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09/08/09

TIP PROJECTS: U-5725/R-3822

CONTRACT: C204149

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-5725/R-3822		

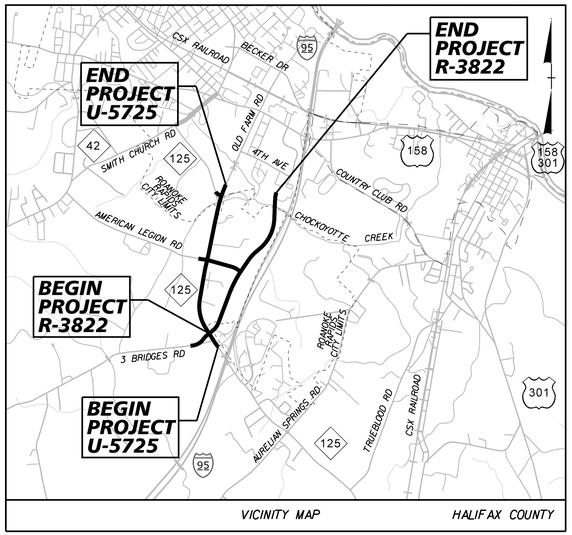
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50162.1.1		P.E. (U-5725)
50162.2.1		R/W (U-5725)
50162.2.2		UTIL. (U-5725)
37765.1.6		P.E. (R-3822)
37765.2.5		R/W, UTIL. (R-3822)
50162.3.1		CONST. (U-5725/R-3822)

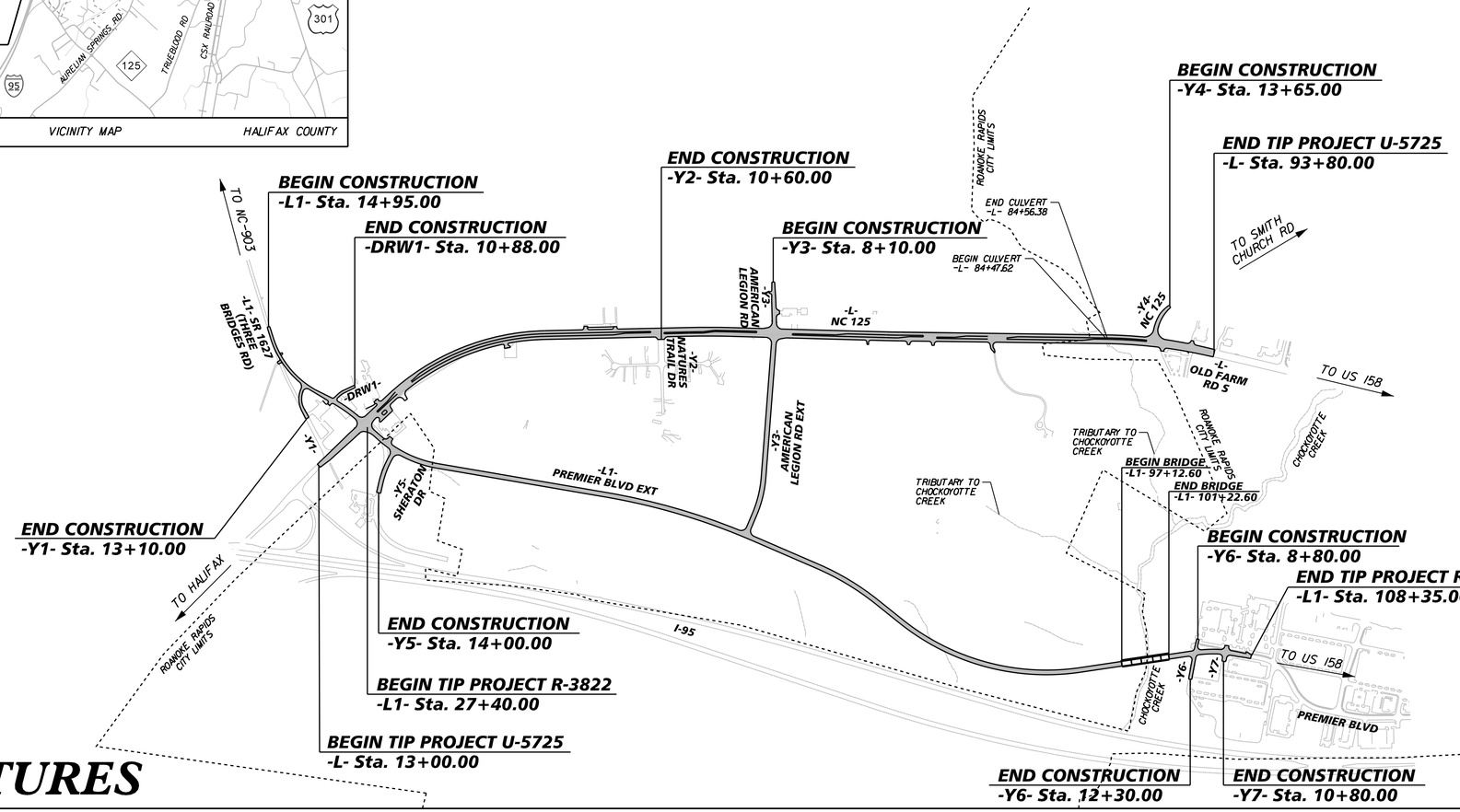
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HALIFAX COUNTY

LOCATION: NC 125 FROM I-95 TO OLD FARM ROAD SOUTH, SR 1627 (THREE BRIDGES ROAD) FROM NC 125 TO PREMIER BOULEVARD

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, AND STRUCTURES





NC GRID
NAD 83/95

STRUCTURES

U-5725 DESIGN DATA		
AADT 2018	=	10600
AADT 2040	=	15100
K	=	10%
D	=	55%
T	=	3%*
V	=	50 MPH

* (TTST 1% + DUAL 2%)
FUNCTIONAL CLASSIFICATION:
RURAL ARTERIAL
REGIONAL TIER

R-3822 DESIGN DATA		
AADT 2018	=	0
AADT 2040	=	3200
K	=	8%
D	=	55%
T	=	3%*
V	=	40 MPH

* (TTST 1% + DUAL 2%)
FUNCTIONAL CLASSIFICATION:
LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY
TIP PROJECT R-3822 = 1.455 MILES
LENGTH STRUCTURE
TIP PROJECT R-3822 = 0.078 MILES
TOTAL LENGTH
TIP PROJECT R-3822 = 1.533 MILES
LENGTH ROADWAY
TIP PROJECT U-5725 = 1.530 MILES
TOTAL LENGTH
TIP PROJECT U-5725 = 1.530 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2017

NC LICENSE #F-0102
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2018 STANDARD SPECIFICATIONS

LETTING DATE:
SEPTEMBER 2018

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

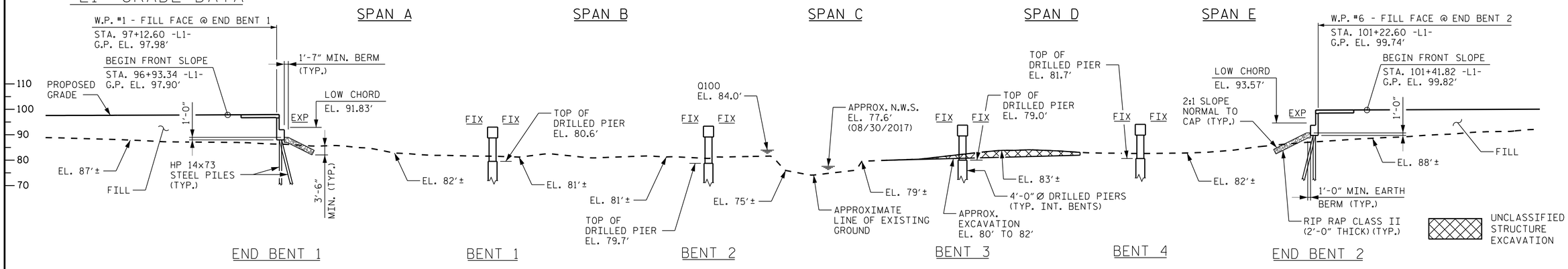
6/28/2018

97+00 98+00 99+00 100+00 101+00 102+00

(-)0.7724% (+)0.4290%

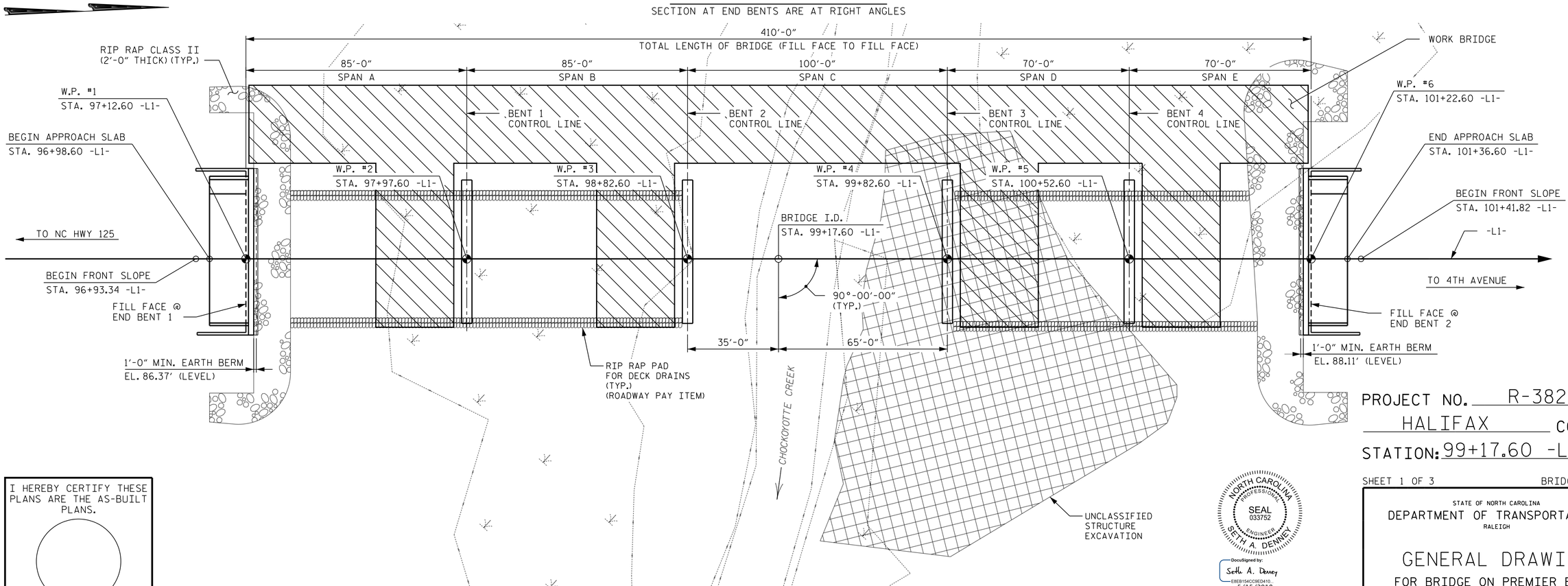
P.I. STA. = 96+00.00
EL. = 97.50'
V.C. = 120'

-L1- GRADE DATA



SECTION ALONG -L1-

SECTION AT END BENTS ARE AT RIGHT ANGLES



PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney
EBEB154CC9ED410...
5/15/2018

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY:	D. D. LOWERY	DATE:	03/18
CHECKED BY:	C. T. POOLE	DATE:	03/18
DESIGN ENGINEER OF RECORD:	S. A. DENNEY	DATE:	03/18

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 1 OF 3 BRIDGE NO. 208

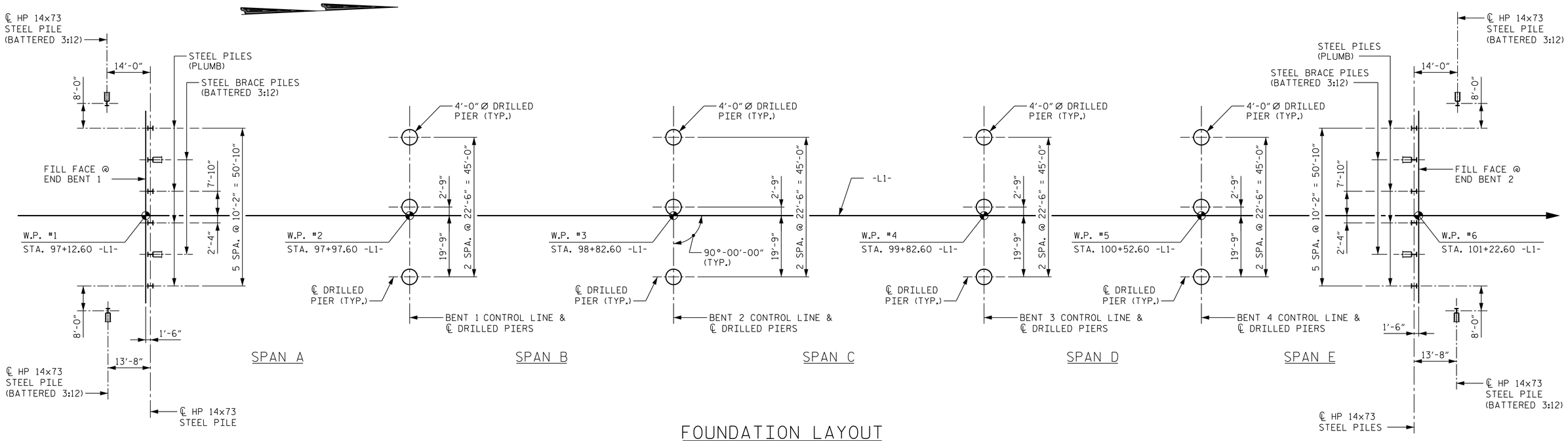
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON PREMIER BLVD. EXTENSION OVER CHOCKOYOTTE CREEK BETWEEN NC HWY 125 AND 4TH AVENUE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			58

5/14/2018 K:\RDT_Structures_Bridge\NC\01036392 - R-3822\Cad\Dgn\R3822_SMU_CD1_410208.dgn



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES

FOUNDATION NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 160 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 270 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1 AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40,000 FT-LBS TO 55,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE GEOTECHNICAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 505 TONS FOR PIER NO. 1, 625 TONS FOR PIER NO. 2, AND 480 TONS FOR PIER NO. 3. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 90 TSF FOR PIER NO. 1, 110 TSF FOR PIER NO. 2, AND 85 TSF FOR PIER NO. 3.

DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 540 TONS FOR PIER NO. 1, 670 TONS FOR PIER NO. 2, AND 515 TONS FOR PIER NO. 3. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95 TSF FOR PIER NO. 1, 120 TSF FOR PIER NO. 2, AND 20 TSF FOR PIER NO. 3.

DRILLED PIERS AT BENT NO. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 545 TONS FOR PIER NO. 1, 675 TONS FOR PIER NO. 2, AND 515 TONS FOR PIER NO. 3. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95 TSF FOR PIER NO. 1, 120 TSF FOR PIER NO. 2, AND 10 TSF FOR PIER NO. 3.

DRILLED PIERS AT BENT NO. 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 510 TONS FOR PIER NO. 1, 630 TONS FOR PIER NO. 2, AND 485 TONS FOR PIER NO. 3. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 90 TSF FOR PIER NO. 1, 110 TSF FOR PIER NO. 2, AND 10 TSF FOR PIER NO. 3.

INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 65 FT. FOR PIER NO. 1, 64 FT. FOR PIER NO. 2, AND 63 FT. FOR PIER NO. 3 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 8 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 61 FT. FOR PIER NO. 1, 51 FT. FOR PIER NO. 2, AND 55 FT. FOR PIER NO. 3 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 7 FT. INTO ROCK FOR PIER NO. 1, AT LEAST 4 FT. INTO ROCK FOR PIER NO. 2 AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT NO. 3 TO A TIP ELEVATION NO HIGHER THAN 52 FT. FOR PIER NO. 1, 42 FT. FOR PIER NO. 2, AND 52 FT. FOR PIER NO. 3 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 4 FT. INTO ROCK FOR PIER NO. 1 AND AT LEAST 10 FT. INTO ROCK FOR PIER NO. 2 AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT NO. 4 TO A TIP ELEVATION NO HIGHER THAN 55 FT. FOR PIER NO. 1, 47 FT. FOR PIER NO. 2, AND 54 FT. FOR PIER NO. 3 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 4 FT. INTO ROCK FOR PIER NO. 1, AT LEAST 6 FT. INTO ROCK FOR PIER NO. 2, AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 74 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 70 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 3. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 69 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 4. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 70 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 AND BENT NO. 4 IS ELEVATION 77 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 AND BENT NO. 3 IS ELEVATION 75 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PIT MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR PIT. FOR PILE INTEGRITY TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney ERE8154CC9ED410... 5/15/2018

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421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON PREMIER BLVD. EXTENSION OVER CHOCKOYOTTE CREEK BETWEEN NC HWY 125 AND 4TH AVENUE

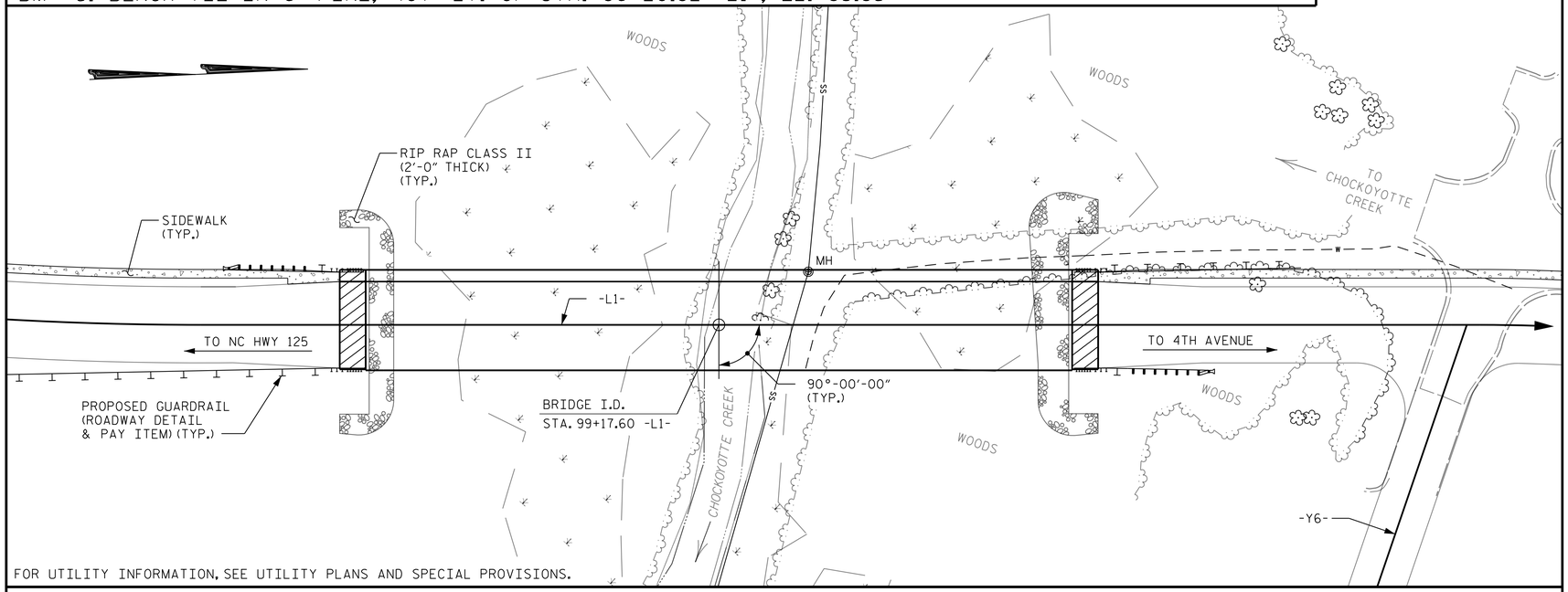
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/14/2018 K:\RDT_Structures_Bridge\NC\01036392 - R-3822\Cad\Dgn\R3822_SMU_FL_410208.dgn

BM #5: BENCH TIE IN 6" PINE, 407' LT. OF STA. 96+20.92 -L1-, EL. 93.85'



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA. 99+17.60 -L1-	4'-0" Ø DRILLED PIERS IN SOIL	4'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	PDA TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 99+17.60 -L1-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	
	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.
SUPERSTRUCTURE								23,682	20,458		LUMP SUM			30	2,423.5
END BENT 1										59.3		7,493			
BENT 1		21.8	28.0	22.8		1				48.0		12,272	1,822		
BENT 2		38.1	34.0	32.1		1				49.3		13,423	2,469		
BENT 3		62.0	29.0	33.0		1				50.5		14,404	3,017		
BENT 4		64.1	25.0	38.1		1				47.9		14,004	2,784		
END BENT 2										59.4		7,493			
TOTAL	LUMP SUM	186.0	116.0	126.0	1	4	LUMP SUM	23,682	20,458	314.4	LUMP SUM	69,089	10,092	30	2,423.5

TOTAL BILL OF MATERIAL (CONT'D.)

	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	1'-2" X 3'-3" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EA.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE					840.7	427.9	427.9			LUMP SUM	LUMP SUM
END BENT 1	8	8	180	8				260	289		
BENT 1											
BENT 2											
BENT 3											
BENT 4											
END BENT 2	8	8	220	8				337	374		
TOTAL	16	16	400	16	840.7	427.9	427.9	597	663	LUMP SUM	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	1600	C.F.S.
FREQUENCY OF DESIGN FLOOD	50	YRS.
DESIGN HIGH WATER ELEVATION	83.7	FT.
DRAINAGE AREA	15.3	SQ. MI.
BASE DISCHARGE (Q100)	1900	C.F.S.
BASE HIGH WATER ELEVATION	84.0	FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	47800	C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	>500	YRS.
OVERTOPPING FLOOD ELEVATION	97.7	FT.

@ APPROX. STA. 96+14 -L1- @ SHOULDER POINT

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 50 FT. LEFT AND 115 FT. RIGHT OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 99+17.60 -L1- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC0E0416... 5/15/2018

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NC LICENSE # F-0102

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PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON PREMIER BLVD. EXTENSION OVER CHOCKOYOTTE CREEK BETWEEN NC HWY 125 AND 4TH AVENUE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: A. L. PHILLIPS DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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5/14/2018

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	⟨1⟩	1.20	--	1.75	0.885	1.31	B	EL	41.400	0.977	1.38	C	I	9.200	0.80	0.885	1.20	C	EL	48.900	1
		HL-93 (OPERATING)	N/A		1.70	--	1.35	0.885	1.70	B	EL	41.400	0.977	1.82	C	I	9.200	N/A	--	--	--	--	--	1,2
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.67	60.12	1.75	0.885	1.77	B	EL	41.400	0.977	1.88	C	I	9.200	0.80	0.885	1.67	C	EL	48.900	1
		HS-20 (OPERATING)	36.000		2.30	82.80	1.35	0.885	2.30	B	EL	41.400	0.977	2.48	C	I	9.200	N/A	--	--	--	--	--	1,2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.91	52.79	1.40	0.885	5.14	B	EL	41.400	0.977	6.33	C	I	9.200	0.80	0.812	3.91	B		41.400	1
		SNGARBS2	20.000		2.86	57.20	1.40	0.885	3.77	B	EL	41.400	0.977	4.41	C	I	9.200	0.80	0.812	2.86	B		41.400	1
		SNAGRIS2	22.000		2.69	59.18	1.40	0.885	3.54	B	EL	41.400	0.977	4.06	C	I	9.200	0.80	0.885	2.69	B	EL	41.400	1
		SNCOTTS3	27.250		1.94	52.87	1.40	0.885	2.55	B	EL	41.400	0.977	3.05	C	I	9.200	0.80	0.812	1.94	B		41.400	1
		SNAGGRS4	34.925		1.61	56.23	1.40	0.885	2.11	B	EL	41.400	0.977	2.38	C	I	9.200	0.80	0.885	1.61	B	EL	41.400	1
		SNS5A	35.550		1.57	55.81	1.40	0.885	2.07	B	EL	41.400	0.977	2.39	C	I	9.200	0.80	0.812	1.57	B		41.400	1
		SNS6A	39.950		1.43	57.13	1.40	0.885	1.89	B	EL	41.400	0.977	2.15	C	I	9.200	0.80	0.812	1.43	B		41.400	1
		SNS7B	42.000		1.37	57.54	1.40	0.885	1.80	B	EL	41.400	0.977	2.06	C	I	9.200	0.80	0.885	1.37	B	EL	41.400	1
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.75	57.75	1.40	0.885	2.30	B	EL	41.400	0.977	2.56	C	I	9.200	0.80	0.885	1.75	B	EL	41.400	1
		TNT4A	33.075		1.75	57.88	1.40	0.885	2.30	B	EL	41.400	0.977	2.69	C	I	9.200	0.80	0.812	1.75	B		41.400	1
		TNT6A	41.600		1.42	59.07	1.40	0.885	1.88	B	EL	41.400	0.977	2.20	C	I	9.200	0.80	0.885	1.42	C	EL	48.900	1
		TNT7A	42.000		1.42	59.64	1.40	0.885	1.88	B	EL	41.400	0.977	2.16	C	I	9.200	0.80	0.885	1.42	C	EL	48.900	1
		TNT7B	42.000		1.46	61.32	1.40	0.885	1.93	B	EL	41.400	0.977	2.06	C	I	9.200	0.80	0.885	1.46	C	EL	48.900	1
		TNAGRIT4	43.000		1.40	60.20	1.40	0.885	1.85	B	EL	41.400	0.977	2.02	C	I	9.200	0.80	0.885	1.40	C	EL	48.900	1
		TNAGT5A	45.000		1.32	59.40	1.40	0.885	1.75	B	EL	41.400	0.977	1.93	C	I	9.200	0.80	0.885	1.32	C	EL	48.900	1
		TNAGT5B	45.000	⟨3⟩	1.31	58.95	1.40	0.885	1.73	B	EL	41.400	0.977	1.92	C	I	9.200	0.80	0.885	1.31	B	EL	41.400	1

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1. ALL DISTANCES ARE MEASURED FROM CENTERLINE OF BEARING AT THE LEFT END OF THE SPAN.
2. SERVICE III LIMIT STATE NOT APPLICABLE AT THE OPERATIONAL LEVEL.

⟨#⟩ CONTROLLING LOAD RATING

⟨1⟩ DESIGN LOAD RATING (HL-93)

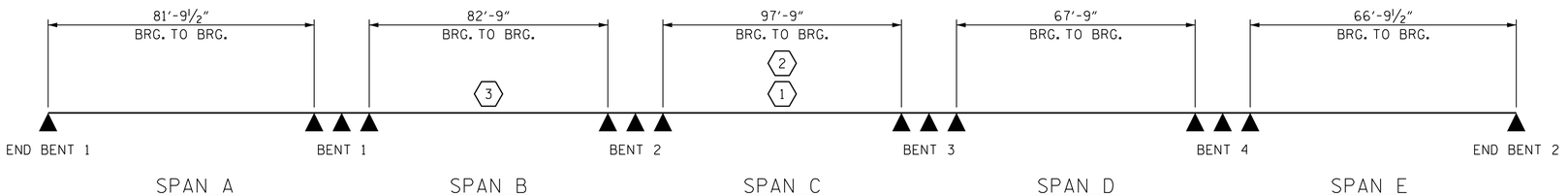
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY
DocuSigned by: Seth A. Denney EBEB154CC9ED410...
5/15/2018

Kimley»Horn
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Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS
(NON-INTERSTATE TRAFFIC)

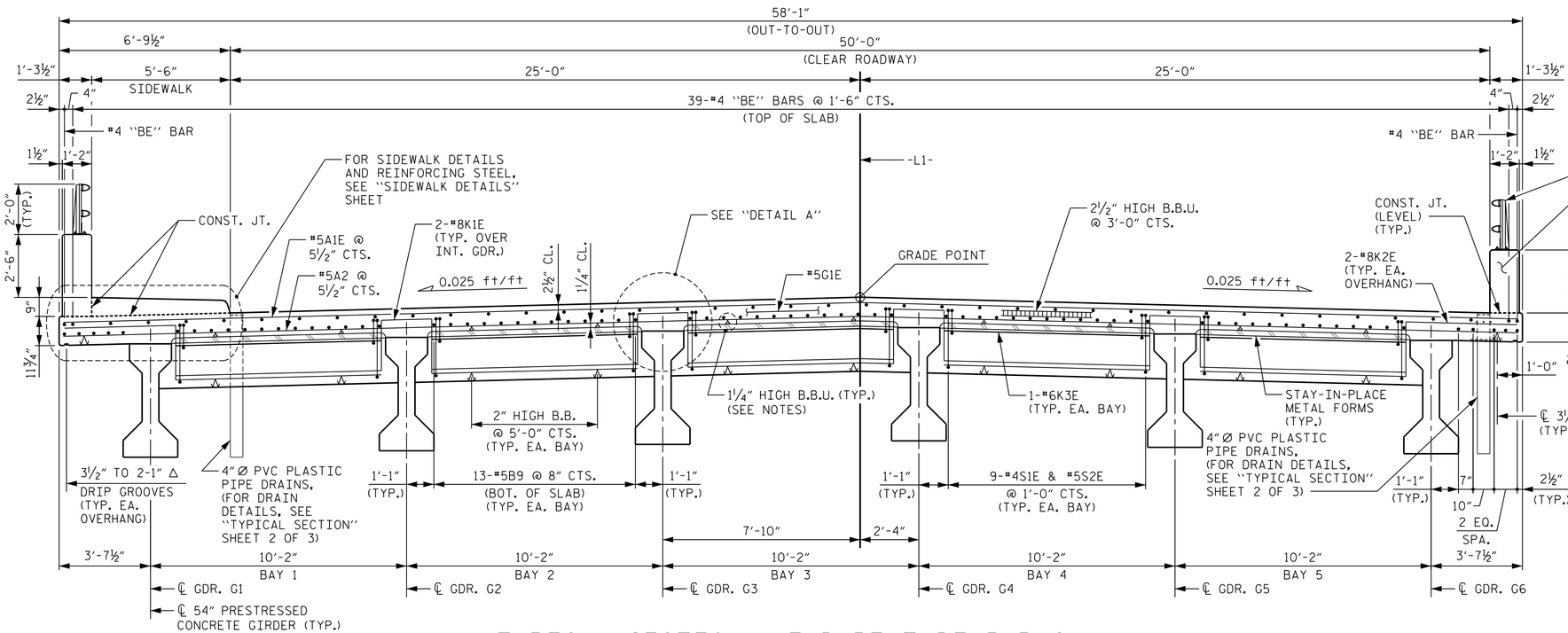
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			58

STD. NO. LRFR1

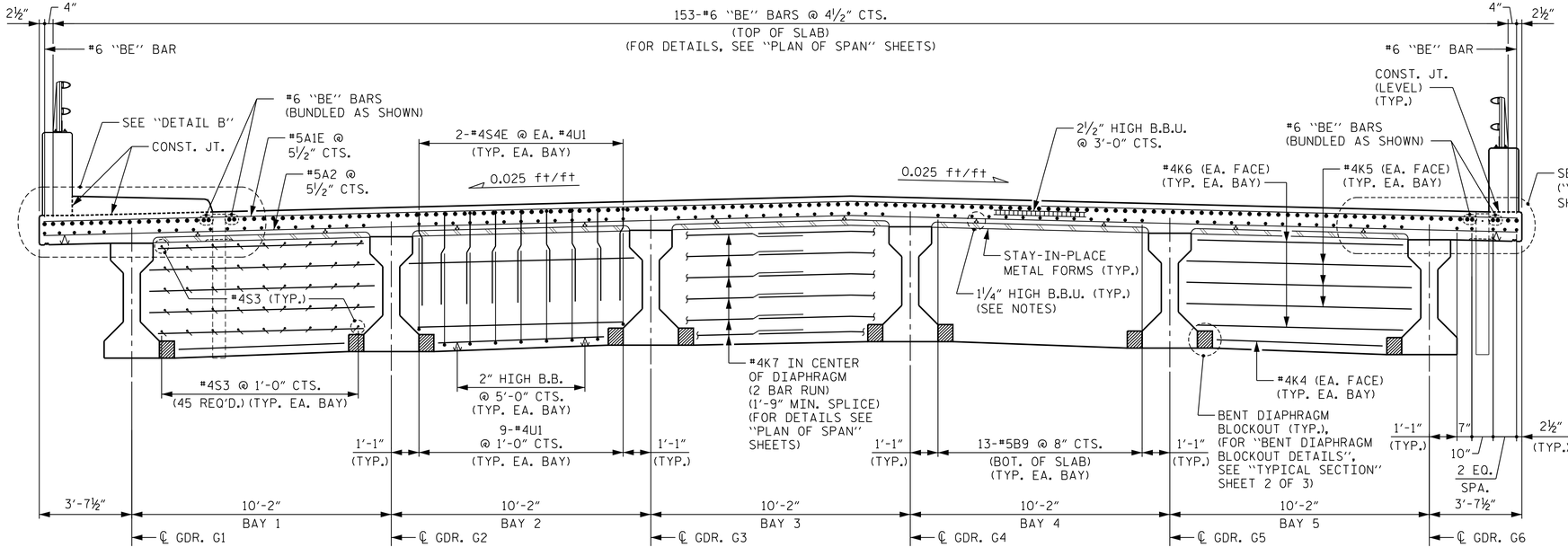
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : D.D. LOWERY		DATE :	03/18
CHECKED BY : C.T. POOLE		DATE :	03/18
DRAWN BY : MAA 1/08	REV. 11/12/08RR		MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11		MAA/GM
	REV. 12/17		MAA/THC

5/14/2018 K:\RDT_Structures_Bridge\NC\011036392 - R-3822\Cad\Dgn\R3822_SML_GD3_410208.dgn



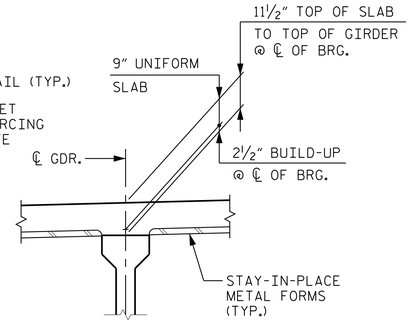
TYPICAL SECTION - END BENT DIAPHRAGM



TYPICAL SECTION - BENT DIAPHRAGM

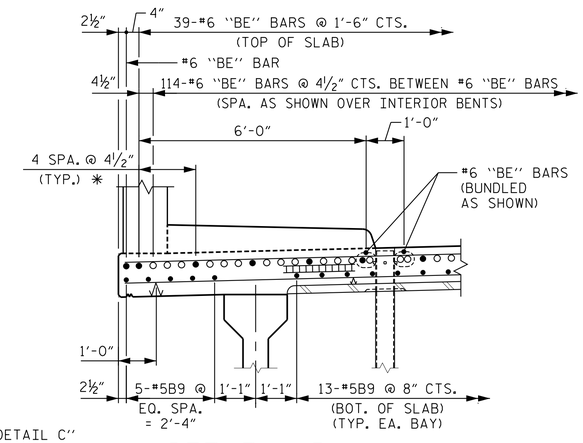
NOTES:

FOR SUPERSTRUCTURE NOTES, SEE "TYPICAL SECTION" SHEET 2 OF 3.



