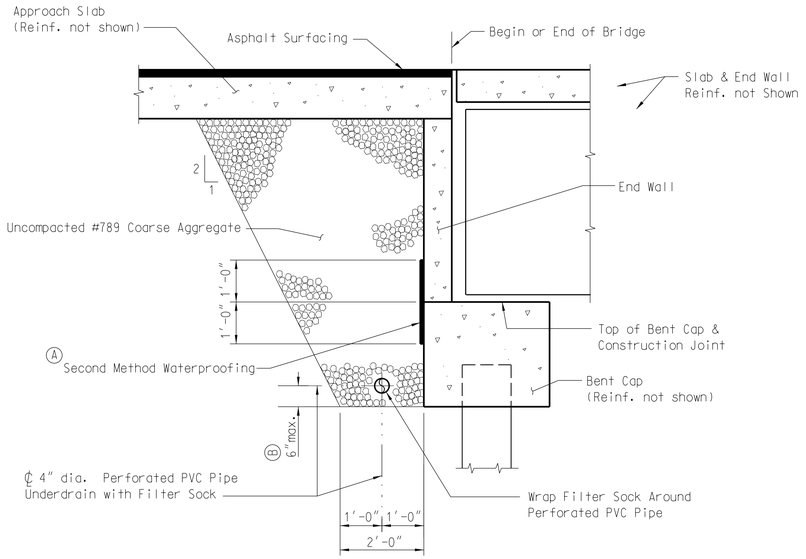
GENERAL DETAILS
SHEET 1 OF 2
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

DRAWING NO. 700-05

b41800gd2.dgn

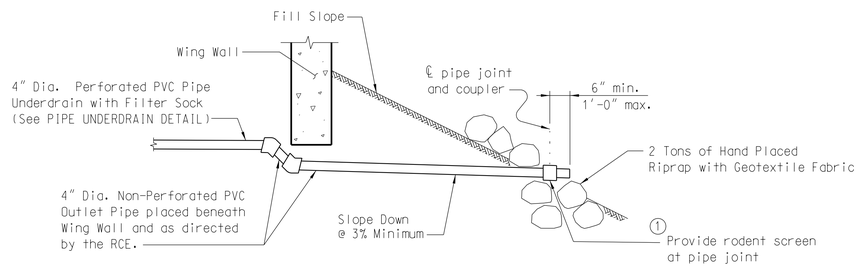
BRIDGE PLANS ID	SHEET NO.
0041800-B01	5



PIPE UNDERDRAIN DETAIL

Ⓐ Extend Second Method Waterproofing the full length of the End Wall and Wing Walls. See Section 814 of the Standard Specifications.

Ⓑ Slope Pipe a minimum of 0.5% to drain.



PIPE OUTLET DETAIL

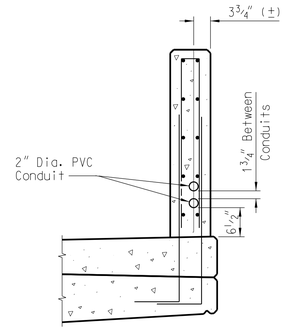
Notes:

Install 4" Dia. Perforated Pipe Underdrain in accordance with Section 802 of the Standard Specifications. Use Uncompacted #789 Coarse Aggregate in accordance with Section 701 of the Standard Specifications.Use Geotextile for Drainage Filtration, Class 1 Fabric (Protected) for the Filter Sock in accordance with the Special Provisions.

Include all costs for furnishing and installing the 4" Dia. Perforated PVC Pipe Underdrain, Filter Sock, #789 Coarse Aggregate, 4" Dia. Non-perforated PVC Outlet Pipe, Riprap, Geotextile Fabric for Riprap, rodent screen, and constructing the outlet as directed by the RCE in the unit price bid for Aggregate Underdrain (Aggregate #789) with 4" Perforated Pipe for Structures.

Include all costs for furnishing and installing the Second Method Waterproofing in the unit price bid for Waterproofing (Substructure - Second Method).

① Construct the pipe outlet with a pipe joint that is a minimum of 6" and a maximum of 1'-0" from the outlet end of the pipe. Provide rodent screen manufactured from T304 stainless steel or galvanized steel with a minimum wire diameter of 0.050". Provide a rodent screen with a minimum of 2 openings per inch and a maximum of 4 openings per inch.



SECTION THRU
RAILING WALL

DETAILS OF CONDUIT IN RAILING WALL

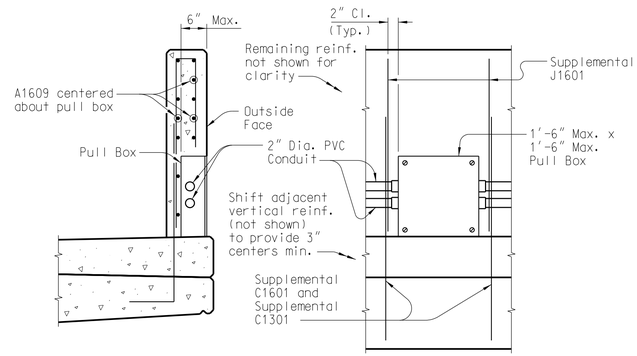
(Typ. ea. side of bridge)

Use Schedule 80 PVC nonmetallic pipe for conduit.

Extend conduits 6 inches beyond each end of the barrier parapet transition and cap with watertight covers.

Provide expansion/deflection fittings at all open joints in the railing wall.

Include all costs for furnishing and installing conduit, expansion/deflection and/or expansion fittings, and any incidentals required in the unit price bid for 2.0" Schedule 80 PVC Conduit.



SECTION THRU RAILING WALL AT PULL BOX

ELEVATION OF RAILING WALL AT PULL BOX

CONDUIT PULL BOX DETAILS

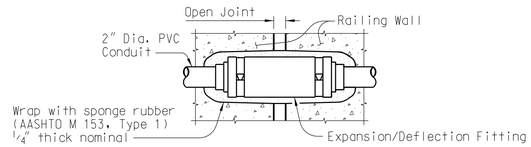
Mount nonmetallic or galvanized steel pull boxes flush with the outside face of the railing wall.

Space pull boxes at no more than 300 feet and a minimum of 10 feet from an open joint in the railing wall.

Provide pull boxes with gasketed weatherproof covers.

Field cut and/or bend railing wall reinforcing along outside face around the pull boxes as necessary to provide 2 inch clearance between the reinforcing and the pull boxes.

Include all costs for furnishing and installing pull boxes and any incidentals required (including supplemental reinforcing shown above) in the unit price bid for 2.0" Schedule 80 PVC Conduit.



EXPANSION / DEFLECTION FITTING DETAIL

GENERAL CONDUIT NOTES

Furnish and install approved conduits and fittings in accordance with the National Electric Code (NEC) and as directed by the RCE.

Furnish Schedule 80 PVC rigid nonmetallic conduits in accordance with NEMA TC-2 and UL Standard 651 and furnish fittings in accordance with NEMA TC-3 and UL Standard 514B. Furnish conduit and fittings with UL labels: conduit - on each 10 foot length; fittings - stamped or molded on each fitting. Connect conduit and fittings using solvent cement in accordance with manufacturer's recommendations.

Furnish and install NEMA Type 4X non-metallic or galvanized steel pull boxes sized in accordance with NEC requirements and the maximum limits shown. Provide gasketed weatherproof covers for the pull boxes.

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SOUTH CAROLINA — NV5 ENGINEERS AND CONSULTANTS, INC. — No. C00957 — CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA — REGISTERED PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

Document ID: L. Kevin Austin C24851110317F480... 11/8/2022

REV.	WBA	LKA	7-19
	0041800		
REV.	PCW	HL	4-19
	22x36 Border		
REV.	GAR	JMG	4-15
	Fitting Rubber		
REVIEWED			
QUAN.			
DR.	SRM/PNP	SAN	2-08
DES.			
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

GENERAL DETAILS
SHEET 2 OF 2
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

DRAWING NO. 700-Misc

10/19/2022 2:59:53 PM H:\Project\2006\320.20 SC 557 Alt 4\CLIENT\Structures\b41800gd2.dgn

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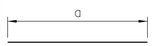
BRIDGE PLANS ID	SHEET NO.
0041800-B01	6



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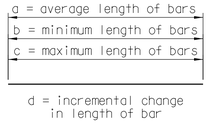

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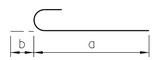

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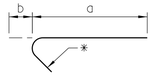

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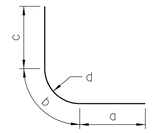

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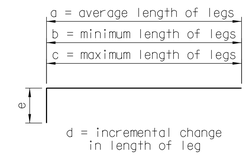

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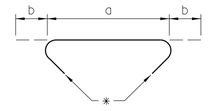

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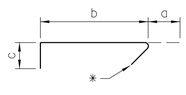

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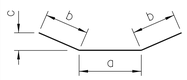

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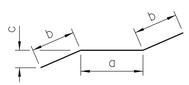

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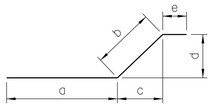

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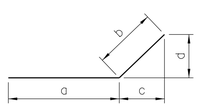

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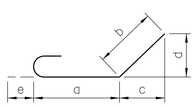

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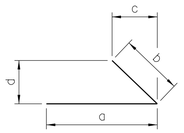

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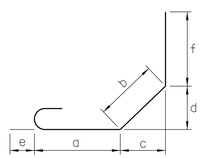

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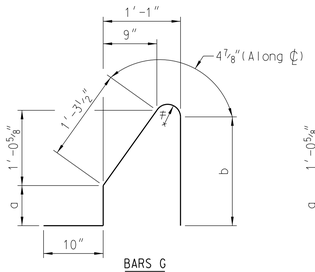

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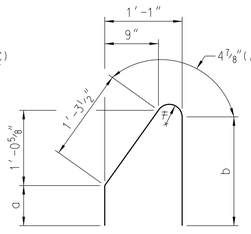

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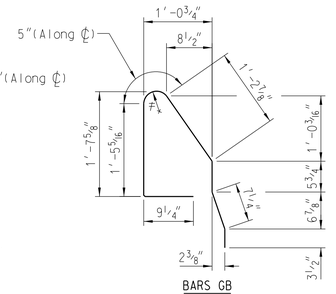

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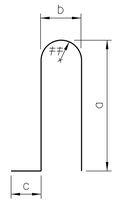

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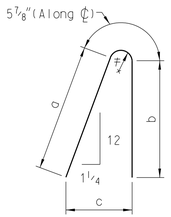

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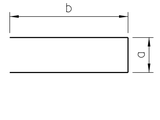

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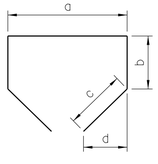

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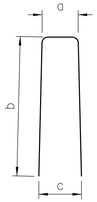

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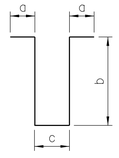

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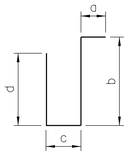

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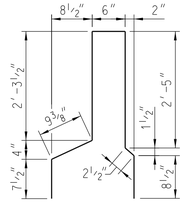

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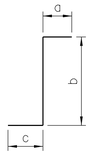

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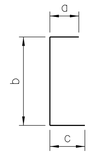

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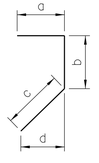

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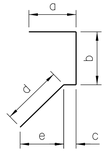

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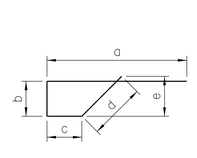

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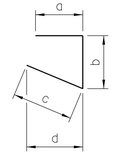

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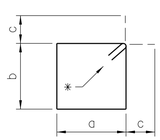

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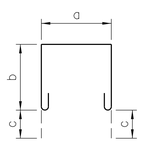

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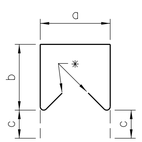

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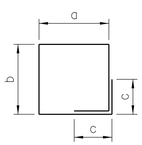

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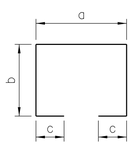

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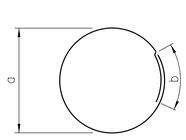

BARS T

BARS TA

BARS TB

BARS U

BARS UA

BARS V

③ BARS WS

③ BARS WP

*STANDARD 135° SEISMIC HOOK

Notes:

Dimensions shown are out-to-out and Standard C.R.S.I. bending details shall apply, except as noted.

\# - $1\frac{5}{8}$″ Inside Radius

- Outside Radius = b/2

◪ - $1\frac{1}{2}$ turns @ a closed pitch secured by an ultimate welded lap splice.

REINFORCING STEEL CODE

TYPE	SIZE	SERIES	COUPLER
A	16	01	②

① Ultimate Butt-Welded Splice - Use complete joint penetration butt weld conforming to the requirements of AWS D1.4/D1.4M Structural Welding Code - Reinforcing Steel (Latest Edition) and the Standard Specifications.

② If a mechanical coupler is required, the reinforcing steel code includes a designation of "S" for a standard coupler and a designation of "U" for an Ultimate Coupler. Unless noted otherwise, bar lengths shown in the Reinforcing Steel Schedules are to the center of the coupler. If necessary, adjust the length of the bars to maintain the required concrete cover.

③ Splice WS and WP bars with either ultimate welded lap splices or ultimate mechanical couplers. Use over and under lap splices, not side by side, to maintain bar clearances.

④ The fabrication tolerance for welded hoop diameter is $\pm\ 1/2$ inch.

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formerly CALYX Engineers & Consultants

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C24651110337F480... 11/8/2022

REV.	BY	CHK.	DATE
	WBA	LKA	3-21
	PCW	HL	03-21
	Rev. Bars LA		
	PCW	HL	10-19
	Rev. Bars LA		
REVIEWED			
QUAN.			
DR.	BMH	MRW	11-10
DES.			

YORK COUNTY
PENNIES FOR PROGRESS

REINFORCING BENDING DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

DRAWING NO. 703-01

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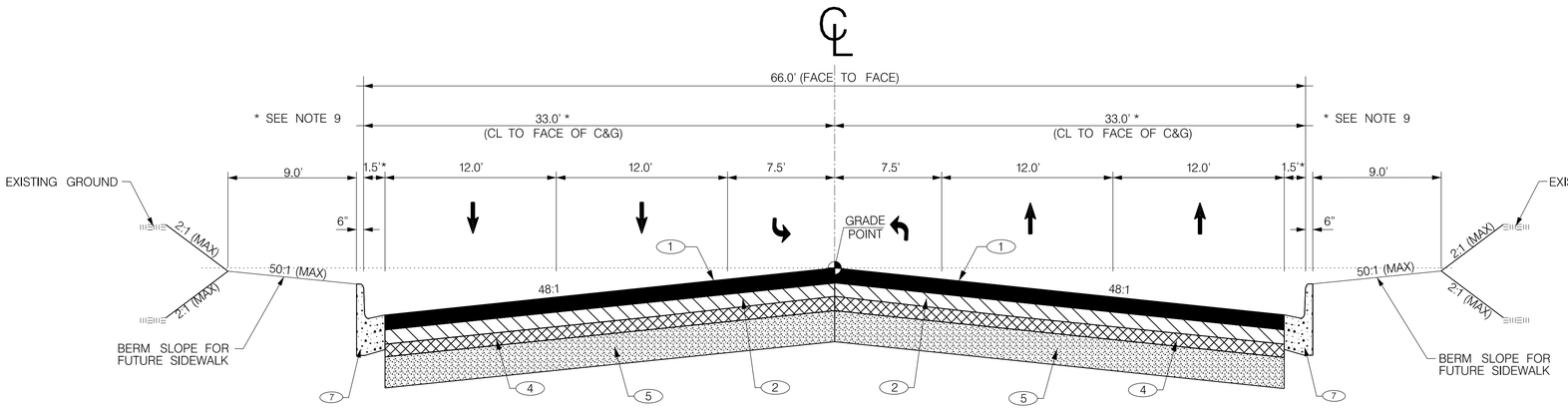
FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT ID	PROJECT NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	SC	YORK	0041800	03-013/11-009	557	7	

TYPICAL SECTION OF IMPROVEMENT
SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
COLUMBIA, S.C.

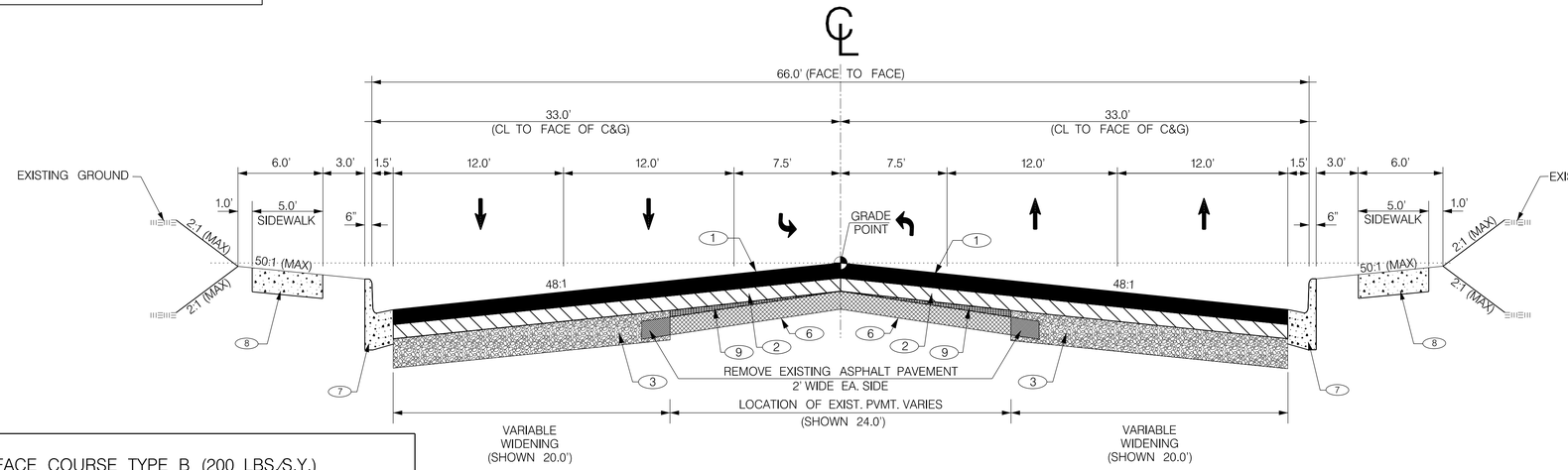
FOR INFORMATION ONLY



USE THIS SECTION FOR SC 557

STA. 246+00.00 TO STA. 255+70.87 (Begin Bridge)
STA. 259+21.13 (End Bridge) TO STA. 293+00.00

MILL 1.5" AND RESURFACE
STA. 330+02.00 TO STA. 333+97.00



USE THIS SECTION FOR SC 557

STA. 300+43.00 LT TO STA. 330+02.00 LT
STA. 300+35.19 RT TO STA. 330+02.00 RT

1		HOT MIX ASPHALT SURFACE COURSE TYPE B (200 LBS./S.Y.)
2		HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B (200 LBS./S.Y.)
3		ROLLER COMPACTED CONCRETE PAVEMENT – 8" UNIFORM
4		HOT MIX ASPHALT BASE COURSE TYPE A (400 LBS./S.Y.)
5		GRADED AGGREGATE BASE COURSE (12" UNIFORM)
6		RETAIN EXISTING PAVEMENT
7		CONCRETE CURB AND GUTTER (2'–0") VERTICAL FACE
8		CONCRETE SIDEWALK (4" UNIFORM)
9		HOT MIX ASPHALT SURFACE COURSE FOR BUILDUP TYPE B (VARIES)

NOTE:

1. ALL DIMENSIONS AND PAVEMENT DESIGNS ARE DETERMINED BY INDIVIDUAL PROJECTS.

2. FILL SLOPES
   6:1——0' TO 5' FILL
   4:1——5' TO 10' FILL
   2:1——OVER 10' FILL

SEE STD. DWG. SECTION 805 FOR GUARDRAIL PLACEMENT. PLACE 5.5' FROM BACK OF CURB WITH EXTRA LENGTH POSTS.

3. SEE STD. NO. 720–105–00 FOR CONCRETE CURB AND GUTTER DETAILS.

4. PEDESTRIAN RAMPS PER SCDOT STD. DWG. SECTION 720.

5. SEE STD. NO. 720–410–00 FOR CONCRETE DRIVEWAY DETAILS.

6. SUPERELEVATION SHALL BE ACHIEVED IN ACCORDANCE WITH STD. NO. 150–205–00.

7. PERFORM VARIABLE DEPTH MILLING AS REQUIRED BY ENGINEER.

8. PERFORM 8" FULL DEPTH PATCHING AS REQUIRED BY ENGINEER.

9. TRANSITION FACE OF C&G FROM 1.5' TO 1.58' WIDTH OVER 10' DISTANCE IN ADVANCE OF BRIDGE APPROACH SLAB

SOUTH CAROLINA NVS ENGINEERS AND CONSULTANTS,INC. No. C00957 CERTIFICATE OF AUTHORIZATION

NV5 ENGINEERS & CONSULTANTS, INC.
7500 E. INDEPENDENCE BLVD, SUITE 100
CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
SC License # 957
formerly CALYX Engineers & Consultants

RTE. SC 557 DESIGN SPEED			
FUNCTIONAL CLASS.	MPH	FROM STA.	TO STA.
RURAL MINOR ARTERIAL	45	203+05.00	330+02.00
EXCEPTIONS TO DESIGN SPEED			

PAVEMENT DESIGN

YORK COUNTY
PENNIES FOR PROGRESS

TYPICAL SECTION SHEET

SCALE 1"V = NTS SCALE 1"H = 5' RTE. SC 557

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FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT ID	PROJECT NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	SC	YORK	0041800	03-013/11-009	557	8	

FOR INFORMATION ONLY

-N-
EXISTING ROADWAY EMBANKMENT EXCAVATION ESTIMATED 6,500 CY
ERECT 550 LF MGS2C GUARDRAIL CONSTRUCT MT3 LEADING END TREATMENT TL3 CONSTRUCT MTBBC3 (MASH) THRIE BEAM BARRIER CONN.TL3
PRES. 75' R/W PER SC STATE PROJ. DKT. NO. 910 M.A.H.
REMOVE EXIST. GUARDRAIL
REMOVE EXISTING GUARDRAIL
PRESENT 37.5' R/W PER SC STATE PROJECT DKT. NO. 910 M.A.H.
REMOVE 191' X 30' BRIDGE
REMOVE EXISTING GUARDRAIL
ERECT 387.5 LF MGS2C GUARDRAIL CONSTRUCT MT3 LEADING END TREATMENT TL3 CONSTRUCT MTBBC3 (MASH) THRIE BEAM BARRIER CONN.TL3
REMAINDER OF TRACT 11 ACQUIRED BY YORK COUNTY
INSTALL DOUBLE SILT FENCE FROM 257+38.00 LT TO 263+00.00 LT
DRIVEWAY 1 PT=11+28.50
DRIVEWAY 1 PC=11+45.53
DRIVEWAY 1 PT=13+44.32 END CONSTRUCTION
RELOC. POT=14+62.41
RELOC. PC=10+39.98
RELOC.-SC 557- -CONST.C/L-
S 85° 53' 14" E
-SURVEY C/L-
N 83° 24' 00" E
20' CONC. APPR.SLAB
MATCHLINE TO SHEET 8 -SC 557- STA.247+50
MATCHLINE TO SHEET 10 -SC 557- STA.263+50
PLACE RIP-RAP CLASS C & GEOTEXTILE UNDER RIP-RAP (CLASS 2) TYPE C SEE PROFILE
INSTALL DOUBLE SILT FENCE FROM 256+50.00 RT TO 258+98.00 RT
ERECT 162.5 LF MGS2C GUARDRAIL CONST. MT3 LEADING END TREATMENT TL3 CONSTRUCT MTBBC3 (MASH) THRIE BEAM BARRIER CONN.TL3
TIE EQUALITY: DRIVEWAY 1 STA.10+00.00= -SC 557- POT STA.249+00.00
TIE EQUALITY: OUTFALL DITCH 4 STA.14+79.67= -SC 557- POT STA.253+73.89
ERECT 575 LF MGS2C GUARDRAIL CONSTRUCT MT3 LEADING END TREATMENT TL3 CONSTRUCT MTBBC3 (MASH) THRIE BEAM BARRIER CONN.TL3
CONSTRUCT 350.26' X 77.17' R.C. BRIDGE STA.255+70.87 TO STA.259+21.13 WITH 20' CONC. APPROACH SLABS EACH END OVERLAID WITH ASPHALT CONCRETE SURFACE COURSE (210 LBS/SY) (SEE BRIDGE PLANS)
TRANSITION FACE OF C&G FROM 1.5' TO 1.58' WIDTH OVER 10' DISTANCE IN ADVANCE OF BRIDGE APPROACH SLAB LT & RT
NEW TEMPORARY 220' R/W
CROWDERS CREEK
WOODS
OUTFALL DITCH 4

NOTE: RELOCATE CENTERLINE BETWEEN STA. 244+46.70 AND STA. 320+61.70

REMOVAL OF EXISTING PAVEMENT

ALIGNMENT CONTROL CAN BE FOUND ON REFERENCE SHEETS

SOUTH CAROLINA CALYX ENGINEERS AND CONSULTANTS, INC. No. C00957 CERTIFICATE OF AUTHORIZATION

NV5

NV5 ENGINEERS & CONSULTANTS, INC.
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SC License # 957
formerly CALYX Engineers & Consultants

REV. NO.	BY	DATE	DESCRIPTION OF REVISION
8			
7	CALYX	6/21/2019	ADDED DRIVEWAY FOR TRACT 9 RT OF SC 557 STA. 247+62
6	CALYX	4/3/2019	REMOVED TEMP R/W TRACT 11 STA 262+25 TO 267+80 LT
5	CALYX	12/20/2018	REVISED TRACT 11 DRIVEWAY GRADE AND TEMPORARY R/W
4	CALYX	10/09/2018	REVISED NEW ROW TRACT 11 STA. 260+50 TO 263+50 LT/RT. REVISED DRIVEWAY STA. 262+93 RT. CONSTR. LIMITS, & NPDES
3	CALYX	8/17/2018	REVISED NEW ROW TRACT 8 STA. 247+50 TO 251+27.76 LT. ADDED ACCESS DRIVEWAY STA. 249+00 LT.
2	CALYX	8/17/2018	REVISED NEW ROW TRACT 11 STA. 259+00 TO 263+50 RT & 262+25 TO 263+50 LT. REVISED DRIVEWAY TRACT 11
1	CALYX	5/31/2018	REMOVED BCA & NPDES TRACT 10

TOPO. DATE
DWG. DATE
R/W DATE
SQUAD -

YORK COUNTY
PENNIES FOR PROGRESS

SC 557
PLAN
STA. 247+50 TO STA. 263+50

SCALE 1"= 50' RTE. SC 557 DWG. NO.

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FOR INFORMATION ONLY

FED. ROAD DIV. NO.	STATE	COUNTY	PROJECT ID	PROJECT NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	SC	YORK	0041800	03-013/11-009	557	9	

SOUTH CAROLINA — NV5 ENGINEERS AND CONSULTANTS,INC. No. C00957 — CERTIFICATE OF AUTHORIZATION

NV5 ENGINEERS & CONSULTANTS, INC.
7500 E. INDEPENDENCE BLVD, STE 100
CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
NC License # F-1333

-SC 557-

UNCL. EXC. = 29,767 CY
BOR. EXC. = 0 CY

-SC 557- POT STA. 243+52.93 =
-S-46-152(RIDDLE MILL RD.)- POT STA. 10+00.00
-S-46-152(BETHEL SCHOOL RD.)- POT STA. 16+92.23

EXC. = 29,767 CY EMB. = 22,898 CY
30%= 6,869 CY
TOTAL = 29,767 CY TOTAL = 29,767 CY

25,409 CY EXC. AND 5,747 CY EMB. INCLUDED FROM RIDGE RD./KINGSBURRY RD.
12 CY EXC. AND 911 CY EMB. INCLUDED FROM PHARR YARN INC. DRIVEWAY
178 CY EXC. AND 231 CY EMB. INCLUDED FROM RIDDLE MILL RD.
245 CY EXC. AND 979 CY EMB. INCLUDED FROM BETHEL SCHOOL RD.

VPI = 235+50.00
Elev. = 634.84
(+) 2.76%
(-) 0.50%
FINISHED GRADE
EXISTING GRADE
BEGIN DITCH LT. STA.237+00.00 ELEV.628.75
-2.50%
-0.50%
-1.25%
-2.00%
STA.237+50.00 ELEV.627.50
BEGIN DITCH LT. STA.237+60.00 ELEV.627.45
END DITCH LT. STA.237+60.00 ELEV.627.45
STA.238+00.00 ELEV.627.95
END DITCH LT. STA.239+50.00 ELEV.630.95
(+90) 633.14 VPT
K = 208
680' V.C.
D.S. = 65 MPH
CONST.SPECIAL DITCH LT. STA.237+00 TO STA.237+60 SEE CROSS SECTIONS
CONST.SPECIAL DITCH LT. STA.237+60 TO STA.239+50 SEE CROSS SECTIONS
(-) 0.50%
(-) 3.64%
VPI = 246+16.00
Elev. = 629.51
(+76) 630.71 VPC
K = 153
480' V.C.
D.S. = 60 MPH

640 630 620 610 600 590 580 570

627.74 628.85 629.83 630.70 631.44 632.07 632.57 632.96 633.22 633.37 633.40 633.30 633.09 632.84 632.59 632.34 632.09 631.84 631.59 631.34 631.09 630.84 630.57 630.16 629.59 628.85 627.95 626.88 625.65 624.26 622.70

233+00 234+00 235+00 236+00 237+00 238+00 239+00 240+00 241+00 242+00 243+00 244+00 245+00 246+00 247+00 248+00

-SC 557-

+23.00

UNCL. EXC. = 500 CY
BOR. EXC. = 62,359 CY
EXC. = 500 CY EMB. = 48,655 CY
BOR. EXC. = 62,752 CY 30%= 14,597 CY
S. TOTAL = 63,252 CY S. TOTAL = 63,252 CY
LESS BOR. = 62,752 CY LESS BOR. = 62,752 CY
TOTAL = 500 CY TOTAL = 500 CY

OBTAIN 393 CY BORROW FROM WASTE IN BALANCE OF STA. 256+17 TO STA. 258+84
OBTAIN 62,359 CY BORROW FROM OFF-SITE

+17.00

UNCL. EXC. = 393 CY
BOR. EXC. = 0 CY
EXC. = 393 CY EMB. = 0 CY
30%= 0 CY
S. TOTAL = 0 CY
WASTE = 393 CY
TOTAL = 393 CY TOTAL = 393 CY

USE 393 CY OF WASTE FOR BORROW IN BALANCE OF STA. 251+23 TO STA. 256+17

+84.00

HYDROLOGY DATA:
D.A. = 91.62 sq.mi.= 58,637 ac.
Q50 = 9,940 cfs
Vel. = 5.1 ft/sec
50 Year W.S. Elev. = 580.63 ft.
Q100 = 11,400 cfs
Vel = 5.3 ft/sec
100 Year W.S. Elev. = 581.54 ft.
2 Year W.S. Elev. = 574.99 ft.

OVERTOPPING FLOOD:
Q = N/A cfs
Probability = Less than 0.002

UNCL. EXC. = 19,531 CY
BOR. EXC. = 0 CY
EXC. = 19,531 CY EMB. = 15,024 CY
30%= 4,507 CY
TOTAL = 19,531 CY TOTAL = 19,531 CY

(+56) 620.76 VPT
K = 153
480' V.C.
D.S. = 60 MPH
(+80) 605.31 VPC
K = 117
240' V.C.
D.S. = 55 MPH
VPI = 254+00.00
Elev. = 600.94
(-) 3.64%
(-) 1.60%
(+20) 599.02 VPT
BEGIN BRIDGE STA. 255+70.87 ELEV. 598.21'
END BRIDGE STA. 259+21.13 ELEV. 592.60'
FINISHED GRADE
(+65) 591.90 VPC
K = 116
250' V.C.
D.S. = 55 MPH
LOW POINT STA. 261+50.34 ELEV. 590.42
(+15) 590.60 VPT
END DITCH RT. STA.262+50.00 ELEV.604.50
PLACE EST. 950 TONS RIP-RAP CLASS C OVER GEOTEXTILE FOR EROSION CONTROL UNDER RIP-RAP (CLASS 2) TYPE C TO ELEV. 583.17 (BOTH BRIDGE ENDS)
EXISTING GRADE
CONST.SPECIAL DITCH LT. STA.254+00 TO STA.257+50 SEE CROSS SECTIONS
TOE OF FILL STA. 256+08
TOE OF FILL STA. 258+93
1938 HISTORICAL H.W. ELEV. = 582.6
2:1
BEGIN DITCH LT. STA.254+00.00 ELEV.577.00
BEGIN DITCH RT. STA.255+30.00 ELEV.572.85
CONST.SPECIAL DITCH RT. STA.255+30 TO STA.257+50 SEE CROSS SECTIONS
END DITCH LT. STA.257+50.00 ELEV.575.25
END DITCH RT. STA.257+50.00 ELEV.571.75
BEGIN DITCH LT STA.258+60.00 ELEV.573.15
BEGIN DITCH RT. STA.258+50.00 ELEV.570.25
CONST.SPECIAL DITCH LT. STA.258+60 TO STA.259+80 SEE CROSS SECTIONS
END DITCH LT. STA.259+80.00 ELEV.573.75
(-) 1.60%
(+) 0.56%
VPI = 260+90.00
Elev. = 589.90
18.00'
12.50%
CONST.SPECIAL DITCH RT. STA.258+50 TO STA.262+50 SEE CROSS SECTIONS
STA.261+00.00 ELEV.577.50
STA.260+50.00 ELEV.571.25

630 620 610 600 590 580 570 560 550

620.98 619.16 617.34 615.52 613.69 611.87 610.05 608.23 606.41 604.60 602.97 601.55 600.35 599.36 598.54 597.74 596.94 596.14 595.34 594.54 593.74 592.94 592.14 591.39 590.85 590.53 590.42 590.52 590.79 591.07

248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00 257+00 258+00 259+00 260+00 261+00 262+00 263+00

PROFILE | SURVEYED | PLOTTED | GRADES CHECKED | MASS HAUL | STRUCTURE NOTATIONS CHECKED
NOTE BOOK | No. | BY | DATE

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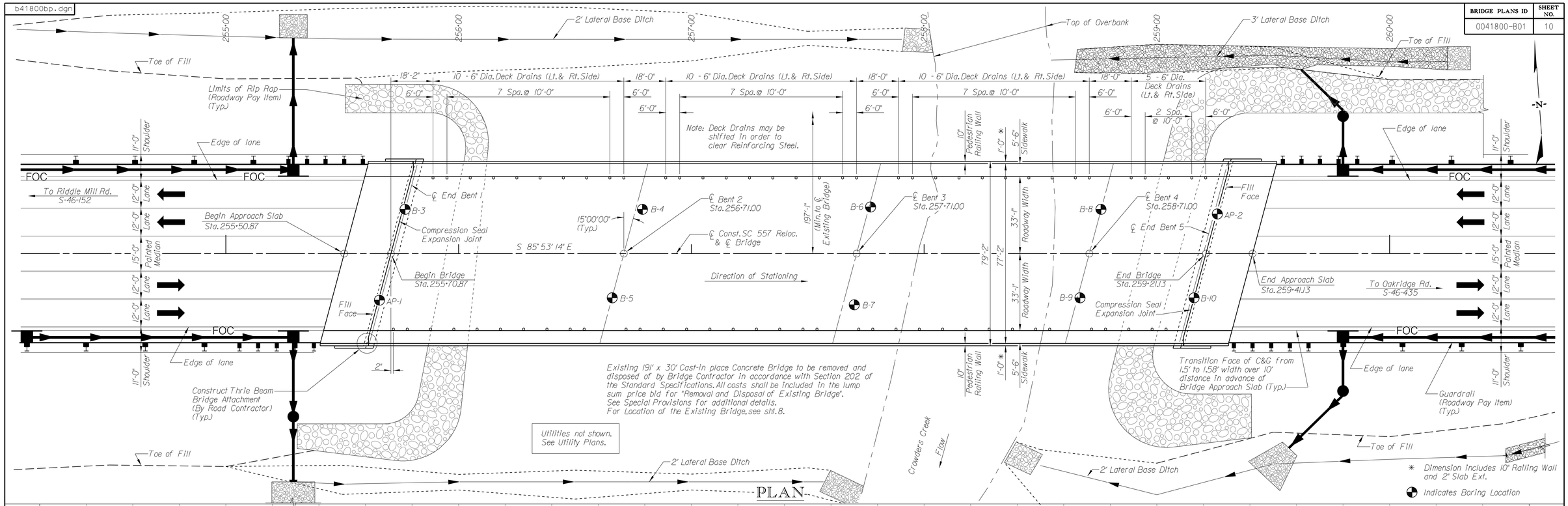
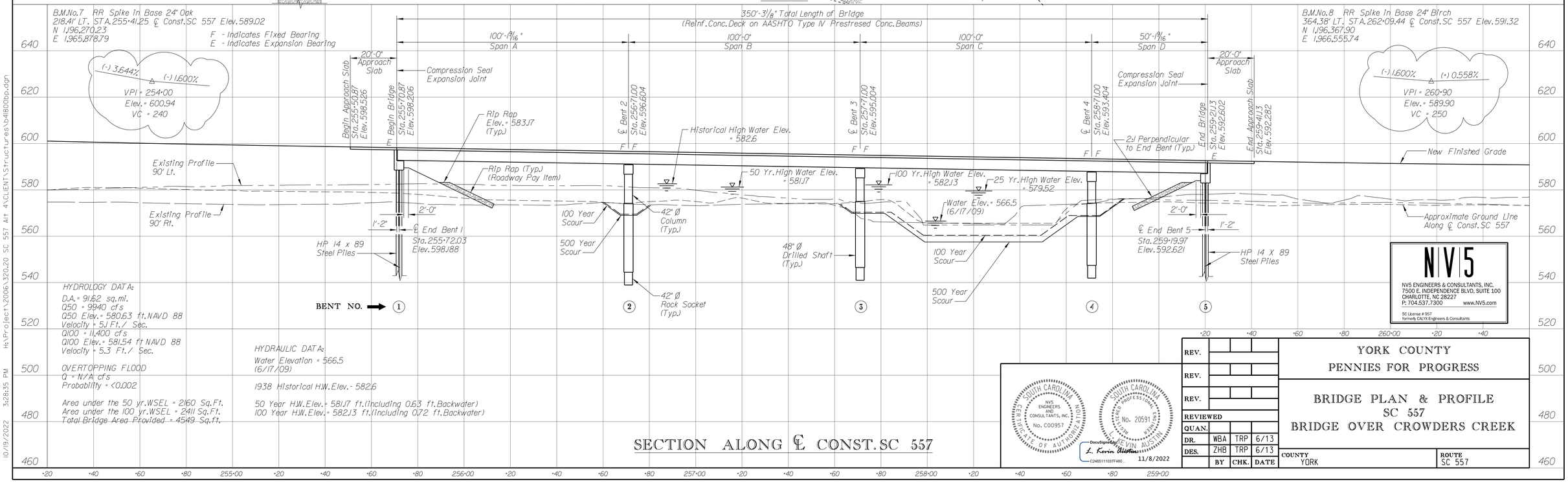
BRIDGE PLANS ID	SHEET NO.
0041800-B01	10



PLAN



HYDROLOGY DATA:
D.A. = 91.62 sq.mi.
Q50 = 9940 cfs
Q50 Elev. = 580.63 ft.NAVD 88
Velocity = 5.1 Ft./ Sec.
Q100 = 11,400 cfs
Q100 Elev. = 581.54 ft NAVD 88
Velocity = 5.3 Ft./ Sec.
OVERTOPPING FLOOD
Q = N/A cfs
Probability = <0.002
Area under the 50 yr.WSEL = 2160 Sq.Ft.
Area under the 100 yr.WSEL = 2411 Sq.Ft.
Total Bridge Area Provided = 4549 Sq.ft.

