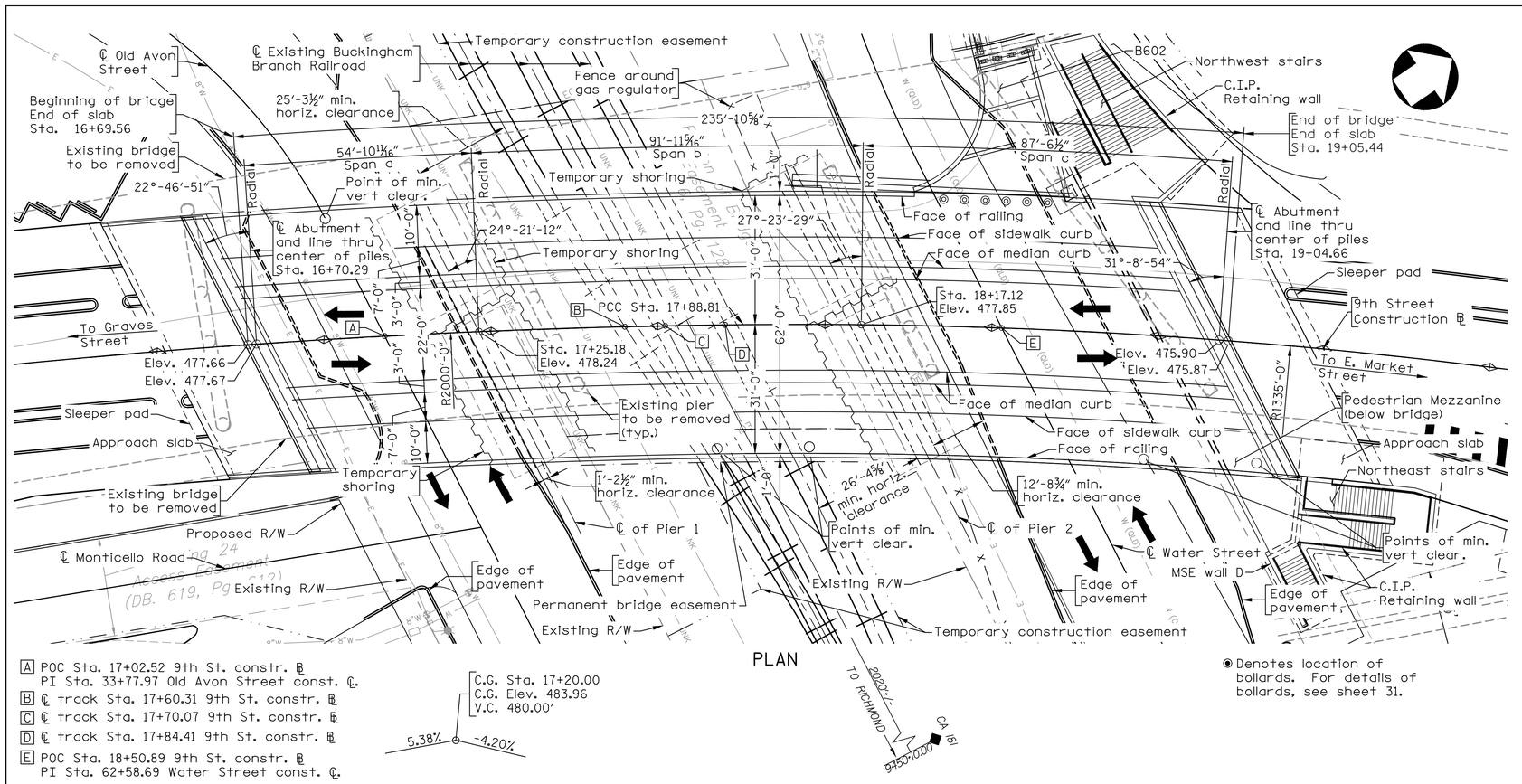


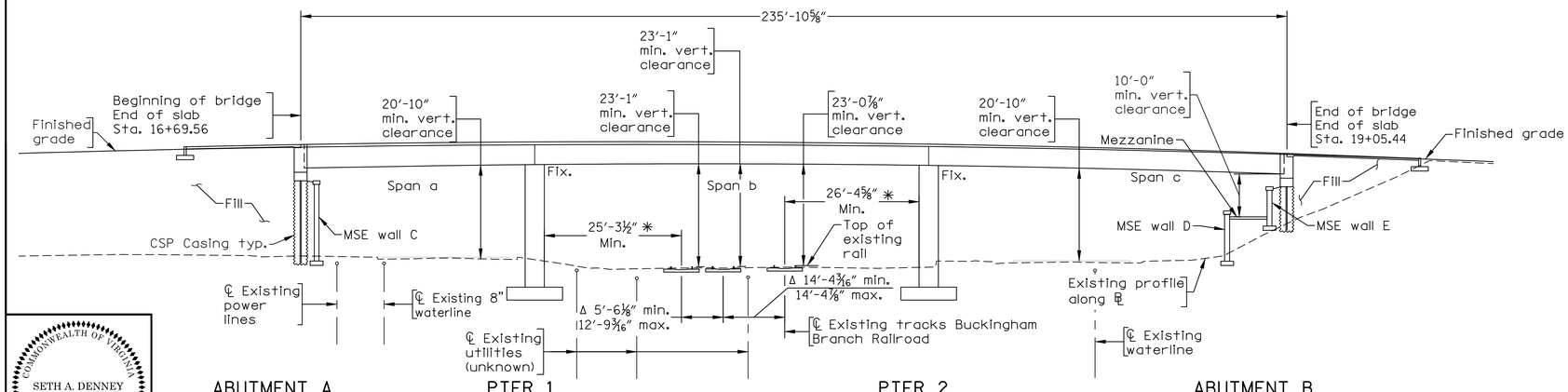
A POC Sta. 17+02.52 9th St. constr. ℄
PI Sta. 33+77.97 Old Avon Street const. ℄.

B ℄ track Sta. 17+60.31 9th St. constr. ℄

C ℄ track Sta. 17+70.07 9th St. constr. ℄

D ℄ track Sta. 17+84.41 9th St. constr. ℄

E POC Sta. 18+50.89 9th St. constr. ℄
PI Sta. 62+58.69 Water Street const. ℄.



DEVELOPED SECTION ALONG CONSTR. ℄

* Minimum face of pier clearance normal to track

Δ Along outside of bridge

Scale: ¾″=1′-0″

STATE	FEDERAL AID		STATE		SHEET
	ROUTE	PROJECT	ROUTE	PROJECT	NO.
VA.	—	STP-5104(296)	20	0020-104-101, B601	1
Federal Structure No. 000000000031086			FHWA Construction and Scour Code:	X581-SN	
Federal Stewardship and Oversight Code:		FO		UPC No. 75878	

DESIGN EXCEPTION(S):

None.

GENERAL NOTES:

The original approved sheet, including original signatures, is filed in the City of Charlottesville Offices. Any misuse of electronic files is illegal. Violators will be prosecuted to the full extent of the applicable laws.

Width: 10′-0″ sidewalk, 7′-0″ bike lane, 3′-0″ median, 22′-0″ roadway, 3′-0″ median, 7′-0″ bike lane, 10′-0″ sidewalk. Overall width 62′-0″ face-to-face of railing.

Span layout: 54′-10¹¹⁄₁₆″ - 91′-11⅝″ - 87′-6½″ prestressed concrete 45″ deep Bulb-T beam spans continuous for live load.

Capacity: HL-93 loading.

Specifications:

Construction: Virginia Department of Transportation Road and Bridge Specifications, 2020.

Design: AASHTO LRFD Bridge Design Specifications 8th Edition 2017, and VDOT Modifications.

Standards: Virginia Department of Transportation Road and Bridge Standards, 2016; including all current revisions.

These plans are incomplete unless accompanied by the Supplemental Specifications and Special Provisions included in the contract documents.

Design loading includes 20 psf allowance for construction tolerances and construction methods.

Design loading includes 15 psf allowance for future wearing surface.

Concrete in superstructure, including parapets, sidewalks, medians, terminal walls and integral backwall shall be low shrinkage Class A4 modified in accordance with Section 217.12(a). All other concrete to be Class A3. Concrete for sidewalks, medians and deck slab shall be colored Omaha Tan (city mix), per City of Charlottesville Standards and Design Manual.

Prestressed concrete in bulb-T beams shall be Class A5 having a minimum compressive cylinder strength at 28 days equal to 10,000 psi and a minimum compressive cylinder strength at time of release of strands equal to 7,000 psi.

For a continuation of General Notes, see sheet 2.

CITY OF CHARLOTTESVILLE NEIGHBORHOOD DEVELOPMENT SERVICES

9TH STREET (ROUTE 20) OVER OLD AVON STREET, BUCKINGHAM BRANCH RAILROAD, AND WATER STREET CITY OF CHARLOTTESVILLE PROJ. 0020-104-101, B601

Recommended for Approval: _____ JOHN BLAIR _____ 11/10/20
Acting City Manager — Date

302-08

Date: _____

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COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

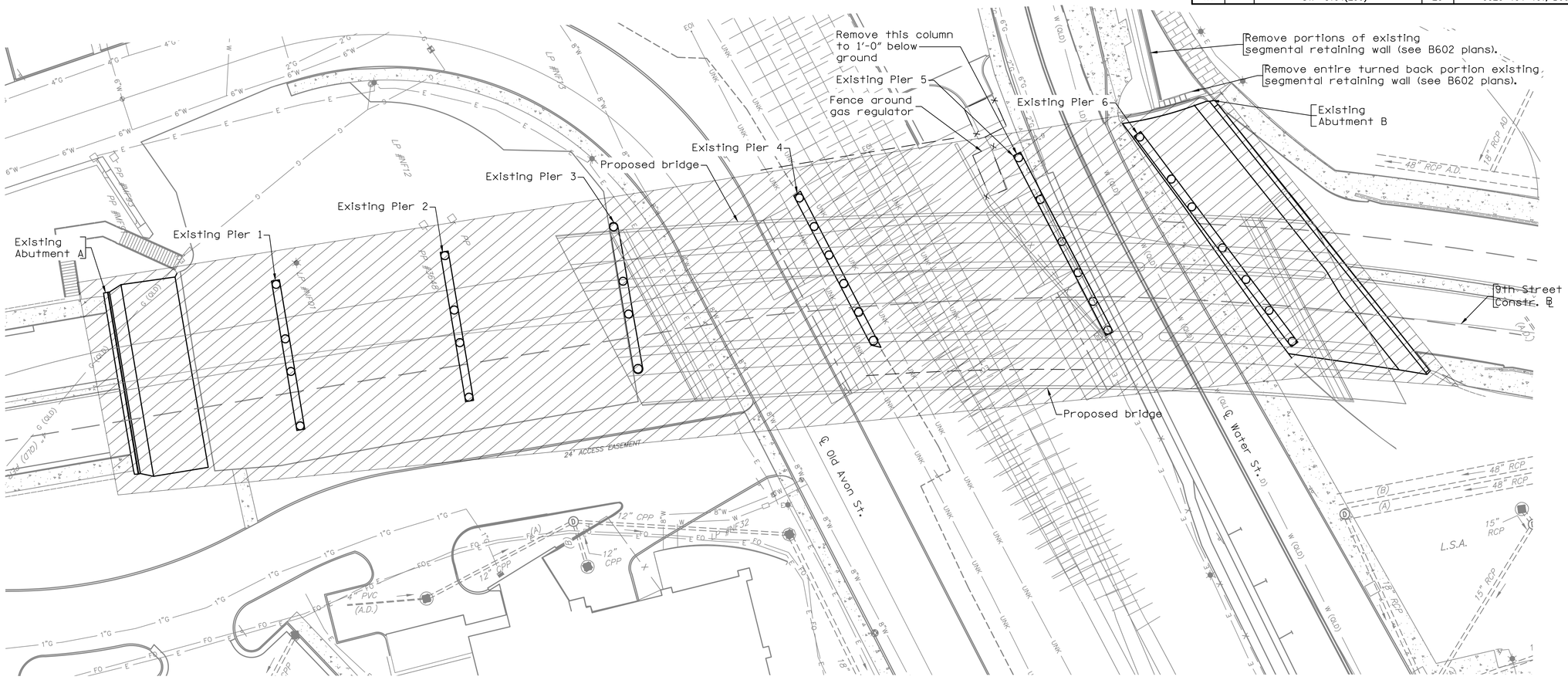
Seth A Denney
2021.01.15 08:28:14-05'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

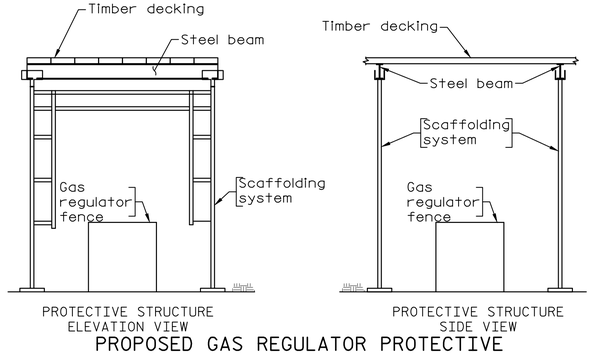
PLANS BY:	Kimley-Horn
COORDINATED:	J. Janiczek
SUPERVISED:	Seth A. Denney
DESIGNED:	Patrick D. Cooksey
DRAWN:	James I. Kimble
CHECKED:	Seth A. Denney

No.	Description	Date
	REVISIONS	
	For Table of Revisions, see Sheet 2.	

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	3



DEMOLITION PLAN



PROPOSED GAS REGULATOR PROTECTIVE STRUCTURE

Notes:
The Contractor shall exercise care during excavation for spread footings, to minimize the disturbance at the foundation level.

All columns and spread footings at existing Piers 1, 2 and 3 shall be removed to 1'-0" below ground level. All columns and spread footings at Pier 4 shall be removed to the maximum extent practicable, but not less than 3'-0" below ground level. All spread footings at existing Pier 6 shall be removed completely. Additionally, all individual footings for existing Pier 5 shall be removed completely, with the exception of the westernmost footing that is nearest the gas regulator. See plan view.

The gas regulator protection system is shown for illustrative purposes only. The Contractor shall develop their own protection system and shall exercise care to ensure no disturbance to the gas regulator station at any time during demolition and construction. The cost for the protection system shall be included in the dismantle and remove existing structure pay item. See special provisions.

For the sequence of construction and removal of existing structure, refer to sheets 6-8. For additional details refer to the Maintenance of Traffic Plans.

The Contractor shall use extreme caution during demolition and construction activities in the vicinity of the existing natural gas regulator station, and shall at no time disturb the existing station.

The existing unknown utilities in the vicinity of proposed Pier 1 shall be removed prior to excavation and construction of the footing for Pier 1.

The City of Charlottesville is the owner of the natural gas regulator station and associated gas lines. A City of Charlottesville Gas representative/inspector shall be present for all demolition and construction activities within 20' of the existing natural gas regulator station. The Contractor shall notify the City, in writing, at least two weeks prior to any demolition or construction activities within 20' of the existing natural gas regulator station during Stage 2 activities.

The Contractor shall submit a design for a temporary protective structure to enclose the existing gas regulator station and protect the station from all demolition and construction activities to the Engineer and the City of Charlottesville for approval, prior to any demolition or construction activities on the existing or proposed bridge or within 50' of the existing natural gas regulator station during Stage 2 activities.

Refer to the CSXT Construction Submission Criteria regarding demolition and protection of railroad tracks.

Scale: 1" = 1'-0

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Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:22:32-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

DEMOLITION PLAN

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	3 of 50
Checked: SAD			

ESTIMATED QUANTITIES - SUBSTRUCTURE ONLY

			Concrete Class A3	Reinf. Steel	Corrosion Resistant Reinf. Steel Class I	Steel Piles 12"	Structure Excavation	Select Backfill Abutment Zone	Porous Backfill	Geocomposite Wall Drain [1]	Pipe Underdrain 6"	NS Preboring Pile 12" Steel [2] [3]
	Item Code		60403	69100	69091	64112	64011	64015	60430	64032	64036	64038
			CY	LB	LB	LF	CY ⊗	Ton	CY ⊗	SY	LF	LF
Stage I	Abutment A	Neat	—	—	2,310	—	—	—	—	—	—	—
		Footing	10.0	1,250	—	215	—	268	20	12	35	102
	Pier 1	Neat	61.7	18,800	—	—	—	—	—	—	—	—
		Footing	117.6	30,170	—	—	303	—	—	—	—	—
	Pier 2	Neat	61.9	14,850	—	—	—	—	—	—	—	—
		Footing	120.7	31,170	—	—	298	—	—	—	—	—
	Abutment B	Neat	—	—	2,380	—	—	—	—	—	—	—
		Footing	10.7	1,360	—	230	—	299	22	13	38	163
	Total		382.6	97,600	4,690	445	601	567	42	25	73	265
Stage II	Abutment A	Neat	—	—	2,030	—	—	—	—	—	—	—
		Footing	9.0	1,030	—	191	—	254	18	12	34	78
	Pier 1	Neat	51.8	11,710	—	—	—	—	—	—	—	—
		Footing	99.3	17,120	—	—	257	—	—	—	—	—
	Pier 2	Neat	56.0	16,680	—	—	—	—	—	—	—	—
		Footing	117.4	26,760	—	—	287	—	—	—	—	—
	Abutment B	Neat	—	—	2,100	—	—	—	—	—	—	—
		Footing	9.9	1,130	—	272	—	290	20	13	37	230
	Total		343.4	74,430	4,130	463	544	544	38	25	71	308
	Grand Total		726.0	172,030	8,820	908	1,145	1,111	80	50	144	573

LUMP SUM BID ITEMS

85011	NS Dismantle and remove existing structure Number 20087	LS
85011	NS Bridge Conduit System (B601)	LS
85011	NS Bridge Lighting System (B601)	LS
85011	NS Temporary Sheet Piling (B601)	LS
85011	NS Asbestos Removal Structure Number 20087	LS

Rev. No.	Sheets Revised	Date
3	2	3/2/21
2	2	2/18/21
1	2	2/5/21

Table of Revisions

⊗ Denotes items to be paid for on the basis of plan quantities in accordance with current Road and Bridge Specifications.

INDEX OF SHEETS

Sheet No.	Description	Sheet No.	Description	Sheet No.	Description
1	Title sheet, plan, profile, design exceptions and general notes	17	Prestressed beam bearing details	34	Deck slab elevations along centerline beam
2	Estimated quantities and index of sheets	18	Transverse section	35	Concrete barrier type 732SW Stage 1
3	Demolition plan	19	Transverse section	36	Concrete barrier type 732SW Stage 2
4	Curved bridge layout	20	Erection diagram spans a & b	37	Concrete barrier type 732SW Details 1 of 2
5	Substructure layout	21	Erection diagram span c	38	Concrete barrier type 732SW Details 2 of 2
6	Sequence of construction	22	Prestressed concrete bulb-T PCBT-45 span a	39	Reinforcing steel schedule
7	Sequence of construction	23	Prestressed concrete bulb-T PCBT-45 span b	40	Reinforcing steel schedule
8	Sequence of construction	24	Prestressed concrete bulb-T PCBT-45 span c	41	Reinforcing steel schedule
9	Abutment A plan and elevation	25	Prestressed concrete bulb-T miscellaneous beam details	42	Reinforcing steel schedule
10	Abutment A footing plan and details	26	Prestressed concrete bulb-T miscellaneous beam details	43	Engineering geology
11	Abutment B plan and elevation	27	Prestressed concrete bulb-T miscellaneous beam details	44	Engineering geology
12	Abutment B footing plan and details	28	Prestressed concrete beam intermediate diaphragm details	45	Engineering geology
13	Pier 1 details	29	Prestressed concrete bulb-T closure diaphragm details	46	Engineering geology
14	Pier 1 details	30	Deck slab plan span a and b	47	Engineering geology
15	Pier 2 details	31	Deck slab plan span c	48	Approach slab abutment A
16	Pier 2 details	32	Deck lighting plan and details	49	Approach slab abutment B
		33	Deck elevations and deck slab placement schedule	50	Approach slab details

ESTIMATED QUANTITIES - SUPERSTRUCTURE ONLY

	Item Code	Conc. Class A4 Mod. Low Shrinkage 60409	Corrosion Resistant Reinf. Steel Class I 69091	NS Railing 62021	Prest. Conc. Beam, Bulb-T 45" Depth +50-60' 61221	Prest. Conc. Beam, Bulb-T 45" Depth +80-90' 61216	Prest. Conc. Beam, Bulb-T 45" Depth +90-100' 61225	Cover depth survey 60495	Bridge Deck Grooving 60490	Conc. Class A4 Bridge Appr. Slab 11020	Reinf. Steel Bridge Appr. Slab 11030	Pref. Elast. Joint Sealer 3" 11033	Elastic Inclusion ~~10"~~ 12" [1] 64021
		CY	LB ⊗	LF ⊗	EA	EA	EA	SY ⊗	SY ⊗	CY ⊗	LB ⊗	LF	LF
Quantities	Stage I	363.1	77,760	259	4	4	4	855	568	99.3	14,950	75	75
	Stage II	325.7	73,590	219	3	3	3	824	536	94.2	15,030	72	72
	Total	688.8	151,350	478	7	7	7	1,679	944	193.5	29,980	147	147

⊗ Denotes items to be paid for on the basis of plan quantities in accordance with current Road and Bridge Specifications.

Bid item Bridge Deck Grooving includes the quantity for the approach slabs.

Not to scale

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COMMONWEALTH OF VIRGINIA
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PROFESSIONAL ENGINEER

Seth A Denney
2021.03.02 15:09:07-05'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

STATE	FEDERAL AID ROUTE	FEDERAL AID PROJECT	STATE ROUTE	STATE PROJECT	SHEET NO.
VA.	—	STP-5104(296)	20	0020-104-101, B601	2

GENERAL NOTES (CONTINUED):

All reinforcing steel shall be deformed and shall conform to ASTM A615 Grade 60 except for steels noted as Corrosion Resistant Reinforcing (CRR) which shall conform to Section 223 of the Specifications. All reinforcing bar dimensions on the detailed drawings are to centers of bars except where otherwise noted and are subject to fabrication and construction tolerances.

CRR steels shall conform to one or more of the three Classes listed in Section 223 of the Specifications. The Class of CRR steel required on this project is/are noted on plan sheets and in the reinforcing steel schedule. CRR Steel, Class II or Class III, may be substituted for Class I. CRR Steel, Class III, may be substituted for Class II.

Prestressing strands shall be uncoated, seven-wire, low-relaxation steel strands conforming to ASTM A416 Grade 270.

Footings for piers shall bear on firm material. For bearing requirements for Pier 1 and Pier 2 see the Spread Footing Data Table on sheets 13 and 15.

All H-piles shall be ASTM A709 Grade 50 steel. For axial pile resistance requirements, see the Pile Data Table on sheets 9 and 11. All piles shall be installed to or below the minimum tip elevation(s) shown in the Pile Data Table, unless otherwise directed or authorized by the Engineer.

All piles shall be installed in predrilled holes. Predrilling shall penetrate at least 2 feet into rock, and the loose material shall be removed from the excavation. The bottom of the hole shall be flat. The predrilled hole shall be at least 24 inches in diameter. The piles shall be backfilled up to the top of the rock with concrete. Above the concrete, the predrilled holes shall be filled with loose sand.

+Bridge No. of existing bridge is 20087. Plan No. is 158-16.

+The existing structure is designated a Type B structure in accordance with Sec. 411.

H&B #2 is a standard surveyor's "TBAR" set flush with the ground having a surveyor's tack as the center point and having the following attributes:

H&B #2 NAD 83 (Virginia south) and NAVD 88 (GEIOD 83) established using VRS RTK GPS.

Northing = 3898499.22513
Easting = 11490031.89705
Elevation = 465.24665
Description = Control point-Standard TBAR

Piles at the abutment shall be installed before construction of the MSE walls. The piles shall be cased with corrugated metal pipe sleeves or other materials as approved by the Engineer through the reinforced fill zone and extending a minimum of 5 feet below the bottom of the reinforced fill zone. The annulus between the piles and the casing shall be filled with dry sand just prior to construction of the footing. Cost of the casings and the sand shall be incidental to the price bid for the piles.

The Contractor shall not use the railroad right-of-way for storage of materials or equipment during construction.

The Contractor shall plan and perform the work in manner that the tracks remain fully capable of carrying rail traffic throughout the duration of the project.

A railroad flagman may be required for any work that requires entry onto the railroad right-of-way, all work that has the potential to foul railroad tracks, and all work to be performed within 50 feet of the centerline of tracks. The railroad shall have sole authority to determine the need for flagging required.

Contractor to salvage the black fence on top of the west side of the existing bridge. The contractor shall keep the fence in their possession and safe from damage until the City of Charlottesville Department of Parks and Recreation can take possession of the fencing. The contractor shall allow two weeks for this transfer to take place. The cost for this shall be incidental to the removal of existing structure with no separate payment thereto.

No.	Description	Date
3	Revised quantities	3/2/21
2	Revised quantities	2/18/21
1	Revised quantities	2/5/21

Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

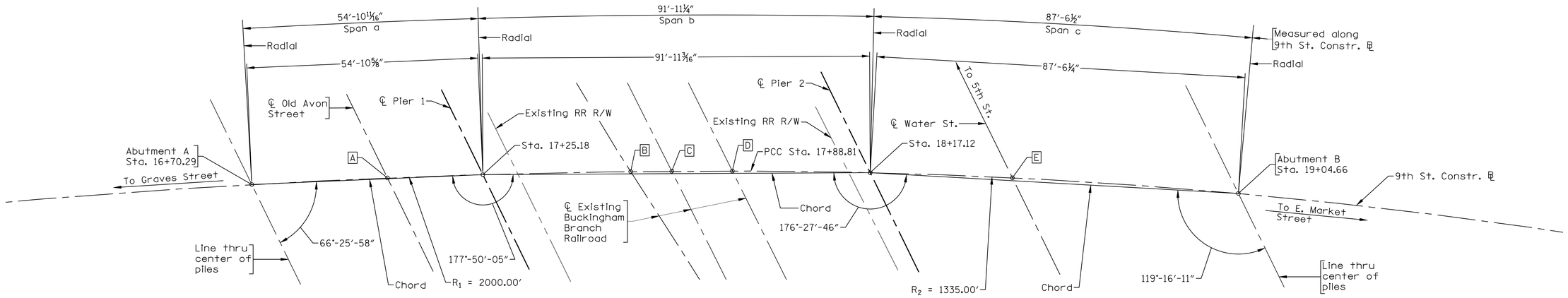
ESTIMATED QUANTITIES AND INDEX OF SHEETS

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	2 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	4

Notes:

This layout is to be used only for the purpose of locating supports for substructure.



A — POC Sta. 17+02.52 9th St. Constr. ℄
PI Sta. 33+77.97 Old Avon St. ℄
Δ = 66°-17′-45″ RT.

B — POC Sta. 17+60.31 9th St. Constr. ℄
℄ Existing Buckingham Track
Δ = 58°-31′-50″ RT.

C — POC Sta. 17+70.07 9th St. Constr. ℄
℄ Existing Buckingham Track
Δ = 63°-40′-20″ RT.

D — POC Sta. 17+84.41 9th St. Constr. ℄
℄ Existing Buckingham Track
Δ = 63°-33′-04″ RT.

E — POC Sta. 18+50.89 9th St. Constr. ℄
PI Sta. 62+58.69 Water St. ℄
Δ = 61°-01′-30″ RT.

CURVED BRIDGE LAYOUT

COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:23:19-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

Scale: 1″ = 1′-0

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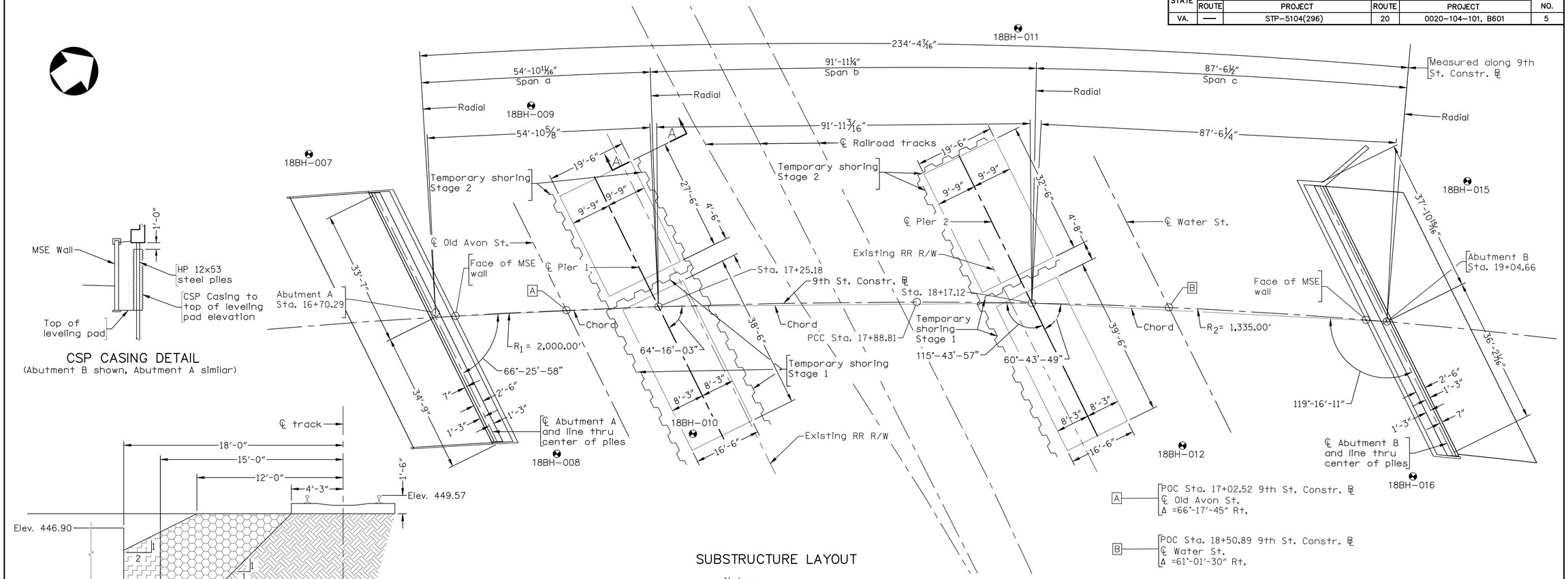
No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

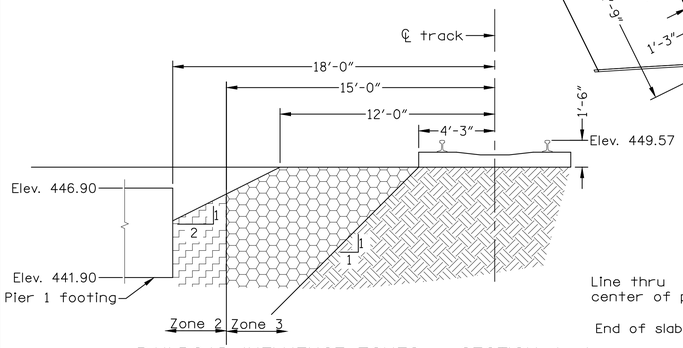
CURVED BRIDGE LAYOUT

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	4 of 50
Checked: SAD			

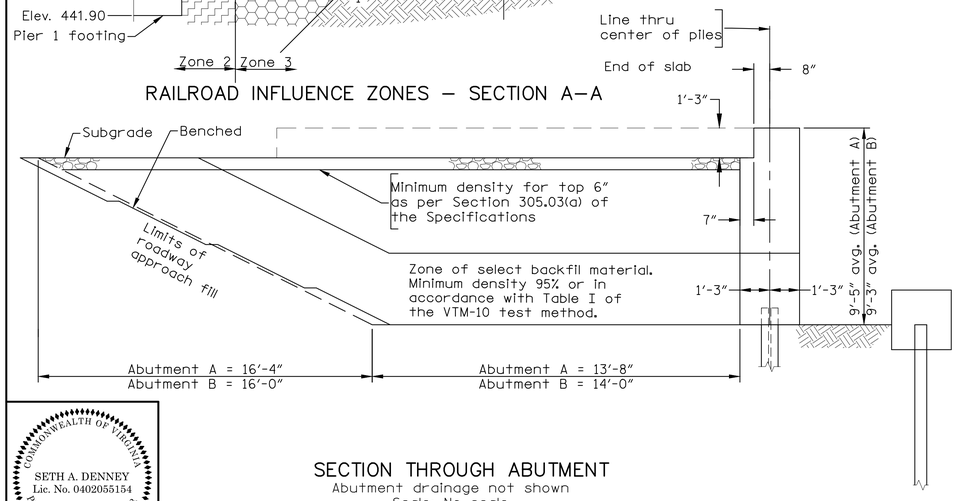
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	5



CSP CASING DETAIL
(Abutment B shown, Abutment A similar)



RAILROAD INFLUENCE ZONES — SECTION A—A



SECTION THROUGH ABUTMENT
Abutment drainage not shown
Scale: No scale

SUBSTRUCTURE LAYOUT

Notes:

This layout is to be used only for the purpose of locating footings of piers and abutments. For details of neatwork, see pier and abutment sheets.

Temporary retaining structures will be required during construction. Sheet pile wall has been shown in this plan set. However, the contractor may erect a different structure with the Engineer's approval and at no additional cost to the client. All retaining structures shall be placed in accordance with VDOT specifications.

The design of the temporary retaining structures shall be provided by the Contractor and shall be designed according to CSXT Construction Submission Criteria or AASHTO LRFD Bridge Design Specifications, and shall be sufficient to support all adjacent railroad and roadway traffic. Working drawings for the retaining structures shall be signed and sealed by a Professional Engineer that is licensed to practice engineering in the Commonwealth of Virginia. The final drawings shall be submitted to the Engineer for approval prior to installation.

In regards to the temporary retaining structures, the dimensions and elevations shown in these plans are approximate and should be used for bidding purposes only. Actual dimensions shall be verified in the field based on site conditions and design specifics.

The temporary retaining structures shall be paid for as a lump sum price under the Temporary Sheet Piling pay item. Such payment shall be compensation for any subsurface investigation, design, detailing and construction of the temporary retaining structures and includes furnishing all labor, tools, equipment, materials and any incidentals necessary to construct and maintain the temporary retaining structures during construction. Payment will also include all costs associated with the partial or complete demolition, removal and disposal of the temporary retaining structure when no longer required. Payment shall also include costs associated with any additional measures required to install the walls due to unknown obstructions. See special provisions.

It shall be noted that any temporary retaining structure located within 18′-0″ of the centerline of any existing railroad track will be required to be left in place and not removed after construction. In such case the temporary retaining structure would not be temporary and would be subject to the Buy America provisions in the Contract.

For Railroad Influence Zones, see CSXT Construction Submission Criteria.

◓ = Boring locations, for details see sheets 43 - 46.

COMMONWEALTH OF VIRGINIA
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2020.10.27 13:23:58-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

SUBSTRUCTURE LAYOUT

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	5 of 50
Checked: SAD			

Scale: 1″ = 1′-0 unless noted otherwise

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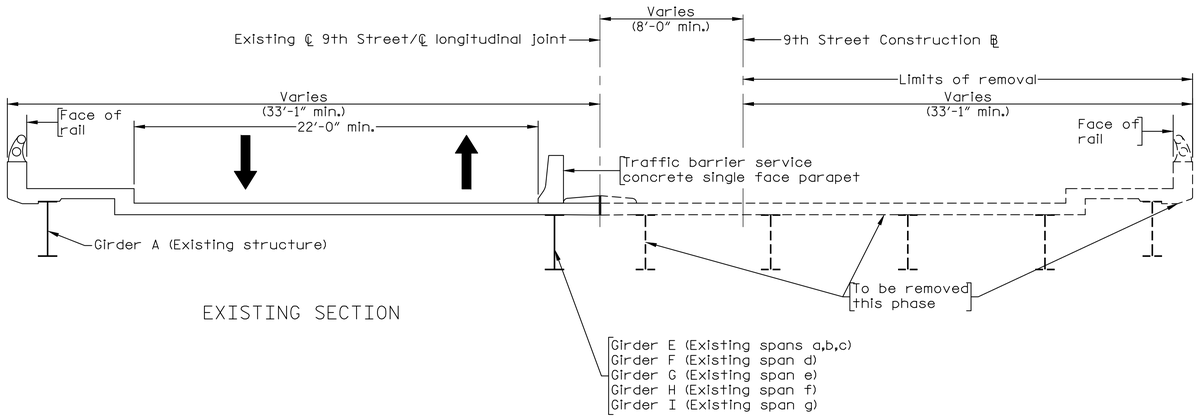
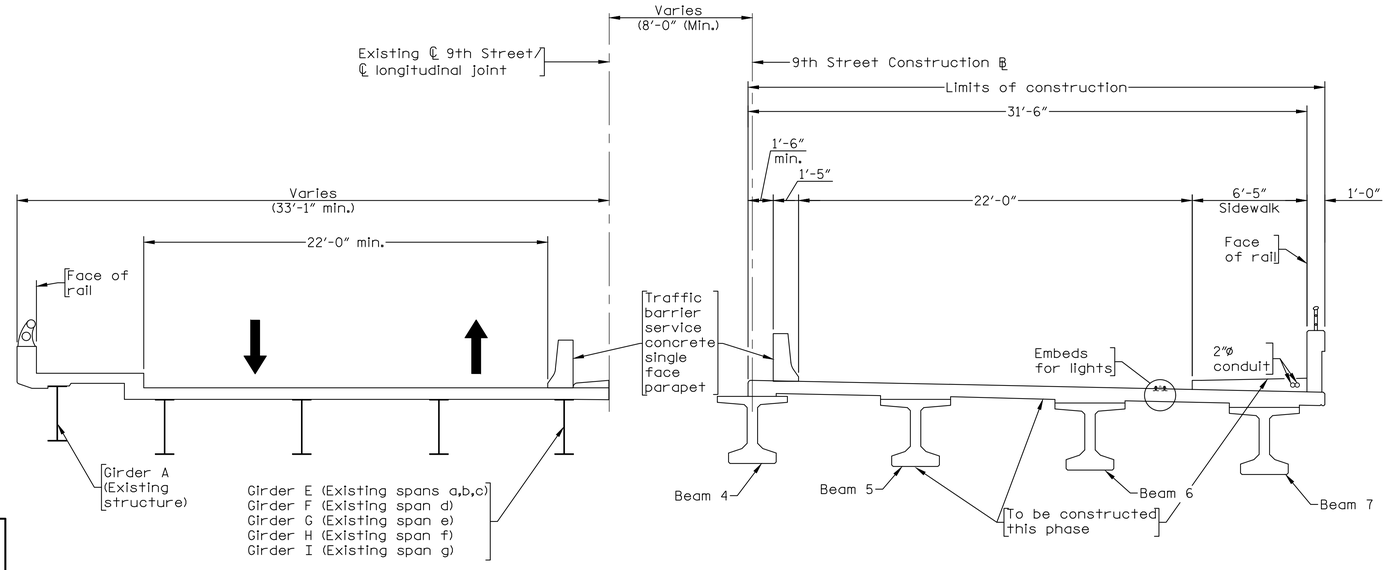
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	6



EXISTING SECTION

STAGE 1 - PHASE 1



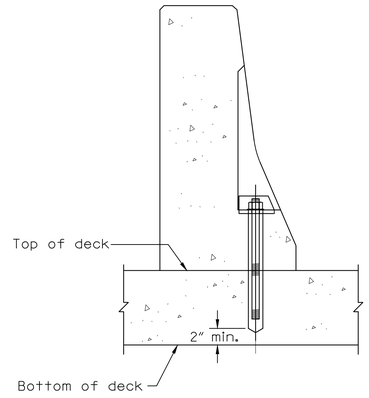
EXISTING SECTION

STAGE 1 - PHASE 2

Notes:

For location and details of lighting see sheet 32.

Embeds for lights shall be protected from damage until stage 4.



TRAFFIC BARRIER SERVICE
CONCRETE PARAPET (SINGLE FACE)

NOTES:

1. Bolt down side adjacent to traffic.
2. For details not shown, see VDOT Road and Bridge Standards MB-10A.
3. After removing Temporary barrier, cut ⅞″ø bolt or threaded rod as low as practical below roadway surface and fill recess with epoxy bonding compound EP-4.
4. Anchor system shall be tested to provide a minimum pullout of 32,000 lbs. and installed according to manufacturer's recommendations.

Proposed Overall Construction Sequence:

Stages shown in the construction sequence are those indicated in the roadway plans on sheets 01J(2A) and 01J(2B).