DETAIL "A"

(TYP. EA. GDR. @ EA. BENT)



DETAIL "B"

✳ TYP. SPACING OF NON-CONTINUOUS "BE" BARS BETWEEN CONTINUOUS "BE" BARS.

○ INDICATES NON-CONTINUOUS REINFORCING STEEL OVER BENT.

● INDICATES CONTINUOUS REINFORCING STEEL FROM END BENT 1 TO END BENT 2.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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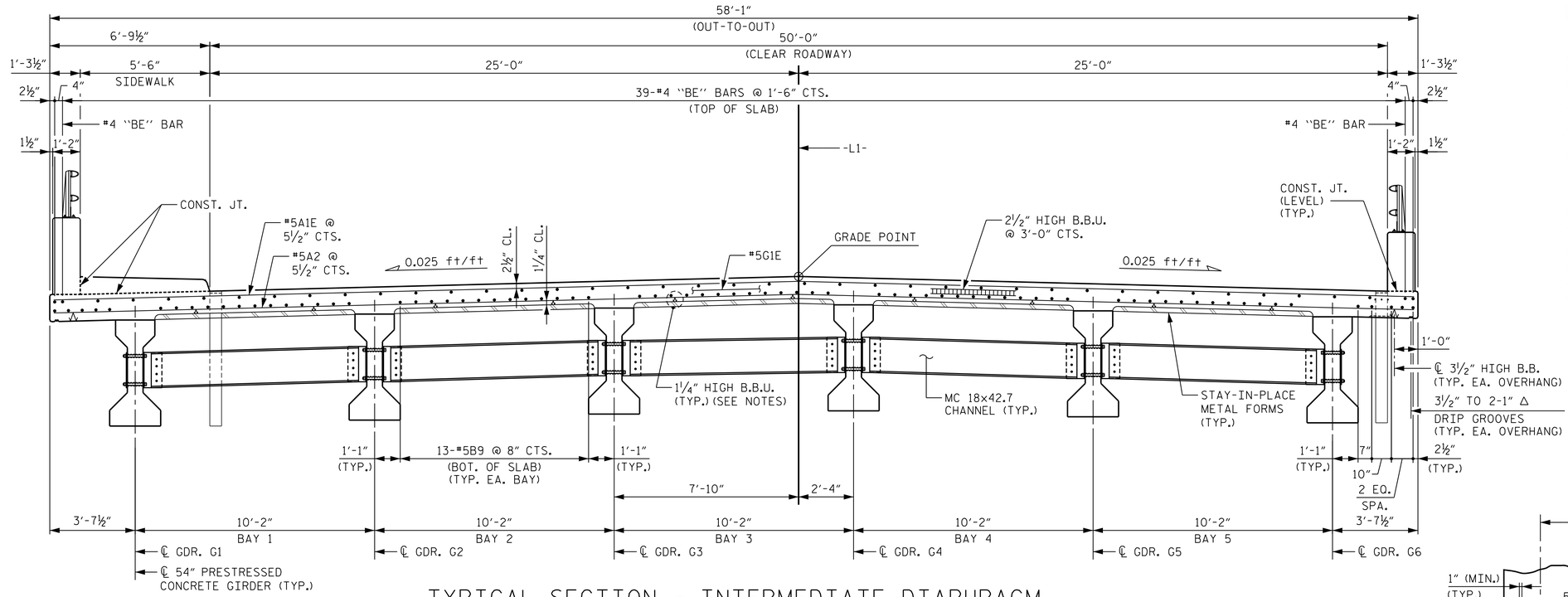


TYPICAL SECTION - INTERMEDIATE DIAPHRAGM

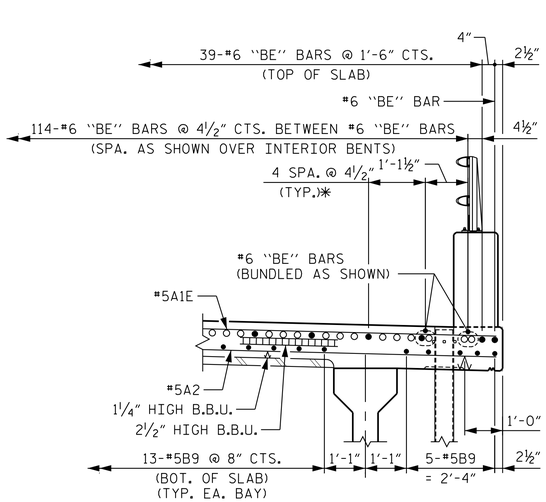
NOTES:

PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH DRAINS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

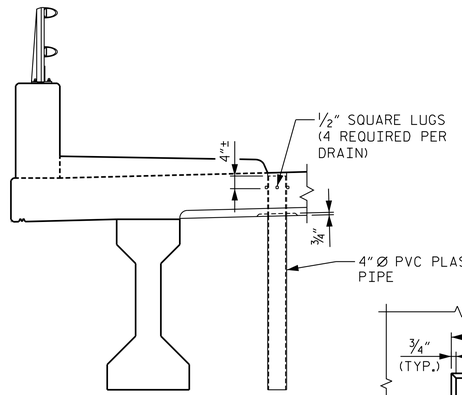


DETAIL "C"

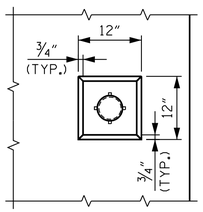
✳ TYP. SPACING OF NON-CONTINUOUS "BE" BARS BETWEEN CONTINUOUS "BE" BARS.

○ INDICATES NON-CONTINUOUS REINFORCING STEEL OVER BENT.

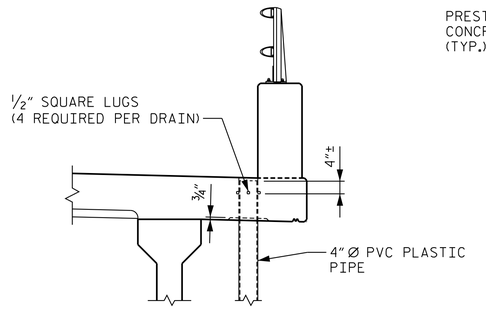
● INDICATES CONTINUOUS REINFORCING STEEL FROM END BENT 1 TO END BENT 2.



LEFT ELEVATION



PLAN OF RECESS



RIGHT ELEVATION

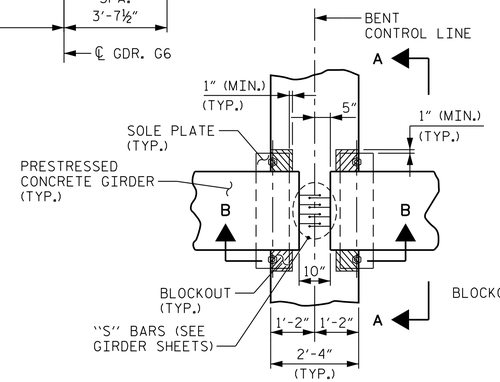
DRAIN DETAILS

TOP OF FLOOR DRAINS TO BE SET ⅜" BELOW SURFACE OF SLAB.

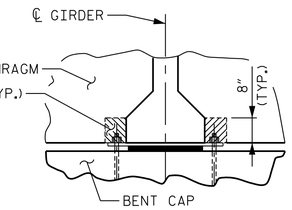
4-½" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

THE 4"Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

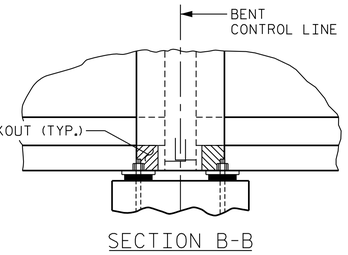
FOR DRAIN LOCATIONS AND SPACING, SEE "PLAN OF SPAN" SHEETS.



PLAN



SECTION A-A



SECTION B-B

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EREB154CC9ED410... 5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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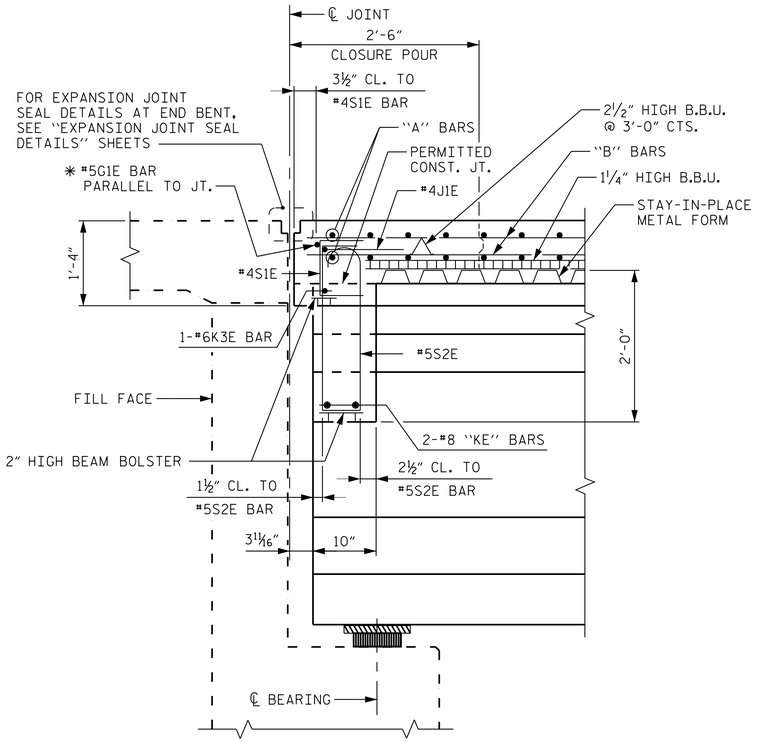
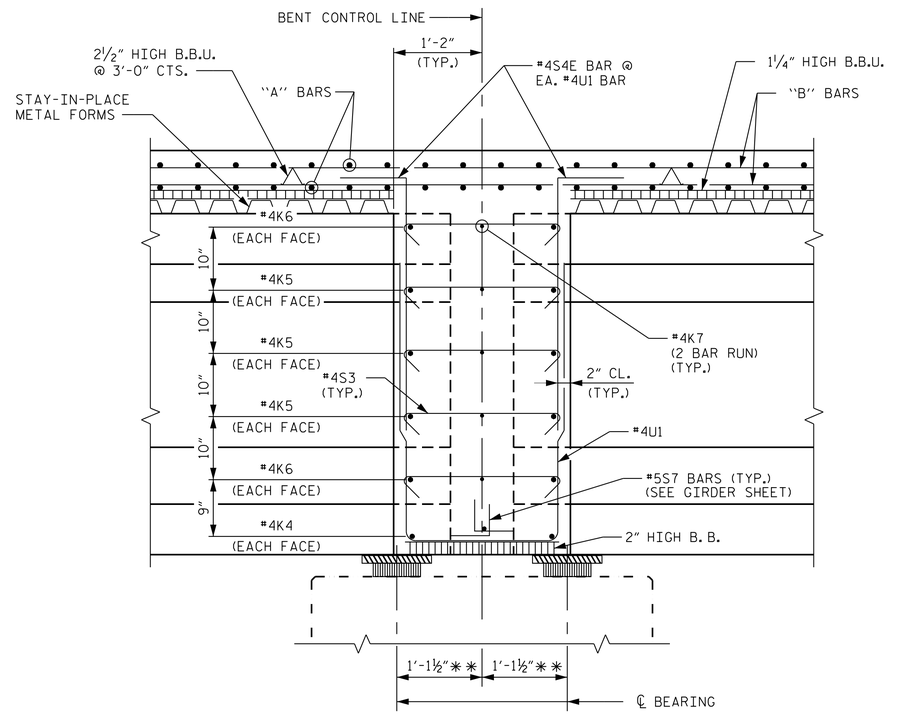


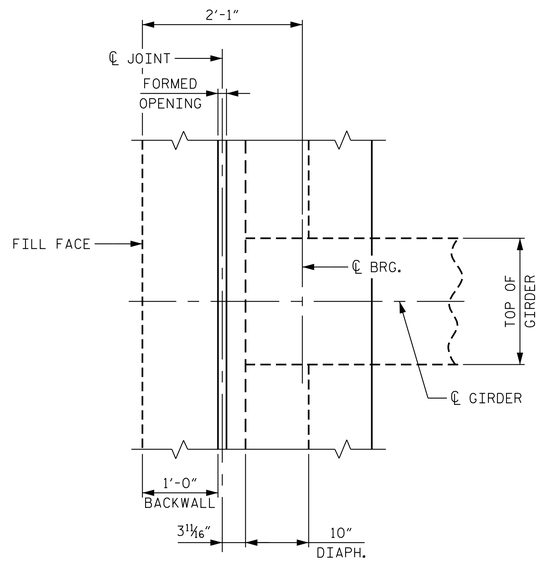
SECTION THRU END BENT DIAPHRAGM

✱ #5G1E BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS



SECTION THRU BENT DIAPHRAGM

✱✱ DIMENSION ALONG ℄ GIRDER



END BENT DIAPHRAGM PLAN

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5/14/2018

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CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

Docusigned by:
Seth A. Denney
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5/15/2018

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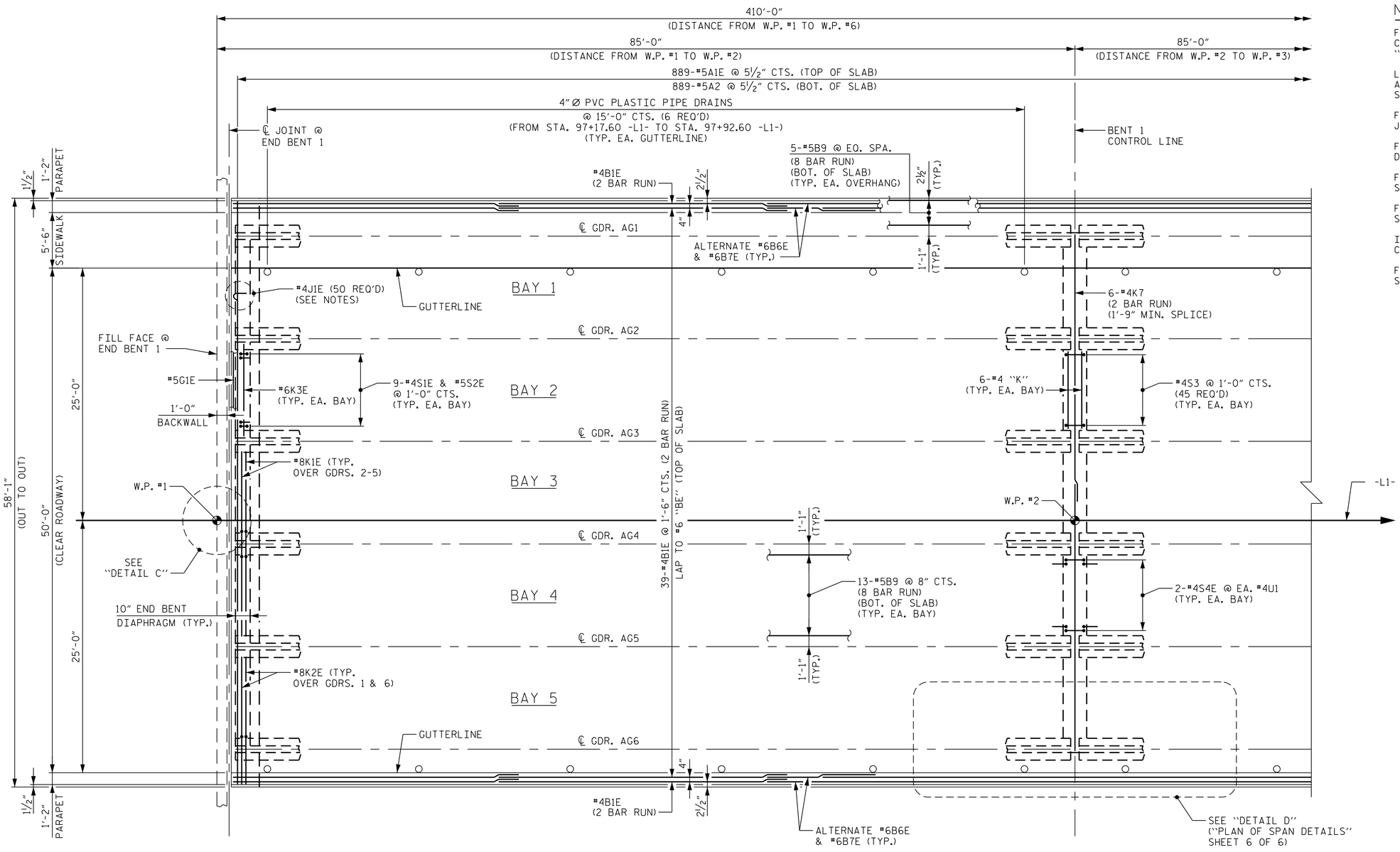
PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			58



SPAN A

PART PLAN OF SPANS

NOTES:

FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINTS, SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEETS.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

FOR PLACEMENT OF #4J1E BARS, SEE "EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 4.

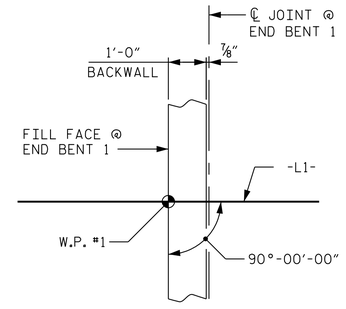
FOR SIDEWALK REINFORCING STEEL, SEE "SIDEWALK DETAILS" SHEET.

FOR CONCRETE PARAPET REINFORCING STEEL, SEE "CONCRETE PARAPET DETAILS" SHEETS.

FOR SECTIONS, SEE "TYPICAL SECTION DETAILS" SHEET 3 OF 3.

INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY, SEE "FRAMING PLAN" SHEETS.

FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINT, SEE "BILL OF MATERIAL" SHEET 1 OF 2.



DETAIL "C"

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by:
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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY	DATE: 03/18	
CHECKED BY: C. T. POOLE	DATE: 03/18	
DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE: 03/18	

5/14/2018 K:\R0T_Structures_Bridge\NC\011036392 - R-3822\Cad\Dgn\R3822_SMU_S1_410208.dgn

410'-0"
(DISTANCE FROM W.P. #1 TO W.P. #6)

85'-0"
(DISTANCE FROM W.P. #1 TO W.P. #2)

85'-0"
(DISTANCE FROM W.P. #2 TO W.P. #3)

100'-0"
(DISTANCE FROM W.P. #3 TO W.P. #4)

889-#5A1E @ 5½" CTS. (TOP OF SLAB)

889-#5A2 @ 5½" CTS. (BOT. OF SLAB)

4" Ø PVC PLASTIC PIPE DRAINS
@ 15'-0" CTS. (6 REQ'D)
(FROM STA. 98+02.60 -L1- TO STA. 98+77.60 -L1-)
(TYP. EA. GUTTERLINE)

BENT 1
CONTROL LINE

BENT 2
CONTROL LINE

5-#5B9 @ EQ. SPA.
(8 BAR RUN)
(BOT. OF SLAB)
(TYP. EA. OVERHANG)

#4B2E

2½"

4"

2½" (TYP.)

1'-1" (TYP.)

ALTERNATE #6B6E
& #6B7E (TYP.)

1'-2" PARAPET

1½"

5'-6" SIDEWALK

℄ GDR. BG1

℄ GDR. BG2

℄ GDR. BG3

℄ GDR. BG4

℄ GDR. BG5

℄ GDR. BG6

BAY 1

BAY 2

BAY 3

BAY 4

BAY 5

6-#4K7
(2 BAR RUN)
(1'-9" MIN. SPLICE)

GUTTERLINE

6-#4 "K"
(TYP. EA. BAY)

#4S3 @ 1'-0" CTS.
(45 REQ'D)
(TYP. EA. BAY)

W.P. #2

W.P. #3

39-#4B2E @ 1'-6" CTS.
LAP TO #6 "BE" (TOP OF SLAB)

13-#5B9 @ 8" CTS.
(8 BAR RUN)
(BOT. OF SLAB)
(TYP. EA. BAY)

2-#4S4E @ EA. #4U1
(TYP. EA. BAY)

25'-0"

50'-0" (CLEAR ROADWAY)

58'-1" (OUT TO OUT)

-L1-

SEE "DETAIL D"
("PLAN OF SPAN DETAILS"
SHEET 6 OF 6)

SEE "DETAIL E"
("PLAN OF SPAN DETAILS"
SHEET 6 OF 6)

SPAN B

PART PLAN OF SPANS

NOTES:

FOR NOTES SEE "PLAN OF SPAN" SHEET 1 OF 6.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A DENNEY

DocuSigned by:
Seth A. Denney
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5/15/2018

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REVISIONS						SHEET NO.
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DRAWN BY: D. D. LOWERY DATE: 03/18
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DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

5/14/2018

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410'-0"
(DISTANCE FROM W.P. #1 TO W.P. #6)

85'-0"
(DISTANCE FROM W.P. #2 TO W.P. #3)

100'-0"
(DISTANCE FROM W.P. #3 TO W.P. #4)

70'-0"
(DISTANCE FROM W.P. #4 TO W.P. #5)

889-#5A1E @ 5½" CTS. (TOP OF SLAB)
889-#5A2 @ 5½" CTS. (BOT. OF SLAB)

BENT 2
CONTROL LINE

BENT 3
CONTROL LINE

5-#5B9 @ EQ. SPA.
(8 BAR RUN)
(BOT. OF SLAB)
(TYP. EA. OVERHANG)

2½"
(TYP.)

#4B3E
(2 BAR RUN)

2½"

4"

1'-2"
PARAPET

1½"

5'-6"
SIDEWALK

℄ GDR. CG1

ALTERNATE #6B6E
& #6B7E (TYP.)

1'-1"
(TYP.)

BAY 1

6-#4K7
(2 BAR RUN)
(1'-9" MIN. SPLICE)

GUTTERLINE

℄ GDR. CG2

6-#4 "K"
(TYP. EA. BAY)

#4S3 @ 1'-0" CTS.
(45 REQ'D)
(TYP. EA. BAY)

BAY 2

℄ GDR. CG3

39-#4B3E @ 1'-6" CTS. (2 BAR RUN)
LAP TO #6 "BE" (TOP OF SLAB)

25'-0"

BAY 3

W.P. #3

W.P. #4

℄ GDR. CG4

50'-0"
(CLEAR ROADWAY)

58'-1"
(OUT TO OUT)

-L1-

1'-1"
(TYP.)

2-#4S4E @ EA. #4U1
(TYP. EA. BAY)

BAY 4

13-#5B9 @ 8" CTS.
(8 BAR RUN)
(BOT. OF SLAB)
(TYP. EA. BAY)

℄ GDR. CG5

1'-1"
(TYP.)

25'-0"

BAY 5

GUTTERLINE

℄ GDR. CG6

SEE "DETAIL E"
("PLAN OF SPAN DETAILS"
SHEET 6 OF 6)

ALTERNATE #6B6E
& #6B7E (TYP.)

#4B3E
(2 BAR RUN)

4"

2½"

SEE "DETAIL F"
("PLAN OF SPAN DETAILS"
SHEET 6 OF 6)

1'-2"
PARAPET

1½"

SPAN C

PART PLAN OF SPANS

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 6

NOTES:

FOR NOTES SEE "PLAN OF SPAN" SHEET 1 OF 6.

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by:
Seth A. Denney
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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5/14/2018 K:\RDT_Structures_Bridge\NC\01036392 - R-3822\Cad\Dgn\R3822_SMU_S3_410208.dgn

410'-0"
(DISTANCE FROM W.P. #1 TO W.P. #6)

100'-0"
(DISTANCE FROM W.P. #3 TO W.P. #4)

70'-0"
(DISTANCE FROM W.P. #4 TO W.P. #5)

70'-0"
(DISTANCE FROM W.P. #5 TO W.P. #6)

889-#5A1E @ 5½" CTS. (TOP OF SLAB)

889-#5A2 @ 5½" CTS. (BOT. OF SLAB)

4" Ø PVC PLASTIC PIPE DRAINS
@ 15'-0" CTS. (5 REQ'D)
(FROM STA. 99+87.60 -L1- TO STA. 100+47.60 -L1-)
(TYP. EA. GUTTERLINE)

BENT 3
CONTROL LINE

BENT 4
CONTROL LINE

5-#5B9 @ EQ. SPA.
(8 BAR RUN)
(BOT. OF SLAB)
(TYP. EA. OVERHANG)

#4B4E

4"

2½"

2½" (TYP.)

1'-2"
PARAPET

1½"

5'-6"
SIDEWALK

℄ GDR. DG1

ALTERNATE #6B6E
& #6B7E (TYP.)

1'-1" (TYP.)

BAY 1

6-#4K7
(2 BAR RUN)
(1'-9" MIN. SPLICE)

GUTTERLINE

℄ GDR. DG2

1'-1" (TYP.)

6-#4 "K"
(TYP. EA. BAY)

#4S3 @ 1'-0" CTS.
(45 REQ'D)
(TYP. EA. BAY)

BAY 2

13-#5B9 @ 8" CTS.
(8 BAR RUN)
(BOT. OF SLAB)
(TYP. EA. BAY)

2-#4S4E @ EA. #4U1
(TYP. EA. BAY)

℄ GDR. DG3

1'-1" (TYP.)

BAY 3

6-#4K7
(2 BAR RUN)
(1'-9" MIN. SPLICE)

W.P. #4

W.P. #5

℄ GDR. DG4

39-#4B4E @ 1'-6" CTS.
LAP TO #6 "BE" (TOP OF SLAB)

25'-0"

50'-0"
(CLEAR ROADWAY)

58'-1"
(OUT TO OUT)

-L1-

2-#4S4E @ EA. #4U1
(TYP. EA. BAY)

BAY 4

6-#4 "K"
(TYP. EA. BAY)

#4S3 @ 1'-0" CTS.
(45 REQ'D)
(TYP. EA. BAY)

℄ GDR. DG5

25'-0"

BAY 5

℄ GDR. DG6

GUTTERLINE

4"

#4B4E

2½"

1'-2"
PARAPET

1½"

SEE "DETAIL F"
("PLAN OF SPAN DETAILS"
SHEET 6 OF 6)

ALTERNATE #6B6E
& #6B7E (TYP.)

SEE "DETAIL G"
("PLAN OF SPAN DETAILS"
SHEET 6 OF 6)

SPAN D

PART PLAN OF SPANS

NOTES:

FOR NOTES SEE "PLAN OF SPAN" SHEET 1 OF 6.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 4 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
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DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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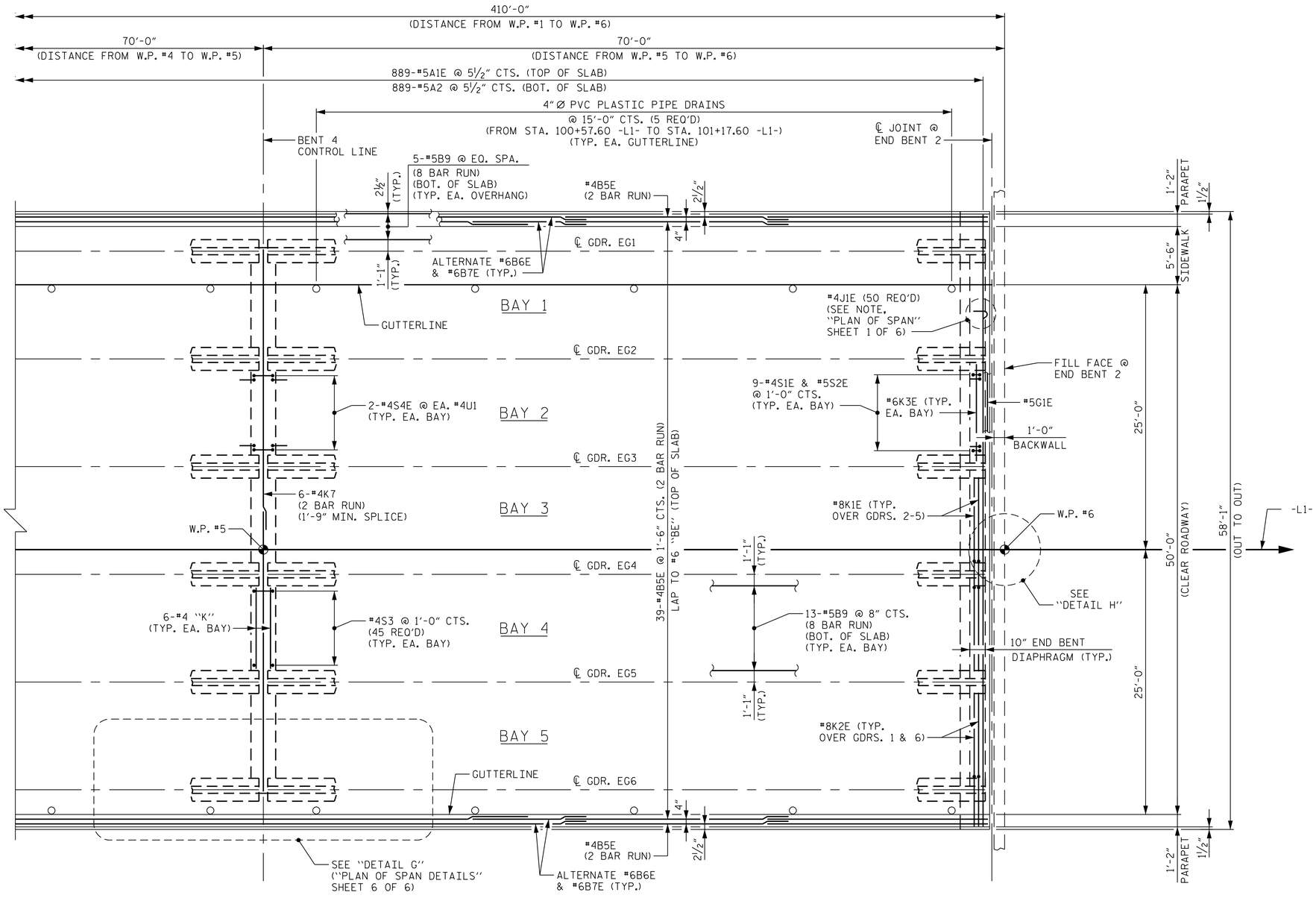

SPAN E

PART PLAN OF SPANS

NOTES:

FOR NOTES SEE "PLAN OF SPAN" SHEET 1 OF 6.