HYDRAULIC DATA:
Water Elevation = 566.5 (6/17/09)
1938 Historical H.W.Elev. - 582.6
50 Year H.W.Elev. = 581.17 ft.(Including 0.63 ft.Backwater)
100 Year H.W.Elev. = 582.13 ft.(Including 0.72 ft.Backwater)

SECTION ALONG ℄ CONST.SC 557

NV5 ENGINEERS & CONSULTANTS, INC.
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CHARLOTTE, NC 28227
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formerly CALVI Engineers & Consultants

SOUTH CAROLINA NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957 CERTIFICATE OF AUTHORITY

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 20591 KEVIN L. AUSTIN

DocuSigned by: L. Kevin Austin C2465111037F480... 11/8/2022

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	WBA	TRP	6/13
DES.	ZHB	TRP	6/13
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

BRIDGE PLAN & PROFILE
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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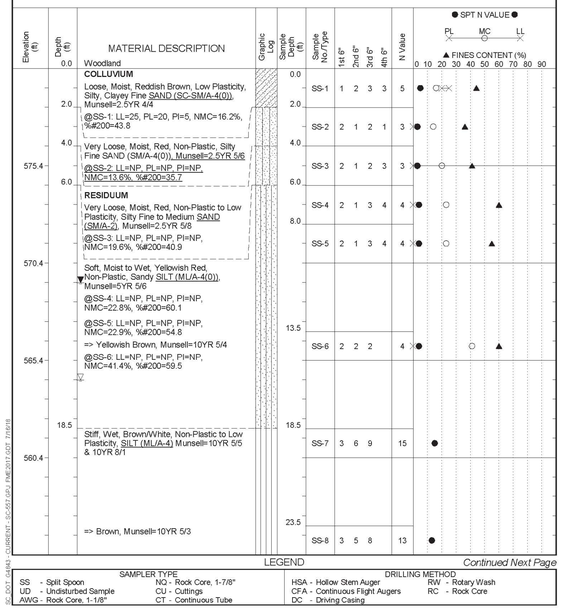
BRIDGE PLANS ID	SHEET NO.
0041800-B01	11

FOR INFORMATION ONLY

SCDOT Soil Test Log

Project ID:	G4843.000			**County:**	York	**Boring No.:**	B-3
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	255+77	**Offset:**	19 ft - L	**Alignment:**	Mainline
Elev.:	580.4 ft	**Latitude:**	35.120408	**Longitude:**	-81.11401	**Date Started:**	6/7/2018
Total Depth:	48.5 ft	**Soil Depth:**	48.5 ft	**Core Depth:**	0 ft	**Date Completed:**	6/7/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	N/A	**Driller:**	D. Harris	**Groundwater:**	**TOB** 16.0 ft	**24HR**	11.0 ft

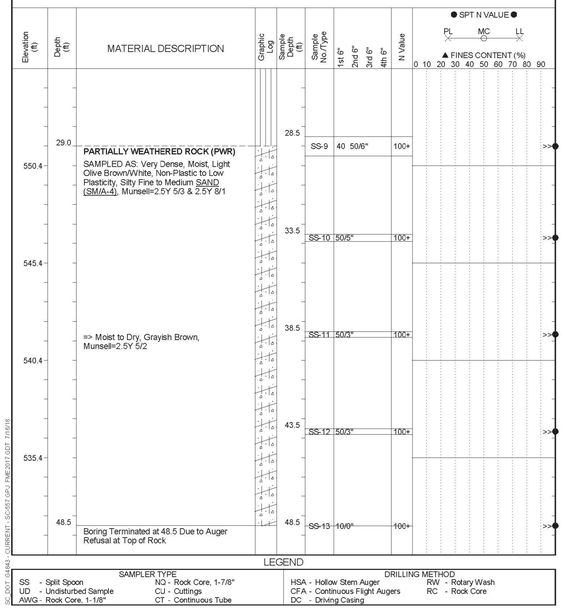


LEGEND *Continued Next Page*

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:	G4843.000			**County:**	York	**Boring No.:**	B-3
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	255+77	**Offset:**	19 ft - L	**Alignment:**	Mainline
Elev.:	580.4 ft	**Latitude:**	35.120408	**Longitude:**	-81.11401	**Date Started:**	6/7/2018
Total Depth:	48.5 ft	**Soil Depth:**	48.5 ft	**Core Depth:**	0 ft	**Date Completed:**	6/7/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	N/A	**Driller:**	D. Harris	**Groundwater:**	**TOB** 16.0 ft	**24HR**	11.0 ft

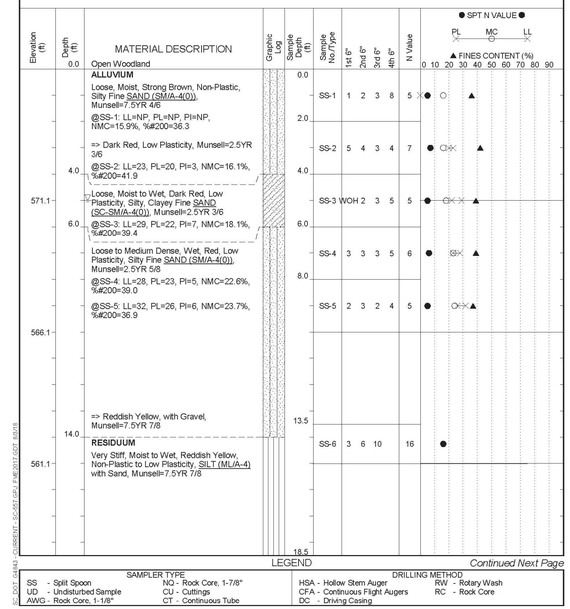


LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:	G4843.000			**County:**	York	**Boring No.:**	B-4
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	256+76	**Offset:**	19 ft - L	**Alignment:**	Mainline
Elev.:	576.1 ft	**Latitude:**	35.120389	**Longitude:**	-81.11368	**Date Started:**	6/6/2018
Total Depth:	46.8 ft	**Soil Depth:**	24.5 ft	**Core Depth:**	22.3 ft	**Date Completed:**	6/7/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA/RC	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	NQ	**Driller:**	D. Harris	**Groundwater:**	**TOB** 5.0 ft	**24HR**	Not Recorded



LEGEND *Continued Next Page*

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

NV5 ENGINEERS & CONSULTANTS, INC.
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DR.	WBA	LKA	7/19
DES.			
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

BORING LOGS
SHEET 1 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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FOR INFORMATION ONLY

SCDOT Soil Test Log

Project ID:	G4843.000	County:	York	Boring No.:	B-4
Site Description:	SC 557 Bridge over Crowders Creek	Route:	SC 557		
Eng./Geo.:	R. Wessinger	Boring Location:	256+76	Offset:	19 ft - L
Alignment:	Mainline	Elev.:	576.1 ft	Latitude:	35.120389
Longitude:	-81.11368	Date Started:	6/6/2018	Date Completed:	6/7/2018
Total Depth:	46.8 ft	Soil Depth:	24.5 ft	Core Depth:	22.3 ft
Bore Hole Diameter (in):	6	Sampler Configuration		Liner Required:	Y (N)
Liner Used:	Y (N)	Drill Machine:	CME 550X	Drill Method:	HSA/RC
Hammer Type:	Automatic	Energy Ratio:	81%	Core Size:	NQ
Driller:	D. Harris	Groundwater: TOB	5.0 ft	24HR	Not Recorded

Elevation (ft): 556.1, 551.1, 546.1, 541.1

Depth (ft)	Material Description	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	Remarks
			SS-7	4	8	9		17	
23.5	**PARTIALLY WEATHERED ROCK (PWR)** SAMPLED AS: Hard, Moist, Olive Gray, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), Munsell=5Y 4/2	23.5	SS-8	50/4"				100+	>>
24.5	**METAGABBRO** Grayish Green/White, Medium to Coarse Grained, Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene, Moderately to Slightly Weathered, Strong Rock, Joints Dip from 10° to 40°, Few Joints, Very Narrow to Tight, Filled (Healed), Irregular, Very Close, Rough to Very Rough	24.5	NQ-1						@25.1-ft: UC Strength=10,510 psi %REC=86, %RQD=75, RMR=65, GSI=60-70
	NQ-2: Strong Rock, Joints Dip from 10° to 40°, Few Joints, Very Narrow to Tight, Filled (Healed), Irregular, Very Close, Rough to Very Rough	26.8	NQ-2						%REC=100, %RQD=100, RMR=67, GSI=60-70; @31.4-ft: UC Strength=9,560 psi
31.8	**METAGABBRO/METADIORITE** Grayish Green/White/Gray, Fine to Coasre Grained, Thickly to Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene/Hornblende, Slightly Weathered to Fresh, Joints Dip from 20° to 45°, Occasional Joints, Very Narrow to Tight, Partially Filled/Filled (Quartz), Irregular, Very Close, Slightly Rough to Rough	31.8	NQ-3						%REC=99, %RQD=90, GSI=50-60
		36.8							

SPT N VALUE; PL, MC, LL; FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 8/3/18

SCDOT Soil Test Log

Project ID:	G4843.000	County:	York	Boring No.:	B-4
Site Description:	SC 557 Bridge over Crowders Creek	Route:	SC 557		
Eng./Geo.:	R. Wessinger	Boring Location:	256+76	Offset:	19 ft - L
Alignment:	Mainline	Elev.:	576.1 ft	Latitude:	35.120389
Longitude:	-81.11368	Date Started:	6/6/2018	Date Completed:	6/7/2018
Total Depth:	46.8 ft	Soil Depth:	24.5 ft	Core Depth:	22.3 ft
Bore Hole Diameter (in):	6	Sampler Configuration		Liner Required:	Y (N)
Liner Used:	Y (N)	Drill Machine:	CME 550X	Drill Method:	HSA/RC
Hammer Type:	Automatic	Energy Ratio:	81%	Core Size:	NQ
Driller:	D. Harris	Groundwater: TOB	5.0 ft	24HR	Not Recorded

Elevation (ft): 536.1, 531.1, 526.1, 521.1

Depth (ft)	Material Description	Sample Depth (ft)	Sample No./Type	N Value	Remarks
	@NQ-4: Moderately to Slightly Weathered, Joints Dip from 20° to 45°, Occasional Joints/Veins, Moderately Narrow to Narrow, Surface Stain/Partially Filled (Iron Oxide), Irregular, Very Close, Slightly Rough to Rough		NQ-4		%REC=93, %RQD=85, GSI=50-60
	@NQ-5: Medium to Coarse Grained, Highly Weathered to Fresh, Joints Dip from 20° to 45°, Few Joints, Moderately Narrow to Narrow, Partially Filled (Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	41.8	NQ-5		%REC=99, %RQD=88, GSI=55-65
46.8	Coring Terminated at 46.8 feet				

SPT N VALUE; PL, MC, LL; FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 8/3/18

SCDOT Soil Test Log

Project ID:	G4843.000	County:	York	Boring No.:	B-5
Site Description:	SC 557 Bridge over Crowders Creek	Route:	SC 557		
Eng./Geo.:	R. Wessinger	Boring Location:	256+66	Offset:	19 ft - R
Alignment:	Mainline	Elev.:	574.1 ft	Latitude:	35.120285
Longitude:	-81.113723	Date Started:	6/7/2018	Date Completed:	6/7/2018
Total Depth:	49.8 ft	Soil Depth:	29.3 ft	Core Depth:	20.5 ft
Bore Hole Diameter (in):	6	Sampler Configuration		Liner Required:	Y (N)
Liner Used:	Y (N)	Drill Machine:	CME 550X	Drill Method:	HSA/RC
Hammer Type:	Automatic	Energy Ratio:	81%	Core Size:	NQ
Driller:	D. Harris	Groundwater: TOB	6.0 ft	24HR	Cave 5.0-ft

Elevation (ft): 569.1, 564.1, 559.1, 554.1, 549.1

Depth (ft)	Material Description	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
0.0	Brushy Woodland							
	ALLUVIUM Very Loose, Moist, Brown, Non-Plastic, Silty Fine SAND (SM/A-4(0)), Munsell=7.5YR 4/4	0.0	SS-1	1	1	2	2	3
	@SS-1: LL=NP, PL=NP, PI=NP, NMC=17.6%, %#200=36.0	2.0	SS-2	1	2	1	1	3
	=> A-2-4; @SS-2: LL=NP, PL=NP, PI=NP, NMC=14.3%, %#200=21.4	4.0	SS-3	1	1	1	1	2
	=> Moist to Wet, Reddish Brown, Munsell=5YR 5/4; @SS-3: LL=NP, PL=NP, PI=NP, NMC=22.2%, %#200=14.6	6.0	SS-4	1	1	1	2	2
	=> Wet; @SS-4: LL=NP, PL=NP, PI=NP, NMC=19.9%, %#200=29.4	8.0	SS-5	2	2	2	3	4
	=> Brown, Munsell=7.5YR 5/4; @SS-5: LL=NP, PL=NP, PI=NP, NMC=22.7%, %#200=25.8							
	=> Yellowish Brown, Munsell=10YR 5/4	13.5	SS-6	3	4	5		9
	=> Medium Dense, Brownish Yellow, Munsell=10YR 6/6	18.5	SS-7	5	8	9		17
20.0	**RESIDUUM** Medium Dense, Wet, Light Yellowish Brown, Non-Plastic to Low Plasticity, Silty Fine SAND (SM/A-4), Munsell=2.5Y 6/4	23.5	SS-8	2	4	8		12
		28.5						

SPT N VALUE; PL, MC, LL; FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

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REVIEWED			
QUAN.			
DR.	WBA	LKA	7/19
DES.			

YORK COUNTY
PENNIES FOR PROGRESS

BORING LOGS
SHEET 2 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

FOR INFORMATION ONLY

SCDOT Soil Test Log

Project ID: G4843.000	**County:** York	**Boring No.:** B-5	
Site Description: SC 557 Bridge over Crowders Creek		**Route:** SC 557	
Eng./Geo.: R. Wessinger	**Boring Location:** 256+66	**Offset:** 19 ft - R	**Alignment:** Mainline
Elev.: 574.1 ft	**Latitude:** 35.120285	**Longitude:** -81.113723	**Date Started:** 6/7/2018
Total Depth: 49.8 ft	**Soil Depth:** 29.3 ft	**Core Depth:** 20.5 ft	**Date Completed:** 6/7/2018
Bore Hole Diameter (in): 6	**Sampler Configuration**	**Liner Required:** Y (N)	**Liner Used:** Y (N)
Drill Machine: CME 550X	**Drill Method:** HSA/RC	**Hammer Type:** Automatic	**Energy Ratio:** 81%
Core Size: NQ	**Driller:** D. Harris	**Groundwater: TOB** 6.0 ft	**24HR** Cave 5.0-ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	● SPT N VALUE ● / PL MC LL / ▲ FINES CONTENT (%)
	29.3	=> Very Dense, Dark Greenish Gray, Munsell=5GY 4/1	29.3	SS-9	28	50/3.5"			100+	>>
				SS-10	10/0"				100+	>>
544.1		**METADIORITE** Grayish Green/White/Gray, Medium Grained, Very Thickly Bedded, Plagioclase Feldspar/Hornblende, Moderately to Slightly Weathered, Joints Dip from 20° to 60°, Few Joints, Very Narrow to Tight, Filled (Calcite), Irregular, Very Close, Slightly Rough to Rough		NQ-1						%REC=86, %RQD=71, GSI=55-65
			31.1	NQ-2						@32.0-ft: UC Strength=26,420 psi; %REC=99, %RQD=98, RMR=75, GSI=55-65
539.1		@NQ-2: Very Strong Rock, Joints Dip from 20° to 45°, Few Joints, Very Narrow to Tight, Filled (Healed), Irregular, Very Close, Slightly Rough to Rough								
		@NQ-3: Very Strong Rock, Joints Dip from 10° to 70°, Few Joints, Narrow to Tight, Surface Stain/Partially Filled (Calcite/Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	36.1	NQ-3						@36.7-ft: UC Strength=20,110 psi; %REC=97, %RQD=87, RMR=69, GSI=55-65
534.1		@NQ-4: Joints Dip from 20° to 70°, Occasional Joints, Narrow to Tight, Surface Stain/Partially Filled (Chlorite/Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	41.1	NQ-4						%REC=97, %RQD=92, GSI=45-55
529.1		@NQ-5: Joints Dip from 30° to 80°, Few Joints, Narrow to Very Narrow, Surface Stain/Partially Filled (Calcite/Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	46.1	NQ-5						%REC=89, %RQD=66, GSI=50-60
524.1	49.8	Coring Terminated at 49.8 feet								
519.1										

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

SCDOT Soil Test Log

Project ID: G4843.000	**County:** York	**Boring No.:** B-6	
Site Description: SC 557 Bridge over Crowders Creek		**Route:** SC 557	
Eng./Geo.: R. Wessinger	**Boring Location:** 257+77	**Offset:** 20 ft - L	**Alignment:** Mainline
Elev.: 575.2 ft	**Latitude:** 35.120372	**Longitude:** -81.113344	**Date Started:** 6/6/2018
Total Depth: 45.9 ft	**Soil Depth:** 26.4 ft	**Core Depth:** 19.5 ft	**Date Completed:** 6/6/2018
Bore Hole Diameter (in): 6	**Sampler Configuration**	**Liner Required:** Y (N)	**Liner Used:** Y (N)
Drill Machine: CME 550X	**Drill Method:** HSA/RC	**Hammer Type:** Automatic	**Energy Ratio:** 81%
Core Size: NQ	**Driller:** D. Harris	**Groundwater: TOB** 7.0 ft	**24HR** 6.5 ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
	0.0	Woodland							
		ALLUVIUM Very Loose to Loose, Moist, Light Brown, Non-Plastic, Silty Fine SAND (SM/A-2-4), Munsell=7.5YR 6/4	0.0	SS-1	WOH	1	1	2	2
		@SS-1: LL=NP, PL=NP, PI=NP, NMC=17.6%, %#200=21.8	2.0	SS-12	4	4	5	6	9
		=> Strong Brown, Munsell=7.5YR 5/8; @SS-2: LL=NP, PL=NP, PI=NP, NMC=16.5%, %#200=34.4	4.0	SS-3	8	8	8	7	16
570.2		=> Medium Dense to Loose, Brown, Munsell=7.5YR 5/4; @SS-3: LL=NP, PL=NP, PI=NP, NMC=21.0%, %#200=33.8	6.0	SS-4	4	6	4	4	10
		=> Wet, A-4(0); @SS-4: LL=NP, PL=NP, PI=NP, NMC=27.7%, %#200=47.4	8.0	SS-5	1	1	1	2	2
565.2		=> Very Loose, Brown/Gray, A-2-4, Munsell=7.5YR 5/4 & 7.5YR 6/1; @SS-5: LL=NP, PL=NP, PI=NP, NMC=27.0%, %#200=20.4							
560.2	13.5	Very Soft, Wet, Gray, Non-Plastic, Sandy SILT (ML/A-4(0)), Munsell=7.5YR 5/1; @SS-6: LL=NP, PL=NP, PI=NP, NMC=43.3%, %#200=57.0	13.5	SS-6	1	1	1		2
555.2	18.5	Very Stiff, Wet to Moist, Dark Greenish Gray, Non-Plastic to Low Plasticity, Sandy SILT (ML/A-4), Munsell=5GY 4/1	18.5	SS-7	4	6	13		19
			23.5						

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

SCDOT Soil Test Log

Project ID: G4843.000	**County:** York	**Boring No.:** B-6	
Site Description: SC 557 Bridge over Crowders Creek		**Route:** SC 557	
Eng./Geo.: R. Wessinger	**Boring Location:** 257+77	**Offset:** 20 ft - L	**Alignment:** Mainline
Elev.: 575.2 ft	**Latitude:** 35.120372	**Longitude:** -81.113344	**Date Started:** 6/6/2018
Total Depth: 45.9 ft	**Soil Depth:** 26.4 ft	**Core Depth:** 19.5 ft	**Date Completed:** 6/6/2018
Bore Hole Diameter (in): 6	**Sampler Configuration**	**Liner Required:** Y (N)	**Liner Used:** Y (N)
Drill Machine: CME 550X	**Drill Method:** HSA/RC	**Hammer Type:** Automatic	**Energy Ratio:** 81%
Core Size: NQ	**Driller:** D. Harris	**Groundwater: TOB** 7.0 ft	**24HR** 6.5 ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	● SPT N VALUE ● / PL MC LL / ▲ FINES CONTENT (%)
				SS-8	10	10	18		28	
550.2										
	26.4	@NQ-3: Grayish Green, Joints Dip from 20° to 70°, Occasional Joints/Bedding, Very Narrow to Tight, Surface Stain/Filled (Calcite/Quartz), Irregular, Very Close, Smooth to Slightly Rough	26.4	~~SS-9~~	~~10/0"~~				~~100+~~	>>
		METAGABBRO/METADIORITE Grayish Green/White, Medium to Fine Grained, Very Thickly to Thickly Bedded, Plagioclase Feldspar/Clinopyroxene/ Hornblende, Highly to Slightly Weathered, Very Strong Rock, Joints Dip from 20° to 70°, Few Joints, Narrow to Tight, Surface Stain/Filled (Iron Oxide/Quartz), Irregular, Very Close, Slightly Rough to Rough		NQ-1						@27.7-ft: UC Strength=29,140 psi; %REC=32, %RQD=29 RMR=62, GSI=45-55
545.2			30.9							
		@NQ-2: Grayish Green/White/Gray, Extremely Strong Rock, Joints Dip from 20° to 70°, Occasional Joints/Bedding, Narrow to Very Narrow, Surface Stain/Filled (Iron Oxide/Quartz), Irregular, Very Close, Slightly Rough to Rough		NQ-2						%REC=98, %RQD=90, RMR=68, GSI=50-60; @35.0-ft: UC Strength=39,210 psi
540.2		@NQ-3: Joints Dip from 20° to 70°, Occasional Joints/Bedding, Very Narrow to Tight, Surface Stain/Filled (Calcite/Quartz), Irregular, Very Close, Smooth to Slightly Rough	35.9	NQ-3						%REC=98, %RQD=83, GSI=35-45
535.2		@NQ-4: Grayish Green/White/Gray/Black, Joints Dip from 10° to 70°, Numerous Joints/Shears, Narrow to Very Narrow, Surface Stain/Filled (Healed/Chlorite), Irregular, Very Close, Slickensided to Slightly Rough	40.9	NQ-4						%REC=98, %RQD=75, GSI=35-45
530.2	45.9	Coring Terminated at 45.9 feet								

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

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QUAN.			
DR.	WBA	LKA	7/19
DES.			

YORK COUNTY
PENNIES FOR PROGRESS

BORING LOGS
SHEET 3 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

FOR INFORMATION ONLY

SCDOT Soil Test Log

Project ID:	G4843.000		**County:**	York		**Boring No.:**	B-7
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	257+70	**Offset:**	22 ft - R	**Alignment:**	Mainline
Elev.:	574.4 ft	**Latitude:**	35.120257	**Longitude:**	-81.113376	**Date Started:**	6/5/2018
Total Depth:	48.3 ft	**Soil Depth:**	27.5 ft	**Core Depth:**	20.8 ft	**Date Completed:**	6/5/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA/RC	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	NQ	**Driller:**	D. Harris	**Groundwater: TOB**	6.0 ft	**24HR**	6.5 ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
	0.0	Woodland							
		ALLUVIUM Very Loose, Moist, Very Pale Brown, Non-Plastic, Silty Fine SAND (SM/A-2-4), Munsell=10YR 7/4 @SS-1: LL=NP, PL=NP, PI=NP, NMC=16.0%, %#200=19.8	0.0	SS-1	WOH/12"		1	1	1
		@SS-2: LL=NP, PL=NP, PI=NP, NMC=21.1%, %#200=20.1	2.0	SS-2	2	1	2	11	3
569.4		=> Medium Dense, Strong Brown, A-4(0), Munsell=7.5YR 5/6 @SS-3: LL=NP, PL=NP, PI=NP, NMC=17.8%, %#200=38.8	4.0	SS-3	7	11	8	8	19
			6.0	SS-4	2	2	2	2	4
	8.0	=> Very Loose, Wet, Strong Brown, Munsell=7.5YR 5/8 @SS-4: LL=NP, PL=NP, PI=NP, NMC=29.8%, %#200=40.6	8.0	SS-5	2	2	1	1	3
564.4		Very Loose, Wet, Strong Brown, Non-Plastic, Poorly Graded Fine SAND (SP-SM/A-2-4) with Silt, Munsell=7.5YR 5/8 @SS-5: LL=NP, PL=NP, PI=NP, NMC=26.6%, %#200=12.0							
559.4	13.5	Very Loose, Wet, Pale Brown/Gray, Non-Plastic, Silty Fine SAND (SM/A-4(0)), with Organics, Munsell=10YR 4/3 & 10YR 5/1 @SS-6: LL=NP, PL=NP, PI=NP, NMC=38.2%, %#200=36.1	13.5	SS-6	1	1	1		2
554.4	18.5	Very Loose, Wet, Light Gray, Non-Plastic, Poorly Graded M/C SAND (SP-SM/A-1-b) with Silt, Munsell=10YR 7/2 @SS-7: LL=NP, PL=NP, PI=NP, NMC=28.7%, %#200=6.0	18.5	SS-7	1	1	2		3
549.4	21.0	Medium Dense, Wet, Clear/Black, Non-Plastic, GRAVEL (GP) with Sand, Munsell=10YR 2/1	23.5	SS-8	27	16	4		20
	27.5		27.5	SS-9	10/0"				

● SPT N VALUE ● — PL, MC, LL — ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 8/3/18

SCDOT Soil Test Log

Project ID:	G4843.000		**County:**	York		**Boring No.:**	B-7
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	257+70	**Offset:**	22 ft - R	**Alignment:**	Mainline
Elev.:	574.4 ft	**Latitude:**	35.120257	**Longitude:**	-81.113376	**Date Started:**	6/5/2018
Total Depth:	48.3 ft	**Soil Depth:**	27.5 ft	**Core Depth:**	20.8 ft	**Date Completed:**	6/5/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA/RC	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	NQ	**Driller:**	D. Harris	**Groundwater: TOB**	6.0 ft	**24HR**	6.5 ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	Remarks
		METAGABBRO Grayish Green/White, Fine to Medium Grained, Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene, Moderately to Slightly Weathered, Joints Dip from 45° to 70°, Few Joints, Very Narrow to Tight, Surface Stain/Filled (Calcite/Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	27.5	NQ-1						%REC=85, %RQD=47, GSI=50-60
544.4	30.3	**METADIORITE** Grayish Green/White, Medium Grained, Thickly Bedded, Plagioclase Feldspar/Hornblende, Slightly Weathered to Fresh, Strong Rock, Joints Dip from 20° to 60°, Few Joints, Very Narrow to Tight, Surface Stain (Healed), Irregular, Very Close, Slightly Rough to Rough	30.3	NQ-2						@30.9-ft: UC Strength=8,200 psi %REC=100, %RQD=100 RMR=70, GSI=65-75
539.4		@NQ-3: Very Strong Rock, Joints Dip from 20° to 80°, Few Joints, Very Narrow to Tight, Surface Stain (Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	35.3	NQ-3						%REC=95, %RQD=80 RMR=69, GSI=60-70 @38.2-ft: UC Strength=17,190 psi
534.4	40.3	**METAGABBRO/METADIORITE** Grayish Green/White, Fine to Medium Grained, Thickly to Very Thickly Bedded, Plagioclase Feldspar//Clinopyroxene/Hornblende, Slightly Weathered to Fresh, Joints Dip from 20° to 70°, Few Joints, Very Narrow, Surface Stain/Partially Filled (Chlorite), Irregular, Very Close, Slightly Rough to Rough	40.3	NQ-4						%REC=93, %RQD=85, GSI=60-70
529.4		@NQ-5: Joints Dip from 20° to 60°, Few Joints, Tight, Filled (Calcite), Irregular, Very Close, Slightly Rough to Rough	45.3	NQ-5						%REC=99, %RQD=99, GSI=65-75
524.4	48.3	Coring Terminated at 48.3 feet								

● SPT N VALUE ● — PL, MC, LL — ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 8/3/18

SCDOT Soil Test Log

Project ID:	G4843.000		**County:**	York		**Boring No.:**	B-8
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	C. Piercy	**Boring Location:**	258+76	**Offset:**	19 ft - L	**Alignment:**	Mainline
Elev.:	574.4 ft	**Latitude:**	35.120351	**Longitude:**	-81.113011	**Date Started:**	5/30/2018
Total Depth:	46.6 ft	**Soil Depth:**	26.6 ft	**Core Depth:**	20 ft	**Date Completed:**	5/30/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA/RC	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	NQ	**Driller:**	D. Harris	**Groundwater: TOB**	5.3 ft	**24HR**	Not Recorded

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value
	0.0	Woodland							
		Very Soft, Moist, Brown, Non-Plastic, Sandy SILT (ML/A-4(0)), Munsell=7.5YR 5/4 @SS-1: LL=NP, PL=NP, PI=NP, NMC=33.9%, %#200=63.2	0.0	SS-1	WOH/18"			2	WOH
		=> Low Plasticity, A-4(5) @SS-2: LL=34, PL=26, PI=8, NMC=27.7%, %#200=68.0	2.0	SS-2	3	2	2	1	4
569.4		=> A-4(1) @SS-3: LL=30, PL=26, PI=4, NMC=30.9%, %#200=56.1	4.0	SS-3	WOH	1	1	1	2
		=> Light Yellowish Brown, A-4(3), Munsell=10YR 6/4 @SS-4: NMC=47.9%	6.0	SS-4	WOH/24"				WOH
564.4		=> Grayish Brown, A-4(2), Munsell=10YR 5/2 @SS-5: LL=31, PL=25, PI=6, NMC=35.3%, %#200=56.3	8.0	SS-5	WOH/24"				WOH
559.4	13.5	Very Loose, Wet, Gray, Non-Plastic, Silty Fine SAND (SM/A-2-4, Munsell=2.5Y 5/1 @SS-6: LL=NP, PL=NP, PI=NP, NMC=33.3%, %#200=25.5	13.5	SS-6	WOH	1	2		3
554.4		=> Grayish Brown, Munsell=2.5Y 5/2 @SS-7: LL=NP, PL=NP, PI=NP, NMC=30.3%, %#200=14.1	18.5	SS-7	1	1	1		2
			23.5						

● SPT N VALUE ● — PL, MC, LL — ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

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YORK COUNTY
PENNIES FOR PROGRESS

BORING LOGS
SHEET 4 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK — ROUTE: SC 557

FOR INFORMATION ONLY

SCDOT Soil Test Log (Boring B-8)

Project ID:	G4843.000	County:	York	Boring No.:	B-8		
Site Description:	SC 557 Bridge over Crowders Creek	Route:	SC 557				
Eng./Geo.:	C. Piercy	Boring Location:	258+76	Offset:	19 ft - L	Alignment:	Mainline
Elev.:	574.4 ft	Latitude:	35.120351	Longitude:	-81.113011	Date Started:	5/30/2018
Total Depth:	46.6 ft	Soil Depth:	26.6 ft	Core Depth:	20 ft	Date Completed:	5/30/2018
Bore Hole Diameter (in):	6	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 550X	Drill Method:	HSA/RC	Hammer Type:	Automatic	Energy Ratio:	81%
Core Size:	NQ	Driller:	D. Harris	Groundwater: TOB	5.3 ft	24HR	Not Recorded

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6" / 2nd 6" / 3rd 6" / 4th 6"	N Value	SPT N VALUE / PL MC LL / FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
	24.0	=> Light Yellowish Brown, Munsell=2.5Y 6/3		SS-8	27 50/3"	100+	>>
549.4		**PARTIALLY WEATHERED ROCK (PWR)** SAMPLED AS: Very Dense, Wet to Moist, Very Dark Grayish Green, Non-Plastic to Low Plasticity, Silty Fine to Coarse SAND (SM), with Gravel, Munsell=5GY 3/2					
	26.6	=> Light Olive Brown, Munsell=2.5Y 5/3	26.6	SS-9	50/0.5"	100+	>>
		METADIORITE White/Gray/Black, Medium Grained, Thickly Bedded, Plagioclase Feldspar/Hornblende, Moderately to Slightly Weathered, Strong Rock, Joints Dip from 20° to 60°, Occasional Joints, Very Narrow to Tight, Surface Stain (Iron Oxide), Irregular, Very Close, Slightly Rough to Rough		NQ-1			@27.2-ft: UC Strength=13,680 psi; %REC=76, %RQD=41 RMR=37, GSI=30-40
544.4		@NQ-2: Very Strong Rock, Joints Dip from 20° to 70°, Fewl Joints, Very Narrow to Tight, Surface Stain, Irregular, Very Close, Slightly Rough to Rough	31.6	NQ-2			%REC=88, %RQD=74 RMR=65, GSI=50-60
539.4							@35.4-ft: UC Strength=19,620 psi
	36.6	**METAGABBRO** Grayish Green, Fine Grained, Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene, Highly to Moderately Weathered, Joints Dip from 20° to 80°, Numerous Joints, Moderately Wide, Spotty (Healed), Irregular, Very Close, Slightly Rough to Rough	36.6	NQ-3			%REC=20, %RQD=0, GSI=25-35
534.4							
		METAGABBRO/METADIORITE Grayish Green/White/Gray, Medium to Fine Grained, Thickly to Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene/ bHornblende, Highly to Moderately Weathered, Very Strong Rock, Joints Dip from 10° to 70°, Numerous Joints, Very Narrow to Tight, Surface Stain (Clay/Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	41.6	NQ-4			@42.4-ft: UC Strength=16,810 psi; %REC=90, %RQD=53, RMR=47, GSI=35-45
529.4	46.6	Coring Terminated at 46.6 feet					

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

SCDOT Soil Test Log (Boring B-9)

Project ID:	G4843.000	County:	York	Boring No.:	B-9		
Site Description:	SC 557 Bridge over Crowders Creek	Route:	SC 557				
Eng./Geo.:	C. Piercy	Boring Location:	258+67	Offset:	19 ft - R	Alignment:	Mainline
Elev.:	574.0 ft	Latitude:	35.120247	Longitude:	-81.113053	Date Started:	5/31/2018
Total Depth:	40.9 ft	Soil Depth:	20.9 ft	Core Depth:	20 ft	Date Completed:	5/31/2018
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 550X	Drill Method:	RW/RC	Hammer Type:	Automatic	Energy Ratio:	81%
Core Size:	NQ	Driller:	D. Harris	Groundwater: TOB	5.0 ft	24HR	Cave 6.2-ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6" / 2nd 6" / 3rd 6" / 4th 6"	N Value	SPT N VALUE / PL MC LL / FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
	0.0	Woodland					
	0.1	TOPSOIL (0.5")	0.0				
		Very Soft, Moist, Brown, Non-Plastic, SILT (ML/A-4(0)), Micaceous, Munsell=7.5YR 5/3; @SS-1: LL=NP, PL=NP, PI=NP, NMC=31.6%, %#200=90.8		SS-1	WOH/18" 2	WOH	
	2.0	Very Loose, Moist, Brown, Low Plasticity, Silty Fine SAND (SM/A-2-4), Micaceous, with Organics (Piece of Wood), Munsell=7.5YR 5/3; @SS-2: LL=33, PL=27, PI=6, NMC=33.0%, %#200=28.8	2.0	SS-2	2 1 1 1	2	
569.0		=> Wet, Brown, Munsell=7.5YR 5/4	4.0	SS-3	1 1 WOH/12"	1	
	6.0	Very Soft, Wet, Brown, Low Plasticity, SILT (ML/A-4(5) with Sand, Munsell=7.5YR 5/4; @SS-4: LL=NP, PL=NP, PI=NP, NMC=44.9%, %#200=71.5	6.0	SS-4	WOH/24"	WOH	
	8.0	Very Soft, Wet, Grayish Brown, Non-Plastic, Sandy SILT (ML/A-4(0)), Munsell=2.5Y 5/2; @SS-5: LL=NP, PL=NP, PI=NP, NMC=40.1%, %#200=55.2	8.0	SS-5	WOH/18" 2	WOH	
564.0		=> Gray, Munsell=2.5Y 5/1					
	13.5	Loose to Very Loose, Wet, Gray, Non-Plastic, Silty Fine to Medium SAND (SM/A-2-4), Micaceous, with Gravel; @SS-6: LL=NP, PL=NP, PI=NP, NMC=24.7%, %#200=19.6	13.5	SS-6	1 2 3	5	
559.0							
		=> Grayish Brown, with Organics (Wood), Munsell=2.5Y 5/2	18.5	SS-7	WOH 3 1	4	*Piece of Wood Lodged in Shoe of Spoon*
554.0	20.9		20.9	SS-8	50/0"	100+	>>

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

SCDOT Soil Test Log (Boring B-9, continued)

Project ID:	G4843.000	County:	York	Boring No.:	B-9		
Site Description:	SC 557 Bridge over Crowders Creek	Route:	SC 557				
Eng./Geo.:	C. Piercy	Boring Location:	258+67	Offset:	19 ft - R	Alignment:	Mainline
Elev.:	574.0 ft	Latitude:	35.120247	Longitude:	-81.113053	Date Started:	5/31/2018
Total Depth:	40.9 ft	Soil Depth:	20.9 ft	Core Depth:	20 ft	Date Completed:	5/31/2018
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME 550X	Drill Method:	RW/RC	Hammer Type:	Automatic	Energy Ratio:	81%
Core Size:	NQ	Driller:	D. Harris	Groundwater: TOB	5.0 ft	24HR	Cave 6.2-ft

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6" / 2nd 6" / 3rd 6" / 4th 6"	N Value	SPT N VALUE / PL MC LL / FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
		METADIORITE White/Gray/Black, Medium Grained, Thickly Bedded, Plagioclase Feldspar/Hornblende, Moderately to Slightly Weathered, Very Strong Rock, Joints Dip from 20° to 80°, Numerous Joints, Very Narrow to Tight, Surface Stain (Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	20.9	NQ-1			@21.7-ft: UC Strength=19,840 psi; %REC=86, %RQD=40 RMR=57, GSI=40-50
549.0		@NQ-2: Very Strong Rock, Joints Dip from 30° to 60°, Occasional Joints, Very Narrow to Tight, Surface Stain (Iron Oxide), Irregular, Very Close, Slightly Rough to Rough	25.9	NQ-2			@28.1-ft: UC Strength=26,980 psi; %REC=85, %RQD=70, RMR=60, GSI=40-50
544.0	30.9	**METAGABBRO/METADIORITE** Grayish Green/White/Gray, Medium Grained, Thickly to Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene/Hornblende, Slightly Weathered to Fresh, Joints Dip from 30° to 60°, Few Joints, Very Narrow to Tight, Filled (Calcite), Irregular, Very Close, Slightly Rough to Rough	30.9	NQ-3			%REC=100, %RQD=99, GSI=55-65
539.0	35.9	**METADIORITE** White/Gray/Black, Medium Grained, Thickly Bedded, Plagioclase Feldspar/Hornblende, Fresh, Joints Dip from 20° to 80°, Few Joints, Very Narrow to Tight, Partially Filled/Filled (Calcite), Irregular, Very Close, Slightly Rough to Rough	35.9	NQ-4			%REC=94, %RQD=93, GSI=55-65
534.0	40.9	Coring Terminated at 40.9 feet					

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

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YORK COUNTY
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BORING LOGS
SHEET 5 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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BRIDGE PLANS ID	SHEET NO.
0041800-B01	16

FOR INFORMATION ONLY

SCDOT Soil Test Log

Project ID: G4843.000		**County:** York		**Boring No.:** B-10	
Site Description: SC 557 Bridge over Crowders Creek				**Route:** SC 557	
Eng./Geo.: C. Piercy	**Boring Location:** 259+16	**Offset:** 19 ft - R		**Alignment:** Mainline	
Elev.: 573.2 ft	**Latitude:** 35.120237	**Longitude:** -81.112888		**Date Started:** 5/31/2018	
Total Depth: 26.1 ft	**Soil Depth:** 19.3 ft	**Core Depth:** 6.8 ft		**Date Completed:** 5/31/2018	
Bore Hole Diameter (in): 4	**Sampler Configuration**	**Liner Required:** Y [✓ N]		**Liner Used:** Y [✓ N]	
Drill Machine: CME 550X	**Drill Method:** RW/RC	**Hammer Type:** Automatic		**Energy Ratio:** 81%	
Core Size: NQ	**Driller:** D. Harris	**Groundwater:** **TOB** 5.0 ft		**24HR** 0.3 ft	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	● SPT N VALUE ● / PL MC LL / ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
	0.0	Very Loose, Moist, Brown, Low Plasticity, Silty Fine SAND (SM/A-4(0)), Micaceous, Munsell=7.5YR 4/4 @SS-1: LL=30, PL=27, PI=3, NMC=25.1%, %#200=44.5	0.0	SS-1	WOH/24"				WOH	
	2.0	Very Soft, Moist, Brown, Non-Plastic, Sandy SILT (ML/A-4(0)), Micaceous, Munsell=10YR 6/4 @SS-2: LL=NP, PL=NP, PI=NP, NMC=35.2%, %#200=50.9	2.0	SS-2	WOH/18"		1		WOH	
568.2	4.0	Very Loose, Moist to Wet, Brown, Non-Plastic, Silty Fine SAND (SM/A-2-4), Munsell=10YR 5/3 @SS-3: LL=NP, PL=NP, PI=NP, NMC=29.3%, %#200=19.8	4.0	SS-3	1	1	2	2	3	
		=> Wet, Light Brownish Gray, Munsell=10YR 6/2 @SS-4: LL=NP, PL=NP, PI=NP, NMC=29.8%, %#200=20.3	6.0	SS-4	1	2	1	1	3	
	8.0	Very Loose, Wet, Grayish Brown, Low Plasticity, Silty, Clayey Fine SAND (SC-SM/A-4(0)), with Organics, Munsell=2.5Y 5/2 @SS-5: LL=24, PL=20, PI=4, NMC=29.4%, %#200=49.4	8.0	SS-5	WOH/24"				WOH	
563.2										
	13.5		13.5							

LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

SCDOT Soil Test Log

Project ID: G4843.000		**County:** York		**Boring No.:** B-10	
Site Description: SC 557 Bridge over Crowders Creek				**Route:** SC 557	
Eng./Geo.: C. Piercy	**Boring Location:** 259+16	**Offset:** 19 ft - R		**Alignment:** Mainline	
Elev.: 573.2 ft	**Latitude:** 35.120237	**Longitude:** -81.112888		**Date Started:** 5/31/2018	
Total Depth: 26.1 ft	**Soil Depth:** 19.3 ft	**Core Depth:** 6.8 ft		**Date Completed:** 5/31/2018	
Bore Hole Diameter (in): 4	**Sampler Configuration**	**Liner Required:** Y [✓ N]		**Liner Used:** Y [✓ N]	
Drill Machine: CME 550X	**Drill Method:** RW/RC	**Hammer Type:** Automatic		**Energy Ratio:** 81%	
Core Size: NQ	**Driller:** D. Harris	**Groundwater:** **TOB** 5.0 ft		**24HR** 0.3 ft	