1. During Stage 1, demolish the east side of the existing bridge in accordance with the construction sequencing shown on sheets 6 through 8.
2. During Stage 1, construct the northeast stairs, north tunnel extension, east portion of the south tunnel, and the east side of bridge B601 as shown on sheets 6 through 8.
3. During Stage 2, demolish the west side of the existing bridge in accordance with the construction sequencing shown on sheets 6 through 8.
4. During Stage 2, remove portions of the existing segmental retaining wall along Water Street in accordance with B602 sheet 3.
5. During Stage 2, construct the northwest stairs, west portion of the south tunnel, south stairs, Abutment A of bridge B602, Pier 1 and 2 of Bridge B602, the support pier of bridge B602, and the west side of bridge B601 as shown on sheets 6 through 8. Backfill the retaining wall at Pier 2 of B602.
6. During Stage 2, construct span a and b of bridge B602 as shown on bridge B602 sheets 5 and 6.

The Contractor may submit an alternate overall construction sequence to the Engineer for review and approval. If an alternate sequence is proposed, bridge B601 shall be constructed prior to the construction of span b of bridge B602.

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2020.10.27 13:26:13-04'00'

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RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

SEQUENCE OF CONSTRUCTION

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	6 of 50

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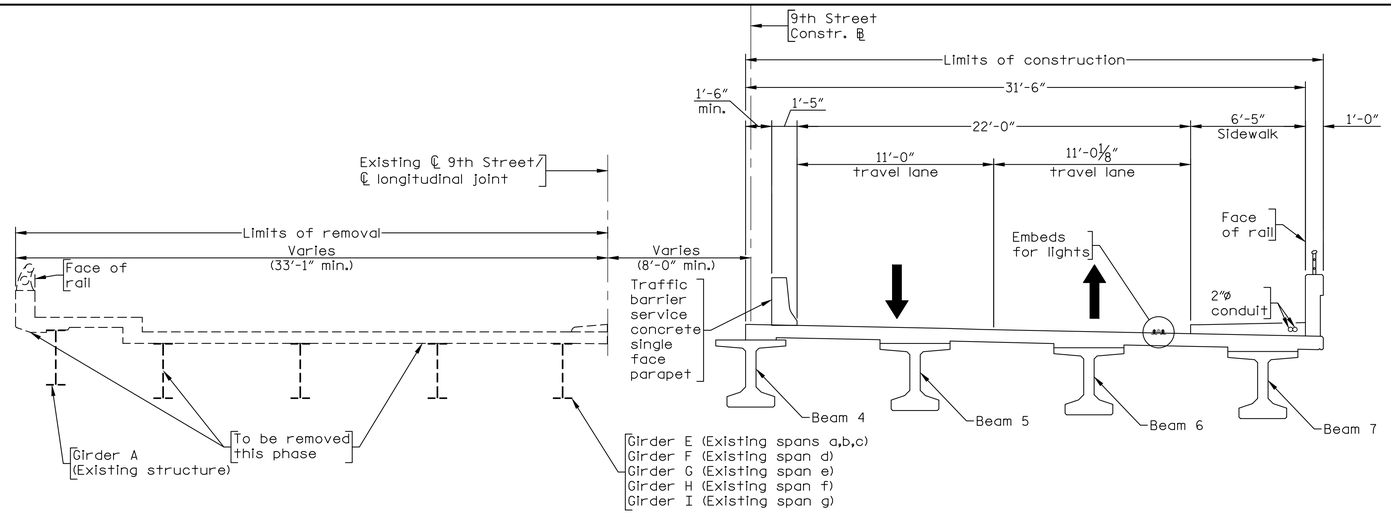
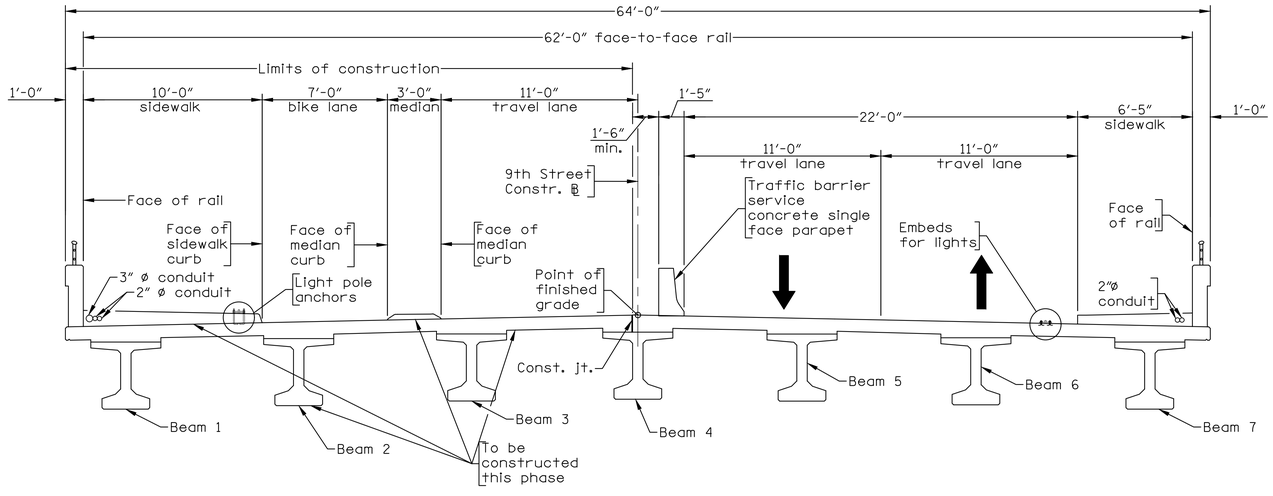
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	7



STAGE 2 - PHASE 1



STAGE 2 - PHASE 2

Notes:

For location and details of lighting see sheet 32.

Embeds for lights shall be protected from damage until stage 4.

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	Revisions	

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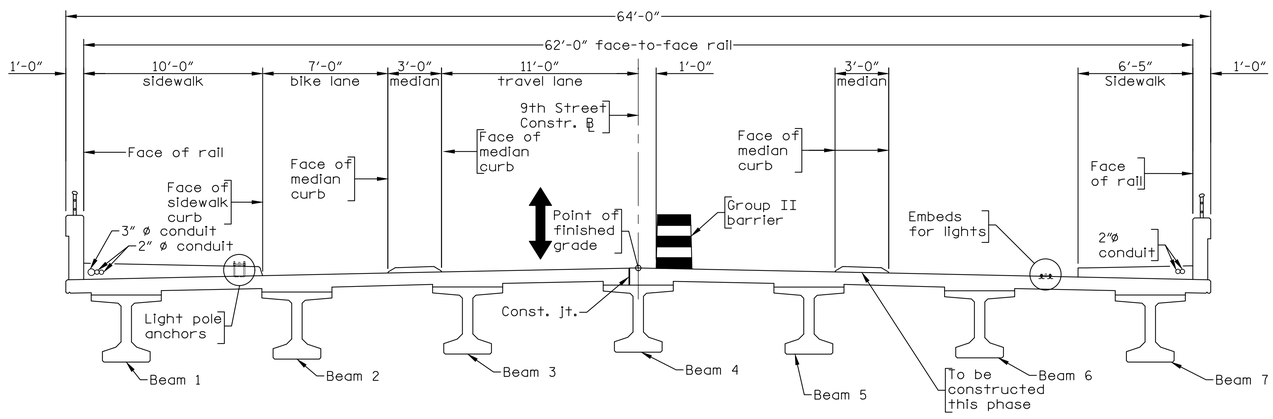
STRUCTURE AND BRIDGE DIVISION

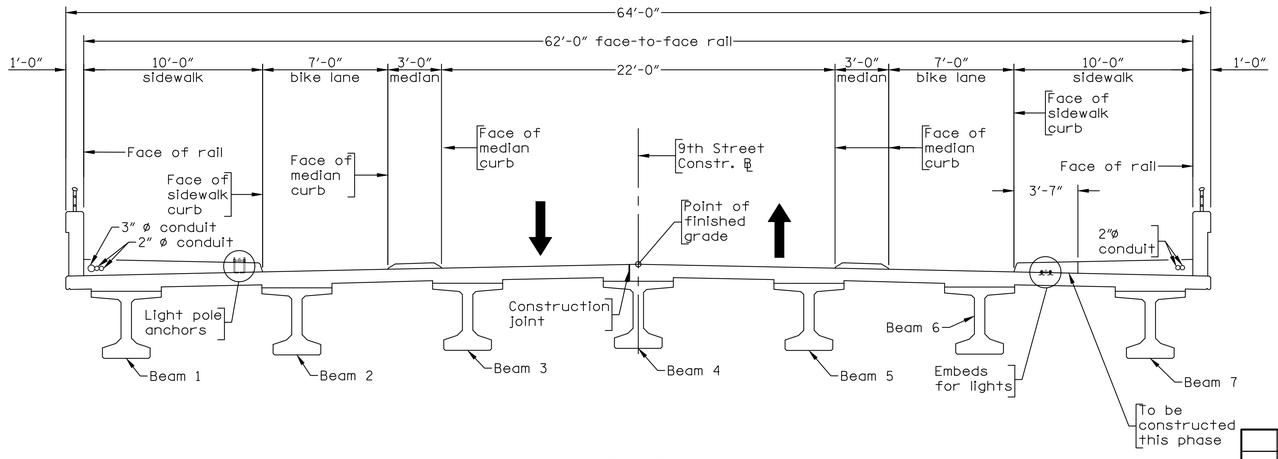
SEQUENCE OF CONSTRUCTION

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	7 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	8



STAGE 3



STAGE 4

Notes:

For location and details of lighting see sheet 32.

Embeds for lights shall be protected from damage until stage 4.

The typical section shown for stage 3 depicts the nighttime lane closure and one-lane, two-way traffic for median and sidewalk construction; during stage 3 the daytime typical section is similar to that shown for stage 4 with two-lane, two-way traffic.

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	Revisions	

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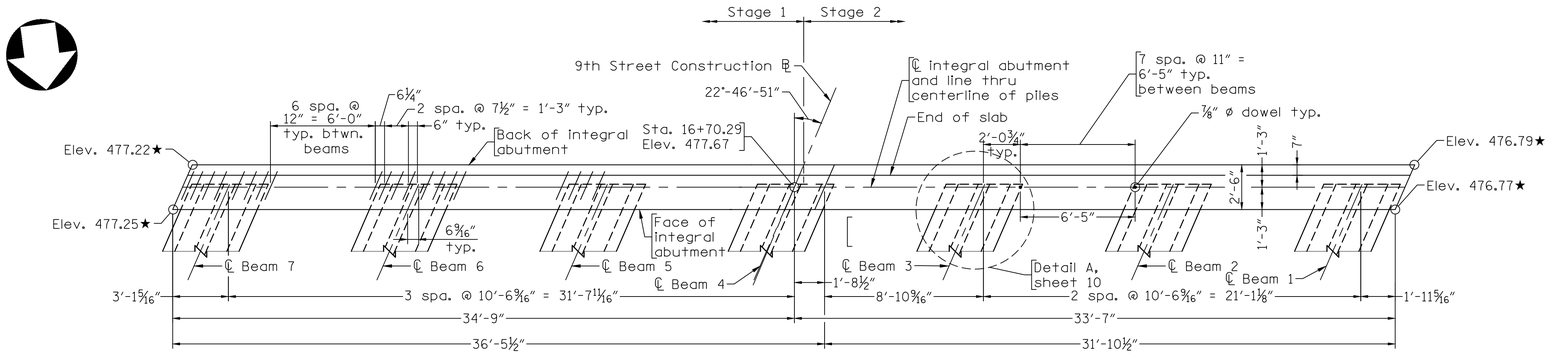
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

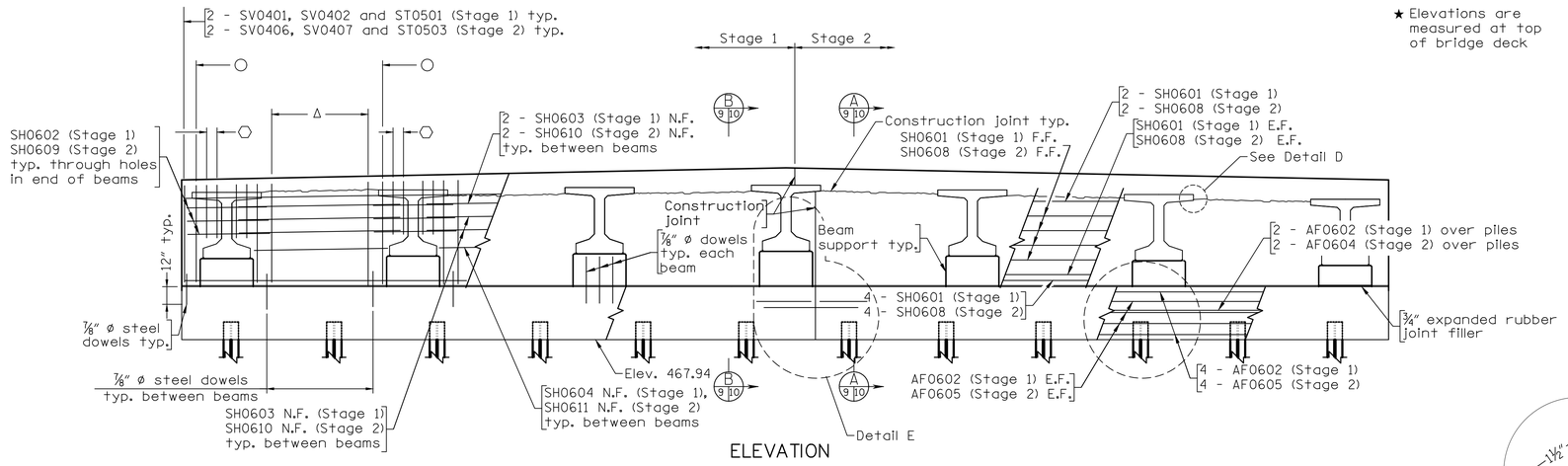
SEQUENCE OF CONSTRUCTION

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	8 of 50

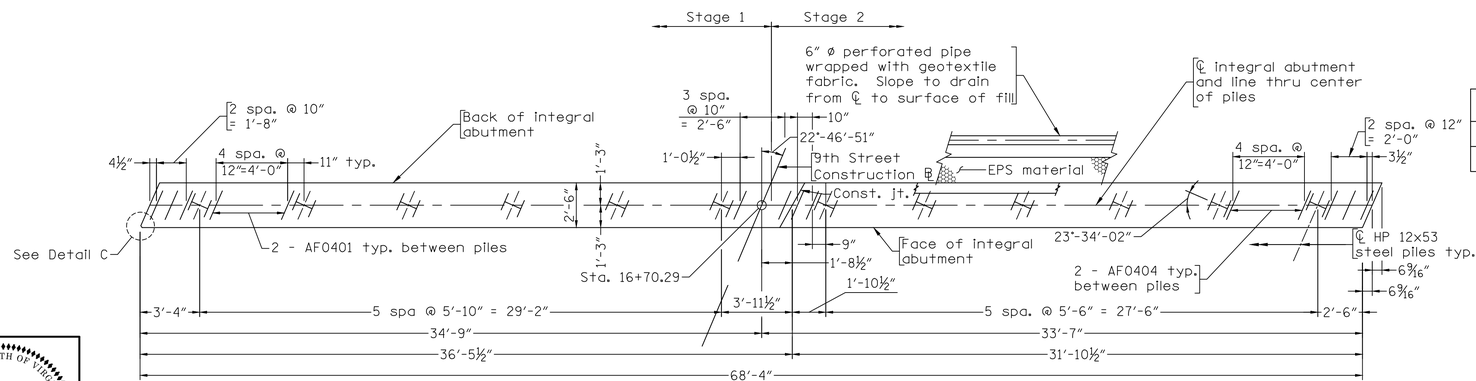


PLAN



ELEVATION

★ Elevations are measured at top of bridge deck



PILE AND FOOTING REINFORCEMENT PLAN

AF0602 and AF0605 bars are not shown for clarity

PILE DATA TABLE			
Substructure Unit	Nominal Axial Resistance Measured During Driving (Tons/pile)	Factored Axial Resistance (Tons/pile)	Estimated Tip Elevation
Abutment A	232.5	151	435.7 - 440.4

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	9

Notes:
Portion of the integral abutment above the hinge shall be placed and cured to a minimum compressive strength of 3000 psi prior to the placement of the deck concrete.

Backfill behind integral abutment footing shall not be placed until concrete in the upper portion of the integral abutment attains a minimum compressive strength of 3000 psi. The remainder of the backfill behind both bridge abutments shall be placed such that the differential in height of fill at each abutment shall not exceed 6″

The integral backwall shall be cast when the least thermal movement of the superstructure can be expected during the period of initial set of the concrete in the backwall: for instance 1) at dusk or 2) during an expected uniformly cloudy day.

Tolerance for driving piles shall be as specified for "Column supports for bent caps" in Section 403, Table IV-I of the Specifications.

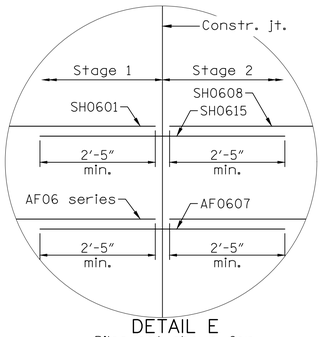
See prestressed beam sheets for details of holes through the web and location of BC bars.

Beams shall not be placed until temporary support concrete gains a minimum strength of 3000 psi.

Elevations in plan view are at top of slab.

SH0602 and SH0609 may be field cut at exterior beams to meet required clearances.

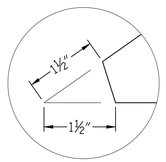
SH0610 and SH0611 may be field cut at const. jt. to meet required clearance.



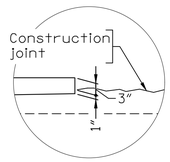
AF0607 shall be lapped a minimum of 2′-5″ to all AF06 series bars in the footingl.

SH0615 shall be lapped a minimum of 2′-5″ to all SH0601 and all SH0608 bars in abutment backwall.

DETAIL E
Piles not shown for clarity



DETAIL C
Typical at acute angles



DETAIL D

TABLE OF TOP OF BEAM SUPPORT ELEVATIONS						
Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 7
472.14	472.41	472.67	472.94	472.80	472.67	472.53

Δ 2 – SV0401, SV0402, ST0501 and ST0602 (Stage 1)
2 – SV0406, SV0407, ST0503 and ST0604 (Stage 2)
typ. between beams

⬡ SV0402, SV0403, SV0404, SV0405 and ST0602 (Stage 1)
SV0407, SV0408, SV0409, SV0410 and ST0604 (Stage 2)

◯ 2 – SV0401, SV0402 and ST0602 typ. (Stage 1)
2 – SV0406, SV0407 and ST0604 typ. (Stage 2)

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DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

ABUTMENT A PLAN AND ELEVATION

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	9 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	10

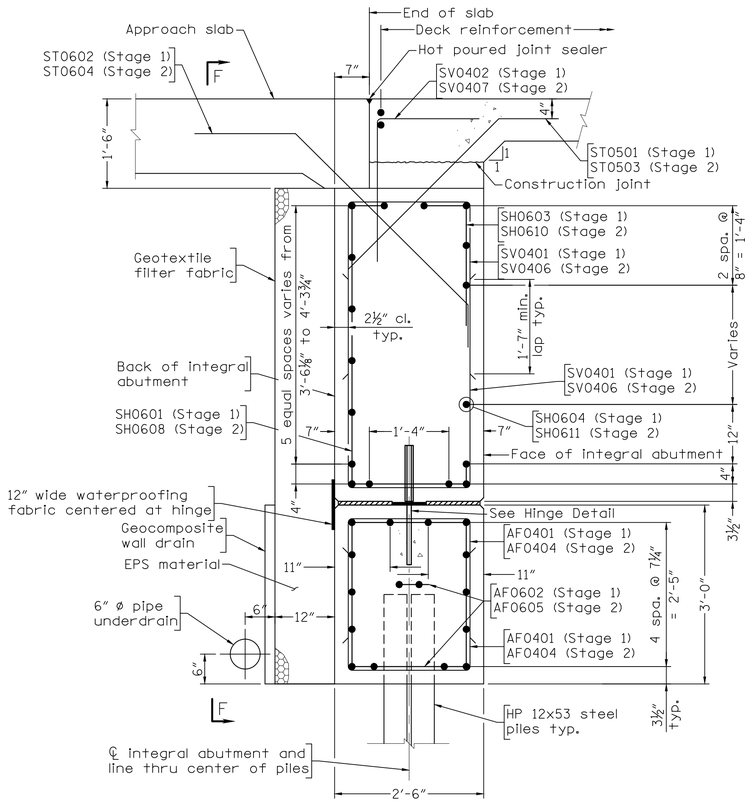
Notes:
All chamfers shall be ¾".

Class A4 concrete and corrosion resistant reinforcing (CRR) steel are included with superstructure quantities.

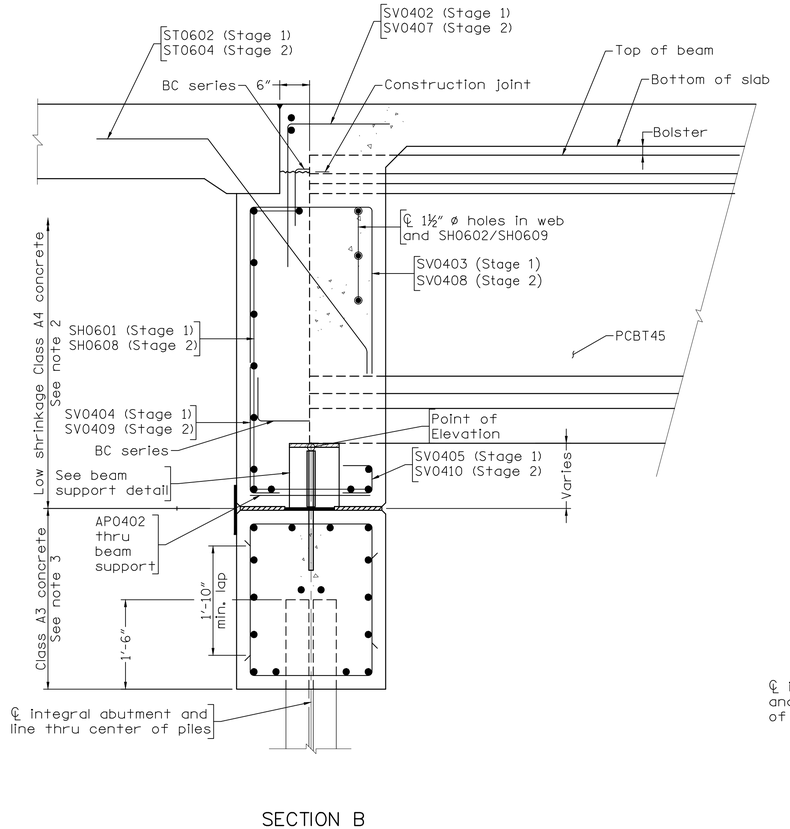
Class A3 concrete and reinforcing steel is included with substructure quantities.

Extreme care must be taken, when placing concrete, to eliminate any voids under beam flanges.

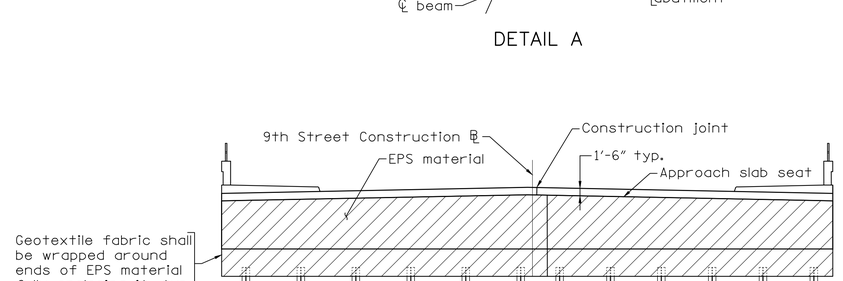
Cost of dowels, anchor bolts, plates, washers and temporary supports shall be included in the bid price for prestressed concrete beams. Cost of neoprene and roofing felt are to be included in other bid items.



SECTION A
(Between girders)



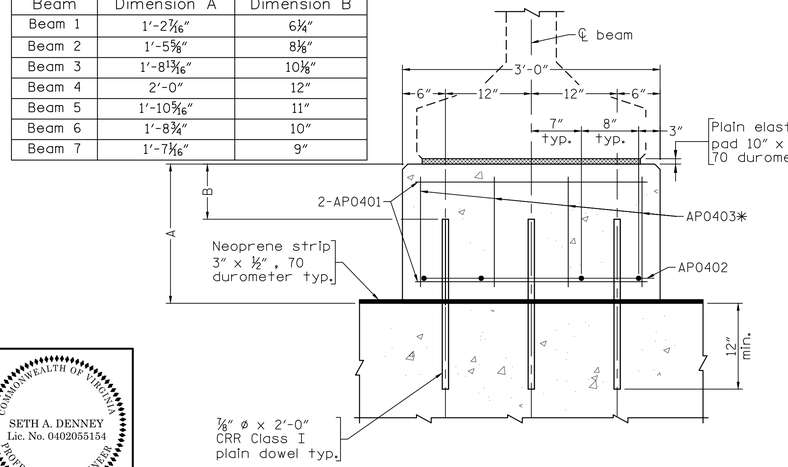
SECTION B
(At beams)
For details not shown see Section A-A



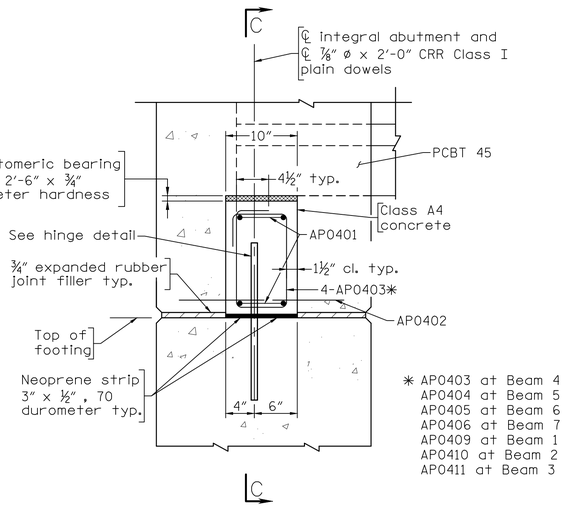
HINGE DETAIL

DETAIL A

BEAM SUPPORT HEIGHT		
Beam	Dimension A	Dimension B
Beam 1	1'-2 7/16"	6¼"
Beam 2	1'-5⅝"	8⅛"
Beam 3	1'-8 13/16"	10⅛"
Beam 4	2'-0"	12"
Beam 5	1'-10 5/16"	11"
Beam 6	1'-8¾"	10"
Beam 7	1'-7 1/16"	9"



SECTION C–C



* AP0403 at Beam 4
AP0404 at Beam 5
AP0405 at Beam 6
AP0406 at Beam 7
AP0409 at Beam 1
AP0410 at Beam 2
AP0411 at Beam 3

BEAM SUPPORT DETAIL

VIEW F–F

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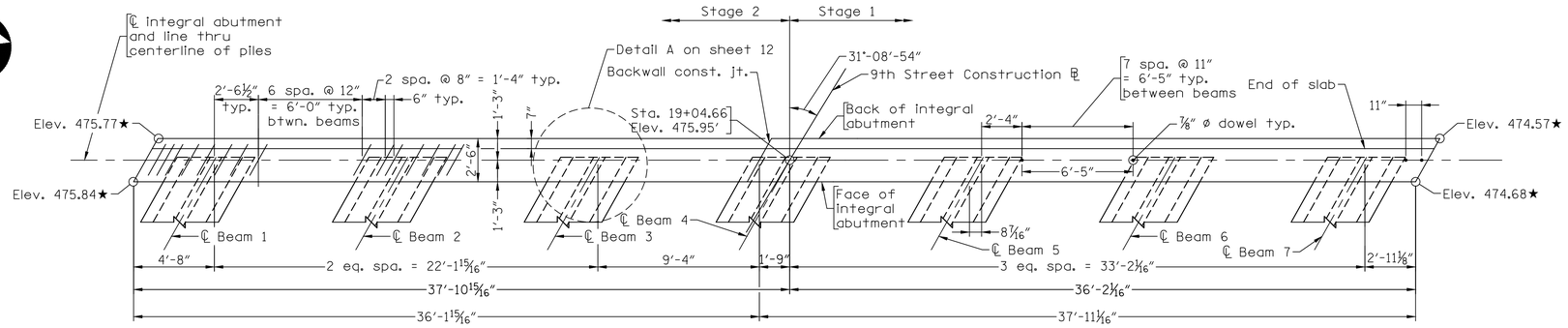
	Revisions	

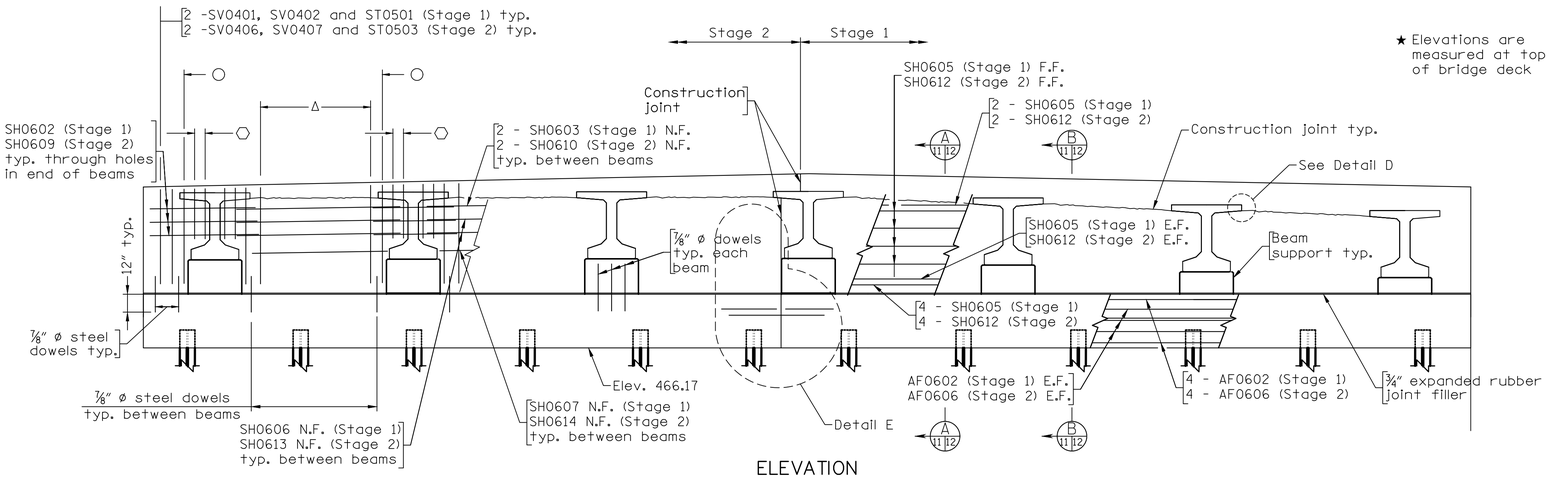
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

ABUTMENT A FOOTING PLAN AND DETAILS

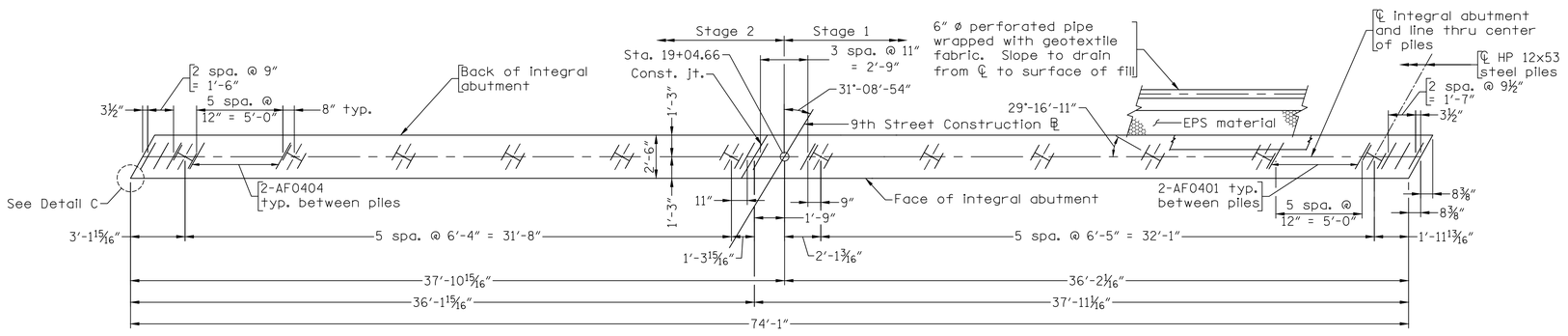
Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302–08	10 of 50
Checked: RAD			



PLAN



ELEVATION



PILE AND FOOTING REINFORCEMENT PLAN
AF0601 bars are not shown for clarity

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	11

Notes:
Portion of the integral abutment above the hinge shall be placed and cured to a minimum compressive strength of 3000 psi prior to the placement of the deck concrete.

Backfill behind integral abutment footing shall not be placed until concrete in the upper portion of the integral abutment attains a minimum compressive strength of 3000 psi. The remainder of the backfill behind both bridge abutments shall be placed such that the differential in height of fill at each abutment shall not exceed 6"

The integral backwall shall be cast when the least thermal movement of the superstructure can be expected during the period of initial set of the concrete in the backwall: for instance 1) at dusk or 2) during an expected uniformly cloudy day.

Tolerance for driving piles shall be as specified for "Column supports for bent caps" in Section 403, Table IV-I of the Specifications.

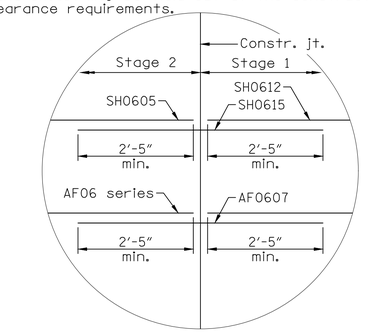
See prestressed beam sheets for details of holes through the web and location of BC bars.

Beams shall not be placed until temporary support concrete gains a minimum strength of 3000 psi.

Elevations in plan view are at top of slab.

SH0602 and SH0609 may be field cut at exterior beams to meet required clearances.

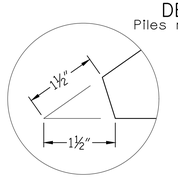
SH0613 and SH0614 may be field cut at the construction joint to meet clearance requirements.



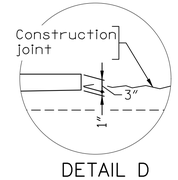
DETAIL E
Piles not shown for clarity

AF0607 shall be lapped a minimum of 2'-5" to all AF06 series bars in the footing.

SH0615 shall be lapped a minimum of 2'-5" to all SH0605 and SH0612 bars in abutment backwall.



DETAIL C
Typical at acute angles



DETAIL D

Δ 2 – SV0401, SV0402, ST0501 and ST0602 (Stage 1)
2 – SV0406, SV0407, ST0503 and ST0604 (Stage 2)
typ. between beams

⬡ SV0402, SV0403, SV0404, SV0405 and ST0602 (Stage 1)
SV0407, SV0408, SV0409, SV0410 and ST0604 (Stage 2)

◯ 2 – SV0401, SV0402 and ST0602 typ. (Stage 1)
2 – SV0406, SV0407 and ST0604 typ. (Stage 2)

TABLE OF TOP OF BEAM SUPPORT ELEVATIONS						
Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 7
471.08	471.12	471.14	471.16	470.78	470.41	470.02

For location of point of top of beam support see Section B on sheet 12

PILE DATA TABLE			
Substructure Unit	Nominal Axial Resistance Measured During Driving (Tons/pile)	Factored Axial Resistance (Tons/pile)	Estimated Tip Elevation
Abutment B	232.5	151	425.2 - 441.0

Scale: No scale

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

ABUTMENT B PLAN AND ELEVATION

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302-08	11 of 50
Checked: SAD.....			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	12

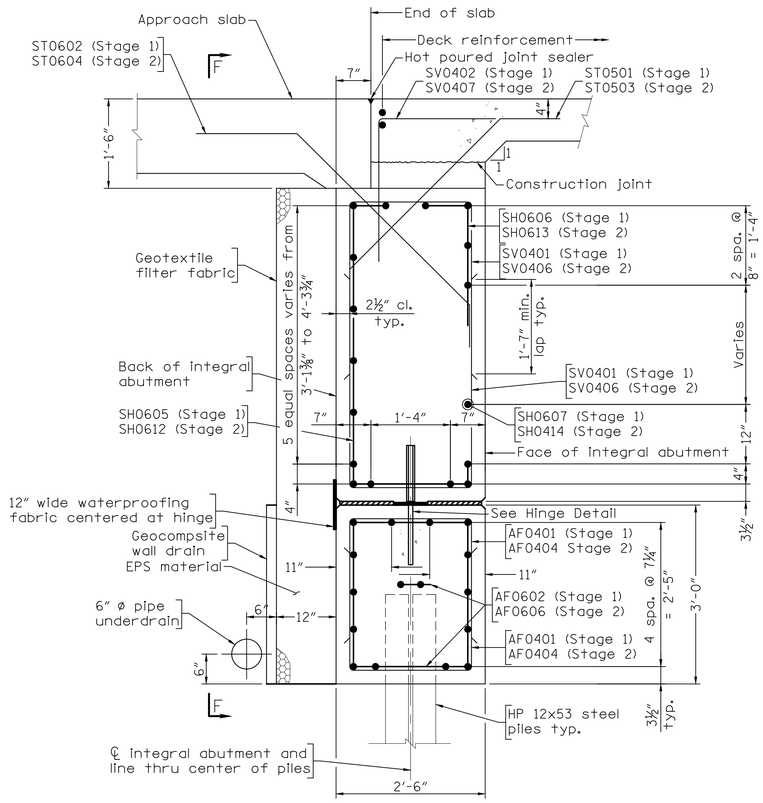
Notes:
All chamfers shall be ¾".

Class A4 concrete and corrosion resistant reinforcing (CRR) steel are included with superstructure quantities.

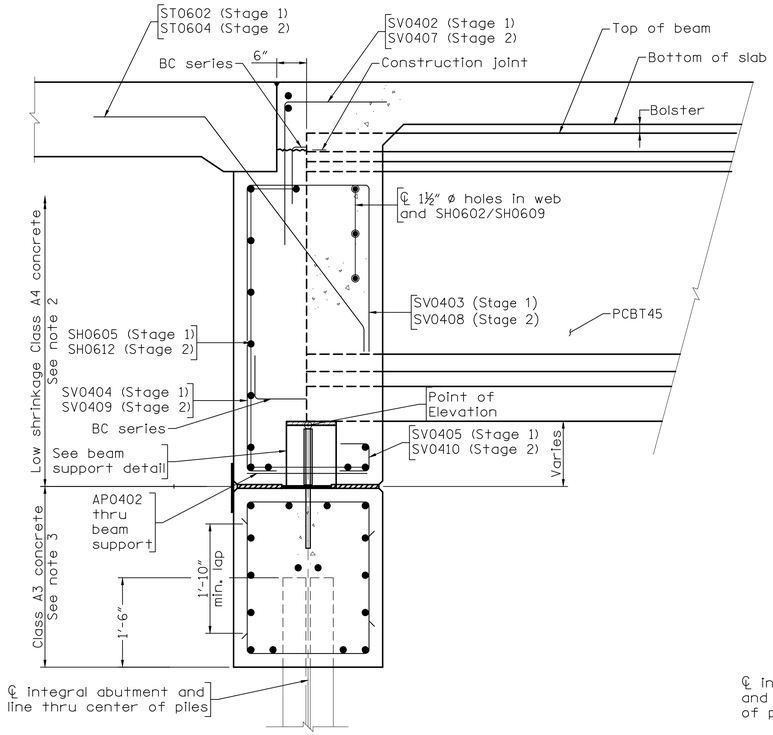
Class A3 concrete and reinforcing steel is included with substructure quantities.

Extreme care must be taken, when placing concrete, to eliminate any voids under beam flanges.