DETAIL "H"

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 5 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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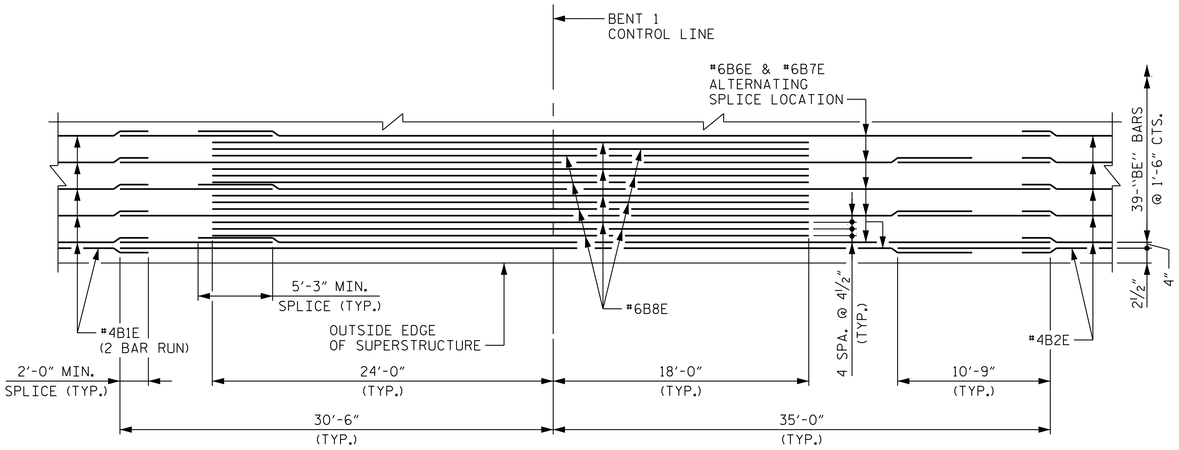
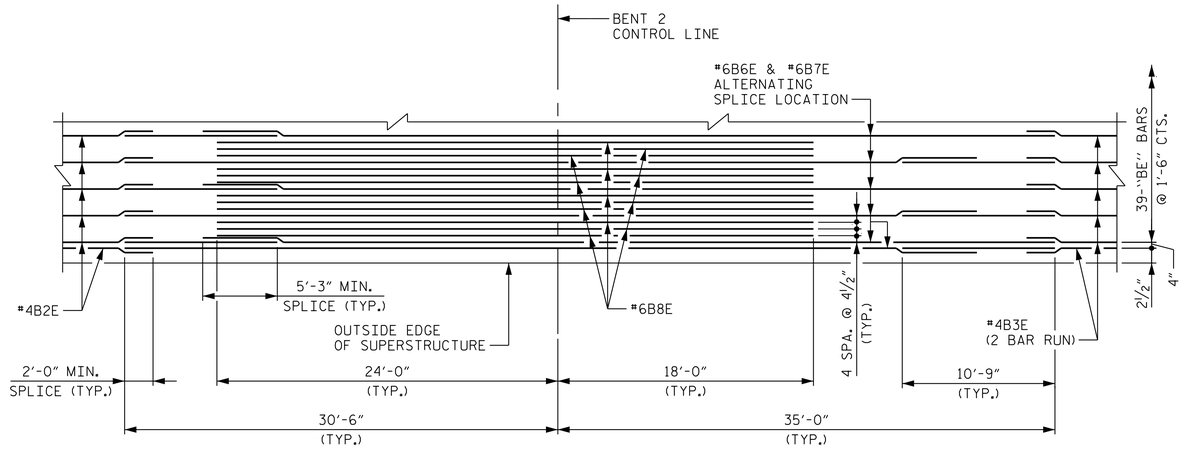


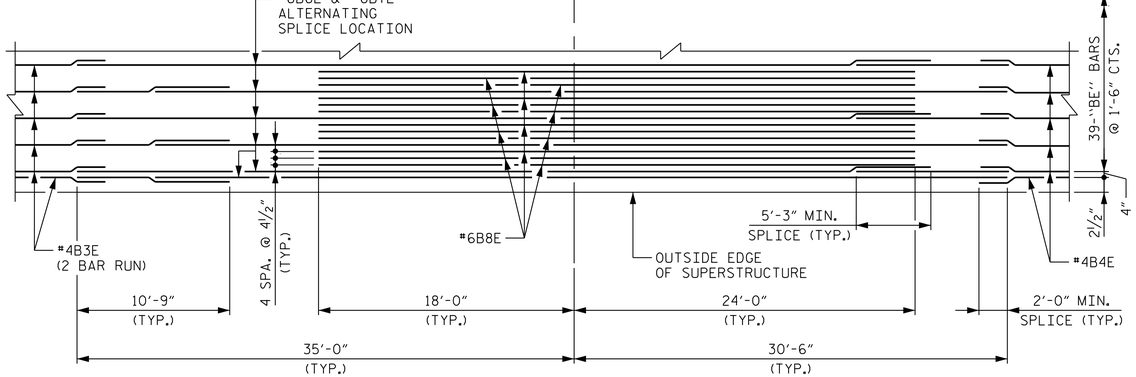
DETAIL ''D''

LONGITUDINAL REINFORCING TOP OF SLAB
REINFORCING IS SYMMETRICAL ABOUT BRIDGE ℄



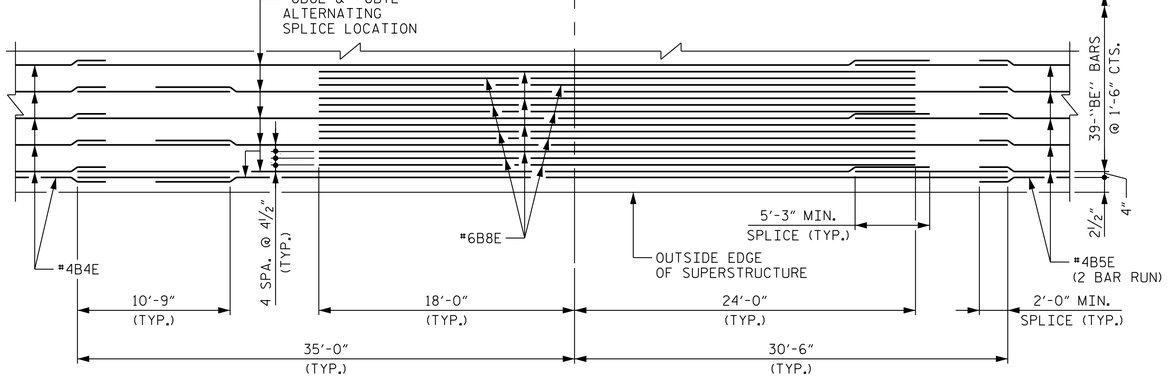
DETAIL ''E''

LONGITUDINAL REINFORCING TOP OF SLAB
REINFORCING IS SYMMETRICAL ABOUT BRIDGE ℄



DETAIL ''F''

LONGITUDINAL REINFORCING TOP OF SLAB
REINFORCING IS SYMMETRICAL ABOUT BRIDGE ℄



DETAIL ''G''

LONGITUDINAL REINFORCING TOP OF SLAB
REINFORCING IS SYMMETRICAL ABOUT BRIDGE ℄

NOTE:

DETAILS DO NOT INCLUDE LOCATIONS OF BUNDLED BARS.

FOR LOCATIONS OF BUNDLED BARS, SEE ''TYPICAL SECTION''
SHEET 1 OF 3 AND 2 OF 3.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY	DATE:	03/18
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DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE:	03/18

5/14/2018

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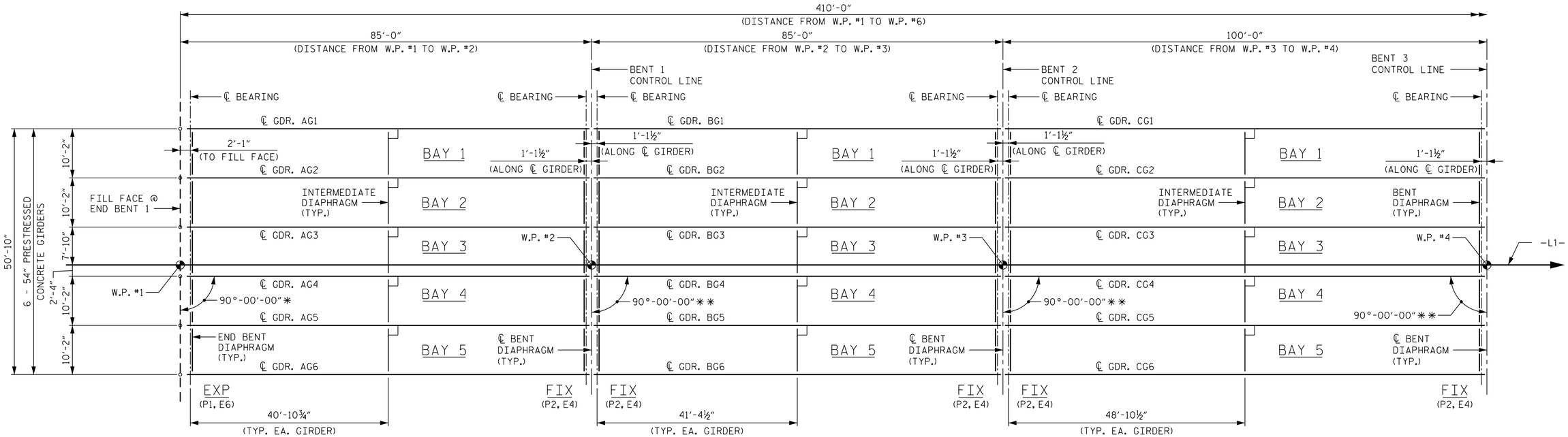
NOTES:

FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDER" SHEET.

* ANGLE SHOWN IS FROM ℄ GIRDER TO FILL FACE AT END BENT (TYPICAL EACH GIRDER).

** ANGLE SHOWN IS FROM ℄ GIRDER TO BENT CONTROL LINE (TYPICAL EACH GIRDER).



FRAMING PLAN

END BENTS AND BENTS ARE PARALLEL

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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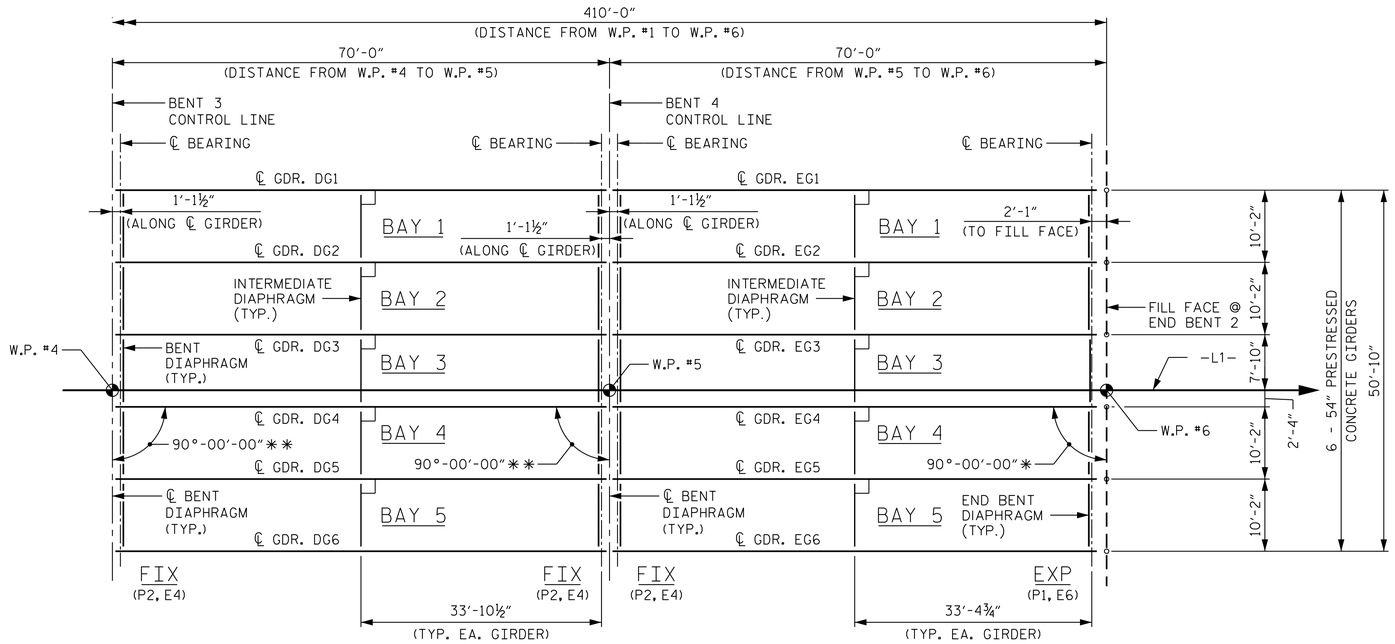
NOTES:

FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDER" SHEET.

∗ ANGLE SHOWN IS FROM ℄ GIRDER TO FILL FACE AT END BENT (TYPICAL EACH GIRDER).

∗∗ ANGLE SHOWN IS FROM ℄ GIRDER TO BENT CONTROL LINE (TYPICAL EACH GIRDER).



SPAN D SPAN E

FRAMING PLAN

END BENTS AND BENTS ARE PARALLEL

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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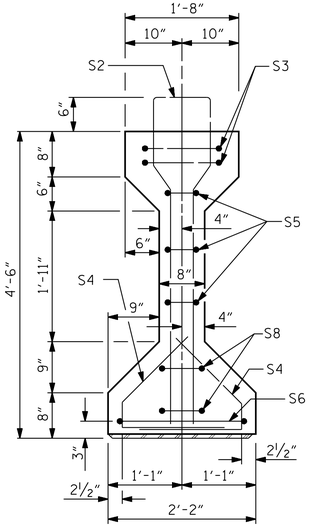
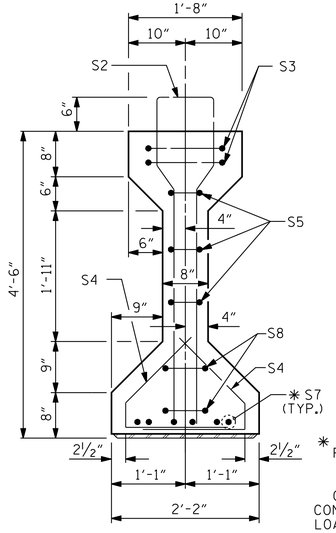
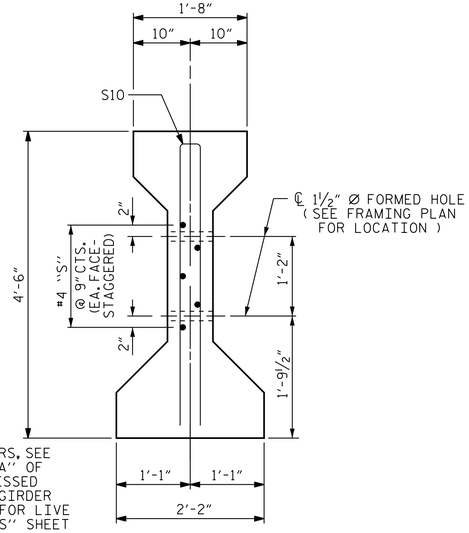


SECTION A-A



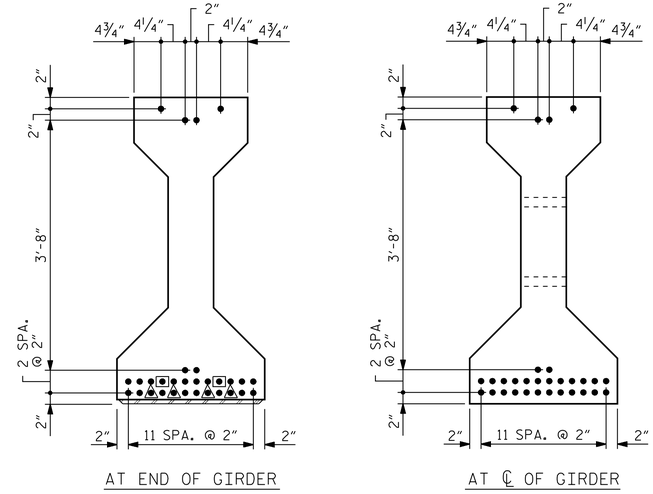
SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)

✱ FOR S7 BARS, SEE DETAIL "A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5



AT END OF GIRDER

AT ℄ OF GIRDER

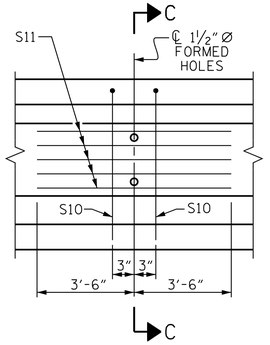
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◬ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

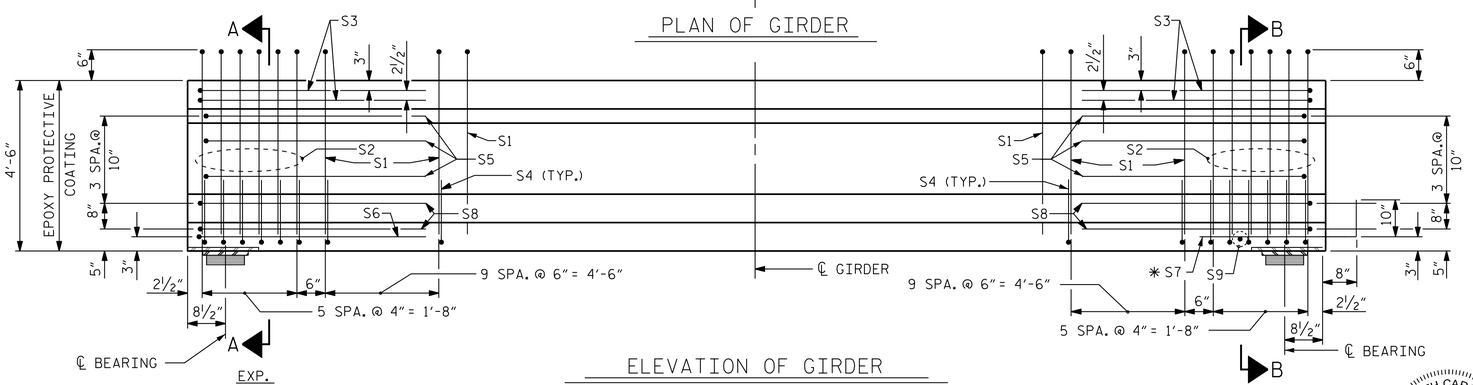
TABLE OF DIMENSIONS				
SPAN	①	②	③	④
A	83'-2½"	41'-7¼"	2¾"	69
E	68'-2½"	34'-1¼"	8¾"	53

PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-6



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

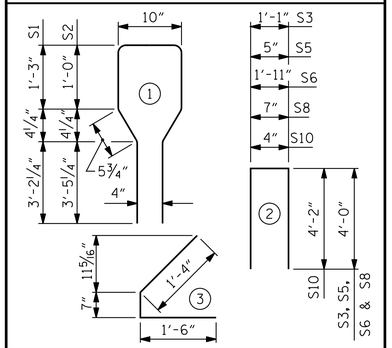
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
SPAN A	S1	90	#4	1	10'-8"	641
SPAN E	S1	74	#4	1	10'-8"	527
	S2	12	#6	1	10'-8"	192
	S3	4	#4	2	9'-1"	24
	S4	64	#4	3	3'-5"	146
	S5	6	#4	2	8'-5"	34
	S6	1	#4	2	9'-11"	7
	✱ S7	6	#5	STR	3'-8"	23
	S8	4	#4	2	8'-7"	23
	S9	1	#3	STR	1'-10"	1
	S10	2	#5	2	8'-8"	18
	S11	5	#4	STR	7'-0"	23

✱ NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	8500 PSI CONCRETE C.Y.	0.6"Ø L.R. STRANDS No.
SPAN A	1132	16.9	30
SPAN E	1018	13.8	30

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	6	83'-2½"	499'-3"
SPAN E	6	68'-2½"	409'-3"

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN A & SPAN E

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			58

ASSEMBLED BY : D. D. LOWERY		DATE :	03/18
CHECKED BY : C. T. POOLE		DATE :	03/18
DRAWN BY : ELR 8/91	REV. 10/1/11		MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15		MAA/TMG
	REV. 12/17		MAA/THC

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STD. NO. PCG6

5/14/2018

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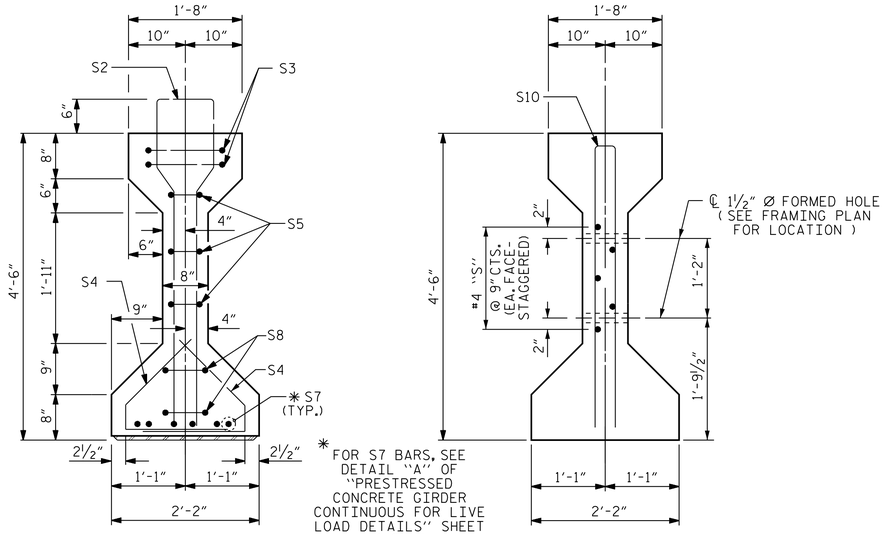
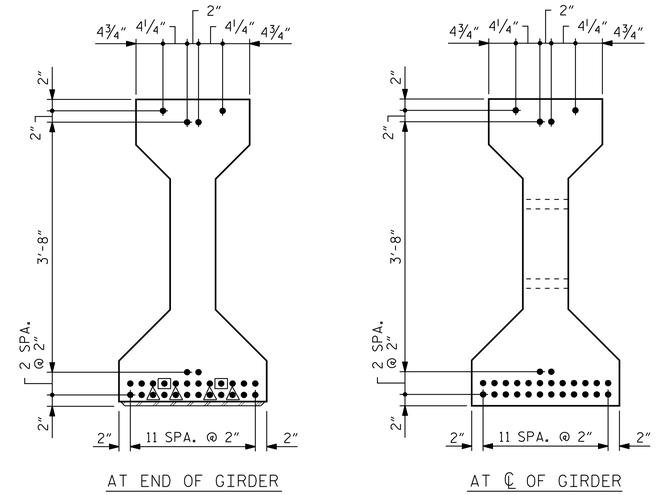


SECTION A-A

* FOR S7 BARS, SEE DETAIL "A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5

SECTION B-B

(S1 BARS NOT SHOWN)



AT END OF GIRDER

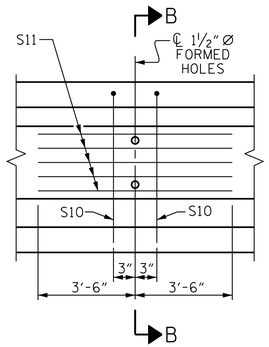
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

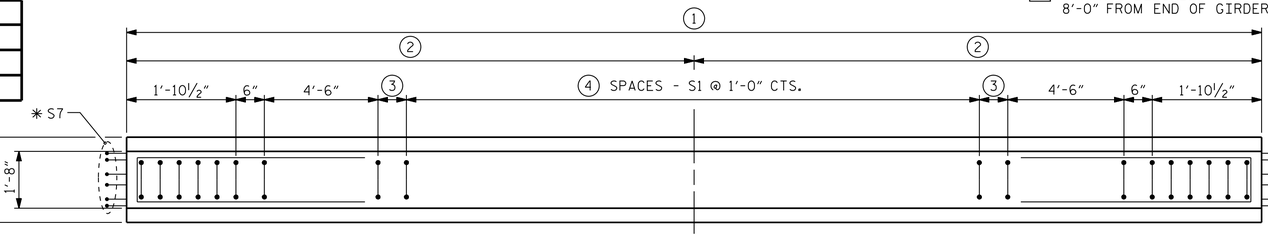
- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◬ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

TABLE OF DIMENSIONS				
SPAN	①	②	③	④
B	84'-2"	42'-1"	8½"	69
D	69'-2"	34'-7"	2½"	55

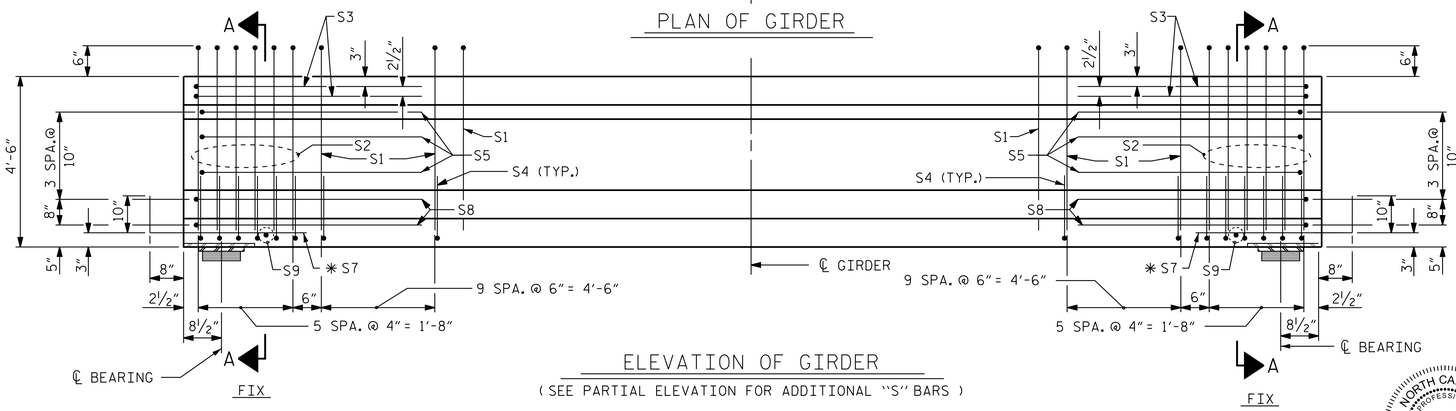


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-6



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

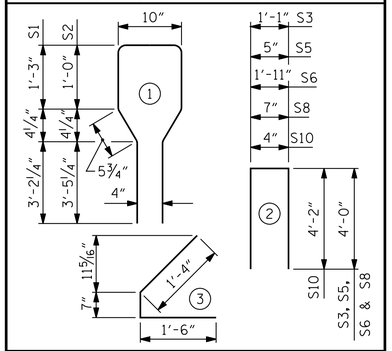
REINFORCING STEEL FOR ONE GIRDER

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
SPAN B	S1	90	#4	1	10'-8"	641
SPAN D	S1	76	#4	1	10'-8"	542
	S2	12	#6	1	10'-8"	192
	S3	4	#4	2	9'-1"	24
	S4	64	#4	3	3'-5"	146
	S5	6	#4	2	8'-5"	34
	* S7	12	#5	STR	3'-8"	46
	S8	4	#4	2	8'-7"	23
	S9	2	#3	STR	1'-10"	1
	S10	2	#5	2	8'-8"	18
	S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	8500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN B	1148	17.1	30
SPAN D	1049	14.0	30

GIRDERS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
SPAN B	6	84'-2"	505'-0"
SPAN D	6	69'-2"	415'-0"

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN B & SPAN D

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			58

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC9ED410... 5/15/2018

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CHECKED BY : C. T. POOLE	DATE : 03/18		
DRAWN BY : ELR 8/91	REV. 10/1/11	MAA/GM	
CHECKED BY : GRP 8/91	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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5/14/2018

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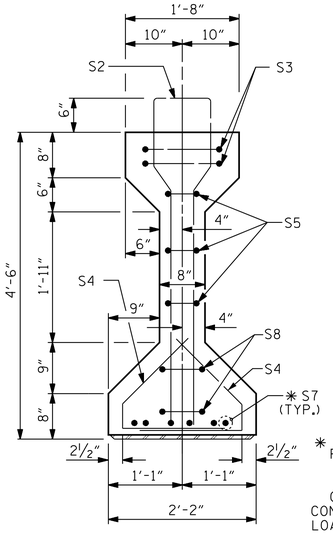
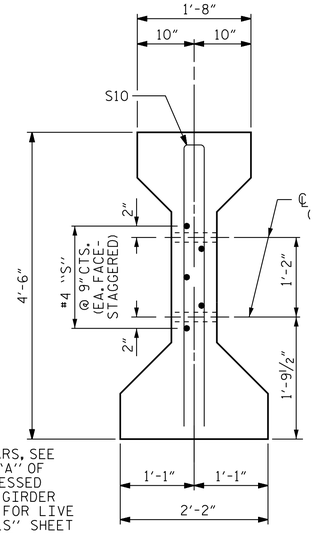


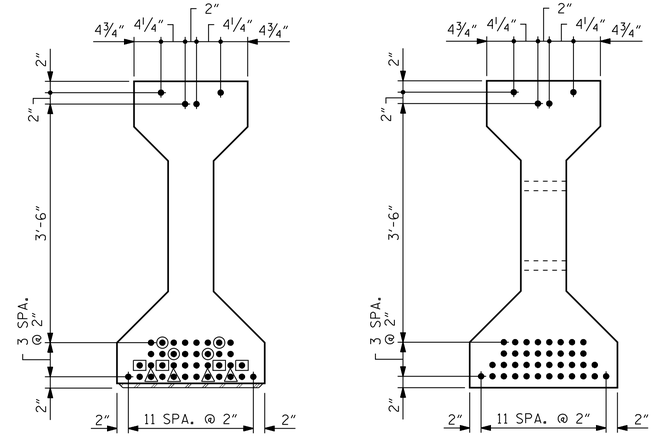
SECTION A-A

✱ FOR S7 BARS, SEE DETAIL "A" OF "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5



SECTION B-B

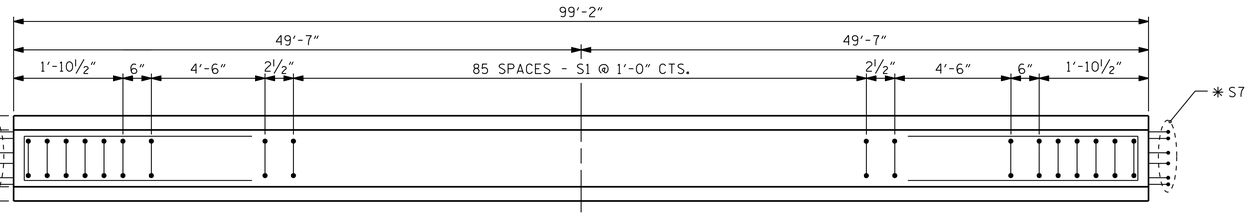
(S1 BARS NOT SHOWN)



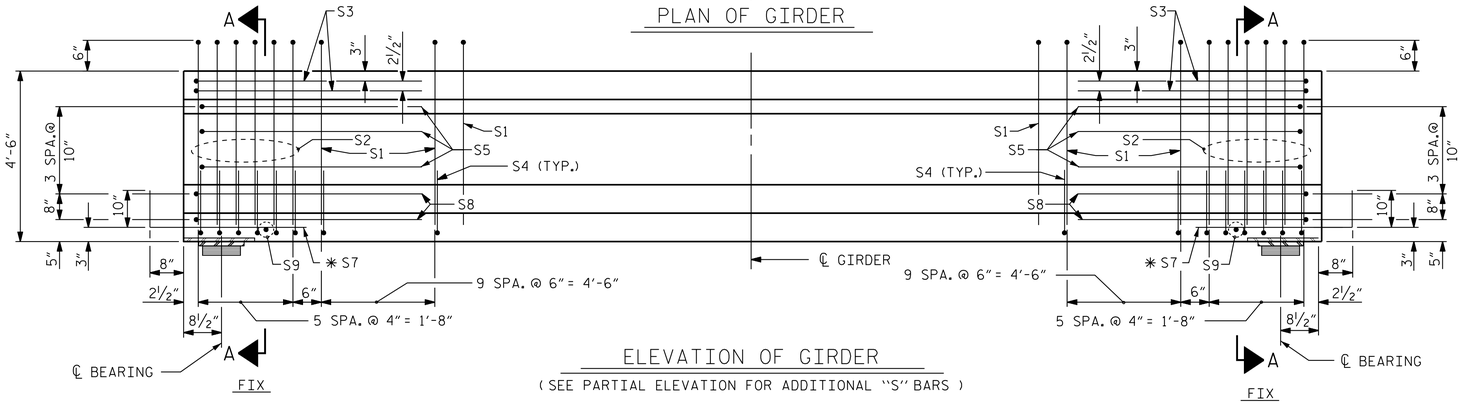
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- ◉ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ◬ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

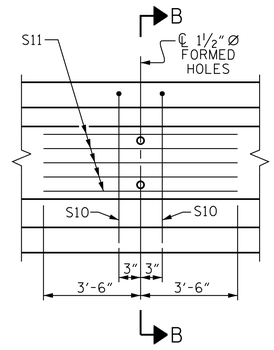


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-6

0.6" Ø L. R. GRADE 270 STRANDS

AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

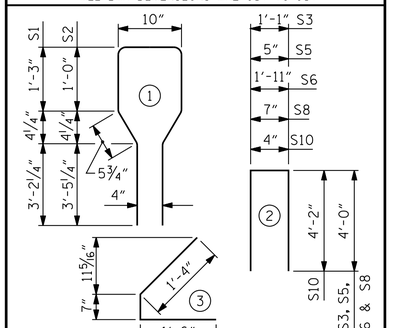
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	106	#4	1	10'-8"	755
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
✱ S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

✱ NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	8500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN C	1262	20.1	42

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
6	99'-2"	595'-0"

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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5/15/2018

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CHECKED BY : GRP 8/91	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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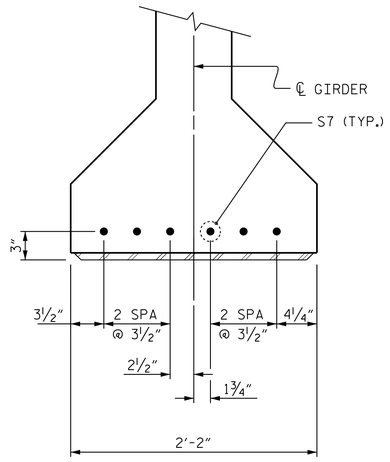
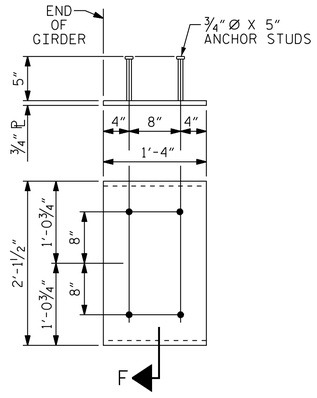
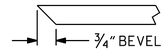


DETAIL "A"



EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE IV GIRDER

(2 REQ'D PER GIRDER)



SECTION "F"

(SEE NOTES)

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6800 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼".

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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2			4			58

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CHECKED BY : C. T. POOLE	DATE :	03/18
DRAWN BY : ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15	MAA/TMG
	REV. 12/17	MAA/THC

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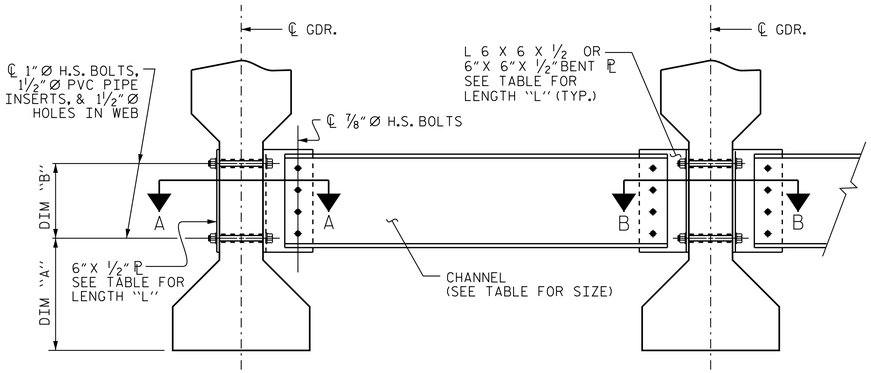
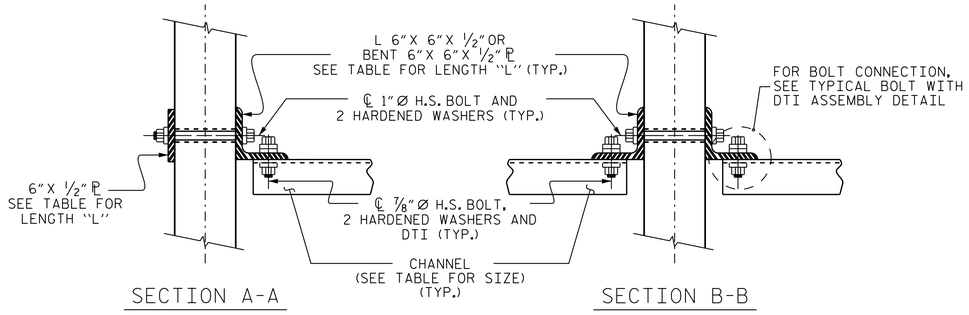
STD. NO. PCG9



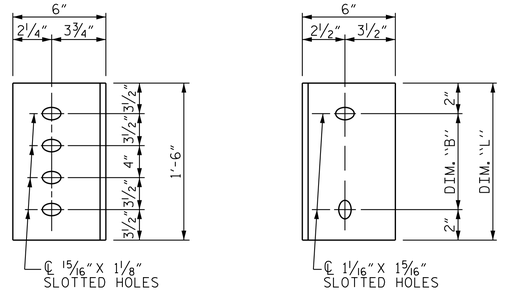
EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



SECTION A-A SECTION B-B

CONNECTION DETAILS



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS

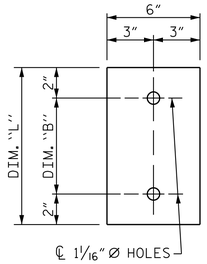
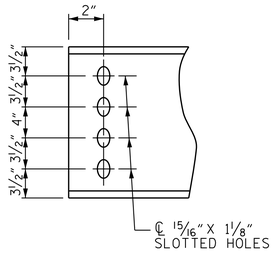
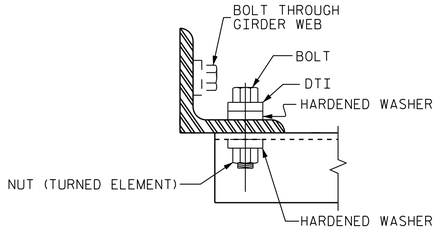


PLATE DETAILS



CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL ¼ TURN.