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	4th 6"	N Value	● SPT N VALUE ● / PL MC LL / ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
		Very Soft, Wet, Grayish Brown, Low Plasticity, Sandy, Silty CLAY (CL-ML/A-4(1)), Micaceous, with Organics, Munsell=2.5Y 5/2 @SS-6: LL=25, PL=18, PI=7, NMC=39.9%, %#200=56.5		SS-6	WOH	1	1		2	
558.2		=> Gray, Munsell=2.5Y 5/1								
	18.5	**PARTIALLY WEATHERED ROCK (PWR)**	18.5	SS-7	50/4"				100+	>>
	19.3	SAMPLED AS: Hard, Wet, Gray, Non-Plastic, Silty Fine SAND (SM/A-4), with Organics (Wood), Munsell=2.5Y 5/1	19.3	SS-8	50/0"				100+	>> @19.4-ft: UC Strength=26,670 psi
553.2		**METAGABBRO** Grayish Green/White, Medium Grained, Very Thickly Bedded, Plagioclase Feldspar/Clinopyroxene, Slightly Weathered, Very Strong Rock, Joints Dip from 20° to 40°, Few Joints, Very Narrow to Tight, Surface Stain/Filled (Iron Oxide/Quartz), Irregular, Very Close, Slightly Rough to Rough		NQ-1						%REC=98, %RQD=98 RMR=72, GSI=55-65
		@NQ-2: Joints Dip from 10° to 40°, Few Joints/Veins, Very Narrow to Tight, Surface Stain/Filled (Iron Oxide/Quartz), Irregular, Very Close, Slightly Rough to Rough	21.1	NQ-2						%REC=80, %RQD=79, GSI=50-60
548.2										
	26.1	Coring Terminated at 26.1 feet								

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC_DOT G4843 - CURRENT - SC-557.GPJ FME2017.GDT 7/16/18

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YORK COUNTY
PENNIES FOR PROGRESS

BORING LOGS
SHEET 6 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY YORK | ROUTE SC 557

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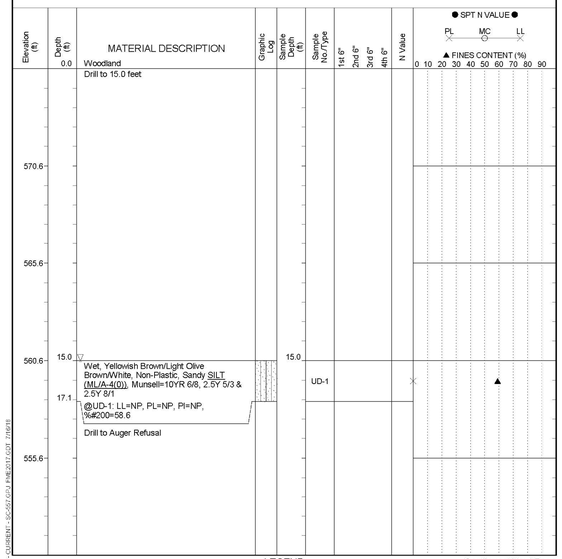
BRIDGE PLANS ID	SHEET NO.
0041800-B01	16A

FOR INFORMATION ONLY

SCDOT Soil Test Log

Project ID:	G4843.000			**County:**	York	**Boring No.:**	AP-1
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	255+66	**Offset:**	20 ft - R	**Alignment:**	Mainline
Elev.:	575.6 ft	**Latitude:**	35.120303	**Longitude:**	-81.114057	**Date Started:**	6/8/2018
Total Depth:	37.4 ft	**Soil Depth:**	37.4 ft	**Core Depth:**	0 ft	**Date Completed:**	6/8/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	N/A	**Driller:**	D. Harris	**Groundwater:**	**TOB** 15 ft	**24HR**	Not Recorded



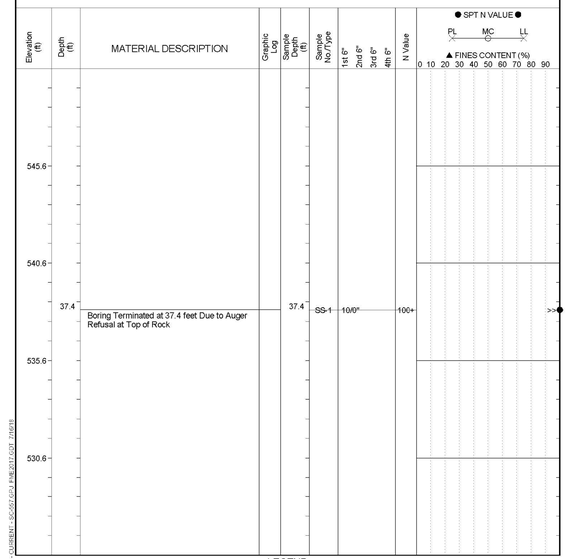
LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

Continued Next Page

SCDOT Soil Test Log

Project ID:	G4843.000			**County:**	York	**Boring No.:**	AP-1
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	R. Wessinger	**Boring Location:**	255+66	**Offset:**	20 ft - R	**Alignment:**	Mainline
Elev.:	575.6 ft	**Latitude:**	35.120303	**Longitude:**	-81.114057	**Date Started:**	6/8/2018
Total Depth:	37.4 ft	**Soil Depth:**	37.4 ft	**Core Depth:**	0 ft	**Date Completed:**	6/8/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	N/A	**Driller:**	D. Harris	**Groundwater:**	**TOB** 15 ft	**24HR**	Not Recorded

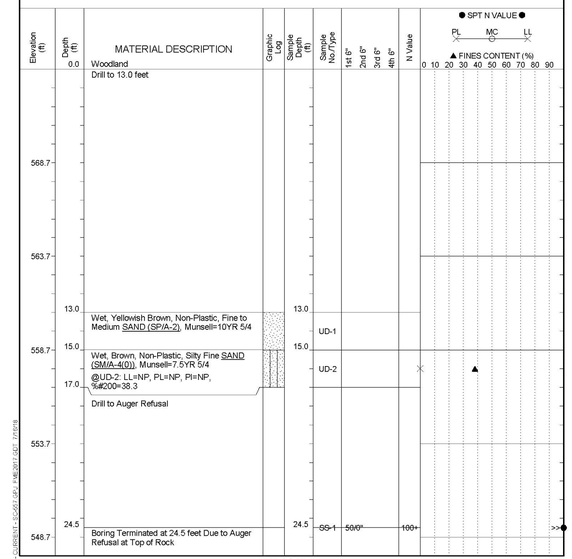


LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SCDOT Soil Test Log

Project ID:	G4843.000			**County:**	York	**Boring No.:**	AP-2
Site Description:	SC 557 Bridge over Crowders Creek					**Route:**	SC 557
Eng./Geo.:	C. Piercy	**Boring Location:**	259+26	**Offset:**	17 ft - L	**Alignment:**	Mainline
Elev.:	573.7 ft	**Latitude:**	35.120333	**Longitude:**	-81.112848	**Date Started:**	6/1/2018
Total Depth:	24.5 ft	**Soil Depth:**	24.5 ft	**Core Depth:**	0 ft	**Date Completed:**	6/1/2018
Bore Hole Diameter (in):	6	**Sampler Configuration**		**Liner Required:**	Y (N)	**Liner Used:**	Y (N)
Drill Machine:	CME 550X	**Drill Method:**	HSA	**Hammer Type:**	Automatic	**Energy Ratio:**	81%
Core Size:	N/A	**Driller:**	D. Harris	**Groundwater:**	**TOB** Not Recorded	**24HR**	Cave 2.0-f



LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
UD - Undisturbed Sample	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

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YORK COUNTY
PENNIES FOR PROGRESS

BORING LOGS
SHEET 7 OF 7
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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BRIDGE PLANS ID	SHEET NO.
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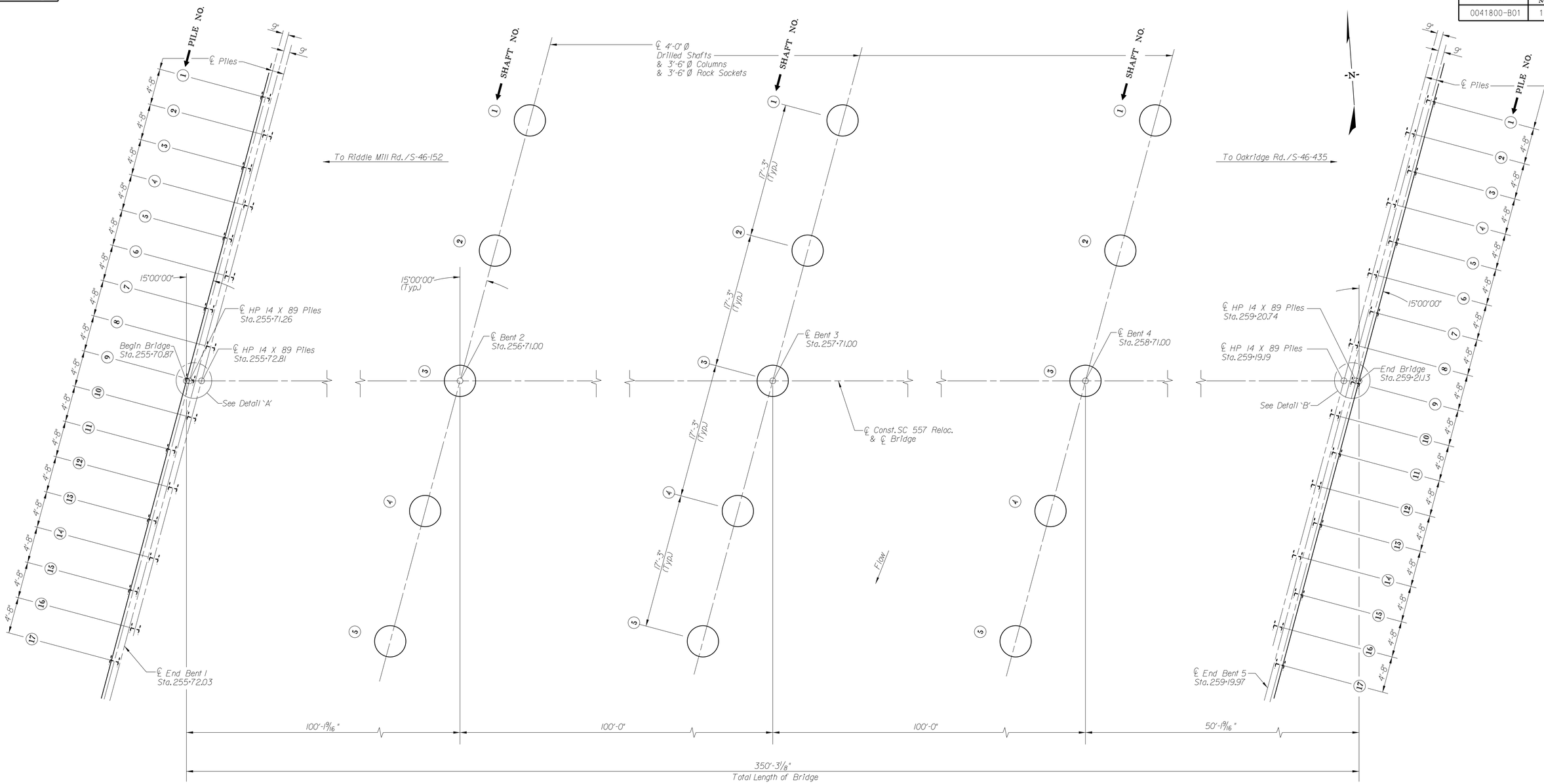
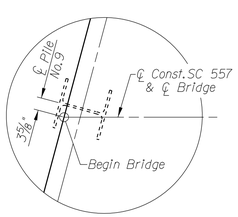
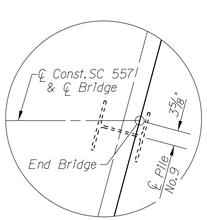




DETAIL 'A'



DETAIL 'B'

FOUNDATION LAYOUT

All piles shall be HP 14 x 89 Steel Piles

Dimensions to piles are measured to ℄ of pile.

Dimensions to Drilled Shafts are measured to ℄ Drilled Shafts.

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SOUTH CAROLINA — No. 20591 — KEVIN L. AUSTIN — REGISTERED PROFESSIONAL ENGINEER

DocuSigned by: L. Kevin Austin C2465111037F480...

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PENNIES FOR PROGRESS

FOUNDATION LAYOUT
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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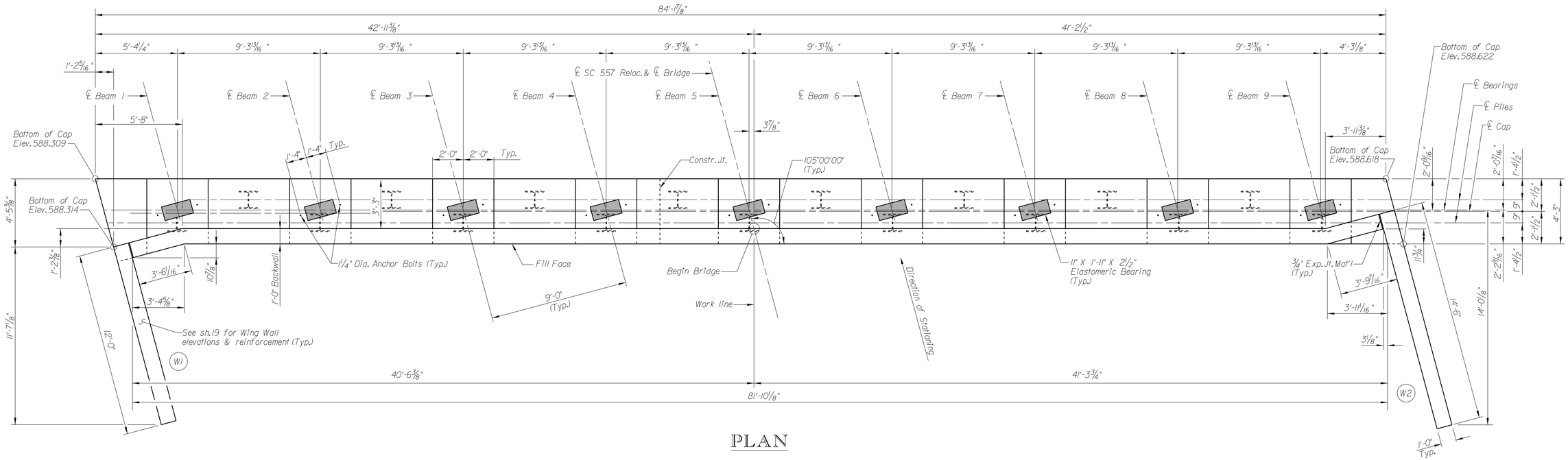
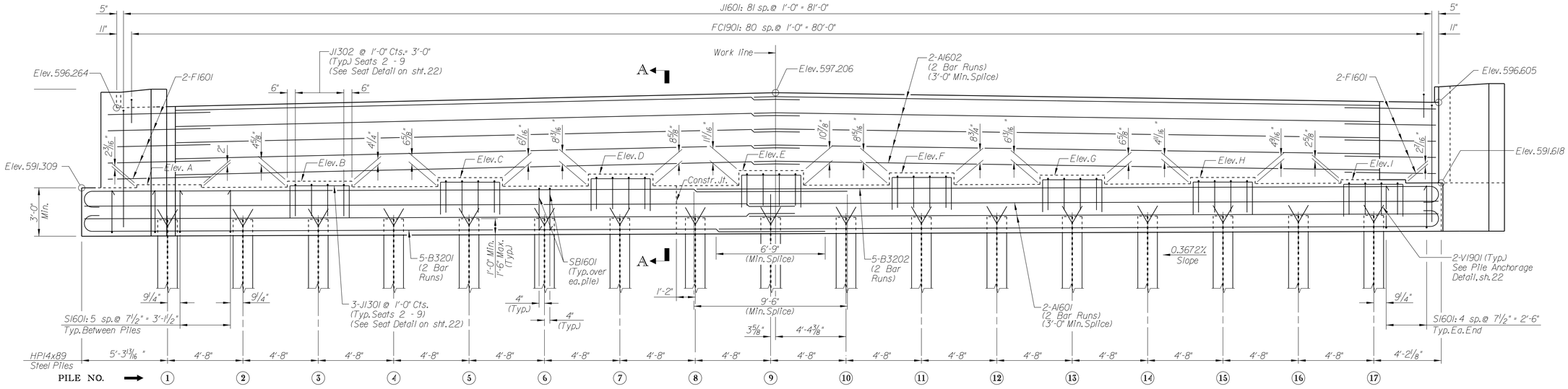
BRIDGE PLANS ID	SHEET NO.
0041800-B01	18



PLAN



ELEVATION

(Looking in the direction of stationing)

Notes:

HP14x89 steel piling shall conform to the latest AASHTO specifications for M270 steel and have a minimum yield strength of 50 ksi.

For anticipated pile tip elevation at End Bent 1,see table on sh. 22.

For Section A-A and Reinforcing Steel Schedule, see sh. 22.

For Pile Notes, see sh. 22.

For Pile Anchorage detail,see sh.22.

For Elastomeric Bearing and Bearing Plate Details, see sh. 37.

Cast build-ups monolithically with end bent caps.

For pipe underdrain details,see sh.5.

SEAT ELEVATIONS			
A	591.504	F	592.237
B	591.723	G	592.096
C	591.942	H	591.954
D	592.160	I	591.813
E	592.379		

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SOUTH CAROLINA No. 20591 REGISTERED PROFESSIONAL ENGINEER KEVIN AUSTIN

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YORK COUNTY
PENNIES FOR PROGRESS

END BENT 1
PLAN & ELEVATION
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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BRIDGE PLANS ID	SHEET NO.
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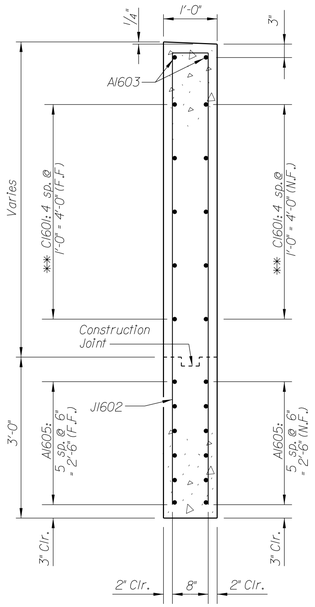
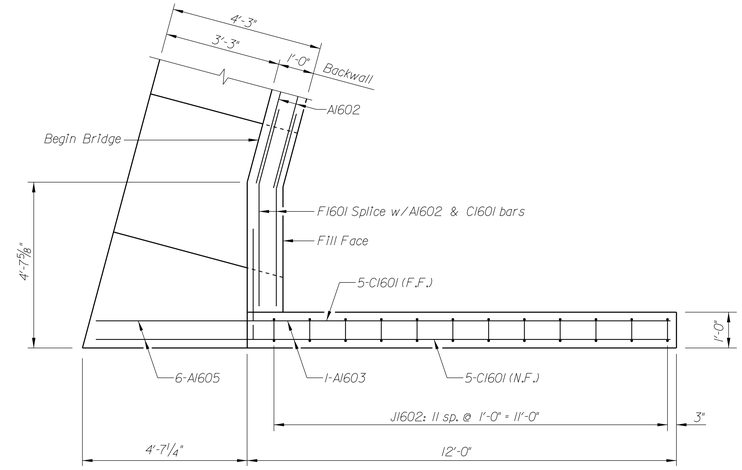


SECTION B-B

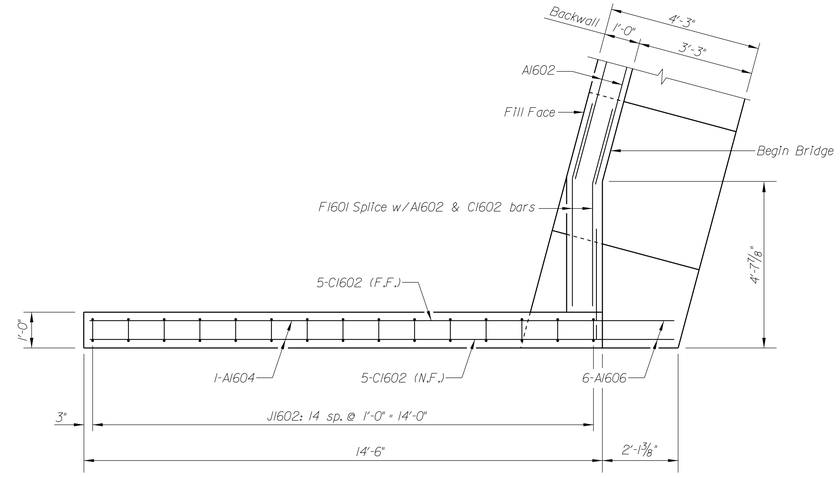


LEFT WING PLAN - W1

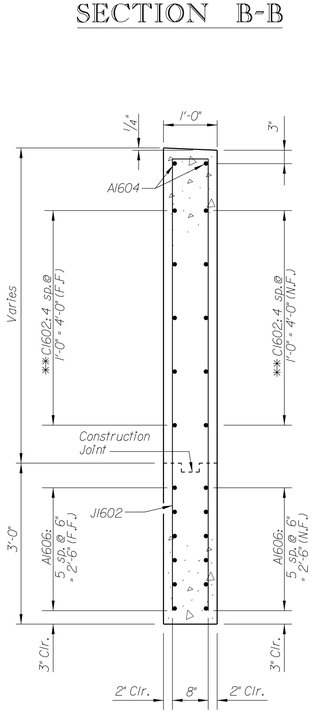
Notes:

N.F. Denotes Near Face

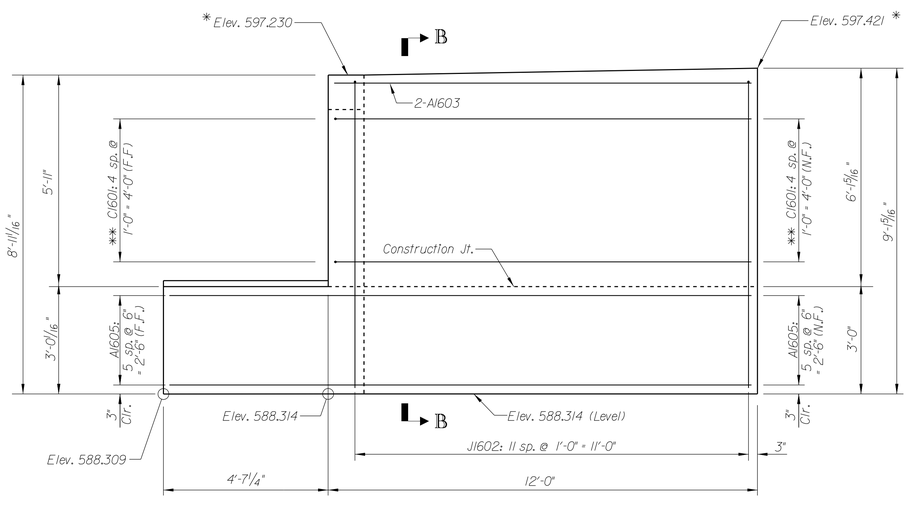
F.F. Denotes Far Face



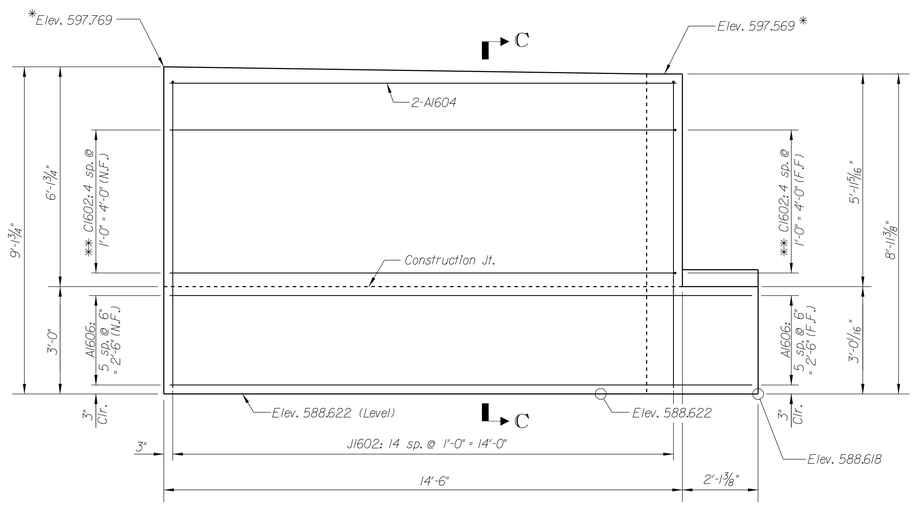
RIGHT WING PLAN - W2



SECTION C-C



LEFT WING ELEVATION - W1



RIGHT WING ELEVATION - W2

*Elevations shown @ inside face of Wing Wall

**Match with F1601 bars in backwall

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YORK COUNTY
PENNIES FOR PROGRESS

END BENT 1
WING WALL DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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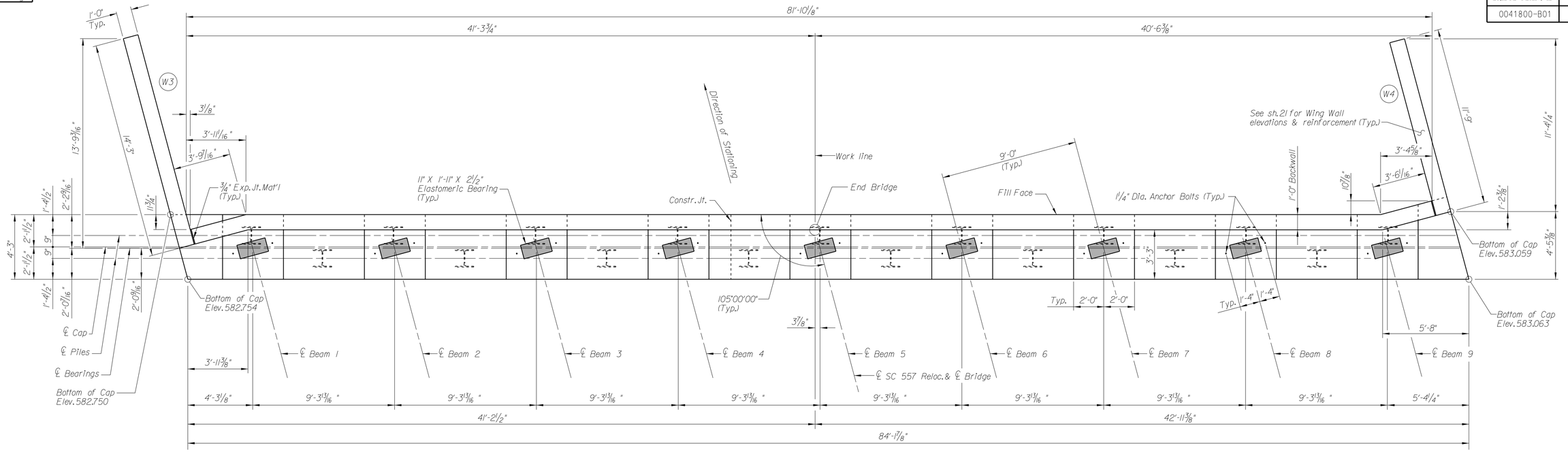
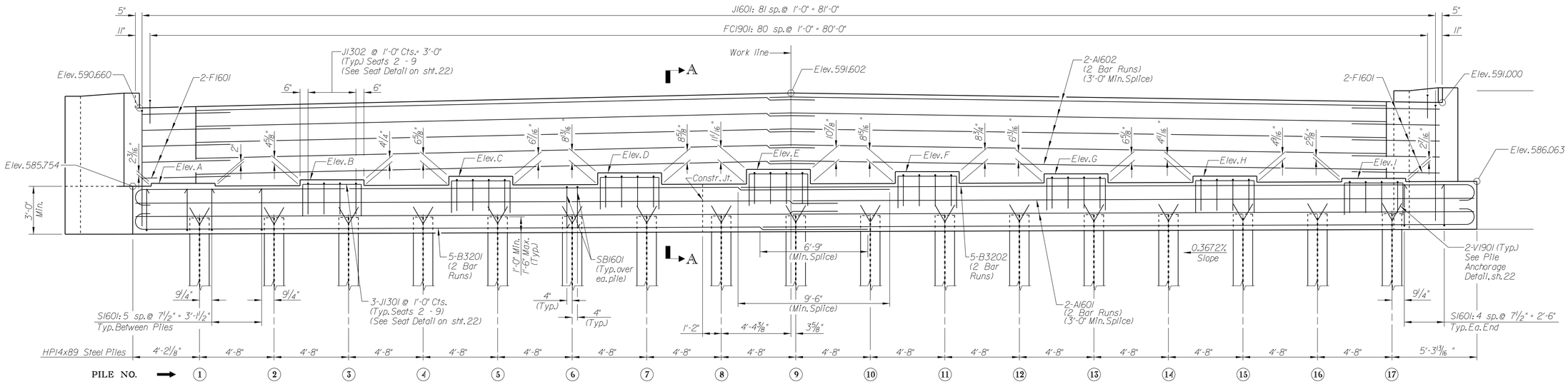
BRIDGE PLANS ID	SHEET NO.
0041800-B01	20



PLAN



ELEVATION

(Looking in the direction of stationing)

Notes:

HP14x89 steel piling shall conform to the latest AASHTO specifications for M270 steel and have a minimum yield strength of 50 ksi.

For anticipated pile tip elevation at End Bent 5, see table on sh. 22.

For Section A-A and Reinforcing Steel Schedule, see sh. 22.

For Pile Notes, see sh. 22.

For Pile Anchorage detail, see sh. 22.

For Elastomeric Bearing and Bearing Plate Details, see sh. 37.

Cast build-ups monolithically with end bent caps.

For pipe underdrain details, see sh. 5.

SEAT ELEVATIONS			
A	585.940	F	586.673
B	586.159	G	586.532
C	586.378	H	586.390
D	586.596	I	586.249
E	586.815		

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YORK COUNTY
PENNIES FOR PROGRESS

END BENT 5
PLAN & ELEVATION
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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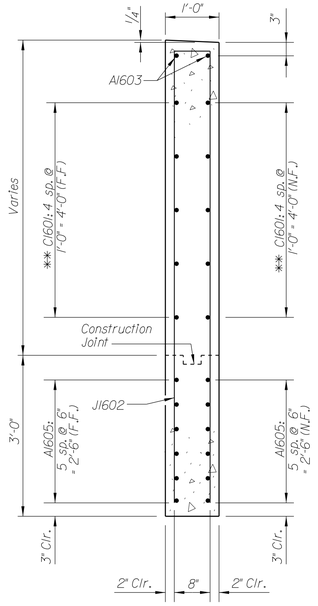
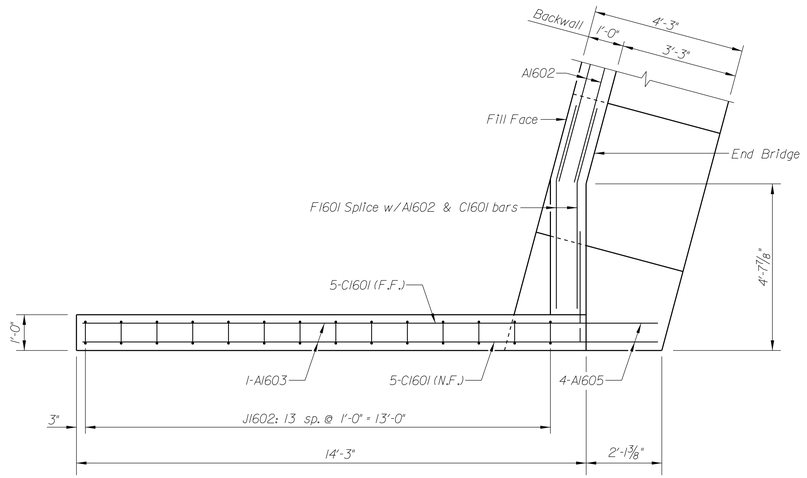
BRIDGE PLANS ID	SHEET NO.
0041800-B01	21



SECTION B-B

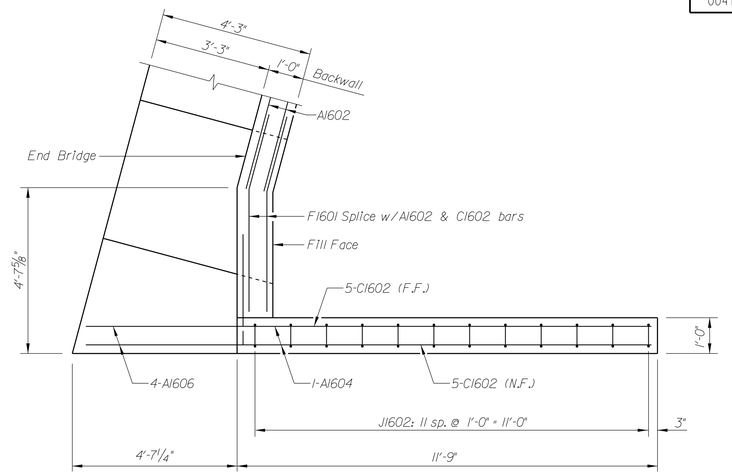


LEFT WING PLAN - W3

Notes:

N.F. Denotes Near Face

F.F. Denotes Far Face



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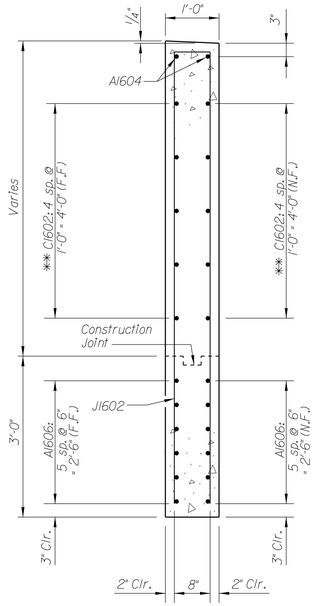

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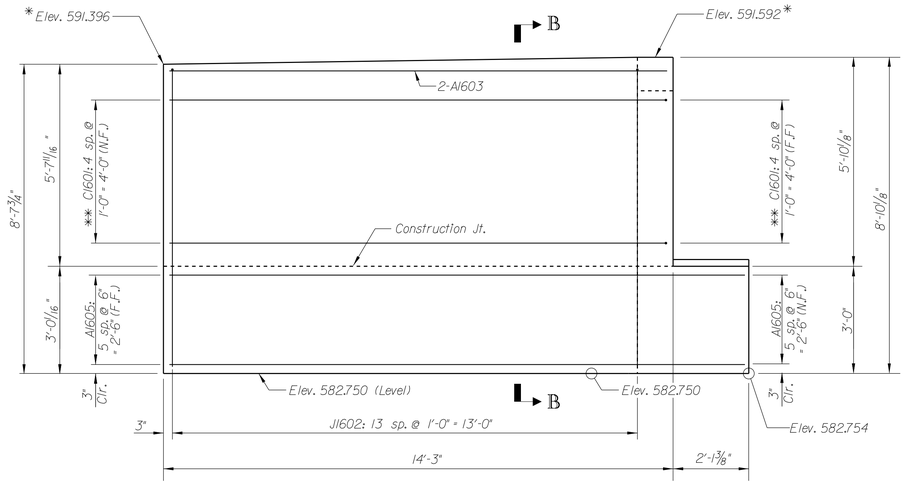
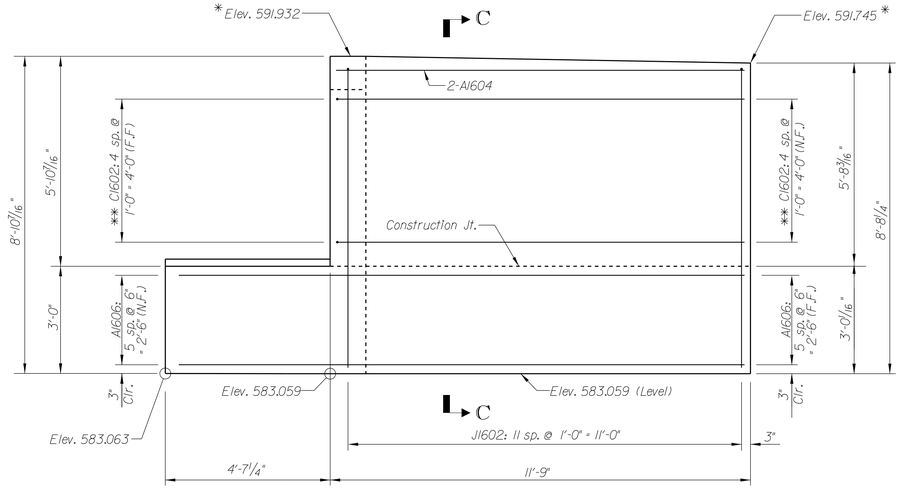


LEFT WING ELEVATION - W3



RIGHT WING ELEVATION - W4

*Elevations shown @ inside face of Wing Wall

**Match with F1601 bars in backwall

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SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

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YORK COUNTY
PENNIES FOR PROGRESS

END BENT 5
WING WALL DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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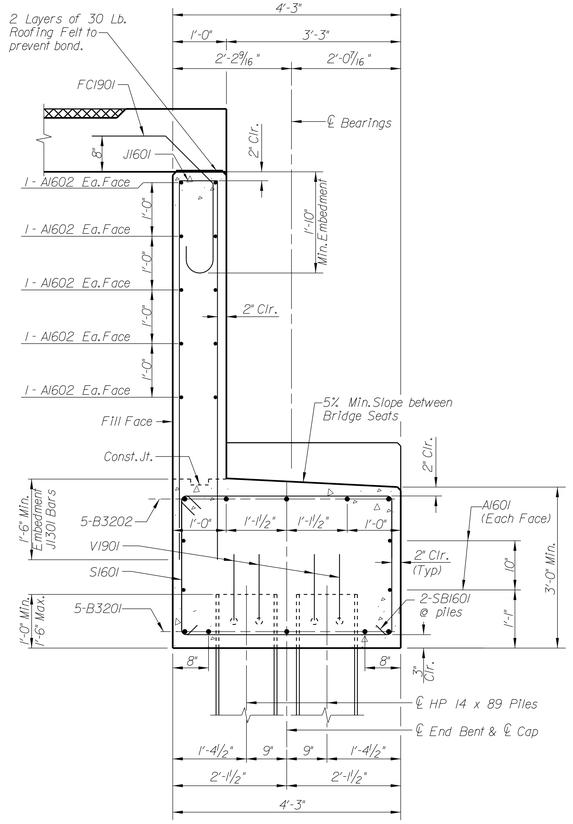
BRIDGE PLANS ID	SHEET NO.
0041800-B01	22



SECTION A-A

Reinforced pile tips with teeth are required to mitigate hard driving conditions at End Bent 1 and End Bent 5. Install the reinforced pile tips in accordance with the manufacturer's installation recommendations. Include the cost of providing teeth on the reinforced pile tips in the bid price for Reinforced Pile Tips.

For End Bent 1 and End Bent 5 steel piles, the required minimum pile tip elevation to achieve lateral stability and the estimated pile tip elevation to achieve the required axial capacity are provided in the following table:

PILE TIP ELEVATIONS

BENT I.D.	MINIMUM PILE TIP ELEVATION (ft-NAVD88)	ESTIMATED PILE TIP ELEVATION (ft-NAVD88)
End Bent 1	-567	-550
End Bent 5	-564	-552

A pile hammer having a rated energy as indicated on this sheet is considered suitable for driven pile installation. However, final hammer approval is based on a wave equation analysis that accurately reflects the Contractor's proposed driving system.

End Bent 1 and End Bent 5 piles shall be driven to a practical refusal condition. Practical refusal is defined as 5 blows per quarter inch or equivalent multiples thereof.

Each pile is to be installed in one continuous operation. Include details of any anticipated temporary driving discontinuities including anticipated time intervals in the Pile Installation Plan.

Reference the 2007 Standard Specifications for Highway Construction for Driven Pile Foundations, Section 711. Notes included in these plans are in addition to the requirements of the Standard Specifications.

PILE RESISTANCE

Bent I.D.	END BENT 1	END BENT 5
Governing Limit State	Strength Axial	Strength Axial
Factored Design Load	100.0 tons	67.5 tons
Geotechnical Resistance Factor	0.50	0.50
Nominal Resistance	200.0 tons	135.0 tons
Estimated Scour	0 tons	0 tons
Unfactored Downdrag	0 tons	0 tons
Required Driving Resistance	200.0 tons	135.0 tons

Method of controlling installation of piles and verifying their capacity: Pile installation will be controlled through wave equation analysis without stress measurements during driving, and pile capacity will be verified by driving to a practical refusal condition.

ESTIMATED PILE DRIVABILITY ANALYSIS PARAMETERS

END BENT 1 OR 5, ONE PILE	
Skin Quake (QS)	0.10 in
Toe Quake (QT)	0.04 in
Skin Damping (SD)	0.20 sec./ft.
Toe Damping (TD)	0.15 sec./ft.
Percent Skin Friction	20%
Distribution Shape No.	1.0 [1]
Bearing Graph	Constant Skin Friction [2]
Pile Penetration	90%
Hammer Energy Range	40 - 50 ft-kips

[1] *Distribution Shape No. varies with depth: 0 at the ground surface and 1.0 at the pile tip elevation*

[2] *Bearing Graph Options - proportional, constant skin friction, and constant end bearing. Note: GRLWEAP (2010) was used to perform the wave equation analysis.*

QUANTITIES

ITEM	UNIT	END BENT 1	END BENT 5
Concrete for Structures, Class 4000	CY	66.4	66.4
Reinforcing Steel for Structures (Bridge)	LBS	11,186 *	11,139 *
Pile Driving Setup	EA	17	17
Reinf. Pile Tips (HP14x89)	EA	17	17
Steel H Bearing Piling (HP14x89)	LF	678	550

* *Includes 168 lbs for Anchor Bolt Assemblies*
For Reinforcing Bending Details, see sh. 6.
For Anchor Bolt Details, see sh. 4.