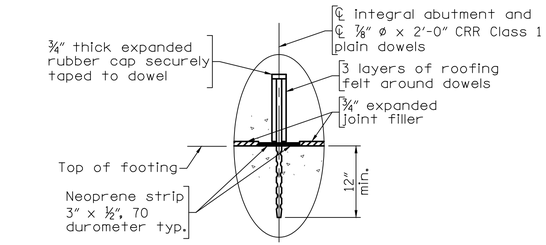
Cost of dowels, anchor bolts, plates, washers and temporary supports shall be included in the bid price for prestressed concrete beams. Cost of neoprene and roofing felt are to be included in other bid items.



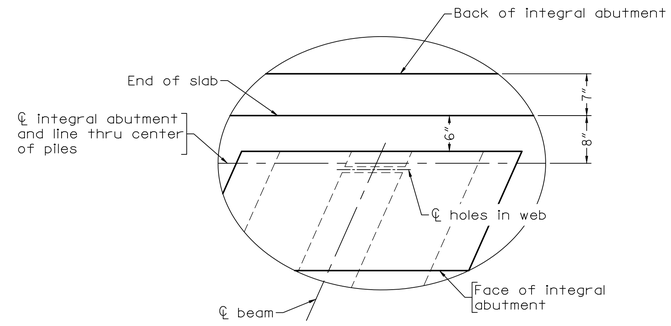
SECTION A
(Between girders)



SECTION B
(At beams)
For details not shown see Section A-A

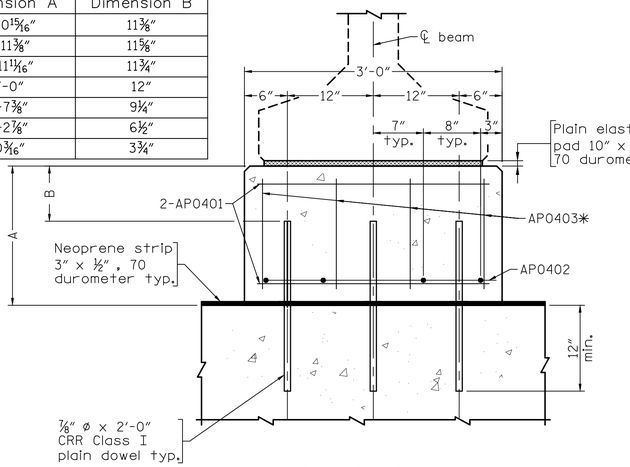


HINGE DETAIL

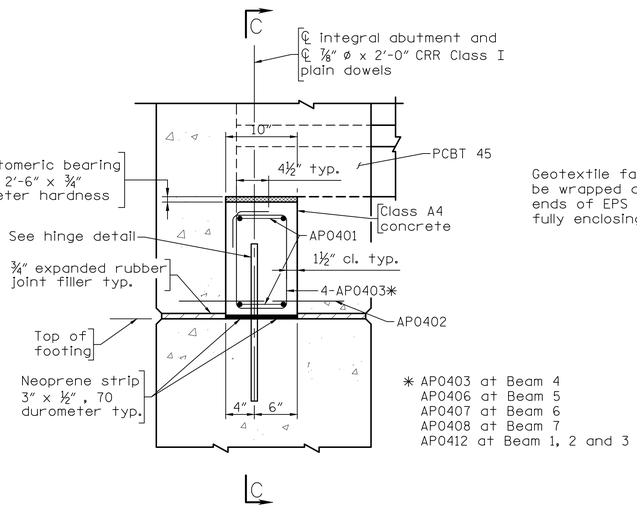


DETAIL E

BEAM SUPPORT HEIGHT		
Beam	Dimension A	Dimension B
Beam 1	1'-10 15/16"	11⅜"
Beam 2	1'-11⅜"	11⅝"
Beam 3	1'-11 11/16"	11¾"
Beam 4	2'-0"	12"
Beam 5	1'-7⅜"	9¼"
Beam 6	1'-2⅞"	6½"
Beam 7	10¾6"	3¾"

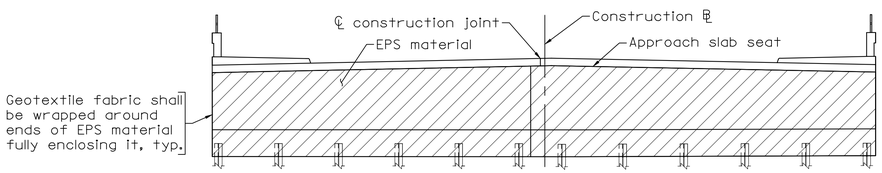


SECTION C–C



BEAM SUPPORT DETAIL

* AP0403 at Beam 4
AP0406 at Beam 5
AP0407 at Beam 6
AP0408 at Beam 7
AP0412 at Beam 1, 2 and 3



VIEW F–F

SETH A. DENNEY
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COMMONWEALTH OF VIRGINIA
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:31:41-04'00'

KIMLEY–HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

Scale: no scale

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

ABUTMENT B FOOTING PLAN AND DETAILS

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302–08	12 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	13

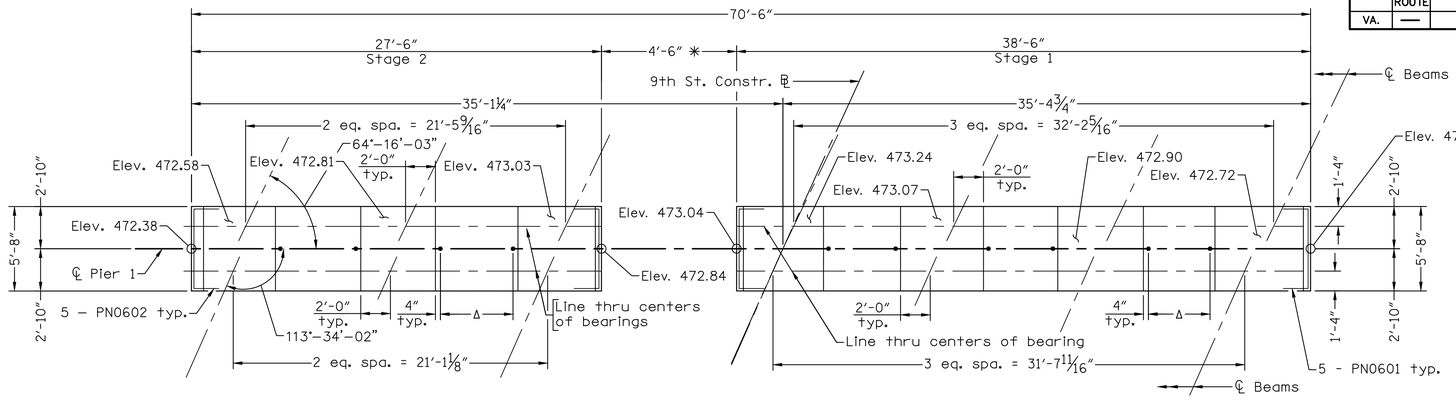
* The 4′-6″ dimension has been exaggerated for clarity

Δ Dowels typ. between beams, 3 equal spaces between beam seats

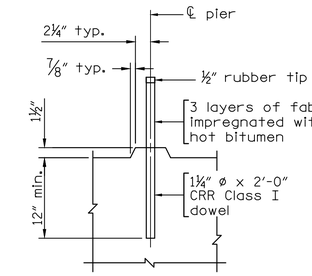
Notes:
For closure diaphragm details, see sheet 29.

Contractor may shift PS05 series bars slightly to reduce conflicts with PV series.

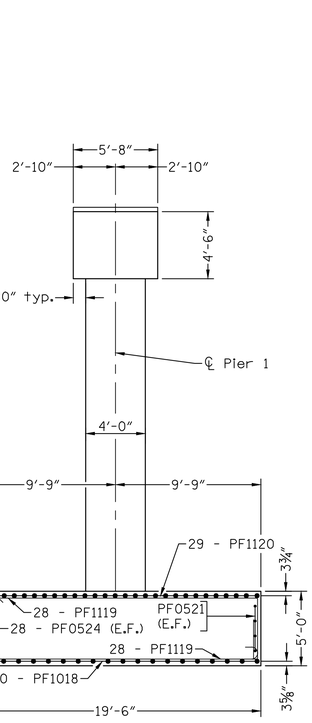
When finishing concrete between and beyond pads, float surface to drain from ℄ pier to edges of cap.



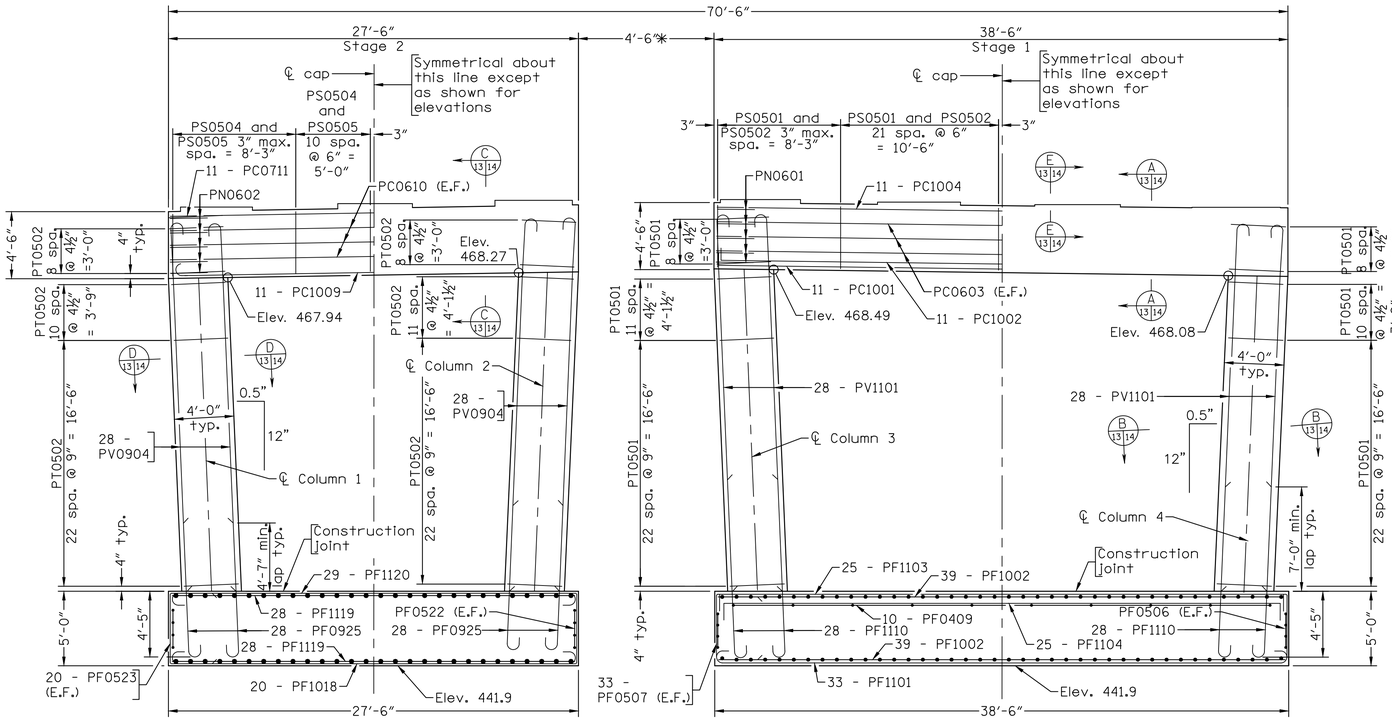
PLAN OF CAP



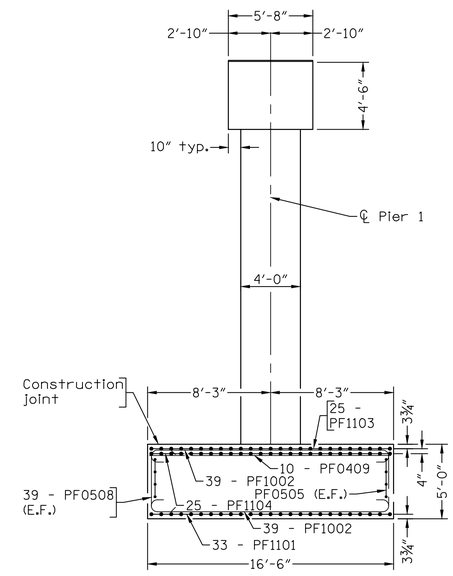
DOWEL DETAIL



END VIEW
Stage 2



ELEVATION



END VIEW
Stage 1

SPREAD FOOTING DATA TABLE			
	SERVICE		STRENGTH
Substructure Unit	Nominal Bearing Resistance (tsf)	Tolerable Settlement (Inches)	Factored Bearing Resistance ϕ_b = 0.45 (tsf)
Pier 1	21.5	< 0.5	9.7

The strength limit state controls final design

COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
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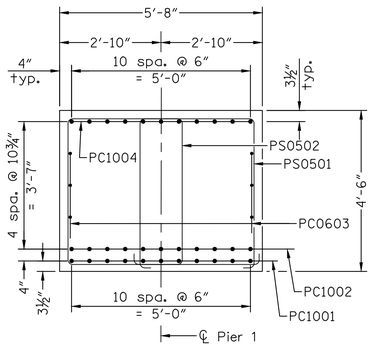
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

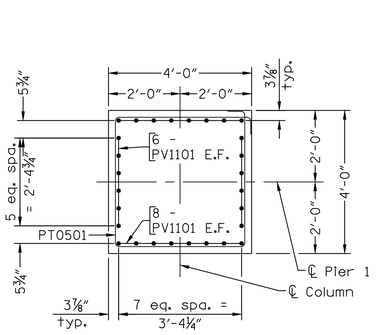
PIER 1

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	13 of 50
Checked: SAD			

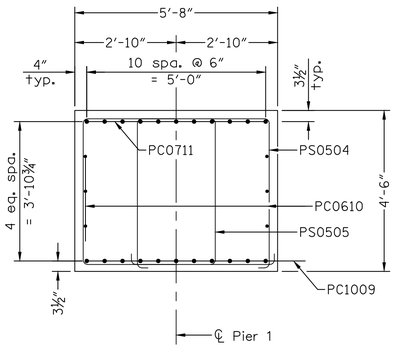
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	14



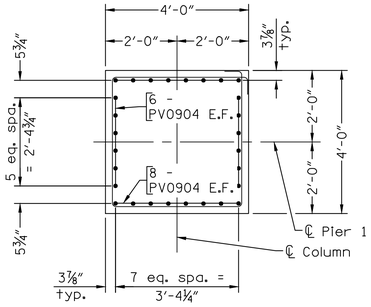
SECTION A-A



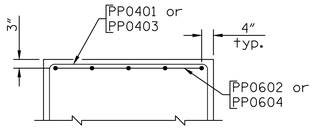
SECTION B-B



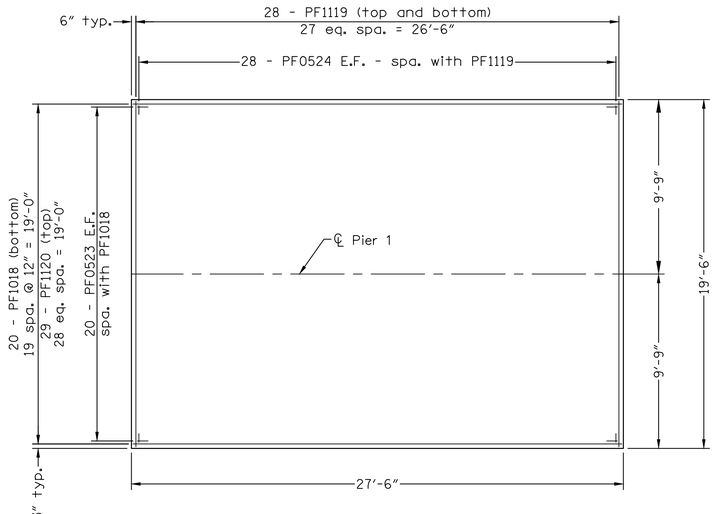
SECTION C-C



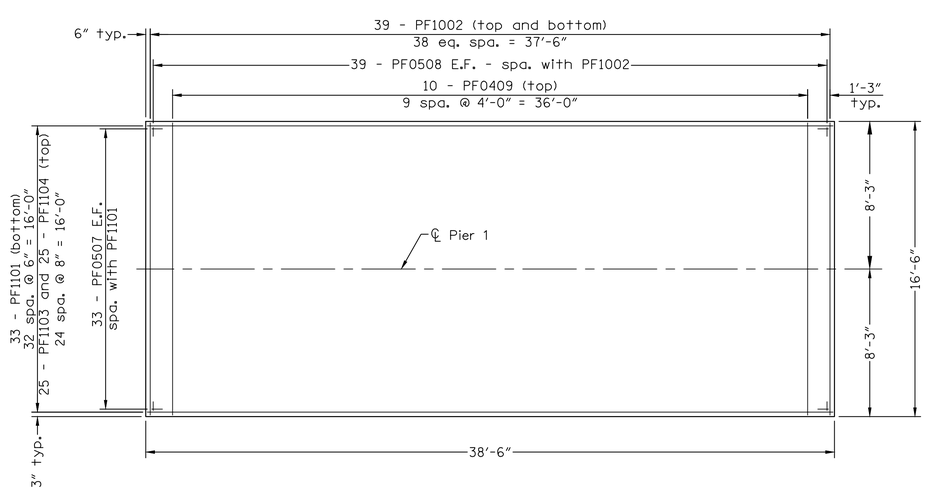
SECTION D-D



SECTION E-E



FOOTING PLAN - STAGE 2



FOOTING PLAN - STAGE 1

COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:32:59-04'00'

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Revisions		

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

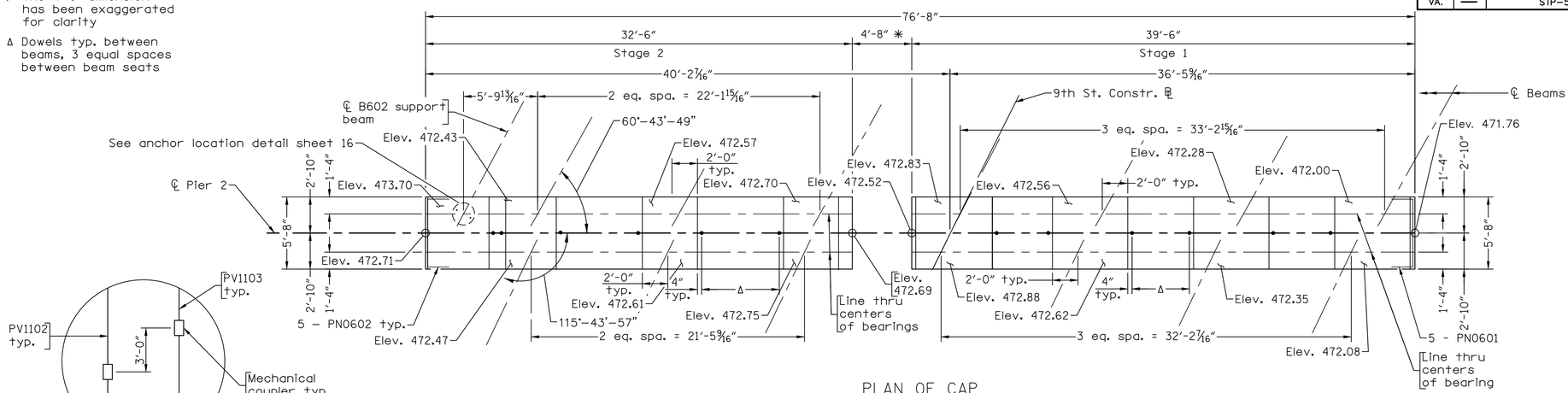
PIER 1 DETAILS

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	14 of 50
Checked: SAD			

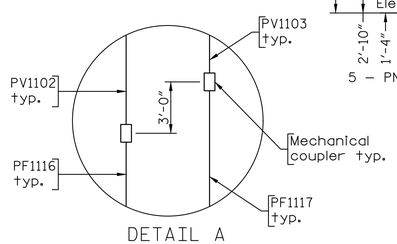
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	15

✳ The 4′-8″ dimension has been exaggerated for clarity

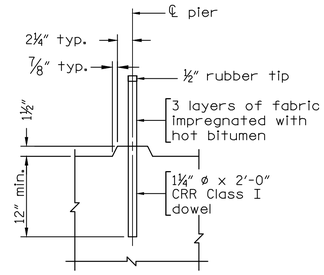
Δ Dowels typ. between beams, 3 equal spaces between beam seats



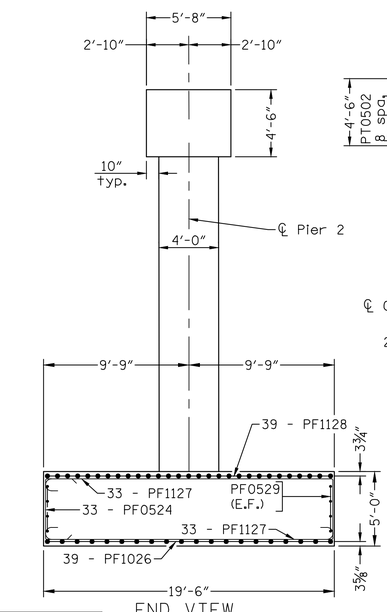
PLAN OF CAP



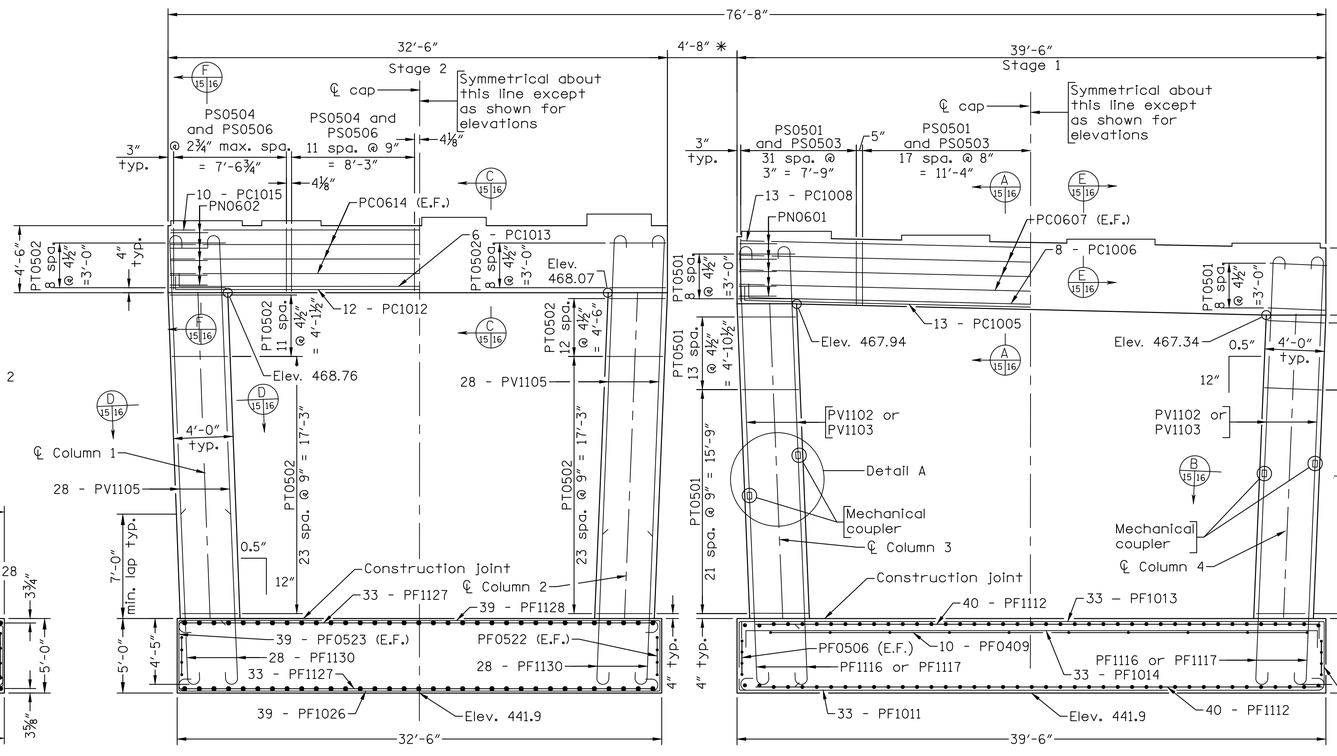
DETAIL A



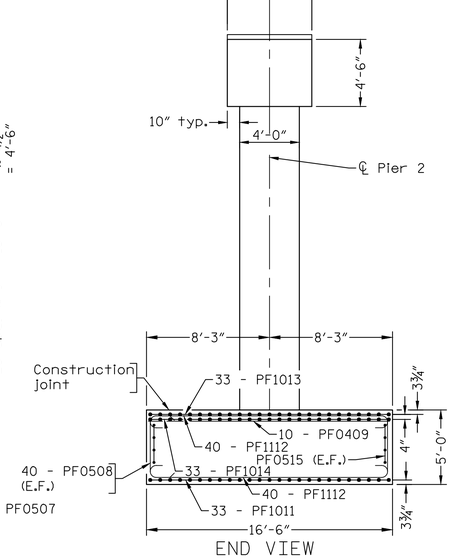
DOWEL DETAIL



END VIEW
Stage 2



ELEVATION



END VIEW
Stage 1

Notes:
For closure diaphragm details, see sheet 29.

Contractor may shift PS05 series bars slightly to reduce conflicts with PV series.

When finishing concrete between and beyond pads, float surface to drain from ℄ pier to edges of cap.

For details, anchor bolts and reinforcing bars relating to the support beam and integral diaphragm, see Bridge B602 plans. These details, which have not been shown here for clarity, are required for the construction of B602 and will interact with Pier 2.

SPREAD FOOTING DATA TABLE			
	SERVICE		STRENGTH
Substructure Unit	Nominal Bearing Resistance (tsf)	Tolerable Settlement (inches)	Factored Bearing Resistance $ø_b$ = 0.45 (tsf)
Pier 2	21.5	< 0.5	9.7

The strength limit state controls final design

Not to scale

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COMMONWEALTH OF VIRGINIA
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RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

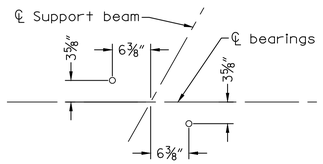
PIER 2

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

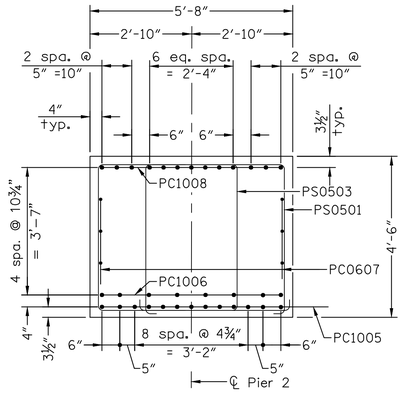
Date	Plan No.	Sheet No.
October 2020	302–08	15 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	16

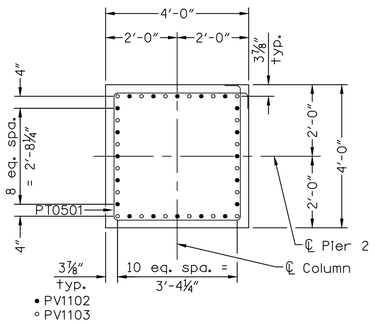
Notes:
For details, anchor bolts and reinforcing bars relating to the support beam and integral diaphragm, see Bridge B602 plans. These details, which have not been shown here for clarity, are required for the construction of B602 and will interact with Pier 2.



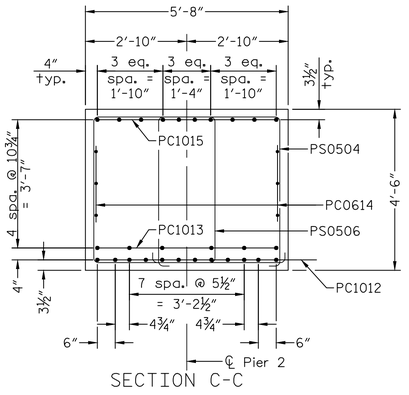
ANCHOR LOCATION - B602 SUPPORT BEAM



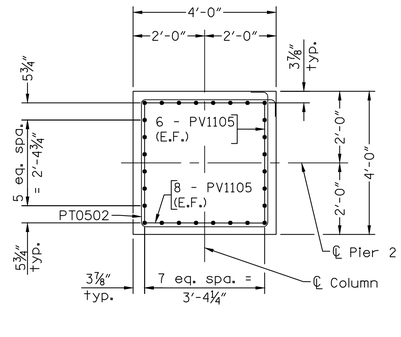
SECTION A-A



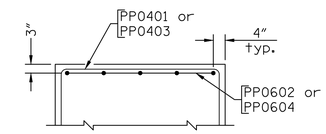
SECTION B-B



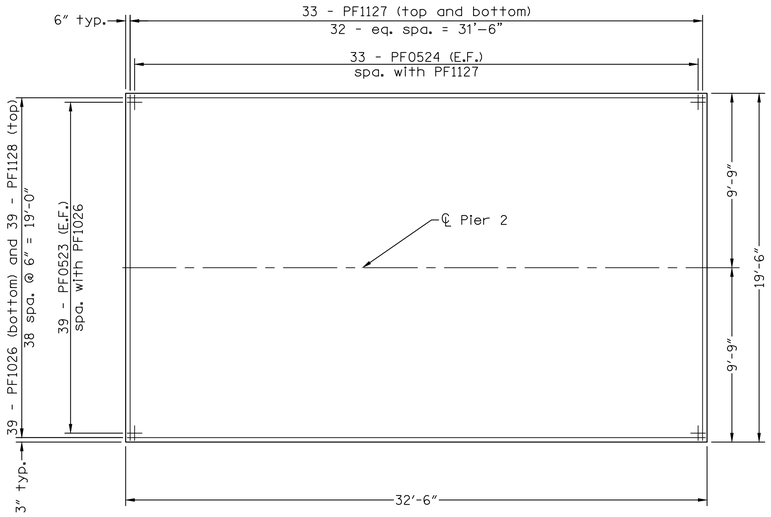
SECTION C-C



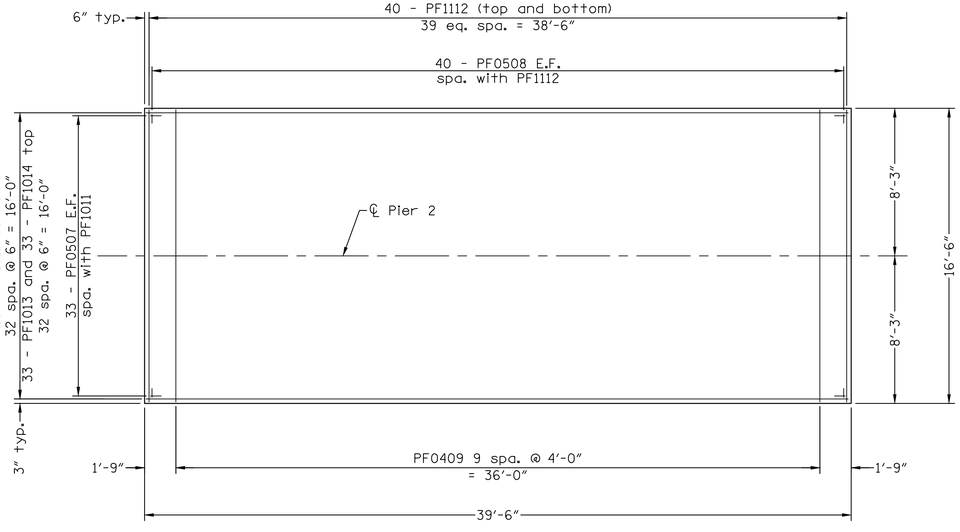
SECTION D-D



SECTION E-E



FOOTING PLAN - STAGE 2



FOOTING PLAN - STAGE 1

Seth A Denney
2020.10.27 13:34:26-04'00'

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STRUCTURAL ENGINEER

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COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

PIER 2 DETAILS

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: MK	October 2020	302-08	16 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	17

Notes:

Material: Elastomer - 50 durometer hardness
Shim - ASTM A36 or A1011 mild steel
Standard steel pipe - ASTM A53 grade B

Elastomeric bearings shall be molded as a single unit.

Bevel sole plates to grade shown in table. Minimum ¾" thickness.

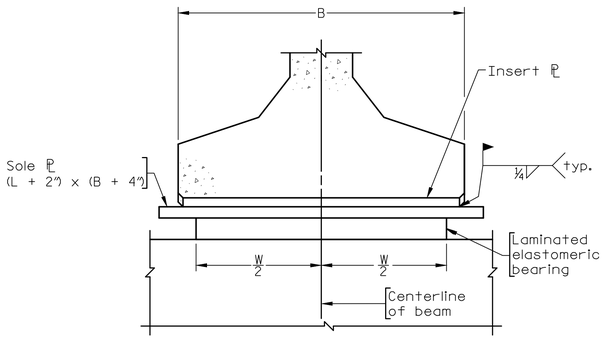
Insert plate shall provide uniform bearing over its entire contact area. For insert plate details, see sheet 25.

In welding insert plate to sole plate, ample time shall be allowed between weld passes to prevent heat damage to the concrete, sole plate and elastomeric pad. Elastomer shall not be subjected to temperatures higher than 400 F.

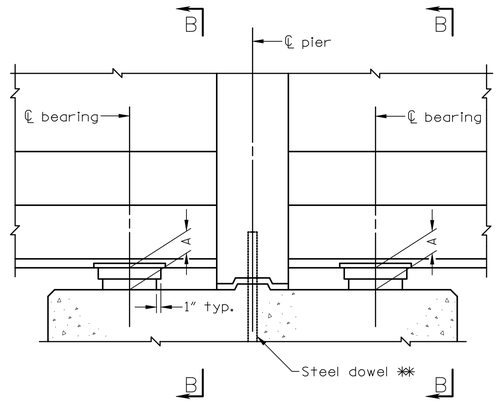
Sole plates and insert plates shall be galvanized.

✳ Centerline of beam (including center line and text) shall be marked on the top, bottom and side surfaces of the laminated elastomeric bearing prior to shipping. The markings shall be done with an indelible ink or flexible paint of contrasting color.

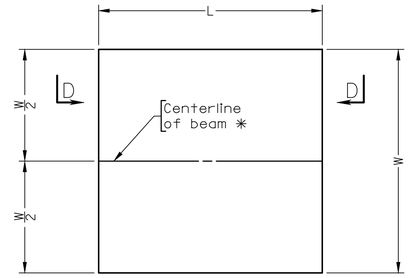
✳✳ For steel dowel and closure diaphragm details, see sheet 29.

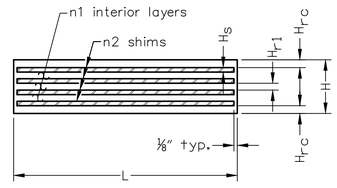


SECTION B–B



PIER ELEVATION
FIXED BEARING
CONTINUOUS SPANS





SECTION D–D
LAMINATED ELASTOMERIC BEARING

Beam Type	B	C
II	1'–6"	12"
III	1'–10"	1'–2"
IV	2'–2"	1'–4"
V	2'–4"	1'–5"
VI	2'–4"	1'–5"
pcbt–series	2'–8"	1'–7"

Span	Abut.	Pier	Beams	Beam Type	Bearing Type	A	Laminated Elastomeric Bearing						Grade %	Total Load (kips)
							W	L	H	H_{rc}	n1 @ H_{ri}	n2 @ H_s		
a		1	all	PCBT	Fix	3.75	24	15	3	0.25	3 @ 0.688	4 @ 0.1196	0	166
b		1	all	PCBT	Fix	3.75	24	15	3	0.25	3 @ 0.688	4 @ 0.1196	0	213
b		2	all	PCBT	Fix	3.75	24	15	3	0.25	3 @ 0.688	4 @ 0.1196	0	224
c		2	1–3	PCBT	Fix	3.75	24	15	3	0.25	3 @ 0.688	4 @ 0.1196	–1.78	230
c		2	4–7	PCBT	Fix	3.75	24	15	3	0.25	3 @ 0.688	4 @ 0.1196	–2.02	230

All dimensions in table are in inches.

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2020.10.27 13:36:24-04'00'

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No.	Description	Date
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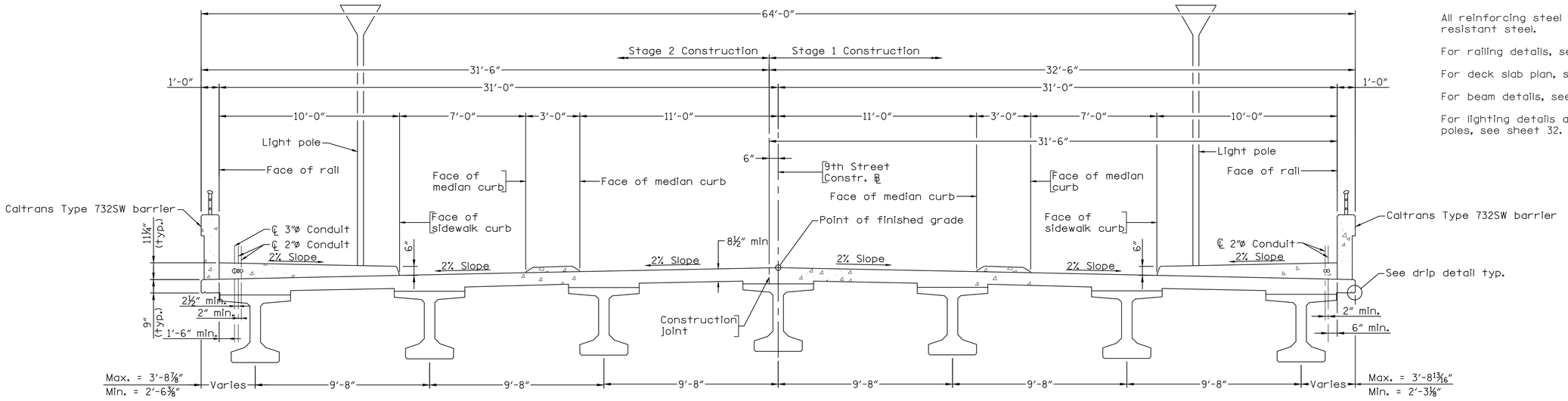
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

PRESTRESSED BEAM BEARING DETAILS

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302–08	17 of 50
Checked: SAD.....			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	18



TRANSVERSE SECTION

Notes:

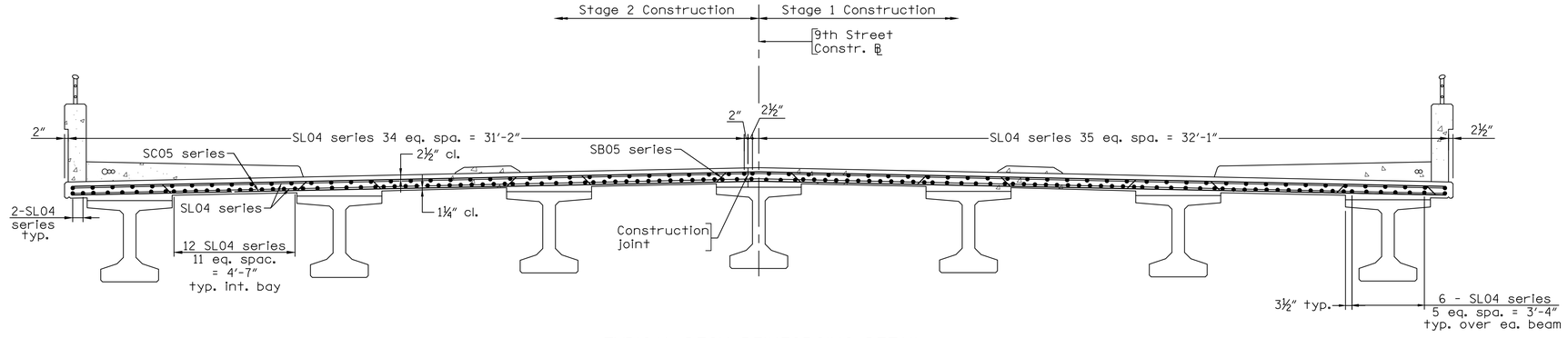
All reinforcing steel shall be corrosion resistant steel.

For railing details, see sheets 35 thru 38.

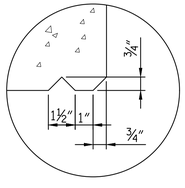
For deck slab plan, see sheets 30 and 31.

For beam details, see sheets 22 thru 24.

For lighting details and location of light poles, see sheet 32.