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9½"	1'-2"	1'-6"

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 5 OF 5

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			58

STD. NO. PCG10

ASSEMBLED BY : D. D. LOWERY	DATE : 03/18		
CHECKED BY : C. T. POOLE	DATE : 03/18		
DRAWN BY : TLA 6/05	REV. 5/1/06RRR	KMM/GM	
CHECKED BY : VC 6/05	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A																																
	GIRDER AG1											GIRDER AG2											GIRDER AG3										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.026	0.051	0.071	0.084	0.088	0.084	0.071	0.052	0.027	0.000	0.000	0.028	0.054	0.075	0.089	0.094	0.089	0.076	0.055	0.028	0.000	0.000	0.027	0.053	0.073	0.086	0.091	0.087	0.074	0.053	0.027	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	0	0	1/16"	3/16"	3/16"	1/4"	1/4"	1/4"	3/16"	1/8"	1/16"	0	0	1/16"	3/16"	1/4"	1/4"	5/16"	1/4"	1/4"	3/16"	1/16"	0

0.6" Ø LOW RELAXATION STRANDS	SPAN A																																
	GIRDER AG4											GIRDER AG5											GIRDER AG6										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.026	0.051	0.071	0.083	0.088	0.084	0.071	0.051	0.026	0.000	0.000	0.026	0.052	0.072	0.084	0.089	0.085	0.072	0.052	0.026	0.000	0.000	0.024	0.047	0.066	0.077	0.082	0.077	0.066	0.048	0.024	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	0	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	0	0	1/8"	1/4"	5/16"	3/8"	7/16"	3/8"	5/16"	1/4"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN B																																
	GIRDER BG1											GIRDER BG2											GIRDER BG3										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.037	0.070	0.096	0.113	0.118	0.113	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.113	0.118	0.113	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.113	0.118	0.113	0.096	0.070	0.037	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.028	0.054	0.075	0.088	0.093	0.088	0.075	0.054	0.028	0.000	0.000	0.029	0.057	0.080	0.094	0.099	0.094	0.080	0.057	0.029	0.000	0.000	0.028	0.056	0.077	0.091	0.096	0.091	0.077	0.056	0.028	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	1/16"	1/8"	1/4"	1/4"	1/4"	1/4"	1/4"	1/8"	1/16"	0	0	1/16"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/16"	0	0	1/16"	1/8"	3/16"	1/4"	1/4"	1/4"	3/16"	1/8"	1/16"	0

0.6" Ø LOW RELAXATION STRANDS	SPAN B																																
	GIRDER BG4											GIRDER BG5											GIRDER BG6										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.037	0.070	0.096	0.113	0.118	0.113	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.113	0.118	0.113	0.096	0.070	0.037	0.000	0.000	0.037	0.070	0.096	0.113	0.118	0.113	0.096	0.070	0.037	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.027	0.054	0.074	0.088	0.092	0.088	0.074	0.054	0.027	0.000	0.000	0.028	0.054	0.075	0.089	0.093	0.089	0.075	0.054	0.028	0.000	0.000	0.026	0.050	0.069	0.081	0.086	0.081	0.069	0.050	0.026	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	1/16"	3/16"	1/4"	1/4"	1/4"	1/4"	1/4"	3/16"	1/16"	0	0	1/16"	3/16"	3/16"	1/4"	1/4"	1/4"	3/16"	3/16"	1/16"	0	0	1/8"	3/16"	5/16"	3/8"	3/8"	3/8"	5/16"	3/16"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY
DocuSigned by: Seth A. Denney E8E815ACC9ED415...
5/15/2018

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

5/14/2018
K:\RDT_Structures_Bridge\NC\Q11036392 - R-3822\Cad\Dgn\R3822_SMU_DL1_410208.dgn

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN C																														
	GIRDER CG1											GIRDER CG2											GIRDER CG3									
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.073	0.137	0.188	0.220	0.231	0.220	0.188	0.137	0.073	0.000	0.000	0.073	0.137	0.188	0.220	0.231	0.220	0.188	0.137	0.073	0.000	0.000	0.073	0.137	0.188	0.220	0.231	0.220	0.188	0.137	0.073	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.055	0.106	0.146	0.172	0.180	0.172	0.146	0.106	0.055	0.000	0.000	0.058	0.112	0.155	0.182	0.191	0.182	0.155	0.112	0.058	0.000	0.000	0.056	0.109	0.150	0.177	0.186	0.177	0.150	0.109	0.056	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	3/16"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	3/16"	0	0	1/8"	1/4"	3/8"	7/16"	7/16"	7/16"	3/8"	1/4"	1/8"	0	0	3/16"	5/16"	7/16"	1/2"	1/2"	1/2"	7/16"	5/16"	3/16"	0

0.6" Ø LOW RELAXATION STRANDS	SPAN C																														
	GIRDER CG4											GIRDER CG5											GIRDER CG6									
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.073	0.137	0.188	0.220	0.231	0.220	0.188	0.137	0.073	0.000	0.000	0.073	0.137	0.188	0.220	0.231	0.220	0.188	0.137	0.073	0.000	0.000	0.073	0.137	0.188	0.220	0.231	0.220	0.188	0.137	0.073	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.054	0.104	0.145	.0170	0.179	0.170	0.145	0.104	0.054	0.000	0.000	0.054	0.106	0.146	0.172	0.181	0.172	0.146	0.106	0.054	0.000	0.000	0.050	0.097	0.134	0.158	0.166	0.158	0.134	0.097	0.050	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	3/16"	3/8"	1/2"	9/16"	5/8"	9/16"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	7/16"	9/16"	9/16"	9/16"	7/16"	3/8"	3/16"	0	0	1/4"	7/16"	5/8"	11/16"	3/4"	11/16"	5/8"	7/16"	1/4"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN D																														
	GIRDER DG1											GIRDER DG2											GIRDER DG3									
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.031	0.058	0.079	0.093	0.097	0.093	0.079	0.058	0.031	0.000	0.000	0.031	0.058	0.079	0.093	0.097	0.093	0.079	0.058	0.031	0.000	0.000	0.031	0.058	0.079	0.093	0.097	0.093	0.079	0.058	0.031	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.013	0.025	0.034	0.040	0.042	0.040	0.034	0.025	0.013	0.000	0.000	0.013	0.026	0.036	0.042	0.045	0.042	0.036	0.026	0.013	0.000	0.000	0.013	0.025	0.035	0.041	0.043	0.041	0.035	0.025	0.013	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	9/16"	5/8"	9/16"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	9/16"	5/8"	9/16"	1/2"	3/8"	3/16"	0

0.6" Ø LOW RELAXATION STRANDS	SPAN D																														
	GIRDER DG4											GIRDER DG5											GIRDER DG6									
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.031	0.058	0.079	0.093	0.097	0.093	0.079	0.058	0.031	0.000	0.000	0.031	0.058	0.079	0.093	0.097	0.093	0.079	0.058	0.031	0.000	0.000	0.031	0.058	0.079	0.093	0.097	0.093	0.079	0.058	0.031	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.012	0.024	0.034	0.040	0.042	0.040	0.034	0.024	0.012	0.000	0.000	0.012	0.024	0.034	0.040	0.042	0.040	0.034	0.024	0.012	0.000	0.000	0.011	0.022	0.031	0.037	0.039	0.037	0.031	0.022	0.011	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	9/16"	5/8"	11/16"	5/8"	9/16"	3/8"	3/16"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER ", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

Docusigned by:
Seth A. Denney
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5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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5/14/2018

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN E																														
	GIRDER EG1											GIRDER EG2											GIRDER EG3										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.030	0.057	0.078	0.091	0.096	0.091	0.078	0.057	0.030	0.000	0.000	0.030	0.057	0.078	0.091	0.096	0.091	0.078	0.057	0.030	0.000	0.000	0.030	0.057	0.078	0.091	0.096	0.091	0.078	0.057	0.030	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.012	0.023	0.032	0.038	0.039	0.037	0.032	0.023	0.012	0.000	0.000	0.012	0.024	0.034	0.040	0.042	0.040	0.034	0.024	0.012	0.000	0.000	0.012	0.024	0.033	0.039	0.041	0.039	0.033	0.024	0.012	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	9/16"	5/8"	9/16"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0

0.6" Ø LOW RELAXATION STRANDS	SPAN E																														
	GIRDER EG4											GIRDER EG5											GIRDER EG6										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.030	0.057	0.078	0.091	0.096	0.091	0.078	0.057	0.030	0.000	0.000	0.030	0.057	0.078	0.091	0.096	0.091	0.078	0.057	0.030	0.000	0.000	0.030	0.057	0.078	0.091	0.096	0.091	0.078	0.057	0.030	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.011	0.023	0.032	0.037	0.039	0.037	0.032	0.023	0.011	0.000	0.000	0.012	0.023	0.032	0.038	0.040	0.038	0.032	0.023	0.012	0.000	0.000	0.011	0.021	0.029	0.035	0.036	0.035	0.029	0.021	0.011	0.000
FINAL CAMBER (OR DEFLECTION) (IN.) ↑	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	3/8"	9/16"	5/8"	11/16"	5/8"	9/16"	3/8"	3/16"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by:
Seth A. Denney
E8EB154CC9ED410...
5/15/2018

Kimley»Horn
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Phone (919) 677-2000
NC LICENSE # F-0102

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

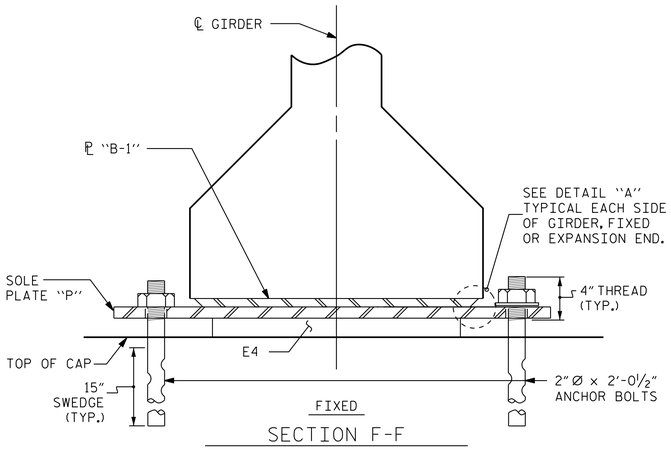
SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

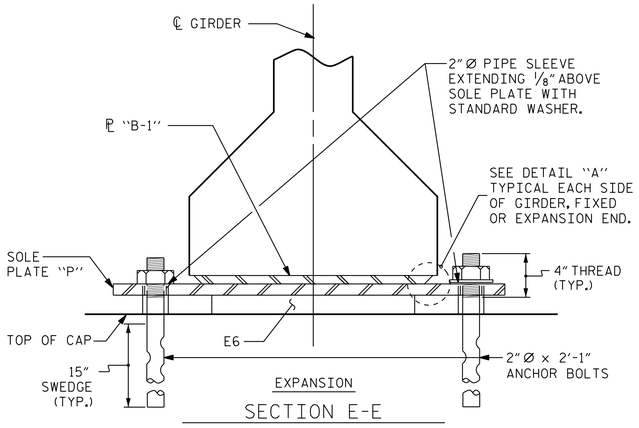
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

5/14/2018 K:\RDT.Structures_Bridge\NC\01036392 - R-3822\Cad\Dgn\R3822_SMU_DL3_410208.dgn



SECTION F-F



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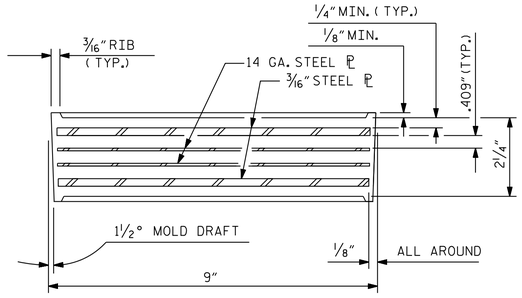
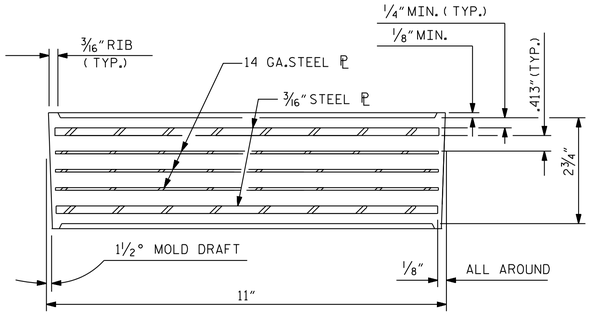
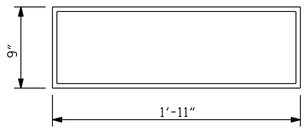


TYPICAL SECTION OF ELASTOMERIC BEARINGS



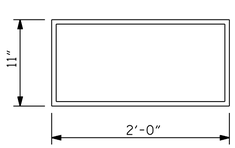
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E4 (48 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

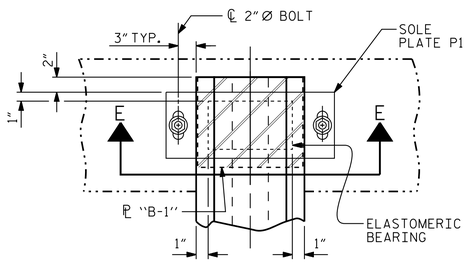
TYPE V



E6 (12 REQ'D)

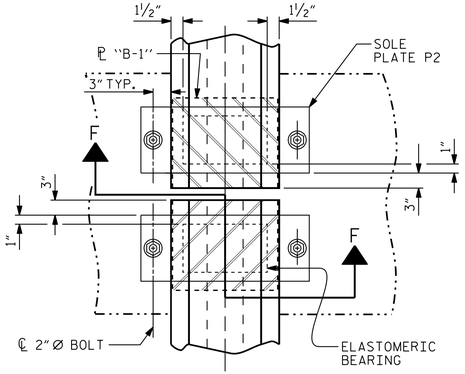
PLAN VIEW OF ELASTOMERIC BEARING

TYPE VII



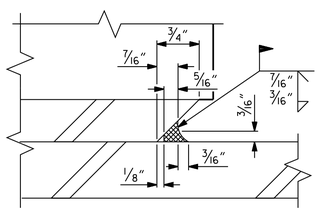
TYPICAL PLAN

(SHOWING @ END BENT)

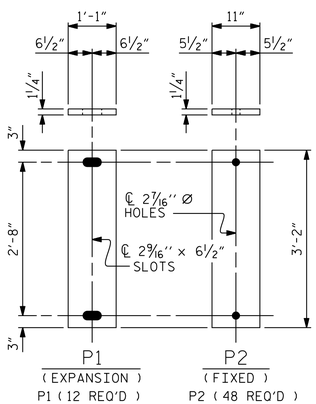


TYPICAL PLAN

(SHOWING CONTINUOUS BENT)



DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L.(NO IMPACT)	
TYPE V	238 k
TYPE VII	205 k

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2"Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC9ED410... 5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			58

ASSEMBLED BY : D.D. LOWERY	DATE : 03/18		
CHECKED BY : C.T. POOLE	DATE : 03/18		
DRAWN BY : EEM 2/97	REV. 6/13	AAC/MAA	
CHECKED BY : VAP 2/97	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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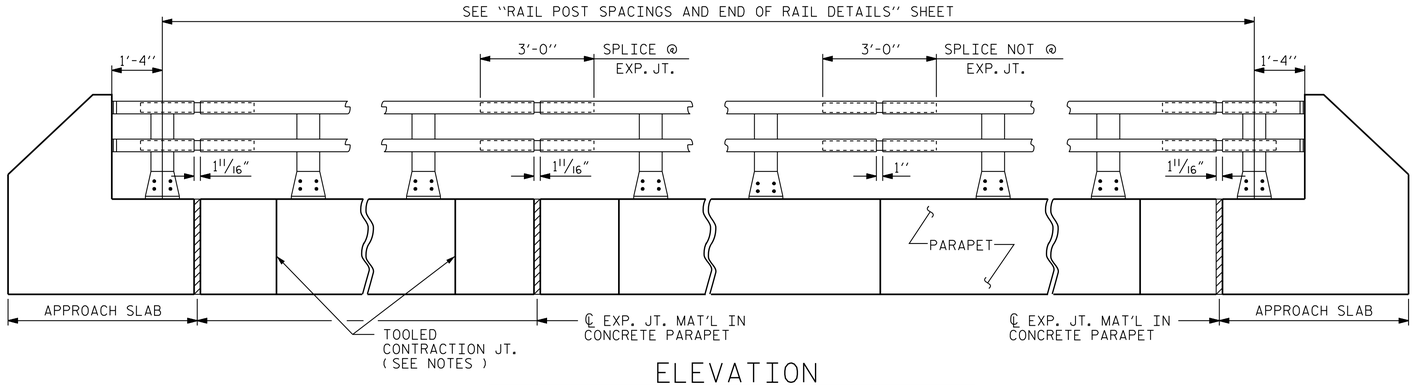
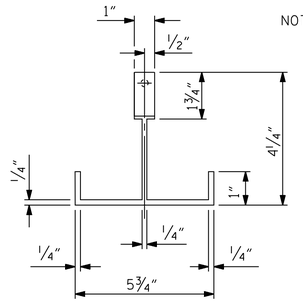
STD. NO. EB4

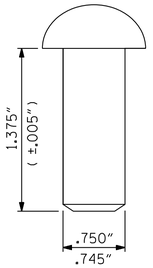


ELEVATION

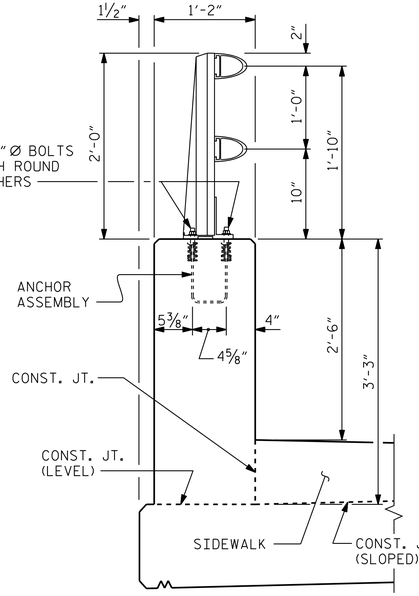
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE ''RAIL POST SPACINGS AND END OF RAIL DETAILS''



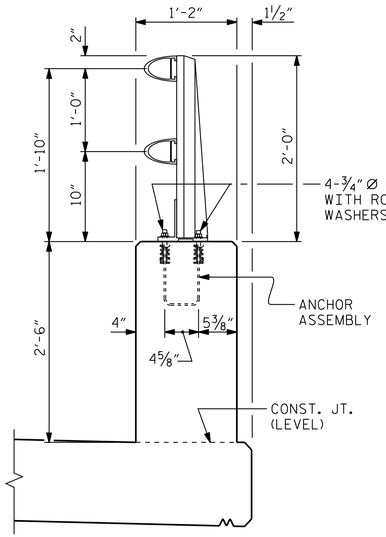
PLAN



RIVET DETAIL

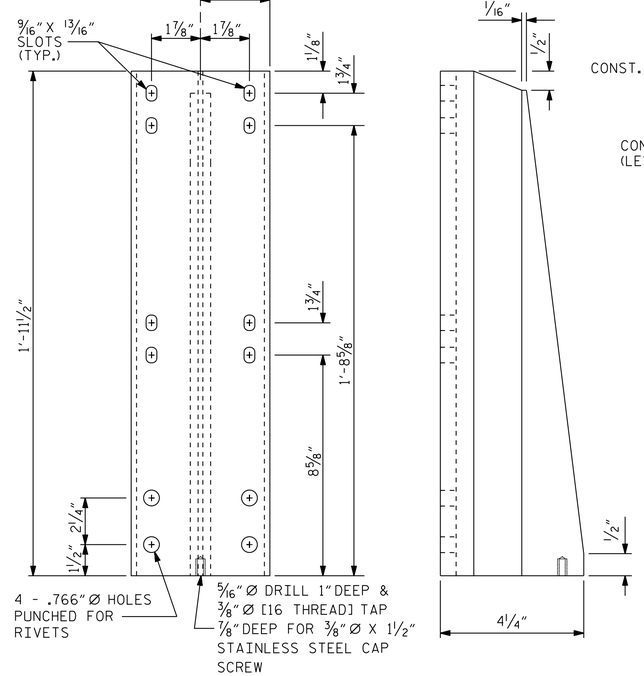


LEFT SIDE



RIGHT SIDE

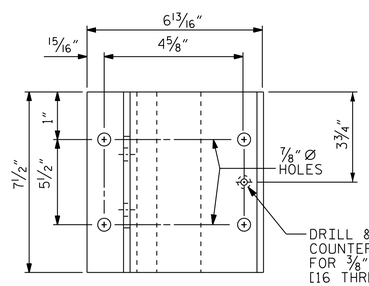
SECTION THRU PARAPET AND RAIL



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



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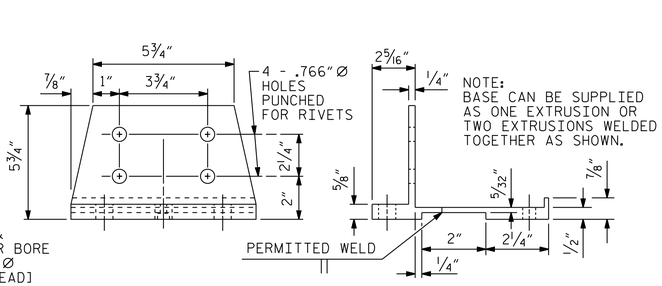

FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER ''2 BAR METAL RAIL ALTERNATE''. ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 840.72 LIN. FT.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			58

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC9ED410... 5/15/2018

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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: D. D. LOWERY	DATE: 03/18	
CHECKED BY: A. L. PHILLIPS	DATE: 03/18	
DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE: 03/18	

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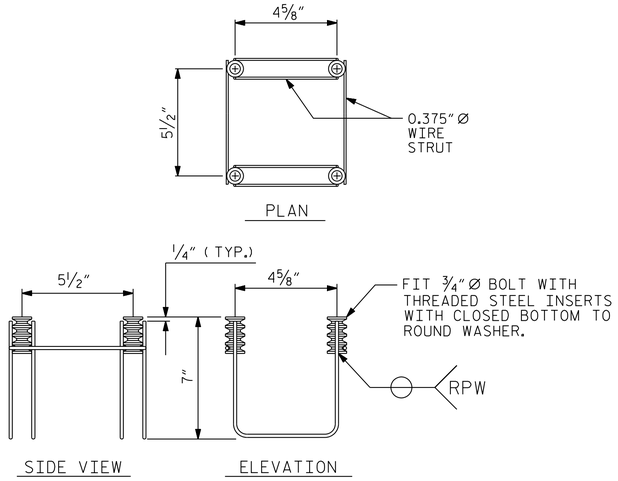
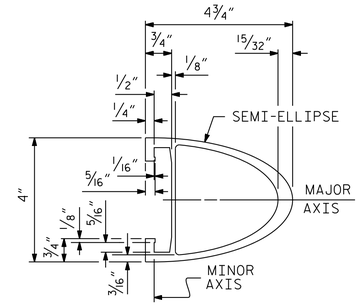
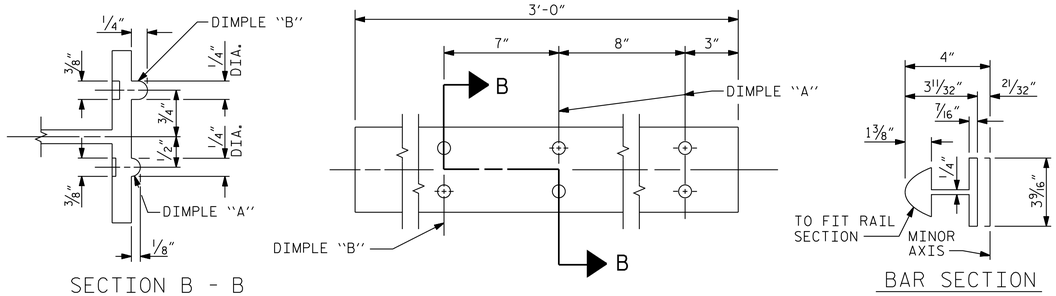


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(144 ASSEMBLIES REQUIRED)



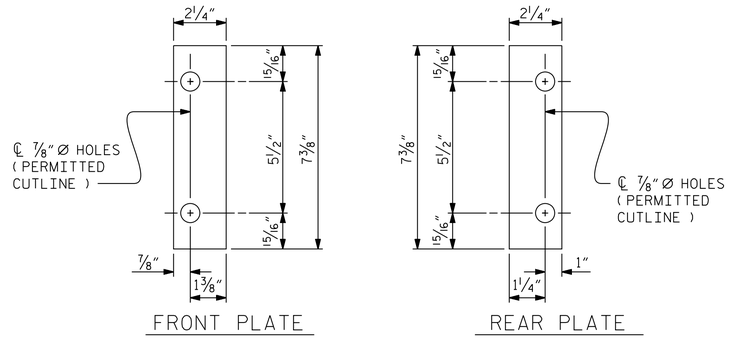
RAIL SECTION



SECTION B - B

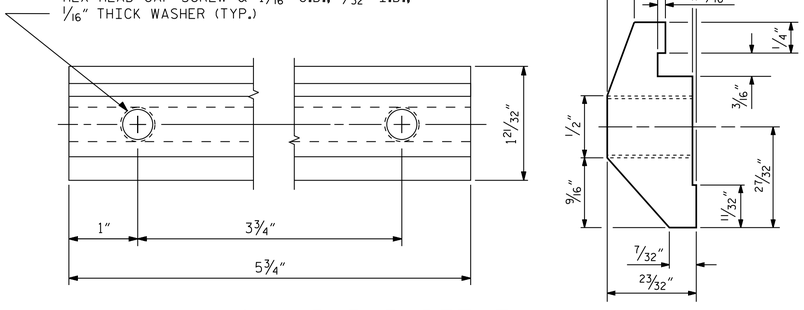
EXPANSION BAR DETAILS

BAR SECTION



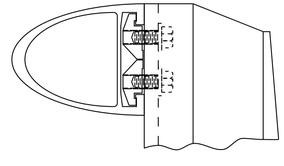
SHIM DETAILS

NOTE:
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

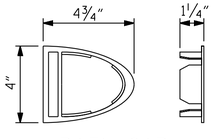


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY



RAIL CAP

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR ¾" FERRULES.

B. 4 - ¾"Ø X 2½" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ¾"Ø X 2½" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16"Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.

E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾"Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 2 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY
DocuSigned by: Seth A. Denney
E8E8154CC6E0416...
5/15/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			58

ASSEMBLED BY : D.D. LOWERY		DATE :	03/18
CHECKED BY : A.L. PHILLIPS		DATE :	03/18
DRAWN BY : EEM 6/94	REV. 5/1/06R		KMM/GM
CHECKED BY : RGW 6/94	REV. 10/1/11		MAA/GM
	REV. 12/1/17		MAA/THC

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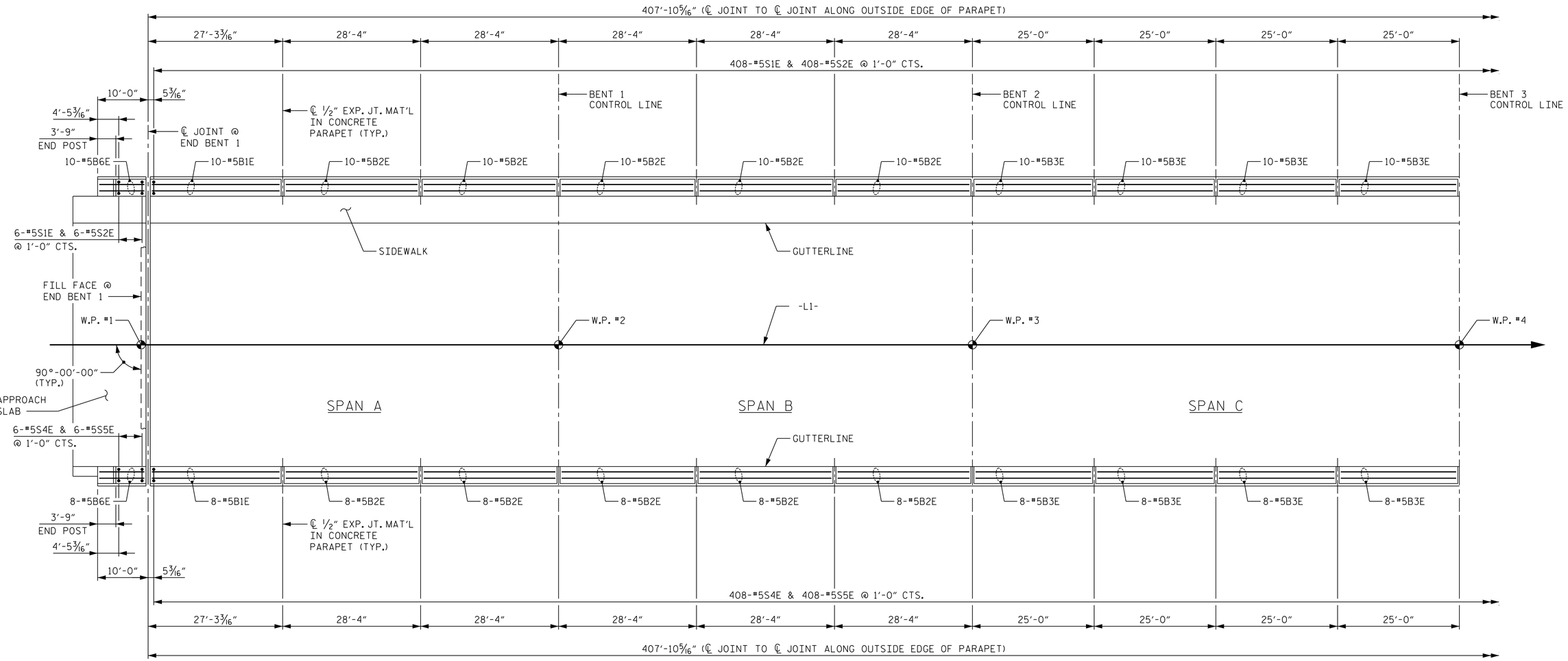
STD. NO. BMR4



PLAN

NOTE: ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE PARAPET

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE PARAPET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: A. L. PHILLIPS DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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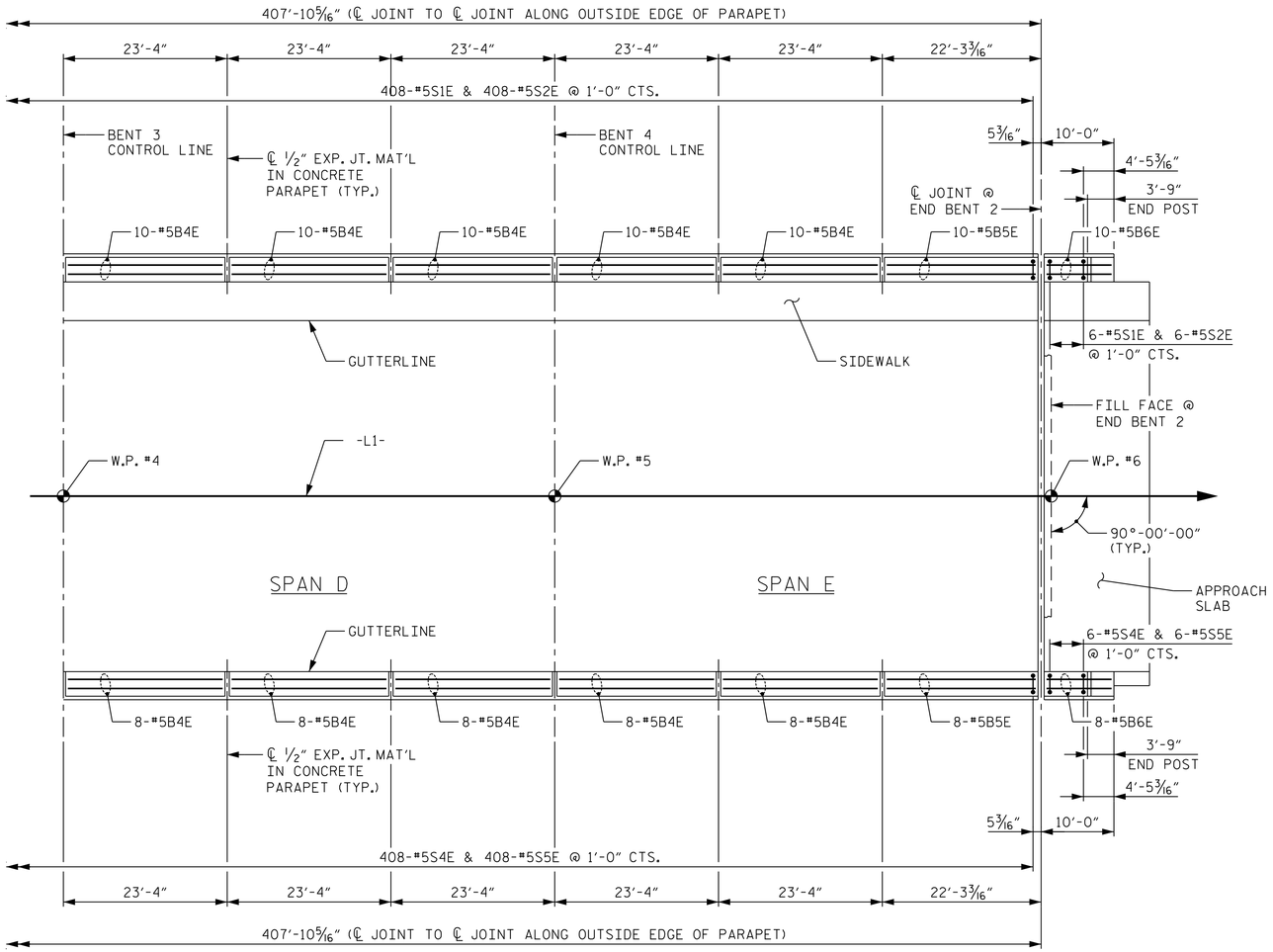