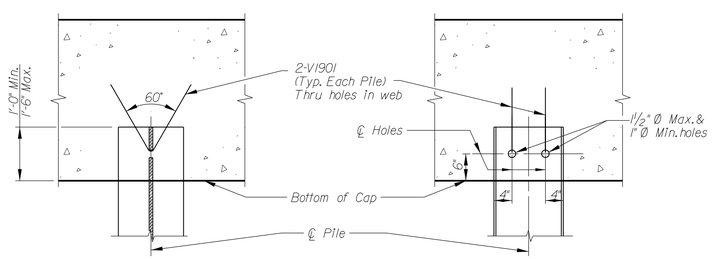
REINFORCING STEEL SCHEDULE

END BENT 1

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	"e"	"f"	LENGTH
AI601	8	43'-5"						43'-5"
AI602	20	38'-10"						38'-10"
AI603	2	11'-8"						11'-8"
AI604	2	14'-2"						14'-2"
AI605	12	16'-0"						16'-0"
AI606	12	16'-4"						16'-4"
B3201	10	45'-4"	1'-3"					46'-7"
B3202	10	46'-8"	1'-3"					47'-11"
CI601	10	11'-8"	3'-2"					14'-10"
CI602	10	14'-2"	3'-2"					17'-4"
FI601	20	3'-8"	2'-2"	2'-1 1/8"	6 3/4"			5'-10"
FCI901	81	1'-8"	1'-5"	10 5/8"	10 5/8"	8"	1'-6"	5'-3"
JI301	24	3'-8"	2'-0"					7'-8"
JI302	32	2'-11"	2'-0"					6'-11"
JI601	82	8"	7'-4"					15'-4"
JI602	27	8"	8'-7"					17'-10"
SI601	106	3'-11"	2'-7"	8"				14'-4"
SBI601	34	3'-11"	2'-7"	8"				10'-5"
VI901	34	1'-10"						3'-8"
Anchor Bolt	18	1 1/4" Dia.						2'-0 1/2"

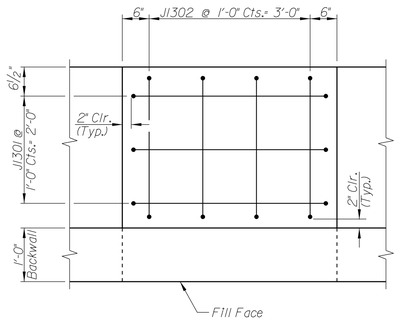
END BENT 5

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	"e"	"f"	LENGTH
AI601	8	43'-5"						43'-5"
AI602	20	38'-10"						38'-10"
AI603	2	13'-11"						13'-11"
AI604	2	11'-5"						11'-5"
AI605	12	16'-1"						16'-1"
AI606	12	15'-9"						15'-9"
B3201	10	45'-4"	1'-3"					46'-7"
B3202	10	46'-8"	1'-3"					47'-11"
CI601	10	13'-11"	3'-2"					17'-1"
CI602	10	11'-5"	3'-2"					14'-7"
FI601	20	3'-8"	2'-2"	2'-1 1/8"	6 3/4"			5'-10"
FCI901	81	1'-8"	1'-5"	10 5/8"	10 5/8"	8"	1'-6"	5'-3"
JI301	24	3'-8"	2'-0"					7'-8"
JI302	32	2'-11"	2'-0"					6'-11"
JI601	82	8"	7'-4"					15'-4"
JI602	26	8"	8'-3 1/2"					17'-3"
SI601	106	3'-11"	2'-7"	8"				14'-4"
SBI601	34	3'-11"	2'-7"	8"				10'-5"
VI901	34	1'-10"						3'-8"
Anchor Bolt	18	1 1/4" Dia.						2'-0 1/2"



Note:
Drill or flame cut the holes. Grind area around flame cut holes to remove burrs. Tie or wedge tightly the VI901 bar against the top of the hole.

TYPICAL PILE ANCHORAGE DETAIL



Note:
Provide 2" Clr. between the top of the seat and the JI301 and JI302 bars.

SEAT DETAIL

Looking in direction of stationing for End Bent 1
Looking in opposite direction of stationing for End Bent 5

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formerly CALYX Engineers & Consultants

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 20591 — REGISTERED — KEVIN AUSTIN

DocuSigned by: L. Kevin Austin — C24651110 37F480... — 11/8/2022

REV.				
REV.				
REV.				
REVIEWED				
QUAN.	WBA	LKA	9-18	
DR.	WBA	LKA	9-18	
DES.	ZHB	LKA	9-18	
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

END BENT DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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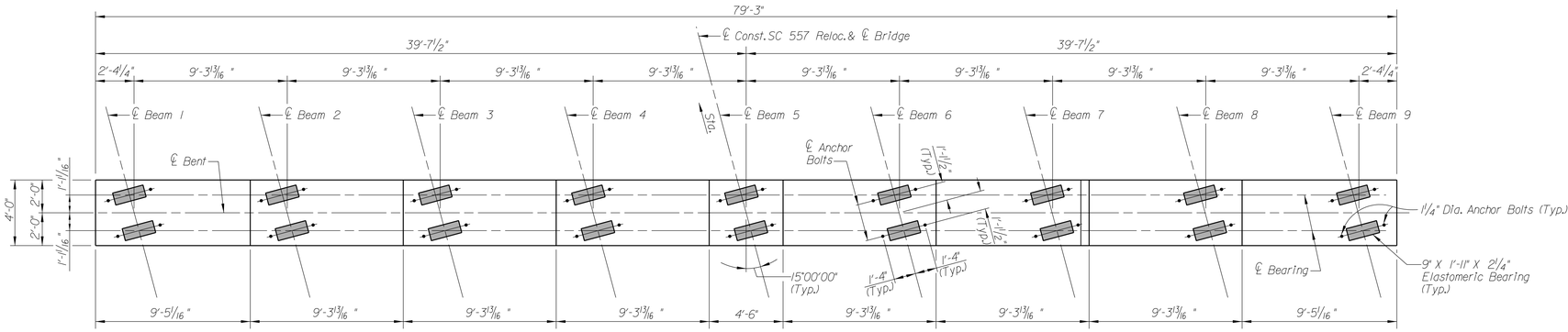
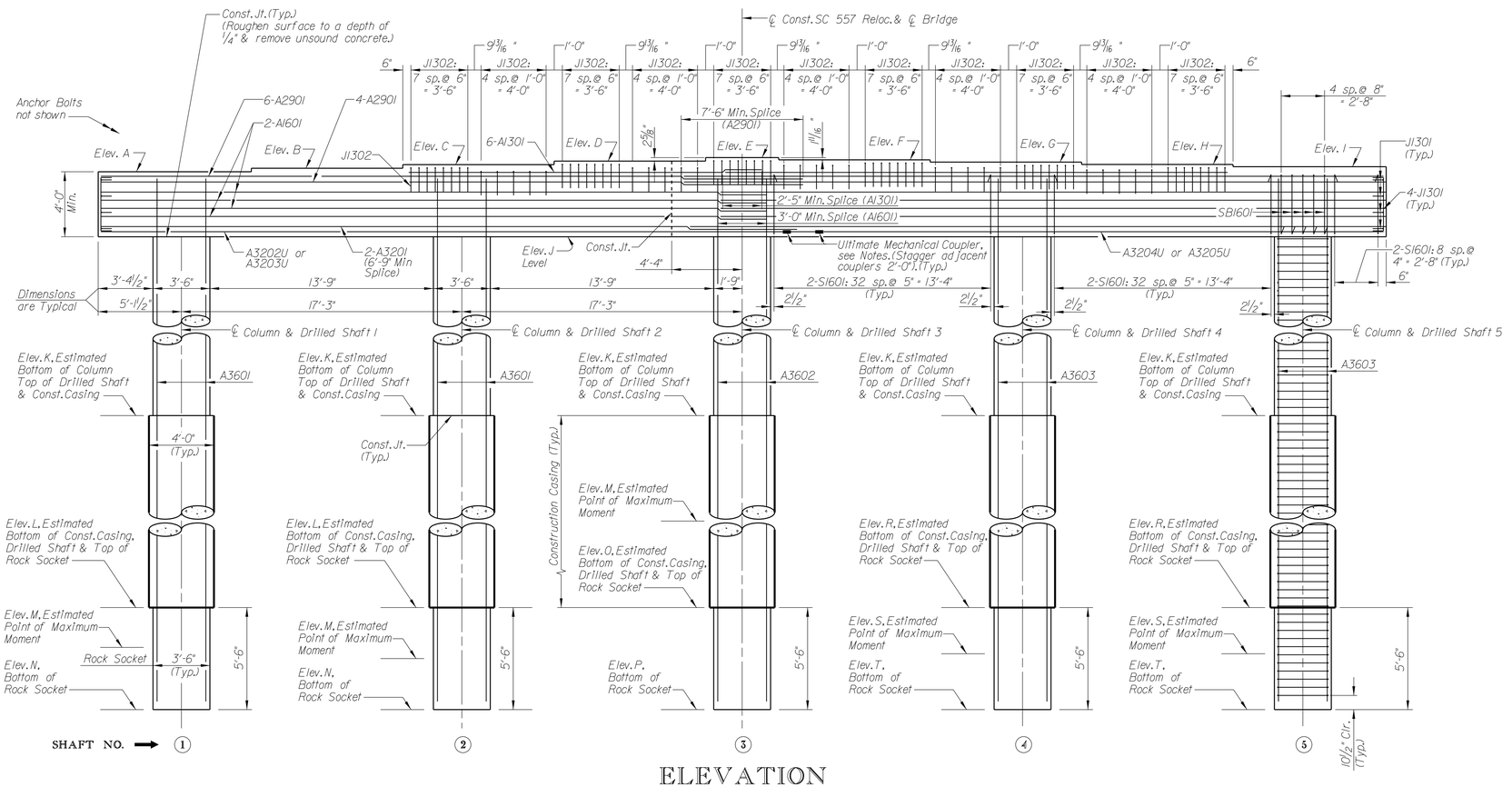
BRIDGE PLANS ID	SHEET NO.
0041800-B01	23



PLAN



ELEVATION

Looking in direction of Stationing

TABLE OF ELEVATIONS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T
Bent 2	589.925	590.144	590.362	590.581	590.800	590.658	590.517	590.375	590.234	585.925	574.175	550.925	549.925	545.425	547.925	542.425	544.425	543.925	538.925

Notes:

For Reinforcing Steel Schedule and additional details, see sh. 26.

For Drilled Shaft notes and bearing data, see sh. 26.

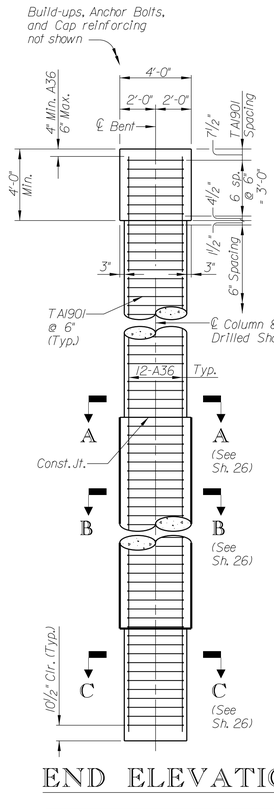
Vertical A36 bars in Drilled Shafts are detailed 2'-0" longer than shown to allow for lowering of shaft tips if required. Bars shall be cut off to allow 6" Clr. at bottom of shaft. Quantity of TAI901 Bars shown is based on the increased length of vertical bar.

Splicing of the Vertical A36 bars is not allowed.

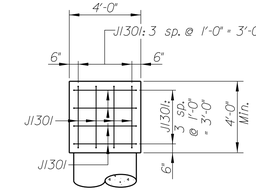
The bottom row of A32U bars in the cap may be spliced using ultimate mechanical couplers where shown in Elevation view. Adjacent splices to be offset 2'-0". Ultimate Mechanical Couplers shall be in accordance with the Standard Specifications. Mechanical Couplers shall be submitted for approval. No extra payment will be made for using mechanical couplers or modifying bar lengths, the cost will be incidental to reinforcing steel.

Butt welds of adjacent TAI901 hoops shall be staggered around the perimeter of the shaft by a minimum distance of 1/3 of the hoop circumference.

Use Class 4000 Concrete for Caps and Columns and use Class 4000DS Concrete for Drilled Shafts and Rock Sockets as specified in sections 701 and 712 of the Standard Specifications.



END ELEVATION



PART END ELEVATION

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

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REV.				
REV.				
REV.				
REVIEWED				
QUAN.	WBA	LKA	9-18	
DR.	WBA	LKA	9-18	
DES.	ZHB	LKA	9-18	
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

INTERIOR BENT 2
PLAN & ELEVATION
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY YORK

ROUTE SC 557

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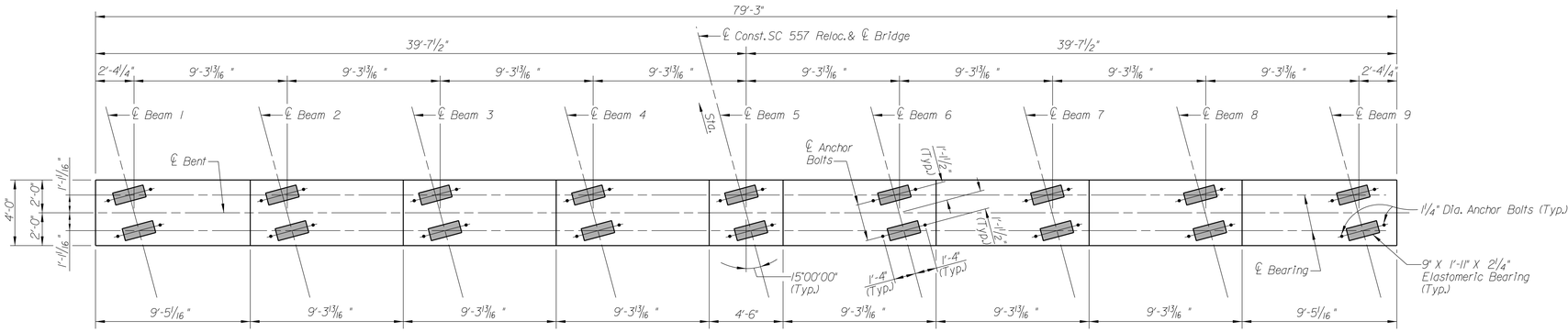
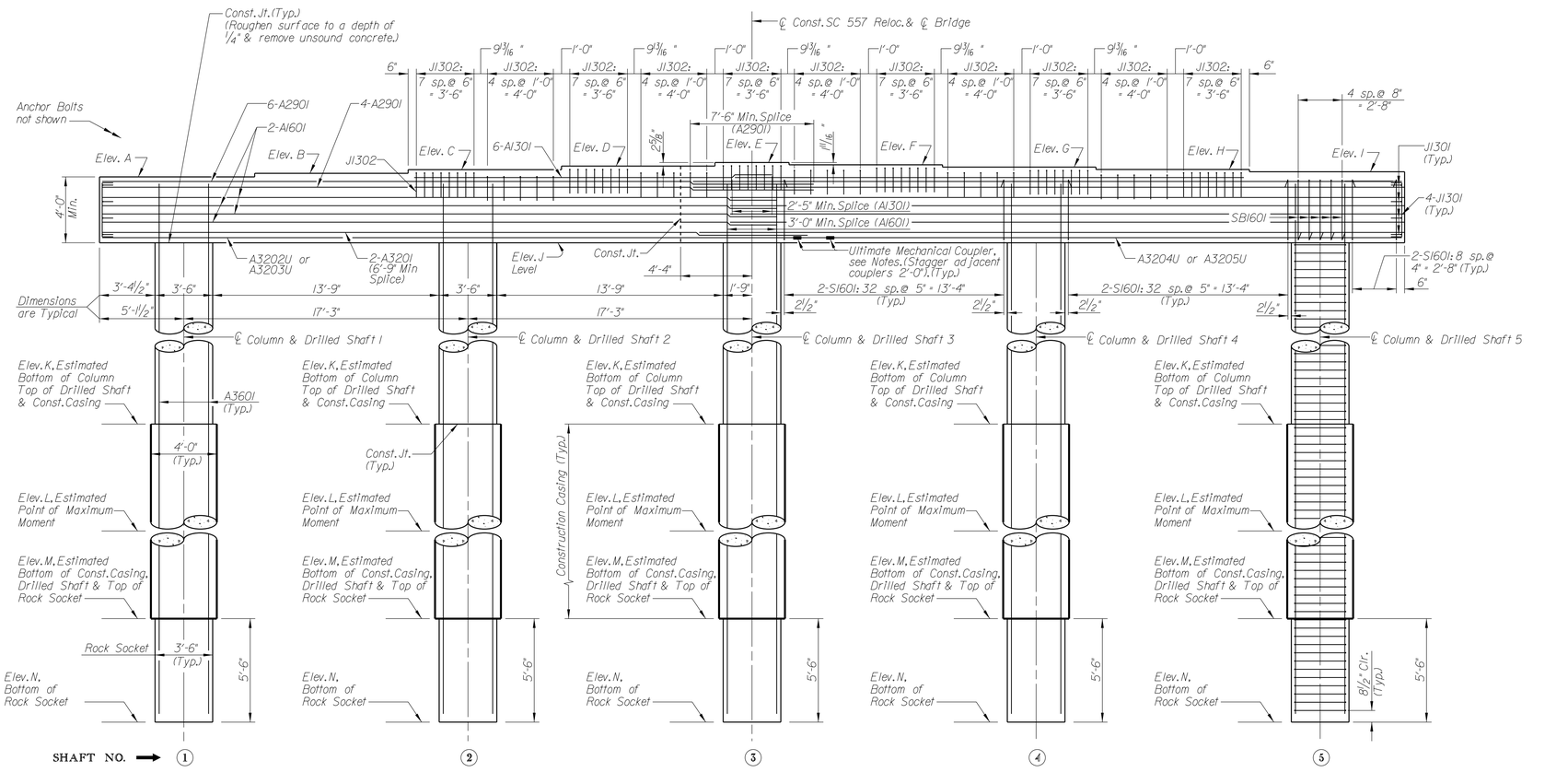
BRIDGE PLANS ID	SHEET NO.
0041800-B01	24



PLAN



ELEVATION

Looking in direction of Stationing

TABLE OF ELEVATIONS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Bent 3	588.325	588.544	588.762	588.981	589.200	589.058	588.917	588.775	588.634	584.325	574.575	547.325	546.492	540.992

Notes:

For Reinforcing Steel Schedule and additional details, see sh. 26.

For Drilled Shaft notes and bearing data, see sh. 26.

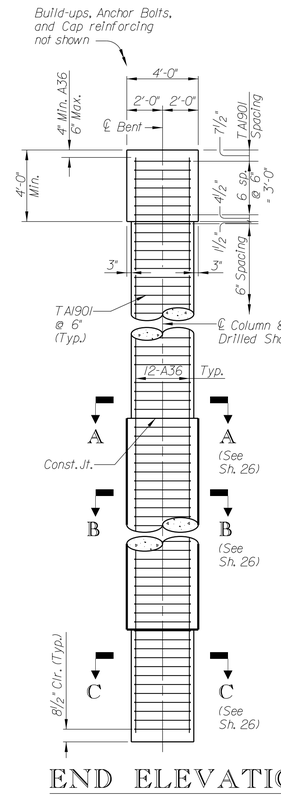
Vertical A36 bars in Drilled Shafts are detailed 2'-0" longer than shown to allow for lowering of shaft tips if required. Bars shall be cut off to allow 6" Clr. at bottom of shaft. Quantity of TA1901 Bars shown is based on the increased length of vertical bar.

Splicing of the Vertical A36 bars is not allowed.

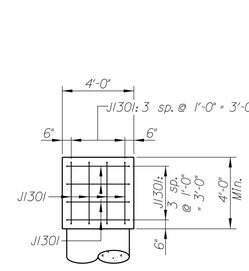
The bottom row of A32U bars in the cap may be spliced using ultimate mechanical couplers where shown in Elevation view. Adjacent splices to be offset 2'-0". Ultimate Mechanical Couplers shall be in accordance with the Standard Specifications. Mechanical Couplers shall be submitted for approval. No extra payment will be made for using mechanical couplers or modifying bar lengths, the cost will be incidental to reinforcing steel.

Butt welds of adjacent TA1901 hoops shall be staggered around the perimeter of the shaft by a minimum distance of 1/3 of the hoop circumference.

Use Class 4000 Concrete for Caps and Columns and use Class 4000DS Concrete for Drilled Shafts and Rock Sockets as specified in sections 701 and 712 of the Standard Specifications.



END ELEVATION



PART END ELEVATION

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SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

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REV.				
REV.				
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REVIEWED				
QUAN.	WBA	LKA	9-18	
DR.	WBA	LKA	9-18	
DES.	ZHB	LKA	9-18	
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

INTERIOR BENT 3
PLAN & ELEVATION
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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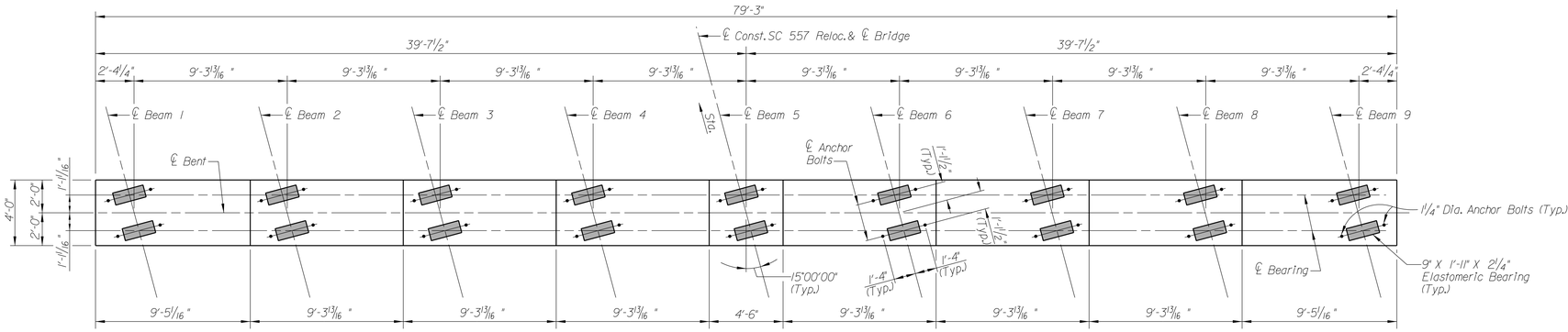
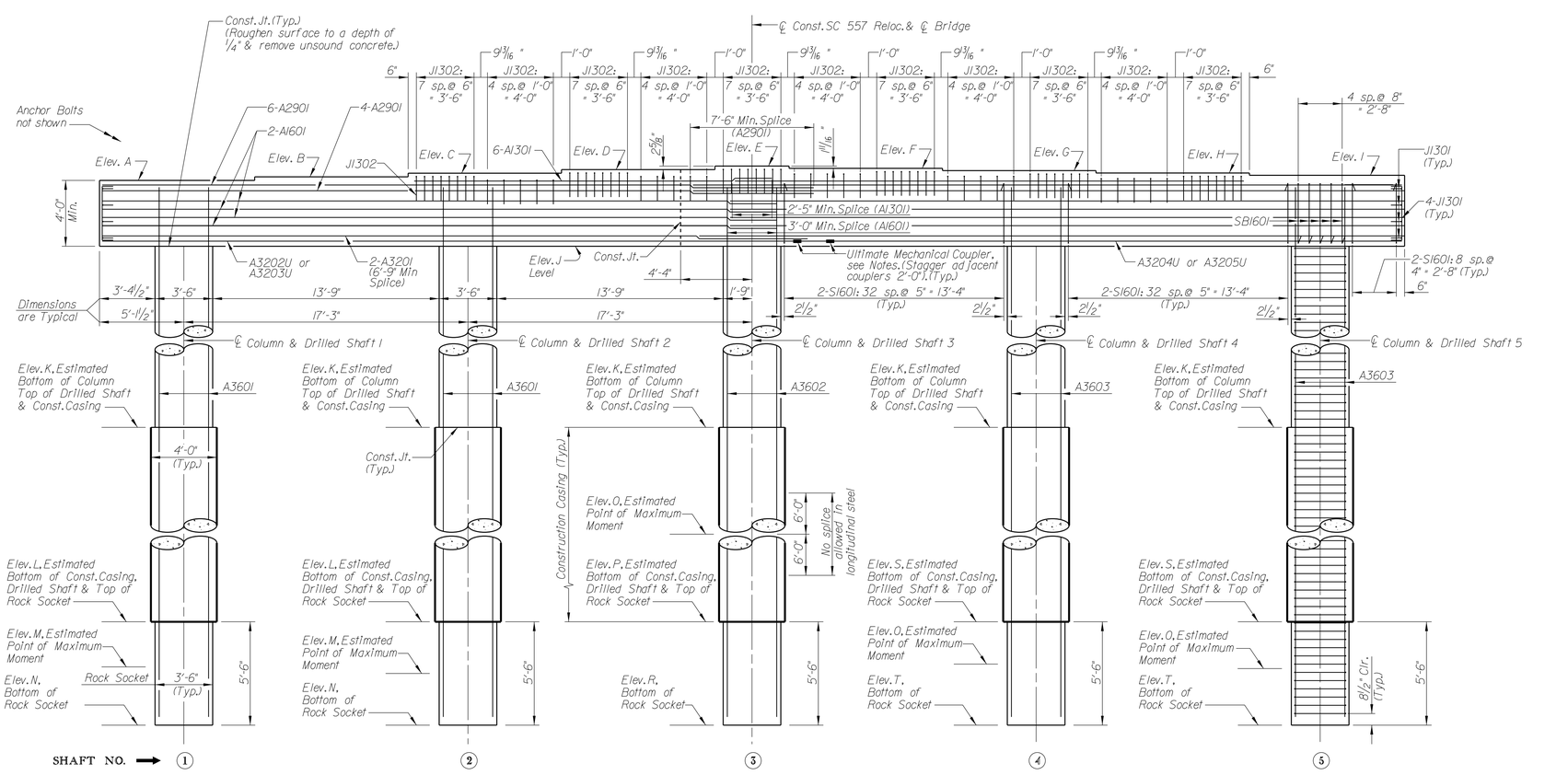
BRIDGE PLANS ID	SHEET NO.
0041800-B01	25



PLAN



ELEVATION

Looking in direction of Stationing

TABLE OF ELEVATIONS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T
Bent 4	586.730	586.949	587.167	587.386	587.604	587.463	587.321	587.180	587.039	582.730	573.897	547.397	546.761	541.897	551.761	549.897	544.397	552.897	547.397

Notes:

For Reinforcing Steel Schedule and additional details, see sh. 26.

For Drilled Shaft notes and bearing data, see sh. 26.

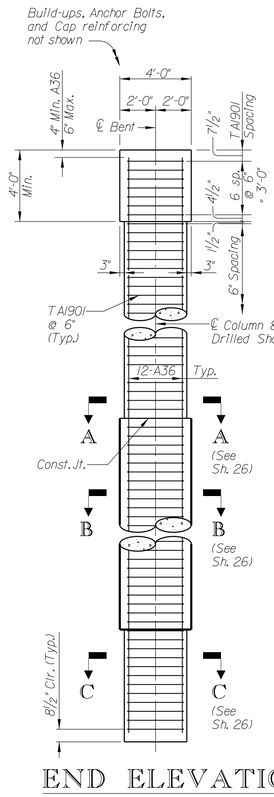
Vertical A36 bars in Drilled Shafts are detailed 2'-0" longer than shown to allow for lowering of shaft tips if required. Bars shall be cut off to allow 6" Clr. at bottom of shaft. Quantity of TAI901 Bars shown is based on the increased length of vertical bar.

Splicing of the Vertical A36 bars is not allowed.

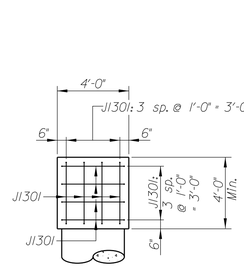
The bottom row of A32U bars in the cap may be spliced using ultimate mechanical couplers where shown in Elevation view. Adjacent splices to be offset 2'-0". Ultimate Mechanical Couplers shall be in accordance with the Standard Specifications. Mechanical Couplers shall be submitted for approval. No extra payment will be made for using mechanical couplers or modifying bar lengths, the cost will be incidental to reinforcing steel.

Butt welds of adjacent TAI901 hoops shall be staggered around the perimeter of the shaft by a minimum distance of 1/3 of the hoop circumference.

Use Class 4000 Concrete for Caps and Columns and use Class 4000DS Concrete for Drilled Shafts and Rock Sockets as specified in sections 701 and 712 of the Standard Specifications.



END ELEVATION



PART END ELEVATION

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SOUTH CAROLINA PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

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REV.				
REV.				
REV.				
REVIEWED				
QUAN.	WBA	LKA	9-18	
DR.	WBA	LKA	9-18	
DES.	ZHB	LKA	9-18	
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

INTERIOR BENT 4
PLAN & ELEVATION
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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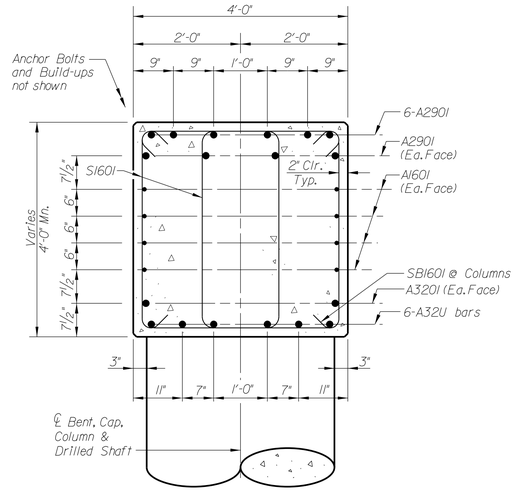
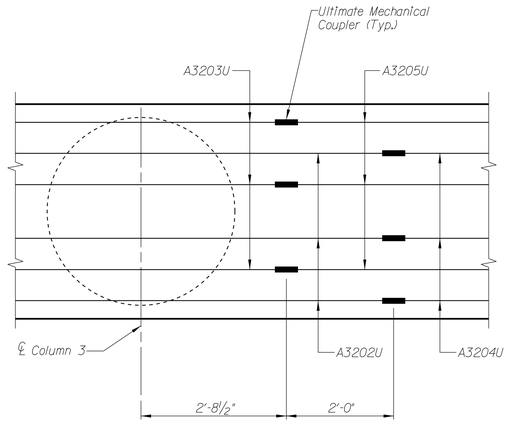
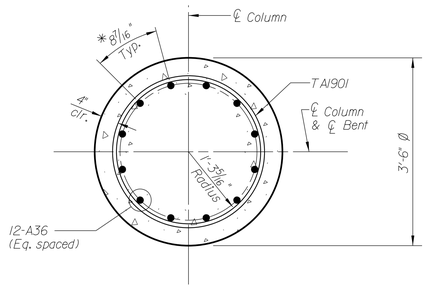
BRIDGE PLANS ID	SHEET NO.
0041800-B01	26



SECTION THRU CAP

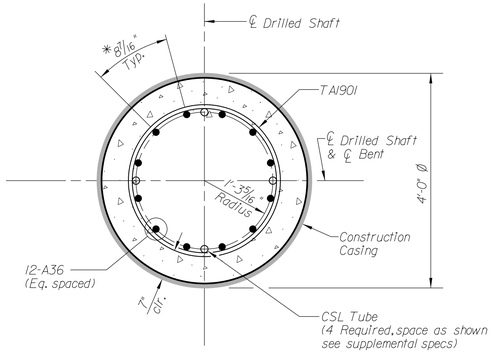


A32U BAR LAYOUT

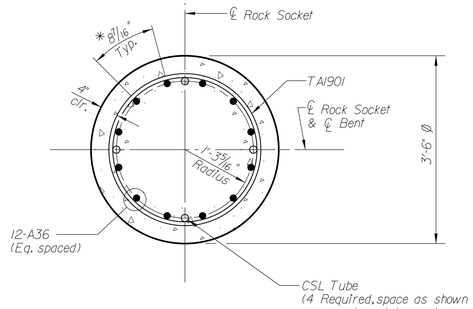


SECTION A-A

*Spacing shown is along the inside of the Hoop Reinforcing Steel, Center to Center spacing is 8".



SECTION B-B



SECTION C-C

★ DRILLED SHAFT REINF.

	A3601		A3602		A3603		TA1901
	No. Req'd	Length	No. Req'd	Length	No. Req'd	Length	No. Req'd
BENT 2	24	45'-7"	12	48'-7"	24	52'-1"	487
BENT 3	60	48'-5"	-	-	-	-	485
BENT 4	24	45'-11"	12	43'-5"	24	40'-5"	433

SHAFT / COLUMN LENGTHS

	SHAFT					COLUMN				
	1	2	3	4	5	1	2	3	4	5
BENT 2	28'-9"	28'-9"	31'-9"	35'-3"	35'-3"	11'-9"	11'-9"	11'-9"	11'-9"	11'-9"
BENT 3	33'-7"	33'-7"	33'-7"	33'-7"	33'-7"	9'-9"	9'-9"	9'-9"	9'-9"	9'-9"
BENT 4	32'-0"	32'-0"	29'-6"	26'-6"	26'-6"	8'-10"	8'-10"	8'-10"	8'-10"	8'-10"

DRILLED SHAFT RESISTANCE

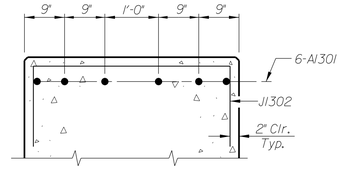
BENT ID	BENT 2	BENT 3	BENT 4
Governing Limit State	Strength Axial	Strength Axial	Strength Axial
Factored Design Load (tons)	577.5	577.5	462.5
Factored Resistance - Side (tons)	0.0	0.0	0.0
Factored Resistance - End (tons)	14,061	12,787	16,130
Geotechnical Resistance Factor - Side	N/A	N/A	N/A
Geotechnical Resistance Factor - End	0.5	0.5	0.5
Total Nominal Resistance (tons)	28,122	25,574	32,260

Provide equipment capable of drilling through rock at the site that may be twenty-five percent (25%) greater than the strength indicated in the table below

ROCK CORE COMPRESSIVE STRENGTH TESTING SUMMARY TABLE

BORING NO.	RECOVERY (%)	RQD (%)	CORE NUMBER	DEPTH [1] (FT)	COMPRESSIVE STRENGTH (PSI)
B-4	86	75	NQ-1	24.5-26.8	10,510
	100	100	NQ-2	26.8-31.5	9,560
B-5	99	98	NQ-2	31.1-36.1	26,420
	97	87	NQ-3	36.1-41.1	20,110
B-6	32	29	NQ-1	26.4-30.9	29,140
	98	90	NQ-2	30.9-35.9	39,210
B-7	100	100	NQ-2	30.3-35.3	8,200
	95	80	NQ-3	35.3-40.3	17,190
B-8	76	41	NQ-1	26.6-31.6	13,680
	88	74	NQ-2	31.6-36.6	19,620
	90	53	NQ-4	41.6-46.6	16,810
B-9	86	40	NQ-1	20.9-25.9	19,840
	85	70	NQ-2	25.9-30.9	26,980
B-10	98	98	NQ-1	19.3-21.1	26,670

[1] Depths are referenced from the top of the indicated soil test boring.



SECTION THRU BUILD-UP

(Other cap reinforcing not shown for clarity)

REINF. STEEL SCHED.

MARK	NO. REQ'D	DIMENSION "a"	DIMENSION "b"	DIMENSION "c"	DIMENSION "d"	LENGTH
A1301	12	26'-5"	——	——	——	26'-5"
A1601	16	41'-0"	——	——	——	41'-0"
A2901	20	43'-3"	——	——	——	43'-3"
A3201	4	42'-10"	——	——	——	42'-10"
A3202U	3	44'-2"	——	——	——	44'-2"
A3203U	3	42'-2"	——	——	——	42'-2"
A3204U	3	34'-9"	——	——	——	34'-9"
A3205U	3	36'-9"	——	——	——	36'-9"
A3601	★	★	——	——	——	★
A3602	★	★	——	——	——	★
A3603	★	★	——	——	——	★
J1301	16	3'-6"	8"	——	——	4'-10"
J1302	73	3'-8"	1'-6"	——	——	6'-8"
S1601	300	2'-6"	3'-8"	8"	——	13'-8"
SB1601	25	3'-8"	3'-8"	8"	——	12'-4"
TA1901	★	2'-10"	——	——	——	8'-8"
Anchor Bolt	36	1¼" Dia.				2'-0½"

QUANTITIES

ITEM	UNIT	BENT 2	BENT 3	BENT 4
Concrete for Structures, Class 4000	CY	73.2	69.6	68.0
Reinforcing Steel for Structures (Bridge)	LBS	27,372	27,256	25,599
Hoop Reinforcing Steel for Structures (Bridge)	LBS	6339	6313	5637
Drilled Shaft Setup	EA	5	5	5
Drilled Shaft with Wet & Dry Excavation - 48" Dia.	LF	132.3	140.4	119.0
Drilled Shaft with Rock Excavation - 42" Dia.	LF	27.5	27.5	27.5
Construction Casing - 48" Dia.	LF	132.3	140.4	119.0
Crosshole Sonic Logging Setup	EA	5	5	5

Note: Reinforcing Steel Quantity includes 236 lbs for Anchor Bolt Assemblies.

For Reinforcing Bending Details, see sh. 6.

Drilled Shaft Notes:

Support the top of casing to maintain construction tolerances during construction.

The wet method for drilled shaft construction is required. Use potable water or mineral slurry throughout the excavation and construction of the shafts. Polymer slurry is not allowed. If mineral slurry is used, the tolerances for testing (including time intervals) and maintaining the mineral slurries are indicated in the Standard Specifications for Highway Construction, Section 712.

During drilled shaft construction, the bottom elevation of the shaft may vary, and rock may be encountered at a different elevation than shown on the plans. If rock is encountered at an elevation less than 2 feet higher than that shown, extend the socket to the tip elevation indicated on the plans. If rock is encountered at an elevation less than 2 feet lower that that shown, lower the tip elevation as needed to maintain the required minimum depth of rock penetration. If rock is encountered at an elevation more than 2 feet higher or lower than that shown, immediately notify the Geotechnical Engineer of Record.

Reference the Standard Specifications for Highway Construction for Drilled Shafts (Section 712) and for Crosshole Sonic Logging of Drilled Shafts (Section 727). Notes included in these plans are in addition to the requirements of the Standard Specifications.

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SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

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	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

INTERIOR BENT DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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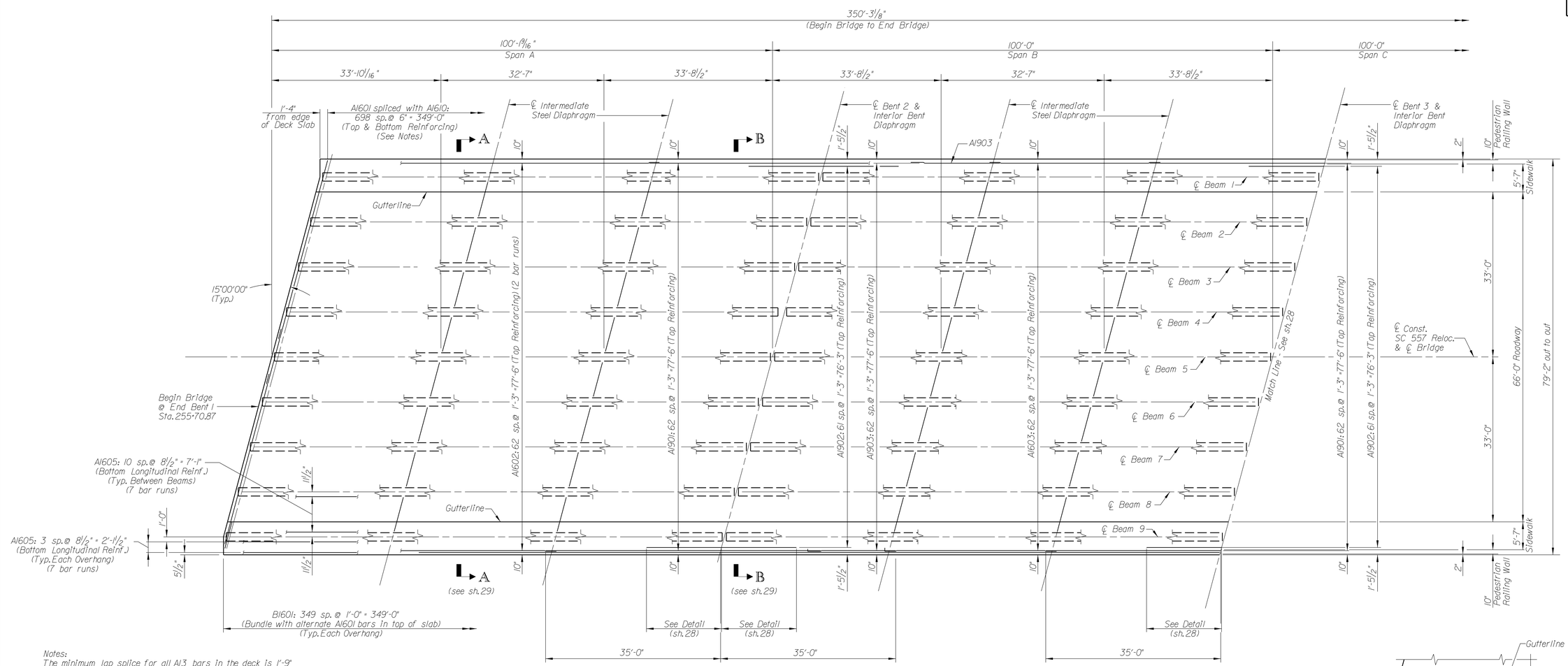
BRIDGE PLANS ID	SHEET NO.
0041800-B01	27

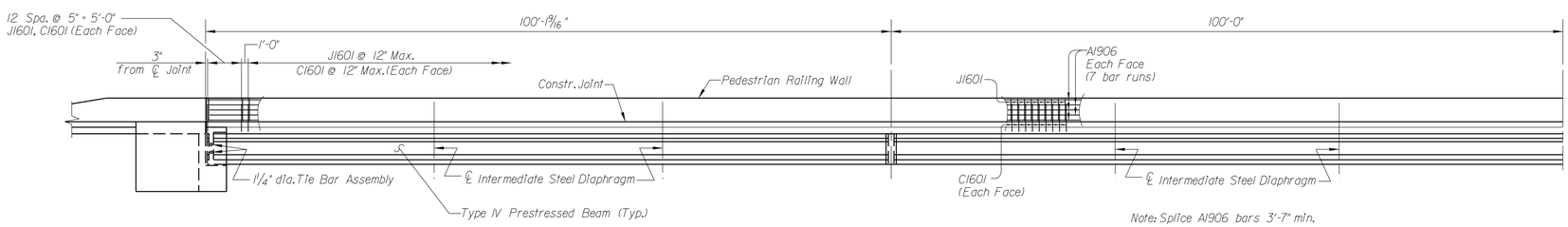


DECK PLAN - 4 SPAN UNIT

Pedestrian Railing Wall omitted for clarity.