TYPICAL DECK REINFORCING DETAIL



DRIP DETAIL

Not to scale

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SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:37:12-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

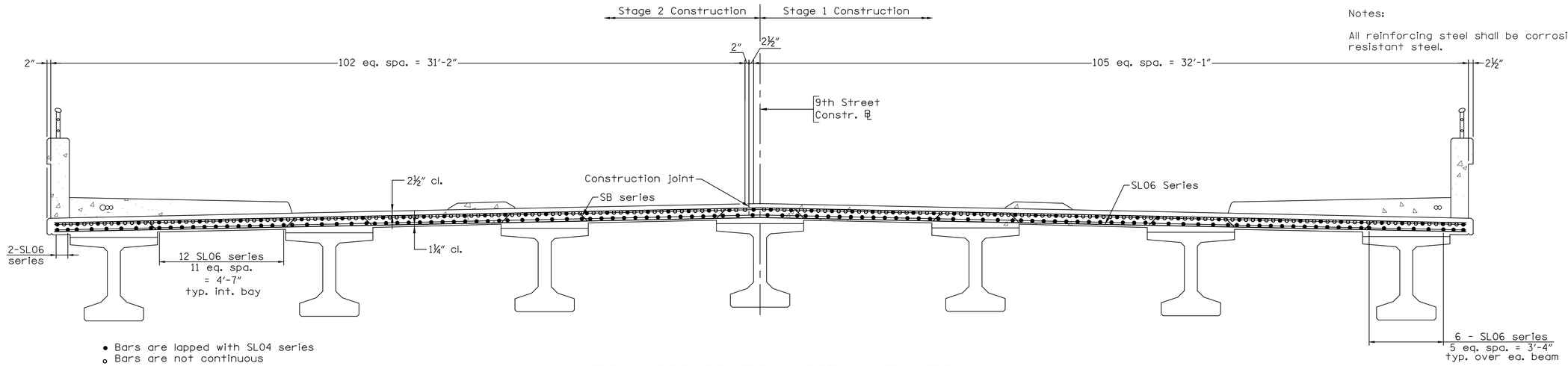
TRANSVERSE SECTION

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302-08	18 of 50
Checked: SAD.....			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	19

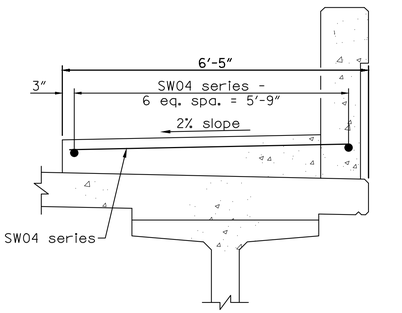
Notes:

All reinforcing steel shall be corrosion resistant steel.

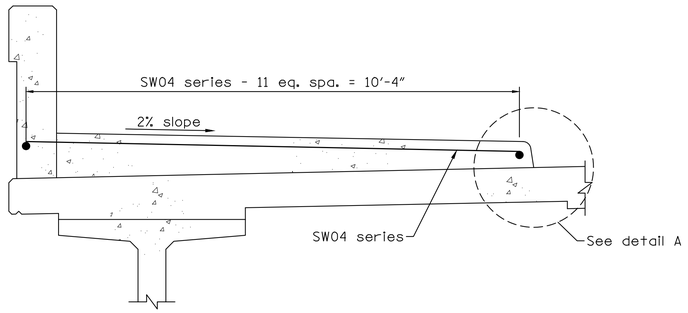


• Bars are lapped with SL04 series
o Bars are not continuous

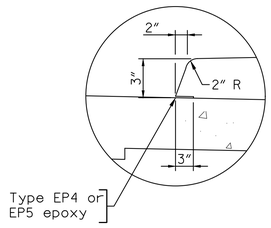
TYPICAL DECK REINFORCING DETAIL OVER PIERS



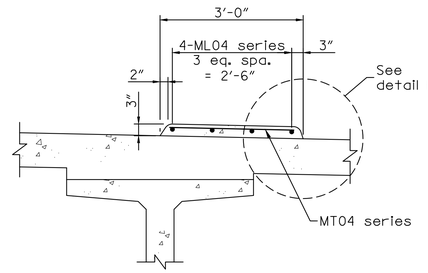
STAGE 1 SIDEWALK DETAIL – PHASE 2



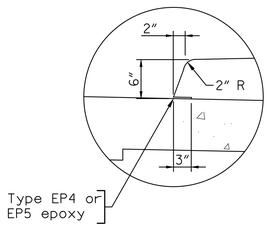
STAGE 2 – SIDEWALK DETAIL



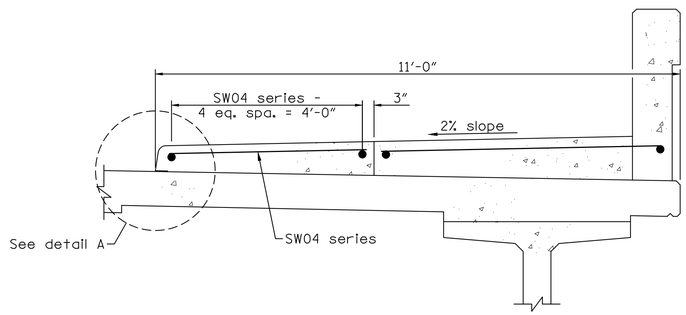
DETAIL B



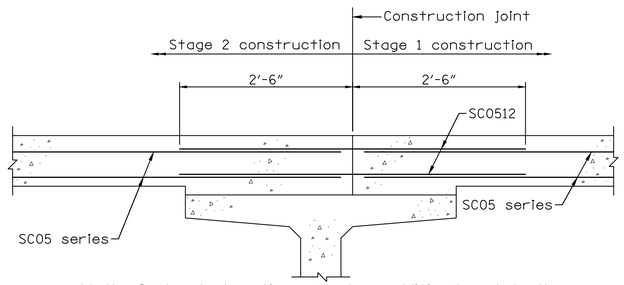
TYPICAL MEDIAN DETAIL



DETAIL A



STAGE 4 – SIDEWALK DETAIL



At the Contractor's option, and at no additional cost to the City, a mechanical splice may be used in place of the lap splice. In this case, the bars are replaced by couplers having 2'-6" leg lengths.

PART SECTION AT CONSTRUCTION JOINT

COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:38:19-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

TRANSVERSE SECTION

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: WK.....	October 2020	302-08	19 of 50
Checked: SAD.....			

Not to scale

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STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	20

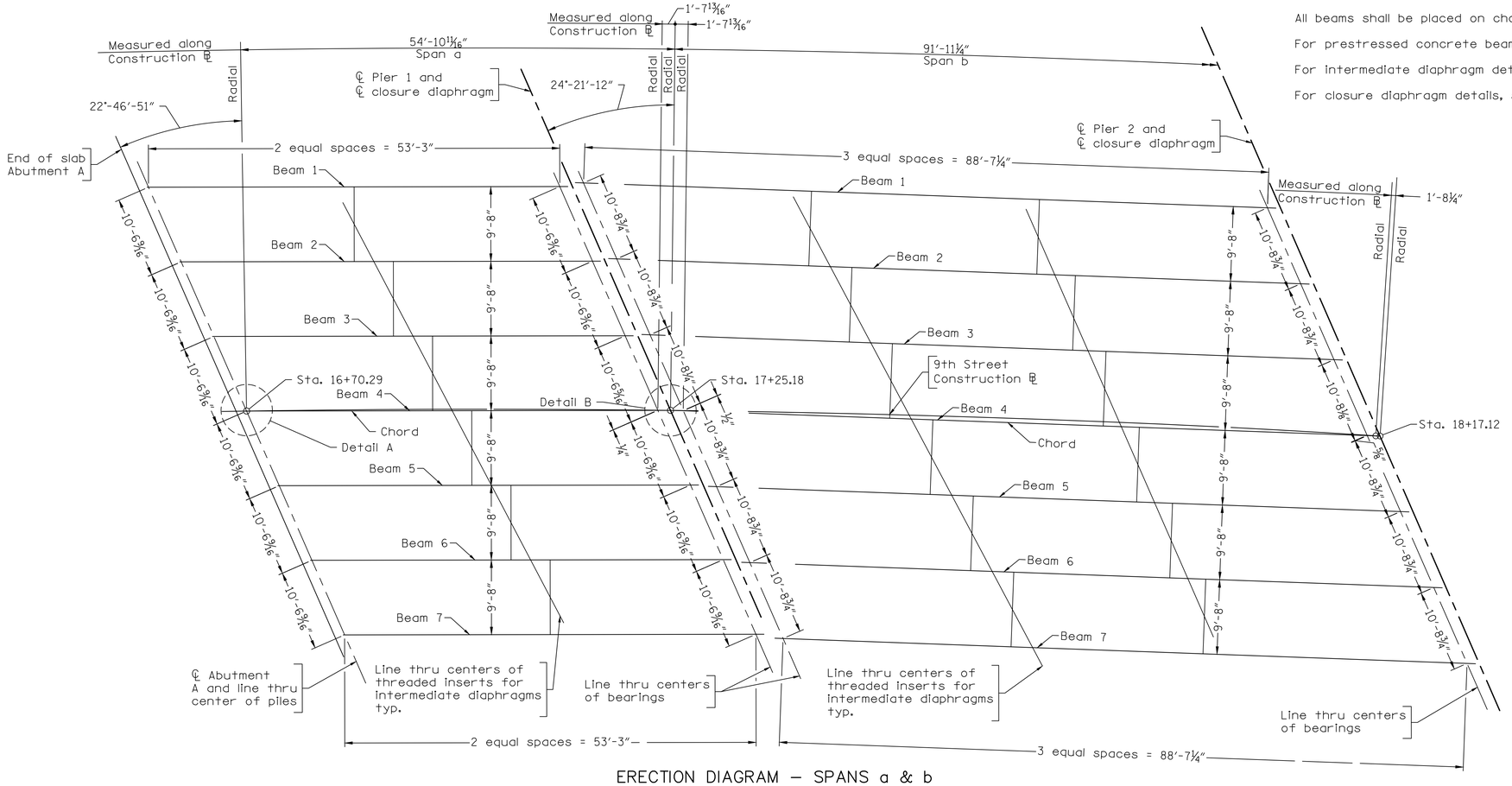
Notes:

All beams shall be placed on chords, end to end of spans.

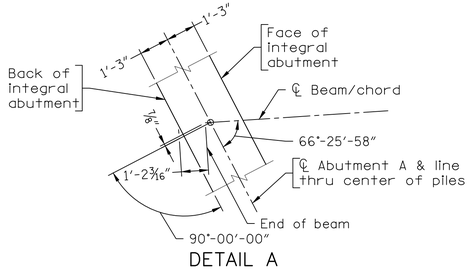
For prestressed concrete beam details, see sheets 25-27.

For intermediate diaphragm details, see sheet 28.

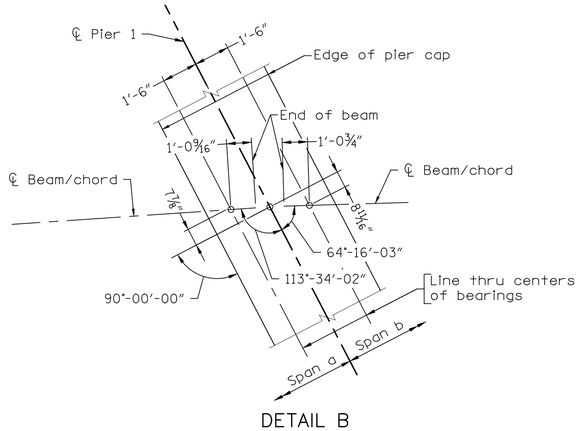
For closure diaphragm details, see sheet 29.



ERECTION DIAGRAM – SPANS a & b



DETAIL A
Not to scale



DETAIL B
Not to scale

Scale: 1½"=1'-0"

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SETH A. DENNEY
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2020.10.27 13:38:54-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

ERECTION DIAGRAM SPANS a & b

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	20 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	21

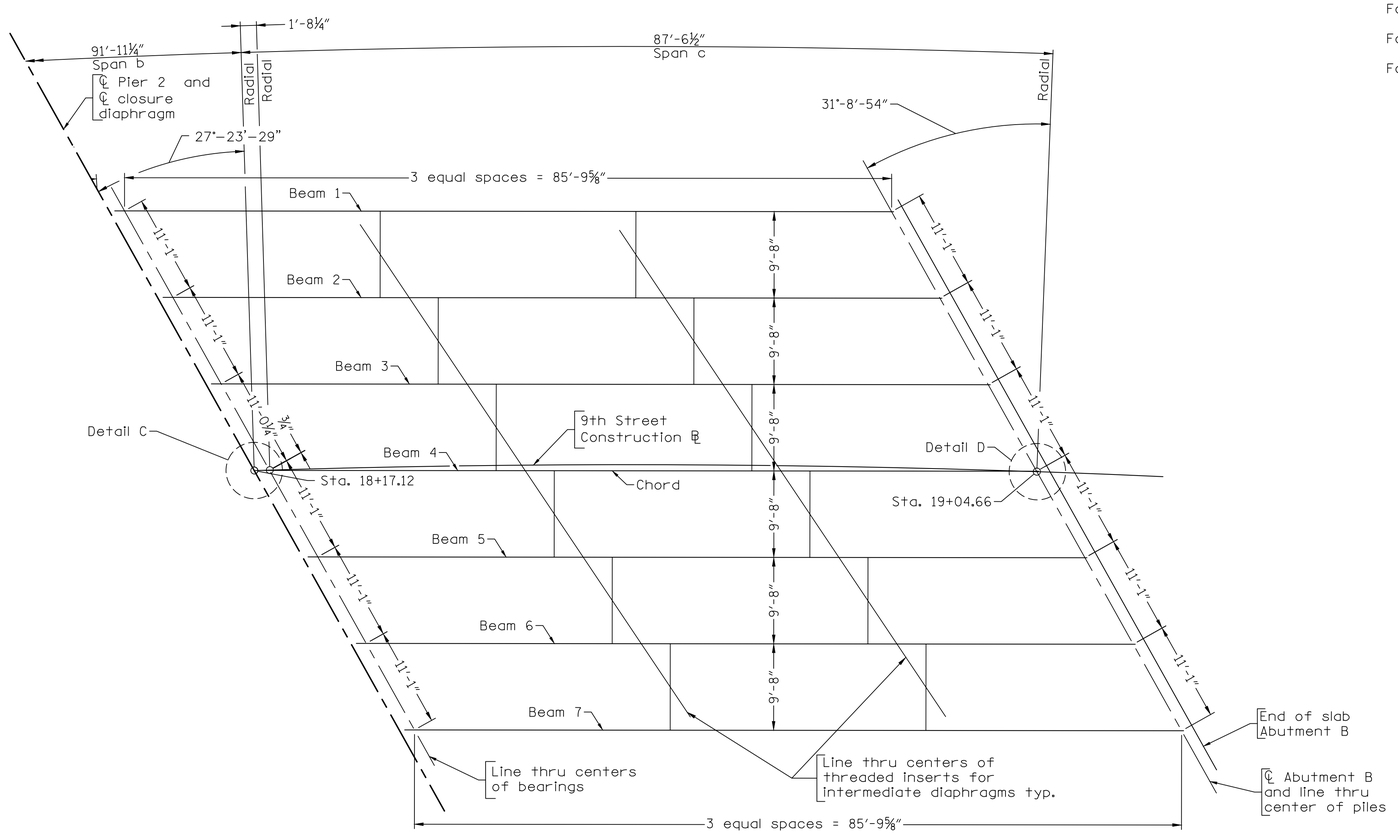
Notes:

All beams shall be placed on chords, end to end of spans.

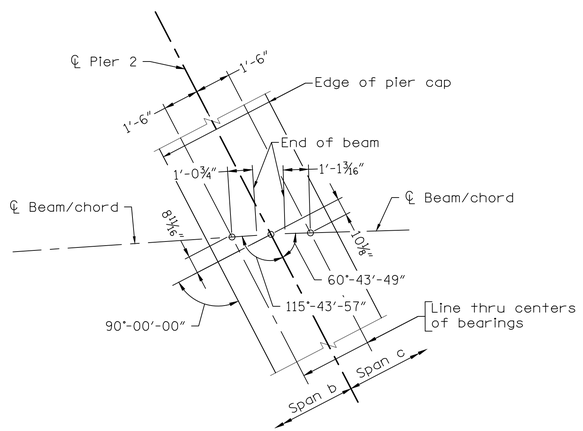
For prestressed concrete beam details, see sheets 25-27.

For intermediate diaphragm details, see sheet 28.

For closure diaphragm details, see sheet 29.



ERECTION DIAGRAM – SPAN c



DETAIL C
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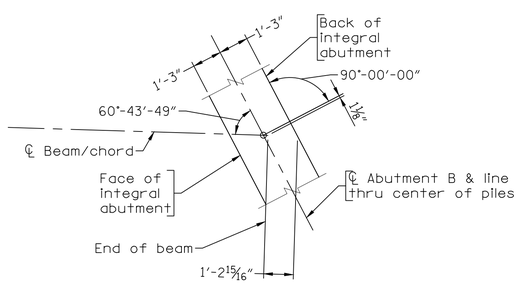

DETAIL D
Not to scale

Scale: 1½"=1'-0"

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STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

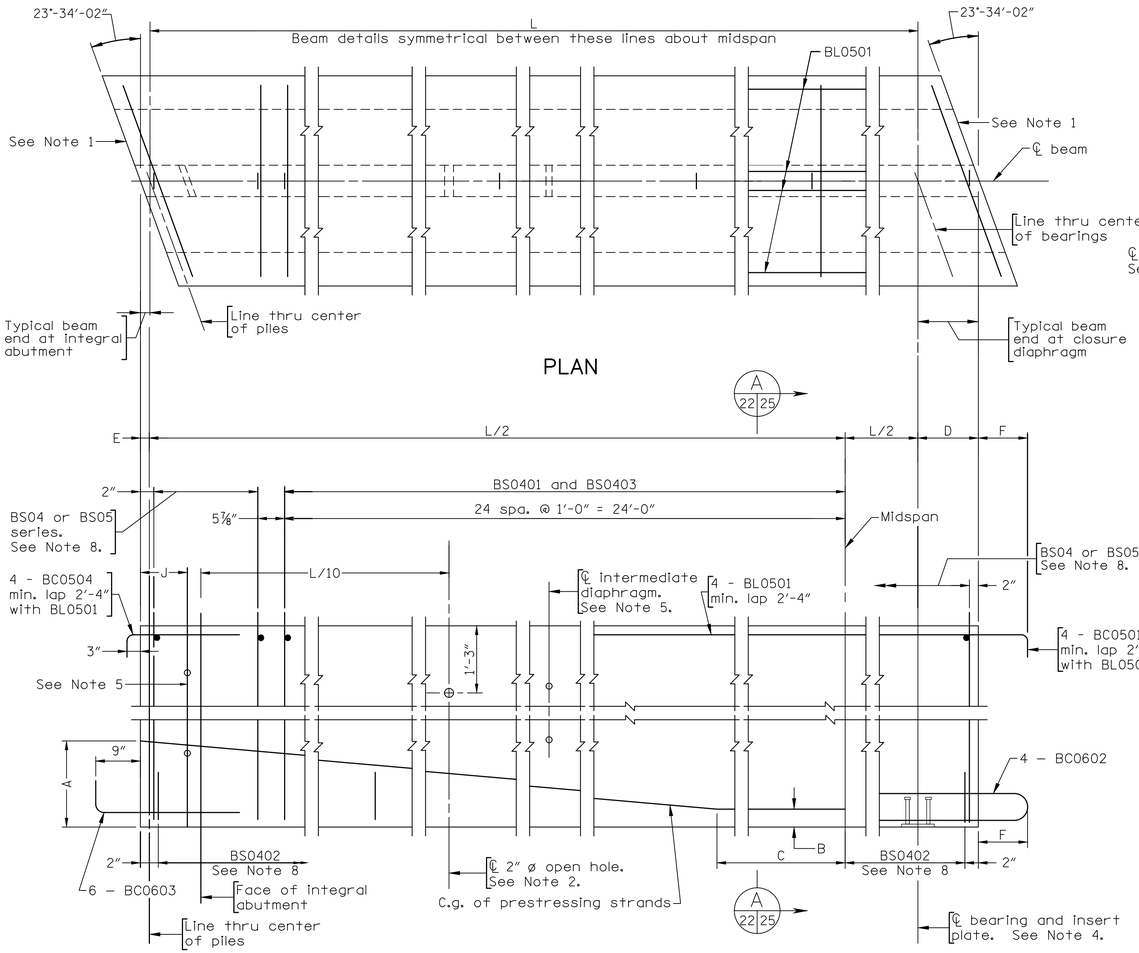
STRUCTURE AND BRIDGE DIVISION

ERECTION DIAGRAM SPAN c

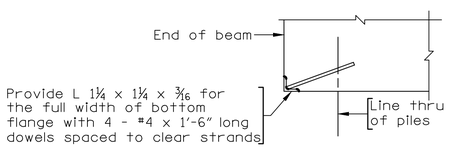
Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	21 of 50

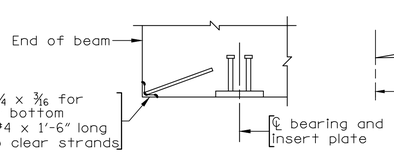
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	22



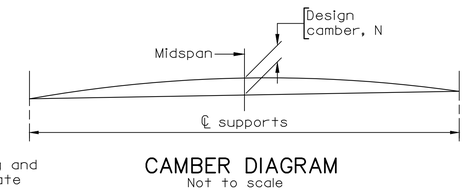
SECTION ON CENTERLINE



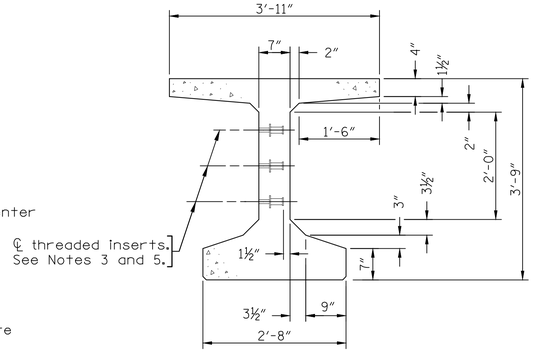
TYPICAL BOTTOM FLANGE EDGE DETAIL AT ABUTMENT



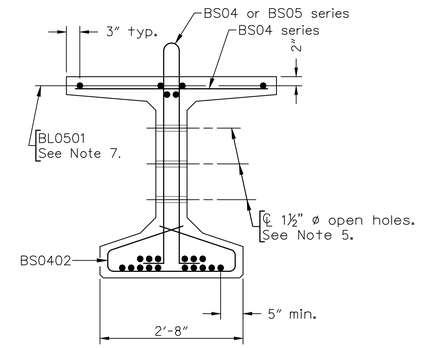
TYPICAL BOTTOM FLANGE EDGE DETAIL AT PIERS



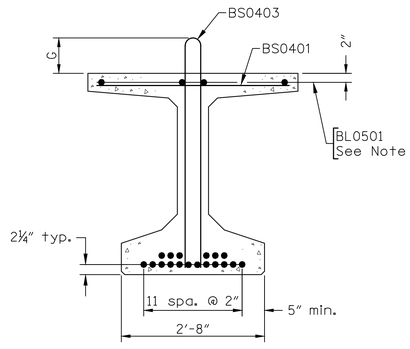
CAMBER DIAGRAM
Not to scale



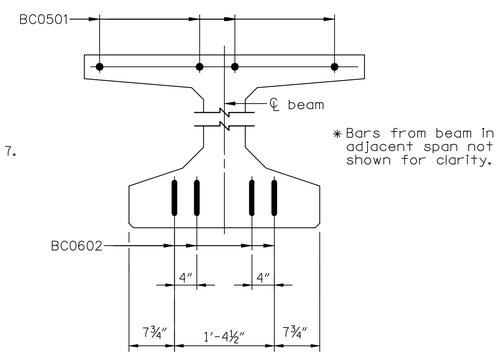
TYPICAL BEAM SECTION



END VIEW
For dimensions not shown, see Typical Beam Section.



SECTION A–A
For dimensions not shown, see Typical Beam Section.



END VIEW AT CLOSURE DIAPHRAGM

Notes:

1. At closure diaphragm and full or semi-integral abutment, end strands may project 1″ + from beam after clipping. End of beam shall be roughened in accordance with Section 405.05 of the Road and Bridge Specifications.
2. Beams shall have 2″ ø open holes formed with nonrigid tubing only on stream crossings. Holes may be slightly shifted to clear reinforcing bars and strands.
3. Threaded inserts shall be provided at all exterior beams and at interior beams where line of diaphragms is discontinued at an interior beam. Threaded inserts shall be ⅛″ - 9 NC threaded plain ferrule inserts suitable for thin precast concrete elements having a minimum ultimate mechanical tensile strength of 8,000 pounds.
4. For details of insert plate, see sheet 25.
5. 1½″ ø open holes shall be formed with non-rigid tubing. For location of end and intermediate diaphragms, see Erection Diagram on sheet 20. For location and number of holes or inserts required for end diaphragms and intermediate diaphragms and at integral abutments, see sheet 27.
6. The Contractor, after written approval from the Engineer, may use different prestressing strand arrangement provided that the total prestressing force and c.g. are the same as shown on the plans.
7. 4 - 0.6″ ø strands stressed to 8,000 lbs. may be substituted for 4 - BL05 series bars. Maximum distance from the outside strands to the flange edge may be increased from 3″ to no more than 4″.
8. For beam end reinforcing details, dead load deflection diagram reinforcing steel schedule and miscellaneous details, see sheets 25 thru 27.
9. At beam ends use 1″ deep recesses around local strand groups with 2″ minimum edge clearances and fill with pneumatically applied mortar immediately after clipping strands. An approved epoxy mortar covering the ends of strands with a minimum thickness of ⅛″ may be used as an alternate. Strands should be cool before mortar is applied. After mortar is allowed to cure, the entire end of beam shall be covered with epoxy type EP-3T.
10. For details of closure diaphragms, see sheet 29.
11. The design is based on a minimum of 90 days between release of strands and casting of closure diaphragm.
12. Design and detailing of these plans are based on the design cambers at erection (see Data and Dimension Table) and the maximum tolerance for camber differential from design camber at erection indicated in the Specifications. Design camber at erection is computed using Precast/Prestressed Concrete Institute (PCI) multipliers.

DATA AND DIMENSION TABLE

Span	Beam	Prestr. force at Release per strand	No. and size of strands per beam	Design Camber, N		A	B	C	D	E	F	G	J	L	Assuming swivel hold-down device		
				At Release in.	At Erection in.	ft.-in.	in	ft.-in.	ft.-in.	ft.-in.	in.	in.	in.	ft.-in.	Anticipated uplift force per strand, Fv - kips	Anticipated total uplift force all strands, ΣFv - kips	Anticipated number of hold-down devices per location
a	all	43,940	18–0.6″ ø	½″	⅝″	7¼″	2⅞″	5′-5⅜″	1′-0 9/16″	2 3/16″	11″	7″	1′-0″	53′-3″	7.9	15.9	1

Not to scale

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COMMONWEALTH OF VIRGINIA
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PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 13:40:24-04'00'

KIMLEY–HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

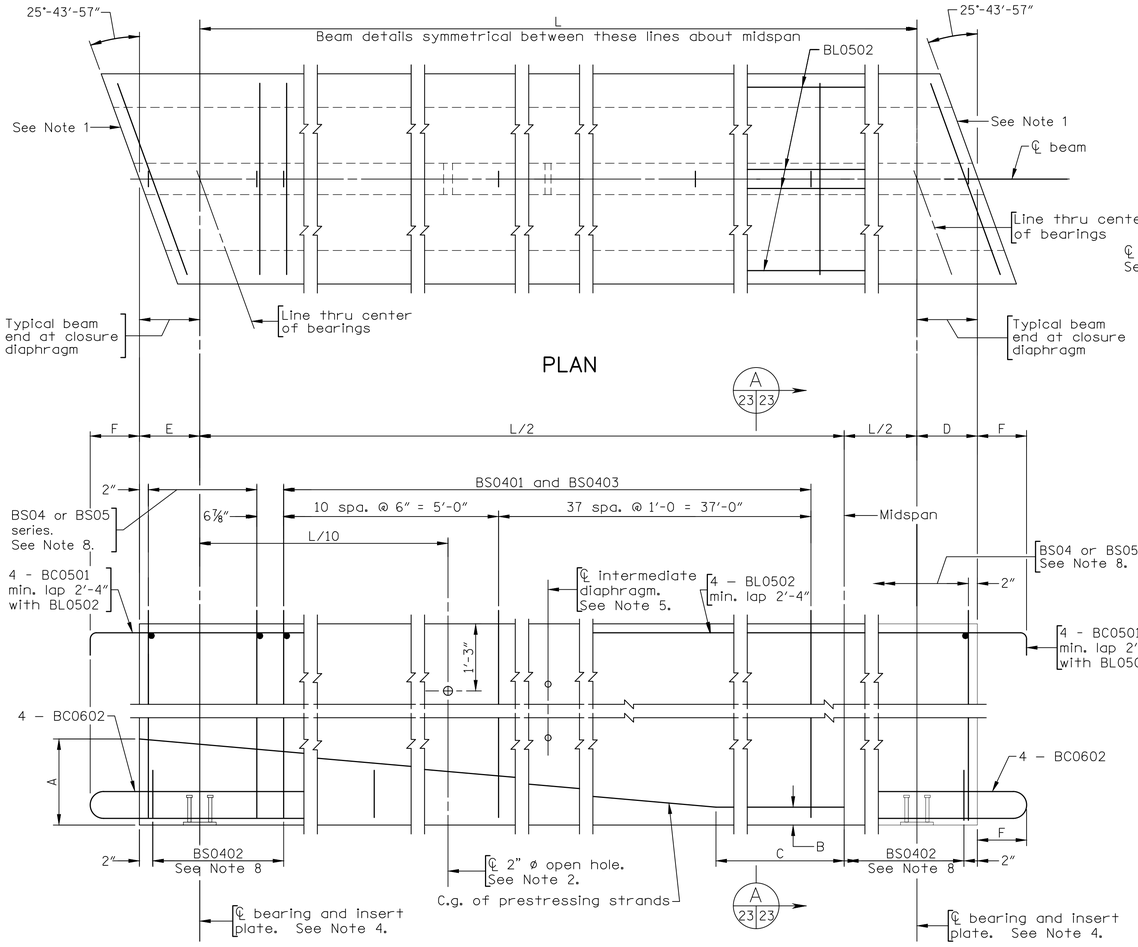
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

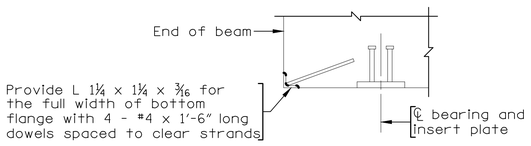
PRESTRESSED CONCRETE BULB-T PCBT-45 (SPAN a)

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

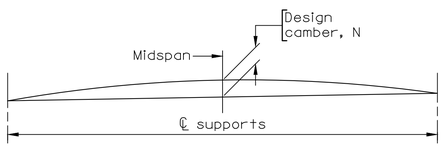
Date	Plan No.	Sheet No.
October 2020	302–08	22 of 50



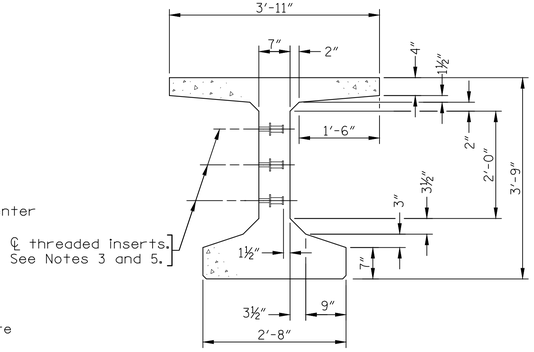
SECTION ON CENTERLINE



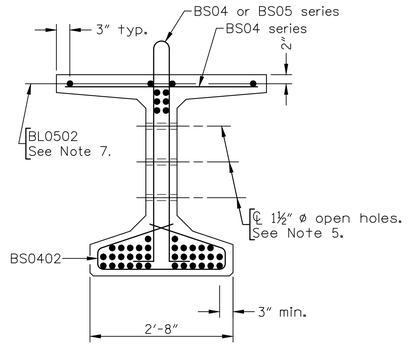
TYPICAL BOTTOM FLANGE EDGE DETAIL
Not to scale



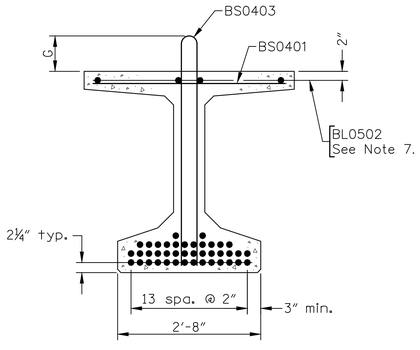
CAMBER DIAGRAM
Not to scale



TYPICAL BEAM SECTION



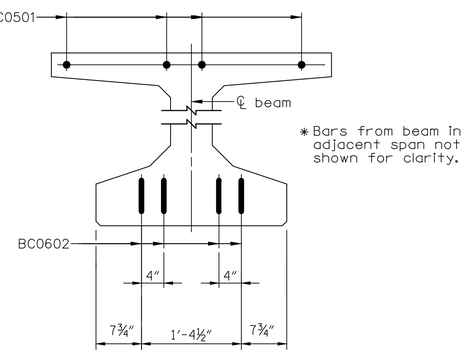
END VIEW
For dimensions not shown, see Typical Beam Section.



SECTION A–A
For dimensions not shown, see Typical Beam Section.

Notes:

1. At closure diaphragm and full or semi-integral abutment, end strands may project 1" + from beam after clipping. End of beam shall be roughened in accordance with Section 405.05 of the Road and Bridge Specifications.
2. Beams shall have 2" ø open holes formed with nonrigid tubing only on stream crossings. Holes may be slightly shifted to clear reinforcing bars and strands.
3. Threaded inserts shall be provided at all exterior beams and at interior beams where line of diaphragms is discontinued at an interior beam. Threaded inserts shall be ⅞" - 9 NC threaded plain ferrule inserts suitable for thin precast concrete elements having a minimum ultimate mechanical tensile strength of 8,000 pounds.
4. For details of insert plate, see sheet 25.
5. 1½" ø open holes shall be formed with non-rigid tubing. For location of end and intermediate diaphragms, see Erection Diagram on sheet 20. For location and number of holes or inserts required for end diaphragms and intermediate diaphragms and at integral abutments, see sheet 27.
6. The Contractor, after written approval from the Engineer, may use different prestressing strand arrangement provided that the total prestressing force and c.g. are the same as shown on the plans.
7. 4 - 0.6" ø strands stressed to 8,000 lbs. may be substituted for 4 - BL05 series bars. Maximum distance from the outside strands to the flange edge may be increased from 3" to no more than 4".
8. For beam end reinforcing details, dead load deflection diagram reinforcing steel schedule and miscellaneous details, see sheets 25 thru 27.
9. At beam ends use 1" deep recesses around local strand groups with 2" minimum edge clearances and fill with pneumatically applied mortar immediately after clipping strands. An approved epoxy mortar covering the ends of strands with a minimum thickness of ⅛" may be used as an alternate. Strands should be cool before mortar is applied. After mortar is allowed to cure, the entire end of beam shall be covered with epoxy type EP-3T.
10. For details of closure diaphragms, see sheet 29.
11. The design is based on a minimum of 90 days between release of strands and casting of closure diaphragm.
12. Design and detailing of these plans are based on the design cambers at erection (see Data and Dimension Table) and the maximum tolerance for camber differential from design camber at erection indicated in the Specifications. Design camber at erection is computed using Precast/Prestressed Concrete Institute (PCI) multipliers.



* Bars from beam in adjacent span not shown for clarity.

END VIEW AT CLOSURE DIAPHRAGM

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	23

DATA AND DIMENSION TABLE

Span	Beam	Prestr. force at Release per strand	No. and size of strands per beam	Design Camber, N		A	B	C	D	E	F	G	L	Assuming swivel hold-down device		
				At Release in.	At Erection in.	ft.-in.	in	ft.-in.	ft.-in.	ft.-in.	in.	in.	ft.-in.	Anticipated uplift force per strand, Fv - kips	Anticipated total uplift force all strands, ΣFv - kips	Anticipated number of hold-down devices per location
b	1,4,7	43,940	42-0.6" ø	2 7/16"	2¾"	9⅝"	4⅜"	9'-0⅞"	1'-0¾"	1'-0¾"	11"	7"	88'-7¼"	4.8	28.8	1
b	2,3,5,6	43,940	42-0.6" ø	2 7/16"	2½"	9⅝"	4⅜"	9'-0⅞"	1'-0¾"	1'-0¾"	11"	7"	88'-7¼"	4.8	28.8	1

Not to scale

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2020.10.27 13:41:03-04'00'
KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

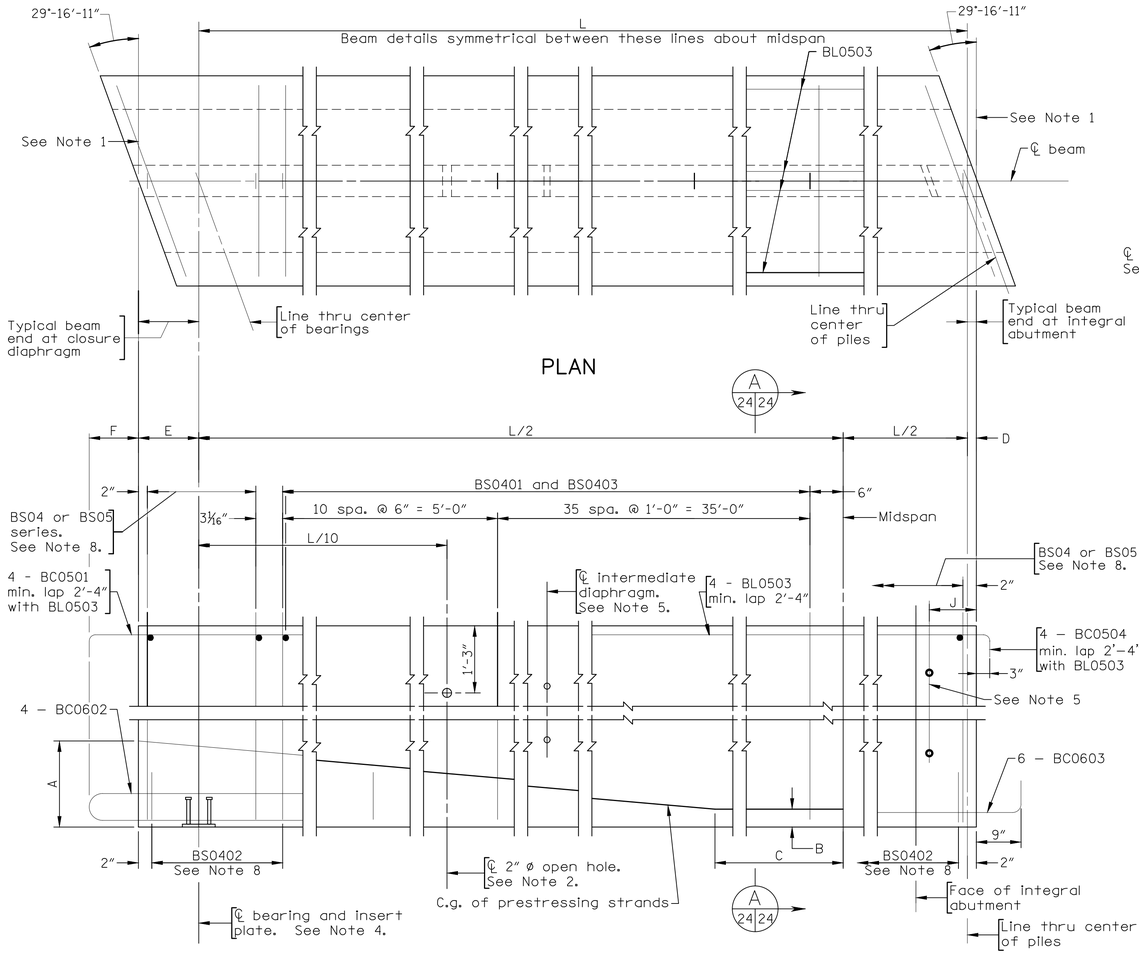
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

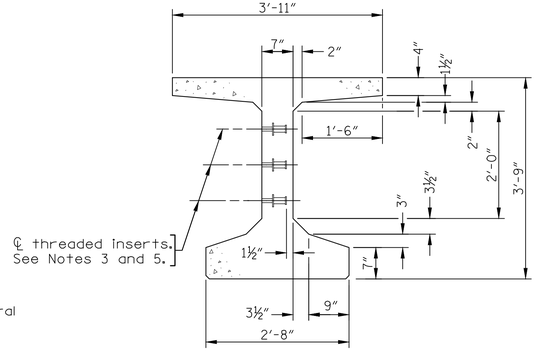
PRESTRESSED CONCRETE BULB-T PCBT-45 (SPAN b)

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

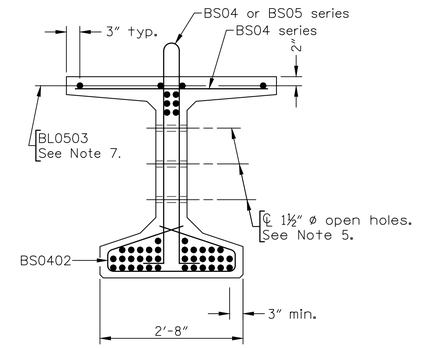
Date	Plan No.	Sheet No.
October 2020	302-08	23 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	24

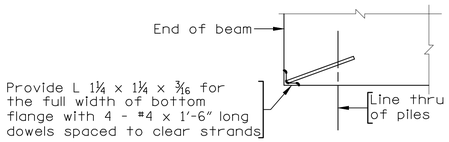




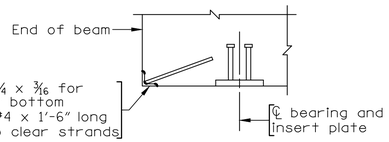
TYPICAL BEAM SECTION



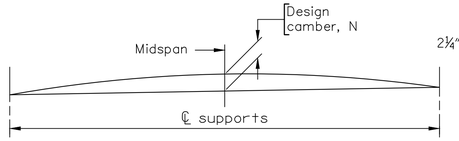
END VIEW
For dimensions not shown, see Typical Beam Section.