PLAN

NOTE: ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE PARAPET

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 4 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A DENNEY

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SUPERSTRUCTURE

CONCRETE PARAPET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
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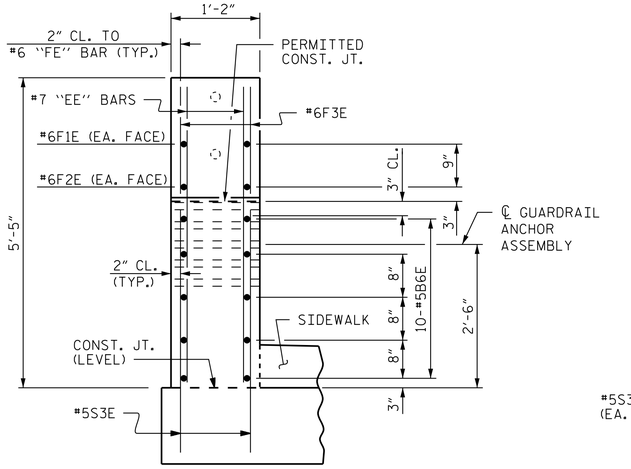
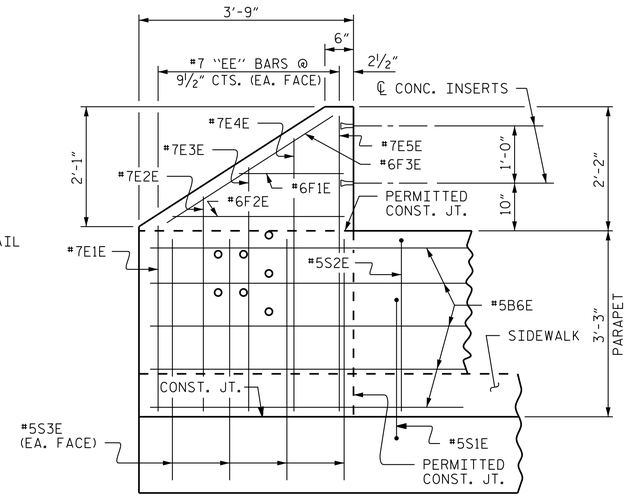
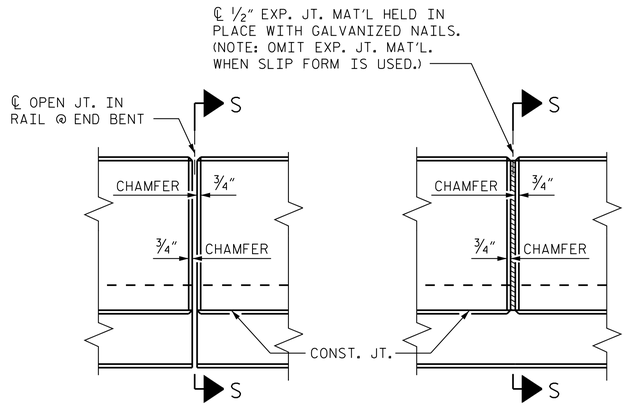


END VIEW

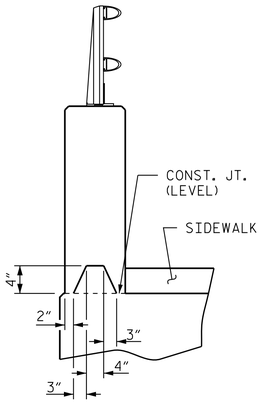


ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL

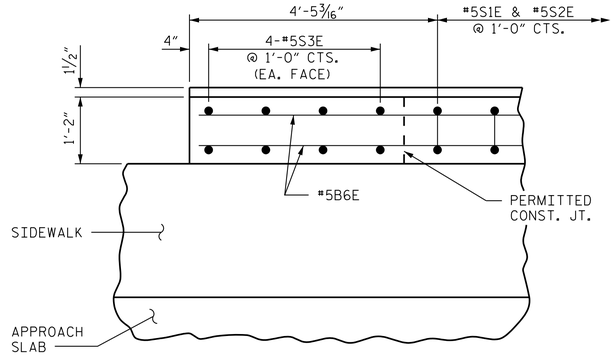


ELEVATION AT EXPANSION JOINTS

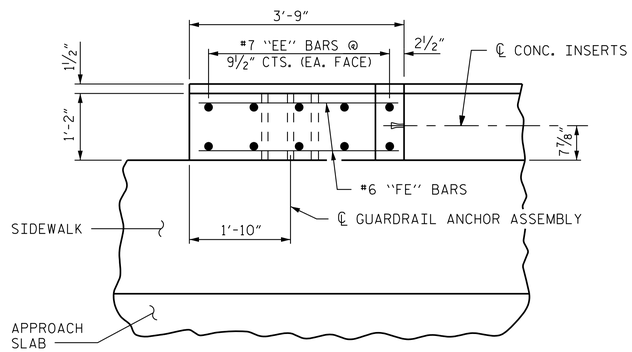


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS

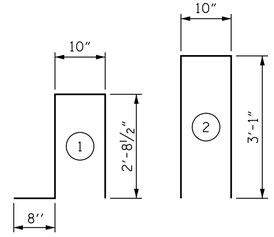


PLAN OF PARAPET



PLAN OF END POST

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

CONCRETE PARAPET AND TWO END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	10	#5	STR	26'-10"	280
B2E	50	#5	STR	27'-11"	1456
B3E	40	#5	STR	24'-7"	1026
B4E	50	#5	STR	22'-11"	1195
B5E	10	#5	STR	21'-10"	228
B6E	20	#5	STR	9'-7"	200
E1E	4	#7	STR	3'-3"	27
E2E	4	#7	STR	3'-9"	31
E3E	4	#7	STR	4'-3"	35
E4E	4	#7	STR	4'-9"	39
E5E	4	#7	STR	5'-1"	42
F1E	4	#6	STR	1'-10"	11
F2E	4	#6	STR	3'-0"	18
F3E	4	#6	STR	3'-5"	21
S1E	420	#5	1	6'-11"	3030
S2E	420	#5	2	7'-0"	3066
S3E	16	#5	STR	3'-9"	63

EPOXY COATED REINFORCING STEEL	LBS.	10,768
CLASS AA CONCRETE	C.Y.	60.5
1'-2" X 3'-3" CONCRETE PARAPET		427.9 LF

NOTES:

THE PARAPET IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

THE #5S1 & #5S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE ½" EXPANSION JOINT MATERIAL IN PARAPET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL" SHEET.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

CONCRETE IN PARAPETS SHALL BE CLASS AA NORMAL WEIGHT CONCRETE.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 5 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC9ED410... 5/15/2018

Kimley»Horn
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NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

CONCRETE PARAPET DETAILS

(LEFT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			58

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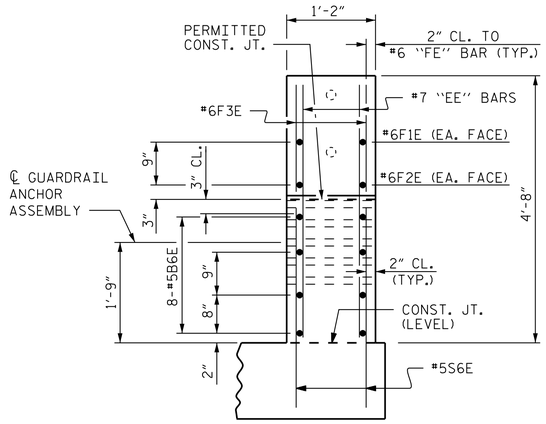
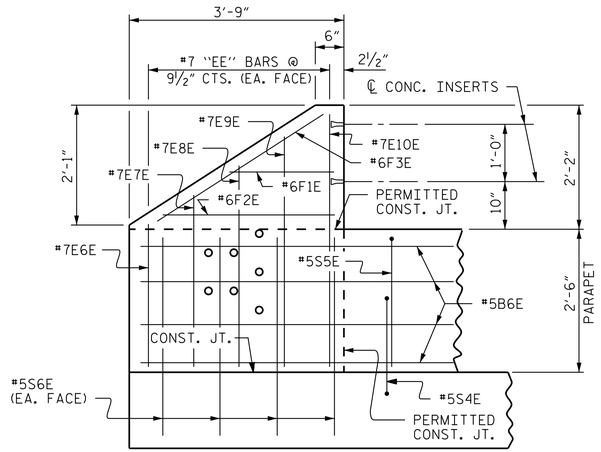
DRAWN BY: D. D. LOWERY	DATE:	03/18
CHECKED BY: A. L. PHILLIPS	DATE:	03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE:	03/18

5/14/2018

K:\RDT_Structures_Bridge\NC\01036392 - R-3822\Cad\Dgn\R3822_SMU_CP3_410208.dgn

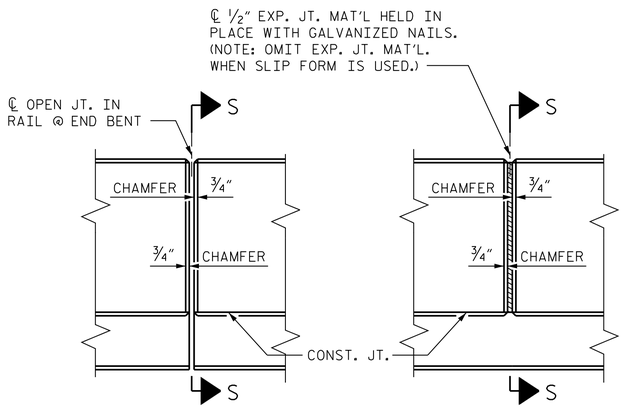


END VIEW

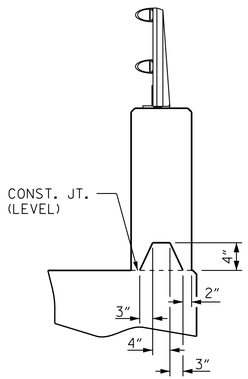


ELEVATION

PARAPET AND END POST FOR TWO BAR RAIL



ELEVATION AT EXPANSION JOINTS



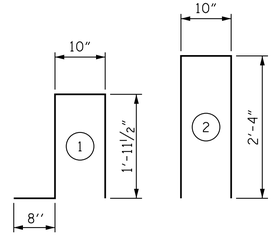
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS

PLAN OF PARAPET

PLAN OF END POST

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

CONCRETE PARAPET AND TWO END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	8	#5	STR	26'-10"	224
B2E	40	#5	STR	27'-11"	1165
B3E	32	#5	STR	24'-7"	820
B4E	40	#5	STR	22'-11"	956
B5E	8	#5	STR	21'-10"	182
B6E	16	#5	STR	9'-7"	160
E6E	4	#7	STR	2'-6"	20
E7E	4	#7	STR	3'-0"	25
E8E	4	#7	STR	3'-6"	29
E9E	4	#7	STR	4'-0"	33
E10E	4	#7	STR	4'-4"	35
F1E	4	#6	STR	1'-10"	11
F2E	4	#6	STR	3'-0"	18
F3E	4	#6	STR	3'-5"	21
S4E	420	#5	1	5'-5"	2373
S5E	420	#5	2	5'-6"	2409
S6E	16	#5	STR	3'-0"	50

EPOXY COATED REINFORCING STEEL	LBS.	8,531
CLASS AA CONCRETE	C.Y.	46.6
1'-2" X 2'-6" CONCRETE PARAPET		427.9 LF

NOTES:

THE PARAPET IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

THE #5S1 & #5S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE ½" EXPANSION JOINT MATERIAL IN PARAPET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL" SHEET.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

CONCRETE IN PARAPETS SHALL BE CLASS AA NORMAL WEIGHT CONCRETE.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 6 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8E8154CC9ED410...

5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE PARAPET DETAILS

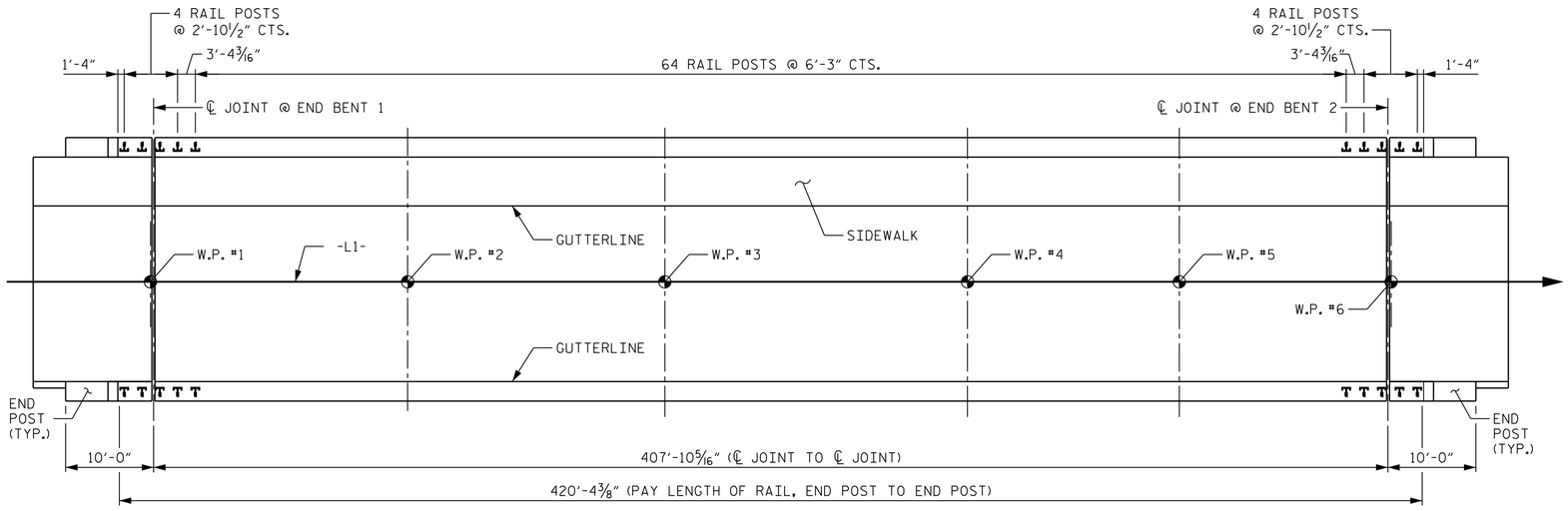
(RIGHT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			58

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

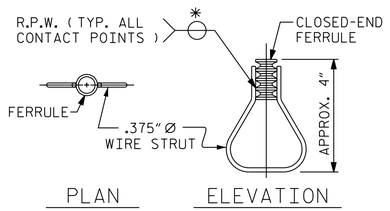
DRAWN BY: D. D. LOWERY	DATE:	03/18
CHECKED BY: A. L. PHILLIPS	DATE:	03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE:	03/18

5/14/2018 K:\RDT_Structures_Bridge\NC\01103639Z - R-3822\Cad\Dgn\R3822_SMU_CP4_4102O8.dgn



PLAN OF RAIL POST SPACINGS

(DIMENSIONS ARE SHOWN ALONG OUTSIDE FACE OF PARAPET @ 60°F)



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".

B. 1 - ¾"Ø X 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾"Ø X 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER).

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7⁄16"Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾"Ø X 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾"Ø X 1⅝" BOLT SHALL HAVE N.C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

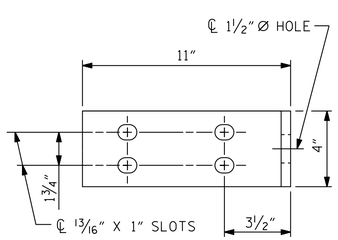
E. ½" PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 2 BAR METAL RAILS.

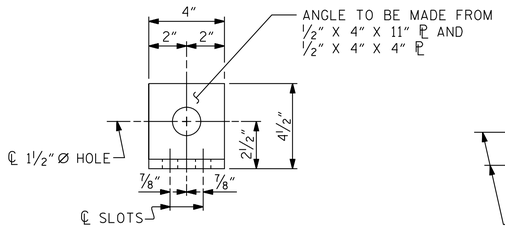
THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

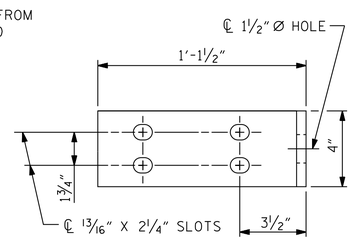
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾"Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾"Ø X 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾"Ø X 1⅝" BOLT SHALL APPLY TO THE ¾"Ø X 6½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



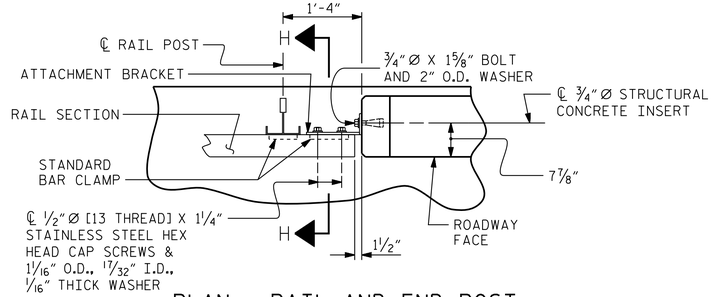
ELEVATION



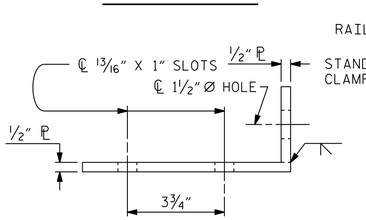
END VIEW (FIX AND EXP.)



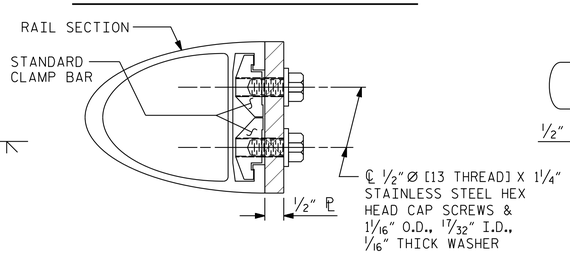
ELEVATION



PLAN - RAIL AND END POST

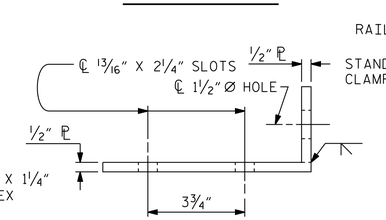


TOP VIEW

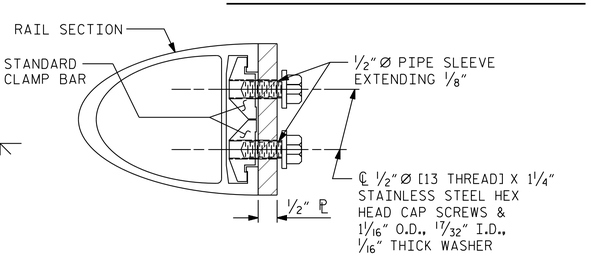


SECTION H-H (FIX)

FIXED



TOP VIEW



SECTION H-H (EXP.)

EXPANSION

DETAILS FOR ATTACHING METAL RAIL TO END POST

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS AND END OF RAIL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			58

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8EB154CC9ED410... 5/15/2018

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Phone (919) 677-2000
NC LICENSE # F-0102

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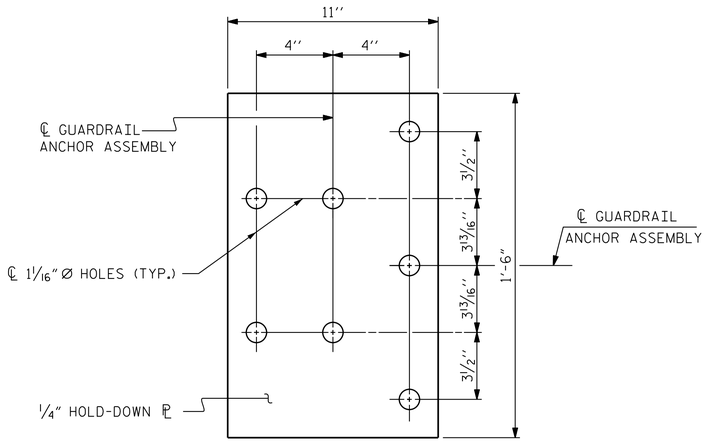
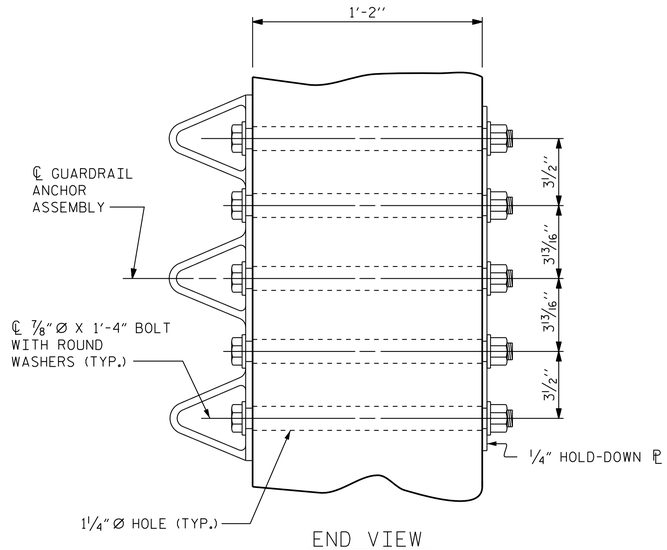
ASSEMBLED BY : D.D. LOWERY	DATE : 03/18		
CHECKED BY : A.L. PHILLIPS	DATE : 03/18		
DRAWN BY : FCJ 1/88	REV. 5/1/06	TLA/GM	
CHECKED BY : CRK 3/89	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

5/14/2018 K:\RDT_Structures_Bridge\NC\01103639 2 - R-3822\Cad\Dgn\R3822_SMU_2MR3_410208.dgn

STD. NO. BMR2



PLAN



END VIEW

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

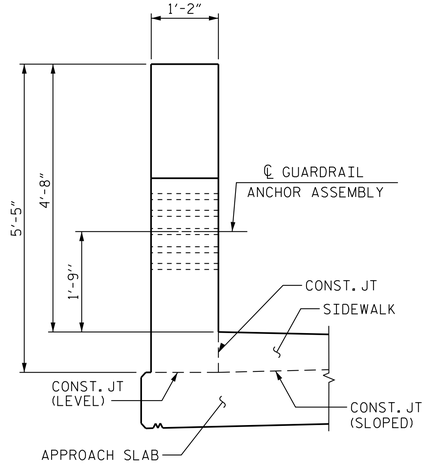
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

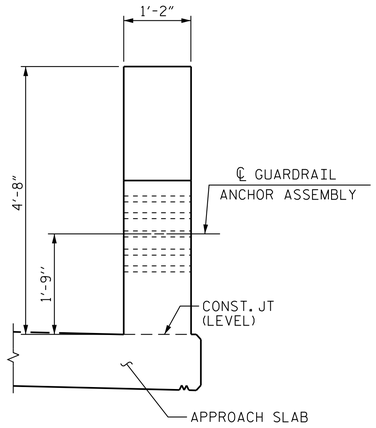
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

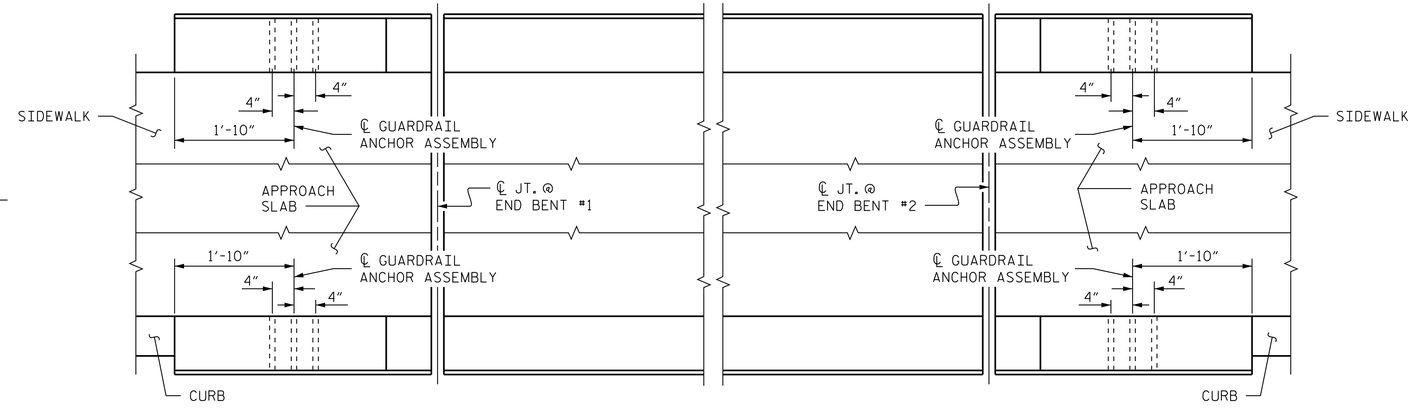
GUARDRAIL ANCHOR ASSEMBLY DETAILS



END VIEW
LEFT SIDE

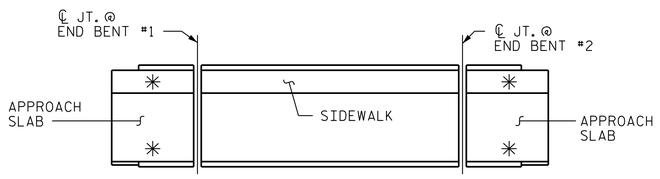


END VIEW
RIGHT SIDE



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC9ED410... 5/15/2018

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NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			58

ASSEMBLED BY : D. D. LOWERY	DATE : 03/18		
CHECKED BY : A. L. PHILLIPS	DATE : 03/18		
DRAWN BY : MAA 5/10	REV. 6/13	MAA/GM	
CHECKED BY : GM 5/10	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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STD. NO. GRA3

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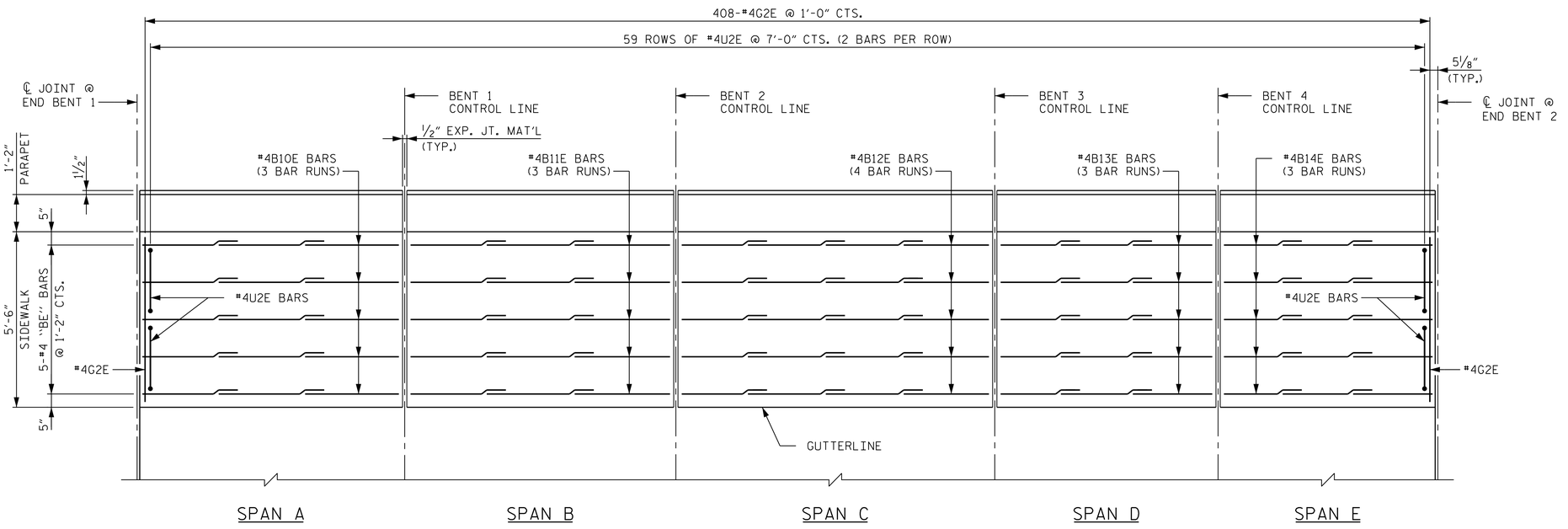
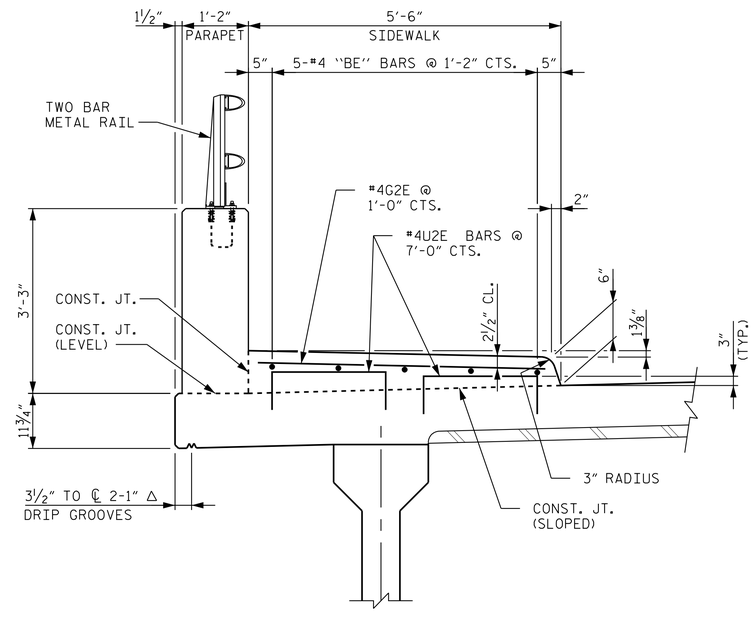


PLAN OF SIDEWALK

DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE PARAPET



SECTION THRU SIDEWALK

NOTES:

#4U2E BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS SCREEDED OFF.

SIDEWALK IN ALL SPANS SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN ALL SPANS HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

SEE "EXPANSION JOINT SEAL DETAILS FOR SIDEWALK" SHEETS FOR COVER PLATE DETAILS.

SEE APPROACH SLAB SHEETS, FOR SIDEWALK ON APPROACH SLAB.

CONCRETE AND REINFORCING STEEL FOR THE SIDEWALK IS INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIALS. PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".

#4U2E BARS MAY BE SHIFTED SLIGHTLY TO AVOID EXPANSION JOINTS IN SIDEWALK.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney ERE8154CC9ED410...

5/15/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

SIDEWALK DETAILS

DRAWN BY: D. D. LOWERY	DATE: 03/18
CHECKED BY: A. L. PHILLIPS	DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE: 03/18

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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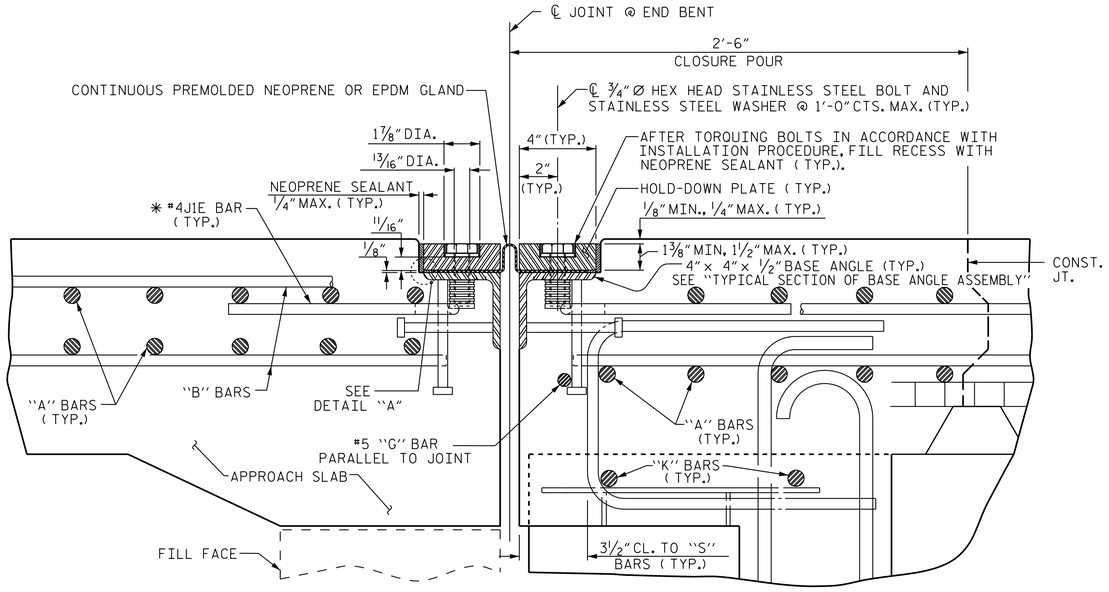


EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT AT END BENT 1 & 2.

✳ THE QUANTITY OF #4J1E BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1E BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1E BARS SPECIFIED, ADDITIONAL J1E BARS WILL NOT BE REQUIRED.