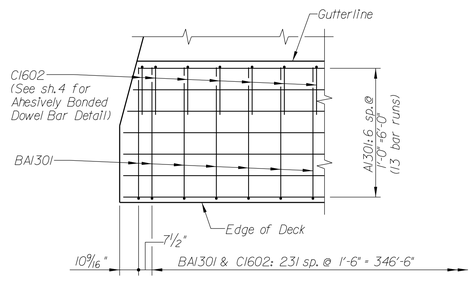
Notes:
The minimum lap splice for all A13 bars in the deck is 1'-9"
The minimum lap splice for all A16 bars in the deck is 2'-2"
The minimum lap splice for all A19 bars in the deck is 2'-7"

The A1601/A1610 splice in the top of the slab shall be staggered from the A1601/A1610 splice in the bottom of the slab. See sheet 29.



SIDE ELEVATION

Note: Splice A1906 bars 3'-7" min.



SIDEWALK DETAILS - PART PLAN

(Right side shown. Left side, opposite corner similar by rotation)

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YORK COUNTY
PENNIES FOR PROGRESS
350'-3 1/8" CONTINUOUS SUPERSTRUCTURE
SHEET 1 OF 2
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY YORK | ROUTE SC 557

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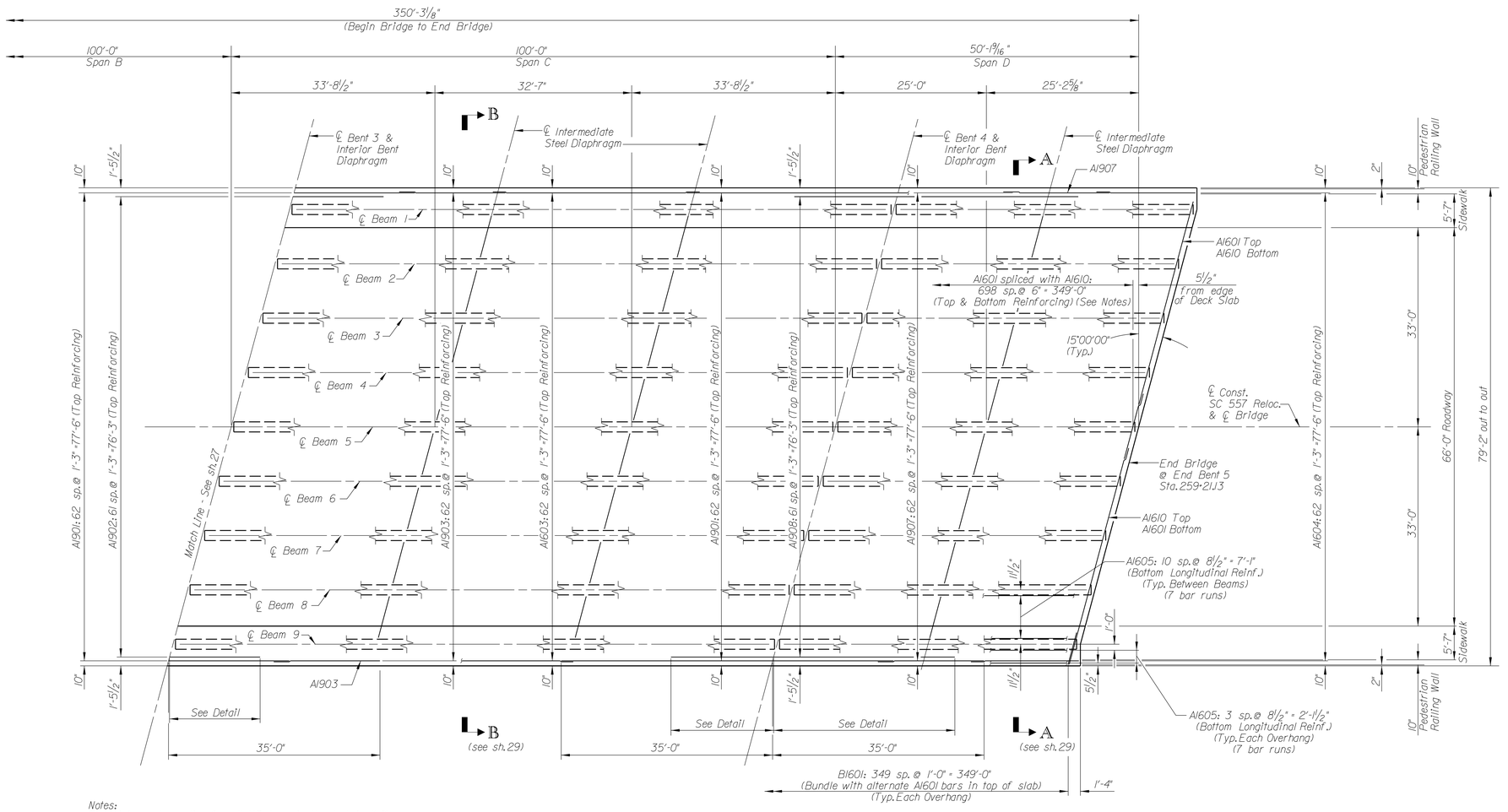
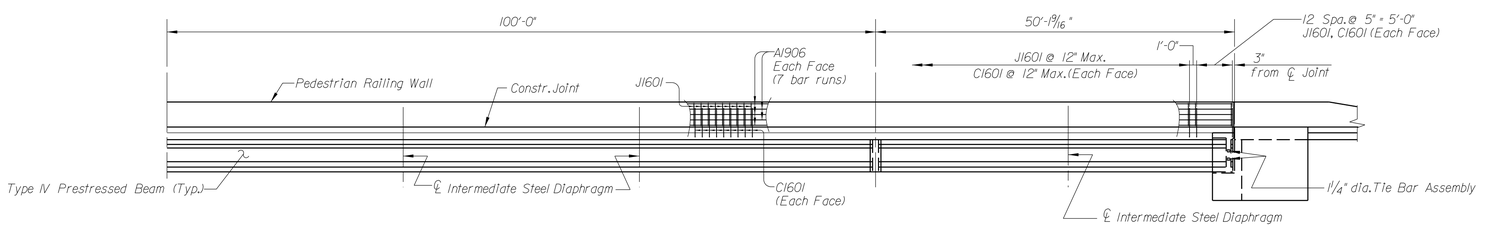
BRIDGE PLANS ID	SHEET NO.
0041800-B01	28



Notes:
The minimum lap splice for all A13 bars in the deck is 1'-9"
The minimum lap splice for all A16 bars in the deck is 2'-2"
The minimum lap splice for all A19 bars in the deck is 2'-7"

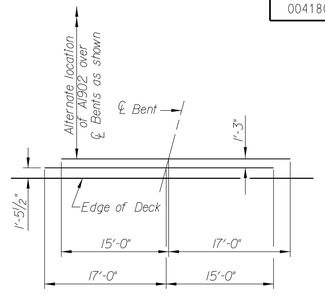
The A1601/A1610 splice in the top of the slab shall be staggered from the A1601/A1610 splice in the bottom of the slab. See sheet 29.

DECK PLAN - 4 SPAN UNIT

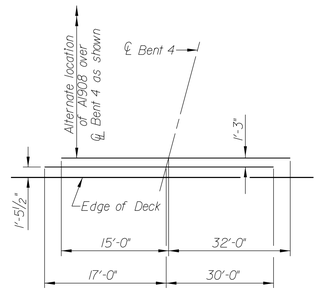


Note: Splice A1906 bars 3'-7" min.

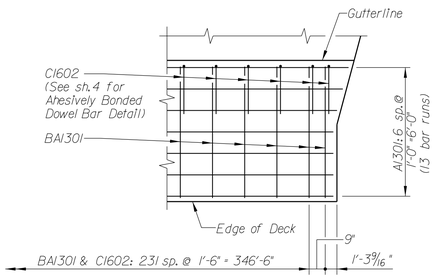
SIDE ELEVATION



A1902 BAR LAYOUT AT BENTS 2 AND 3



A1908 BAR LAYOUT AT BENT 4



SIDEWALK DETAILS - PART PLAN

(Right side shown; Left side, opposite corner similar by rotation)

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YORK COUNTY
PENNIES FOR PROGRESS

350'-3 1/8" CONTINUOUS SUPERSTRUCTURE
SHEET 2 OF 2
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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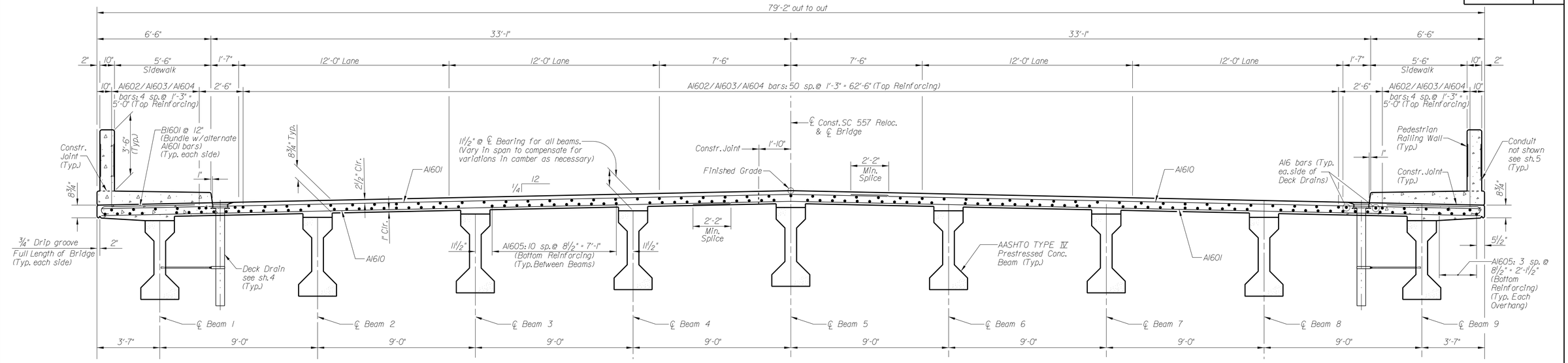
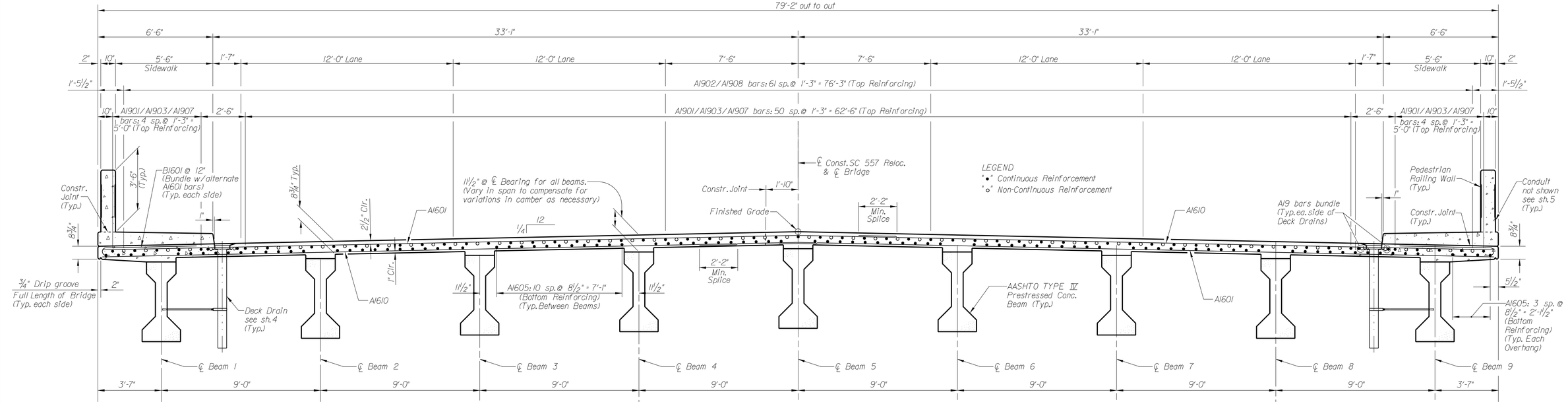
BRIDGE PLANS ID	SHEET NO.
0041800-B01	29



SECTION A-A

Looking in direction of stationing



SECTION B-B

Looking in direction of stationing

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YORK COUNTY
PENNIES FOR PROGRESS

TYPICAL SECTION
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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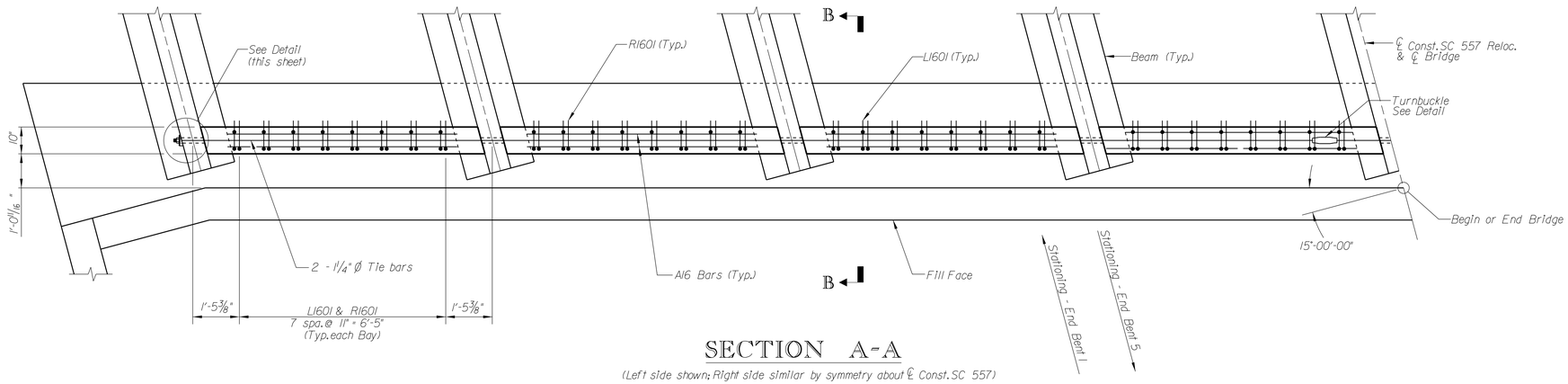
BRIDGE PLANS ID	SHEET NO.
0041800-B01	30



SECTION A-A

(Left side shown; Right side similar by symmetry about ℄ Const.SC 557)

Notes:

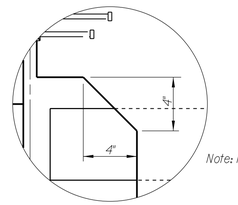
End Bent Diaphragms shall be cast monolithic with the slab.

See sh. 6 for Reinforcing Steel Schedule.

Tie Rod Assembly shall be AASHTO M270 Grade 36 structural steel.

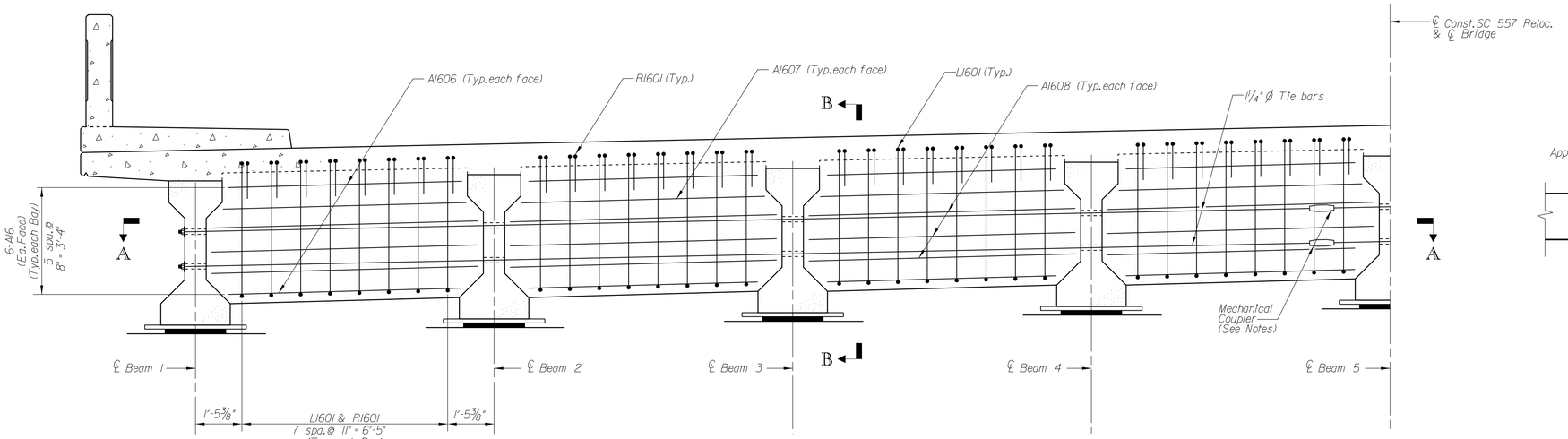
Use Mechanical Couplers to splice tie bars in accordance with Section 703 of the SCDOT Standard Specifications. Couplers shall be capable of developing in tension at least 125% of the yield strength of the tie bar.

Clean, by hand or with power tools and utilize paint system NS2 on the Tie Rod ends, not encased in concrete in accordance with Section 710 of the specifications.



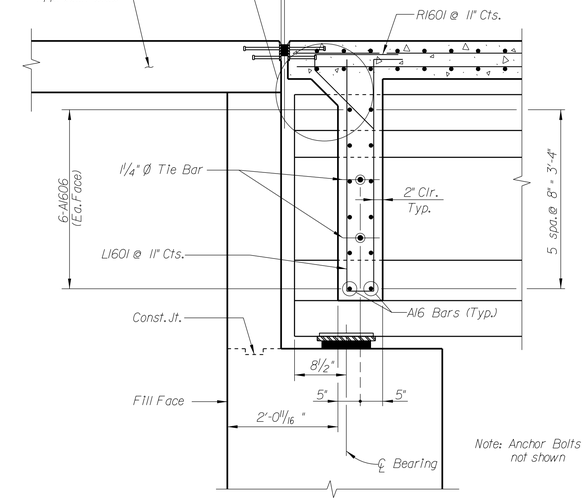
Note: Reinforcing not shown

CHAMFER DETAIL



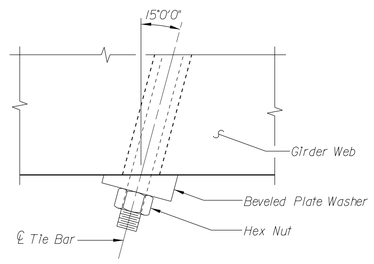
ELEVATION

(Left side shown; Right side similar by symmetry about ℄ Const.SC 557)
(Looking in direction of stationing for End Bent 1)
(Looking in opposite direction for stationing for End Bent 5)



Note: Anchor Bolts not shown

SECTION B-B



PLAN VIEW

DETAIL OF TIE BAR ENDS

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YORK COUNTY
PENNIES FOR PROGRESS

END BENT DIAPHRAGMS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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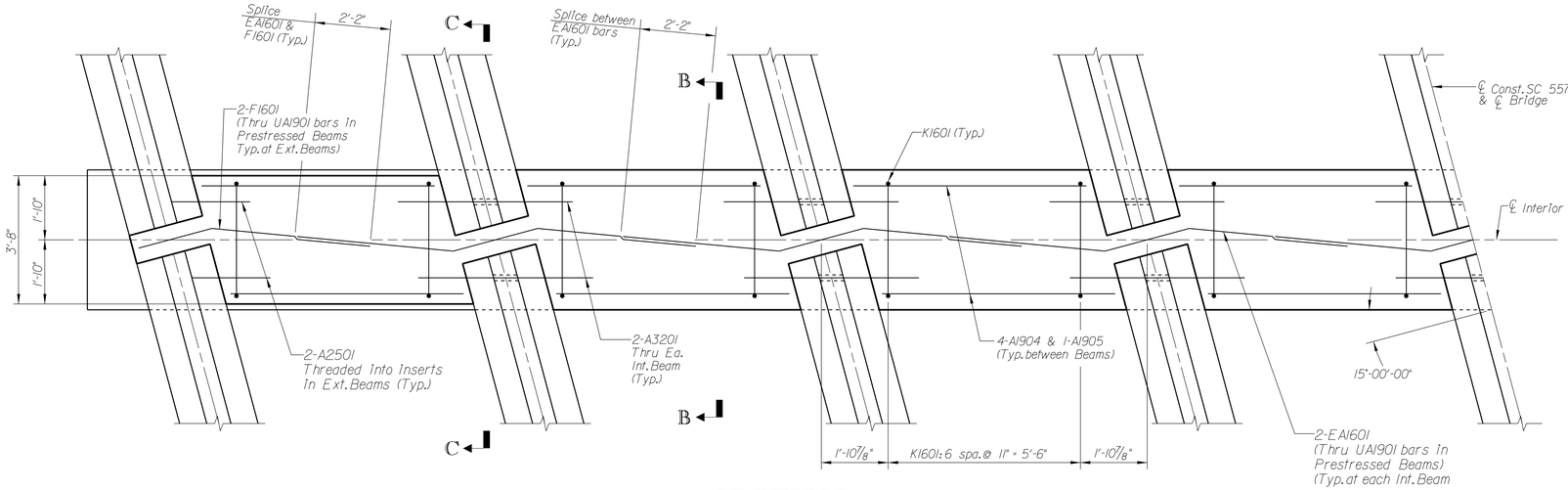
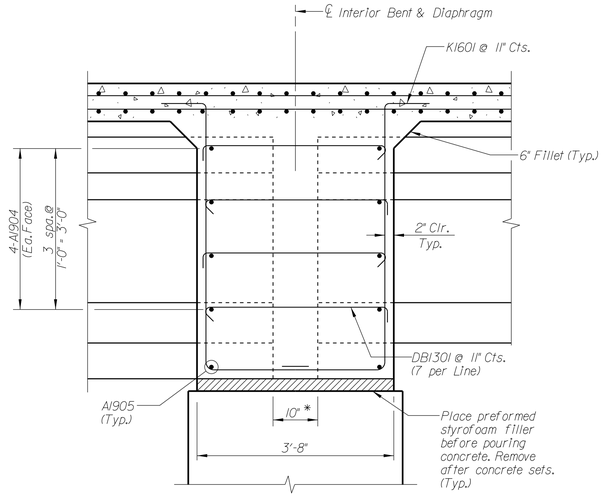
BRIDGE PLANS ID	SHEET NO.
0041800-B01	31

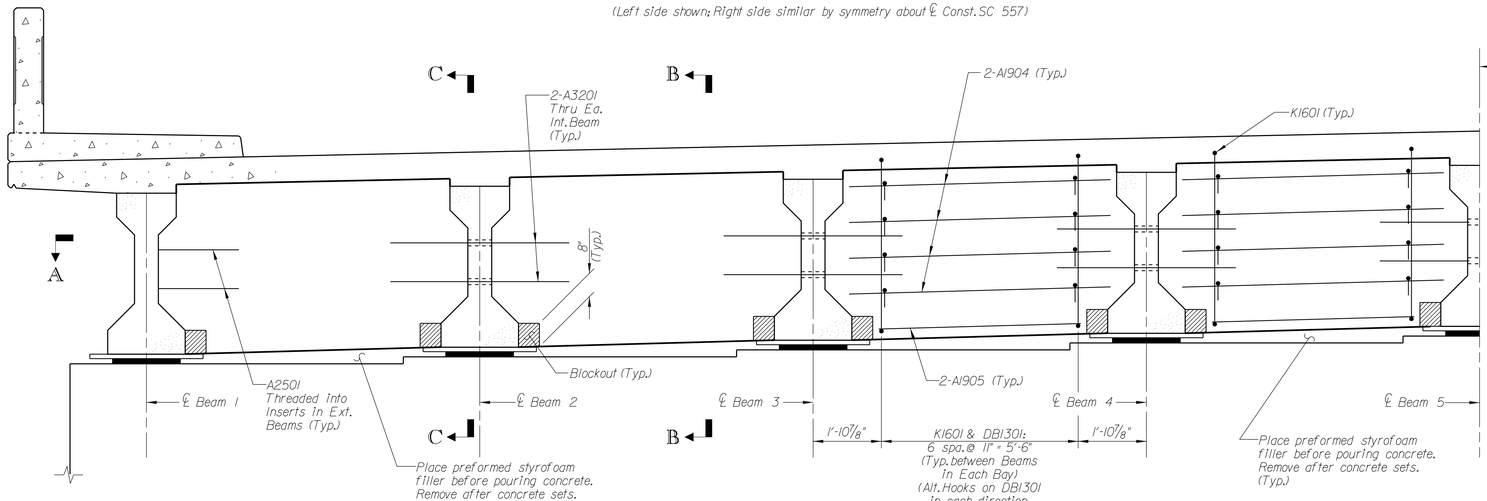


SECTION A-A

(Left side shown; Right side similar by symmetry about ℄ Const.SC 557)

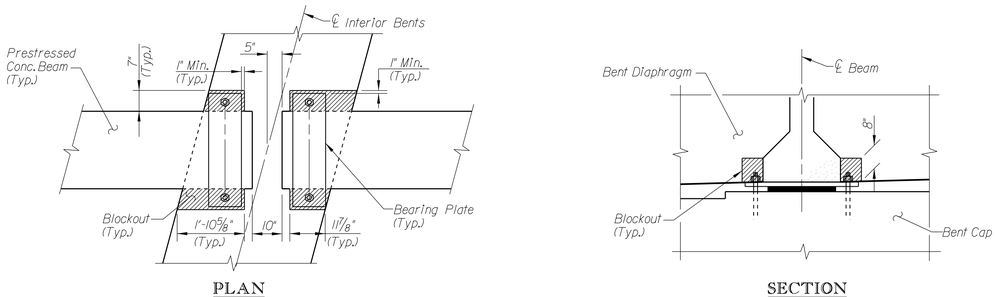


SECTION B-B



ELEVATION

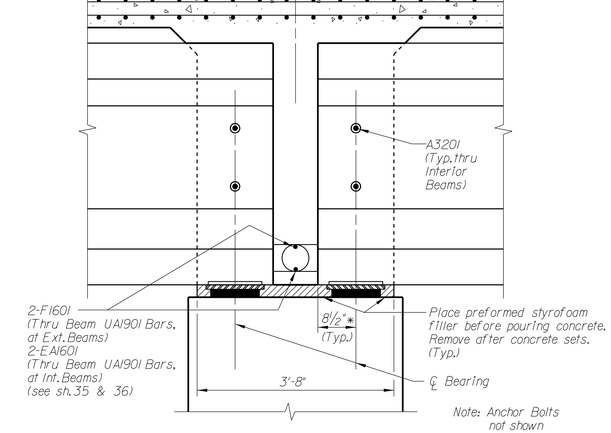
(Left side shown; Right side similar by symmetry about ℄ Const.SC 557)



PLAN

SECTION

BLOCKOUT DETAIL



SECTION C-C

Notes:

Interior Bent Diaphragms shall be cast monolithic with the slab.

See sh. 33 for Reinforcing Steel Schedule.

* Measured along ℄ Beam.

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REV.				INTERIOR BENT DIAPHRAGMS SC 557 BRIDGE OVER CROWDERS CREEK
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QUAN.				
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DES.	ZHB	LKA	5/13	
	BY	CHK.	DATE	COUNTY: YORK — ROUTE: SC 557

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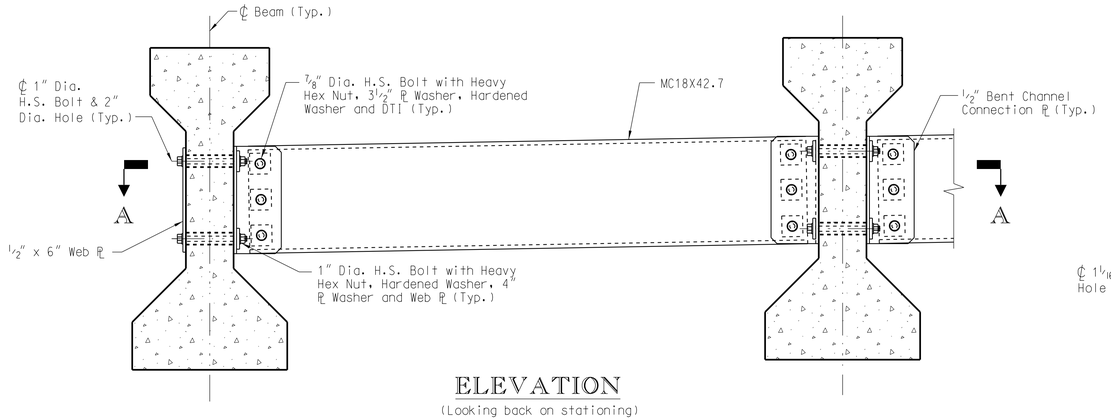
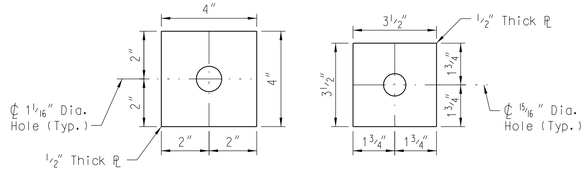
BRIDGE PLANS ID	SHEET NO.
0041800-B01	32



ELEVATION

(Looking back on stationing)



ℙ WASHER DETAIL

Note: Use 3 1/2″ ℙ Washer over all 15/16″ x 2 3/16″ holes.
Use 4″ ℙ Washer over all 1 1/16″ x 2 1/2″ holes.

Notes:

Provide structural steel sections, plates, and plate washers that conform to the requirements of AASHTO M 270, Grade 50. Galvanize all components of diaphragms including connection ℙ and ℙ washers in accordance with AASHTO M 111. Perform galvanizing after fabrication is completed. Roughen faying surfaces of bolted connections by means of hand-wire brushing. Power-wire brushing is not permitted.

Make all bolted diaphragm connections with 7/8″ or 1″ ASTM F3125, Grade A325 (Type 1) bolts. Mechanically galvanize bolts, heavy hex nuts, hardened washers, and direct tension indicators (DTI's) in accordance with ASTM B 695 Class 50. For the 1″ bolt assemblies, galvanizing in accordance with AASHTO M 232 may be substituted for mechanical galvanizing.

Submit shop plans for steel intermediate diaphragms in accordance with the Standard Specifications.

After installation of steel diaphragms, repair all damaged areas of the galvanized finish in accordance with ASTM A 780. Use paint method to repair finish on hardware.

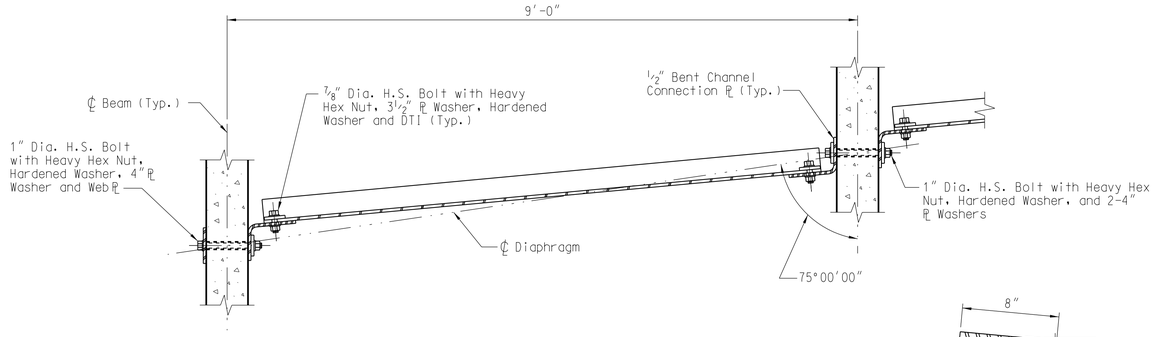
Form bolt holes in prestressed concrete beams using 2″ inside diameter pipe and leave pipe in place after forms are removed.

Tension bolts through the beam web to be snug tight and then turn the bolts an additional 1/4 turn. Peen threads on all bolts installed through the beam web. Install all other bolts using a DTI and hardened washer with each bolt assembly to verify proper tensioning.

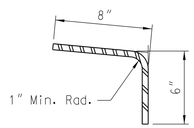
Do not place deck slab until all intermediate diaphragms are properly installed and tightened in each span where deck concrete will be placed during the pour.

Leave steel intermediate diaphragms in place as a permanent part of the completed structure.

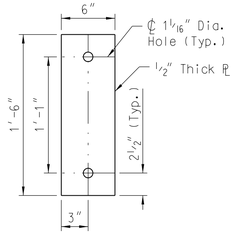
Include all cost of furnishing and installing steel intermediate diaphragm assemblies in the unit price bid for prestressed concrete beams.



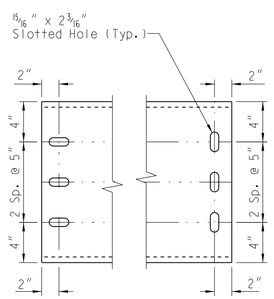
SECTION A-A



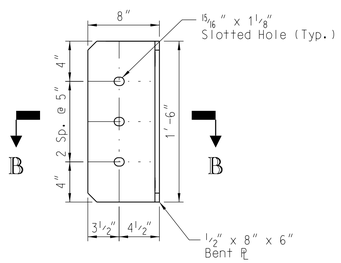
SECTION B-B



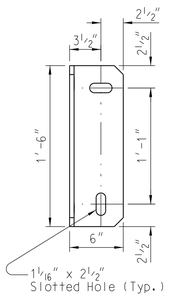
WEB ℙ DETAIL



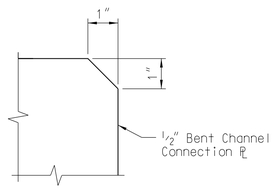
18″ CHANNEL



DIAPHRAGM FACE



WEB FACE



CORNER CLIP

CHANNEL END DETAIL

CHANNEL CONNECTION ℙ DETAILS

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REV.	PCW	HL	09-20
	ASTM F3125		
REV.	HL	LEM	8-16
	Galv. Class		
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QUAN.			
DR.	MRM JDC	SAN	12-11
DES.			
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

STEEL INTERMEDIATE DIAPHRAGM DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

DRAWING NO. 704-05a

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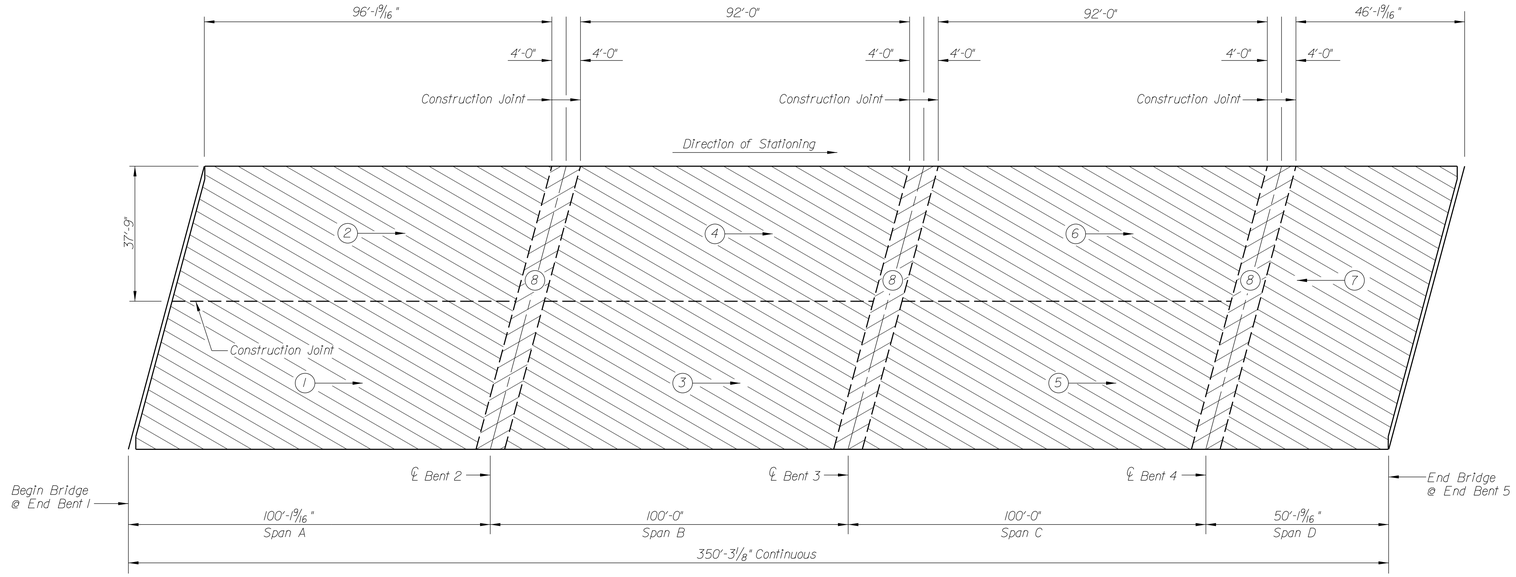
BRIDGE PLANS ID	SHEET NO.
0041800-B01	33



SLAB POURING SEQUENCE

Note:
The Contractor shall establish a minimum pouring rate of 45 CY per hour.

Pours 7 and 8 do not require a construction joint.

Before making subsequent pour, wait either a minimum of 96 hours after placement of initial pour or until the intial pour concrete has attained a minimum of 75% of the specified 28-day compressive strength as verified by testing extra cylinders.

Any deviation from pouring sequence will require approval by the RCE.

(1) Indicates pour sequence and direction

SUPERSTRUCTURE REINF. STEEL SCHED.

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	"e"	LENGTH	LOCATION
A1301	182	28'-7"					28'-7"	Sidewalk
A1601	1398	46'-6"					46'-6"	Slab
A1602	130	34'-8"					34'-8"	Slab
A1603	130	34'-4"					34'-4"	Slab
A1604	65	17'-11"					17'-11"	Slab
A1605	672	5'-10"					5'-10"	Slab
A1606	64	7'-3"					7'-3"	End Bent Diaphragm
A1607	32	7'-7"					7'-7"	End Bent Diaphragm
A1608	96	8'-3"					8'-3"	End Bent Diaphragm
A1609	12	10'-0"					10'-0"	Pedestrian Rail
A1610	1398	37'-2"					37'-2"	Slab
A1901	195	55'-0"					55'-0"	Slab
A1902	124	32'-0"					32'-0"	Slab
A1903	130	17'-7"					17'-7"	Slab
A1904	192	7'-3"					7'-3"	Bent Diaphragm
A1905	48	6'-9"					6'-9"	Bent Diaphragm
A1906	140	53'-1"					53'-1"	Pedestrian Rail
A1907	65	17'-9"					17'-9"	Slab
A1908	62	47'-0"					47'-0"	Slab
A2501*	24	2'-6"					2'-6"	Bent Diaphragm
A3201	84	5'-0"					5'-0"	Bent Diaphragm
B1601	700	5'-6"	7"				6'-1"	Slab
BA1301	468	6'-1 1/2"	7 1/2"				6'-9"	Sidewalk
C1601	1456	3'-5"	10"				4'-3"	Pedestrian Rail
C1602	468	2'-2"	10"				3'-0"	Sidewalk
DB1301	672	7 1/2"	3'-4"	8 1/2"			4'-8"	Bent Diaphragm
E1601	140	10"	1'-9"	1'-2 7/8"			4'-4"	Slab
EA1601	42	2'-6"	4'-7"	1'-7 1/8"			11'-8"	Bent Diaphragm
F1601	12	4'-7"	2'-2"	2'-0 3/8"	9"		6'-9"	Bent Diaphragm
J1601	728	6"	3'-2"				6'-10"	Pedestrian Rail
K1601	168	10"	4'-3"	3'-4"			13'-6"	Bent Diaphragm
L1601	128	10"	4'-3"	6"	4'-3"		9'-10"	End Bent Diaphragm
R1601	128	1'-0"	4"	1'-6"	1'-0 3/4"		2'-10"	End Bent Diaphragm
1 1/4" Dia. Tie Bar		No. Required = 4					35'-8"	End Bent Diaphragm
1 1/4" Dia. Tie Bar		No. Required = 4					40'-0"	End Bent Diaphragm
SB							1' HT.	As Necessary
BBU (With A19 Top Bars)							2 1/2" HT.	As Necessary
BBU (With A16 Top Bars)							2 3/4" HT.	As Necessary

* A2501 Bars to have one threaded end.

CONCRETE QUANTITIES			
POUR NO.	CY	POUR NO.	CY
*1	136.2	*5	126.2
*2	124.2	*6	115.1
*3	126.2	*7	129.2
*4	115.1	*8	190.2
		TOTAL	1062.4

QUANTITIES

	ITEM	UNIT	
	2.0" Schedule 80 PVC Conduit	LF	1565.0
**	Concrete for Structures, Class 4000	CY	1062.4
*	Reinforcing Steel for Structures (Bridge)	LBS	249,793
	Prestr. Conc. Beams (Type IV)	LF	3120
	Conc. Bridge Railing (3'-6" Ht.)	LF	700.5
	Elastomeric Bearings	EA	72

* Includes 1362 lbs for tie bar assemblies.
** Includes 117.6 cy of concrete for sidewalk.