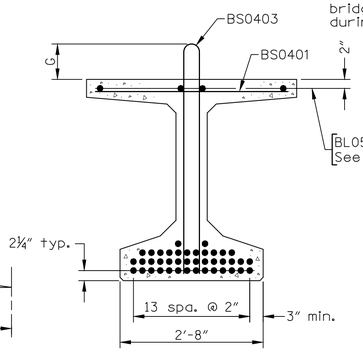
TYPICAL BOTTOM FLANGE EDGE DETAIL AT ABUTMENT
Not to scale



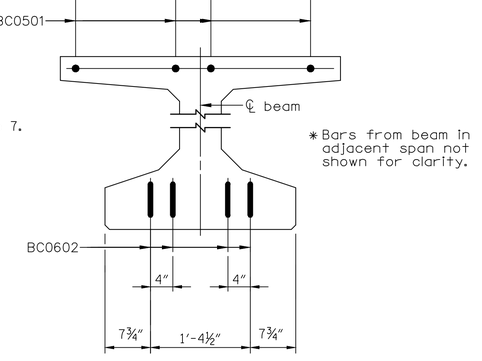
TYPICAL BOTTOM FLANGE EDGE DETAIL AT PIERS



CAMBER DIAGRAM
Not to scale



SECTION A–A
For dimensions not shown, see Typical Beam Section.



END VIEW AT CLOSURE DIAPHRAGM

Notes:

1. At closure diaphragm and full or semi-integral abutment, end strands may project 1" + from beam after clipping. End of beam shall be roughened in accordance with Section 405.05 of the Road and Bridge Specifications.
2. Beams shall have 2" ø open holes formed with nonrigid tubing only on stream crossings. Holes may be slightly shifted to clear reinforcing bars and strands.
3. Threaded inserts shall be provided at all exterior beams and at interior beams where line of diaphragms is discontinued at an interior beam. Threaded inserts shall be ⅞" - 9 NC threaded plain ferrule inserts suitable for thin precast concrete elements having a minimum ultimate mechanical tensile strength of 8,000 pounds.
4. For details of insert plate, see sheet 25.
5. 1½" ø open holes shall be formed with non-rigid tubing. For location of end and intermediate diaphragms, see Erection Diagram on sheet 21. For location and number of holes or inserts required for end diaphragms and intermediate diaphragms and at integral abutments, see sheet 27.
6. The Contractor, after written approval from the Engineer, may use different prestressing strand arrangement provided that the total prestressing force and c.g. are the same as shown on the plans.
7. 4 - 0.6" ø strands stressed to 8,000 lbs. may be substituted for 4 - BL05 series bars. Maximum distance from the outside strands to the flange edge may be increased from 3" to no more than 4".
8. For beam end reinforcing details, dead load deflection diagram reinforcing steel schedule and miscellaneous details, see sheets 25 thru 27.
9. At beam ends use 1" deep recesses around local strand groups with 2" minimum edge clearances and fill with pneumatically applied mortar immediately after clipping strands. An approved epoxy mortar covering the ends of strands with a minimum thickness of ⅛" may be used as an alternate. Strands should be cool before mortar is applied. After mortar is allowed to cure, the entire end of beam shall be covered with epoxy type EP-3T.
10. For details of closure diaphragms, see sheet 29.
11. The design is based on a minimum of 90 days between release of strands and casting of closure diaphragm.
12. Design and detailing of these plans are based on the design cambers at erection (see Data and Dimension Table) and the maximum tolerance for camber differential from design camber at erection indicated in the Specifications. Design camber at erection is computed using Precast/Prestressed Concrete Institute (PCI) multipliers.
13. Threaded inserts may be provided in the exterior beam of span c for temporary bracing connections with the support beam of bridge B602. The location of the threaded inserts shall be verified during shop drawing review. Field drilling will not be allowed.

DATA AND DIMENSION TABLE

Span	Beam	Prestr. force at Release per strand	No. and size of strands per beam	Design Camber, N		A	B	C	D	E	F	G	J	L	Assuming swivel hold-down device		
				At Release in.	At Erection in.	ft.-in.	in	ft.-in.	ft.-in.	ft.-in.	in.	in.	in.	ft.-in.	Anticipated uplift force per strand, Fv - kips	Anticipated total uplift force all strands, ΣFv - kips	Anticipated number of hold-down devices per location
c	1,4,7	43,940	42-0.6" ø	2⅜"	2¾"	9⅝"	4⅜"	8'-8⅝"	2⅝"	1'-1³⁄₁₆"	11"	7"	1'-0"	85'-9⅝"	4.8	28.8	1
c	2,3,5,6	43,940	42-0.6" ø	2⅜"	2½"	9⅝"	4⅜"	8'-8⅝"	2⅝"	1'-1³⁄₁₆"	11"	7"	1'-0"	85'-9⅝"	4.8	28.8	1

Not to scale

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

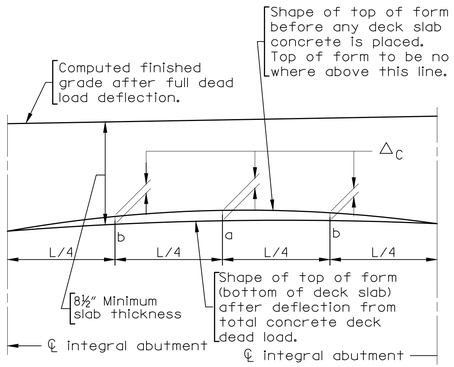
STRUCTURE AND BRIDGE DIVISION

PRESTRESSED CONCRETE BULB-T PCBT-45 (SPAN c)

Designed: PDC.....
Drawn: WK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302–08	24 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	25



Adjustment of deck slab forms to correct for dead load deflections shall be made by varying thickness of concrete bolster between slab and beam without alteration of slab thickness. Longitudinal screed should be set above final finished grade by amounts = △ C2

△ C1 = Deflection of beam from dead load of concrete deck slab, bolsters and diaphragms and does not include the deflection of the beam from its own weight.

△ C2 = Deflection of composite section from dead load (e.g. parapet and curb added after deck is cast).

△ C = △ C1 + △ C2

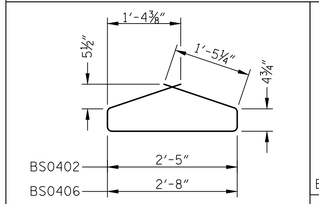
ANTICIPATED DEAD LOAD DEFLECTION				
Span a Beam	At a		At b	
	△ C1	△ C2	△ C1	△ C2
1,7	3/8"	1/8"	1/4"	1/8"
2,3,5,6	1/2"	1/8"	3/8"	1/8"
4	1/2"	0"	3/8"	0"

ANTICIPATED DEAD LOAD DEFLECTION				
Span b Beam	At a		At b	
	△ C1	△ C2	△ C1	△ C2
1,7	3"	1"	2 1/8"	3/4"
2,3,5,6	3 3/4"	1"	2 5/8"	3/4"
4	3 3/4"	1/8"	2 5/8"	1/8"

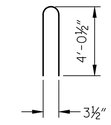
ANTICIPATED DEAD LOAD DEFLECTION				
Span c Beam	At a		At b	
	△ C1	△ C2	△ C1	△ C2
1,7	2 3/4"	7/8"	1 7/8"	5/8"
2,3,5,6	3 3/8"	7/8"	2 3/8"	5/8"
4	3 3/8"	1/8"	2 3/8"	1/8"

DEAD LOAD DEFLECTION DIAGRAM

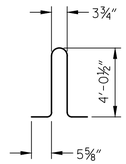
REINFORCING STEEL SCHEDULE



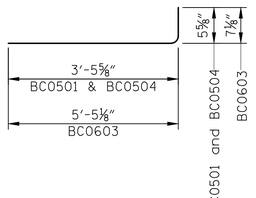
BS0402, BS0406



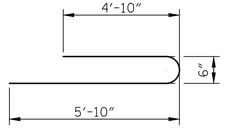
BS0403



BS0504



BC0501, BC0603 and BC0504



BC0602

Mark	Size	No.	Length	Pin ø	Location
BC0501*	#5	112	3'-10"	2½"	Top flange - closure diaphragm
BC0602*	#6	112	10'-10¼"	4½"	Bottom flange - closure diaphragm
BC0603*	#6	84	5'-11"	3¾"	Bott. flange - integral abutment
BC0504*	#5	56	3'-10"	2½"	Top flange - integral abutment
BS0401	#4	2023	3'-7"	——	Top flange transverse
BS0402	#4	756	5'-9¾"	2"	Bottom flange - confinement
BS0403*	#4	1652	8'-3"	2½"	Stirrup outside anchorage zone
BS0504	#5	462	9'-2"	2½"	Anchorage zone stirrup
BS0405	#4	42	3'-10"	——	Top flange - left or right skew
BS0406	#4	238	6'-0"	2"	Bottom flange confinement on skew
BL0501	#5	28	54'-1"	——	Top flange longitudinal (Span a beams)
BL0502	#5	56	46'-6'	——	Top flange longitudinal (Span b beams)
BL0503	#5	56	44'-8'	——	Top flange longitudinal (Span c beams)

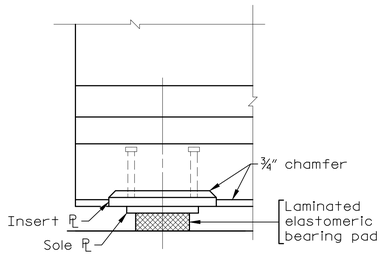
Mark	Size	No. each length	From	To	Vary by	Pin ø

Dimensions in bending diagram are out-to-out of bars.

Reinforcing bars shown in the above schedule are for all beams shown on sheets 22-24.

* Denotes reinforcing bars that shall be corrosion resistant reinforcing steel, Class I.

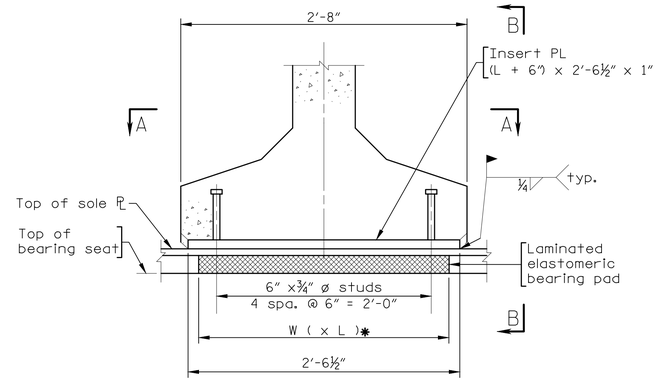
At the Contractor's option and at no additional cost, bar BS0402 may be fabricated as a two piece bar with a minimum 1'-4" lap.



VIEW B-B

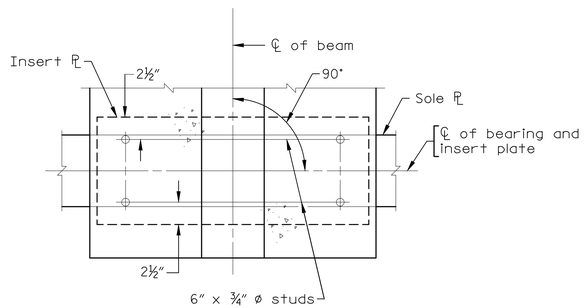
Notes:

Insert plate shall provide uniform bearing over its entire contact area. Insert plate is not required at full integral abutment. For beam details and notes, see sheets 25 thru 27.



INSERT PLATE DETAILS

* For laminated elastomeric bearing pad dimensions, see sheet 17.



SECTION A-A

COMMONWEALTH OF VIRGINIA
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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

PRESTRESSED CONCRETE BULB-T MISCELLANEOUS BEAM DETAILS

Designed: PDC
Drawn: JJK
Checked: SAD

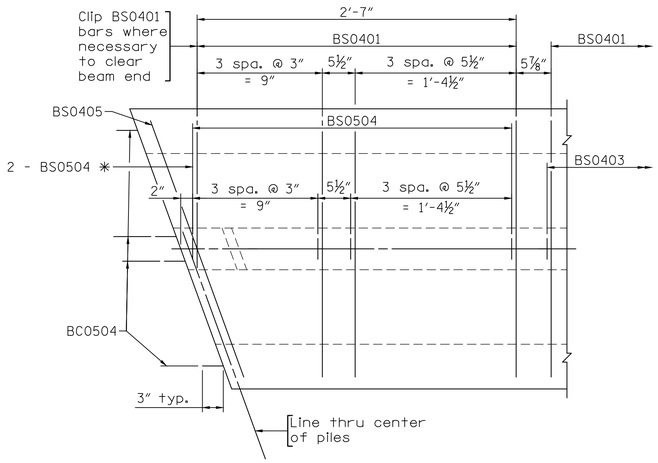
Date	Plan No.	Sheet No.
October 2020	302-08	25 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	26

Notes:

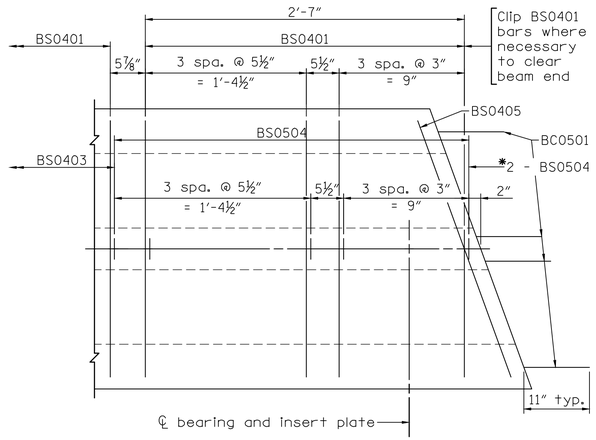
For beam details and notes, see sheets 22 thru 24.

BS series bars may be shifted as directed by the Engineer to clear inserts, open holes and studs in insert plates.



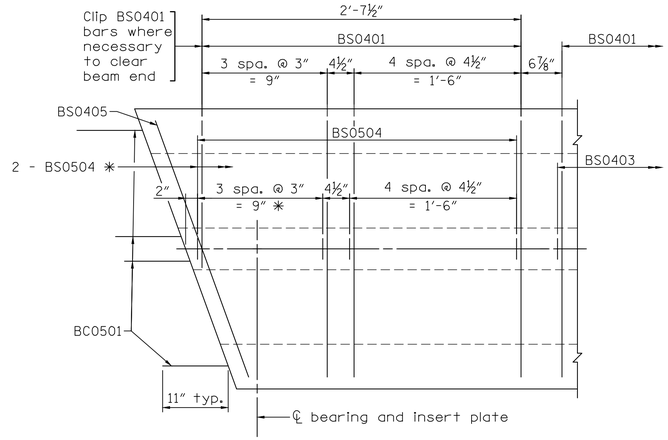
✱ Indicates bundled bars at each location

AT FULL INTEGRAL ABUTMENT FOR SPAN a



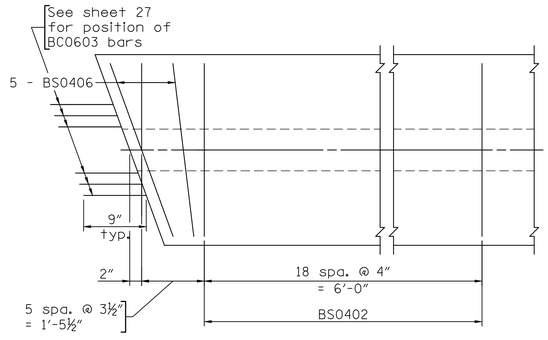
✱ Indicates bundled bars at each location

AT CLOSURE DIAPHRAGM FOR SPAN a



✱ Indicates bundled bars at each location

AT CLOSURE DIAPHRAGM FOR SPAN b
Left end shown, right end similar



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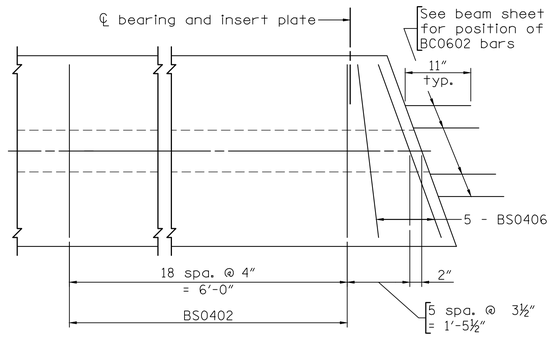
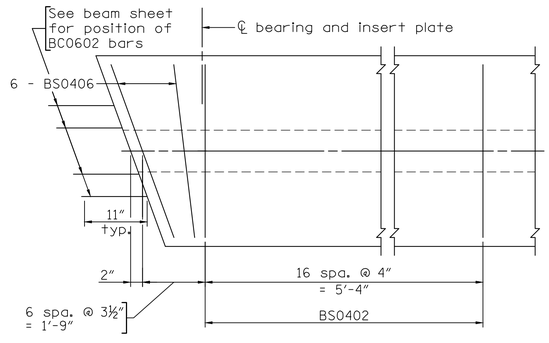


AT CLOSURE DIAPHRAGM FOR SPAN a



AT CLOSURE DIAPHRAGM FOR SPAN b
Left end shown, right end similar

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

PRESTRESSED CONCRETE BULB-T MISCELLANEOUS BEAM DETAILS

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

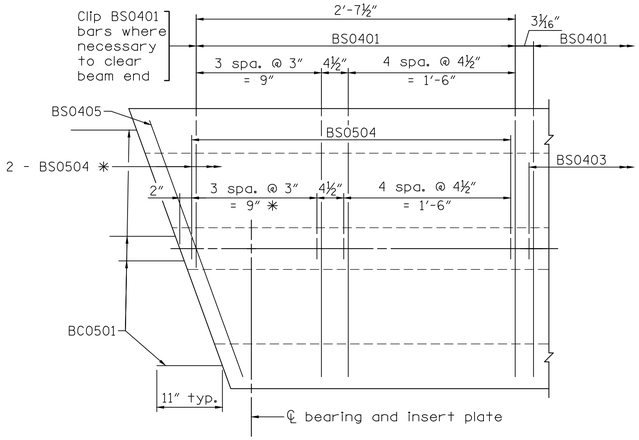
Date	Plan No.	Sheet No.
October 2020	302-08	26 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	27

Notes:

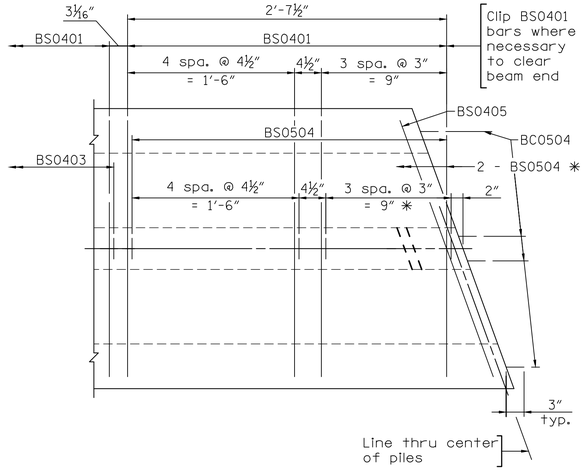
For beam details and notes, see sheets 22 thru 24.

BS series bars may be shifted as directed by the Engineer to clear inserts, open holes and studs in insert plates.



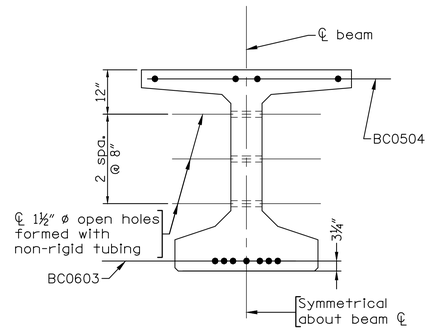
* Indicates bundled bars at each location

AT CLOSURE DIAPHRAGM FOR SPAN c

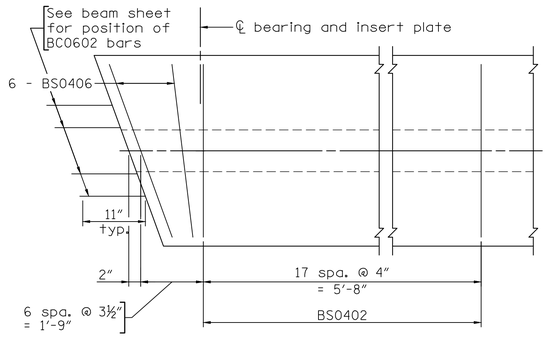


* Indicates bundled bars at each location

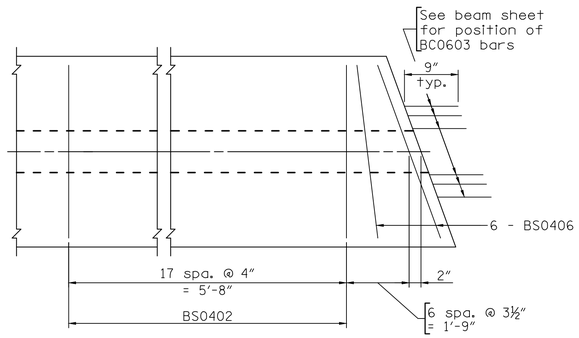
AT FULL INTEGRAL ABUTMENT FOR SPAN c



END VIEW AT INTEGRAL BACKWALL SHOWING LOCATION OF HOLES IN WEB



AT CLOSURE DIAPHRAGM FOR SPAN c



AT FULL INTEGRAL ABUTMENT SPAN c

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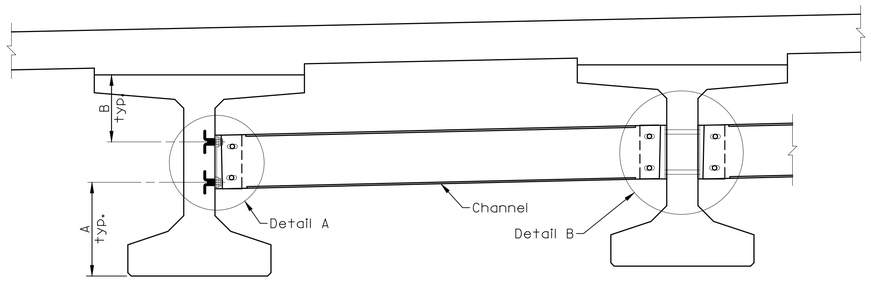
STRUCTURE AND BRIDGE DIVISION

PRESTRESSED CONCRETE BULB-T MISCELLANEOUS BEAM DETAILS

Designed: PDC.....
Drawn: JMK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	27 of 50

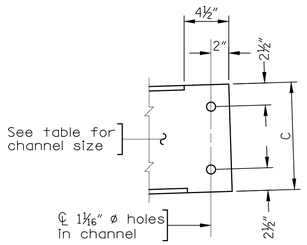
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	28



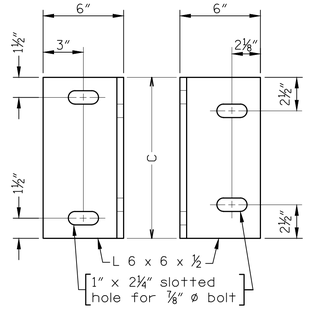
PART TRANSVERSE SECTION

Use Detail A at exterior beams and interior beams where line of diaphragms is discontinued at interior beam. Use Detail B at interior beams where line of diaphragms is continuous across the structure.

DIMENSION TABLE				
BEAM TYPE	A	B	C	CHANNEL SIZE
PCBT-29	1′-3″	9″	8″	MC8x22.8
PCBT-37	1′-5″	11″	12″	C12x20.7
PCBT-45	1′-7½″	1′-1½″	1′-3″	C15x33.9
PCBT-53	1′-1½″	1′-5½″	1′-3″	C15x33.9



CHANNEL DETAIL



BEAM FACE DIAPHRAGM FACE

CONNECTOR PLATE DETAIL

Notes:

All structural steel shall be ASTM A36.

All bolts shall be ⅞″ ø H.S. bolts, ASTM A325.

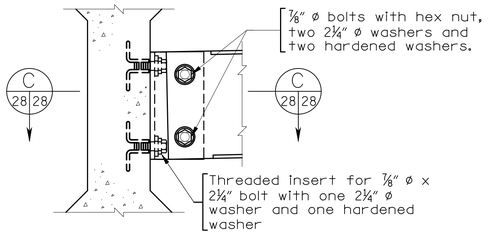
All H.S. bolts used for steel-to-steel connections shall be tightened in accordance with Section 407 of the Specifications.

All H.S. bolts installed in threaded inserts shall be tightened to a snug tight condition. Rotational capacity test is not required.

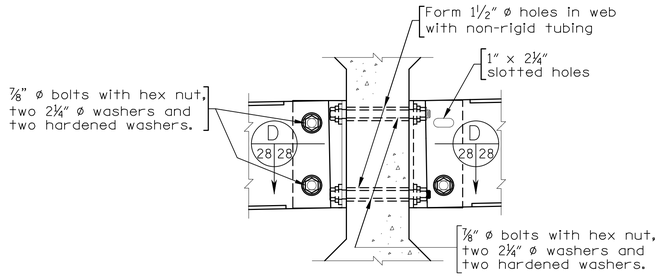
All diaphragm materials including bolts, nuts and washers shall be galvanized.

All threaded inserts shall be ⅞″ - 9 NC threaded plain ferrule inserts suitable for thin precast concrete elements having a minimum ultimate mechanical tensile strength of 8,000 pounds.

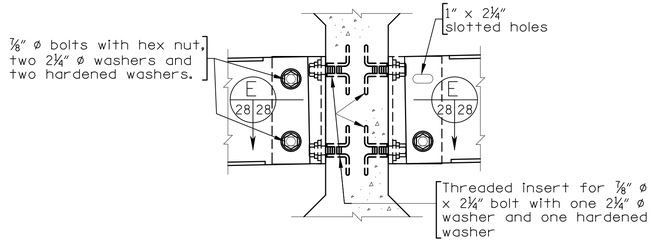
Payment for furnishing and installing steel intermediate diaphragms shall be included in the contract unit price for prestressed concrete members.



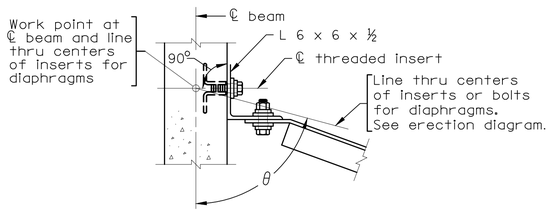
DETAIL A



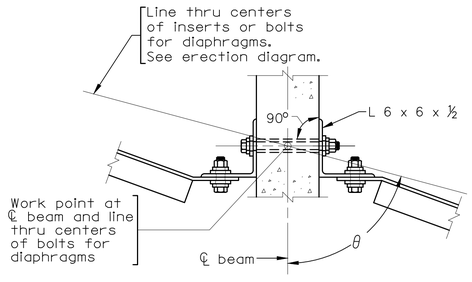
DETAIL B



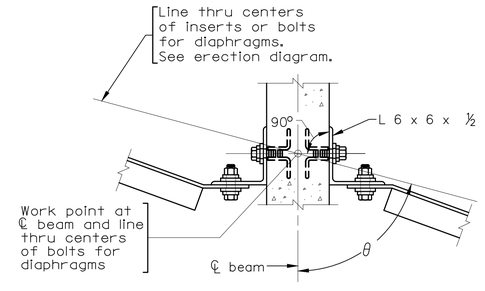
ALTERNATE DETAIL B



SECTION C–C



SECTION D–D



SECTION E–E

Skew angle	θ
≤20°	90° − skew angle
>20°	90°

Not to scale

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STRUCTURE AND BRIDGE DIVISION

PRESTRESSED CONCRETE BEAM INTERMEDIATE DIAPHRAGM DETAILS

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302–08	28 of 50
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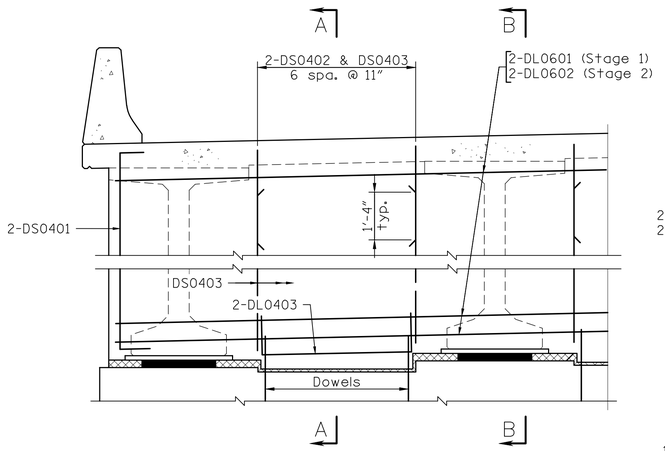
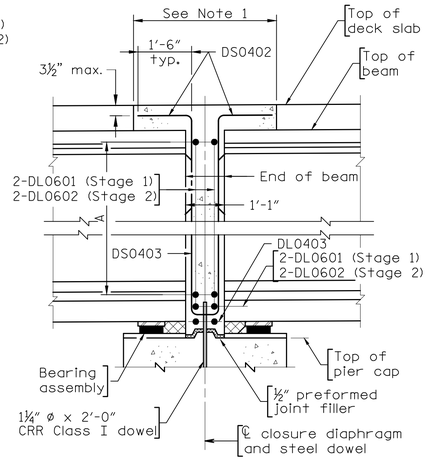
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	29

Notes:

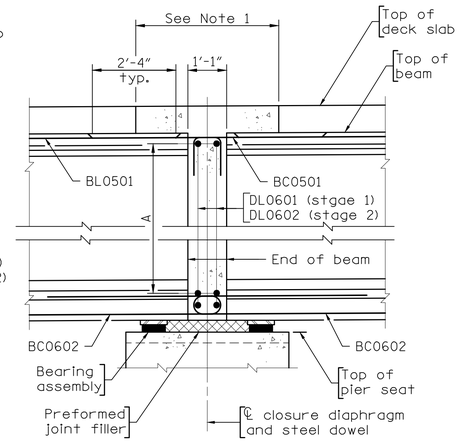
1. This portion of the slab shall be cast with the closure diaphragm. For dimension and placement schedule, see sheet 33.
2. For shallower beams at the Contractor's option, reinforcing bars DS0402 and DS0403 may be detailed as a one piece bar.
3. For location and details of dowels and construction joints, see pier details sheets 13 thru 16.
4. For details of bearing assemblies, see sheet 17.
5. For beam details, see sheets 25 thru 27.
6. All preformed joint filler shall be included in the cost of superstructure concrete.



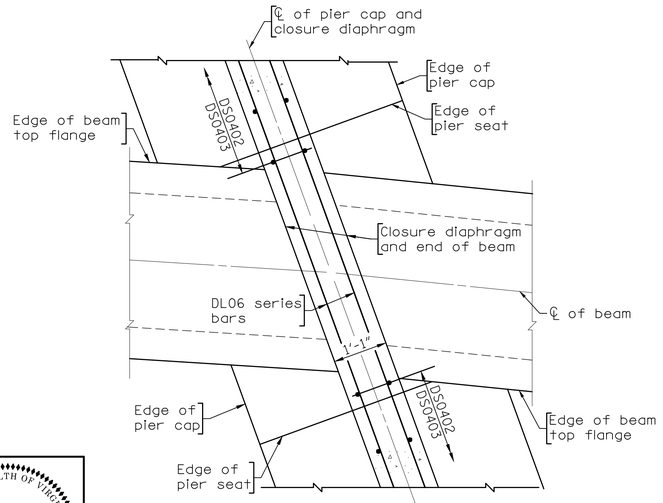
PART SECTION CLOSURE DIAPHRAGM AT FIXED SUPPORTS



SECTION A–A

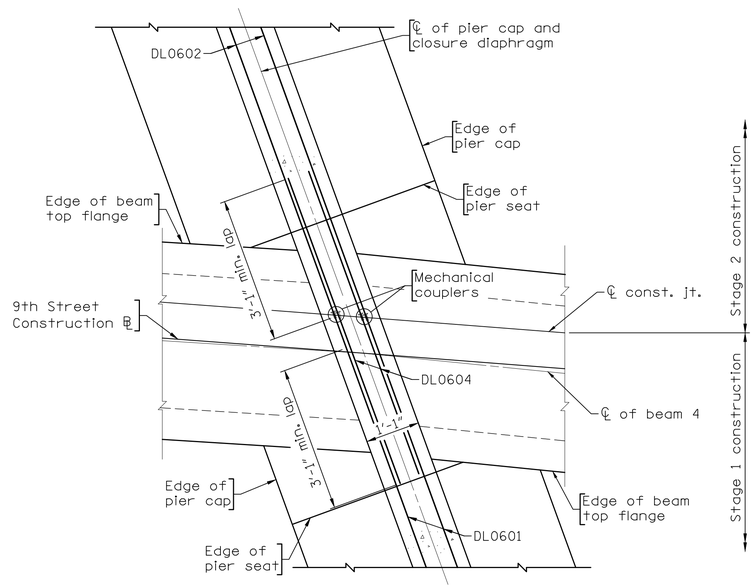


SECTION B–B



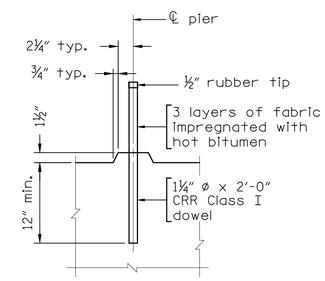
PLAN VIEW OF CLOSURE DIAPHRAGM

Pier 1 shown, Pier 2 similar



CLOSURE DIAPHRAGM CONSTRUCTION JOINT LAYOUT

Pier 1 shown, Pier 2 similar



DOWEL DETAIL

REINFORCING STEEL SPACING	
Beam Type	A
PCBT–29	2 equal spaces
PCBT–37	3 equal spaces
PCBT–45	3 equal spaces
PCBT–53	4 equal spaces
PCBT–61	4 equal spaces

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PRESTRESSED CONCRETE BULB-T CLOSURE DIAPHRAGM DETAILS

Designed: PDC..... Drawn: JJK..... Checked: SAD.....	Date	Plan No.	Sheet No.
	October 2020	302–08	29 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	30

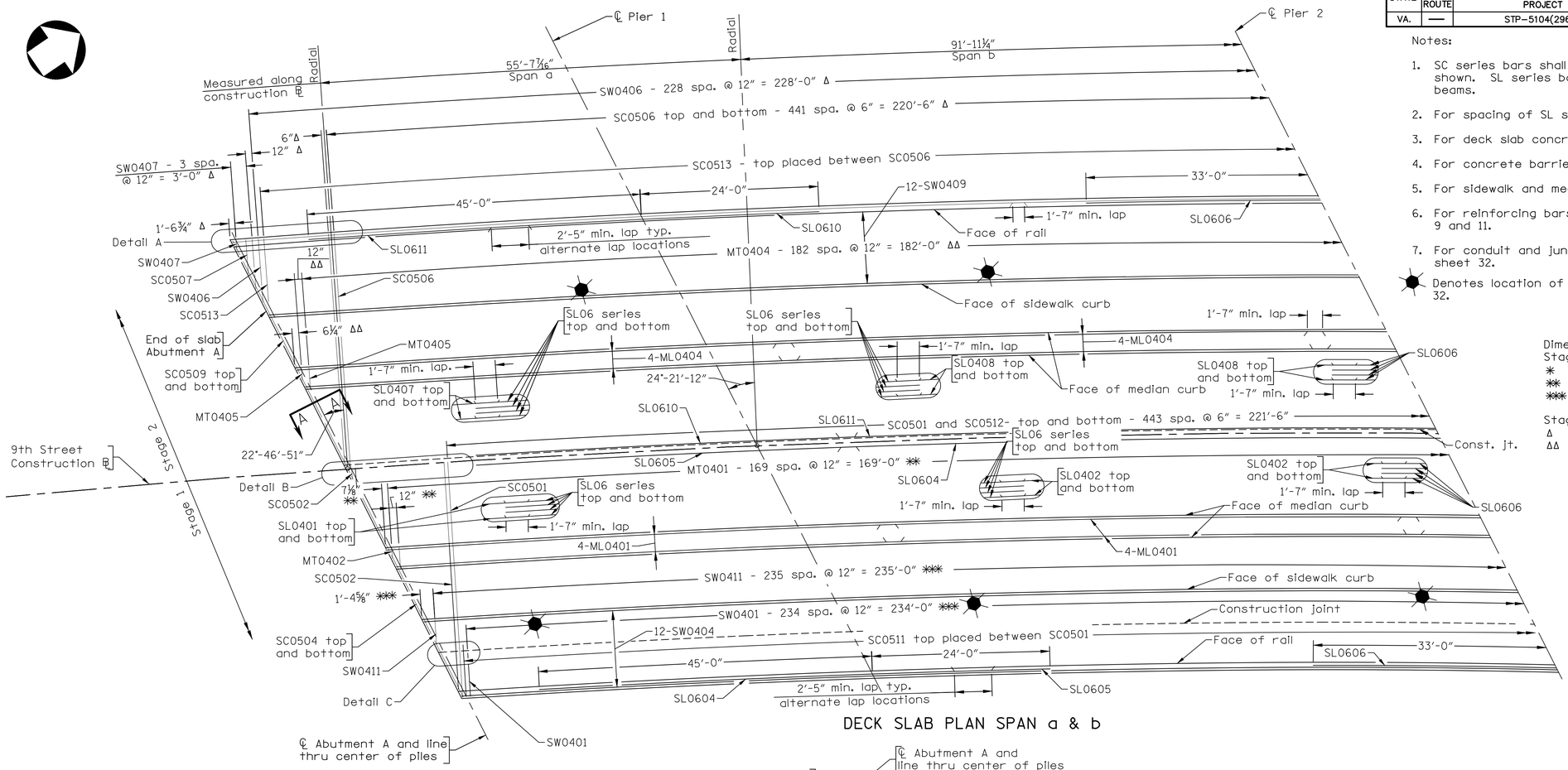
Notes:

1. SC series bars shall be radially placed unless otherwise shown. SL series bars shall be placed parallel to the beams.
2. For spacing of SL series bars, see sheets 18 and 19.
3. For deck slab concrete placement schedule, see sheet 33.
4. For concrete barrier details see sheets 35 thru 38.
5. For sidewalk and median details see sheet 19.
6. For reinforcing bars in the integral backwall see sheets 9 and 11.
7. For conduit and junction box locations and details see sheet 32.

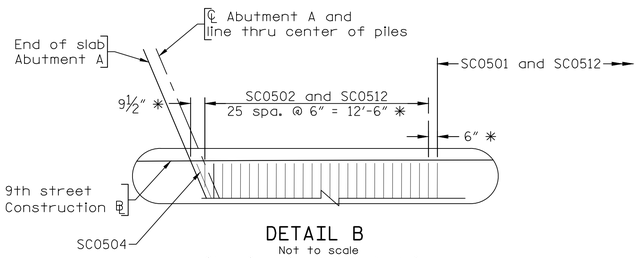
✱ Denotes location of light pole. For lighting details, see sheet 32.