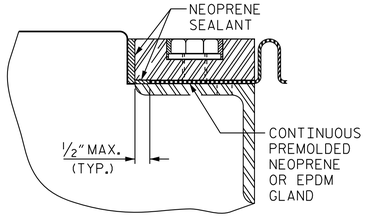
INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4⅛" TO 4¼" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE ¾" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4"X 4"X ½" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TOROUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TOROUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

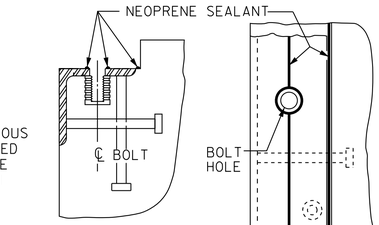
GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE " TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED. SEE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
7. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE GROUND SMOOTH AND COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
8. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
9. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
10. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE ¾" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

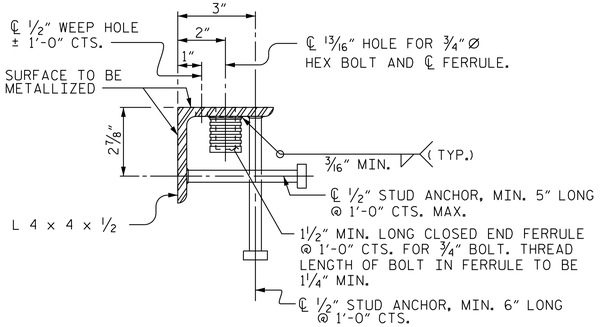
MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
EB1	90°-00'-00"	1¼"	1¹⁵⁄₁₆"	1¹¹⁄₁₆"	1³⁄₁₆"
EB2	90°-00'-00"	1¼"	1¹⁵⁄₁₆"	1¹¹⁄₁₆"	1³⁄₁₆"



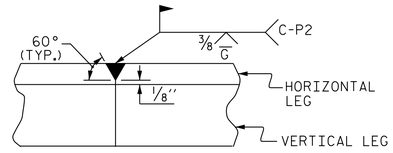
DETAIL "A"



INSTALLATION SKETCH



TYPICAL SECTION OF BASE ANGLE ASSEMBLY



DETAIL- FIELD WELD SPLICE OF BASE ANGLE

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8EB154CC9ED410...
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CHECKED BY : C. T. POOLE		DATE :	03/18
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CHECKED BY : CRK 10/87	REV. 10/1/11		MAA/GM
	REV. 12/17		MAA/THC

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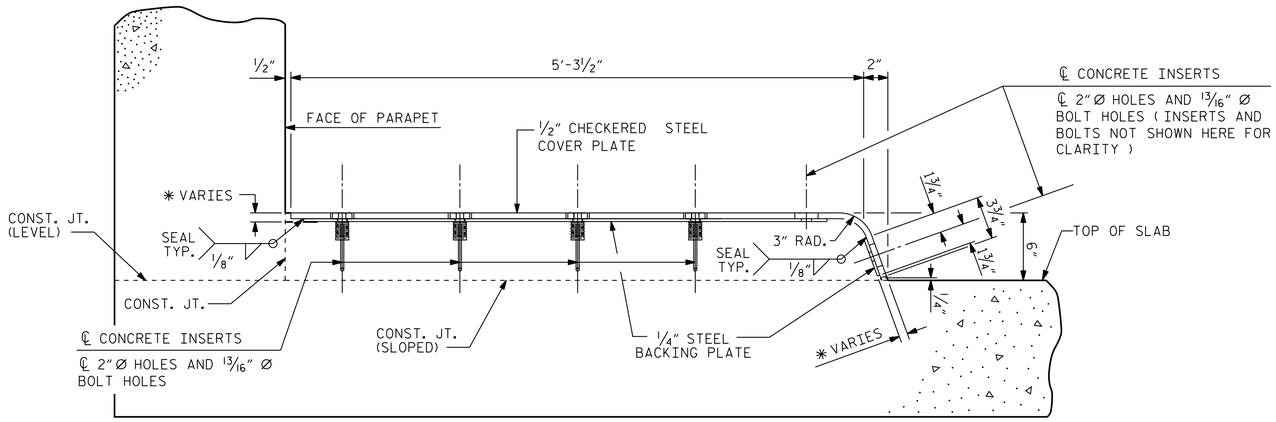


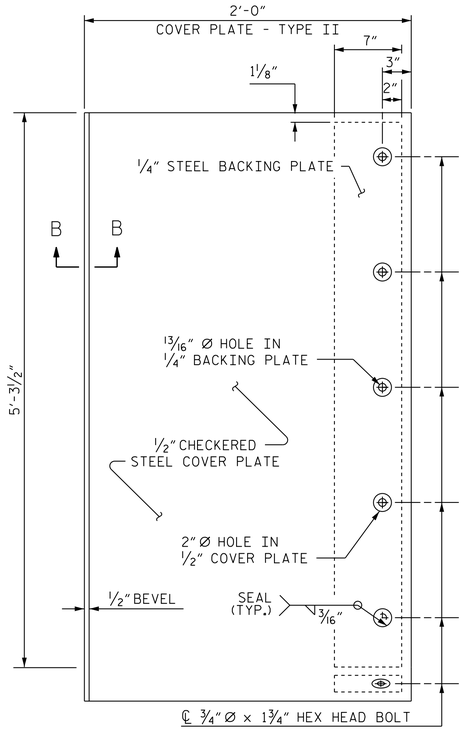
END VIEW

(NORMAL TO SIDEWALK)

* CONCRETE RECESS DIMENSIONS:

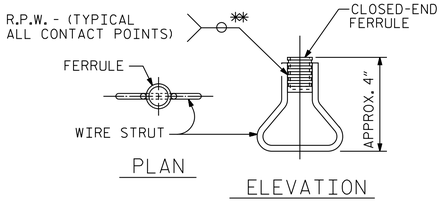
13/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.

9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.



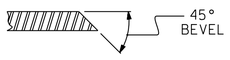
TYPE II - PLAN VIEW

COVER PLATE DETAILS



CONCRETE INSERT

** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



SECTION B - B

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR SIDEWALK

(LEFT SIDE)

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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CHECKED BY : CRK 1/88	REV. 10/1/11		MAA/GM
	REV. 12/17		MAA/THC

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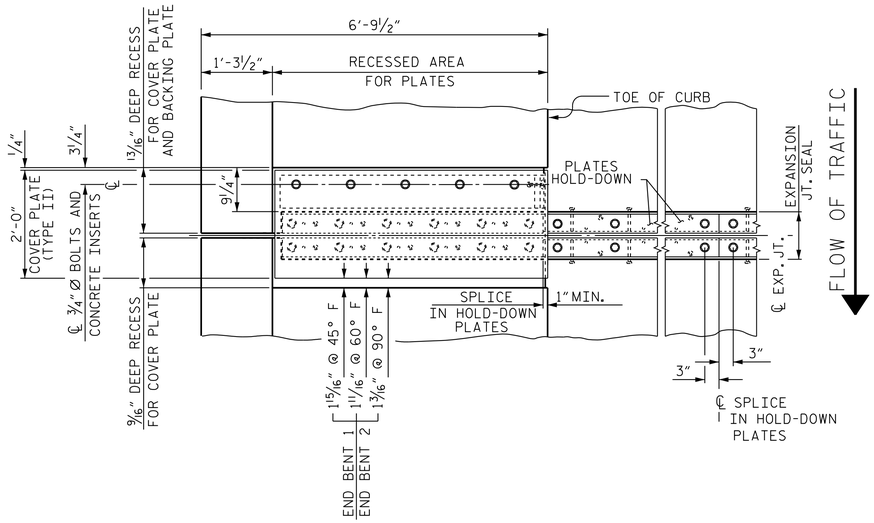
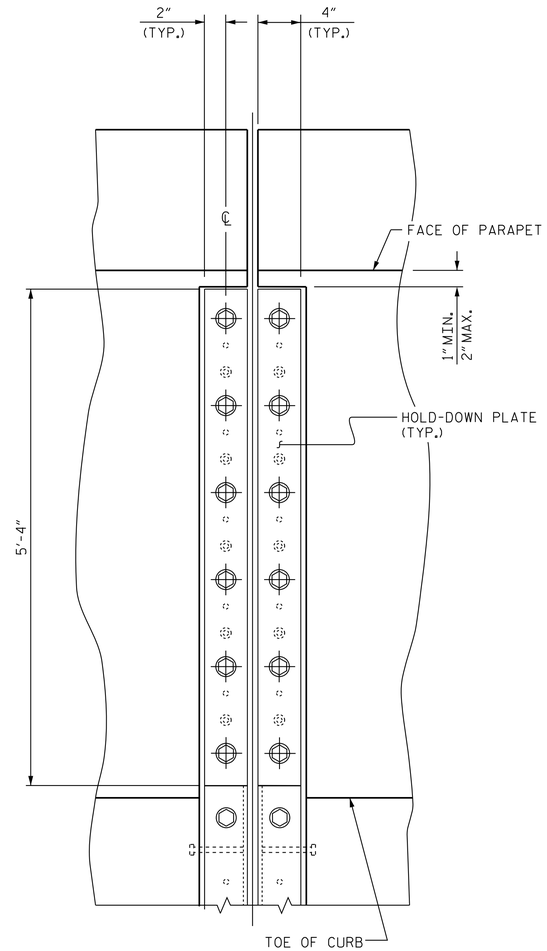
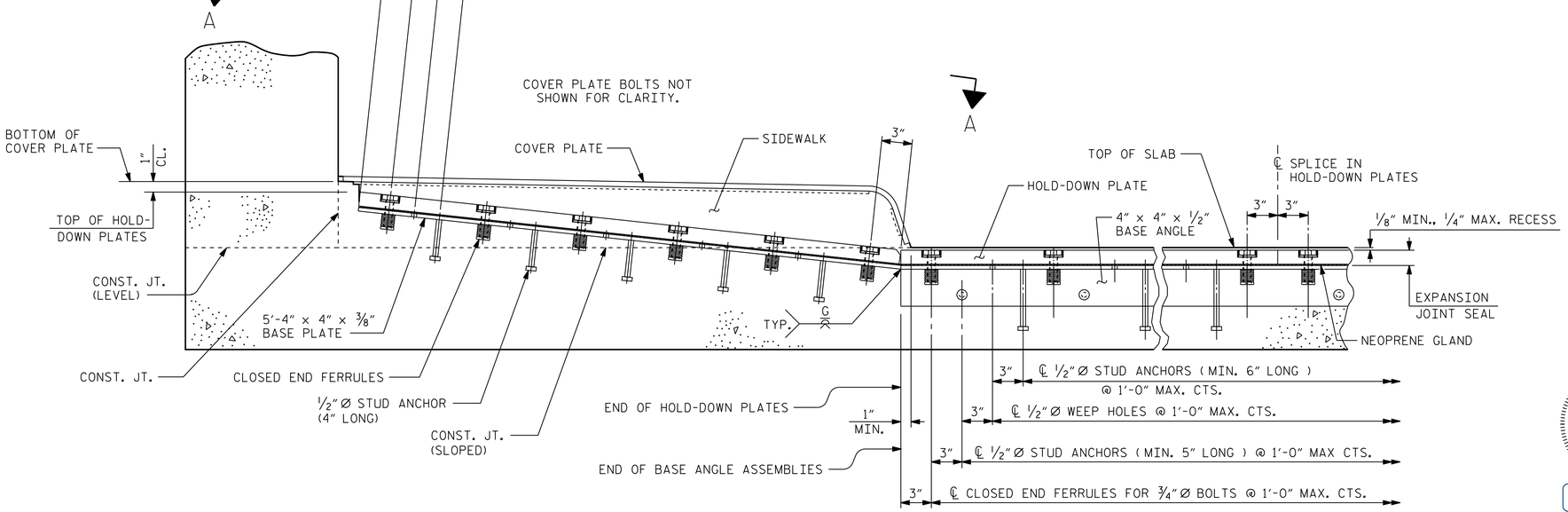


PLAN OF EXPANSION JOINT SEAL - LEFT SIDE



SECTION A - A



SECTION THRU SIDEWALK NORMAL TO JOINT - LEFT SIDE

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR SIDEWALK

(LEFT SIDE)

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8EB154CC8ED410... 5/15/2018

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	REV.	12/17	MAA/THC

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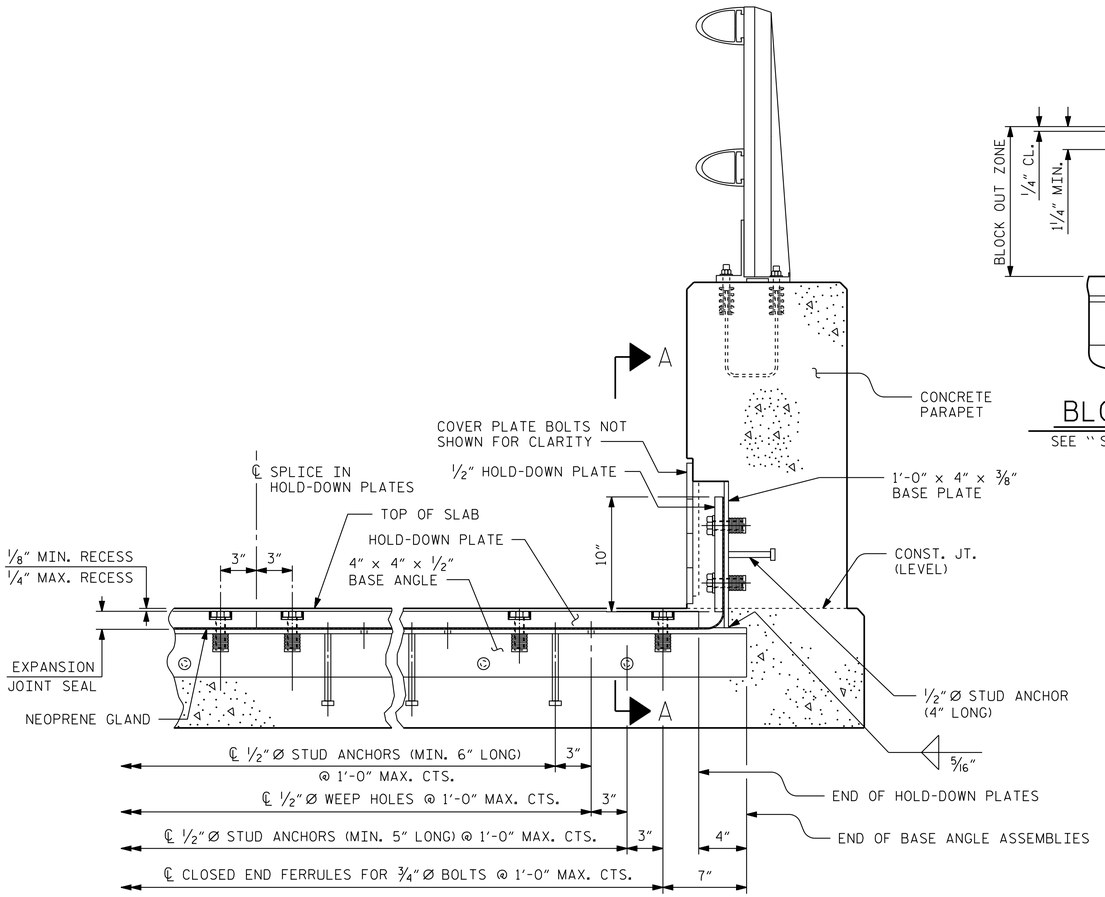
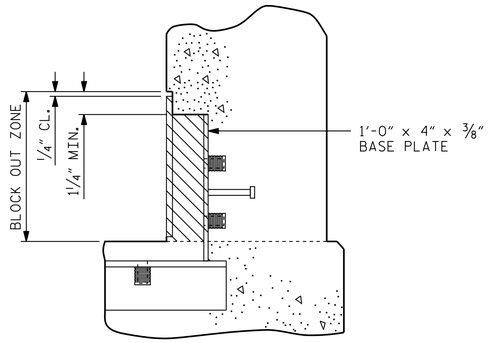
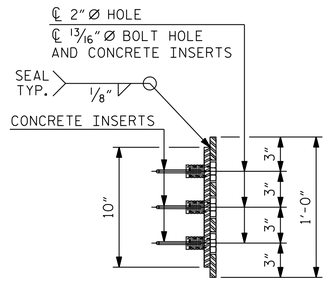


SECTION THRU PARAPET NORMAL TO JOINT - RIGHT SIDE

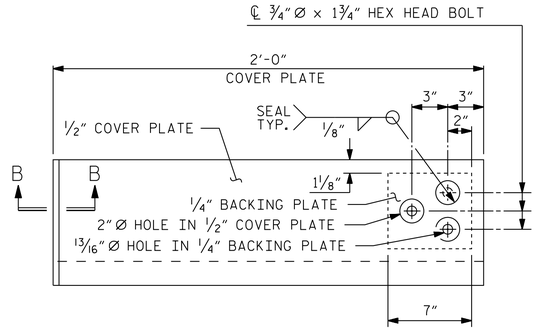


BLOCK OUT DETAIL

SEE "SECTION A-A" FOR OTHER DETAILS.

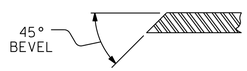


END VIEW

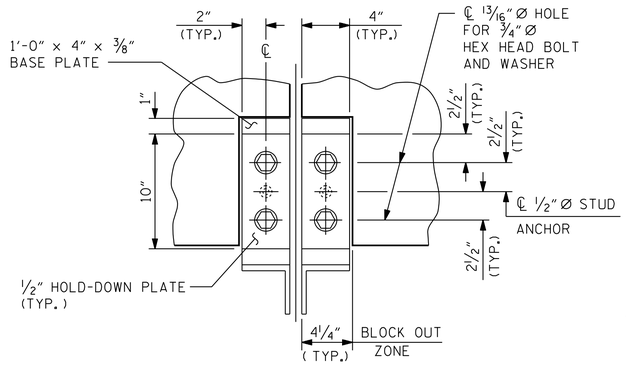


TYPE II - ELEVATION VIEW

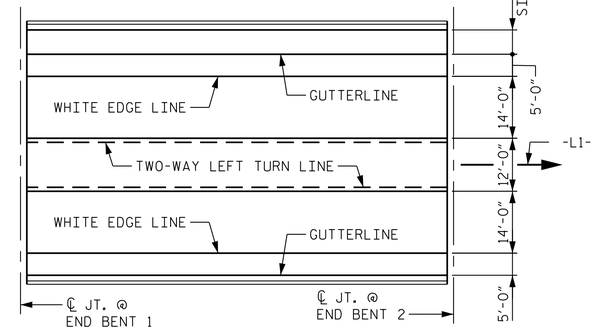
COVER PLATE DETAILS



SECTION B - B



SECTION A - A



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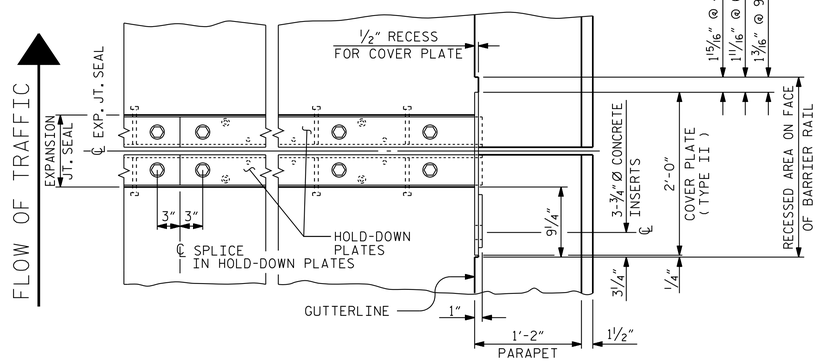
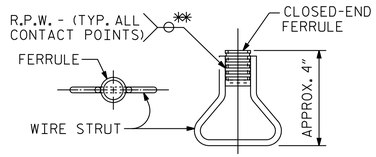


PLAN OF EXPANSION JOINT SEAL - RIGHT SIDE



PLAN ELEVATION

CONCRETE INSERT

✻✻ EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR CONCRETE PARAPET

(RIGHT SIDE)

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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CHECKED BY : C.T. POOLE	DATE : 03/18		
DRAWN BY : REK 9/87	REV. 7/12	MAA/GM	
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	REV. 12/17	MAA/THC	

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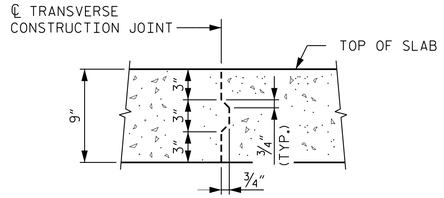
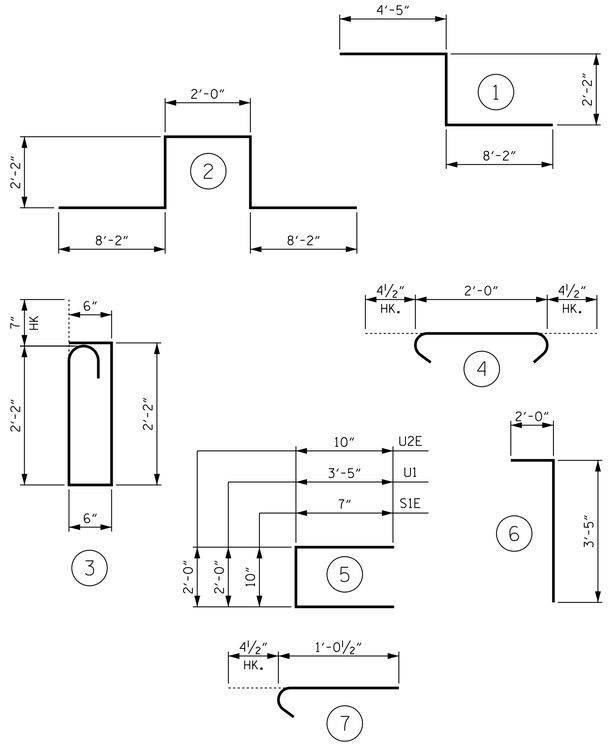


TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

REINFORCING STEEL IN SLAB NOT SHOWN, LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

REINFORCING STEEL SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	889	5	STR	57′-9″	53547
A2	889	5	STR	57′-9″	53547
B1E	82	4	STR	28′-8″	1570
B2E	41	4	STR	23′-6″	644
B3E	82	4	STR	18′-0″	986
B4E	41	4	STR	8′-6″	233
B5E	82	4	STR	21′-1″	1159
B6E	164	6	STR	60′-0″	14780
B7E	164	6	STR	10′-9″	2648
B8E	456	6	STR	42′-0″	28766
B9	600	5	STR	52′-10″	33063
B10E	15	4	STR	29′-1″	291
B11E	15	4	STR	29′-7″	296
B12E	20	4	STR	26′-5″	353
B13E	15	4	STR	24′-7″	246
B14E	15	4	STR	24′-1″	241
G1E	2	5	STR	57′-9″	120
G2E	408	4	STR	5′-2″	1408
J1E	100	4	7	1′-5″	95
K1E	16	8	2	22′-8″	968
K2E	8	8	1	14′-9″	315
K3E	10	6	STR	8′-2″	123
K4	40	4	STR	6′-6″	174
K5	120	4	STR	8′-10″	708
K6	80	4	STR	8′-0″	428
K7	48	4	STR	26′-6″	850
S1E	90	4	5	2′-0″	120
S2E	90	5	3	5′-11″	555
S3	900	4	4	2′-9″	1653
S4E	360	4	6	5′-5″	1303
U1	180	4	5	8′-10″	1062
U2E	118	4	5	3′-8″	289

REINFORCING STEEL	91,485
EPOXY COATED REINFORCING STEEL	111,056

"E" DENOTES EPOXY COATED REINFORCING STEEL.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2′-0″	1′-9″	2′-0″	1′-9″	2′-9″
#5	2′-6″	2′-2″	2′-6″	2′-2″	3′-5″
#6	3′-0″	2′-7″	3′-10″	2′-7″	4′-4″
#7	5′-3″	3′-6″			
#8	6′-10″	4′-7″			

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	144.9		
POUR 2	179.6		
POUR 3	208.0		
POUR 4	151.0		
POUR 5	153.9		
POUR 6	14.2		
SIDEWALK	51.1		
TOTALS **	902.7	91,485	111,056

** QUANTITIES FOR CONCRETE PARAPET NOT INCLUDED.

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,329 SQ.FT.
BRIDGE DECK	19,129 SQ.FT.
TOTAL	20,458 SQ.FT.

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BILL OF MATERIAL

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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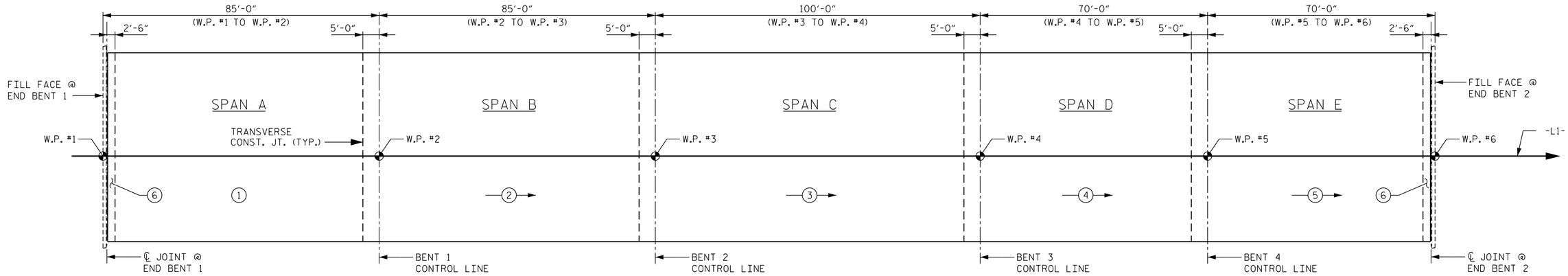
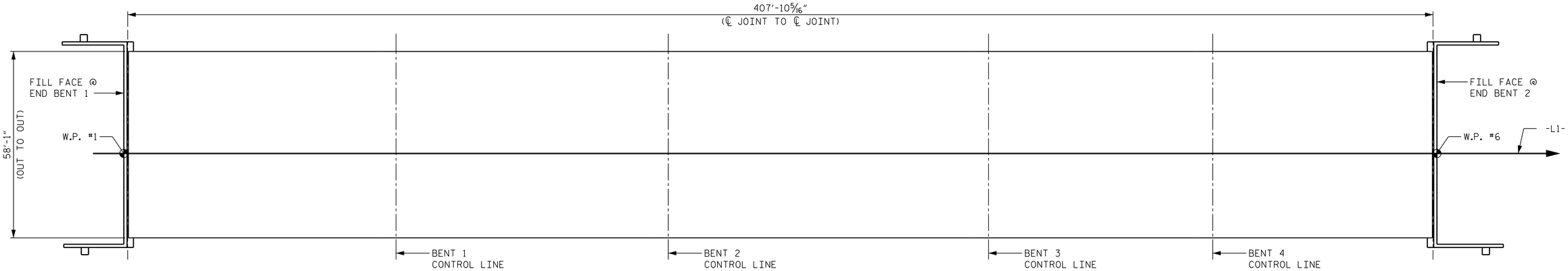
NOTE:

FOR NOTES, SEE "BILL OF MATERIAL", SHEET 1 OF 2.



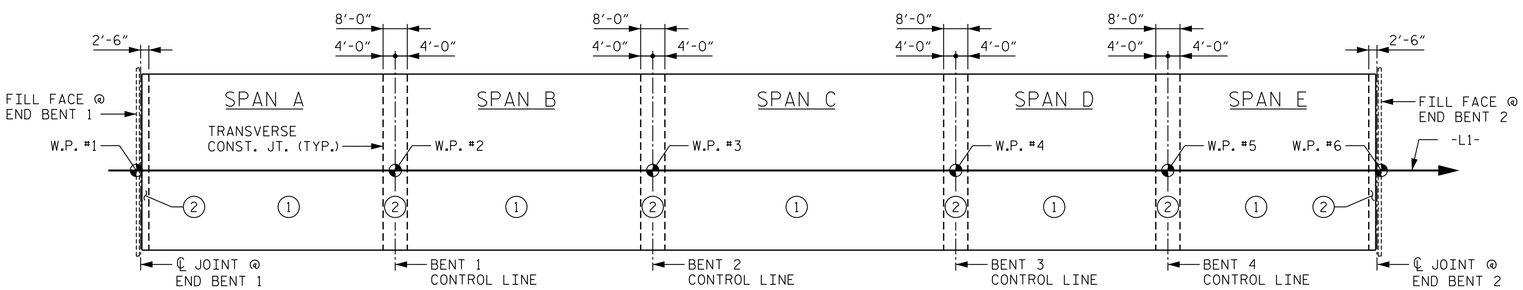
POURING SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 23,682)



OPTIONAL POURING SEQUENCE

POUR #2 SHALL NOT BE STARTED UNTIL BOTH ADJACENT #1 POURS REACH A MINIMUM OF 3,000 PSI.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

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DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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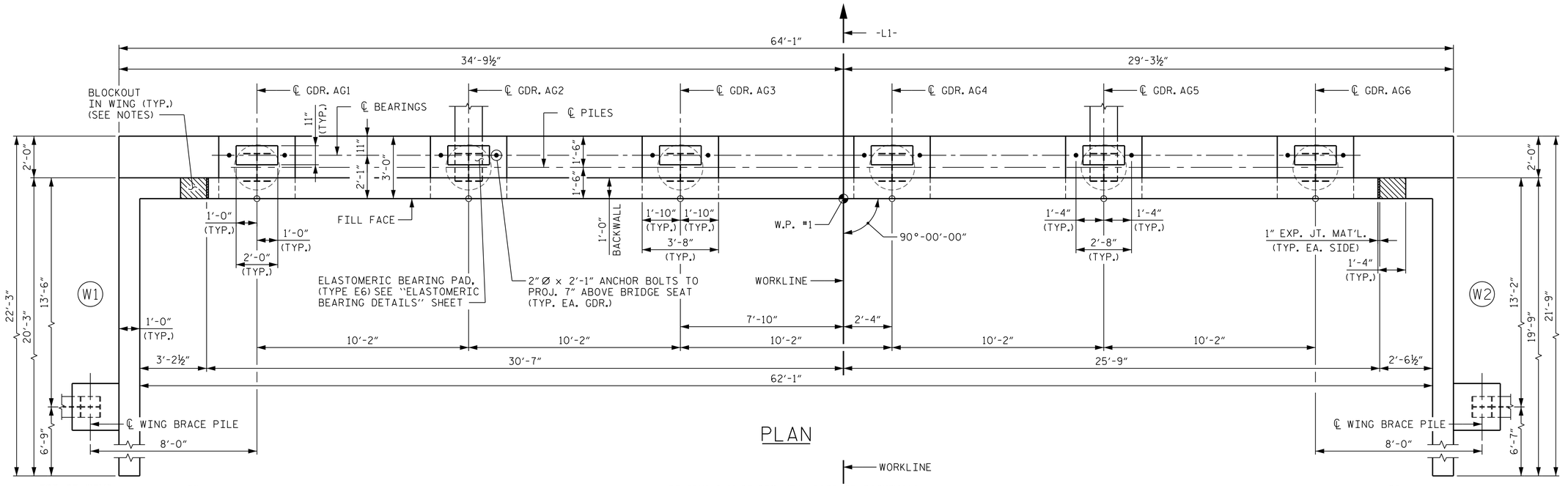
NOTES:

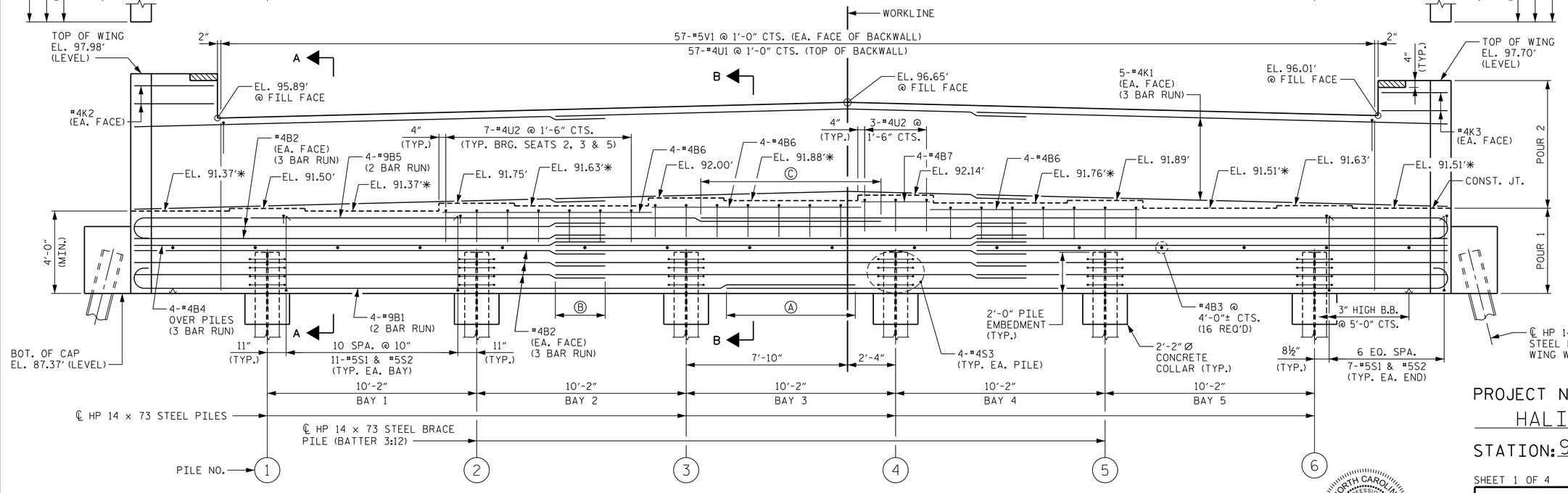
FOR NOTES, SEE "END BENT 1" SHEET 2 OF 4.

FOR "SECTION A-A", SEE "END BENT 1" SHEET 4 OF 4.

FOR "SECTION B-B", SEE "END BENT 1" SHEET 4 OF 4.