NV5 ENGINEERS & CONSULTANTS, INC.
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CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
SC license # 957
formerly CALYX Engineers & Consultants

SOUTH CAROLINA NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C2465111037F480... 11/8/2022

REV.				
REV.				
REV.				
REVIEWED				
QUAN.				
DR.	WBA	LKA	9-14	
DES.	ZHB	LKA	5-14	
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

SUPERSTRUCTURE DETAILS & REINFORCING STEEL SCHEDULE
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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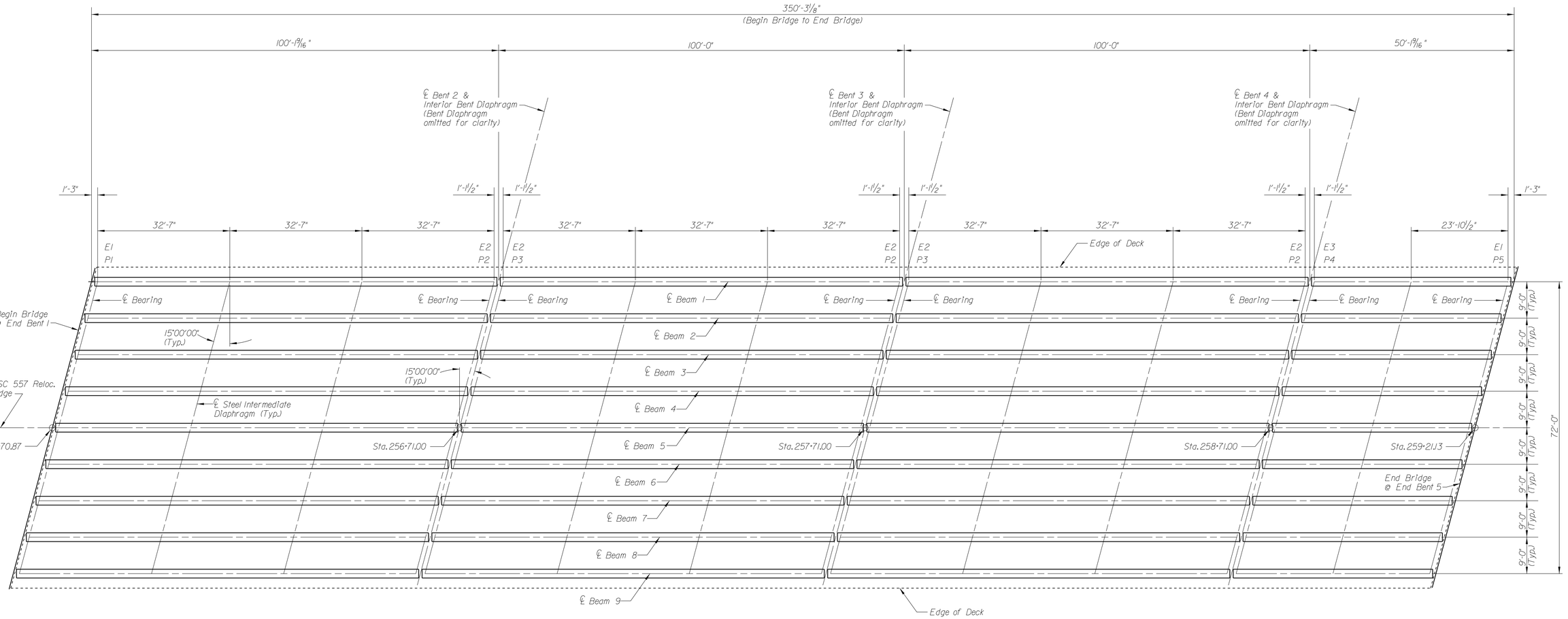
BRIDGE PLANS ID	SHEET NO.
0041800-B01	34



SPAN A SPAN B SPAN C SPAN D

FRAMING PLAN - 4 SPAN UNIT

Note:

For details of Bearing Plates P1, P2, P3, P4 & P5 see sh. 37.

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C24651110 37F480... 11/8/2022

REV.				
REV.				
REV.				
REVIEWED				
QUAN.				
DR.	WBA	ZHB	9/14	
DES.	ZHB	LKA	5/14	
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

FRAMING PLAN
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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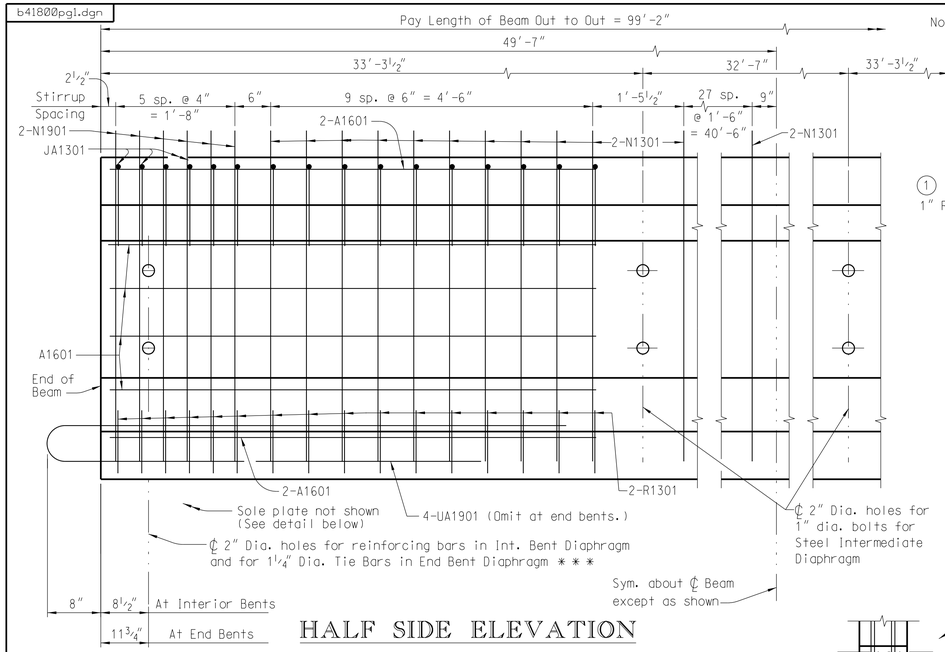
BRIDGE PLANS ID	SHEET NO.
0041800-B01	35



HALF SIDE ELEVATION

Note:

Holes through web at beam ends to follow skew. Dimensions to holes are shown at centerline of beam. See Detail "A", on sh. 36.

STRAND DATA

DIAMETER	AREA (in²)	TENSIONING LOAD
0.6"	0.217	43.9 kips

BEAM CAMBER AND DEFLECTION

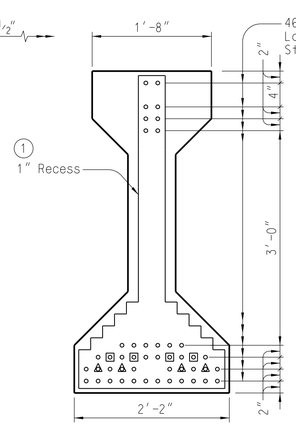
	BEAM CAMBER		DEFLECTION DUE TO			
	AT RELEASE	* AT ERECTION	INTERIOR DIAPHRAGM	STAY-IN-PLACE FORMS **	SLAB	PARAPET & SIDEWALK
EXT. BEAM	+1 11/16"	+3"	0"	-½"	-1 1/8"	-5/16"
INT. BEAM	+1 11/16"	+3"	0"	-13/16"	-1 1/4"	-1/4"

* Based on a beam age of 60 days at the time of erection

** Deflection due to the weight of the metal forms and the weight of the concrete in the valleys of the forms.

"+" indicates upward movement
"-" indicates downward movement

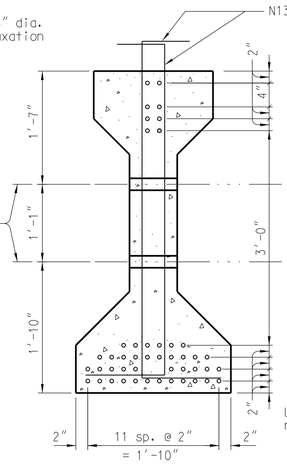
Note: Holes for Steel Diaphragms are perpendicular to the beam web.



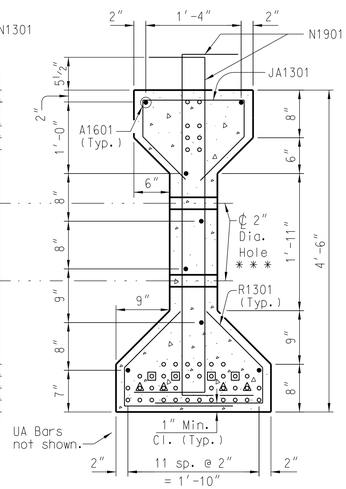
END ELEV.

▣ Debond strands 8' from end of beam

△ Debond strands 10' from end of beam



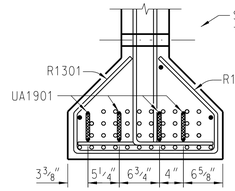
AT CENTER OF BEAM



AT END OF BEAM

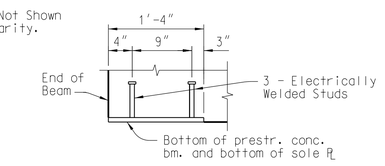
*** Omit holes on exterior beam and provide threaded inserts on the inside face at Bents 2, 3 & 4.

SECTIONS THRU BEAM

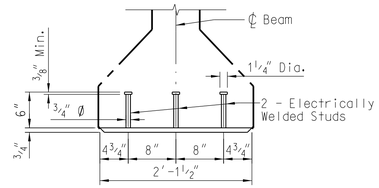


END VIEW

Showing UA1901 bars



ELEV. AT SIDE OF BEAM



ELEV. AT END OF BEAM

DESIGN DATA

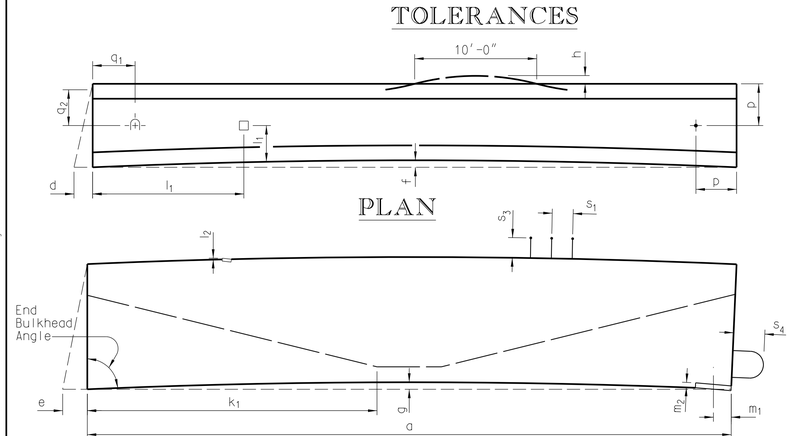
Low Relaxation Strands

Tensile Strength (fpu) = 270 ksi
Initial Prestress (0.75 fpu) = 202.5 ksi

Class 9500 Concrete

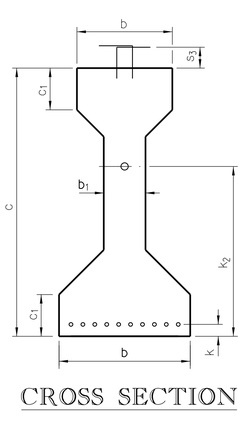
f'c = 9500 ksi
f'ci = 7500 ksi

TOLERANCES



PLAN

ELEVATION



CROSS SECTION

SOLE PLATE DETAIL

a	Length	± ¼" per 25' length, ± 1" max.
b	Width (overall)	+ ⅜", - ¼"
b_1	Web Width	+ ⅜", - ¼"
c	Depth (overall)	+ ½", - ¼"
c_1	Flange Depth	± ¼"
d	Variation from Specified Plan End Squareness or Skew	± ⅛" per 12" width, ± ½" max.
e	Variation from Specified Elevation End Squareness or Skew	± 3/16" per 12" depth, ± 1" max.
f	Sweep	⅛" per 10' length
g	Camber Variation from Design Camber (measurement of camber for comparison to predicted design values should be completed within 72 hrs. of transfer of prestr. force)	± ⅛" per 10' ± ½" max. up to 80' length ± 1" max. for length greater than 80'
h	Local Smoothness of Any Surface	¼" in 10'
k	Location of Strand (Individual) Location of Strand (Bundled)	± ¼" ± ½"
k_1	Location of Harp Points for Harped Strands from Design Location	± 20"
k_2	Location of Post-Tensioning Duct	± ¼"
l_1	Location of Embedment	± 1"
l_2	Tipping and Flushness of Embedment	± ¼"
m_1	Location of Bearing Assembly	± 5/8"
m_2	Tipping and Flushness of Bearing Assembly	± ⅛"
p	Location of Inserts, Sleeves, or Holes for Structural Connections	± ½"
q_1	Location of Handling Device Parallel to Length of Member	± 6"
q_2	Location of Handling Device Transverse to Length of Member	± 1"
s_1	Longitudinal Spacing of Stirrups	± 2"
s_2	Longitudinal Spacing of Stirrups within Distance "c" from Member Ends	± 1"
s_3	Stirrup Projection from Beam Surface	+ ¼", - ½"
s_4	Reinforcing Bar Projection from Beam End	± ½"

REINF. STEEL SCHED.

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	LENGTH
A1601	16	6'-9"	——	——	——	6'-9"
JA1301	32	1'-4"	6½"	11"	7¾"	4'-3"
N1301	152	8"	4'-9"	1'-2"	——	6'-7"
N1901	24	10"	4'-9"	1'-2"	——	6'-9"
R1301	64	1'-6"	6½"	1'-3½"	11"	3'-4"
UA1901	8	8'-6"	6"	7'-0"	——	15'-9"

For Information Only - Paid for as Prestressed Beam

QUANTITIES

ITEM	UNIT	ONE BEAM
Concrete, Class 9500	CY	20.1
Reinforcing Steel	LB	1447
Prestressing Strands	LF	4562
Structural Steel	LB	As Necessary

Notes:

See Section 704 of the Standard Specifications for additional requirements and information regarding prestressed concrete beams. Shop drawings must be submitted in accordance with the Standard Specifications.
All overhang brackets in the top flange of exterior beams shall be galvanized in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as appropriate and shall be detailed accordingly in the shop plans.

Use prestressing strands that conform to the latest AASHTO M 203 for grade 270 (low relaxation).

The tensioning load in all 0.6" Dia. low relaxation strands is 43.9 kips. Do not release the strands until the compressive strength of the concrete has reached the value shown for f'ci.

On the top surface of beams where cast-in-place concrete will be placed, provide a finish that is clean, free of laitance, and intentionally roughened to a full amplitude of approximately ¼". Finish top of beam level.

Always maintain prestressed concrete beams in an upright position. Use lifting devices provided at each end of the beam to lift or handle beams. Do not permit beams to be placed or stored on interior supports causing negative moments.

Locate holes for 1¼" dia. tie bars at End Bents or reinforcing steel at Interior Bents as shown on this drawing. Form holes with 2" inside dia. pipe and prevent movement during casting by securely fastening the pipe.

① Provide a 1" recess in the end of the beam, only at beam ends that are adjacent to expansion joints. Cut all strands ½" back into recess and fill the recess with an epoxy mortar especially formulated for applications on vertical surfaces.

Debonding:

1) For all debonding material, use tubular conduit capable of resisting the pressure exerted by the concrete. When using slit conduit, use two conduits with the slits located on opposite sides of the strand. Use conduit made of high density polyethylene or polyprophylene with a minimum thickness of 0.025". Use conduit with an inside diameter that will permit free movement of the encased strand, but no larger than the diameter of the strand plus ⅛". Place conduit on the strand at the location(s) shown on the plans (± 1") to prevent bonding of the concrete. Secure conduit to prevent any longitudinal movement along the strand. Prevent concrete from entering the conduit by sealing with tape. Use tape manufactured from a non-corrosive material that is compatible with the concrete, conduit, and steel.

2) Release strands in accordance with Section 704 of the Standard Specifications.

3) Within 48 hours of detensioning, seal the openings between the strands and the sheathing . Use an approved sealant that is made of either epoxy or silicone. If silicone sealant is provided, use a low modulus silicone sealant that is white in color.

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SOUTH CAROLINA — NV5 ENGINEERS AND CONSULTANTS, INC. — No. C00957 — CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA — REGISTERED PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C24651110377480... 11/8/2022

REV.	BY	CHK.	DATE
	WBA	LKA	7-19
	0041800		
REV.	PCW	HL	4-19
	Debonding Note		
REV.	PCW	HL	4-19
	Sole PL Detail		
REVIEWED			
QUAN.			
DR.	PNP	SAN	3-08
DES.			

YORK COUNTY
PENNIES FOR PROGRESS

PRESTR. CONC. BEAM DETAILS
AASHTO TYPE IV
SPANS A, B & C
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

DRAWING NO. 704-10

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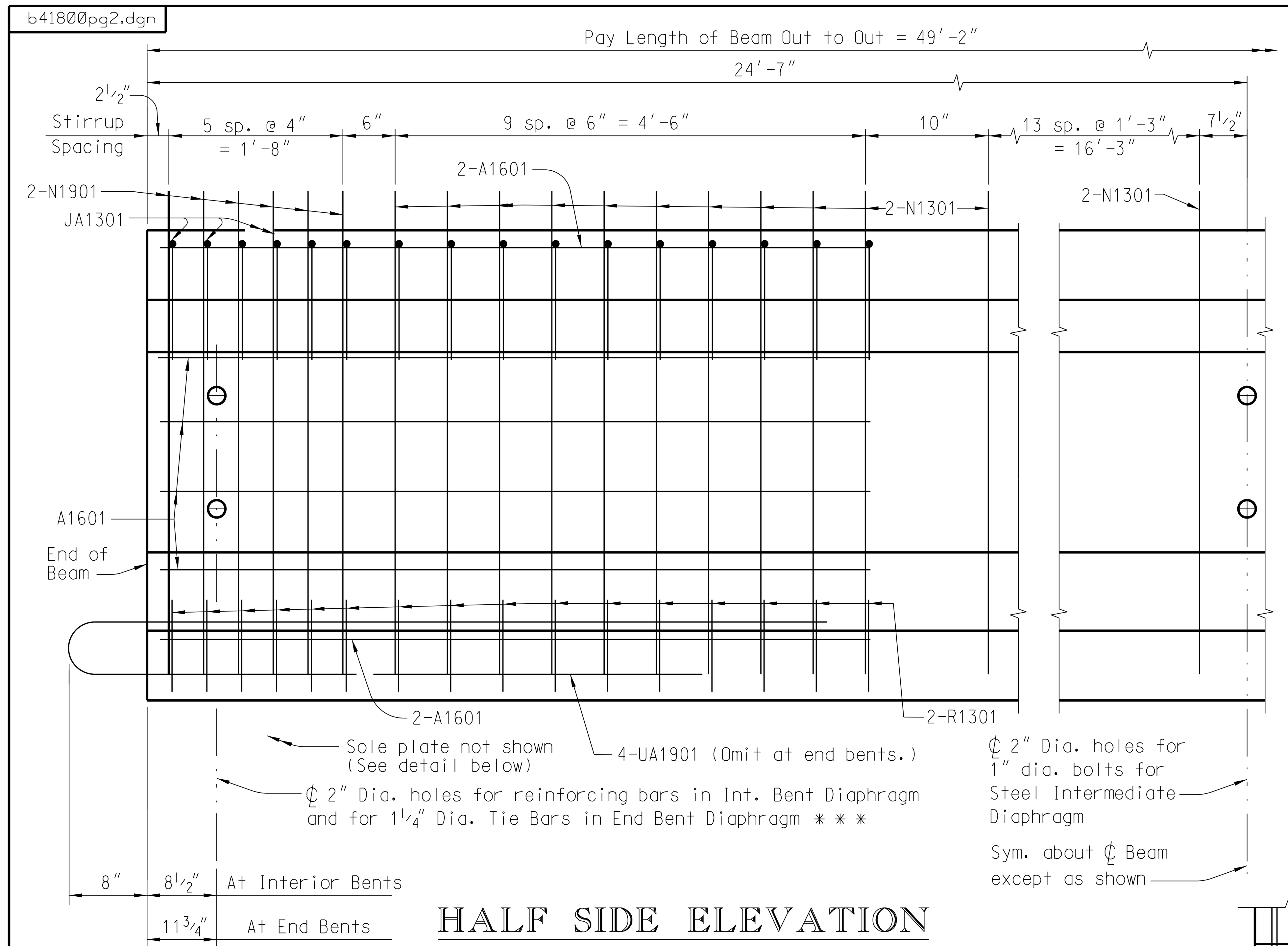
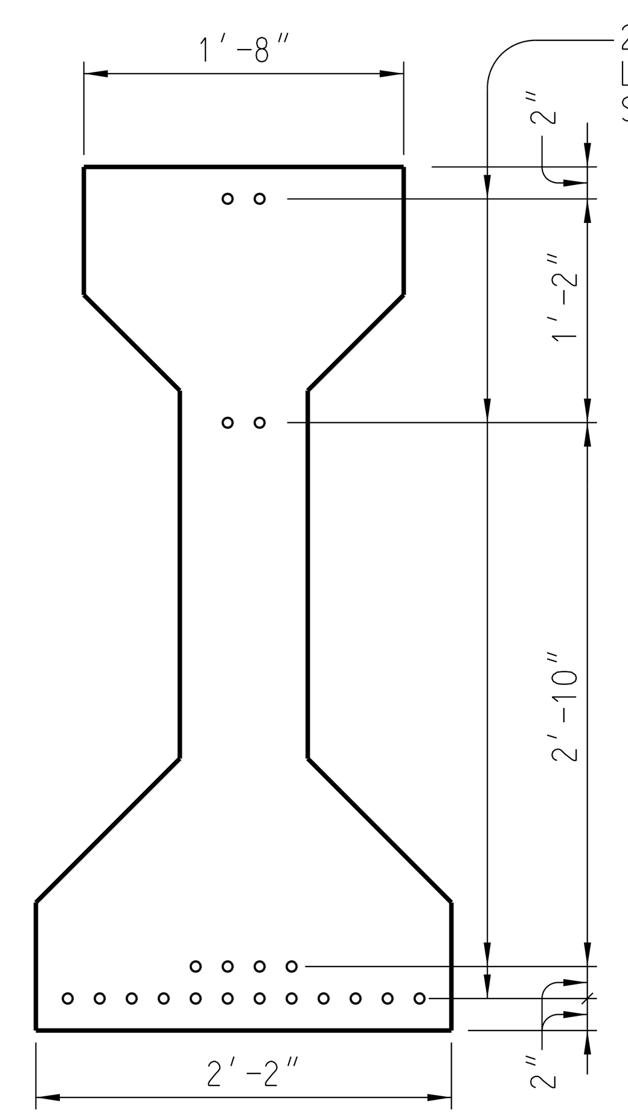
BRIDGE PLANS ID	SHEET NO.
0041800-B01	36

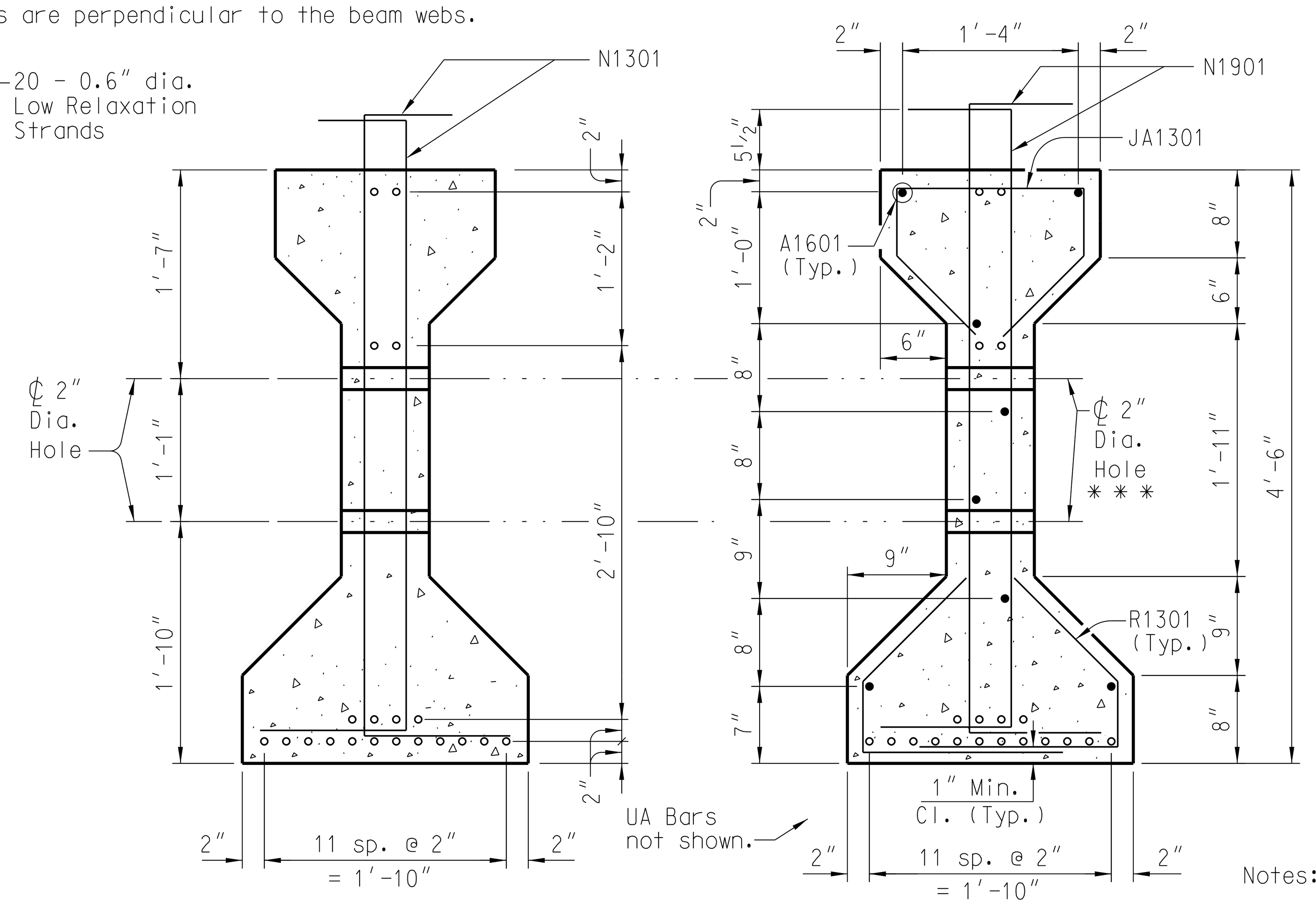


HALF SIDE ELEVATION

Note: Holes for Steel Diaphragms are perpendicular to the beam webs.



END ELEV.



AT CENTER OF BEAM

AT END OF BEAM

* * * Omit holes on exterior beam and provide threaded inserts on the inside face at Bent 4.

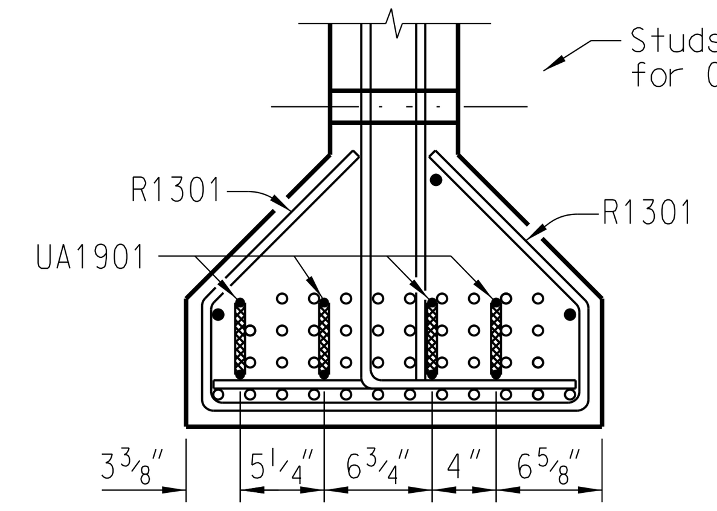
SECTIONS THRU BEAM

Note:

Holes through web at beam ends to follow skew. Dimensions to holes are shown at centerline of beam. See Detail "A".

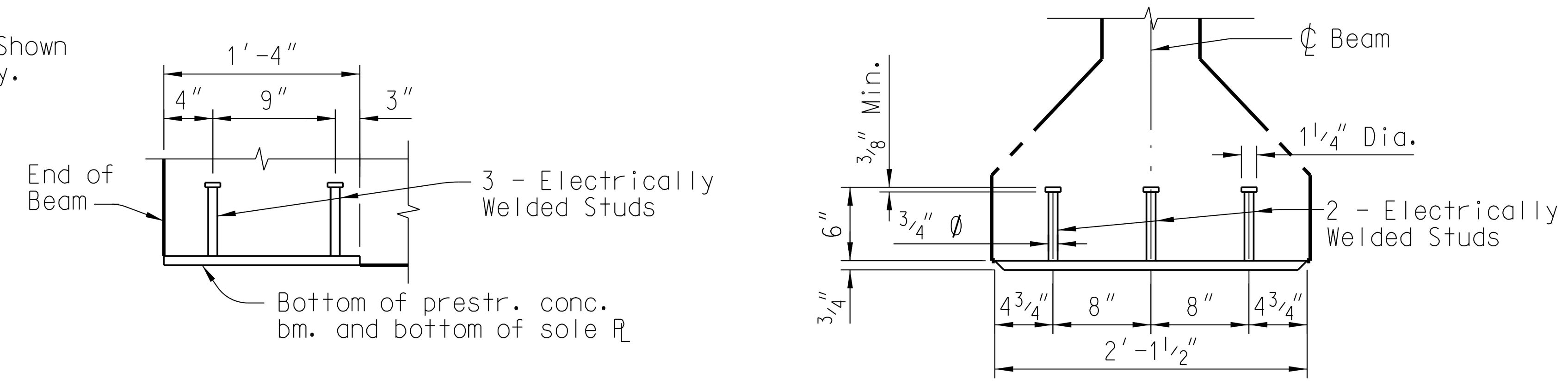
STRAND DATA

DIAMETER	AREA (in²)	TENSIONING LOAD
0.6"	0.217	43.9 kips



END VIEW

Showing UA1901 bars



ELEV. AT SIDE OF BEAM

ELEV. AT END OF BEAM

SOLE PLATE DETAIL

BEAM CAMBER AND DEFLECTION

	BEAM CAMBER		DEFLECTION DUE TO			
	AT RELEASE	* AT ERECTION	INTERIOR DIAPHRAGM	STAY-IN-PLACE FORMS **	SLAB	PARAPET & SIDEWALK
EXT. BEAM	+3/8"	+5/8"	0"	-1/16"	-1/16"	0"
INT. BEAM	+3/8"	+5/8"	0"	-1/16"	-1/8"	0"

* Based on a beam age of 60 days at the time of erection

** Deflection due to the weight of the metal forms and the weight of the concrete in the valleys of the forms.

"+" indicates upward movement
"-" indicates downward movement

DESIGN DATA

Low Relaxation Strands

Tensile Strength (fpu) = 270 ksi
Initial Prestress (0.75 fpu) = 202.5 ksi

Class 5500 Concrete

f'c = 5500 ksi
f'ci = 4500 ksi

REINF. STEEL SCHED.

For Information Only - Paid for as Prestressed Beam

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	LENGTH
A1601	16	6'-9"	——	——	——	6'-9"
JA1301	32	1'-4"	6½"	11"	7¾"	4'-3"
N1301	96	8"	4'-9"	1'-2"	——	6'-7"
N1901	24	10"	4'-9"	1'-2"	——	6'-9"
R1301	64	1'-6"	6½"	1'-3½"	11"	3'-4"
UA1901	8	8'-6"	6"	7'-0"	——	15'-9"

QUANTITIES

ITEM	UNIT	ONE BEAM
Concrete, Class 5500	CY	10.0
Reinforcing Steel	LB	1201
Prestressing Strands	LF	984
Structural Steel	LB	As Necessary

Notes:

See Section 704 of the Standard Specifications for additional requirements and information regarding prestressed concrete beams. Shop drawings must be submitted in accordance with the Standard Specifications.

All overhang brackets in the top flange of exterior beams shall be galvanized in accordance with AASHTO M 111, AASHTO M 232, or ASTM F 2329 as appropriate and shall be detailed accordingly in the shop plans.

Use prestressing strands that conform to the latest AASHTO M 203 for grade 270 (low relaxation).

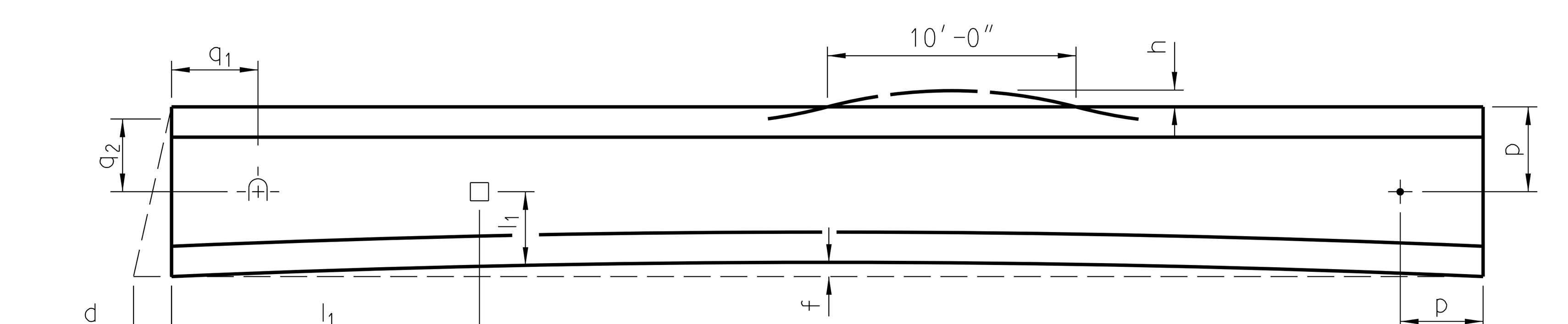
The tensioning load in all 0.6" Dia. low relaxation strands is 43.9 kips. Do not release the strands until the compressive strength of the concrete has reached the value shown for f'ci.

On the top surface of beams where cast-in-place concrete will be placed, provide a finish that is clean, free of laitance, and intentionally roughened to a full amplitude of approximately 1/4". Finish top of beam level.

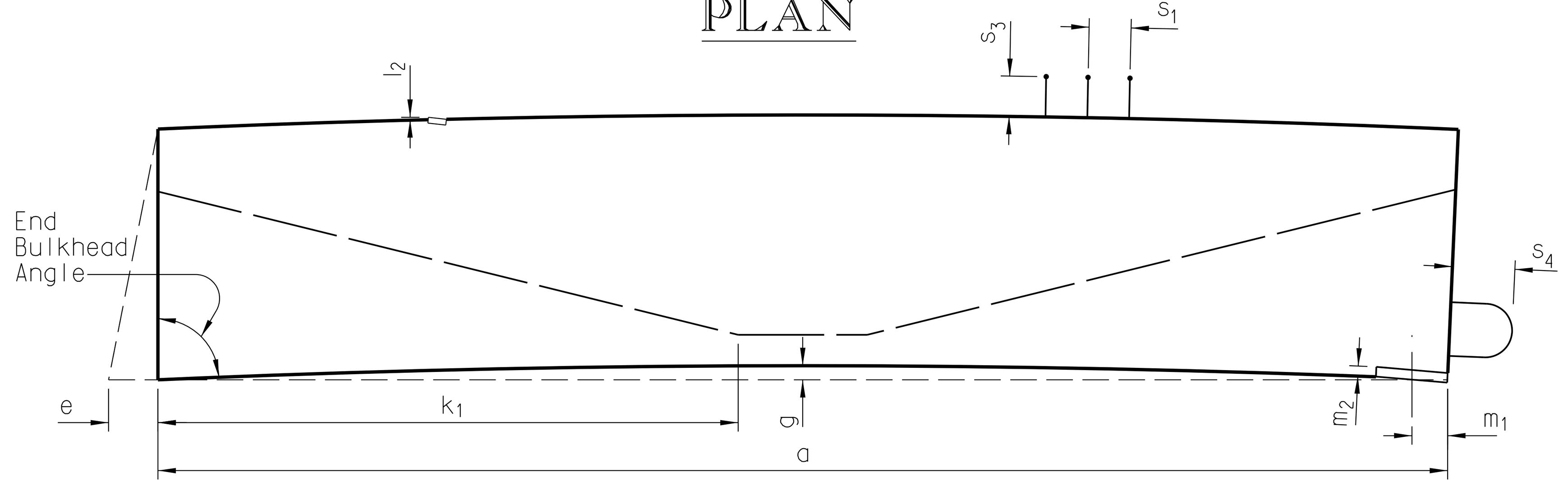
Always maintain prestressed concrete beams in an upright position. Use lifting devices provided at each end of the beam to lift or handle beams. Do not permit beams to be placed or stored on interior supports causing negative moments.

Locate holes for 1¼" dia. tie bars at End Bents or reinforcing steel at Interior Bents as shown on this drawing. Form holes with 2" inside dia. pipe and prevent movement during casting by securely fastening the pipe.