Dimension notes
Stage 1:
✱ Measured along construction ℄
✱✱ Measured along western edge of median
✱✱✱ Measured along western edge of sidewalk

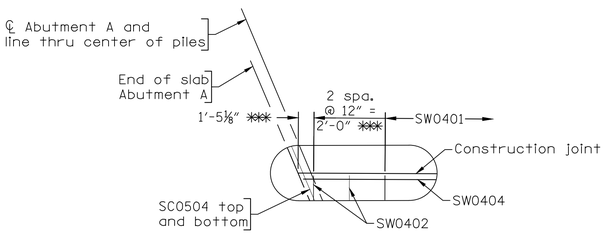
Stage 2:
Δ Measured along western edge of deck
ΔΔ Measured along western edge of median



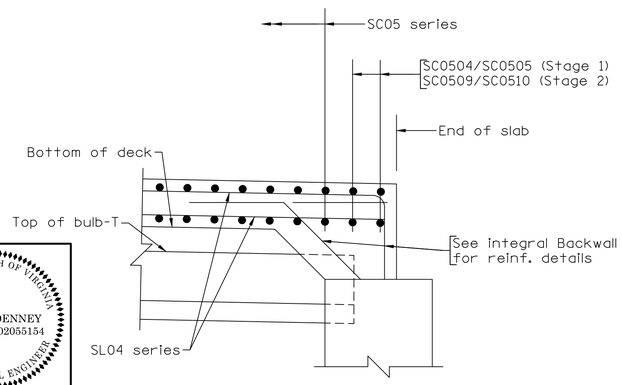
DECK SLAB PLAN SPAN a & b



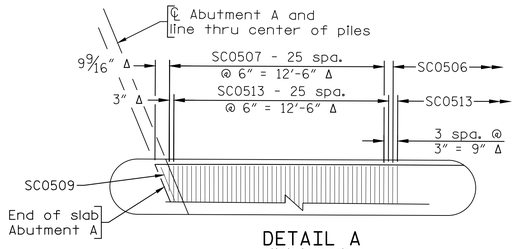
DETAIL B
Not to scale
Stage 2 reinforcing not shown for clarity



DETAIL C
Not to scale
SC0501, SC0502 and SC0511 not shown for clarity



SECTION A-A
Not to scale



DETAIL A
Not to scale
SW series not shown for clarity

Scale: 1½"=1'-0

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STRUCTURE AND BRIDGE DIVISION

DECK SLAB PLAN SPAN a AND b

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302-08	30 of 50
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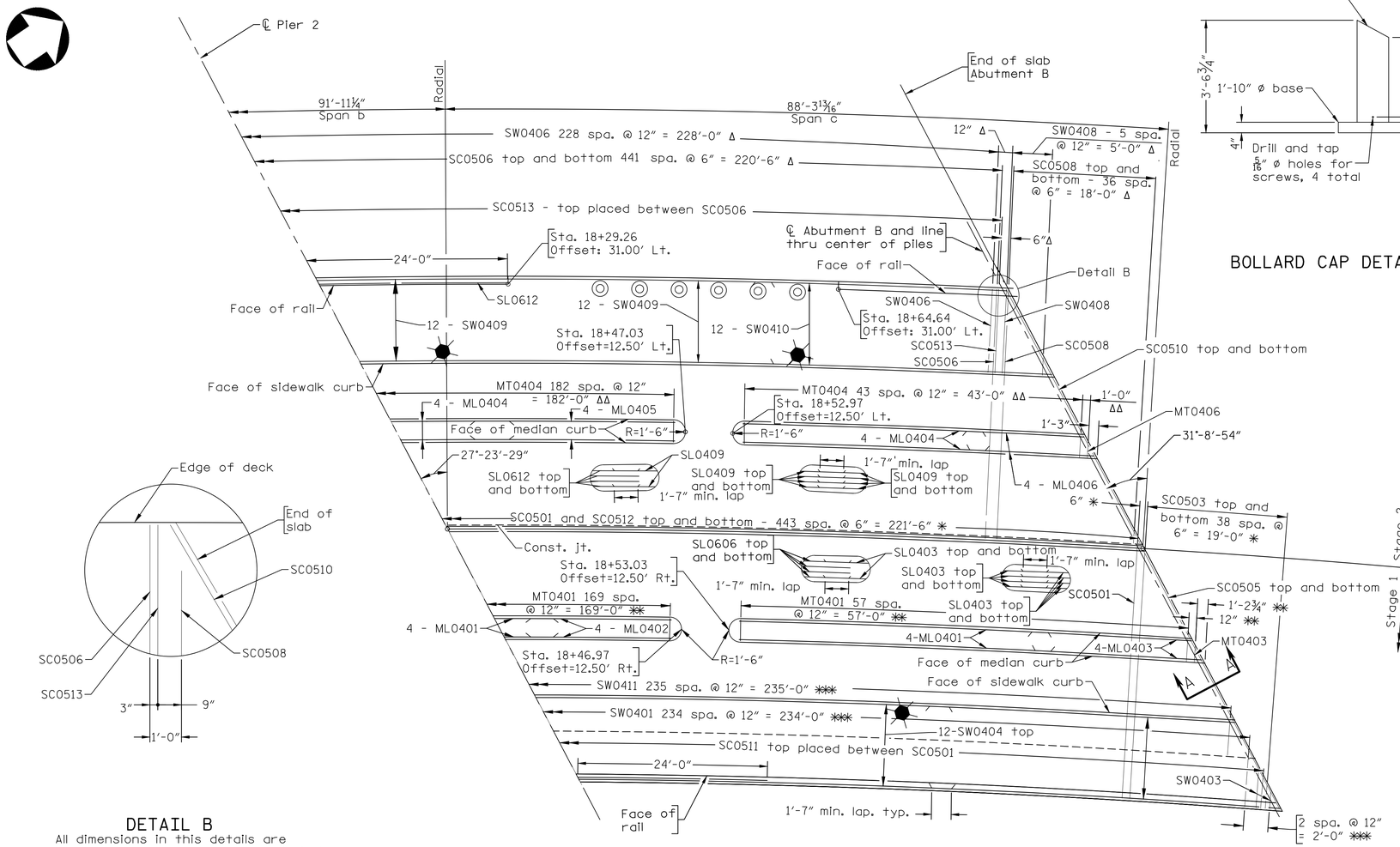
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	31

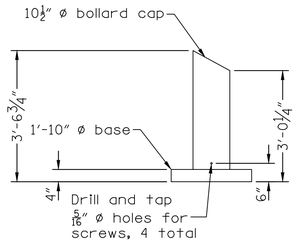


DECK SLAB PLAN SPAN c

DETAIL B

All dimensions in this details are measured along western edge of deck.

SW series not shown for clarity.



BOLLARD CAP DETAIL

Notes:

1. SC series bars shall be radially placed unless otherwise shown. SL series bars shall be placed parallel to the beams.
2. For spacing of SL series bars, see sheets 18 and 19.
3. For deck slab concrete placement schedule, see sheet 33.
4. For concrete barrier details see sheets 35 thru 38.
5. For sidewalk and median details see sheet 19.
6. For reinforcing bars in the integral backwall see sheets 9 and 11.
7. For conduit and junction box locations & details see sheet 32.
8. Bollard cap shall be fabricated from 12 gauge steel sheets and shall be powder coated Stormcloud grey.
9. Anchors shall meet ASTM F1554 Grade 36. Base plates shall be ASTM A36 steel. Anchors and base plates shall be galvanized. Bollard pipe shall be ASTM A53.

◎ Denotes location of bollard. See connection details this sheet.

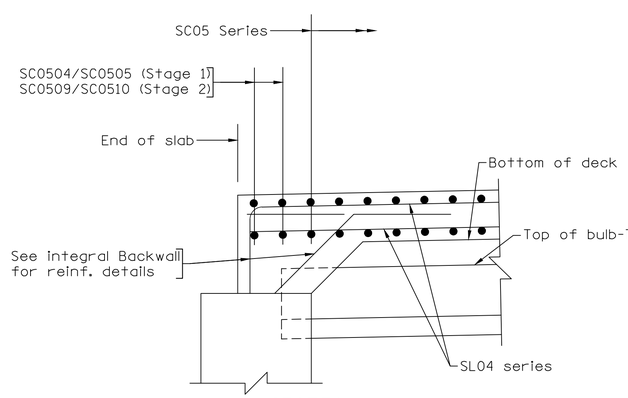
✳ Denotes location of light pole. For stationing and lighting details, see sheet 32.

Payment for furnishing and installing the bollards, bollard base plates, bollard caps, and anchor bolts shall be included in the contract unit price for superstructure concrete low shrinkage class A4 modified.

Installation of the bollards and light poles shall be done in such a way that a minimum sidewalk clear width of 5′-0″ is maintained between any bollard and light pole.

BOLLARD LOCATIONS

STATION	OFFSET
18+36.17	30.50′ LT.
18+41.06	30.50′ LT.
18+45.95	30.50′ LT.
18+50.84	30.50′ LT.
18+55.73	30.50′ Lt.
18+60.61	30.50′ Lt.



SECTION A-A

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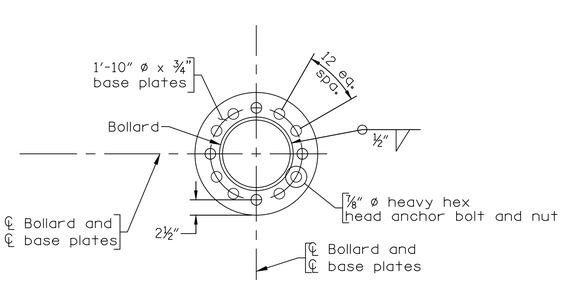
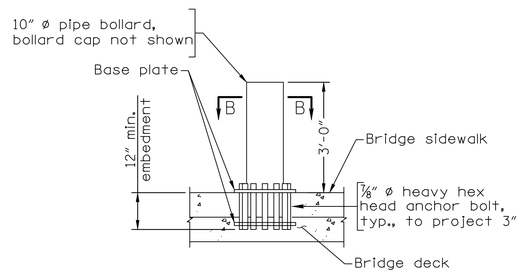


SECTION B-B

Dimension notes
Stage 1:
✳ Measured along construction ℄
✳✳ Measured along western edge of median
✳✳✳ Measured along western edge of sidewalk

Stage 2:
Δ Measured along western edge of deck
ΔΔ Measured along western edge of median



BOLLARD CONNECTION DETAIL

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DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

DECK SLAB PLAN SPAN c

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	31 of 50
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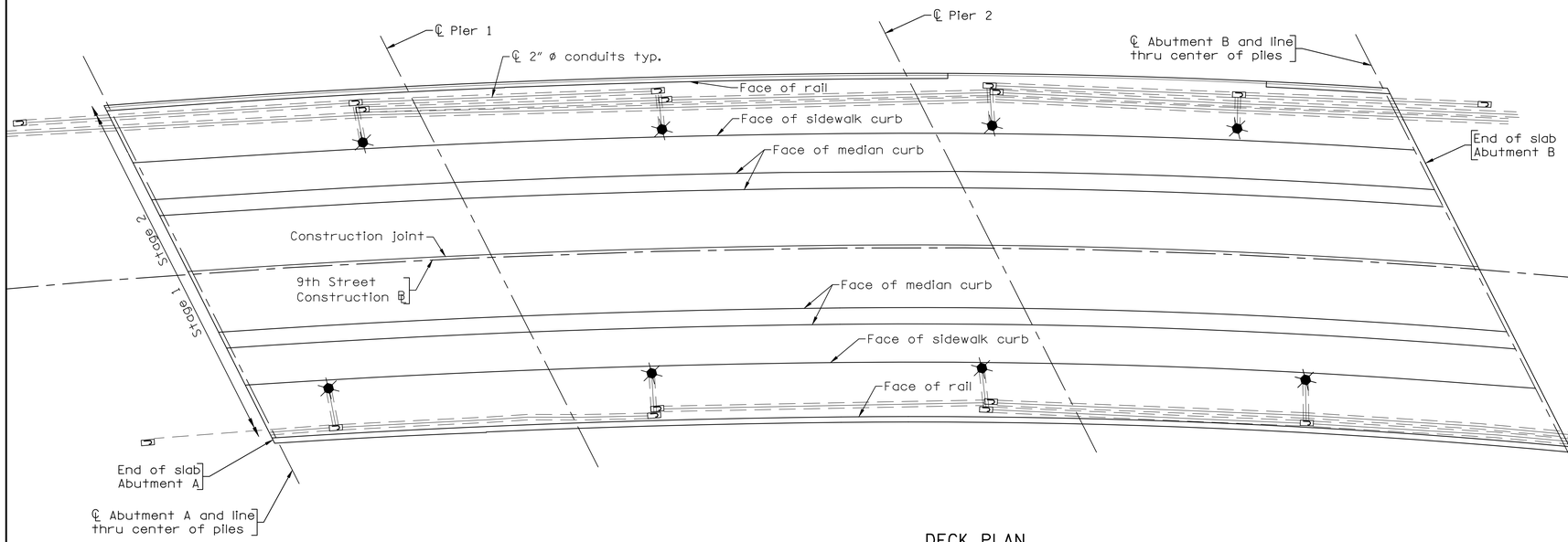
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	32



DECK PLAN

For light pole installation procedures refer to light pole manufacturer details.

Refer to lighting plans for additional details to include conduit routing.

Threaded inserts shall not be galvanized or coated.

Bolts installed in threaded inserts shall be tightened to a snug tight condition as defined in Section 407 of the VDOT Road and Bridge Specifications.

All threaded inserts shall be ¾" - 10 NC threaded plain ferrule inserts having a minimum ultimate mechanical tensile strength of 8,000 pounds.

All anchor bolts shall be ASTM F1554 Grade 36 and shall be galvanized.

Payment for furnishing and installing the threaded anchor bolts, conduit, junction boxes, and threaded inserts shall be included in the lump sum price for the lighting system.

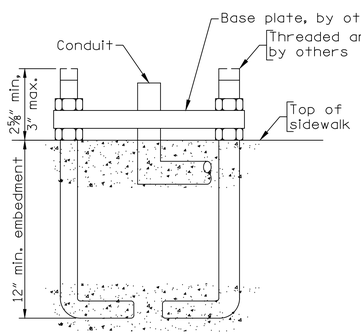
The Contractor shall determine all dimensions and details necessary for installation.

Conduit shall be grounded in conformance with Section 700 with grounding materials that conform to Section 238.

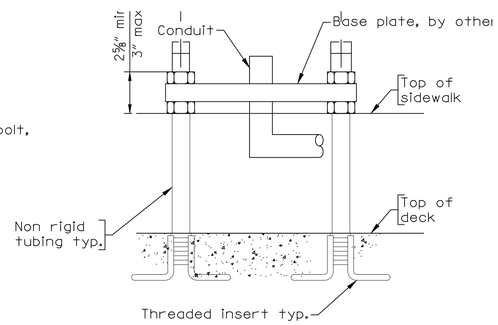
Denotes light pole.

Denotes junction box location.

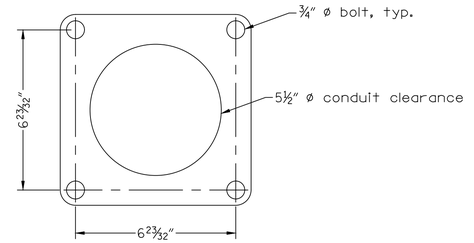
LIGHT POLE LOCATIONS	
STATION	OFFSET
17+02.52	23.21' LT.
17+56.80	23.17' LT.
18+16.54	23.51' LT.
18+60.78	23.14' LT.
16+94.14	23.51' RT.
17+54.19	23.42' RT.
18+15.16	23.47' RT
18+75.92	23.59' RT.



ANCHOR BOLT DETAIL FOR LIGHT POLES (3 REQUIRED)



THREADED INSERT DETAIL FOR LIGHT POLES (4 REQUIRED)



ANCHOR BOLT TEMPLATE

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DECK LIGHTING PLAN AND DETAILS

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Drawn: JJK	October 2020	302-08	32 of 50
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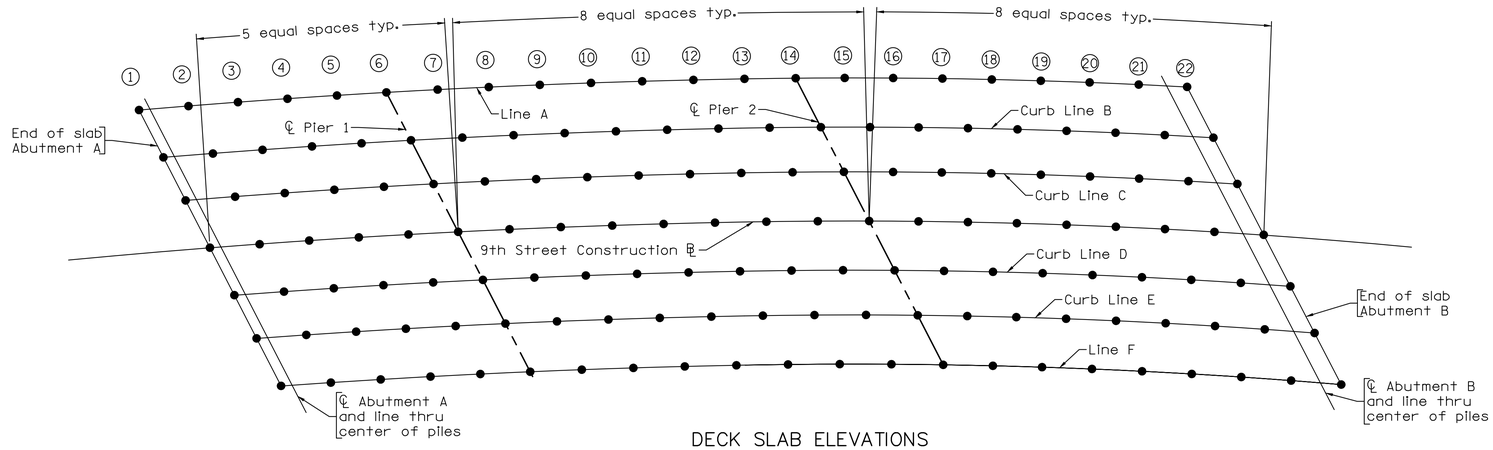
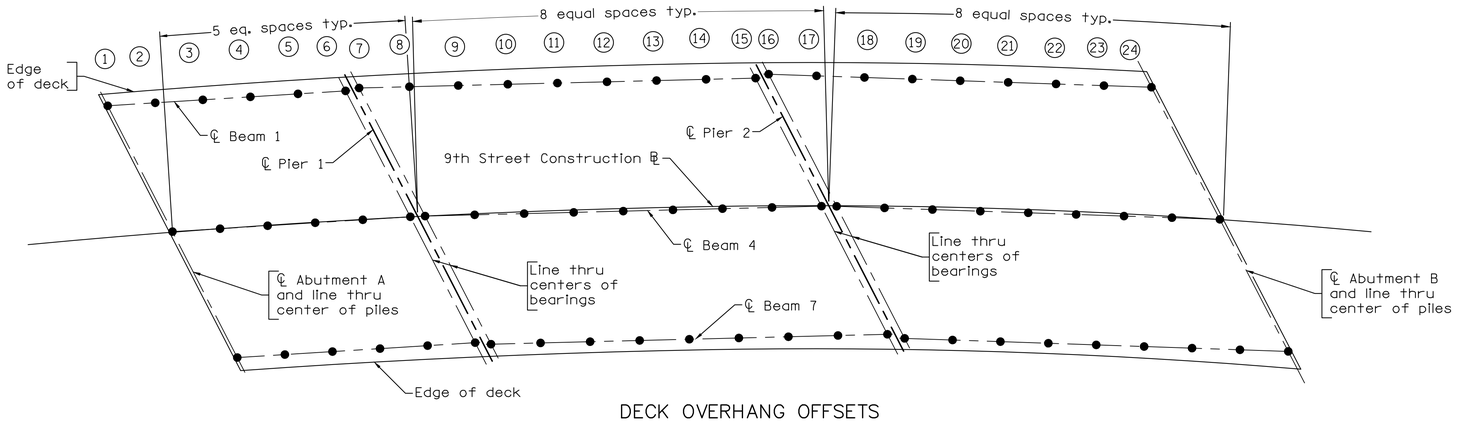
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	33



DECK SLAB ELEVATIONS



DECK OVERHANG OFFSETS

TOP OF DECK SLAB ELEVATIONS–SPAN A

Point	Line A	Line B	Line C	PGL	Line D	Line E	Line F
1	476.79	477.09	477.37	477.66	477.51	477.38	477.22
2	476.98	477.28	477.54	477.83	477.67	477.52	477.36
3	477.15	477.43	477.69	477.97	477.80	477.64	477.47
4	477.29	477.57	477.82	478.08	477.91	477.74	477.55
5	477.41	477.68	477.92	478.17	477.99	477.81	477.62
6	477.51	477.77	477.99	478.24	478.04	477.86	477.65

TOP OF DECK SLAB ELEVATIONS–SPAN B

Point	Line A	Line B	Line C	PGL	Line D	Line E	Line F
6	477.51	477.77	477.99	478.24	478.04	477.86	477.65
7	477.58	477.83	478.05	478.28	478.07	477.88	477.66
8	477.63	477.87	478.07	478.30	478.08	477.87	477.64
9	477.66	477.88	478.08	478.29	478.06	477.84	477.59
10	477.66	477.87	478.05	478.25	478.01	477.78	477.52
11	477.63	477.83	478.00	478.19	477.93	477.69	477.42
12	477.58	477.76	477.93	478.10	477.83	477.57	477.29
13	477.50	477.67	477.82	477.99	477.70	477.43	477.13
14	477.40	477.56	477.70	477.84	477.54	477.26	476.95

TOP OF DECK SLAB ELEVATIONS–SPAN C

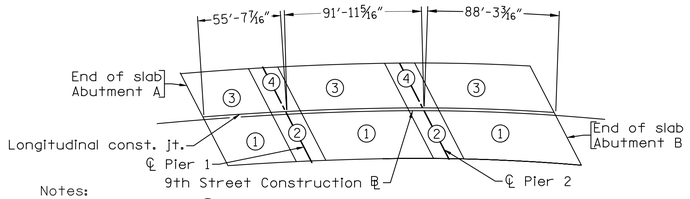
Point	Line A	Line B	Line C	PGL	Line D	Line E	Line F
14	477.40	477.56	477.70	477.84	477.54	477.26	476.95
15	477.27	477.42	477.55	477.68	477.37	477.07	476.74
16	477.13	477.26	477.38	477.50	477.17	476.86	476.51
17	476.96	477.08	477.18	477.29	476.94	476.62	476.25
18	476.77	476.88	476.97	477.05	476.69	476.35	475.97
19	476.56	476.65	476.72	476.80	476.42	476.06	475.66
20	476.32	476.40	476.46	476.51	476.12	475.74	475.32
21	476.07	476.13	476.17	476.21	475.79	475.40	474.96
22	475.79	475.83	475.86	475.87	475.44	475.03	474.57

Notes:
The slab elevations shown in the table above are on top of finished roadway at faces of curbs. Those shown on Construction ℄ are at point of finished grade denoted in Transverse section.

Points along edge of deck, faces of curbs and Construction ℄ are equally spaced along these lines. Straight line interpolations for intermediate elevations on top of finished roadway may be made, in any direction, between any two adjacent points at not more than 12.60′ intervals.

DECK OVERHANG OFFSETS

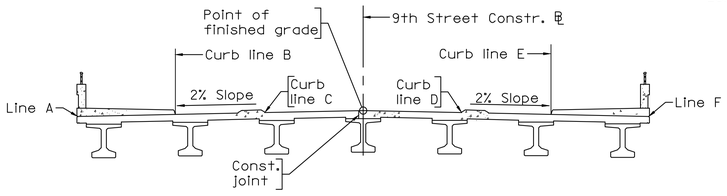
Point / Beam	Span a						Span b									Span c									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	2′-9½″	2′-11 11/16″	3′-1¼″	3′-2 1/16″	3′-2¼″	3′-1¾″	2′-8⅛″	2′-11¾″	3′-2⅝″	3′-4¾″	3′-6 3/16″	3′-6⅞″	3′-6⅞″	3′-6 1/16″	3′-4⅞″	2′-5 1/16″	2′-10⅝″	3′-2⅝″	3′-5⅝″	3′-7 3/16″	3′-8½″	3′-8 1/16″	3′-7⅞″	3′-5¼″
7	2′-10 7/16″	2′-9 13/16″	2′-9⅞″	2′-10⅝″	3′-0⅛″	3′-2¼″	2′-8¼″	2′-6 1/16″	2′-5⅜″	2′-5 1/16″	2′-5½″	2′-6¾″	2′-9⅛″	3′-0⅝″	3′-5 3/16″	2′-6 7/16″	2′-4 1/16″	2′-3½″	2′-3 3/16″	2′-4¾″	2′-6 15/16″	2′-10¼″	3′-2 9/16″	3′-7 15/16″



Notes:
In stage 1, Section ① may be placed in any order or simultaneously.
In stage 2, Section ③ may be placed in any order or simultaneously.

In stage 1, Section ② shall be placed after adjacent section ①.
In stage 2, Section ④ shall be placed after adjacent section ③.

*Closure diaphragm and protion of deck slab shall be cast together without a construction joint. for closure diaphragm details, see sheet 29.



DECK SLAB CONCRETE PLACEMENT SCHEDULE

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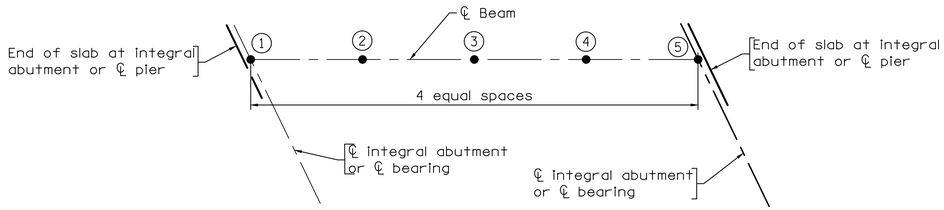
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

DECK ELEVATIONS AND DECK SLAB PLACEMENT SCHEDULE

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302–08	33 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	34



PLAN

Top of Slab Elevations Along ℄ Beams

Span	Point	1	2	3	4	5
a	Beam 1	476.88	477.11	477.30	477.45	477.57
	Beam 2	477.15	477.36	477.54	477.69	477.80
	Beam 3	477.41	477.62	477.79	477.92	478.02
	Beam 4	477.67	477.86	478.02	478.14	478.23
	Beam 5	477.54	477.72	477.87	477.98	478.06
	Beam 6	477.41	477.58	477.71	477.82	477.88
	Beam 7	477.27	477.43	477.56	477.65	477.71
b	Beam 1	477.58	477.70	477.72	477.64	477.46
	Beam 2	477.81	477.91	477.91	477.81	477.60
	Beam 3	478.03	478.11	478.09	477.96	477.74
	Beam 4	478.25	478.29	478.24	478.10	477.87
	Beam 5	478.07	478.09	478.03	477.86	477.61
	Beam 6	477.89	477.89	477.81	477.62	477.34
	Beam 7	477.70	477.69	477.58	477.37	477.07
c	Beam 1	477.41	477.16	476.81	476.36	475.82
	Beam 2	477.56	477.28	476.90	476.42	475.86
	Beam 3	477.69	477.39	476.98	476.48	475.88
	Beam 4	477.82	477.47	477.03	476.51	475.90
	Beam 5	477.55	477.17	476.71	476.16	475.53
	Beam 6	477.27	476.87	476.38	475.81	475.15
	Beam 7	476.99	476.56	476.05	475.45	474.76

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STRUCTURE AND BRIDGE DIVISION

DECK SLAB ELEVATIONS ALONG CENTERLINE BEAM

Designed: PDC.....
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Date	Plan No.	Sheet No.
October 2020	302-08	34 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	35

Notes:

Plan dimensions are measured in the respective horizontal and vertical planes.

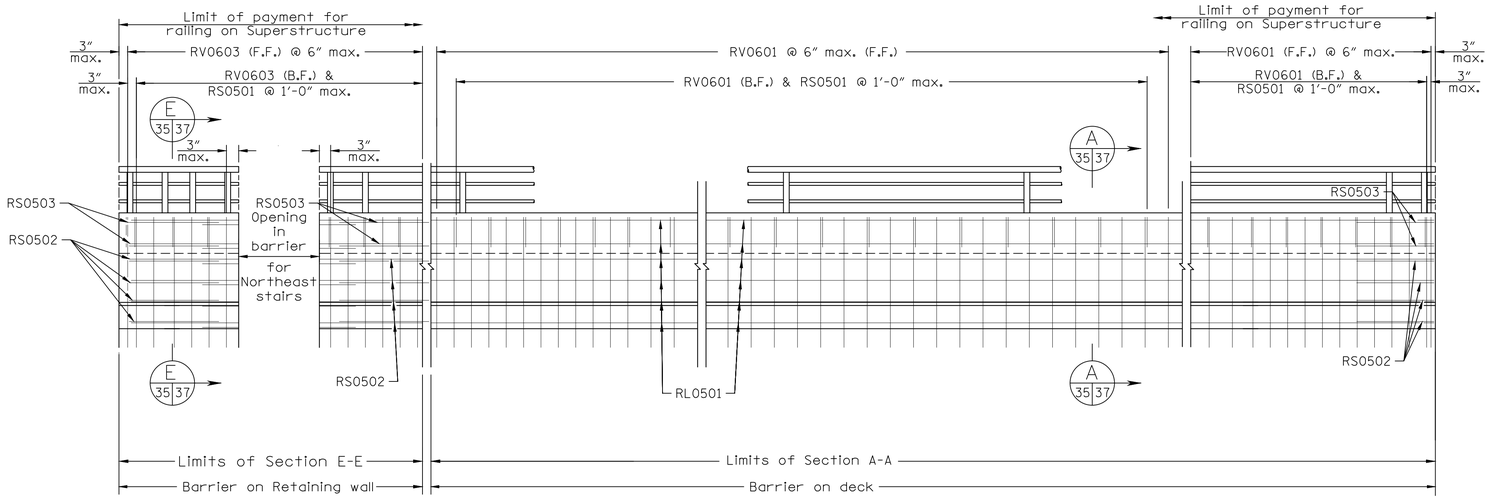
The Contractor shall determine all dimensions and details necessary for installation.

All concrete shall be Low Shrinkage Class A4 Modified.

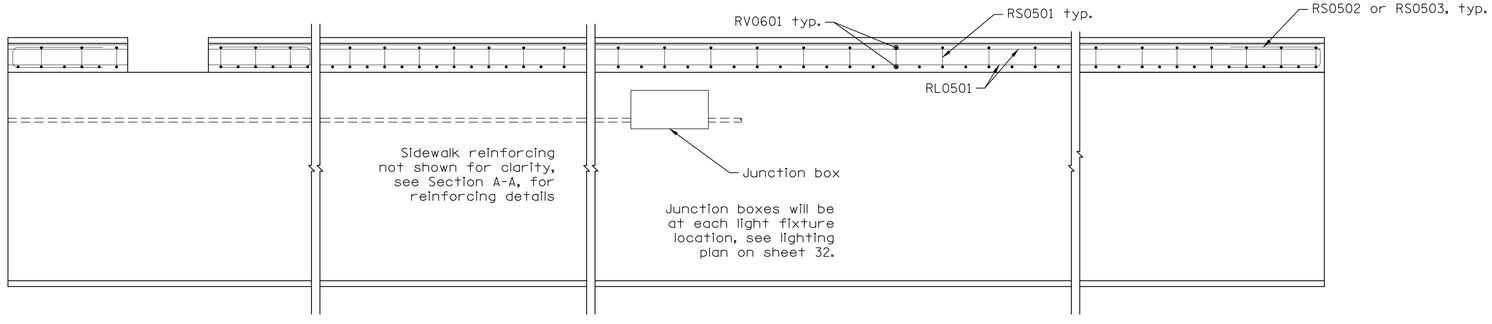
All reinforcing steel shall be Corrosion Resistant Reinforcing Steel, Class I.

For location and details of junction boxes, see sheet 32.

F.F. denotes front face
B.F. denotes back face



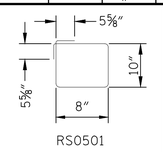
ELEVATION



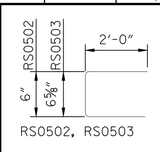
PLAN

REINFORCING STEEL SCHEDULE

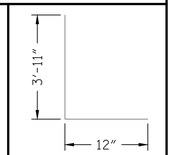
Mark	No.	Size	Pin ø	Length	Location
RS0501		#5	2½"	3'-5"	Parapet
RS0502		#5	2½"	4'-3"	Parapet
RS0503		#5	2½"	4'-4"	Parapet
RV0601		#6	4½"	4'-10"	Parapet
RV0603		#6	—	4'-7"	Parapet
RL05		#5	—		Parapet



RS0501



RS0502, RS0503



RV0601

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COMMONWEALTH OF VIRGINIA
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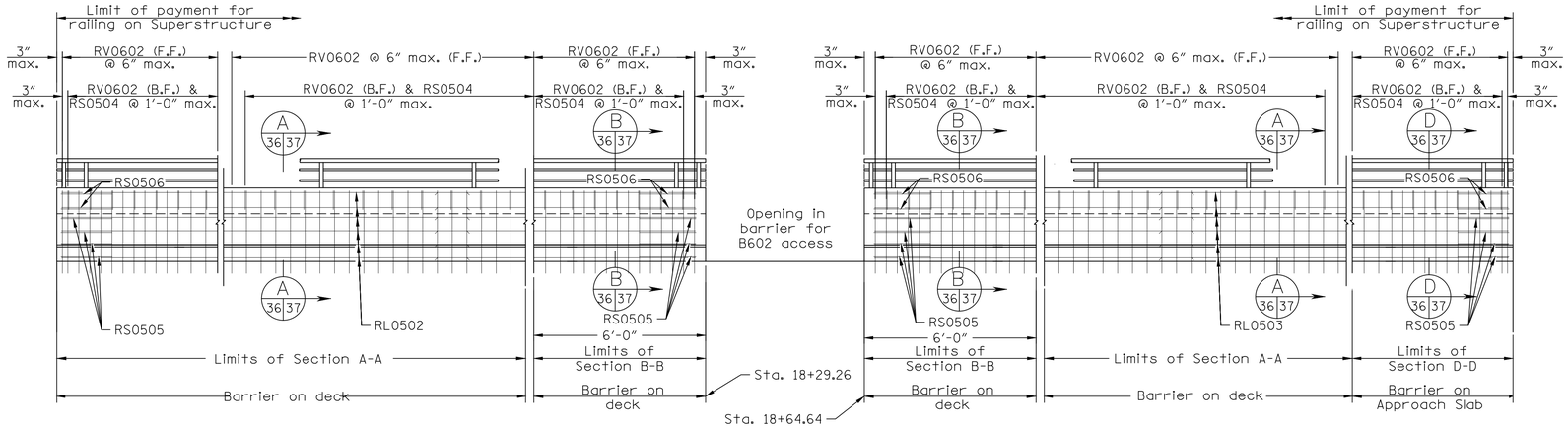
STRUCTURE AND BRIDGE DIVISION

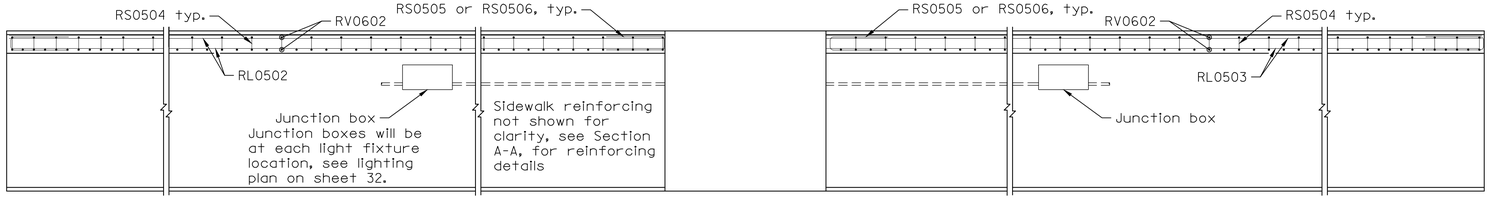
CONCRETE BARRIER TYPE 732SW STAGE 1

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302-08	35 of 50
Checked: SAD.....			

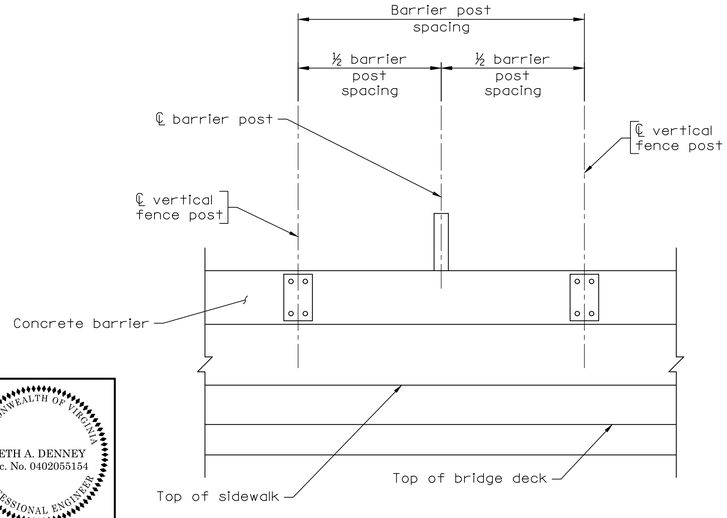
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	36



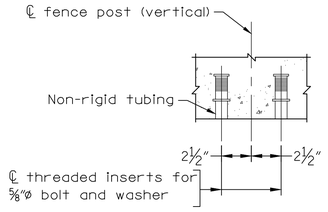
ELEVATION



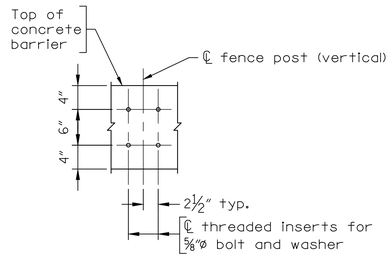
PLAN



THREADED INSERT ELEVATION TYPICAL DETAIL
Stage 2 shown. Stage 1 similar.



THREADED INSERT PLAN
Stage 2 shown. Stage 1 similar.



THREADED INSERT DETAIL
Stage 2 shown. Stage 1 similar.

Notes:

See notes on sheet 35.

The threaded inserts shown are for the installation of fencing, if it is required in the future.

Threaded inserts, when embedded as shown, shall develop full strength of threaded bolts. Embedment of insert per manufacturer's recommendations or 5" whichever is greater.

Threaded inserts shall be galvanized.

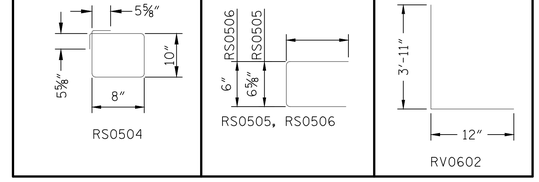
The spacing of the fence posts and threaded inserts shall match the spacing of the barrier posts per the barrier post shop drawings. The spacing of the fence posts and threaded inserts shall not exceed the spacing of the barrier posts. The spacing of the threaded inserts shall be coordinated during shop drawing review.

The cost for the threaded inserts shall be included in the cost for the parapet and railing.

The open end of the threaded inserts shall be covered with a cap plug, or other approved method, to prevent water intrusion. The cap plug shall be removable for fence installation.