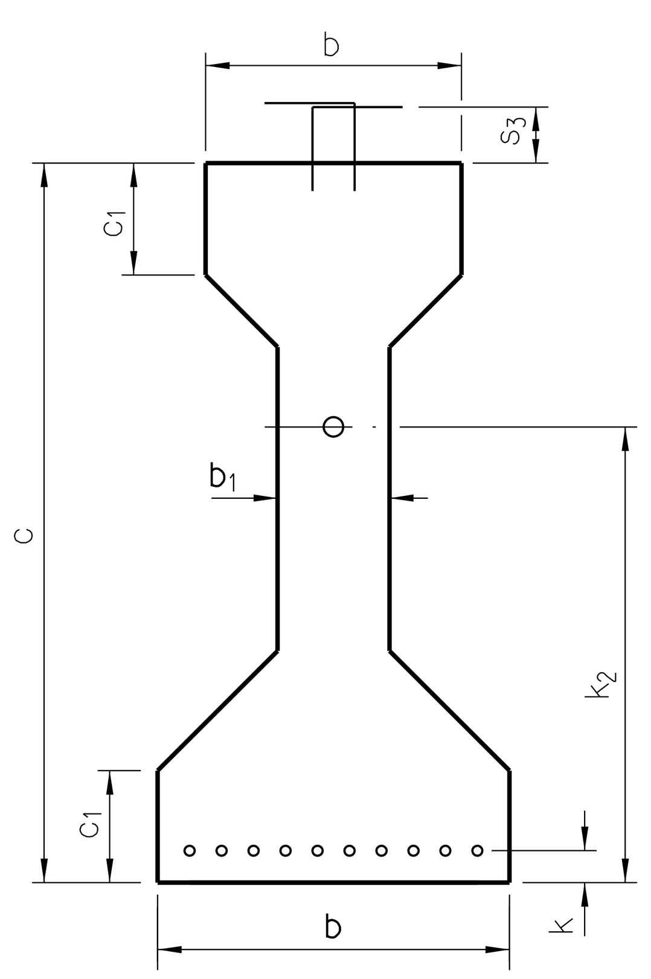
TOLERANCES



PLAN

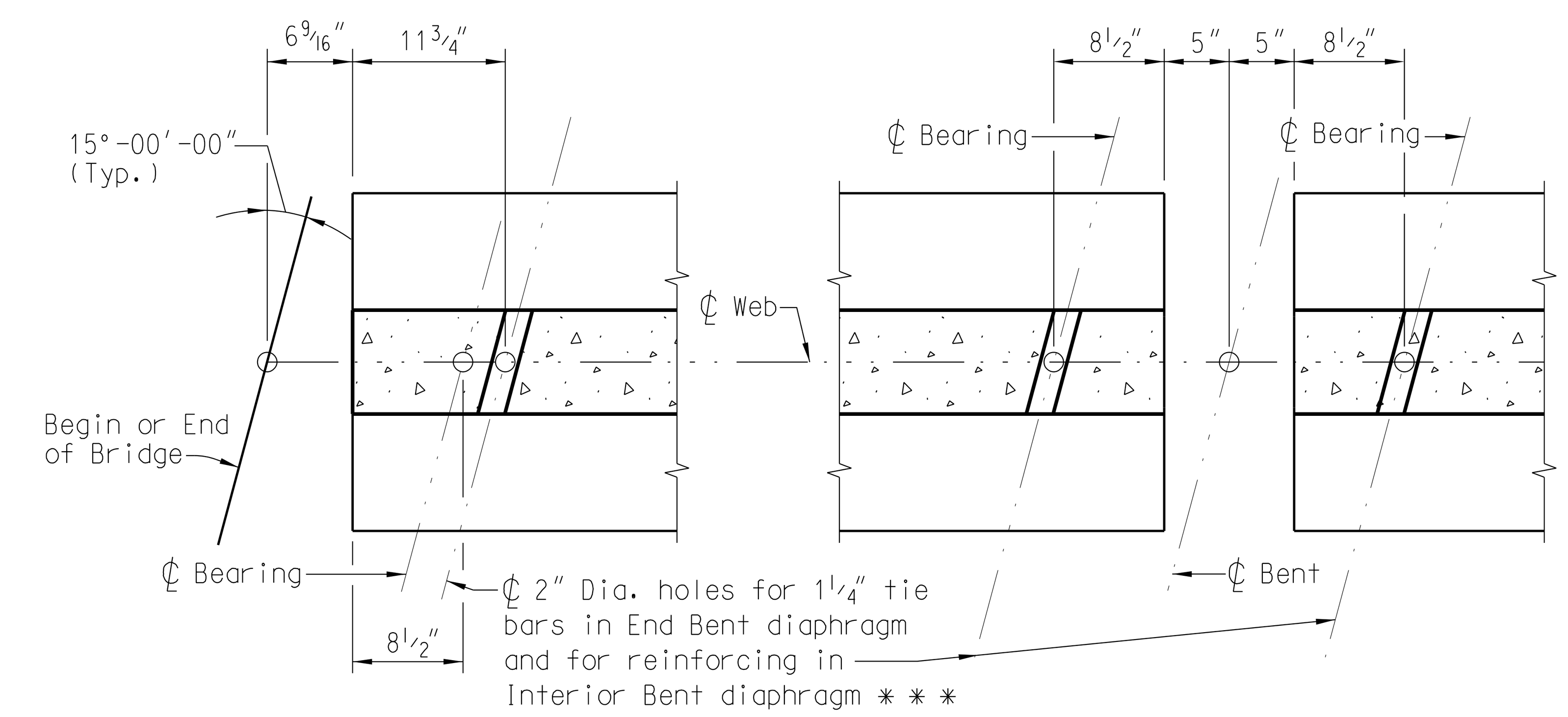


ELEVATION



CROSS SECTION

a	Length	± 1/4" per 25' length, ± 1" max.
b	Width (overall)	+ 3/8", - 1/4"
b_1	Web Width	+ 3/8", - 1/4"
c	Depth (overall)	+ 1/2", - 1/4"
c_1	Flange Depth	± 1/4"
d	Variation from Specified Plan End Squareness or Skew	± 1/8" per 12" width, ± 1/2" max.
e	Variation from Specified Elevation End Squareness or Skew	± 3/16" per 12" depth, ± 1" max.
f	Sweep	1/8" per 10' length
g	Camber Variation from Design Camber (measurement of camber for comparison to predicted design values should be completed within 72 hrs. of transfer of prestr. force)	± 1/8" per 10' ± 1/2" max. up to 80' length ± 1" max. for length greater than 80'
h	Local Smoothness of Any Surface	1/4" in 10'
k	Location of Strand (Individual) Location of Strand (Bundled)	± 1/4" ± 1/2"
k_1	Location of Harp Points for Harped Strands from Design Location	± 20"
k_2	Location of Post-Tensioning Duct	± 1/4"
l_1	Location of Embedment	± 1"
l_2	Tipping and Flushness of Embedment	± 1/4"
m_1	Location of Bearing Assembly	± 5/8"
m_2	Tipping and Flushness of Bearing Assembly	± 1/8"
p	Location of Inserts, Sleeves, or Holes for Structural Connections	± 1/2"
q_1	Location of Handling Device Parallel to Length of Member	± 6"
q_2	Location of Handling Device Transverse to Length of Member	± 1"
s_1	Longitudinal Spacing of Stirrups	± 2"
s_2	Longitudinal Spacing of Stirrups within Distance "c" from Member Ends	± 1"
s_3	Stirrup Projection from Beam Surface	+ 1/4", - 1/2"
s_4	Reinforcing Bar Projection from Beam End	± 1/2"



AT END BENTS

AT BENTS

DETAIL "A"

NV5 ENGINEERS & CONSULTANTS, INC.
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CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
SC License # 957
formerly DALYX Engineers & Consultants

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA PROFESSIONAL ENGINEER L. KEVIN AUSTIN No. 20591

DocuSigned by: L. Kevin Austin
C2465111037F480... 11/8/2022

REV.	WBA	LKA	7-19	
	0041800			
REV.	PCW	HL	4-19	
	Debonding Note			
REV.	PCW	HL	4-19	
	Sole PL Detail			
REVIEWED				
QUAN.				
DR.	PNP	SAN	3-08	
DES.				
	BY	CHK.	DATE	

YORK COUNTY
PENNIES FOR PROGRESS

PRESTR. CONC. BEAM DETAILS
AASHTO TYPE IV
SPAN D
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

DRAWING NO. 704-10

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BRIDGE PLANS ID	SHEET NO.
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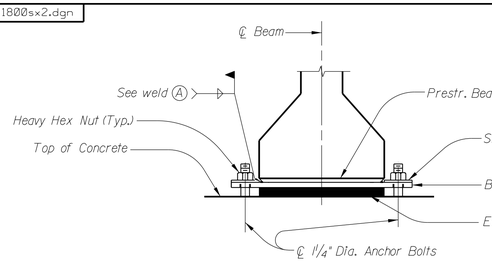
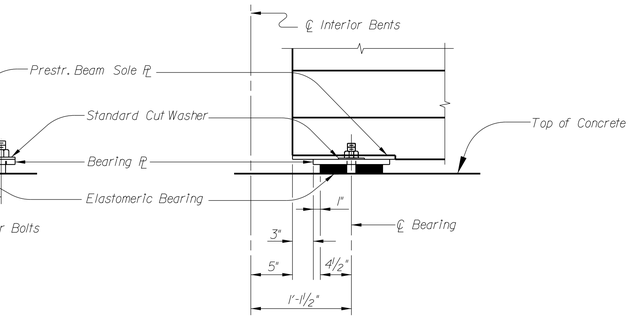
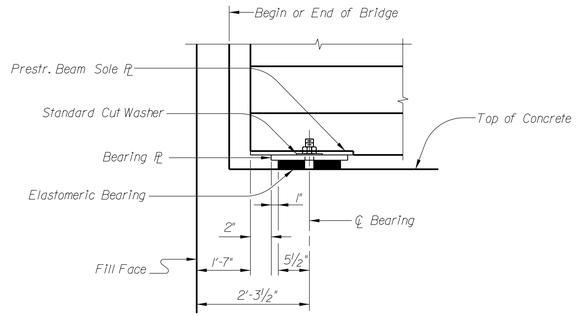


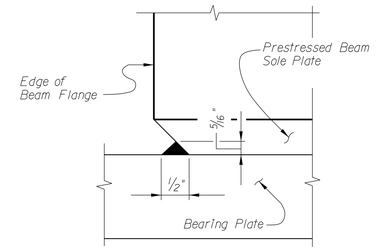
END ELEVATION



SIDE ELEVATION AT INT. BENTS



SIDE ELEVATION AT END BENTS

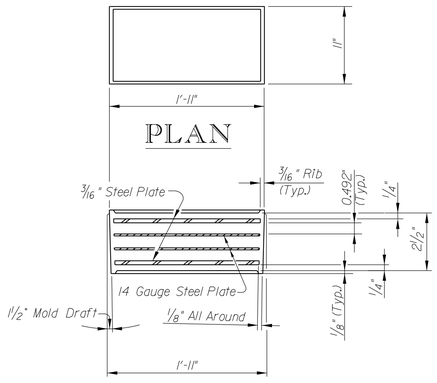


WELD Ⓐ

For Anchor Bolt Details, see Sh. 4.

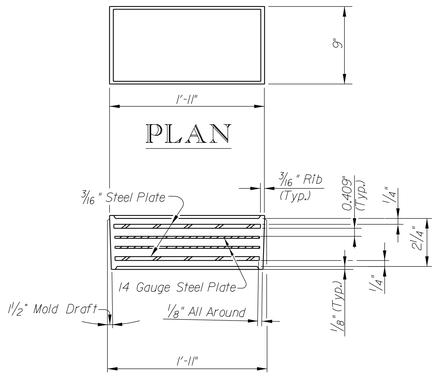
NOTE: Caution shall be exercised where a field weld or shop weld will be made while elastomeric bearing pad is in contact with metal. In no case shall the elastomer or elastomer bond be exposed to instantaneous temperatures greater than 400°F or maximum temperature recommended by the manufacturer, whichever is lower. Any damage to elastomeric bearing due to welding will be cause for rejection. Temperature shall be controlled by use of heat crayons furnished by the contractor.

AT END BENTS & INTERIOR BENTS



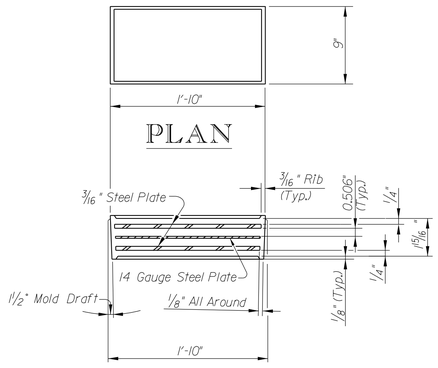
TYPICAL SECTION OF ELASTOMERIC BEARING AT END BENT 1 & 5

(H-60 LAMINATED)
MAX. D. L. + L. L. = 420 Kips
Design per AASHTO Method A
18 Required
(E1)



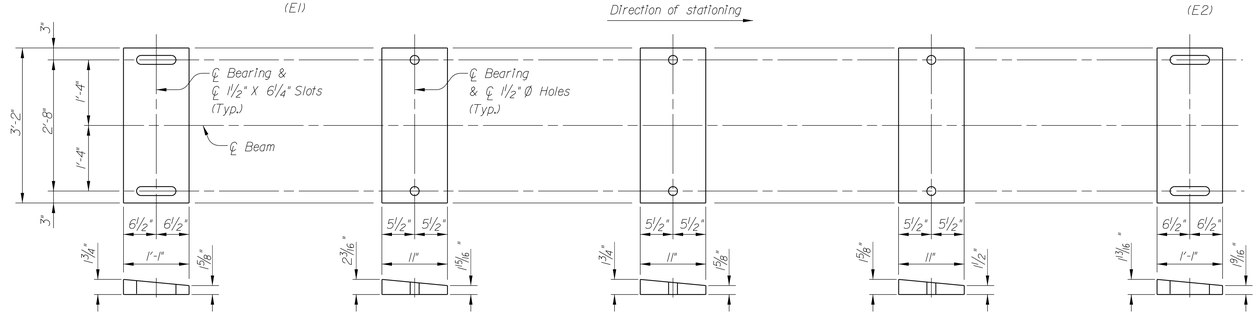
TYPICAL SECTION OF ELASTOMERIC BEARING AT INTERIOR BENTS 2, 3 & 4 (NEAR SIDE)

(H-60 LAMINATED)
MAX. D. L. + L. L. = 365 Kips
Design per AASHTO Method A
45 Required
(E2)



TYPICAL SECTION OF ELASTOMERIC BEARING AT INTERIOR BENT 4 (FAR SIDE)

(H-60 LAMINATED)
MAX. D. L. + L. L. = 225 Kips
Design per AASHTO Method A
9 Required
(E3)



END BENT 1
(9 Required)
(P1)

BENTS 2, 3 & 4 (NEAR SIDE)
(27 Required)
(P2)

BENTS 2 & 3 (FAR SIDE)
(18 Required)
(P3)

BENT 4 (FAR SIDE)
(9 Required)
(P4)

END BENT 5
(9 Required)
(P5)

BEARING PLATE DETAILS

NV5
NV5 ENGINEERS & CONSULTANTS, INC.
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SOUTH CAROLINA — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957 — CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C2465111037F480... 11/8/2022

REV.			
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REVIEWED			
QUAN.			
DR.	WBA	ZHB	8/14
DES.	ZHB	TRP	9/13
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

BEARING DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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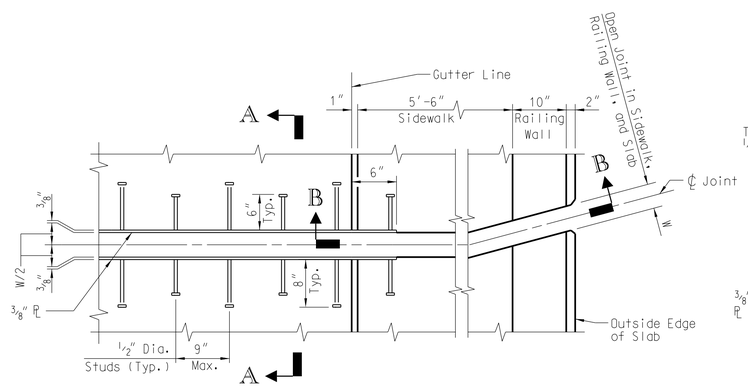
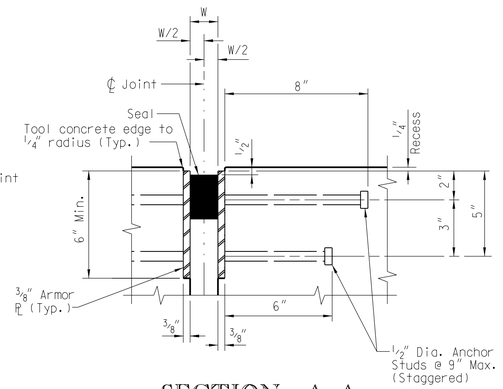
BRIDGE PLANS ID	SHEET NO.
0041800-B01	38

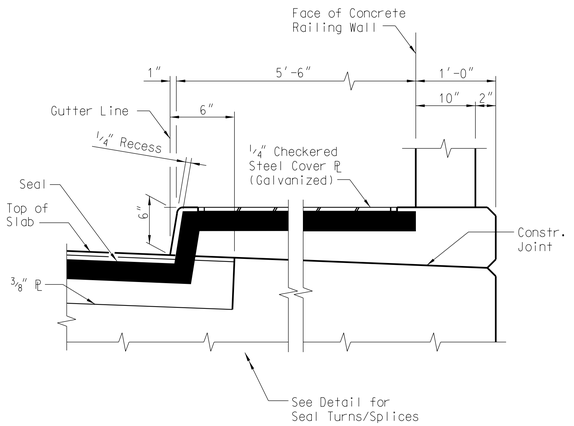


PART PLAN - EXPANSION JOINT

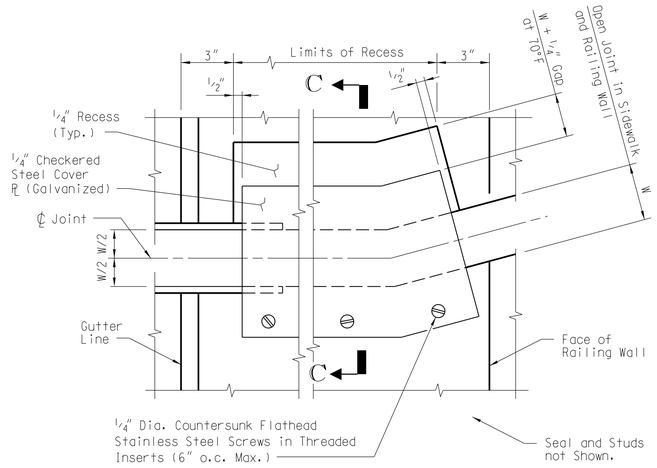
(Seal and Cover Plate Not Shown)



SECTION A-A

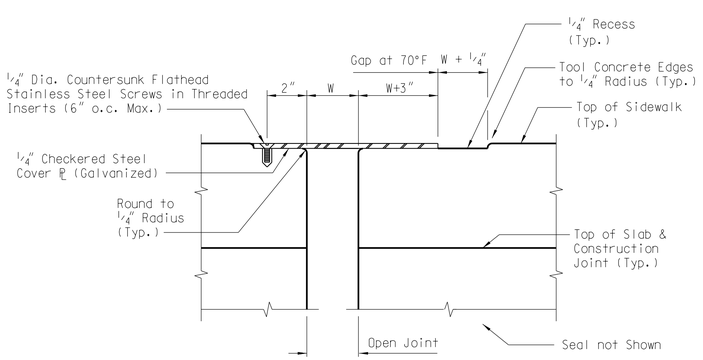


SECTION B-B



PART PLAN - COVER PLATE AT SIDEWALK

(Provide checkered steel cover plate conforming to the latest AASHTO M 270, Grade 36 and galvanize in accordance with AASHTO M 111.)



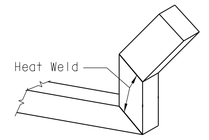
SECTION C-C

Seal Installation:

Have the manufacturer's representative present for the first installation to insure proper installation. Follow the manufacturer's installation procedures and the instructions below.

Begin seal installation at the low end of the joint. Apply mixed epoxy to both sides of the seal and joint. Ensure epoxy completely fills the grooves in the sides of the seal. With gloved hands, compress the seal and install seal into the joint recessing the seal 1/4" below the top of the steel plate. If assistance is needed in installing the seal, use a blunt probe to push down on the seal. Do not push the seal at any angle that will stretch the seal material. Once seal installation has begun on a joint, do not stop until the installation is completed. Clean the excess epoxy from the surface of the seal material quickly and thoroughly in accordance with the seal manufacturer's recommendations. Do not use solvents to clean or remove excess epoxy. Excess epoxy remaining on the joint seal may be cause for rejection of the joint.

Provide a watertight joint and seal. The joint will not be tested, but the RCE will observe the joint condition and performance until final inspection.



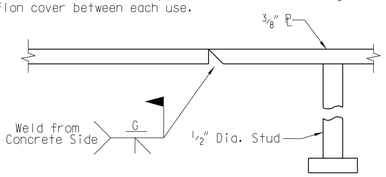
DETAIL FOR SEAL TURNS / SPLICES

1) Preheat the Teflon heating iron to 350° for approximately 30 minutes before welding the seal.

2) Using a sharp instrument such as a hacksaw, cut the seal to form the shape shown in Section B-B. This shape not necessary for welding seal at other approved splice locations.

3) Place the ends of seal to be welded against the Teflon heating iron at 350°F. Hold for a minimum of 10 seconds but no more than 20 seconds, depending on the ambient temperature. Then, quickly place these ends together tightly and hold for 20 seconds. Do not check the welded seal until the material has completely cooled.

4) If the edges do not seal completely, use a thin blade, such as a hacksaw blade to transfer heat into the edge to be sealed. Hold the heated blade between the edges of the material approximately 5 seconds, then remove and press the edge together quickly and hold for 10 to 20 seconds. Keep the blade on the heating iron under the Teflon cover between each use.



FIELD WELD DETAIL

Notes:

Provide seal having a normal uncompressed width of 2 3/4 inches. Set the nominal joint width, "W" to 2" at 70°F. Use the actual air temperature, measured in the shade and averaged over the preceding 24 hour period, as the setting temperature. At the time of construction, decrease the joint opening by 1/8" for each 10°F that the setting temperature is above 70°F or increase the joint opening by 1/8" for each 10°F that the setting temperature is below 70°F.

Ensure three copies of certifications are signed by an authorized agent of the manufacturer or supplier and submitted to the RCE prior to the installation of the seal. The required certifications are a copy of the manufacturer's test reports, or a statement by the supplier accompanied by the test results, certifying that the materials have been sampled, tested and inspected. Failure to provide the required certifications for seals and lubricant/adhesive is grounds for rejection of the materials.

Mark all seals with die markings that indicate the lot number and manufacturer. Mark each container of lubricant/adhesive with the manufacturer, lot number, and shelf life expiration date.

Provide preformed seals that are compatible with steel and concrete and resistant to abrasion, oxidation, oils, gasoline, salt, and other materials that may be spilled on or applied to the surface. Provide seal material that is resistant to weathering and ultra-violet rays. Provide a seal having a working range of 30% tension and 60% compression. Manufacture the seal from a low-density closed cell, cross-linked ethylene vinyl acetate polyethylene copolymer nitrogen blown material.

Manufacture seals with grooves along the bond surface running the length of the joint. The grooves shall be 1/8" wide by 1/8" deep and spaced between 1/4" and 1/2" apart. Provide seals with a minimum depth at least 70% of the uncompressed width and meeting the manufacturer's recommendations. Design the seal so that, when compressed, the center portion of the top does not extend upward above the original height of the seal by more than 1/4".

Shop mark the seal to indicate the top side of the seal in such a way as to be clearly visible upon installation.

Install seals in accordance with the manufacturer's instructions unless stipulated otherwise in these plans or the Special Provisions.

Provide a watertight seal along the entire length including the ends of the seal.

Adhesives:

Provide a two component, 100% solid, modified epoxy adhesive meeting the requirements of ASTM C 881, Type I, Grade 2, Class B & C and in accordance with testing requirements shown on this sheet.

Provide adhesive that is workable to 40°F. For installation temperatures below 40°F or for application on moist, hard to dry concrete surfaces, provide adhesive as specified by the manufacturer of the joint material.

Joint Preparation:

Clean the armored joint opening in accordance with the manufacturer's recommendations. Bond the seal to the cleaned surface on the same day the cleaning is done.

Provide steel armor plates that conform to the requirements of the latest AASHTO M 270, Grade 50W (ASTM A 709, Gr. 50W) and are of weldable quality.

Provide 3/8" plates that conform to the crown of the finished roadway and have smooth edges. Fabricate the 3/8" plates in reasonable lengths and connect them at the job site using partial penetration groove welds. Grind welds at the exposed surfaces of plates flush. Perform welding of splices prior to bonding seals. If necessary to bolt the 3/8" plates to the forms, provide 9/16" Dia. holes at approximately 2' on center in the lower portion of the plates.

Provide 1/2" Dia. headed studs that meet the requirements of Section 709 of the Standard Specifications. Electrically weld all studs.

Field bend top slab reinforcing as required to clear anchor studs.

For payment purposes, measure along the centerline of the joint from the edge of slab to the edge of slab. Include all costs associated with furnishing labor, materials, fabrication, and installation of armor plates, cover plates, and elastomeric seals complete and in place in the unit price bid per linear foot of Compression Seal Joint.

Provide seal that complies with the requirements in the Table below.

TEST	TEST METHOD	REQUIREMENT
Elongation at Break	ASTM D 3575, Suffix T	180%
Tensile Strength	ASTM D 3575, Suffix T	110 psi
Tear Resistance	ASTM D 3575, Suffix G	14 pli
Density	ASTM D 3575, Suffix W - Method A	2.0 pcf to 3.4 pcf
Water Absorption	ASTM D 3575, Suffix L	< 0.03 psf
Compression Set	ASTM D 3575, Suffix B, 2 hour recovery	< 15%

Provide adhesive that complies with the requirements in the Table below.

TEST	TEST METHOD	REQUIREMENT
Tensile Strength	ASTM D 638	3500 psi Min.
Compressive Strength	ASTM D 695	7000 psi Min.
Shore D Hardness	ASTM D 2240	75 Min.
Water Absorption	ASTM D 570	0.25% by Weight
Bond Strength	ASTM C 882	430 psi Min.

DESIGN DATA

Size the uncompressed seal within the following range: Min. width = 1.10W Max. width = 1.35W Preferred width = 1.25W. For skewed joints, limit max. racking to 20% of uncompressed seal width.
Coefficient of Thermal Expansion and Contraction: Normal Weight Concrete = 0.000006 in/in per°F Structural Steel = 0.0000065 in/in per °F
Concrete Shrinkage Coefficient = 0.0002

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SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER — No. 20591 — KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C2465111037F480...

11/8/2022

REV.	WBA	LKA	7-19
	0041800		
REV.	GAR	JXY	2-16
	Sidewalk		
REV.	BMH	SAN	7-14
	Notes		
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QUAN.			
DR.	PNP	SAN	11-08
DES.			
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

COMPRESSION SEAL EXPANSION JOINT DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

DRAWING NO. 702-33

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BRIDGE PLANS ID	SHEET NO.
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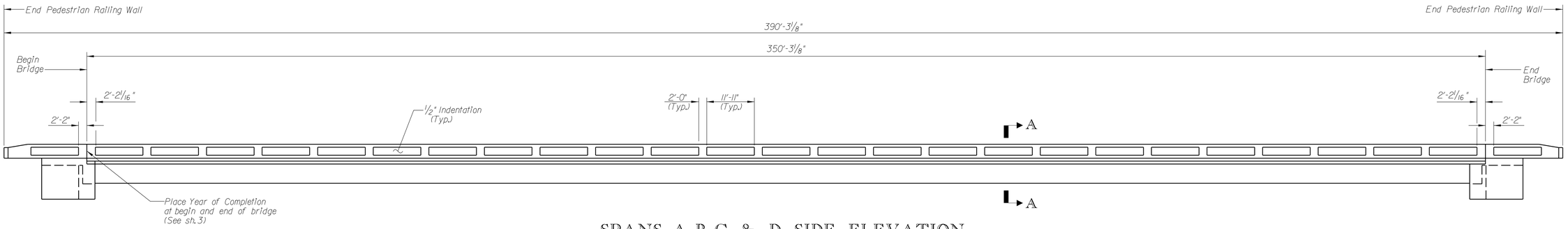
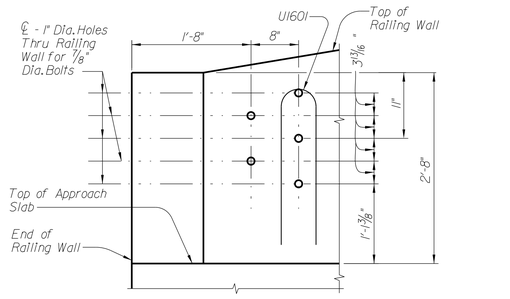


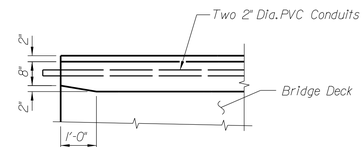
SPANS A, B, C & D SIDE ELEVATION

(Typ. each side)



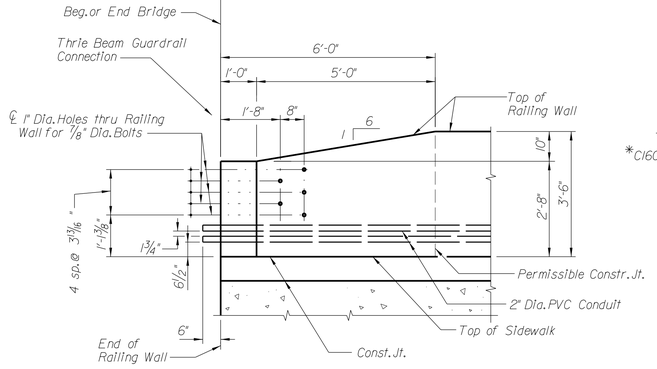
THRIE BEAM GUARD RAIL ATTACHMENT TO RAILING WALL

Form the I" dia. holes with plastic pipe, PVC pipe, or galvanized standard weight steel pipe having an I.D. of I". Include all cost of pipe and installation in the price bid for reinforcing steel. All pipe to remain in place when forms are removed. RCE to verify location of the holes to insure that the guardrail shoe will fit properly when installed.



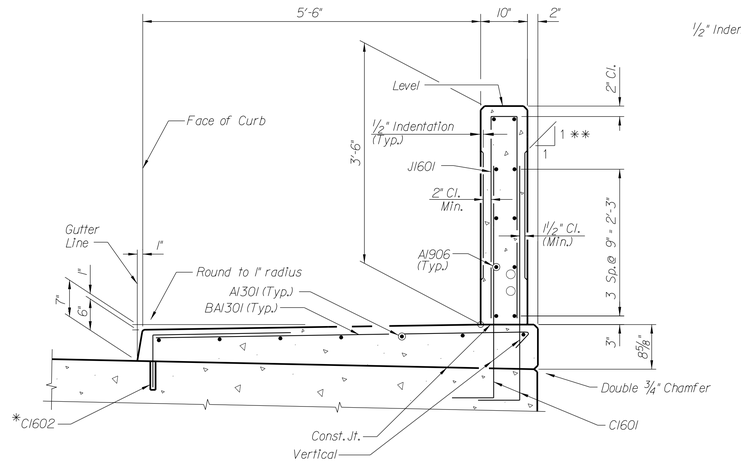
PLAN

(Reinforcing not Shown)



PEDESTRIAN RAILING WALL TRANSITION DETAILS

(Reinforcing not Shown)

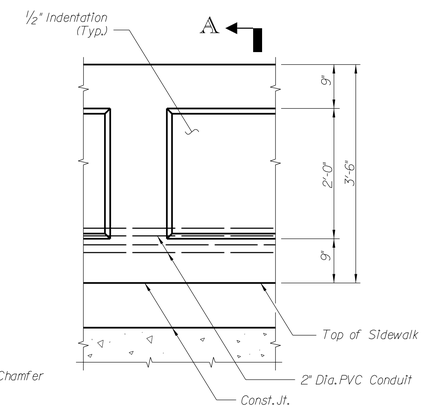


SECTION A-A

(Slab Reinforcing not Shown)

*Adhesively bonded dowel bars, conforming to the requirements of the Supplemental Specifications. (See detail, sh.4)

**Typical at all locations where transitioning from indentation to full width of railing wall.



ELEVATION

(Reinforcing not Shown)

PEDESTRIAN RAILING WALL DETAILS

NV5 ENGINEERS & CONSULTANTS, INC.
7500 E. INDEPENDENCE BLVD, SUITE 100
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SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

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11/8/2022

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REVIEWED			
QUAN.			
DR.	WBA	LKA	8-14
DES.	ZHB	LKA	5-14
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

SIDEWALK & PEDESTRIAN RAILING WALL DETAILS
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY: YORK
ROUTE: SC 557

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BRIDGE PLANS ID	SHEET NO.
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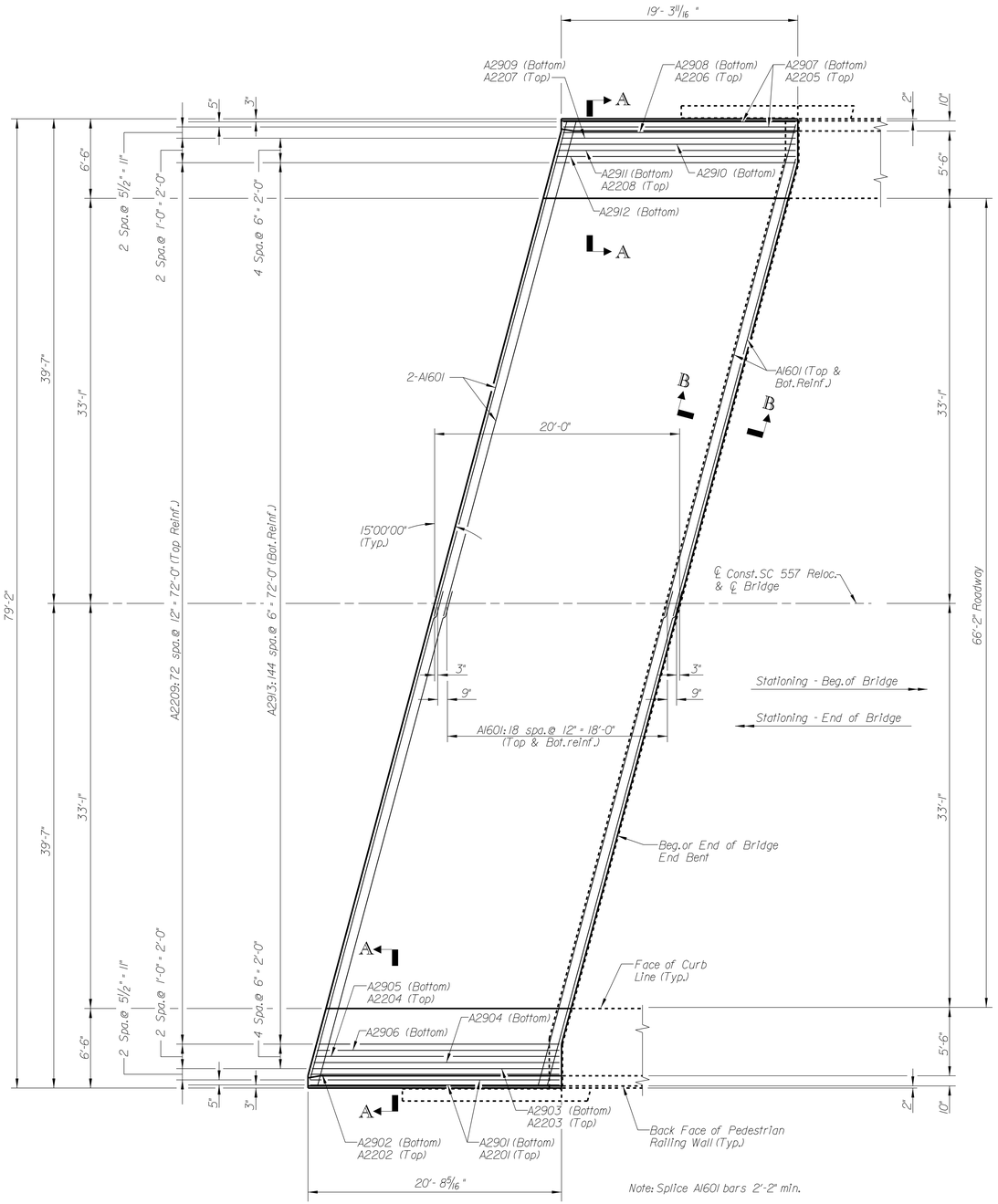


Note: Splice AI60I bars 2'-2" min.

PLAN

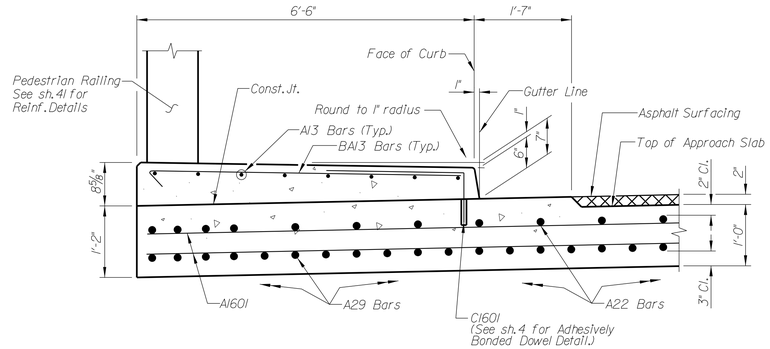
Notes:

Construct approach slabs to the grades and elevations shown on the bridge Plan and Profile drawing. Construct approach slabs to the same crown as the bridge deck.

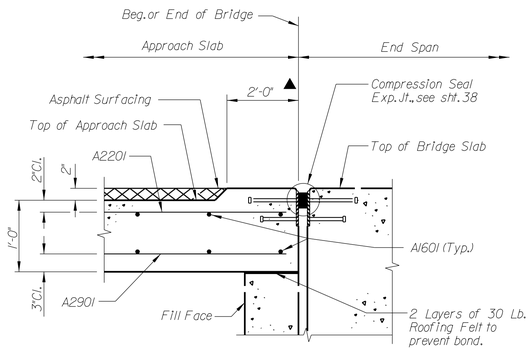
Grade fill under approach slabs to a uniform surface 1'-2" below the finished surface of roadway. Thoroughly compact fill under the approach slab in accordance with Section 208 of the Standard Specifications. Include all costs associated with compaction of fill beneath approach slab to not less than 95% of maximum density in the unit price bid for Concrete for Structures - Class 4000.

Support the bottom mat of reinforcing steel using concrete block or similar material. Provide a minimum concrete cover of 3" below the bottom reinforcing steel.

Space C.H.C.U. bolsters to provide adequate support for top reinforcing steel, approximately 2'-6" on center and parallel to centerline of approach slab. Weight of bar supports is not included in the reinforcing steel quantities. Consider bar supports as incidental to the reinforcing steel, and include all costs for furnishing and placing bar supports in the unit price bid for reinforcing steel.

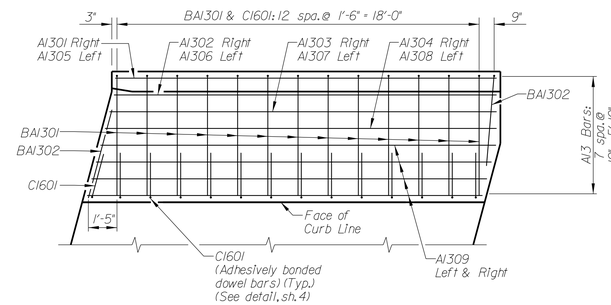


SECTION A-A



SECTION B-B

▲ Perpendicular to ℄ joint. Grooved Surface Finish in this area shall be considered incidental and shall be included in the unit price bid for Concrete for Structures - Class 4000.



SIDEWALK REINFORCING DETAILS

(Left side shown, Right side similar)

NV5 ENGINEERS & CONSULTANTS, INC.
7500 E. INDEPENDENCE BLVD, SUITE 100
CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
SC License # 957
formerly CALYX Engineers & Consultants

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION — NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C24651111037F480... 11/8/2022

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	WBA	ZHB	8/14
DES.	ZHB	LKA	5/14
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

APPROACH SLAB
SHEET 1 OF 2
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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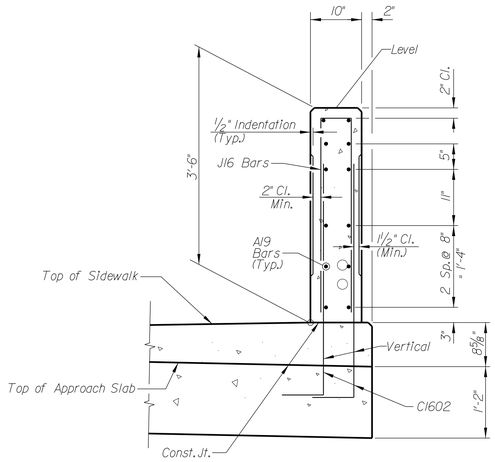
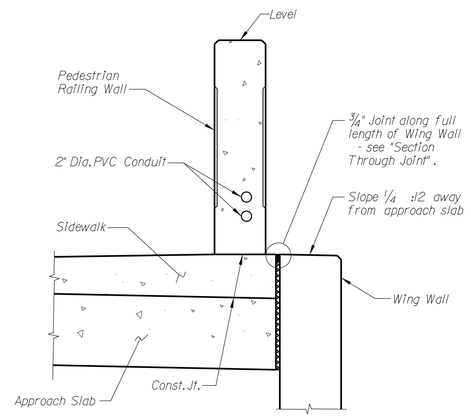
b41800asl.dgn

BRIDGE PLANS ID	SHEET NO.
0041800-B01	41

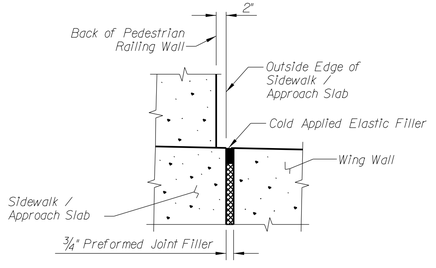


SECTION THRU PEDESTRIAN RAILING WALL

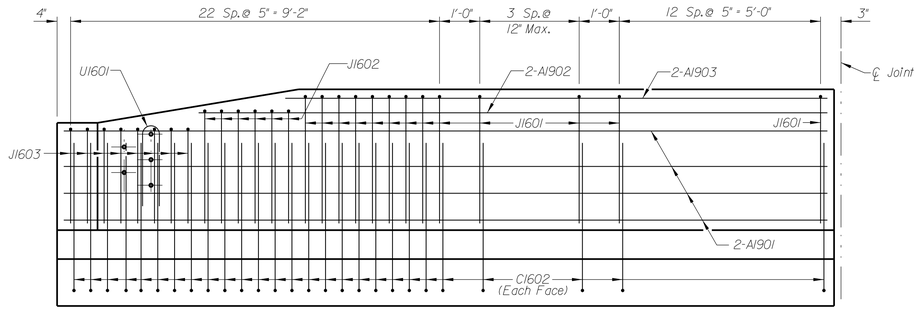
(Slab and Sidewalk Reinforcing not Shown)



SECTION THRU WING WALL/ APPROACH SLAB



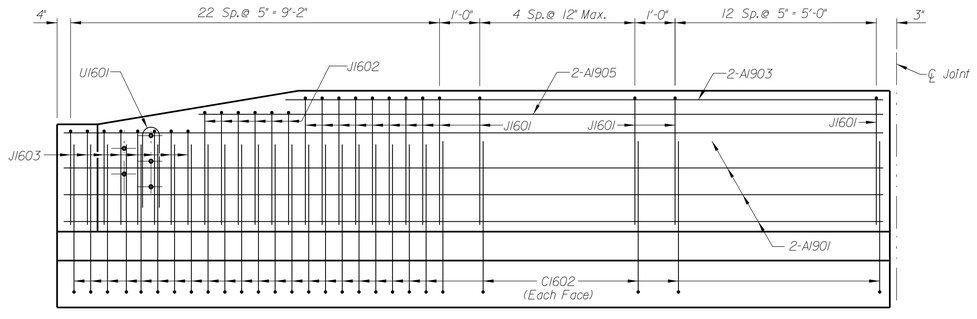
SECTION THROUGH JOINT



See sh. 39 for location of 1" Dia. Holes for the Thrie Beam Guardrail Connection

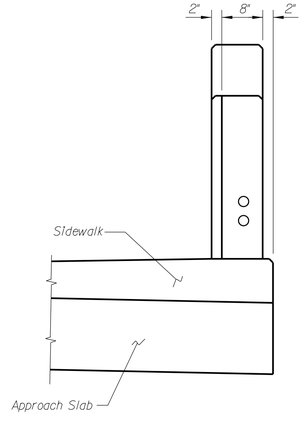
LEFT SIDE ELEVATION

(Right Side Elevation for End Approach Slab)



RIGHT SIDE ELEVATION

(Left Side Elevation for End Approach Slab)



END ELEVATION

REINF. STEEL SCHED.

MARK	NO. REQ'D	DIMENSION "a"	"b"	"c"	"d"	LENGTH
A1301	1	20'-4"				20'-4"
A1302	1	20'-3"				20'-3"
A1303	1	20'-1"				20'-1"
A1304	1	19'-10"				19'-10"
A1305	1	18'-11"				18'-11"
A1306	1	19'-0"				19'-0"
A1307	1	19'-2"				19'-2"
A1308	1	19'-5"				19'-5"
A1309	8	19'-7"				19'-7"
A1601	84	41'-11"				41'-11"
A1901	8	18'-11"				18'-11"
A1902	2	15'-7"				15'-7"
A1903	2	13'-5"				13'-5"
A1904	8	20'-4"				20'-4"
A1905	2	17'-0"				17'-0"
A1906	2	14'-10"				14'-0"
A2201	2	20'-4"				20'-4"
A2202	1	20'-3"				20'-3"
A2203	1	20'-2"				20'-2"
A2204	1	19'-11"				19'-11"
A2205	2	18'-11"				18'-11"
A2206	1	19'-0"				19'-0"
A2207	1	19'-1"				19'-1"
A2208	1	19'-4"				19'-4"
A2209	73	19'-7"				19'-7"
A2901	2	20'-4"				20'-4"
A2902	1	20'-3"				20'-3"
A2903	1	20'-2"				20'-2"
A2904	1	20'-0"				20'-0"
A2905	1	19'-11"				19'-11"
A2906	1	19'-9"				19'-9"
A2907	2	18'-11"				18'-11"
A2908	1	19'-0"				19'-0"
A2909	1	19'-1"				19'-1"
A2910	1	19'-3"				19'-3"
A2911	1	19'-4"				19'-4"
A2912	1	19'-6"				19'-6"
A2913	145	19'-7"				19'-7"
BA1301	26	6'-1 1/2"	7 1/2"			6'-9"
BA1302	4	4'-6 1/2"	7 1/2"			5'-2"
C1601	30	2'-2"	10"			3'-0"
C1602	162	3'-9"	10"			4'-7"
J1601	53	6"	3'-2"			6'-10"
J1602	12	6"	2'-10"			6'-2"
J1603	16	6"	2'-5"			5'-4"
U1601	2	2'-4"	8"			5'-1"
CHCU	3 3/4" Ht.			As Necessary		

QUANTITIES

ITEM	UNIT	ONE APPR. SLAB
Concrete for Struct., Class 4000	CY	71.6
Reinf. Steel for Struct. (Bridge)	LB	19,984
Conc. Bridge Railing (3'-6" Ht.)	FT	40.0

For Bar Bending Details, see sht. 6.

NV5 ENGINEERS & CONSULTANTS, INC.
7500 E. INDEPENDENCE BLVD. SUITE 100
CHARLOTTE, NC 28227
P: 704.537.7300 www.NV5.com
SC License # 957
formerly CALYX Engineers & Consultants

NV5 ENGINEERS AND CONSULTANTS, INC. No. C00957 — SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA LICENSED PROFESSIONAL No. 20591 KEVIN AUSTIN

DocuSigned by: L. Kevin Austin C2465111037F480...

11/8/2022

REV.			
REV.			
REV.			
REVIEWED			
QUAN.			
DR.	WBA	ZHB	8/14
DES.	ZHB	LKA	5/14
	BY	CHK.	DATE

YORK COUNTY
PENNIES FOR PROGRESS

APPROACH SLAB
SHEET 2 OF 2
SC 557
BRIDGE OVER CROWDERS CREEK

COUNTY	ROUTE
YORK	SC 557

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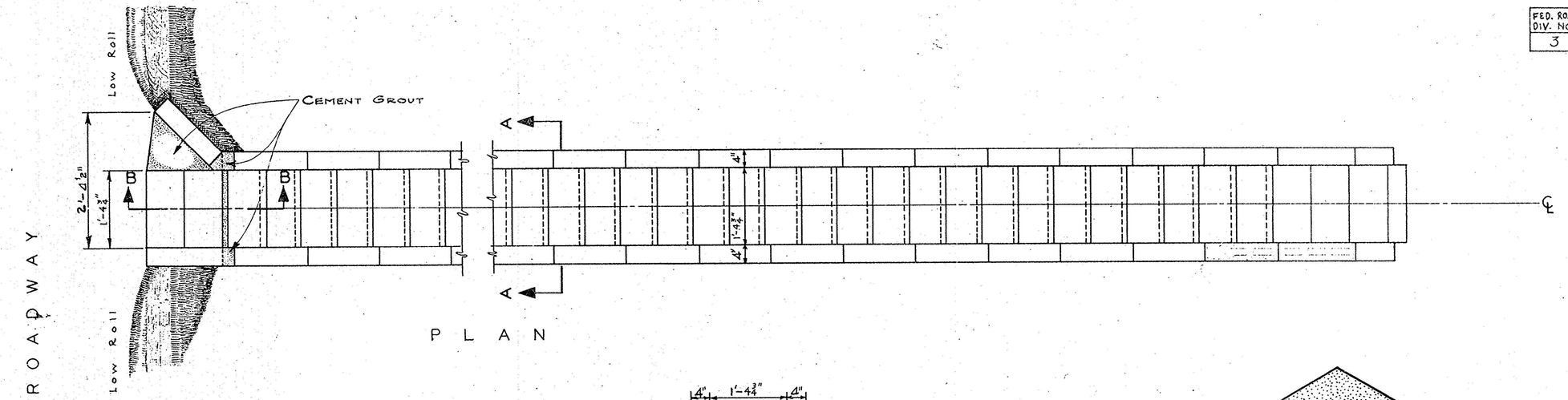
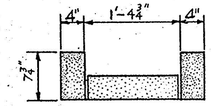
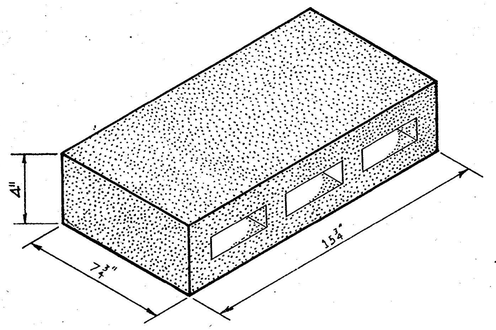
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S C.	York	46.418	557	42	

FOR INFORMATION ONLY







STANDARD CONCRETE BLOCK
THREE CORE TYPE

Total Length 60 Ft.

Scale 1" = 1Ft

NOTE: Necessary Concrete and extra blocks at end of drain will be paid for as 2 feet of slope drain at unit price bid per lin. ft. All Blocks shall be laid with a ½" joint of 1:3 Mortar.
All costs of necessary excavation for the construction of the slope drains shall be included in the unit price bid per lin. ft., of concrete Tile Slope Drains.

Rev	EMO.	RWH	3-56
	For Dk 46.418		
QUANT.			
Tr.	N.R.T.		
Dr.	N.R.T.		

S. C. STATE HIGHWAY DEPARTMENT
COLUMBIA

TYPICAL CONCRETE BLOCK SLOPE DRAINS

S.C. DOCKET NO. 46.418
ROUTE NO. 557

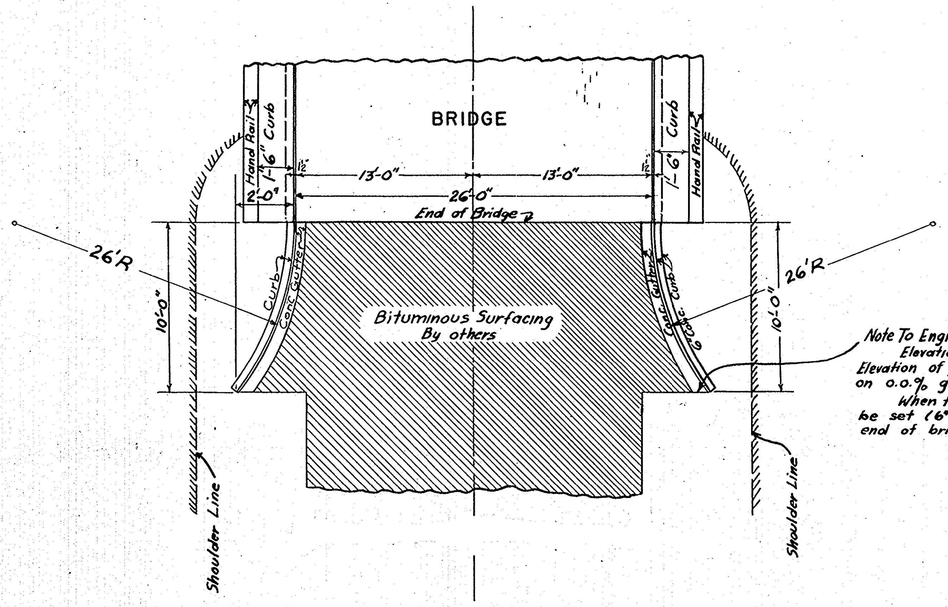
YORK COUNTY
DATE JULY 1956

RWH

32R

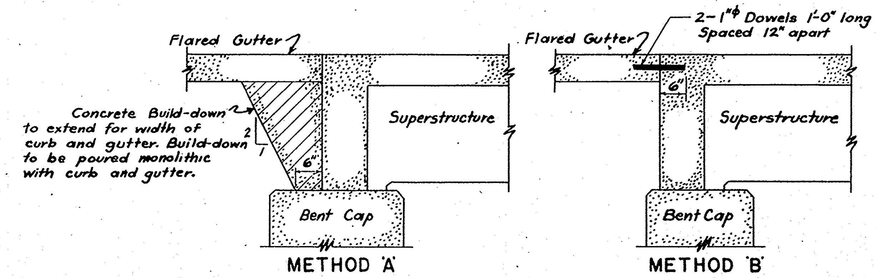
Fed Road Dist. No.	State	County	Docket No.	Route No.	Sheet No.	Total Sheets
3	S.C.	York	46.418	557	43	

FOR INFORMATION ONLY



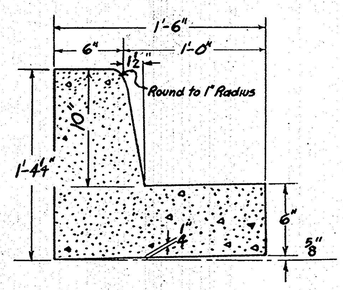
PLAN OF FLARED CURBS
SCALE 1"=5'-0"

Note To Engineers
Elevation of this point to be set 6" below Elevation of gutter at end of bridge where approach is on 0.0% grade.
When the approach is on a grade this point should be set (6" ± % of grade x 10') below elevation of gutter at end of bridge.



Note:- Ends of Curb and Gutter adjacent to bridge to be supported by one of the methods shown above.
Use Method "A" when there is sufficient width and length of bent cap to support concrete build-down. Otherwise, use Method "B"
The quantity of concrete or reinforcing steel involved shall be computed by the Engineer and added to the quantities shown on this sheet.

CURB AND GUTTER SUPPORT
SCALE 3/4"= 1'-0"



DETAIL OF CONC. CURB AND GUTTER
SCALE 1"=6"

CURB AND GUTTER QUANTITIES-ONE END ONE BRIDGE
CLASS 'A' CONCRETE FOR ONE END OF BRIDGE- .59 C.Y.

All costs of constructing the concrete curb and gutter at the ends of the bridge will be included in payment for the concrete involved at the Unit Price Bid for Class A Concrete.

S. C. STATE HIGHWAY DEPARTMENT
COLUMBIA

DETAILS OF FLARED CURB & GUTTER AT ENDS OF BRIDGE

DOCKET NO. 46.418 ROUTE NO. 557
COUNTY-YORK DATE JULY 1956.

Rev.	EMC	RWH	8-56
	For DK 46.418		
Quant.			
Tr.	J.L.S.	R.A.B.	
Dr.			
Des.			
	Ckd.	Gr.	Date

FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	YORK	46.418	557	44	

FOR INFORMATION ONLY

EUGENE DIETZGEN CO. CHGO., N. Y.

PLATE 1-PLAN-PROFILE D. P. R. STANDARD

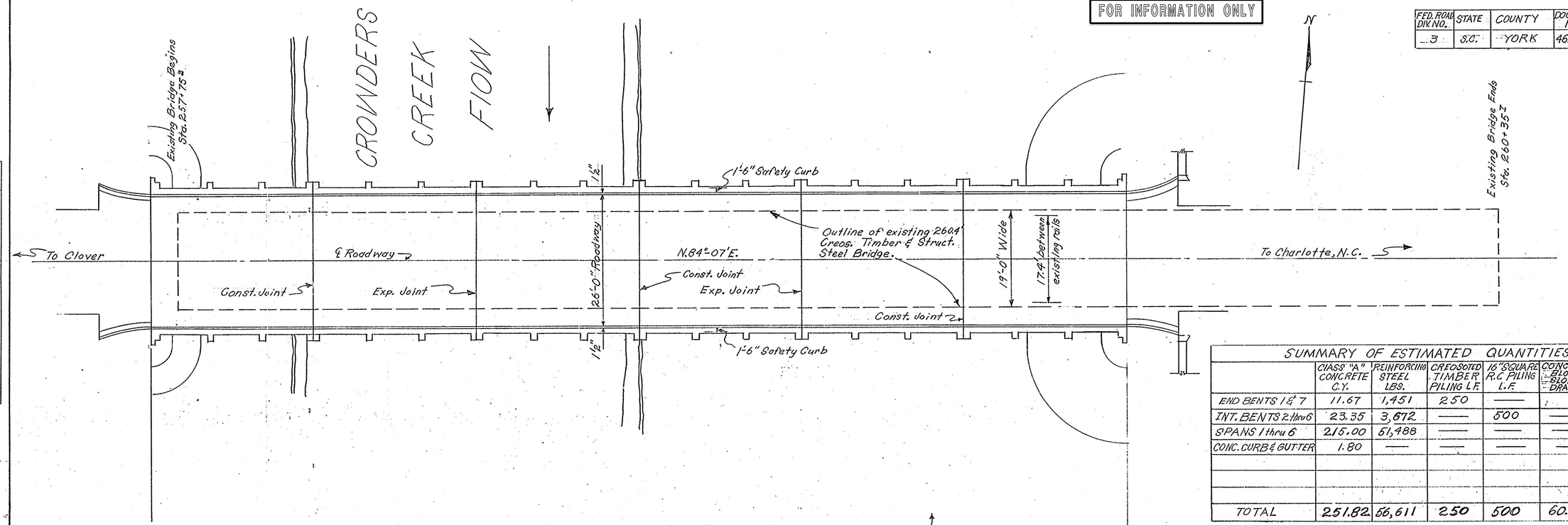
FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	YORK	46.418	557	45	

FOR INFORMATION ONLY

FOR INFORMATION ONLY

FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	YORK	46.418	557	46	

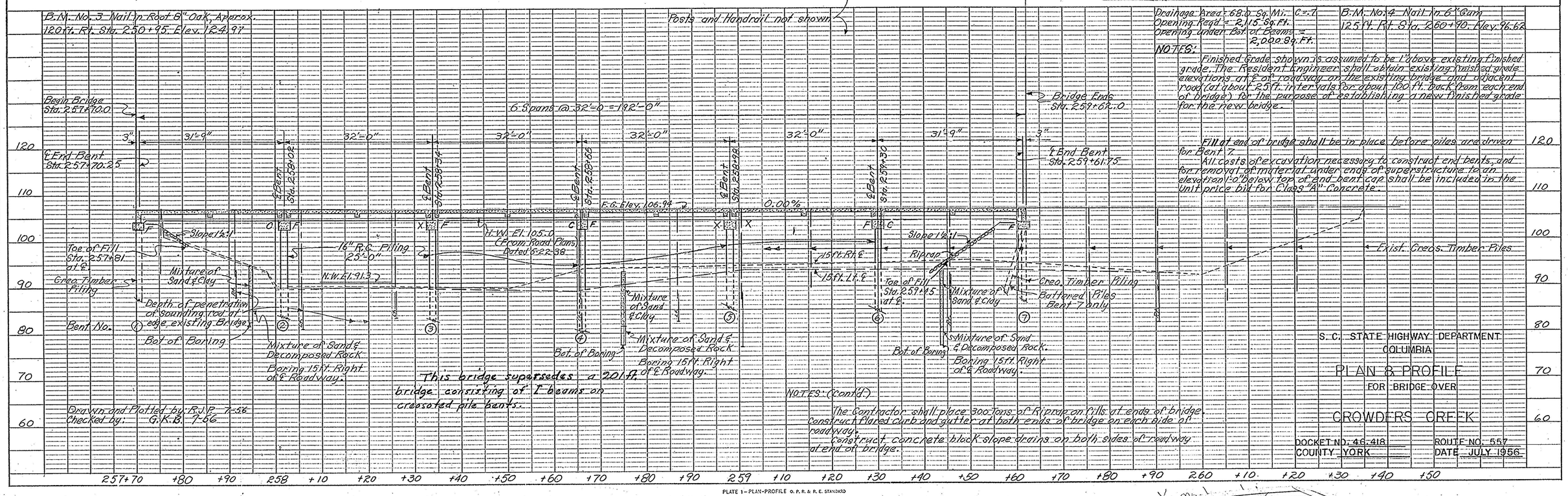
PLAN — SURVEYED, PLOTTED, ALIGNMENT CHECKED, R/W & NOTES CHECKED, STRUCTURE NOTATNS CHKD. — NOTE BOOK — NO. — BY — DATE



SUMMARY OF ESTIMATED QUANTITIES

	CLASS "A" CONCRETE C.Y.	REINFORCING STEEL LBS.	CREOSOTED TIMBER PILING L.F.	16" SQUARE R.C. PILING L.F.	CONCRETE BLOCK SLOPE DRAINS	RIPRAP TONS.
END BENTS 1 & 7	11.67	1,451	250	—		
INT. BENTS 2 thru 6	23.35	3,672	—	500	—	
SPANS 1 thru 6	215.00	51,488	—	—	—	
CONC. CURB & GUTTER	1.80	—	—	—	—	
TOTAL	251.82	56,611	250	500	60.0 L.F.	300

PROFILE — SURVEYED, PLOTTED, ALIGNMENT CHECKED, R/W & NOTES CHECKED, STRUCTURE NOTATNS CHKD. — NOTE BOOK — NO. — BY — DATE



This bridge supersedes a 20ft. bridge consisting of I beams on creosoted pile bents.

Drawn and Plotted by: R.J.P. 7-56
Checked by: G.K.B. 7-56

NOTES: (Cont'd.)

The Contractor shall place 300 tons of Riprap on fills at ends of bridge. Construct flared curb and gutter at both ends of bridge on each side of roadway. Construct concrete block slope drains on both sides of roadway at end of bridge.

NOTES:

Finished Grade shown is assumed to be 1' above existing finished grade. The Resident Engineer shall obtain existing finished grade elevations at ℄ of roadway on the existing bridge and adjacent road (at about 25ft. intervals for about 100 ft. back from each end of bridge) for the purpose of establishing a new finished grade for the new bridge.

Fill at end of bridge shall be in place before piles are driven for Bent 7.

All costs of excavation necessary to construct end bents, and for removal of material under ends of superstructure to an elevation 1'o" below top of end bent cap shall be included in the unit price bid for Class "A" Concrete.

S. C. STATE HIGHWAY DEPARTMENT
COLUMBIA

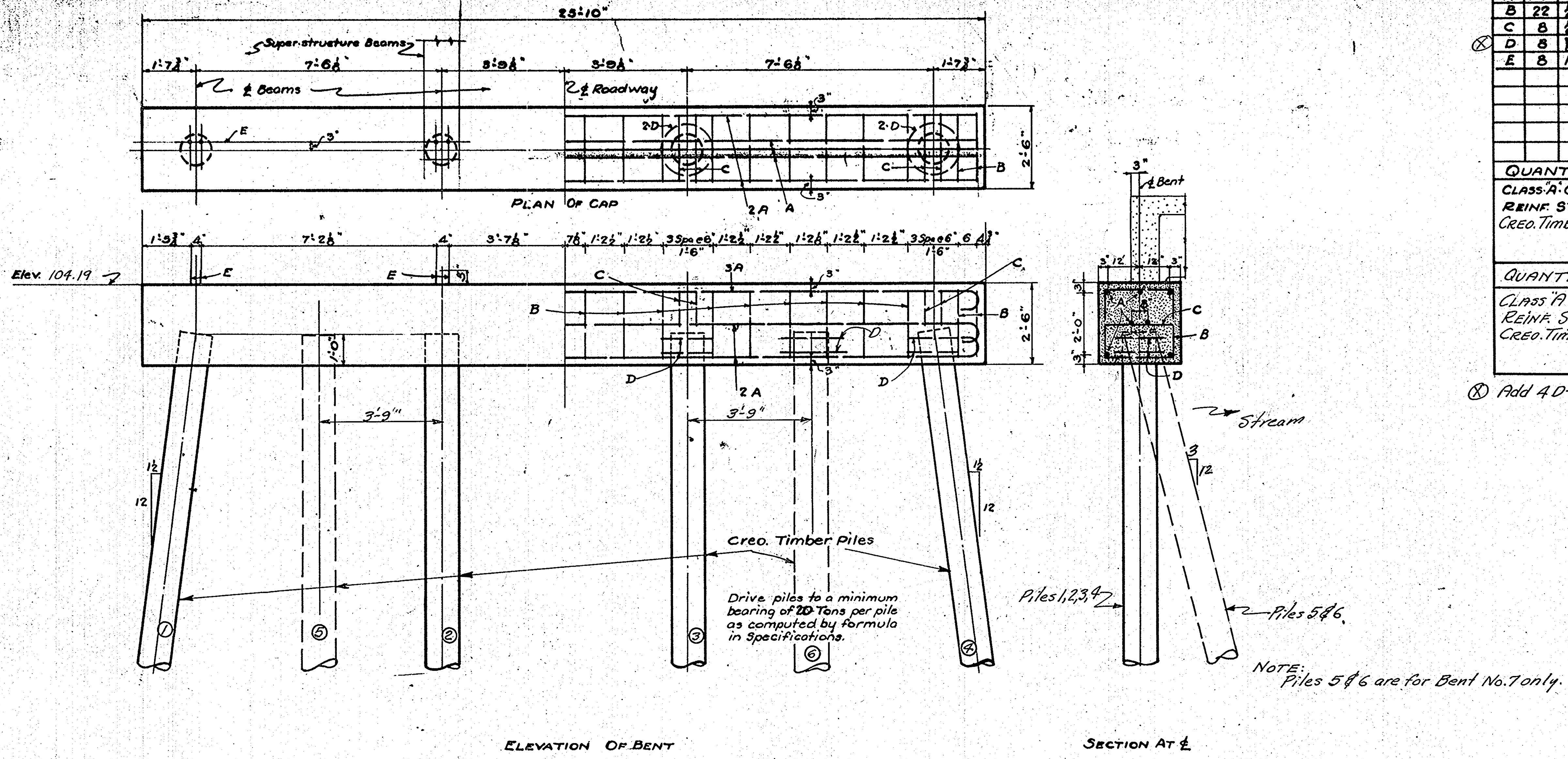
PLAN & PROFILE
FOR BRIDGE OVER
CROWDERS CREEK

DOCKET NO. 46.418 — ROUTE NO. 557
COUNTY YORK — DATE JULY 1956

PLATE 1 — PLAN-PROFILE O. P. R. & R. E. STANDARD
KEUFFEL & ESSER CO., NEW YORK.

FED. ROAD DIV. NO.	STATE	COUNTY	S.C. DOCKET	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	YORK	46.418	557	47	

FOR INFORMATION ONLY

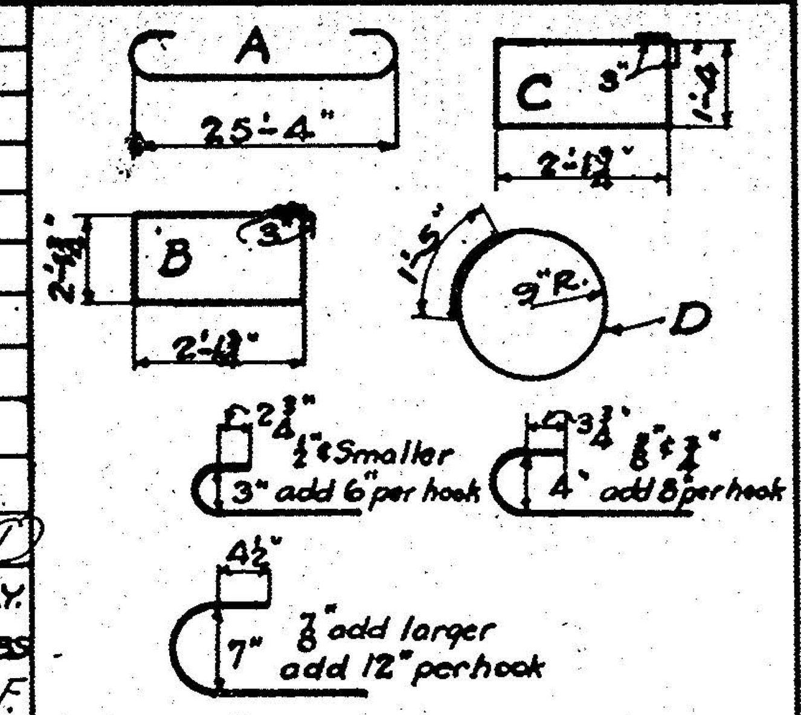


NOTE: Piles 5 & 6 are for Bent No. 7 only.

REINFORCING STEEL - ONE BENT 1 or 7

MARK	No.	SIZE	LENGTH	D
A	7	1"ϕ	27'-4"	B
B	22	½"ϕ	9'-7"	B
C	8	½"ϕ	7'-6"	B
⊗ D	8	⅜"ϕ	6'-2"	B
E	8	1"ϕ	0'-10"	S

BENDING DETAILS



QUANTITIES-ONE BENT ①		
CLASS "A" CONCRETE	5.86	C.Y.
REINF. STEEL	721	LBS
CREO. TIMBER PILING	100	L.F.

QUANTITIES-ONE BENT ⑦		
CLASS "A" CONCRETE	5.81	C.Y.
REINF. STEEL.	730	LBS.
CREO. TIMBER PILING	150	L.F.

⊗ Add 4 D-bars Bent No. 7 (Wt.=9#)

THIS SHEET TO ACCOMPANY C-26-30-1942.

S.C. STATE HIGHWAY DEPARTMENT
COLUMBIA, S.C.

END BENT- 30 FT. SPAN

CROWDERS CREEK

S.C. DOCKET NO. 46.418 YORK COUNTY
ROUTE 557 JULY 1956
SCALE ½ INCH=1 FT.

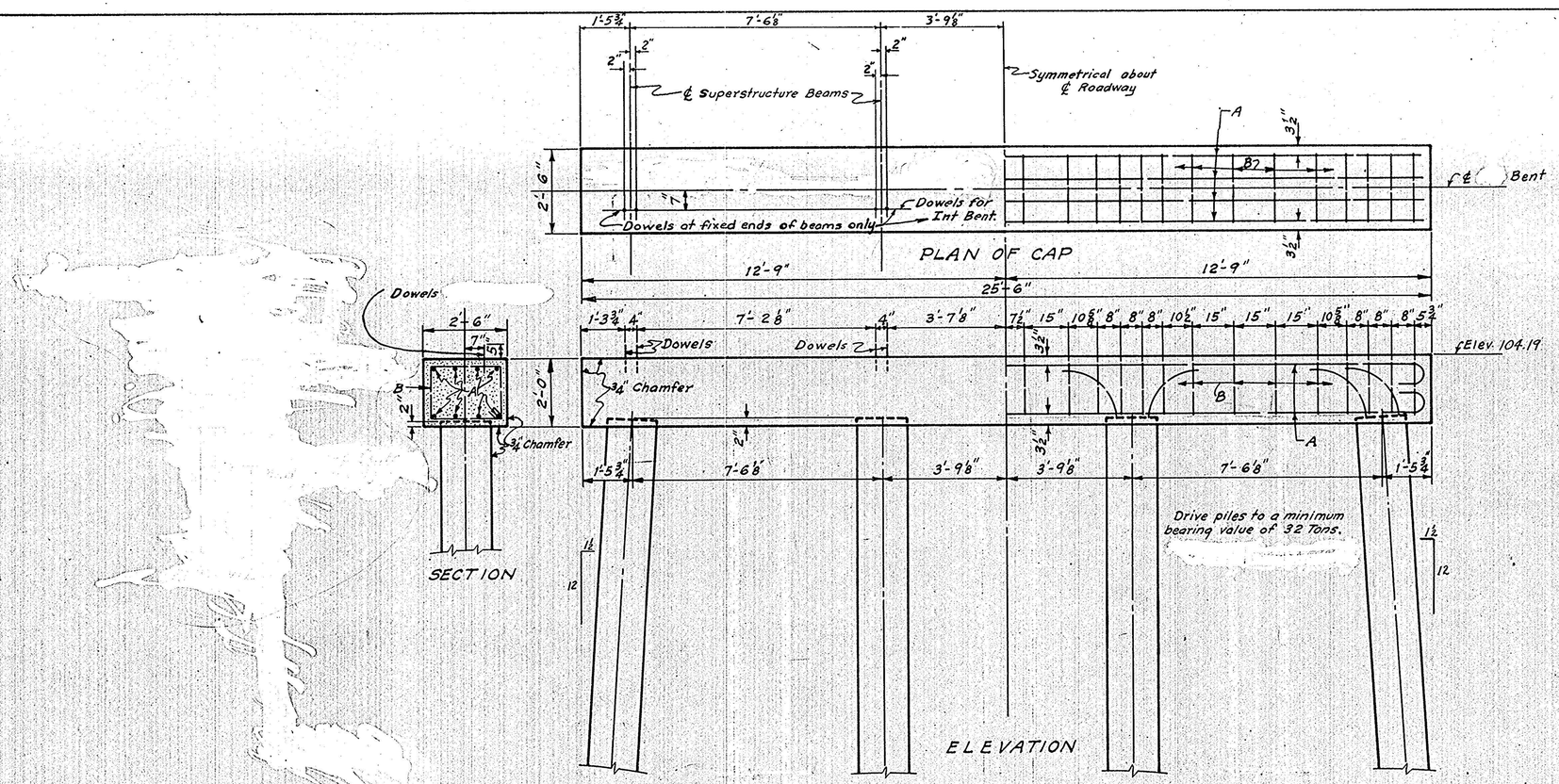
Worked Up for Do. No. 46.418 by: G.K.B. 7-56
Checked by: R.J.P. 7-56

Drawn & Traced C.W.G. 3-30-43.
Checked by CR

9 END BENT C-26-30-1943

FED ROAD DIV. NO	STATE	COUNTY	DOCKET NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	YORK	46.418	557	48	

FOR INFORMATION ONLY

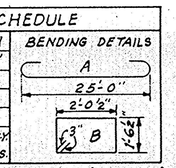


STEEL SCHEDULE

MARK	NO. REQ'D	SIZE NO.	LENGTH
A	8	8	27'-0"
B	28	4	7'-8"
Dowels	8	8	0'-10"

Class 'A' Concrete 4.67 CY.
Reinforcing Steel *738 Lbs.

BENDING DETAILS



*Includes 8 dowels (Wt. 18 Lbs.)
*Omit Dowels in Bent 5 only.

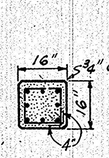
Hook for No 4 & smaller bars add 6" per hook.

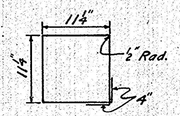
Hook for No 5 & No 6 bars add 8" per hook.

Hook for No 7 & larger bars add 12" per hook.

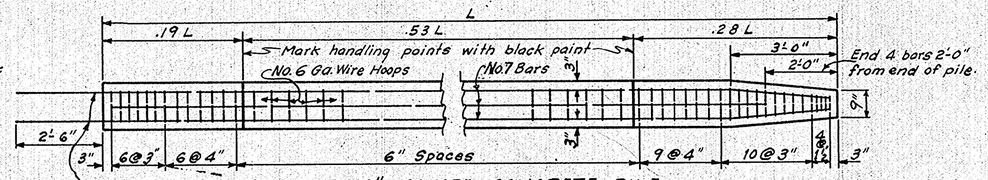
NOTES:
All concrete to be class 'A'.
Structural grade reinforcing not permitted.
All exposed edges to be chamfered ¾" unless otherwise noted.
All dimensions relative to reinforcing steel are to centers of bars.

QUANTITIES FOR 40'-0" PILE
Concrete = 2.560 CY., Reinforcing Steel = 694 Lbs.
For quantities for lengths greater or less than 40'-0" add or subtract 0.066 CY. of concrete and 17.22 Lbs of reinforcing steel.





HOOP DETAIL



DETAIL OF 16" SQUARE CONCRETE PILE

REV.	R.J.P.	G.K.B.	7-56
Rev.	C.H.E.	T.M.J.	5-52
	From DK#. 538.229		
Rev.	E.A.S.	W.B.B.	8-48
	Pile Quantities		
Quan.	J.V.D.	A.T.C.	8-44
Traced	J.V.D.	A.T.C.	8-44
Drawn	J.V.D.	A.T.C.	8-44
Design	W.B.B.	J.V.D.	8-44
	By	Ch'd	Date.

BENTS 2-6

S. C. STATE HIGHWAY DEPARTMENT
COLUMBIA

BENT FOR 30' SPAN

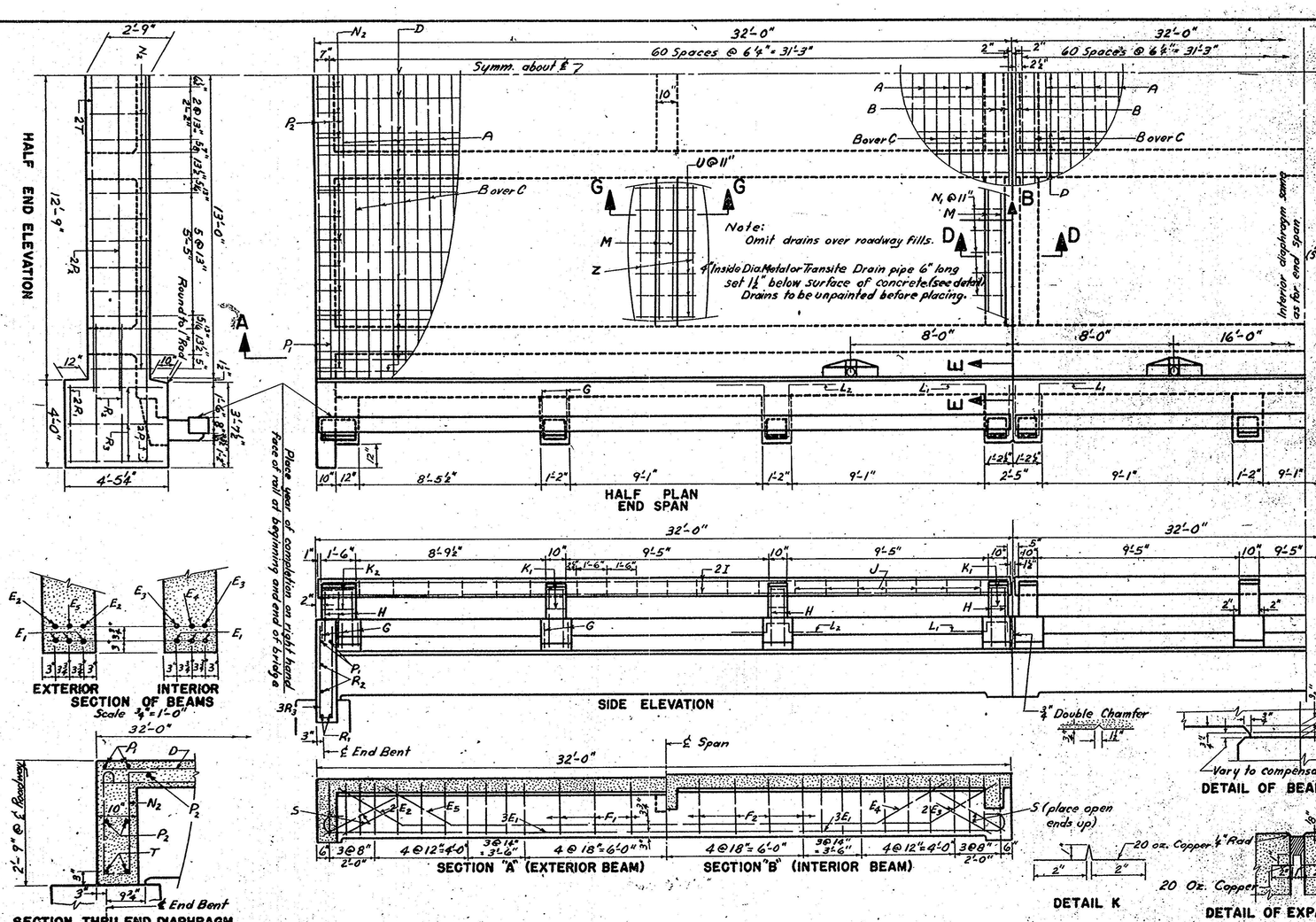
FOR BRIDGE OVER

CROWDERS CREEK

DOCKET NO. 46.418 ROUTE 557
COUNTY YORK DATE JULY 1956

SCALE ½" = 1'-0"

FED. ROAD DIV. NO.	STATE	COUNTY	DOCKET NO.	ROUTE NO.	SHEET NO.	TOTAL SHEETS
3	S.C.	YORK	46.418	557	49	



STEEL SCHEDULE

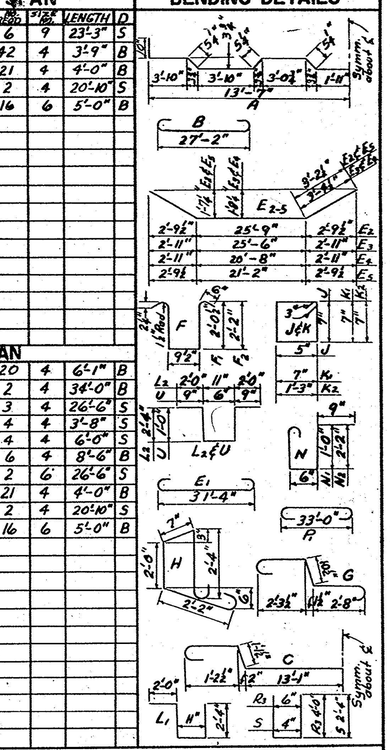
ONE INTERIOR SPAN

MARK	NO. REQD.	SIZE & NO.	LENGTH	D	MARK	NO. REQD.	SIZE & NO.	LENGTH	D
A	29	5	29'-7"	B	M	6	9	23'-3"	S
B	34	4	28'-2"	B	N₁	42	4	3'-9"	B
C	30	4	31'-10"	B	U	21	4	4'-0"	B
D	47	4	31'-8"	S	Z	2	4	20'-10"	S
E₁	12	11	33'-4"	B	S	16	6	5'-0"	B
E₂	4	10	32'-2"	B					
E₃	4	10	32'-3"	B					
E₄	2	10	27'-5"	B					
E₅	2	10	27'-7"	B					
F₁	58	4	5'-10"	B					
F₂	58	4	6'-1"	B					
G	16	5	7'-2"	B					
H	16	4	8'-1"	B					
I	8	4	31'-8"	S					
J	42	2	2'-6"	B					
K₁	16	2	2'-10"	B					
L₁	4	4	7'-7"	B					
L₂	4	4	9'-7"	B					

ONE END SPAN

MARK	NO. REQD.	SIZE & NO.	LENGTH	D	MARK	NO. REQD.	SIZE & NO.	LENGTH	D
A	29	5	29'-7"	B	N₂	20	4	6'-1"	B
B	31	4	28'-2"	B	P₁	2	4	34'-0"	B
C	29	4	31'-10"	B	P₂	3	4	26'-6"	S
D	47	4	31'-8"	S	R₁	4	4	3'-8"	S
E₁	12	11	33'-4"	B	R₂	4	4	6'-0"	S
E₂	4	10	32'-2"	B	R₃	6	4	8'-6"	B
E₃	4	10	32'-3"	B	T	2	6	26'-6"	S
E₄	2	10	27'-5"	B	U	21	4	4'-0"	B
E₅	2	10	27'-7"	B	Z	2	4	20'-10"	S
F₁	58	4	5'-10"	B	S	16	6	5'-0"	B
F₂	58	4	6'-1"	B					
G	18	5	7'-2"	B					
H	18	4	8'-1"	B					
I	8	4	31'-8"	S					
J	40	2	2'-6"	B					
K₁	12	2	2'-10"	B					
K₂	4	2	4'-2"	B					
L₁	2	4	7'-7"	B					
L₂	4	4	9'-7"	B					
M	4	9	23'-3"	S					
N₁	21	4	3'-9"	B					

BENDING DETAILS



SUMMARY OF QUANTITIES

	ONE INTERIOR SPAN	ONE END SPAN
CLASS "A" CONCRETE	35.2 C.Y.	37.1 C.Y.
REINFORCING STEEL	8566 Lbs.	8612 Lbs.

BREAK-DOWN OF CONCRETE QUANTITIES

	1 INT. SPAN	1 END SPAN
Beams, Slabs, Brackets	33.7 C.Y.	35.5 C.Y.
Handrail & Posts	1.5 C.Y.	1.6 C.Y.
Totals	35.2 C.Y.	37.1 C.Y.

NOTES:

Design Data: A.A.S.H.O. Specifications (1941) H15-S12 Live load f_s = 20,000 P.S.I., f_c = 1,000 P.S.I., n = 10, v = 90 P.S.I., u = 150 P.S.I.

All concrete shall be Class "A".

Diaphragms, brackets and wings shall be cast monolithic with slabs and beams.

Exposed edges shall be chamfered ¾" unless otherwise specified.

All reinforcing steel shall be intermediate grade deformed bars.

All dimensions relating to reinforcing steel are to centers of bars.

Rec'd	R.R.B	W.B.B	10-54
Rel.	E & N. Bars		
Quant	D.D.	C.E.S.	5-54
Tr.	D.D.	C.E.S.	5-54
Of.	D.D.	C.E.S.	5-54
Dat.	R.B.W.	W.E.D.	5-54
Rec'd	By	Ck'd	Date

S. C. STATE HIGHWAY DEPARTMENT
COLUMBIA

32 FOOT SPAN
1'-6" SAFETY CURBS
FOR BRIDGE OVER

CROWDERS CREEK

DOCKET NO. 46.418 ROUTE NO. 557
COUNTY YORK DATE JULY 1956

FOR INFORMATION ONLY

C 26 32 15 1954 SCALE AS NOTED

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