REINFORCING STEEL SCHEDULE

Mark	No.	Size	Pin ø	Length	Location
RS0504		#5	2½"	3'-5"	Parapet
RS0505		#5	2½"	4'-3"	Parapet
RS0506		#5	2½"	4'-4"	Parapet
RV0602		#6	4½"	4'-10"	Parapet
RL05		#5	—		Parapet



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CONCRETE BARRIER TYPE 732SW STAGE 2

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302-08	36 of 50
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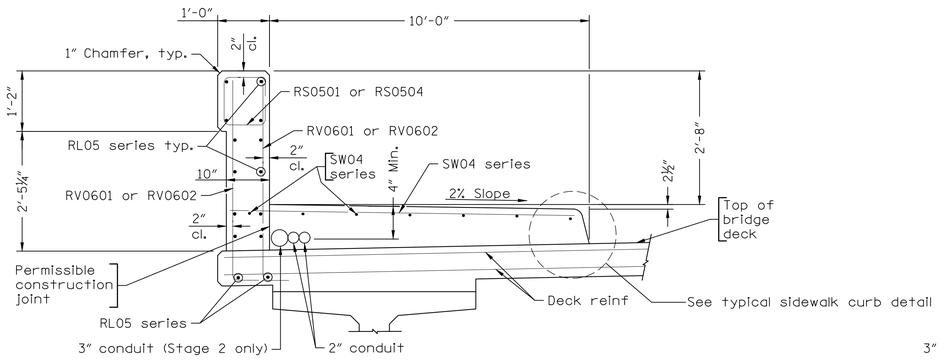
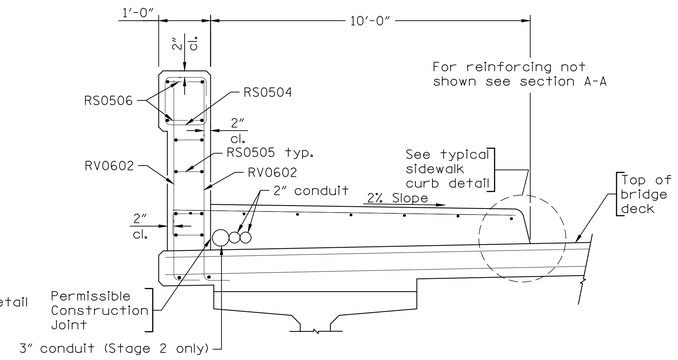
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	37



SECTION A–A
Typical section on deck



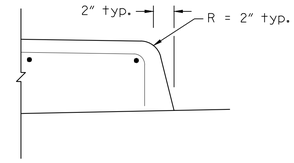
SECTION B–B
Typical section at barrier opening

NOTES:

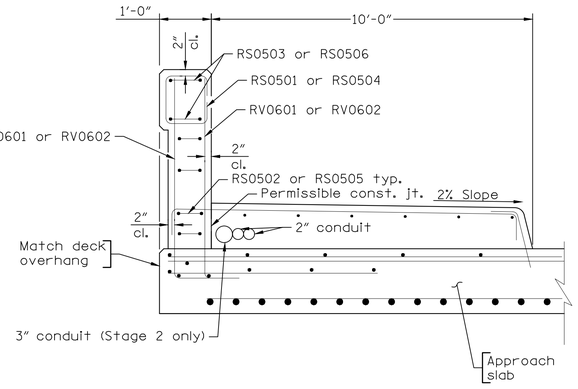
Indicates expanded polystyrene, remove after concrete is placed.

For notes see sheet 35.

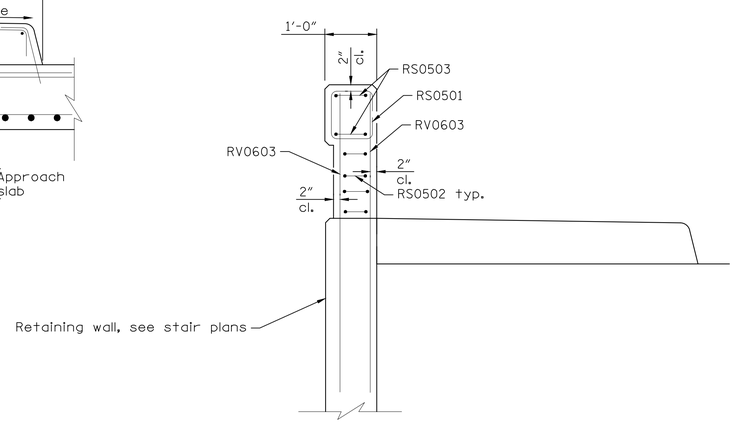
For location of conduits see sheet 18.



TYPICAL SIDEWALK CURB DETAIL



SECTION D–D
Abutment B



SECTION E–E
Abutment B

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CONCRETE BARRIER TYPE 732SW DETAILS (1 OF 2)

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302–08	37 of 50
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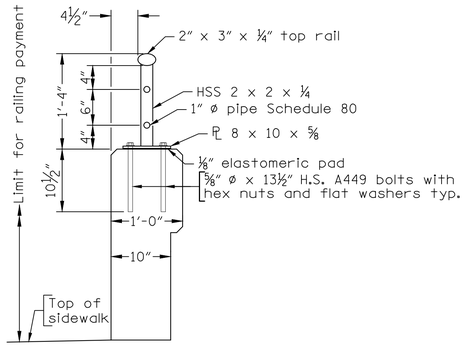
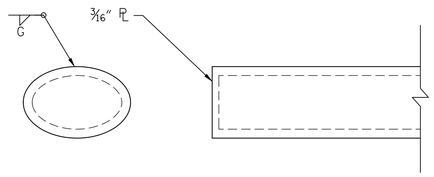
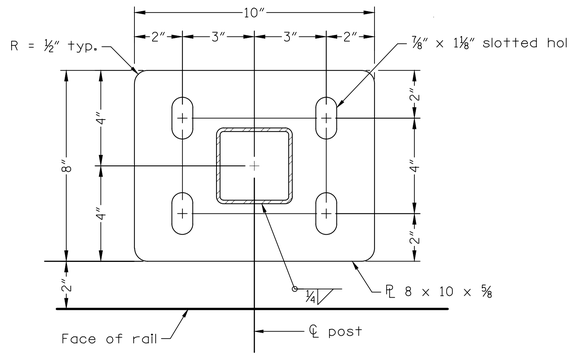
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	38



RAIL SECTION



RAIL CAP
1" ø Schedule 80 pipe similar



BASE PLATE DETAIL

Notes:
Railing shall be powder coated Stormcloud grey. Color to be approved by Owner. A color sample is available and can be provided for color matching.

Drain holes shall be ½" diameter and shall be provided in all rails approximately half-way between posts except at open joints near pier(s). Drain holes shall be provided at each end of rail.

Bid item for railing shall include rails, rail posts, bearing pads, bolts, anchor assemblies, sleeves, barrier delineators, grounding materials and other associated metal parts as shown on the plans. Also included is concrete noted in the plans and reinforcing steel indicated in the reinforcing steel schedule.

Posts and rail members shall be ASTM A500 Grade C steel. Plates shall be ASTM A36 steel. Steel pipe and sleeves shall be ASTM A53.

Bolts for attaching rails to post are ¾" diameter round head (with slot in head), ASTM A449. All other bolts shall be ASTM A325 unless otherwise indicated in the details. Nuts shall be ASTM A563 Grade DH or ASTM A194 Grade 2H. Washers shall be ASTM F436.

All bolts shall be snug tightened.

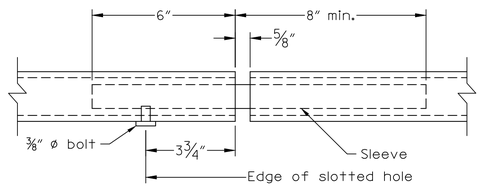
All steel shall be hot dip galvanized.

Posts shall be equally spaced within a span. Maximum spacing is 6'-8".

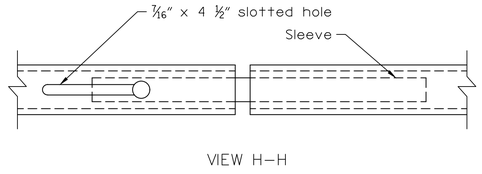
Posts shall be seated on neoprene pads ⅛" minimum thickness, having a nominal durometer hardness of 60. Pads shall conform to post base dimensions.

Posts shall be vertical in transverse direction and normal to longitudinal profile grade. Cut bottom of posts to meet these configurations.

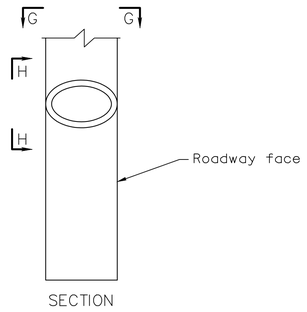
Rails to be continuous over a minimum of 3 posts before splicing.



VIEW G–G

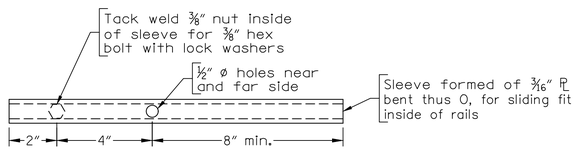


VIEW H–H



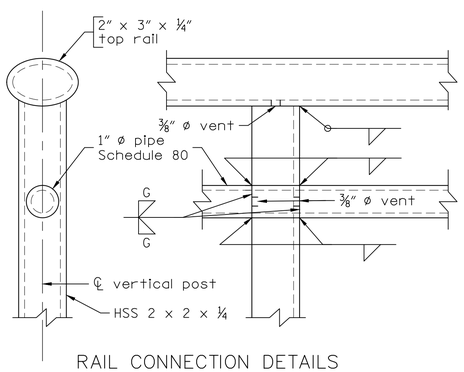
SECTION

Notes:
⅜" nut tack welded to sleeve may be replaced by drilled and tapped hole in sleeve.

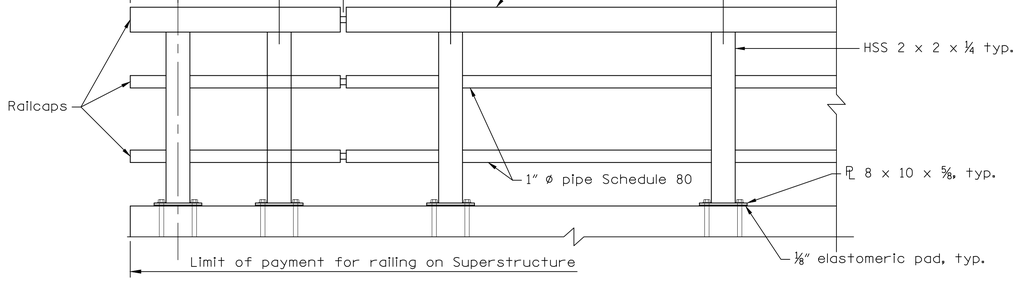


SLEEVE

RAIL SPLICE DETAILS
1" ø Schedule 80 pipe similar



RAIL CONNECTION DETAILS



RAIL ELEVATION

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CONCRETE BARRIER TYPE 732SW DETAILS (2 OF 2)

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STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	39

REINFORCING STEEL SCHEDULE

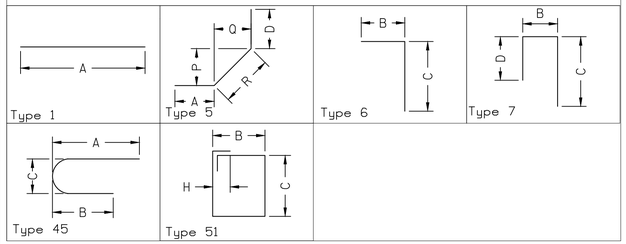
DIMENSION TABLE

MARK	NO.	BAR SIZE	PIN DIA. FT-IN	LENGTH FT.-INCHES	WEIGHT (LBS.)	LOCATION	TYPE	A FT-IN	B FT-IN	C FT-IN	D FT-IN	E P FT-IN	F Q FT-IN	G R FT-IN	H FT-IN	I S FT-IN	J T FT-IN	K U FT-IN	L FT-IN	V FT-IN	N
				Abutment A Footing																	
AF0401	62	4	2	6-04	262	Footing stirrup	7		2-0 1/2	2-02 3/4	2-02 3/4										
AF0602	16	6		35-05	851	Footing longitudinal	1	35-05													
AF0404	60	4	2	6-04	254	Footing stirrup	7		2-0 1/2	2-02 3/4	2-02 3/4										
AF0605	16	6		31-11	767	Footing longitudinal	1	31-11													
AF0607	16	6		5-05	130	Footing constr. joint	1	5-05													
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					2264																
				Abutment A Neat																	
AP0401	28	4		2-08	50	Beam Support Long.	1	2-08													
AP0402	28	4		2-02	40	Beam Support Long.	1	2-02													
AP0403	4	4	2	5-02	14	Beam support stirrup	51		7 1/2	1-09 1/2					4 1/2						
AP0404	4	4	2	4-10	13	Beam support stirrup	51		7 1/2	1-07 1/2					4 1/2						
AP0405	4	4	2	4-07	12	Beam support stirrup	51		7 1/2	1-06					4 1/2						
AP0406	4	4	2	4-04	12	Beam support stirrup	51		7 1/2	1-04 1/2					4 1/2						
AP0409	4	4	2	3-06	9	Beam support stirrup	51		7 1/2	11 1/2					4 1/2						
AP0410	4	4	2	4-01	11	Beam support stirrup	51		7 1/2	1-03					4 1/2						
AP0411	4	4	2	4-07	12	Beam support stirrup	51		7 1/2	1-06					4 1/2						
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					173																
				Abutment A Backwall																	
SH0601	12	6		35-05	638	Horizontal (back face)	1	35-05													
SH0602	12	6		5-11	107	Horizontal thru beams	1	5-11													
SH0603	12	6		9-07	173	Horizontal (near face)	1	9-07													
SH0604	3	6		7-04	33	Horizontal (near face)	1	7-04													
SH0608	12	6		32-00	577	Horizontal (back face)	1	32-00													
SH0609	9	6		5-11	80	Horizontal thru beams	1	5-11													
SH0610	12	6		9-07	173	Horizontal (near face)	1	9-07													
SH0611	3	6		7-04	33	Horizontal (near face)	1	7-04													
SH0615	12	6		5-05	98	Horizontal contr. join	1	5-05													
SV0401	58	4	2	8-07	333	Stirrups btwn. beams	7		2-01	3-04	3-04										
SV0402	45	4	2	4-01	123	Vertical - slab dowel	6		1-08 1/2	2-05 1/2											
SV0403	16	4	2	6-10	73	Stirrup at beam ends	7		2-00 3/4	3-03	1-07 1/2										
SV0404	16	4	2	3-09	40	Stirrup at beam ends	6		6 1/2	3-03											
SV0405	16	4	2	1-05	15	Stirrup (near face)	45	6 1/2	6 1/2	6											
SV0406	58	4	2	8-07	333	Stirrup btwn. beams	7		2-01	3-04	3-04										
SV0407	42	4	2	4-01	115	Vertical - slab dowel	6		1-08 1/2	2-05 1/2											
SV0408	12	4	2	6-10	55	Stirrup at beam ends	7		2-00 3/4	3-03	1-07 1/2										
SV0409	12	4	2	3-09	30	Stirrup at beam ends	6		6 1/2	3-03											
SV0410	12	4	2	1-05	11	Stirrup (near face)	45	6 1/2	6 1/2	6											
ST0501	22	5	3 3/4	6-00	138	Diagonal - slab dowel	5	1-02			1-02	2-7 1/8	2-7 1/8	3-08							
ST0602	44	6	4 1/2	6-06	430	Diagonal - app. slab	5	1-02			1-02	2-11 3/8	2-11 3/8	4-02							
ST0503	23	5	3 3/4	6-00	144	Diagonal - slab dowel	5	1-02			1-02	2-7 1/8	2-7 1/8	3-08							
ST0604	41	6	4 1/2	6-06	400	Diagonal - app. slab	5	1-02			1-02	2-11 3/8	2-11 3/8	4-02							
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					4152																
				Abutment B Footing																	
AF0401	74	4	2	6-04	313	Footing stirrup	7		2-0 1/2	2-02 3/4	2-02 3/4										
AF0602	16	6		38-02	917	Footing longitudinal	1	38-02													
AF0404	68	4	2	6-04	288	Footing stirrup	7		2-0 1/2	2-02 3/4	2-02 3/4										
AF0606	16	6		35-00	841	Footing longitudinal	1	35-00													
AF0607	16	6		5-05	130	Footing constr. joint	1	5-05													
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					2489																
				Abutment B Neat																	
AP0401	28	4		2-08	50	Beam Support Long.	1	2-08													
AP0402	28	4		2-02	40	Beam Support Long.	1	2-02													
AP0403	4	4	2	5-02	14	Beam support stirrup	51		7 1/2	1-09 1/2					4 1/2						
AP0406	4	4	2	4-04	12	Beam support stirrup	51		7 1/2	1-04 1/2					4 1/2						
AP0407	4	4	2	3-07	10	Beam support stirrup	51		7 1/2	1-0					4 1/2						
AP0408	4	4	2	2-10	8	Beam support stirrup	51		7 1/2	7 1/2					4 1/2						
AP0412	12	4	2	4-11	39	Beam support stirrup	51		7 1/2	1-08					4 1/2						
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					173																

DIMENSION VARIATION TABLE

MARK	NO. EA. LEN.	DIMEN-SION	FROM FT.-INCHES	TO FT.-INCHES	VARY BY FT.-INCHES	DIMEN-SION	FROM FT.-INCHES	TO FT.-INCHES	VARY BY FT.-INCHES

BENDING DIAGRAM



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2020.10.27 14:01:25-04'00'

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

REINFORCING STEEL SCHEDULE

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	39 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	40

REINFORCING STEEL SCHEDULE

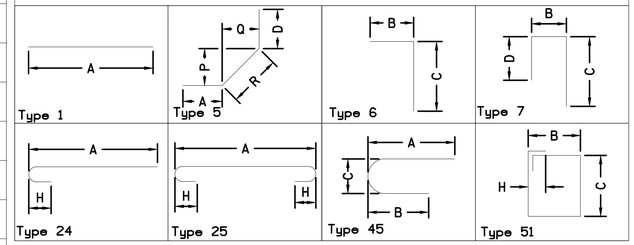
DIMENSION TABLE

MARK	NO.	BAR SIZE	PIN DIA. FT-IN	LENGTH FT.-INCHES	WEIGHT (LBS.)	LOCATION	TYPE	A FT-IN	B FT-IN	C FT-IN	D FT-IN	E P FT-IN	F Q FT-IN	G R FT-IN	H FT-IN	I S FT-IN	J T FT-IN	K U FT-IN	L FT-IN	V FT-IN	N
				Abutment B Backwall																	
SH0605	12	6		38-01	686	Horizontal (back face)	1	38-01													
SH0602	12	6		5-11	107	Horizontal thru beams	1	5-11													
SH0606	12	6		10-00	180	Horizontal (near face)	1	10-00													
SH0607	3	6		7-07	34	Horizontal (near face)	1	7-07													
SH0612	12	6		35-02	634	Horizontal (back face)	1	35-02													
SH0609	9	6		5-11	80	Horizontal thru beams	1	5-11													
SH0613	12	6		10-00	180	Horizontal (near face)	1	10-00													
SH0614	3	6		7-07	34	Horizontal (near face)	1	7-07													
SH0615	12	6		5-05	98	Horizontal (near face)	1	5-05													
SV0401	60	4	2	8-07	344	Stirrups btwn. beams	7		2-01	3-04	3-04										
SV0402	46	4	2	4-01	125	Vertical - slab dowel	6		1-08 1/2	2-05 1/2											
SV0403	16	4	2	6-10	73	Stirrup at beam ends	7		2-00 3/4	3-03	1-07 1/2										
SV0404	16	4	2	3-09	40	Stirrup at beam ends	6		6 1/2	3-03											
SV0405	16	4	2	1-05	15	Stirrup (near face)	45	6 1/2	6 1/2	6											
SV0406	60	4	2	8-07	344	Stirrup btwn. beams	7		2-01	3-04	3-04										
SV0407	42	4	2	4-01	115	Vertical - slab dowel	6		1-08 1/2	2-05 1/2											
SV0408	12	4	2	6-10	55	Stirrup at beam ends	7		2-00 3/4	3-03	1-07 1/2										
SV0409	12	4	2	3-09	30	Stirrup at beam ends	6		6 1/2	3-03											
SV0410	12	4	2	1-05	11	Stirrup (near face)	45	6 1/2	6 1/2	6											
ST0501	23	5	3 3/4	6-00	144	Diagonal - slab dowel	5	1-02			1-02	2-7 1/8	2-7 1/8	3-08							
ST0602	44	6	4 1/2	6-06	430	Diagonal - app. slab	5	1-02			1-02	2-11 3/8	2-11 3/8	4-02							
ST0503	23	5	3 3/4	6-00	144	Diagonal - slab dowel	5	1-02			1-02	2-7 1/8	2-7 1/8	3-08							
ST0604	40	6	4 1/2	6-06	391	Diagonal - app. slab	5	1-02			1-02	2-11 3/8	2-11 3/8	4-02							
	TOTAL WEIGHT IN PRECEDING GROUP OF BARS				4294																
				Pier 1 - Footings																	
PF1101	33	11	11	41-01	7203	Bottom of footing	25	38-00							1-0 3/4						
PF1002	78	10	10	18-09	6300	Top and bottom of ftg.	25	16-00							11 1/2						
PF1103	25	11	11	40-08	5404	Top of footing	7		38-00	1-08 1/4	1-08 1/4										
PF1104	25	11	11	39-10	5294	Top of footing	7		37-02	1-08 1/4	1-08 1/4										
PF0505	8	5		38-00	317	Footing skin	1	38-00													
PF0506	8	5		16-00	134	Footing skin	1	16-00													
PF0507	66	5	2 1/2	12-04	848	Footing stirrup	7		4-06	4-00 1/4	4-00 1/4										
PF0508	78	5	2 1/2	7-07	616	Footing stirrup	7		4-03	1-09 1/4	1-09 1/4										
PF0409	10	4		16-00	107	Footing support bar	1	16-00													
PF1110	56	11	11	13-03	3942	Footing dowel	24	11-08 1/2							1-0 3/4						
PF1018	20	10	10	29-09	2562	Bottom of footing	25	27-00							11 1/2						
PF1119	56	11	11	22-01	6570	Top and bottom of ftg.	25	19-00							1-0 3/4						
PF1120	29	11	11	30-01	4635	Top of footing	25	27-00							1-0 3/4						
PF0521	8	5		27-00	225	Footing skin	1	27-00													
PF0522	8	5		19-00	159	Footing skin	1	19-00													
PF0523	40	5	2 1/2	12-04	514	Footing stirrup	7		4-06	4-00 1/4	4-00 1/4										
PF0524	56	5	2 1/2	7-07	442	Footing stirrup	7		4-03	1-09 1/4	1-09 1/4										
PF0925	56	9	9	10-07	2013	Footing dowel	24	9-04							10 1/8						
	TOTAL WEIGHT IN PRECEDING GROUP OF BARS				47285																
				Pier 1 - Neat																	
PV1101	56	11	11	25-07	7612	Column vertical	24	24-00 1/2							1-0 3/4						
PT0501	85	5	2 1/2	14-09	1306	Column ties	51		3-07	3-07					5 5/8						
PC1001	11	10	10	40-10	1933	Cap bottom	7		38-01	1-08 1/4	1-08 1/4										
PC1002	11	10	10	40-01	1898	Cap bottom	7		37-04	1-08 1/4	1-08 1/4										
PC0603	6	6		38-01	343	Cap skin	1	38-01													
PC1004	11	10		38-01	1803	Cap top	1	38-01													
PS0501	110	5	2 1/2	19-02	2199	Cap stirrup	51		5-03	4-01 1/2					5 5/8						
PS0502	110	5	2 1/2	11-00	1262	Cap stirrup	51		1-01 3/4	4-01 1/2					5 5/8						
PP0401	36	4	2	8-01	194	Seat	7		5-03 1/2	1-06	1-06										
PP0502	24	5		4-10	121	Seat	1	4-10													
PN0601	10	6	3 3/4	8-05	126	End cap stirrup	7		5-04	1-08	1-08										
PV0904	56	9	9	25-03	4808	Column vertical	24	24-00 1/8							10 1/8						
PT0502	85	5	2 1/2	14-09	1306	Column ties	51		3-07	3-07					5 5/8						
PC1009	11	10	10	29-10	1413	Cap bottom	25	27-01							11 1/2						
PC0610	6	6		27-01	244	Cap skin	1	27-01													
PC0711	11	7		27-01	609	Cap top	1	27-01													
PS0504	88	5	2 1/2	19-02	1759	Cap stirrup	51		5-03	4-01 1/2					5 5/8						
PS0505	88	5	2 1/2	13-01	1203	Cap stirrup	51		2-02 3/4	4-01 1/2					5 5/8						
PP0403	27	4	2	8-01	146	Seat	7		5-03 1/2	1-06	1-06										
PP0504	18	5		4-10	91	Seat	1	4-10													
PN0602	10	6	3 3/4	8-05	126	End cap stirrup	7		5-04	1-08	1-08										
	TOTAL WEIGHT IN PRECEDING GROUP OF BARS				30502																

DIMENSION VARIATION TABLE

MARK	NO. EA. LEN.	DIMEN-SION	FROM FT.-INCHES	TO FT.-INCHES	VARY BY FT.-INCHES	DIMEN-SION	FROM FT.-INCHES	TO FT.-INCHES	VARY BY FT.-INCHES

BENDING DIAGRAM



NOTES:

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

REINFORCING STEEL SCHEDULE

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	40 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	41

REINFORCING STEEL SCHEDULE

DIMENSION TABLE

MARK	NO.	BAR SIZE	PIN DIA. FT-IN	LENGTH FT.-INCHES	WEIGHT (LBS.)	LOCATION	TYPE	A FT-IN	B FT-IN	C FT-IN	D FT-IN	E P FT-IN	F Q FT-IN	G R FT-IN	H FT-IN	I S FT-IN	J T FT-IN	K U FT-IN	L FT-IN	V FT-IN	N
				Pier 2 - Footings																	
PF1011	33	10	10	41-11	5952	Bottom of footing	25	39-00							11 1/2						
PF1112	80	11	11	19-01	8111	Top and bottom of ftg.	25	16-00							1-0 3/4						
PF1013	33	10	10	41-09	5929	Top of footing	7		39-00	1-08 1/4	1-08 1/4										
PF1014	33	10	10	41-01	5835	Top of footing	7		38-04	1-08 1/4	1-08 1/4										
PF0515	8	5		39-00	325	Footing skin	1	39-00													
PF0506	8	5		16-00	134	Footing skin	1	16-00													
PF0507	66	5	2 1/2	12-04	848	Footing stirrup	7		4-06	4-00 1/4	4-00 1/4										
PF0508	80	5	2 1/2	7-07	632	Footing stirrup	7		4-03	1-09 1/4	1-09 1/4										
PF0409	10	4		16-00	107	Footing support bar	1	16-00													
PF1116	20	11	11	14-00	1488	Footing dowel	24	12-05 1/2							1-0 3/4						
PF1117	20	11	11	17-00	1806	Footing dowel	24	15-05 1/2							1-0 3/4						
PF1026	39	10	10	34-10	5846	Bottom of footing	25	32-00							11 1/2						
PF1127	66	11	11	22-01	7744	Top and bottom of ftg.	25	19-00							1-0 3/4						
PF1128	39	11	11	35-01	7270	Top of footing	25	32-00							1-0 3/4						
PF0529	8	5		32-00	267	Footing skin	1	32-00													
PF0522	8	5		19-00	159	Footing skin	1	19-00													
PF0523	78	5	2 1/2	12-04	1003	Footing stirrup	7		4-06	4-00 1/4	4-00 1/4										
PF0524	66	5	2 1/2	7-07	521	Footing stirrup	7		4-03	1-09 1/4	1-09 1/4										
PF1130	56	11	11	13-03	3943	Footing dowel	24	11-08 1/2							1-0 3/4						
	TOTAL WEIGHT IN PRECEDING GROUP OF BARS				57920																
				Pier 2 - Neat																	
PV1102	20	11	11	17-03	1833	Column vertical	24	15-08 1/2							1-0 3/4						
PV1103	20	11	11	14-03	1514	Column vertical	24	12-08 1/2							1-0 3/4						
PT0501	86	5	2 1/2	14-09	1321	Column ties	51		3-07	3-07					5 5/8						
PC1005	13	10	10	41-10	2340	Cap bottom	7		39-01	1-08 1/4	1-08 1/4										
PC1006	8	10	10	41-01	1414	Cap bottom	7		38-04	1-08 1/4	1-08 1/4										
PC0607	6	6		39-01	352	Cap skin	1	39-01													
PC1008	13	10		39-01	2186	Cap top	1	39-01													
PS0501	100	5	2 1/2	19-02	1999	Cap stirrup	51		5-03	4-01 1/2					5 5/8						
PS0503	100	5	2 1/2	13-10	1445	Cap stirrup	51		2-07 1/4	4-01 1/2					5 5/8						
PP0401	36	4	2	8-01	194	Seat	7		5-03 1/2	1-06	1-06										
PP0502	24	5		4-10	121	Seat	1	4-10													
PN0601	10	6	3 3/4	8-05	126	End cap stirrup	7		5-04	1-08	1-08										
PV1105	56	11	11	25-04	7537	Column vertical	24	23-09 1/2							1-0 3/4						
PT0502	89	5	2 1/2	14-09	1367	Column ties	51		3-07	3-07					5 5/8						
PC1012	12	10	10	36-10	1851	Cap bottom	7		33-01	1-08 1/4	1-08 1/4										
PC1013	6	10	10	35-01	906	Cap bottom	7		32-04	1-08 1/4	1-08 1/4										
PC0614	6	6		32-01	289	Cap skin	1	32-01													
PC1015	10	10		32-01	1381	Cap top	1	32-01													
PS0504	92	5	2 1/2	19-02	1839	Cap stirrup	51		5-03	4-01 1/2					5 5/8						
PS0506	92	5	2 1/2	11-11	1141	Cap stirrup	51		1-07 1/2	4-01 1/2					5 5/8						
PP0403	27	4	2	8-01	146	Seat	7		5-03 1/2	1-06	1-06										
PP0504	18	5		4-10	91	Seat	1	4-10													
PN0602	10	6	3 3/4	8-05	126	End cap stirrup	7		5-04	1-08	1-08										
	TOTAL WEIGHT IN PRECEDING GROUP OF BARS				31519																

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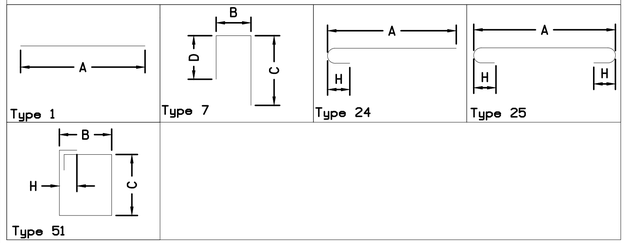

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RALEIGH, NC
STRUCTURAL ENGINEER

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

REINFORCING STEEL SCHEDULE

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	41 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	42

REINFORCING STEEL SCHEDULE

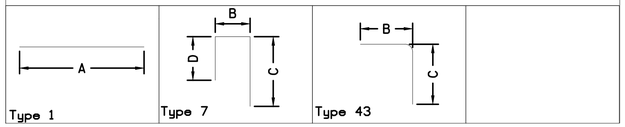
DIMENSION TABLE

MARK	NO.	BAR SIZE	PIN DIA. FT-IN	LENGTH FT.-INCHES	WEIGHT (LBS.)	LOCATION	TYPE	A FT-IN	B FT-IN	C FT-IN	D FT-IN	E P FT-IN	F Q FT-IN	G R FT-IN	H FT-IN	I S FT-IN	J T FT-IN	K U FT-IN	L FT-IN	V FT-IN	N
				Deck Slab																	
SL0401	73	4		12-02	593	Longitudinal deck	1	12-02													
SL0402	73	4		36-00	1756	Longitudinal deck	1	36-00													
SL0403	146	4		33-08	3283	Longitudinal deck	1	33-08													
SL0604	142	6		58-00	12370	Longitudinal deck	1	58-00													
SL0605	142	6		13-08	2915	Longitudinal deck	1	13-08													
SL0606	142	6		60-00	12797	Longitudinal deck	1	60-00													
SC0501	888	5		32-02	29792	Transverse deck	1	32-02													
SC0502	52	5		1-09 to 31-00	894	Transverse deck	1	VARY													
SC0503	78	5		1-04 to 31-08	1331	Transverse deck	1	VARY													
SC0504	2	5		34-11	73	Transverse deck	1	34-11													
SC0505	2	5		37-09	79	Transverse deck	1	37-09													
SC0511	482	5		6-00	3016	Transverse deck	1	6-00													
SC0512	468	5		5-04	2603	Const. jt. in deck	1	5-04													
SW0401	235	4		6-03	981	Sidewalk transverse	1	6-03													
SW0402	2	4		2-09 to 5-01	5	Sidewalk transverse	1	VARY													
SW0403	2	4		3-02 to 4-11	5	Sidewalk transverse	1	VARY													
SW0404	72	4		40-00	1924	Sidewalk longitudinal	1	40-00													
SW0405	12	4		6-06	52	Sidewalk longitudinal	1	6-06													
SW0411	236	4		4-03	670	Sidewalk transverse	1	4-03													
MT0401	228	4		2-08	406	Median transverse	1	2-08													
MT0402	1	4		1-04	1	Median transverse	1	1-04													
MT0403	1	4		1-08	1	Median transverse	1	1-08													
ML0401	20	4		40-00	534	Median longitudinal	1	40-00													
ML0402	4	4		28-07	76	Median longitudinal	1	28-07													
ML0403	4	4		19-01	51	Median longitudinal	1	19-01													
SL0407	73	4		12-02	593	Longitudinal deck	1	12-02													
SL0408	73	4		36-00	1756	Longitudinal deck	1	36-00													
SL0409	146	4		33-04	3251	Longitudinal deck	1	33-04													
SL0610	142	6		58-00	12370	Longitudinal deck	1	58-00													
SL0611	142	6		13-06	2879	Longitudinal deck	1	13-06													
SL0612	142	6		60-00	12797	Longitudinal deck	1	60-00													
SC0506	884	5		31-02	28736	Transv. - top and bott.	1	31-02													
SC0507	26	5		1-03 to 31-01	883	Transverse deck	1	VARY													
SC0508	37	5		1-08 to 30-08	1208	Transverse deck	1	VARY													
SC0509	2	5		33-09	70	Transverse deck	1	33-09													
SC0510	2	5		36-03	76	Transverse deck	1	36-03													
SC0513	478	5		6-00	2991	Transverse deck	1	6-00													
SW0406	229	4		10-08	1632	Sidewalk transverse	1	10-08													
SW0407	4	4		3-02 to 10-04	18	Sidewalk transverse	1	VARY													
SW0408	6	4		2-03 to 10-06	27	Sidewalk transverse	1	VARY													
SW0409	72	4		40-00	1924	Sidewalk longitudinal	1	40-00													
SW0410	12	4		4-02	33	Sidewalk longitudinal	1	4-02													
MT0404	227	4		2-08	404	Median transverse	1	2-08													
MT0405	1	4		1-05	1	Median transverse	1	1-05													
MT0406	1	4		1-06	1	Median transverse	1	1-06													
ML0404	20	4		40-00	534	Median longitudinal	1	40-00													
ML0405	4	4		29-09	79	Median longitudinal	1	29-09													
ML0406	4	4		5-02	14	Median longitudinal	1	5-02													
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					148485																
				Closure Diaphragm																	
DL0601	20	6		36-04	1091	Longitudinal	1	36-04													
DL0602	20	6		34-11	1049	Longitudinal	1	34-11													
DL0603	8	4		6-03	34	Longitudinal	7		4-05	1-00	1-00										
DL0604	20	6		6-08	200	Longitudinal	1	6-08													
DS0401	8	4		6-02	32	Vertical	7		4-04 1/8	1-00	1-00										
DS0402	84	4		4-05	248	Vertical	43		1-06	3-00											
DS0403	42	4		7-01	198	Vertical	7		9	3-03	3-03										
TOTAL WEIGHT IN PRECEDING GROUP OF BARS					2852																

DIMENSION VARIATION TABLE

MARK	NO. EA. LEN.	DIMEN-SION	FROM FT.-INCHES	TO FT.-INCHES	VARY BY FT.-INCHES	DIMEN-SION	FROM FT.-INCHES	TO FT.-INCHES	VARY BY FT.-INCHES
SC0502	2	A	1-09	31-00	1-02				
SC0503	2	A	1-04	31-08	9 5/8				
SW0402	1	A	2-09	5-01	2-04				
SW0403	1	A	3-02	4-11	1-09				
SC0507	2	A	1-03	31-01	1-02 3/8				
SC0508	2	A	1-08	30-08	9 7/8				
SW0407	1	A	3-02	10-04	2-04 5/8				
SW0408	1	A	2-03	10-06	1-07 3/4				

BENDING DIAGRAM



NOTES:

Dimensions in Bending Diagram are out-to-out of bars.

If fabrication of deck slab bar is not possible for length detailed and multiple bars are required, bars shall have the least number of Class B splices possible. Splices shall be located approximately at points of contraflexure and splices in alternate bars shall be located in different bays.

All reinforcing steel in the superstructure and the abutment neatwork shall be Corrosion Resistant Reinforcing Steel, Class 1.

SETH A. DENNEY
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Seth A Denney
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RALEIGH, NC
STRUCTURAL ENGINEER

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COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

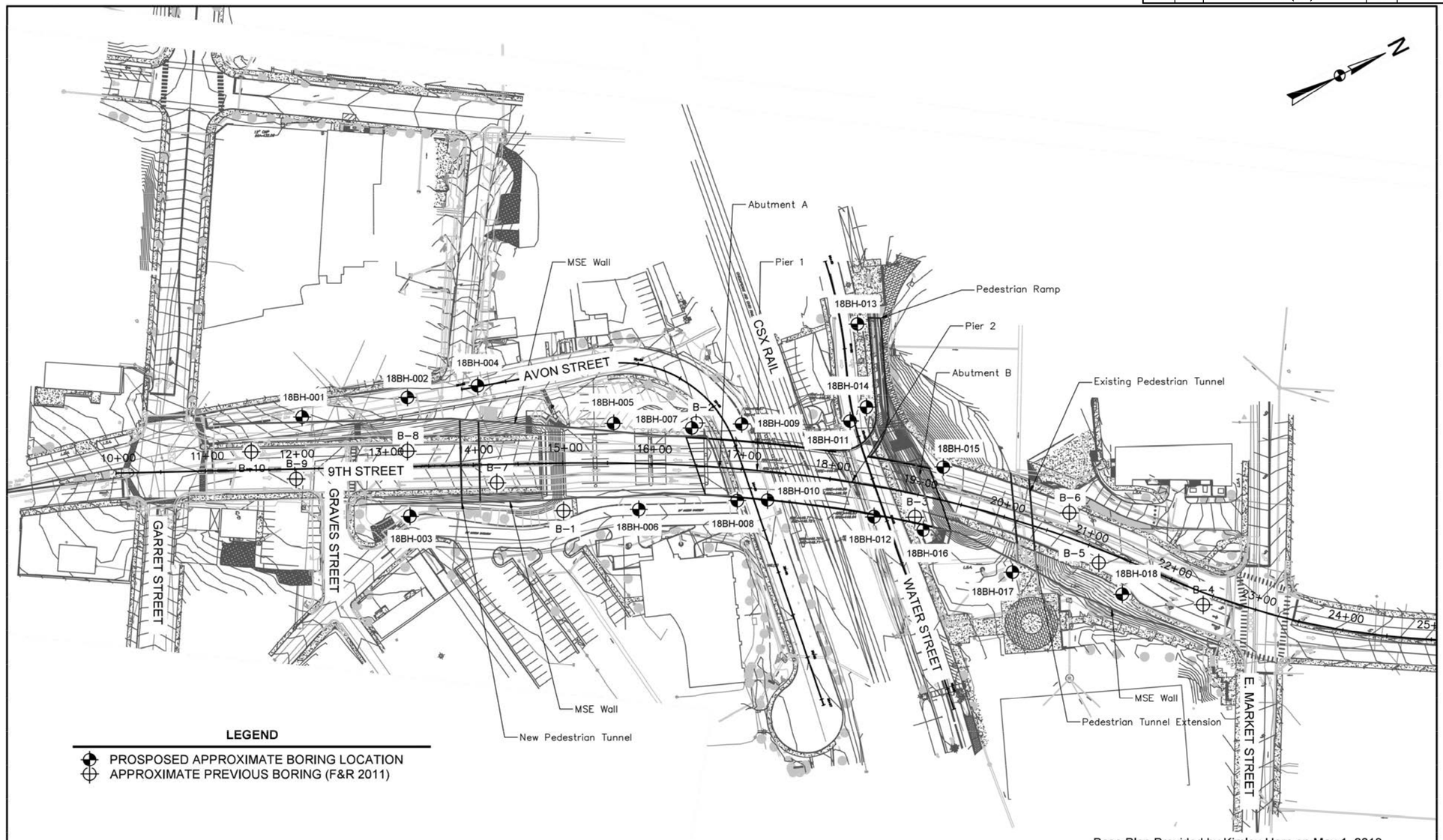
STRUCTURE AND BRIDGE DIVISION

REINFORCING STEEL SCHEDULE

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	42 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	43



Base Plan Provided by Kimley-Horn on May 1, 2018.

Schnabel ENGINEERING

BELMONT BRIDGE REPLACEMENT
9th ST over AVON ST, CSX RAIL, WATER ST
CITY OF CHARLOTTESVILLE, VIRGINIA
VDOT UPC 75878

Figure Name:	Done:	Figure Number:
LOCATION PLAN	A. NEZELEK	2
Project Number:	**Reviewed:**	**Date:**
17C43003	N. SILMAN	AUGUST 2018

COMMONWEALTH OF VIRGINIA
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RALEIGH, NC
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	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

ENGINEERING GEOLOGY

Designed: PDC	Date	Plan No.	Sheet No.
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STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	44

VDOT Virginia Department of Transportation

PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET ABUT A & MSE

18BH-007
PAGE 1 OF 1

STATION: 16+50 OFFSET: 40 L
LATITUDE: 38.028271° N LONGITUDE: 78.476920° W
SURFACE ELEVATION: 452.17 ft COORD. DATUM: NAD 83

FIELD DATA

Date(s) Drilled: 06/18/2018 – 06/18/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
NO LONG TERM MEASUREMENTS TAKEN

DEPTH (ft)	ELEVATION (ft)	STANDARD PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	DIP * STRATA	DIP * JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LAB DATA LL	LAB DATA PI	MOISTURE CONTENT (%)	FINES CONTENT -#200 (%)
											0.0 / 452.17 2-INCHES ASPHALT				
											0.17 / 452.0 4-INCHES CRUSHED STONE				
2	450	5 11 21 25	60		1 3						0.5 / 451.67 Fill, black, fine to coarse, SILTY SAND FILL, contains gravel, dense, moist (SM)			17.5	
4		7 24 20 11	65		5						3.0 / 449.17 Light brown and dark brown, fine to coarse, POORLY GRADED SAND WITH SILT FILL, very dense, moist (SP-SM)			14.1	
6		8 11 11 16	65		7						5.0 / 447.17 Residuum, tan-brown, fine to coarse, SILTY SAND, few rock fragments, medium dense, moist (SM)			8.4	
8	445	10 50/6	90		8						7.5 / 444.67 IGM, tan-brown, fine to coarse, SILTY SAND, few rock fragments, very dense, moist (SM)	23	3	7.7	35.4
10		50/3	100		9 9.3 10.5						10.5 / 441.67 Highly to moderately weathered, soft to moderately hard, gray-green, METABASALT, intensely fractured (< 2 in) to highly fractured (2 – 12 in), moderately dipping joints with manganese infill and iron oxide staining			3.6	
12	440					92	27								
14					15.5										
16	435					68	32								
18															
20					20.5						Auger refusal at 10.5 ft. Bottom of Boring at 20.5 ft.				

REMARKS: Rig Type: Diedrich D-50 (ATV).

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18BH-007

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VDOT Virginia Department of Transportation

PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET ABUT A & MSE

18BH-008
PAGE 1 OF 1

STATION: 17+00 OFFSET: 30 R
LATITUDE: 38.028298° N LONGITUDE: 78.476590° W
SURFACE ELEVATION: 451.72 ft COORD. DATUM: NAD 83

FIELD DATA

Date(s) Drilled: 06/19/2018 – 06/19/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
NO LONG TERM MEASUREMENTS TAKEN

PKT. PENETROMETER (tsf)	DEPTH (ft)	ELEVATION (ft)	STANDARD PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	DIP * STRATA	DIP * JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LAB DATA LL	LAB DATA PI	MOISTURE CONTENT (%)	FINES CONTENT -#200 (%)
												0.0 / 451.72 4-INCHES ASPHALT				
												0.33 / 451.39 44-INCHES CRUSHED STONE			4.3	
	2	450	11 6 6 3	50		1 3						4.0 / 447.72 Fill, orange-brown, fine to coarse, POORLY GRADED SAND FILL, contains gravel, loose, moist (SP)	62	27	27.5	76.2
	4		4 3 3 3	70		5						5.0 / 446.72 Brown with mottles of black, ELASTIC SILT WITH SAND FILL, stiff, moist (MH)	38	11	8.7	35.2
	6		3 3 4 4	75		7						7.0 / 444.72 Residuum, green-brown, fine to coarse, SILTY SAND WITH GRAVEL, dense, moist (SM)			16.7	
2	8	445	6 13 21 24	85		9						10.5 / 441.22 IGM, green-brown, fine to coarse, SANDY SILT WITH GRAVEL, very hard, moist (ML)				
	10		6 12 18 50/5	16		10.9						14.0 / 437.72 Decomposed to moderately weathered, soft to moderately hard, gray-green, METABASALT, intensely fractured (< 2 in) to highly fractured (2 – 12 in), moderately dipping joints with manganese infill and iron oxide staining				
	12	440														
	14		50/0			14										
	16	435					30	17								
	18															
	20					19										
	22	430					43	7								
	24					24						Auger refusal at 14 ft. Bottom of Boring at 24 ft.				

REMARKS: Rig Type: Diedrich D-50 (ATV).

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18BH-008

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STRUCTURE AND BRIDGE DIVISION

ENGINEERING GEOLOGY

Designed: PDC.....
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Date	Plan No.	Sheet No.
October 2020	302-08	44 of 50

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	45

Virginia Department of Transportation

PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET BRIDGE PIER 1

18BH-009
PAGE 1 OF 2

STATION: 17+00 OFFSET: 50 L
LATITUDE: 38.028415° N LONGITUDE: 78.476849° W
SURFACE ELEVATION: 451.91 ft COORD. DATUM: NAD 83

FIELD DATA

Date(s) Drilled: 06/15/2018 – 06/15/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
NO LONG TERM MEASUREMENTS TAKEN

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SOIL: SAMPLE LEGEND	SOIL: SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP ° STRATA	ROCK: DIP ° JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)	FINES CONTENT -#200 (%)
0											0.0 / 451.91 6-INCHES ASPHALT				
2	450	3 4 6 14	75		1						0.5 / 451.41 6-INCHES CRUSHED STONE	43	14	12.9	43.6
4		3 11 12 7	50		3						1.0 / 450.91 Fill, orange-brown, fine to coarse, SILTY SAND WITH GRAVEL FILL, contains crushed stone, medium dense, moist (ML)			19.7	
6		7 8 8 14	25		5						4.0 / 447.91 Gray, fine to coarse gravel, POORLY GRADED GRAVEL WITH SAND FILL, dense, moist (GP)			31.3	
8	445	18 45 50/6	87		7						5.0 / 446.91 Red-brown, ELASTIC SILT WITH GRAVEL FILL, contains crushed stone, very stiff, moist (MH)			4.1	
10		14 28 50/3	92		8.5 9 10.3						7.5 / 444.41 Brown, fine to coarse, SILTY SAND WITH GRAVEL FILL, very dense, moist (SM)			13.3	
12	440				12.5						9.0 / 442.91 Residuum, tan-brown, fine to coarse, SANDY SILT, hard, moist (ML)				
14											10.0 / 441.91 IGM, tan-brown, fine to coarse, SANDY SILT, very hard, moist (ML)				
16	435				17.5	28	0				12.5 / 439.41 Decomposed to highly weathered, very soft to moderately hard, gray-green, METABASALT, intensely fractured (< 2 in), brecciated with epidote, moderately dipping joints with manganese infill and iron oxide staining				
18															
20						25	8								
22	430				22.5						SAME, moderately weathered, moderately hard, intensely fractured (< 2 in) to highly fractured (2 – 12 in)				
24															
26						80	20								
28	425				27.5										
30															

REMARKS: Rig Type: Diedrich D-50 (ATV).

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PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET BRIDGE PIER 1

18BH-009
PAGE 2 OF 2

STATION: 17+00 OFFSET: 50 L
LATITUDE: 38.028415° N LONGITUDE: 78.476849° W
SURFACE ELEVATION: 451.91 ft COORD. DATUM: NAD 83

FIELD DATA

Date(s) Drilled: 06/15/2018 – 06/15/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
NO LONG TERM MEASUREMENTS TAKEN

LAB DATA

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SOIL: SAMPLE LEGEND	SOIL: SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP ° STRATA	ROCK: DIP ° JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LIQUID LIMIT (LL)	PLASTICITY INDEX (PI)	MOISTURE CONTENT (%)	FINES CONTENT -#200 (%)
32	420				32.5	65	0				Auger refusal at 12.5 ft. Bottom of Boring at 32.5 ft.				

REMARKS: Rig Type: Diedrich D-50 (ATV).

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18BH-009

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KIMLEY-HORN & ASSOC.
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DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

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Date	Plan No.	Sheet No.
October 2020	302-08	45 of 50

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STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	46

VDOT Virginia Department of Transportation

PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET BRIDGE PIER 1

18BH-010
PAGE 1 OF 1

STATION: 17+35 OFFSET: 30 R
LATITUDE: 38.028382° N LONGITUDE: 78.476539° W
SURFACE ELEVATION: 451.4 ft COORD. DATUM: NAD 83

Date(s) Drilled: 06/18/2018 – 06/18/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA														LAB DATA			
			SOIL				ROCK										
PKT. PENETROMETER (tsf)	DEPTH (ft)	ELEVATION (ft)	STANDARD PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	DIP ° STRATA	DIP ° JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)	FINES CONTENT -#200 (%)
4.5	2	450	4 5 7	65		1						0.0 / 451.4 5-INCHES ASPHALT 0.42 / 450.98 10-INCHES CRUSHED STONE			19.9	
4.5	4		4 6 7 7	56		3						1.25 / 450.15 Fill, red-brown, fine to coarse, SANDY SILT FILL, stiff, moist (ML)			12.7	
	6	445	50/3 10 11 5 6	60		4.8 5						4.0 / 447.4 Red-brown, fine and coarse, SILTY GRAVEL WITH SAND FILL, contains crushed stone, medium dense, moist (GM)	51	22	13.3	33.3
	8		50/6 6	80		7 7.5						SAME, gray, contains construction debris, very dense below 7 ft			3.0	
	10		22 50/3	63		9 9.8						8.5 / 442.9 IGM, light brown, fine to coarse, CLAYEY SAND WITH GRAVEL, very dense, moist (SC)	33	10	9.3	34.5
	12	440														
	14		50/1	0		14 14.1										
	16	435														
	18					18						18.0 / 433.4 Decomposed to highly weathered, very soft to moderately hard, gray-green, METABASALT, intensely fractured (< 2 in), moderately dipping joints with manganese infill and iron oxide staining				
	20								42	7						
	22	430				23						SAME, decomposed, very soft, intensely fractured (< 2 in)				
	24															
	26	425							12	0						
	28					28						Auger refusal at 18 ft. Bottom of Boring at 28 ft.				

REMARKS: Rig Type: Diedrich D-50 (ATV).
Sampler refusal at 14 ft.

PAGE 1 OF 1
18BH-010

SPT_LOGAB:17C43003 VDOT LOGS.GPJ:SPT7.GDT:gINT_version 10.0.000:11/12/19:Schnabel Engineering, Inc.

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VDOT Virginia Department of Transportation

PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET BRIDGE PIER 2

18BH-011
PAGE 1 OF 1

STATION: 18+25 OFFSET: 70 L
LATITUDE: 38.028717° N LONGITUDE: 78.476673° W
SURFACE ELEVATION: 450.99 ft COORD. DATUM: NAD 83

Date(s) Drilled: 06/12/2018 – 06/12/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
NOT ENCOUNTERED DURING DRILLING
NO LONG TERM MEASUREMENTS TAKEN

FIELD DATA											LAB DATA		
		SOIL				ROCK							
DEPTH (ft)	ELEVATION (ft)	STANDARD PENETRATION TEST HAMMER BLOWS	SOIL RECOVERY (%)	SAMPLE LEGEND	SAMPLE INTERVAL	CORE RECOVERY (%)	ROCK QUALITY DESIGNATION	DIP ° STRATA	DIP ° JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LIQUID LIMIT LL	PLASTICITY INDEX PI	MOISTURE CONTENT (%)
		3 4 8 17	85		2						0.0 / 450.99 6-INCHES ASPHALT 0.5 / 450.49 6-INCHES CRUSHED STONE			35.1
2	450														
		5 14 25 40	80		3 5						1.0 / 449.99 Fill, red-brown, fine to coarse, SILTY SAND FILL, medium dense, moist (SM)			14.6
4															
		13 25 50	93		6.5						2.0 / 448.99 Residuum, light tan-brown, SILT, very hard, moist (ML)			12.1
6	445	50/1	0		7 7.1						6.0 / 444.99 IGM, light tan- brown, SILT, very hard (ML)			
8															
		28 40 50/5	86		9 10.4									10.9
10															
12	440				12.5						12.5 / 438.49 Moderately weathered, soft to moderately hard, gray-green, METABASALT, intensely fractured (< 2 in) to highly fractured (2 – 12 in), moderately dipping joints with manganese infill and iron oxide staining			
14						66	13								
					15.2										
16	435														
18						82	33								
20					20.2										
	430					91	25								
22					22.5						Auger refusal at 12.5 ft. Bottom of Boring at 22.5 ft.				

REMARKS: Rig Type: Diedrich D-50 (ATV).

PAGE 1 OF 1
18BH-011

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Seth A Denney
2020.10.27 14:07:11-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

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	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

ENGINEERING GEOLOGY

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	46 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	47

VDOT Virginia Department of Transportation

PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET BRIDGE PIER 2

18BH-012
PAGE 1 OF 2

STATION: 18+50 OFFSET: 30 R
LATITUDE: 38.028653° N LONGITUDE: 78.476298° W
SURFACE ELEVATION: 450.4 ft COORD. DATUM: NAD 83

FIELD DATA

Date(s) Drilled: 06/12/2018 – 06/12/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
▼ FIRST ENCOUNTERED AT 19.0 ft DEPTH
NO LONG TERM MEASUREMENTS TAKEN

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SOIL: SAMPLE LEGEND	SOIL: SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP ° STRATA	ROCK: DIP ° JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LAB DATA: LIQUID LIMIT (LL)	LAB DATA: PLASTICITY INDEX (PI)	LAB DATA: MOISTURE CONTENT (%)	LAB DATA: FINES CONTENT -#200 (%)
0	450	2 2 3	80		1 3						0.0 / 450.4 4-INCHES ASPHALT 0.33 / 450.07 8-INCHES CRUSHED STONE			38.4	
2		1 2 2	75		3 5						1.0 / 449.4 Residuum, red-brown, fine to coarse, SILTY SAND, loose, moist (SM)			34.7	
4	445	1 1 2	90		5 7							51	12	43.4	48.4
6		5 14 41 50/5	95		7 8.9						7.0 / 443.4 Brown, SILT WITH SAND, contains rock fragments, very hard, moist (ML)			5.3	
8		15 50/5	78		9 9.9						8.5 / 441.9 IGM, light gray, CLAYEY GRAVEL WITH SAND, very dense, moist (GC)	29	10	5.2	17.3
10	440														
12		50/4	100		14 14.3									3.6	
14	435														
16		50/2	50		19 19.2									8.4	
18											17.0 / 433.4 Dark brown-gray, fine to coarse, SILTY GRAVEL, very dense, wet (GM)				
20	430														
22					22.3	50	0				22.3 / 428.1 Decomposed to moderately weathered, very soft to moderately hard, gray-green, METABASALT, intensely fractured (< 2.0 in), moderately dipping joints with manganese infill and iron oxide staining				
24															
26	425				27.3										
28															
30						48	0								

REMARKS: Rig Type: Diedrich D-50 (ATV).

PAGE 1 OF 2
18BH-012

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PROJECT #: 0020-104-101, UPC 75878
LOCATION: Belmont Bridge Replacement
STRUCTURE: 9TH STREET BRIDGE PIER 2

18BH-012
PAGE 2 OF 2

STATION: 18+50 OFFSET: 30 R
LATITUDE: 38.028653° N LONGITUDE: 78.476298° W
SURFACE ELEVATION: 450.4 ft COORD. DATUM: NAD 83

FIELD DATA

Date(s) Drilled: 06/12/2018 – 06/12/2018
Drilling Method(s): 3-1/4" I.D. Hollow Stem Auger
SPT Method: Auto Hammer (140 lb)
Other Test(s): Not Applicable
Driller: Shenandoah Drilling Services, Inc
Logger: A. Nezelek, Schnabel Engineering

GROUND WATER
▼ FIRST ENCOUNTERED AT 19.0 ft DEPTH
NO LONG TERM MEASUREMENTS TAKEN

DEPTH (ft)	ELEVATION (ft)	SOIL: STANDARD PENETRATION TEST HAMMER BLOWS	SOIL: SOIL RECOVERY (%)	SOIL: SAMPLE LEGEND	SOIL: SAMPLE INTERVAL	ROCK: CORE RECOVERY (%)	ROCK: ROCK QUALITY DESIGNATION	ROCK: DIP ° STRATA	ROCK: DIP ° JOINTS	STRATA LEGEND	FIELD DESCRIPTION OF STRATA	LAB DATA: LIQUID LIMIT (LL)	LAB DATA: PLASTICITY INDEX (PI)	LAB DATA: MOISTURE CONTENT (%)	LAB DATA: FINES CONTENT -#200 (%)
32	420				32.3						Auger refusal at 22.3 ft. Bottom of Boring at 32.3 ft.				

REMARKS: Rig Type: Diedrich D-50 (ATV).

PAGE 2 OF 2
18BH-012

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SETH A. DENNEY
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Seth A Denney
2020.10.27 14:07:57-04'00'

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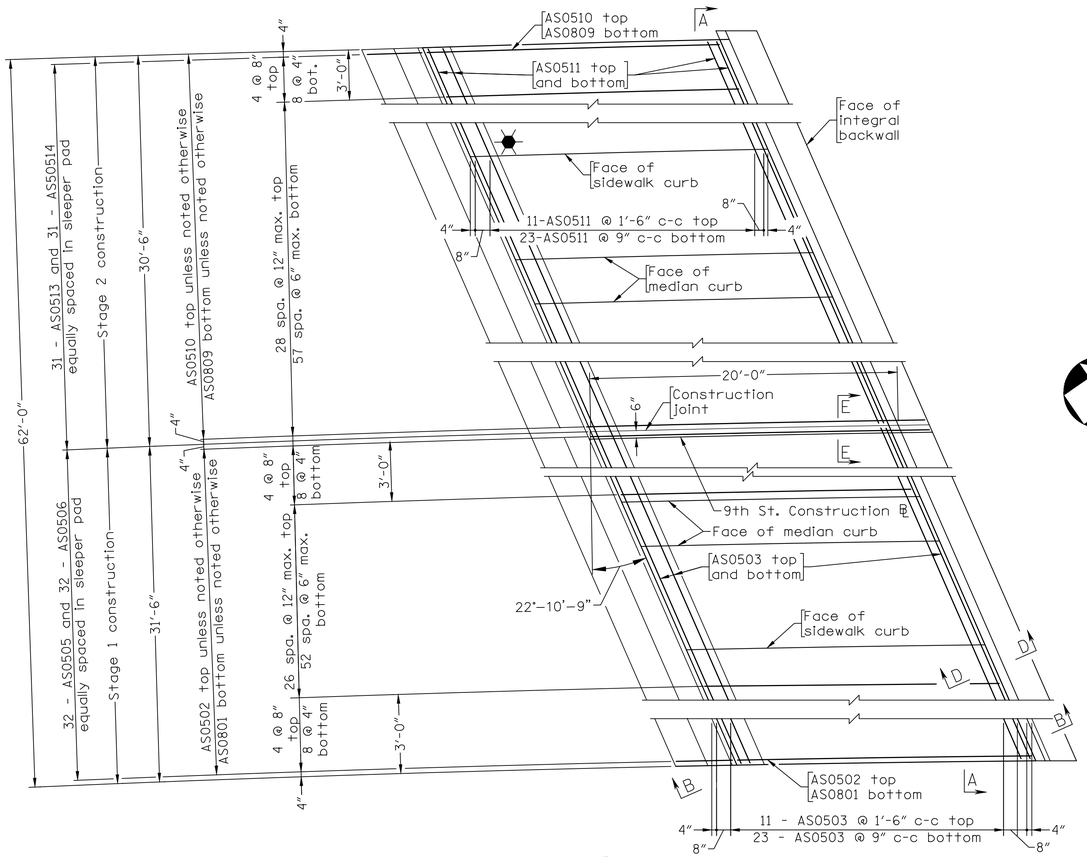
Revisions

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION
STRUCTURE AND BRIDGE DIVISION

ENGINEERING GEOLOGY

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	47 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	48



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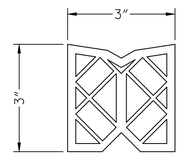
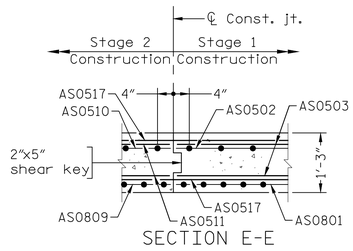


PREFORMED ELASTOMERIC JOINT SEALER
In uncompressed state



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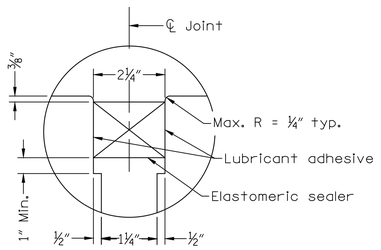
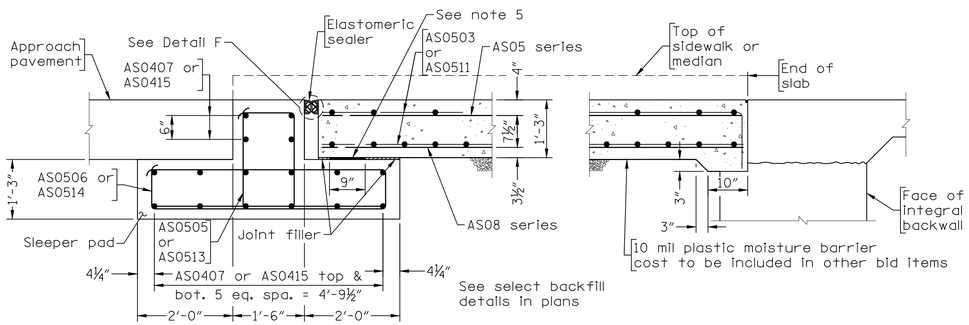


DETAIL F



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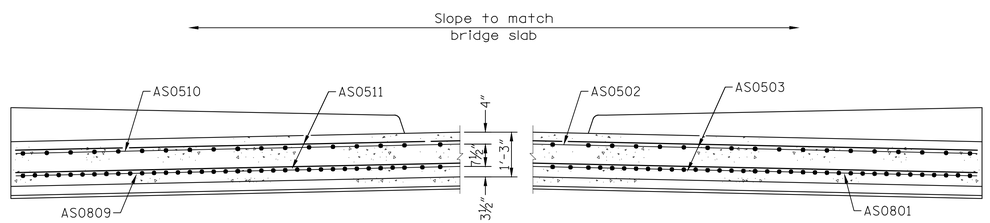
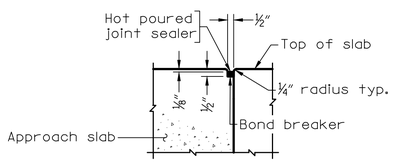


SECTION A-A



SECTION D-D

LIGHT POLE LOCATIONS	
STATION	OFFSET
16+42.72	23.45' LT.

Notes:

1. All joints that are to be sealed shall be free of cracked and spalled areas and their faces shall be free of all foreign matter, curing compound, oils, greases and dirt. All faces must be sandblasted or brushed with a mechanical rotary wire brush. Just prior to sealing, the joint shall be blown out with oil-free compressed air.
2. Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All reinforcing bar dimensions except for bending diagram are to centers of bars.
3. Prime aggregate base material with 0.35 gal. per sq. yd. Liquid Asphalt Material Type RC-70, RC-250 or MC-250 if aggregate base is exposed for more than two weeks.
4. Grooving shall be in accordance with VDOT Road and Bridge Specifications, Section 404.07 (f), Class 6, Bridge Deck Finish. Payment for grooving is included in bridge deck grooving quantities.
5. 2-⅛" preformed bedding material pads conforming to Sec. 237, full length of approach slab seat. Between the pads use either a powdered graphite lubricant or Molykote 321 by Dow Corning or Mantek Dri-guard.
6. Section of sealer shown is heavy-duty structural type sealer and may vary slightly depending on manufacturer.
7. As nearly as possible, side of joints shall be straight, vertical and parallel. The area of the installation shall be free from cracks and spalls.
8. Sealer shall be installed in one continuous piece.
9. Joint width is the final joint width of the cured concrete when placed at 60°F. The width shall be increased or decreased for every 10°F temperature drop or rise respectively by 3/16"

✱ Denotes light pole. See sheet 32 for lighting details including junction box locations. For stations and offsets, see Light pole locations table.

COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
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RALEIGH, NC
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	Revisions	

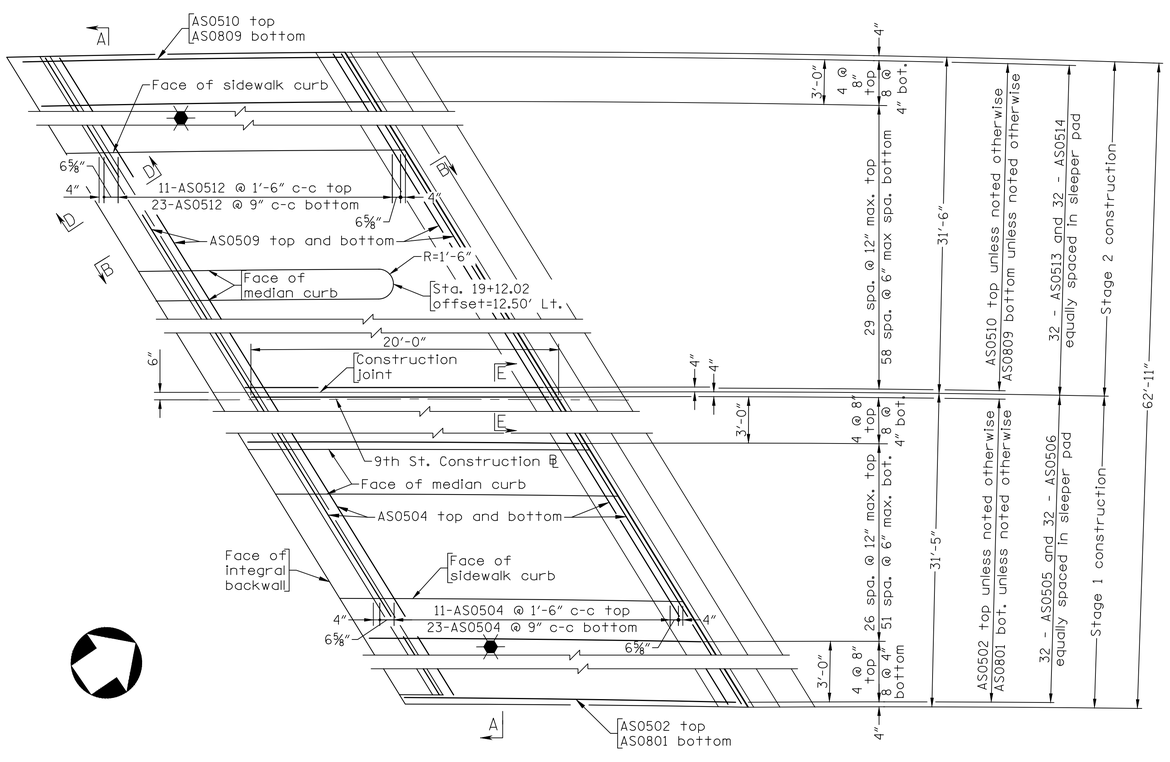
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

APPROACH SLAB ABUTMENT A DETAILS

Designed: PDC	Date	Plan No.	Sheet No.
Drawn: JJK	October 2020	302-08	48 of 50
Checked: SAD			

STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	49



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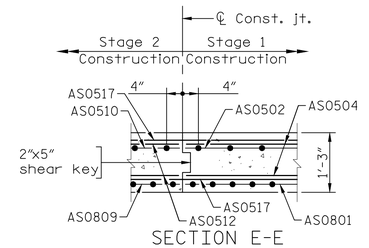
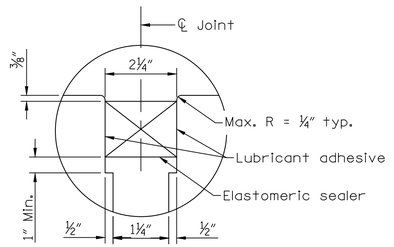
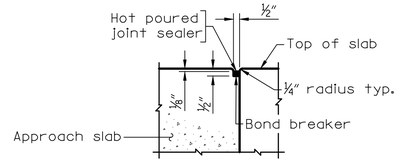


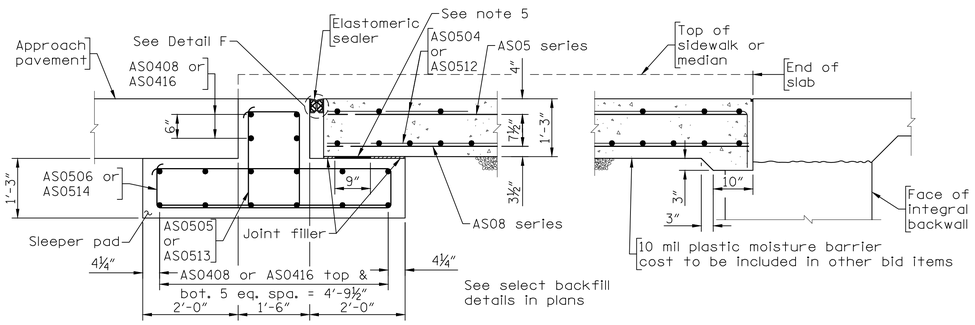
SECTION E-E



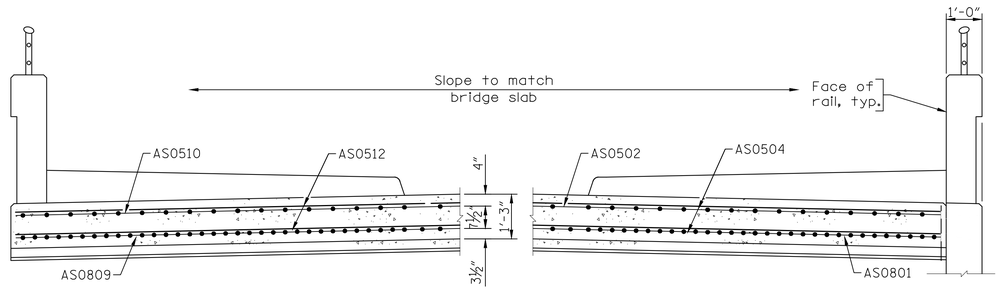
DETAIL F



SECTION D-D



SECTION B-B



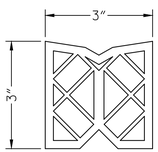
SECTION A-A

Notes:

1. All joints that are to be sealed shall be free of cracked and spalled areas and their faces shall be free of all foreign matter, curing compound, oils, greases and dirt. All faces must be sandblasted or brushed with a mechanical rotary wire brush. Just prior to sealing, the joint shall be blown out with oil-free compressed air.
2. Deformed reinforcing bars shall conform to ASTM A615, Grade 60. All reinforcing bar dimensions except for bending diagram are to centers of bars.
3. Prime aggregate base material with 0.35 gal. per sq. yd. Liquid Asphalt Material Type RC-70, RC-250 or MC-250 if aggregate base is exposed for more than two weeks.
4. Grooving shall be in accordance with VDOT Road and Bridge Specifications, Section 404.07 (f), Class 6, Bridge Deck Finish. Payment for grooving is included in bridge deck grooving quantities.
5. 2-⅛" preformed bedding material pads conforming to Sec. 237, full length of approach slab seat. Between the pads use either a powdered graphite lubricant or Molykote 321 by Dow Corning or Mantek Dri-guard.
6. Section of sealer shown is heavy-duty structural type sealer and may vary slightly depending on manufacturer.
7. As nearly as possible, side of joints shall be straight, vertical and parallel. The area of the installation shall be free from cracks and spalls.
8. Sealer shall be installed in one continuous piece.
9. Joint width is the final joint width of the cured concrete when placed at 60°F. The width shall be increased or decreased for every 10°F temperature drop or rise respectively by 3/16".

✶ Denotes light pole. See sheet 32 for lighting details including junction box locations. for stations and offsets, see light pole locations table.

LIGHT POLE LOCATIONS	
STATION	OFFSET
19+05.12	23.62' LT.
19+36.99	23.20' RT.



PREFORMED ELASTOMERIC JOINT SEALER
In uncompressed state

COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
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Seth A Denney
2020.10.27 14:09:11-04'00'

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No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

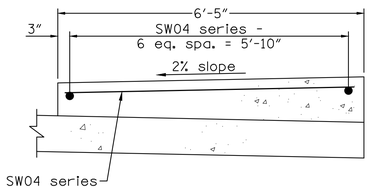
APPROACH SLAB ABUTMENT B DETAILS

Designed: PDC.....	Date	Plan No.	Sheet No.
Drawn: JJK.....	October 2020	302-08	49 of 50
Checked: SAD.....			

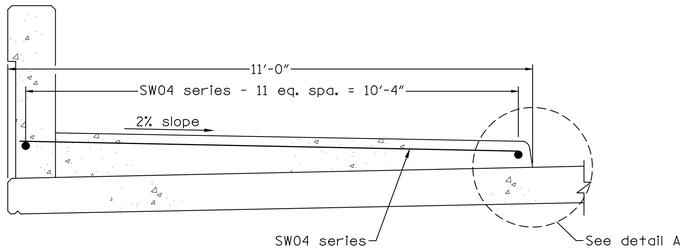
STATE	FEDERAL AID		STATE		SHEET NO.
	ROUTE	PROJECT	ROUTE	PROJECT	
VA.	—	STP-5104(296)	20	0020-104-101, B601	50

Notes:

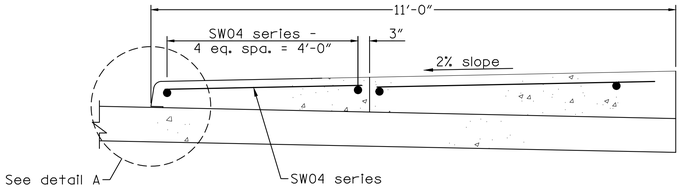
All reinforcing steel shall be corrosion resistant steel.



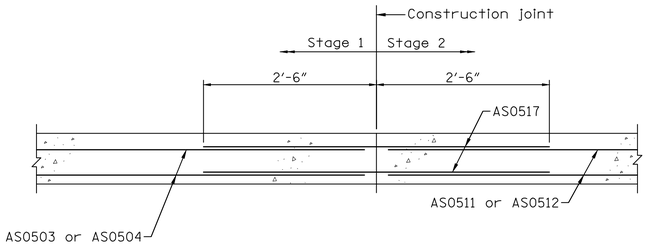
STAGE 1 SIDEWALK DETAIL – PHASE 2



STAGE 2 SIDEWALK DETAIL



STAGE 4 SIDEWALK DETAIL

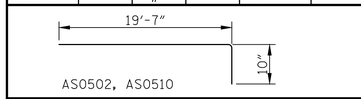


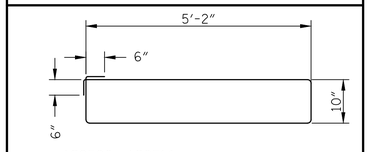
At the Contractor's option, and at no additional cost to the cITY, a mechanical splice may be used in place of the lap splice. In this case, the AS0517 bars are replaced by couplers having 2'-6" leg lengths.

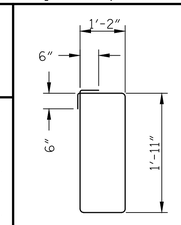
PART SECTION AT CONSTRUCTION JOINT

REINFORCING STEEL SCHEDULE

Mark	No.	Size	Pin ø	Length	Location
AS0801	136	#8	——	19'-7"	Approach slab long., bot. (stage 1)
AS0502	70	#5	3¾"	20'-4"	Approach slab long., top (stage 1)
AS0503	42	#5	——	33'-8"	Approach slab transverse, top and bot. (Abut. A stage 1)
AS0504	42	#5	——	36'-6"	Approach slab transverse, top and bot. (Abut. B stage 1)
AS0505	64	#5	2½"	6'-8"	Sleeper pad stirrups (stage 1)
AS0506	64	#5	2½"	12'-6"	Sleeper pad stirrups (stage 1)
AS0407	16	#4	——	33'-8"	Sleeper pad transverse (Abut. A stage 1)
AS0408	16	#4	——	36'-2"	Sleeper pad transverse (Abut. B stage 1)
SW0401	24	#4	——	19'-6"	Sidewalk longitudinal (stage 1)
SW0402	42	#4	——	7'-2"	Sidewalk transverse (stage 1)
SW0405	42	#4	——	5'-0"	Sidewalk transverse (stage 4)
MT0401	42	#4	——	2'-8"	Median transverse (stage 1)
ML0401	8	#4	——	19'-8"	Median longitudinal (stage 1)
AS0809	131	#8	——	19'-7"	Approach slab long., bot. (stage 2)
AS0510	67	#5	3¾"	20'-4"	Approach slab long., top (stage 2)
AS0511	42	#5	——	32'-5"	Approach slab transverse, top and bot. (Abut. A stage 2)
AS0512	42	#5	——	36'-6"	Approach slab transverse, top and bot. (Abut. B stage 2)
AS0513	63	#5	2½"	6'-8"	Sleeper pad stirrups (stage 2)
AS0514	63	#5	2½"	12'-6"	Sleeper pad stirrups (stage 2)
AS0415	16	#4	——	32'-5"	Sleeper pad transverse (Abut. A stage 2)
AS0416	16	#4	——	37'-2"	Sleeper pad transverse (Abut. B stage 2)
AS0517	84	#5	——	6'-0"	Approach slab construction joint reinforcing
SW0403	24	#4	——	19'-8"	Sidewalk longitudinal (stage 2)
SW0404	42	#4	——	11'-6"	Sidewalk transverse (stage 2)
MT0402	33	#4	——	2'-8"	Median transverse (stage 2)
ML0402	4	#4	——	19'-8"	Median longitudinal (Abutment A stage 2)
ML0403	4	#4	——	13'-11"	Median longitudinal (Abutment B stage 2)



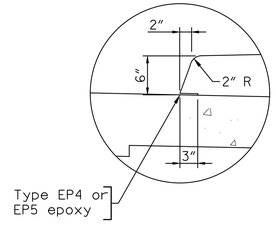




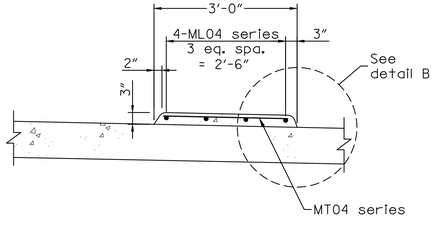
ESTIMATED QUANTITIES

Construction Stage		Concrete Class A4 Bridge Approach Slab ⊗ CY	Reinforcing Steel Bridge Approach Slab ⊗ LB
Stage 1	Abutment A	48.9	7,392
	Abutment B	50.4	7,558
Stage 2	Abutment A	46.2	7,562
	Abutment B	48.0	7,460
Totals		193.5	29,972

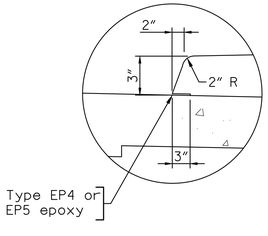
⊗ Denotes items to be paid for on basis of plan quantities in accordance with current Road and Bridge Specifications.



DETAIL A



TYPICAL MEDIAN DETAIL



DETAIL B

* ML0403 bars may be filled cut to meet required clearances.

Not to scale

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COMMONWEALTH OF VIRGINIA
SETH A. DENNEY
Lic. No. 0402055154
PROFESSIONAL ENGINEER

Seth A Denney
2020.10.27 14:09:47-04'00'

KIMLEY-HORN & ASSOC.
RALEIGH, NC
STRUCTURAL ENGINEER

No.	Description	Date
	Revisions	

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION

STRUCTURE AND BRIDGE DIVISION

APPROACH SLAB DETAILS

Designed: PDC.....
Drawn: JJK.....
Checked: SAD.....

Date	Plan No.	Sheet No.
October 2020	302-08	50 of 50