PLAN



Ⓐ 6'-3" MIN. SPLICE (#9B1 BARS)

Ⓑ 2'-5" MIN. SPLICE (#4B2, #4B4 & #4K1 BARS)

Ⓒ 8'-9" MIN. SPLICE (#9B5 BARS)

ELEVATION

*FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A", SHEET 4 OF 4.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 4

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RALEIGH

SUBSTRUCTURE

END BENT 1 PLAN AND ELEVATION

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
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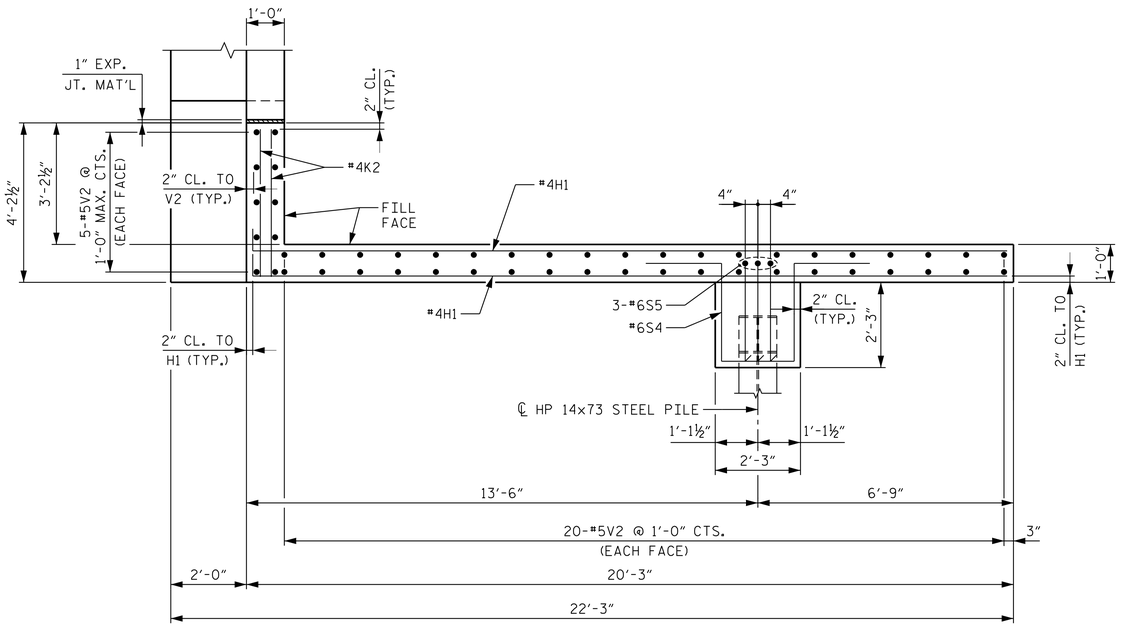
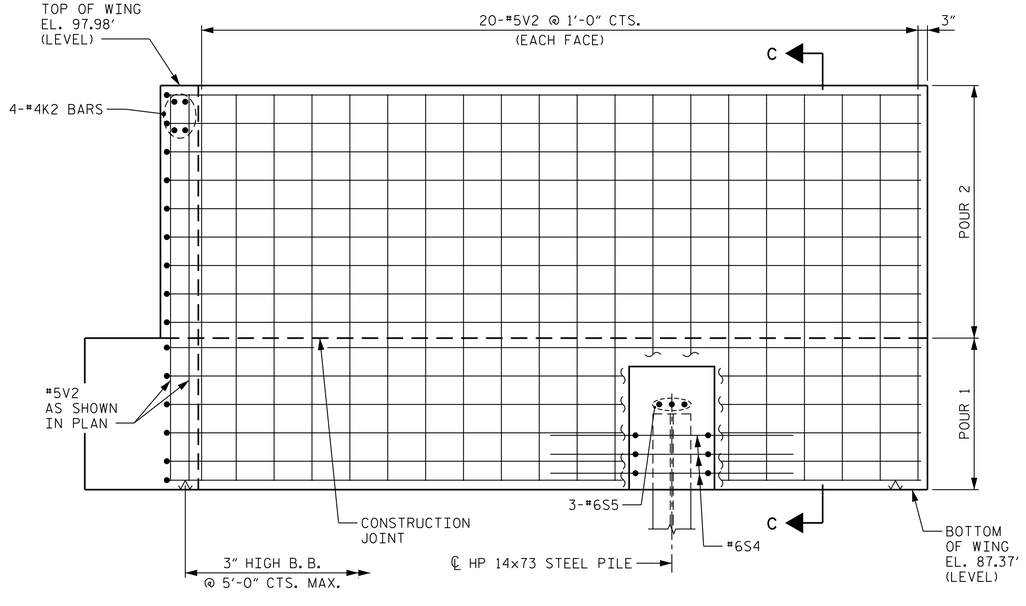
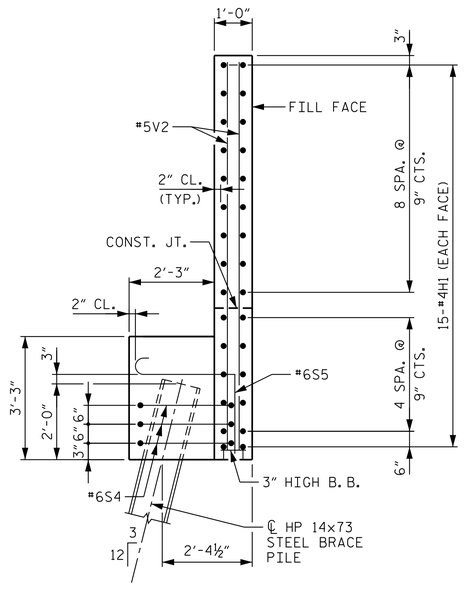


PLAN OF LEFT WING (W1)



ELEVATION OF LEFT WING (W1)



SECTION C-C

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

FOR "PILE SPLICE DETAILS", SEE "END BENT 1" SHEET 4 OF 4.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 4

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SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

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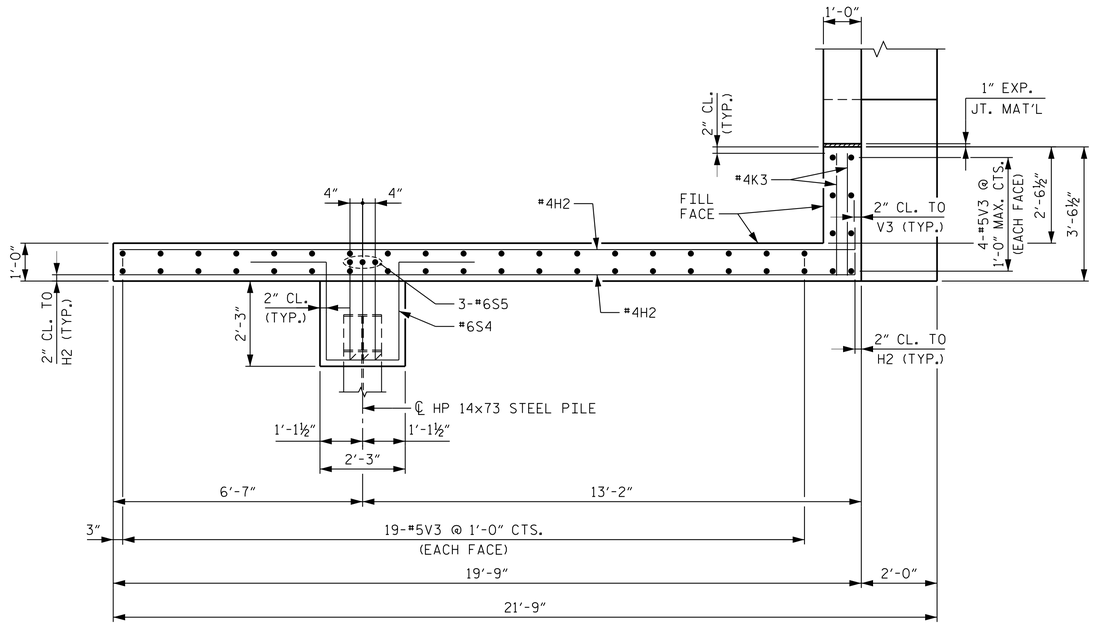
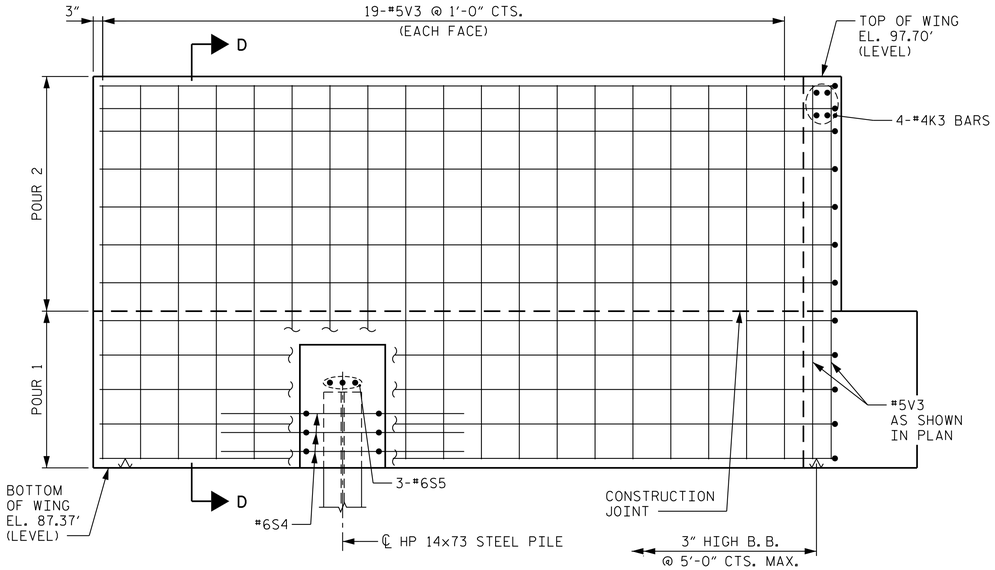
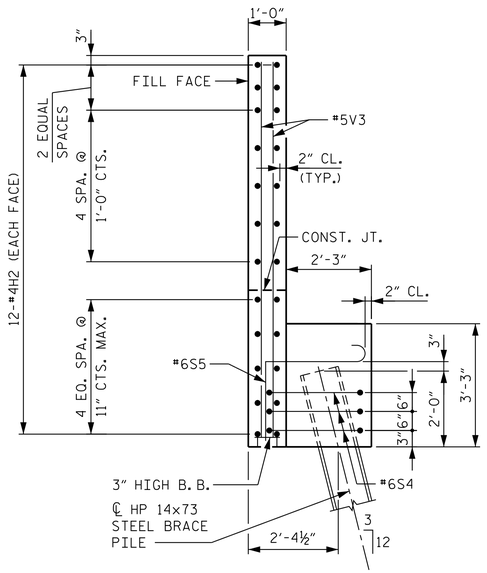


PLAN OF RIGHT WING (W2)



ELEVATION OF RIGHT WING (W2)



SECTION D-D

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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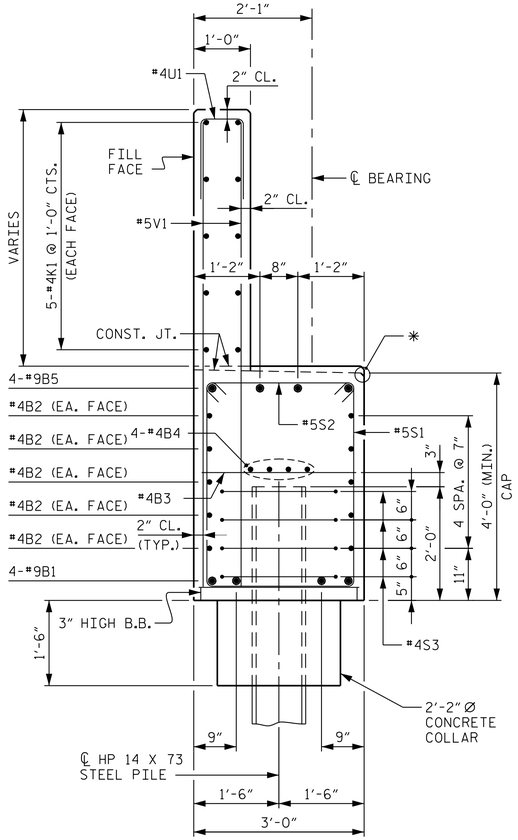
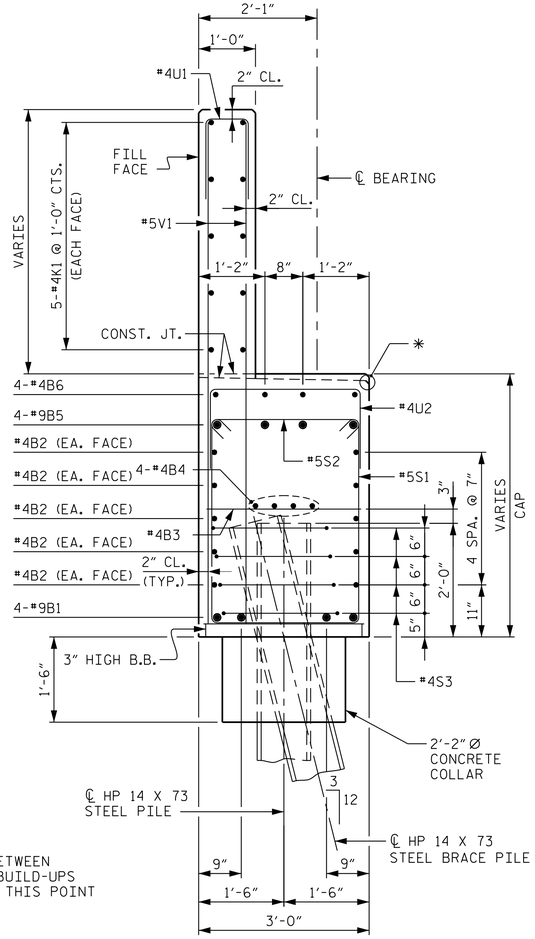
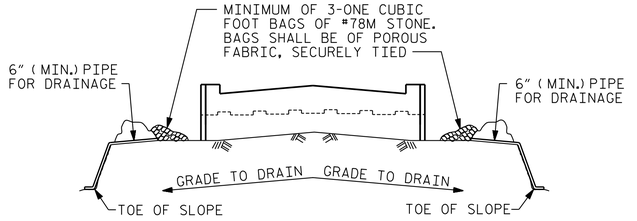


SECTION A-A



SECTION B-B

* ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS ARE TAKEN AT THIS POINT

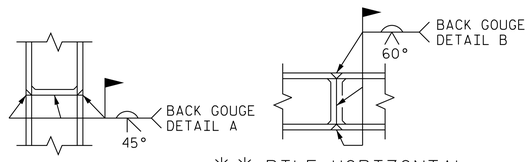


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

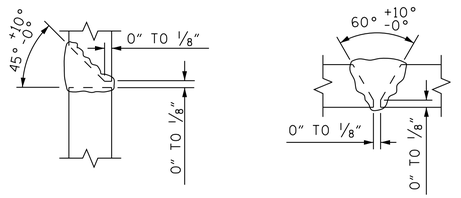
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL

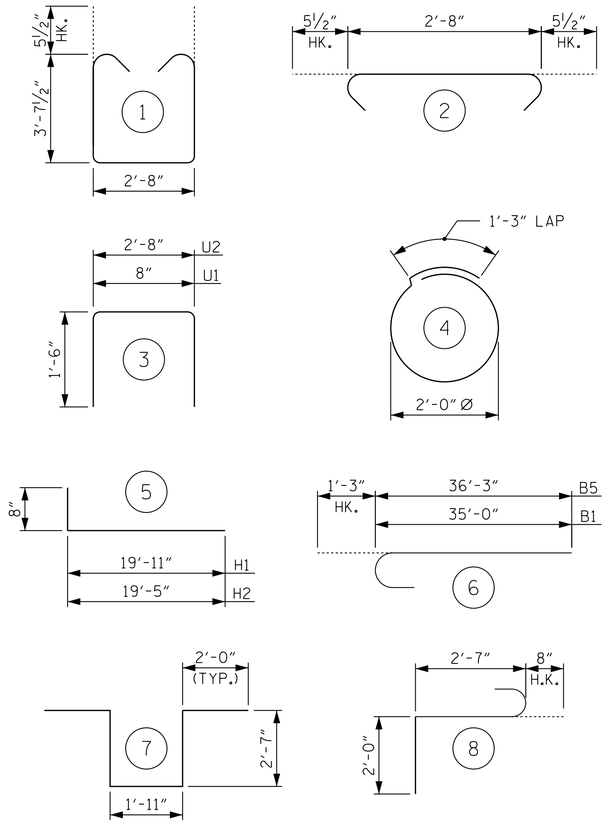


DETAIL A DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	6	36′-3″	986
B2	30	4	STR	22′-11″	459
B3	16	4	STR	2′-8″	29
B4	12	4	STR	22′-11″	184
B5	8	9	6	37′-6″	1020
B6	12	4	STR	10′-2″	81
B7	4	4	STR	3′-4″	9
H1	30	4	5	20′-7″	412
H2	24	4	5	20′-1″	322
K1	30	4	STR	22′-11″	459
K2	4	4	STR	3′-10″	10
K3	4	4	STR	3′-2″	8
S1	69	5	1	10′-10″	780
S2	69	5	2	3′-7″	250
S3	24	4	4	7′-7″	122
S4	6	6	7	11′-1″	100
S5	6	6	8	5′-3″	47
U1	57	4	3	3′-8″	140
U2	24	4	3	5′-8″	91
V1	114	5	STR	8′-1″	961
V2	50	5	STR	10′-3″	535
V3	46	5	STR	10′-0″	480

REINFORCING STEEL	7,493 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP, LOWER WING WALLS, & COLLARS)	38.8 C.Y.
POUR #2 (BACKWALL & UPPER WING WALLS)	20.5 C.Y.
TOTAL CLASS A CONCRETE	59.3 C.Y.
HP 14x73 STEEL PILES	
NO. 8	180 LIN. FT.
STEEL PILE POINTS	8 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	8 EA.

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PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-
SHEET 4 OF 4 BRIDGE NO. 208

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

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1			3			TOTAL SHEETS
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DRAWN BY: D. D. LOWERY	DATE: 03/18
CHECKED BY: C. T. POOLE	DATE: 03/18
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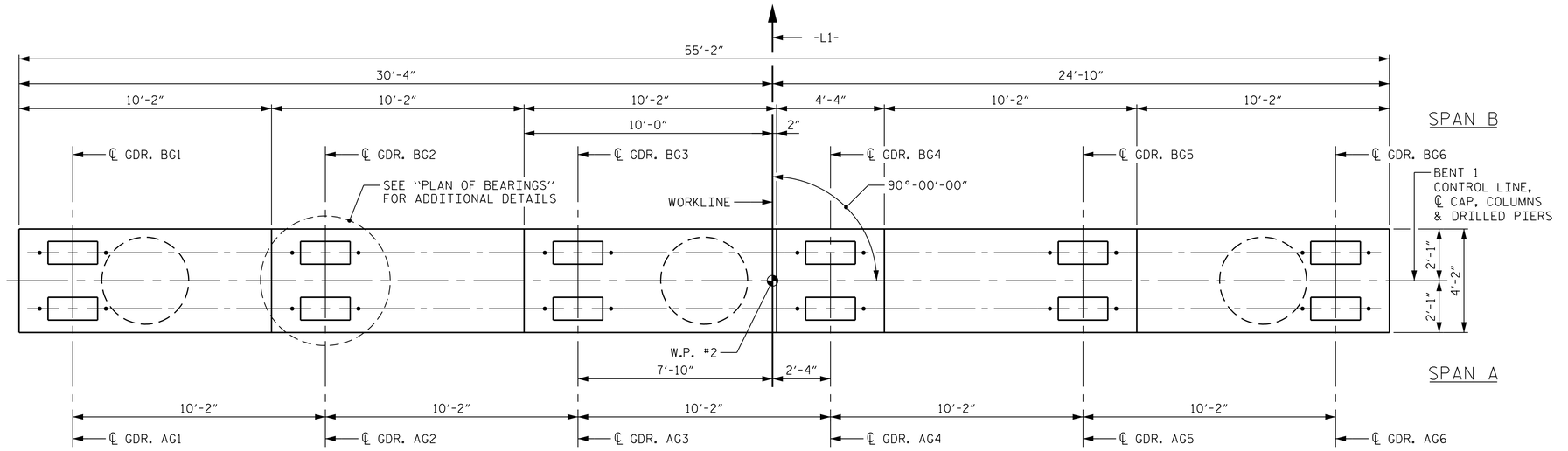
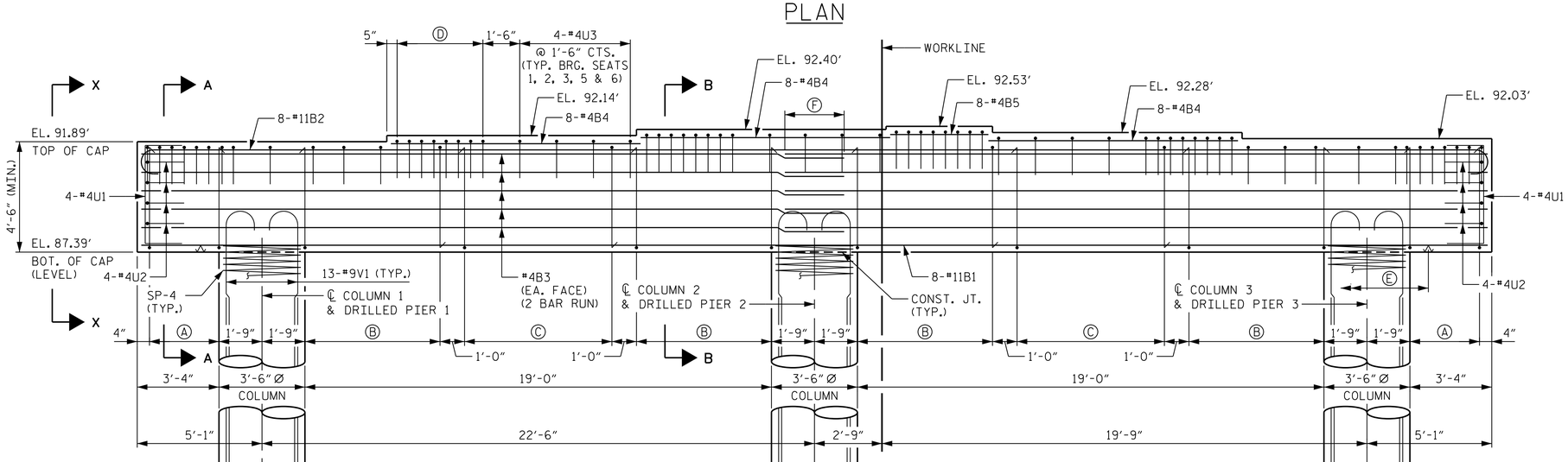
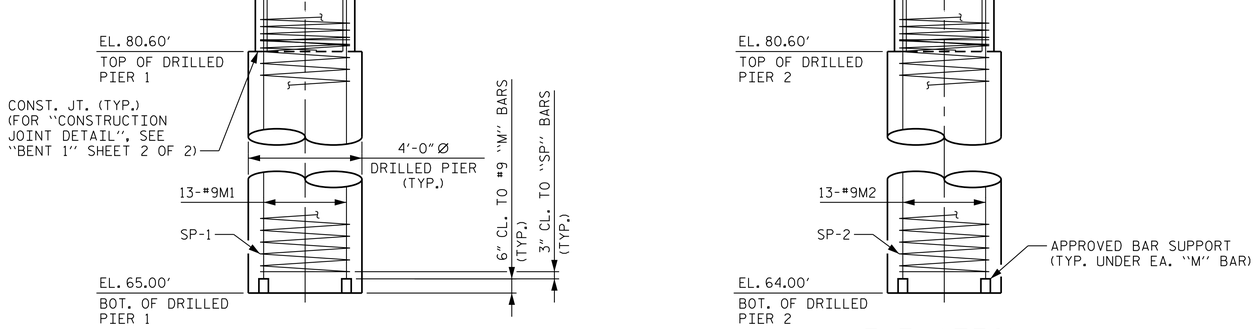


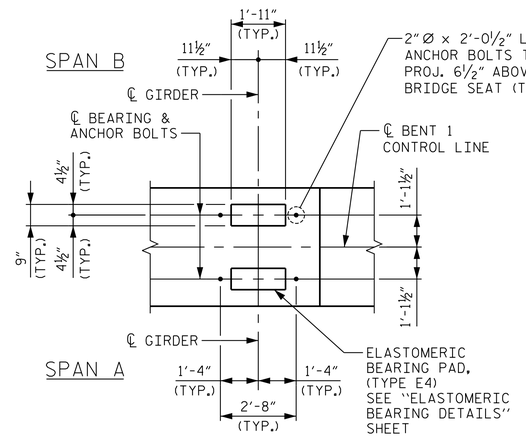
PLAN





ELEVATION

Ⓐ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓑ 12-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓒ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 12" CTS.
Ⓓ 8-#4U3 @ 6" CTS. (TYP. BRG. SEATS 1 - 6)
Ⓔ 3" HIGH B.B. @ 5'-0" CTS. MAX.
Ⓕ 2'-5" SPLICE (TYP. #4B3)



PLAN OF BEARINGS

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

NOTES:

FOR "VIEW X-X", SEE "BENT 1" SHEET 2 OF 2.

FOR "SECTION A-A" AND "SECTION B-B", SEE "BENT 1" SHEET 2 OF 2.

FOR REINFORCING BILL OF MATERIAL, SEE "BENT 1" SHEET 2 OF 2.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL AND ANCHOR BOLTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR ADDITIONAL NOTES, SEE "GENERAL DRAWING" SHEET 2 OF 3.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3' OF EXTRA LENGTH.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

5/14/2018

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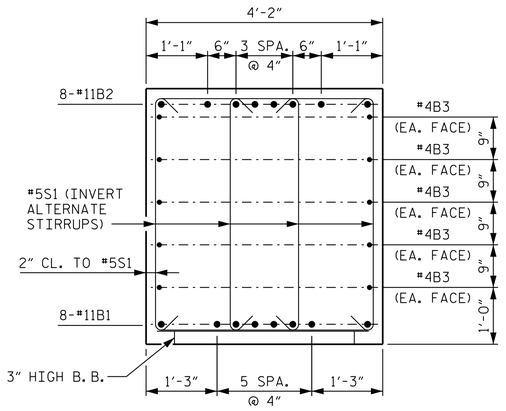
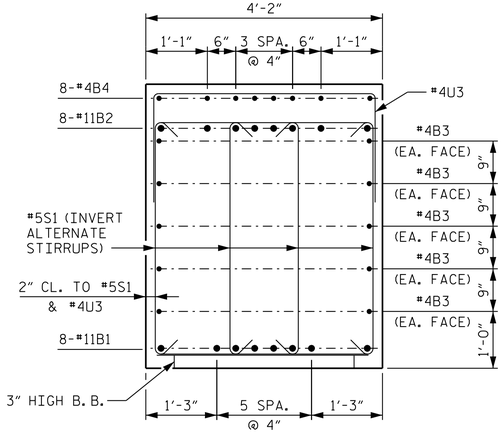
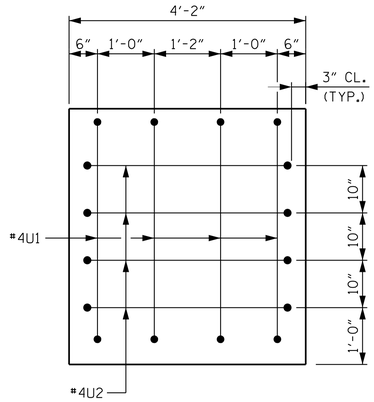


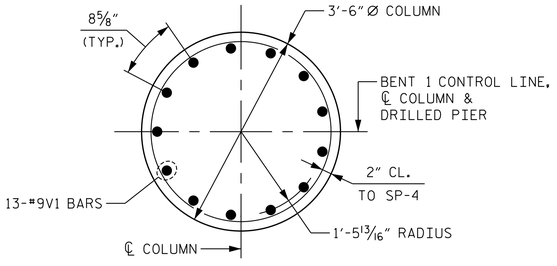
SECTION A-A



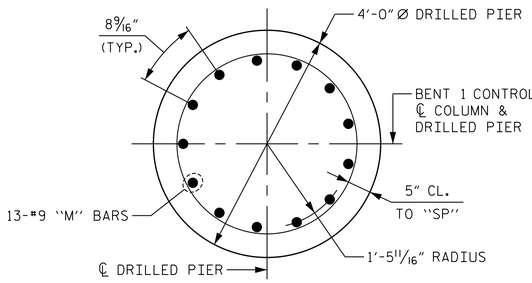
SECTION B-B



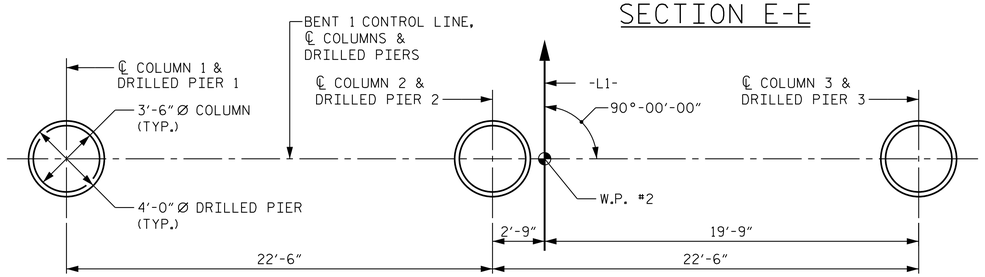
VIEW X-X
(LEFT END SHOWN, RIGHT END SIMILAR)



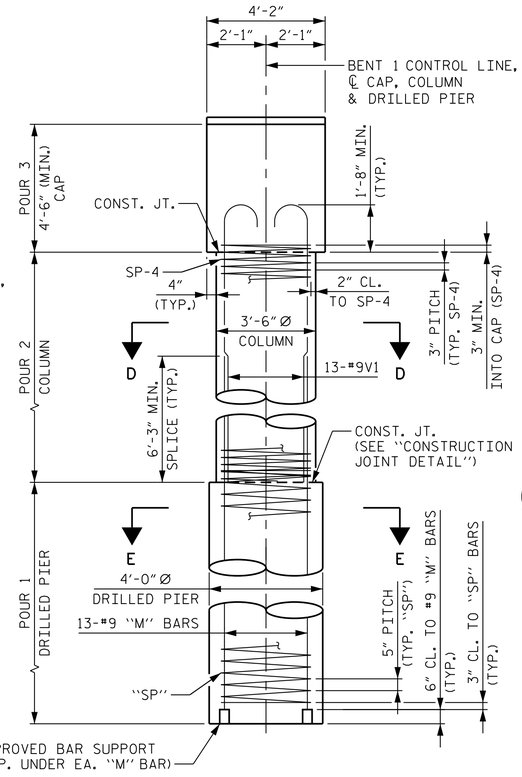
SECTION D-D



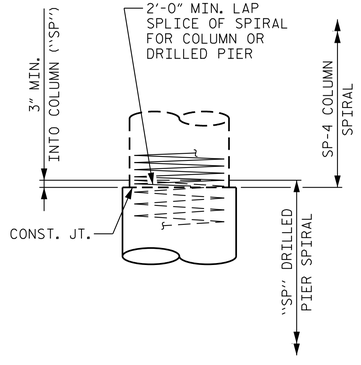
SECTION E-E



PLAN OF DRILLED PIERS & COLUMNS

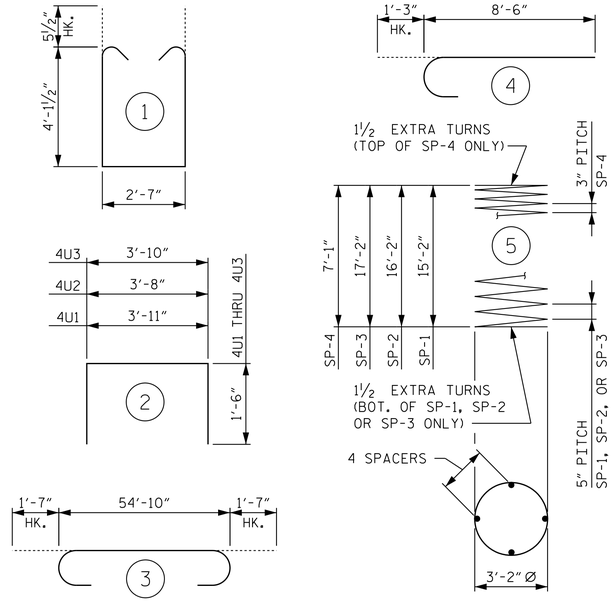


END ELEVATION



CONSTRUCTION JOINT DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	11	STR	54'-10"	2331
B2	8	11	3	58'-0"	2465
B3	20	4	STR	28'-8"	383
B4	24	4	STR	10'-2"	163
B5	8	4	STR	4'-0"	21
M1	13	9	STR	24'-5"	1079
M2	13	9	STR	25'-5"	1123
M3	13	9	STR	26'-5"	1168
S1	152	5	1	11'-9"	1863
U1	8	4	2	6'-11"	37
U2	8	4	2	6'-8"	36
U3	68	4	2	6'-10"	310
V1	39	9	4	9'-9"	1293
REINFORCING STEEL					12,272 LBS.
SP-1	1	**	5	371'-3"	387
SP-2	1	**	5	394'-9"	412
SP-3	1	**	5	418'-3"	436
SP-4	3	*	5	293'-2"	587
SPIRAL REINFORCING STEEL					1,822 LBS.

** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

* THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BENT 1 TOTAL QUANTITIES

CLASS A CONCRETE		
POUR 2 (COLUMNS)	C.Y.	7.3
POUR 3 (CAP)	C.Y.	40.7
TOTAL CLASS A CONCRETE	C.Y.	48.0
DRILLED PIERS, CONCRETE		
POUR 1	C.Y.	23.2
4'-0" Ø DRILLED PIERS IN SOIL	LIN. FT.	21.8
4'-0" Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	28.0
CSL TUBES	LIN. FT.	217.2
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	LIN. FT.	22.8

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8EB754CC6D2410...
5/15/2018

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Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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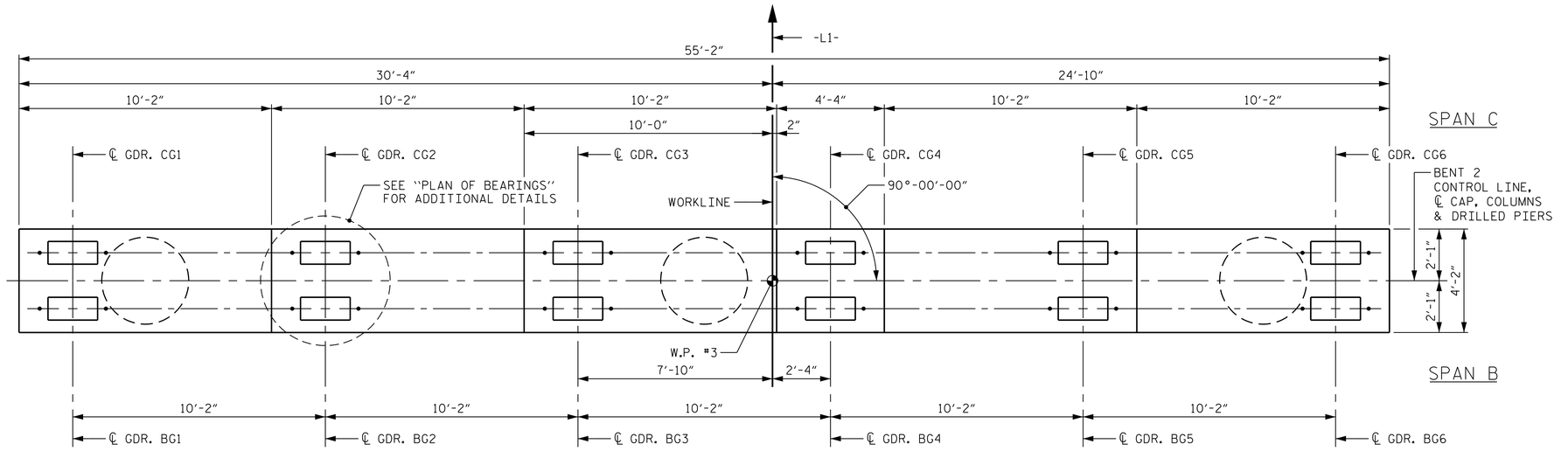
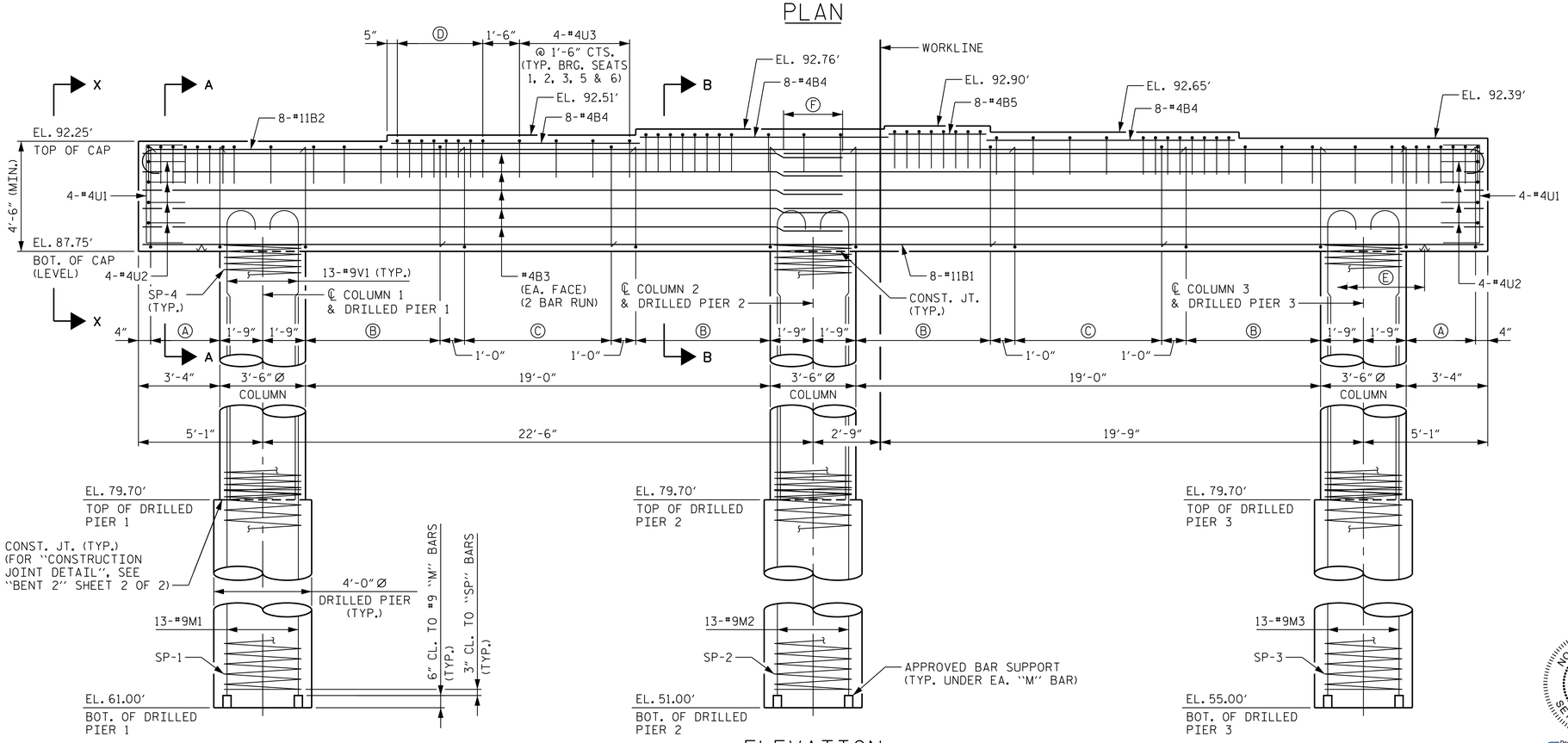


PLAN



ELEVATION

Ⓐ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓑ 12-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓒ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 12" CTS.
Ⓓ 8-#4U3 @ 6" CTS. (TYP. BRG. SEATS 1 - 6)
Ⓔ 3" HIGH B.B. @ 5'-0" CTS. MAX.
Ⓕ 2'-5" SPLICE (TYP. #4B3)

NOTES:

FOR "VIEW X-X", SEE "BENT 2" SHEET 2 OF 2.

FOR "SECTION A-A" AND "SECTION B-B", SEE "BENT 2" SHEET 2 OF 2.

FOR REINFORCING BILL OF MATERIAL, SEE "BENT 2" SHEET 2 OF 2.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL AND ANCHOR BOLTS.

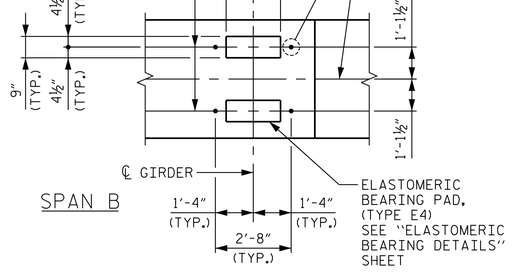
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR ADDITIONAL NOTES, SEE "GENERAL DRAWING" SHEET 2 OF 3.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3' OF EXTRA LENGTH.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".



PLAN OF BEARINGS

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBE815ACC9ED415...
5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-46
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

5/14/2018

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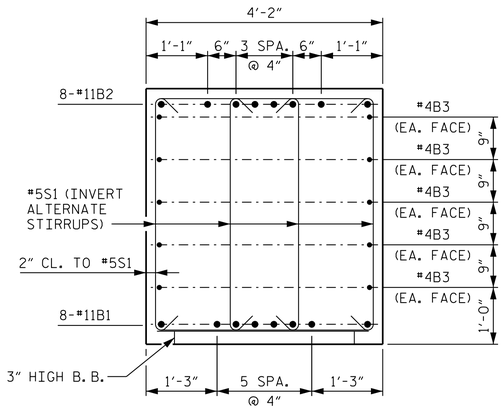

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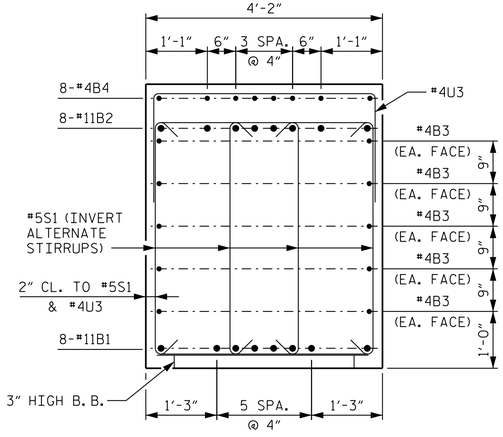
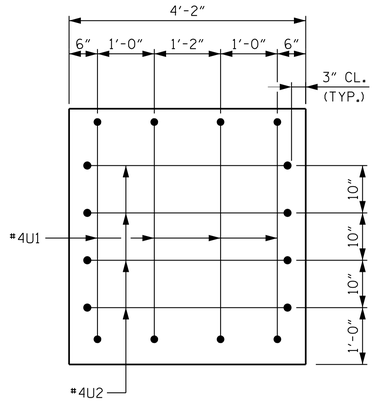
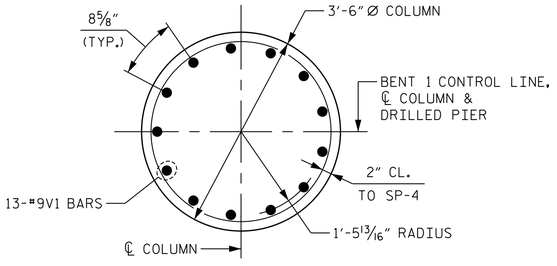


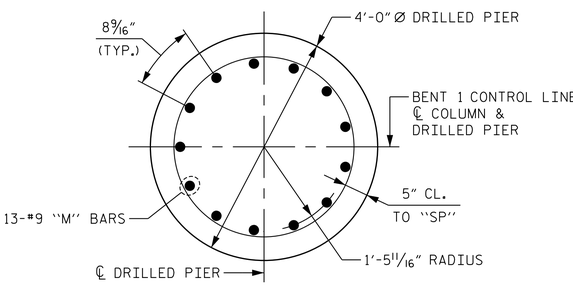
SECTION B-B



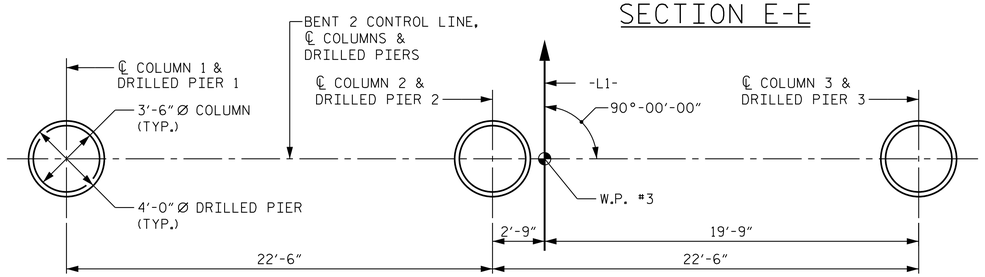
VIEW X-X
(LEFT END SHOWN, RIGHT END SIMILAR)



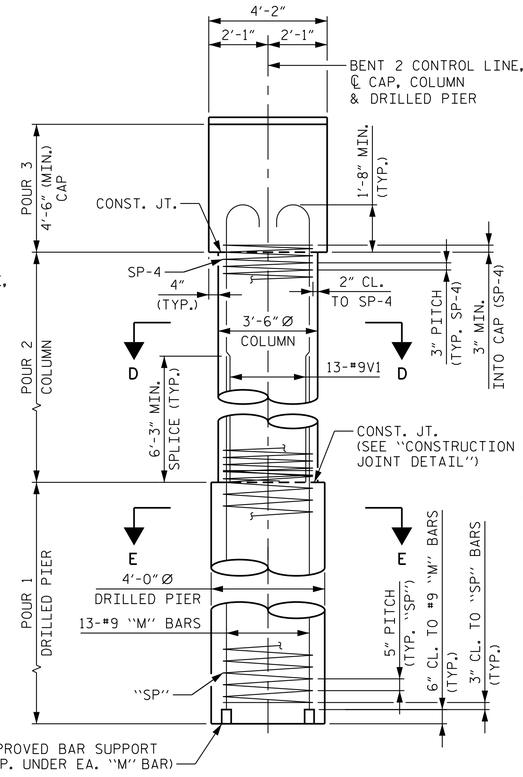
SECTION D-D



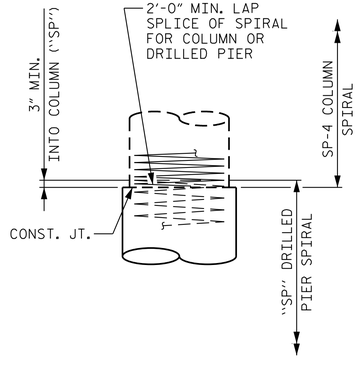
SECTION E-E



PLAN OF DRILLED PIERS & COLUMNS

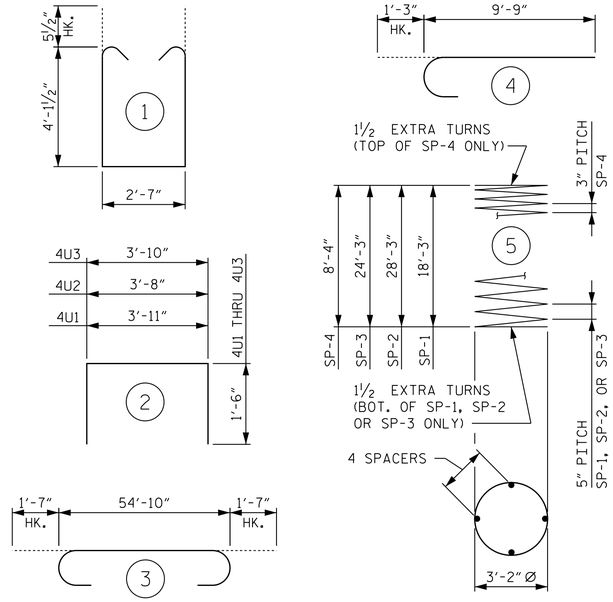


END ELEVATION



CONSTRUCTION JOINT DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	11	STR	54'-10"	2331
B2	8	11	3	58'-0"	2465
B3	20	4	STR	28'-8"	383
B4	24	4	STR	10'-2"	163
B5	8	4	STR	4'-0"	21
M1	13	9	STR	27'-6"	1216
M2	13	9	STR	37'-6"	1658
M3	13	9	STR	33'-6"	1481
S1	152	5	1	11'-9"	1863
U1	8	4	2	6'-11"	37
U2	8	4	2	6'-8"	36
U3	68	4	2	6'-10"	310
V1	39	9	4	11'-0"	1459
REINFORCING STEEL					13,423 LBS.
SP-1	1	**	5	443'-8"	463
SP-2	1	**	5	678'-9"	708
SP-3	1	**	5	584'-9"	610
SP-4	3	*	5	343'-2"	688
SPIRAL REINFORCING STEEL					2,469 LBS.

** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

* THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BENT 2 TOTAL QUANTITIES

CLASS A CONCRETE		
POUR 2 (COLUMNS)	C.Y.	8.6
POUR 3 (CAP)	C.Y.	40.7
TOTAL CLASS A CONCRETE	C.Y.	49.3
DRILLED PIERS, CONCRETE		
POUR 1	C.Y.	33.6
4'-0" Ø DRILLED PIERS IN SOIL	LIN. FT.	38.1
4'-0" Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	34.0
CSL TUBES	LIN. FT.	306.4
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	LIN. FT.	32.1

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 2 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8EB154CC6D2410...
5/15/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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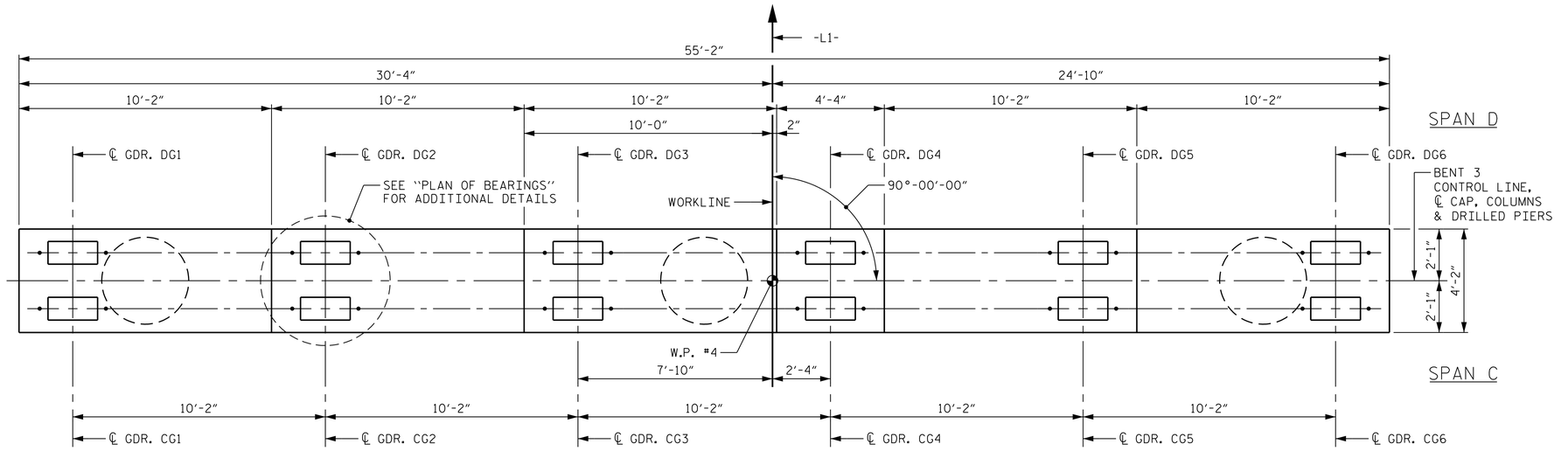
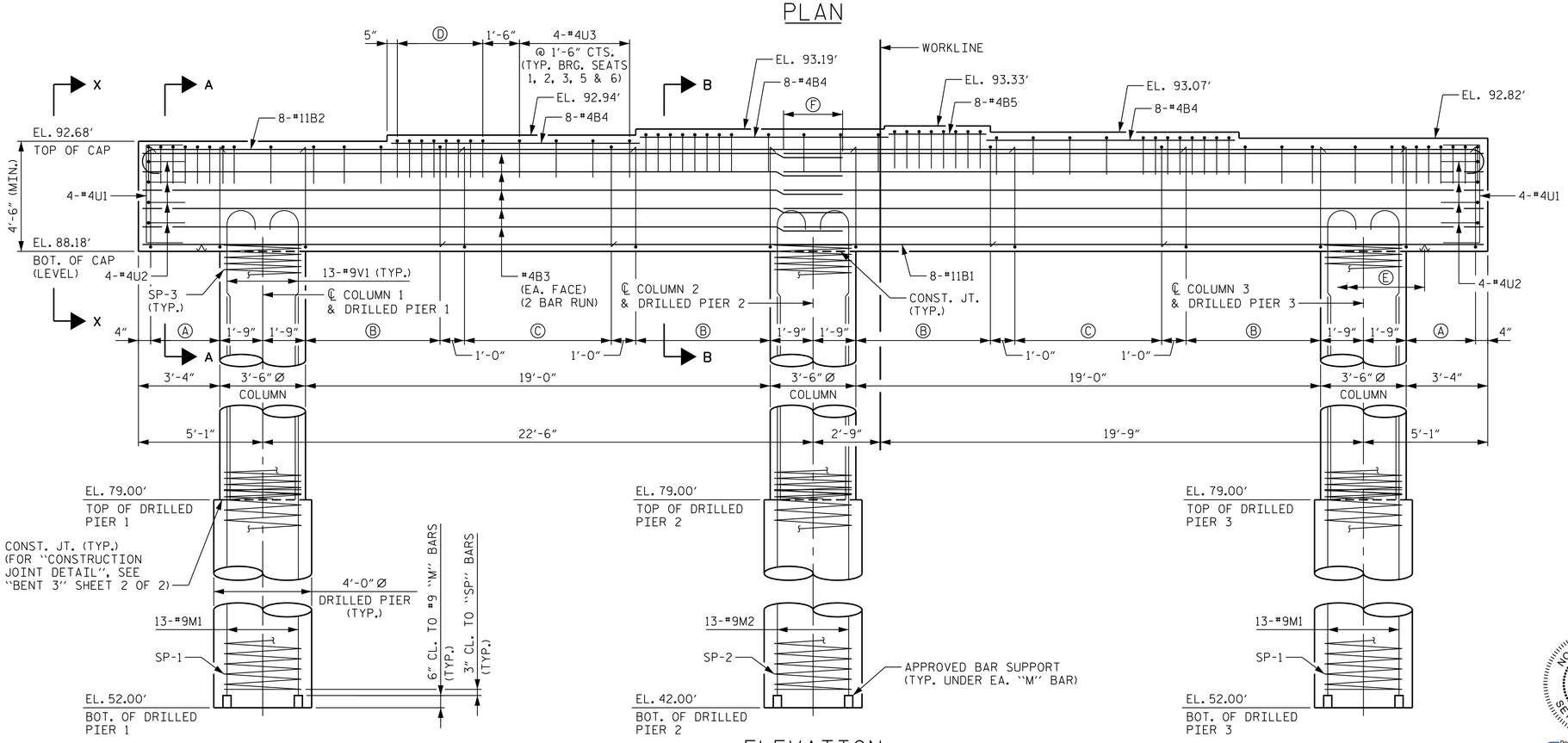


PLAN



ELEVATION

Ⓐ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓑ 12-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓒ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 12" CTS.
Ⓓ 8-#4U3 @ 6" CTS. (TYP. BRG. SEATS 1 - 6)
Ⓔ 3" HIGH B.B. @ 5'-0" CTS. MAX.
Ⓕ 2'-5" SPLICE (TYP. #4B3)

NOTES:

FOR "VIEW X-X", SEE "BENT 3" SHEET 2 OF 2.

FOR "SECTION A-A" AND "SECTION B-B", SEE "BENT 3" SHEET 2 OF 2.

FOR REINFORCING BILL OF MATERIAL, SEE "BENT 3" SHEET 2 OF 2.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL AND ANCHOR BOLTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR ADDITIONAL NOTES, SEE "GENERAL DRAWING" SHEET 2 OF 3.

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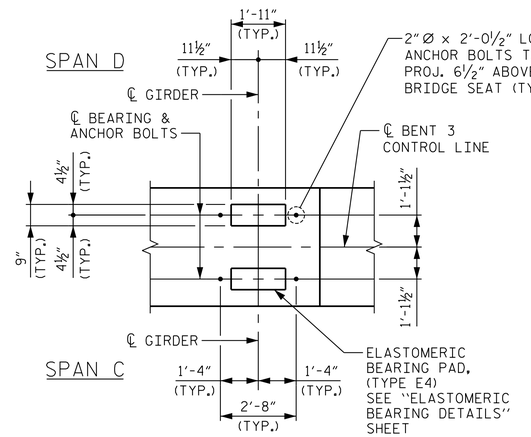

PLAN OF BEARINGS

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 3
PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by:
Seth A. Denney
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5/15/2018

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Phone (919) 677-2000
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: C. T. POOLE DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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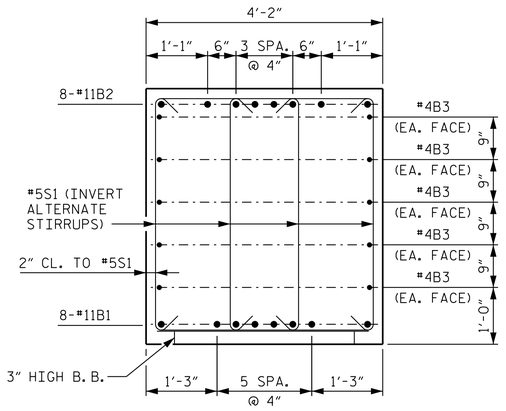
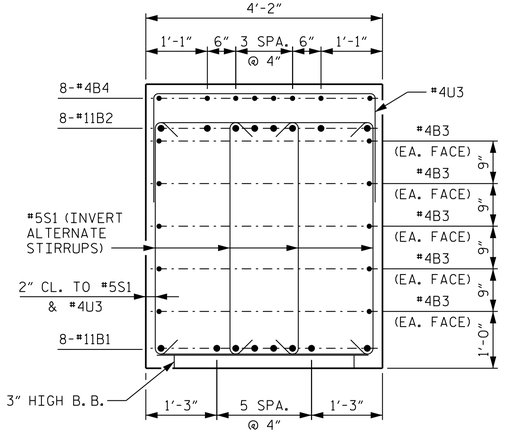
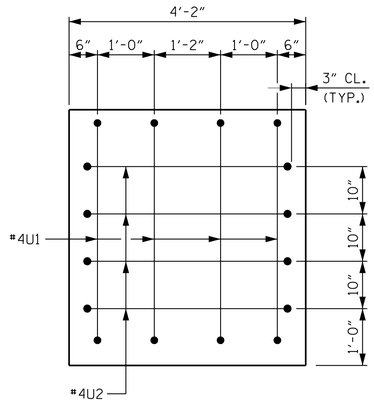
K:\RDT_Structures_Bridge\NC\Q11036392 - R-3822\Cad\Dgn\R3822_SMU_B5_410208.dgn



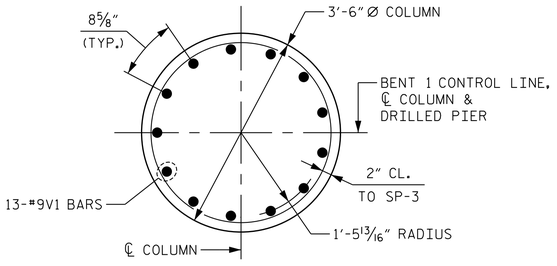
SECTION A-A



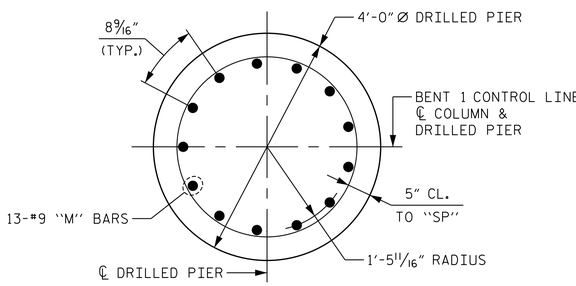
SECTION B-B



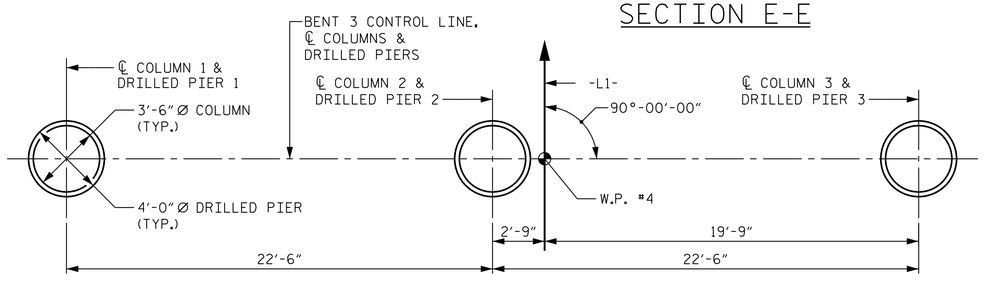
VIEW X-X
(LEFT END SHOWN, RIGHT END SIMILAR)



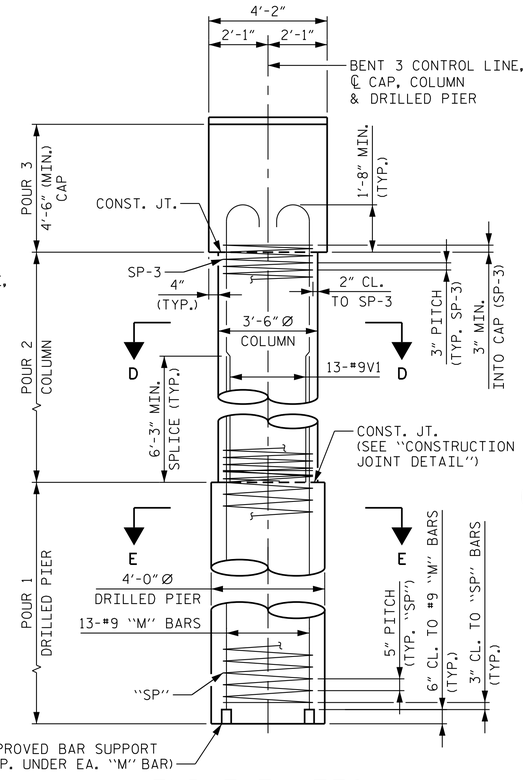
SECTION D-D



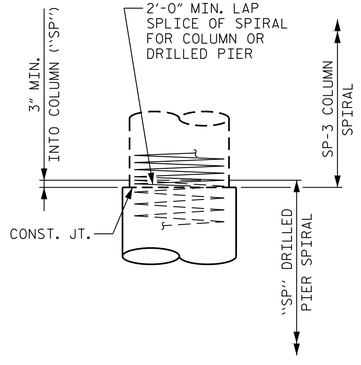
SECTION E-E



PLAN OF DRILLED PIERS & COLUMNS

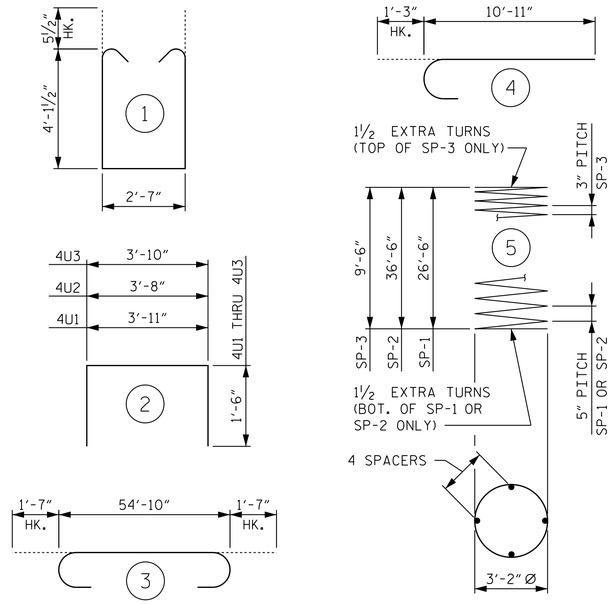


END ELEVATION



CONSTRUCTION JOINT DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	11	STR	54'-10"	2331
B2	8	11	3	58'-0"	2465
B3	20	4	STR	28'-8"	383
B4	24	4	STR	10'-2"	163
B5	8	4	STR	4'-0"	21
M1	26	9	STR	35'-9"	3160
M2	13	9	STR	45'-9"	2022
S1	152	5	1	11'-9"	1863
U1	8	4	2	6'-11"	37
U2	8	4	2	6'-8"	36
U3	68	4	2	6'-10"	310
V1	39	9	4	12'-2"	1613
REINFORCING STEEL					14,404 LBS.
SP-1	2	**	5	637'-7"	1330
SP-2	1	**	5	872'-8"	910
SP-3	3	*	5	387'-11"	777
SPIRAL REINFORCING STEEL					3,017 LBS.

** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

* THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BENT 3 TOTAL QUANTITIES

CLASS A CONCRETE		
POUR 2 (COLUMNS)	C.Y.	9.8
POUR 3 (CAP)	C.Y.	40.7
TOTAL CLASS A CONCRETE	C.Y.	50.5
DRILLED PIERS, CONCRETE		
POUR 1	C.Y.	42.4
4'-0"Ø DRILLED PIERS IN SOIL	LIN. FT.	62.0
4'-0"Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	29.0
CSL TUBES	LIN. FT.	382.0
PERMANENT STEEL CASING FOR 4'-0"Ø DRILLED PIERS	LIN. FT.	33.0

PROJECT NO. R-3822
HALIFAX COUNTY
STATION: 99+17.60 -L1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 3 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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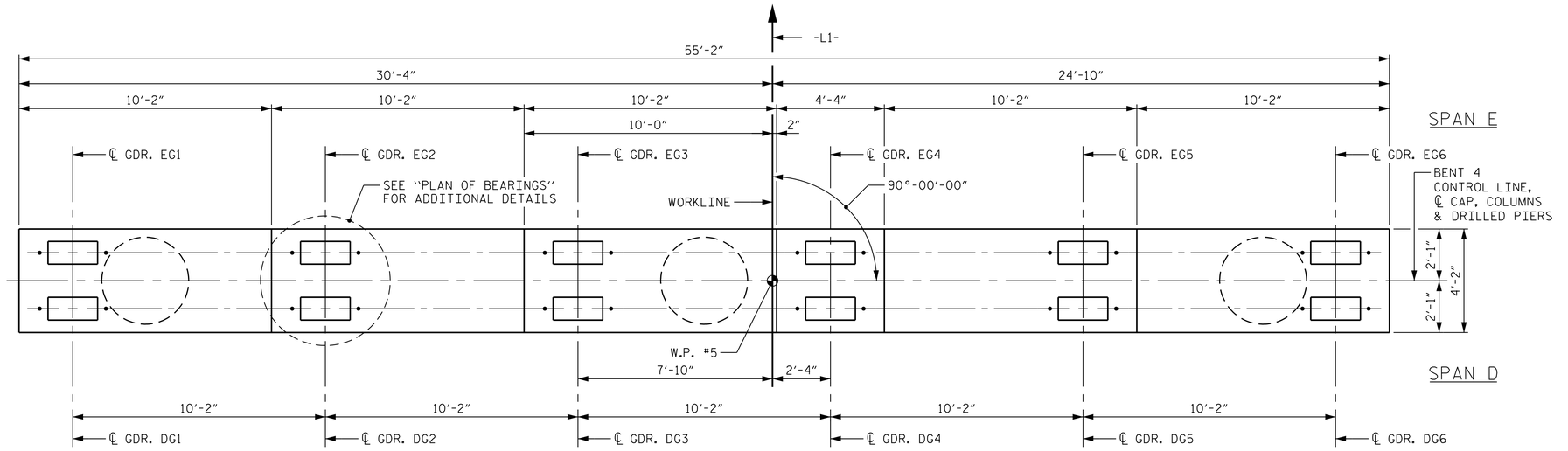
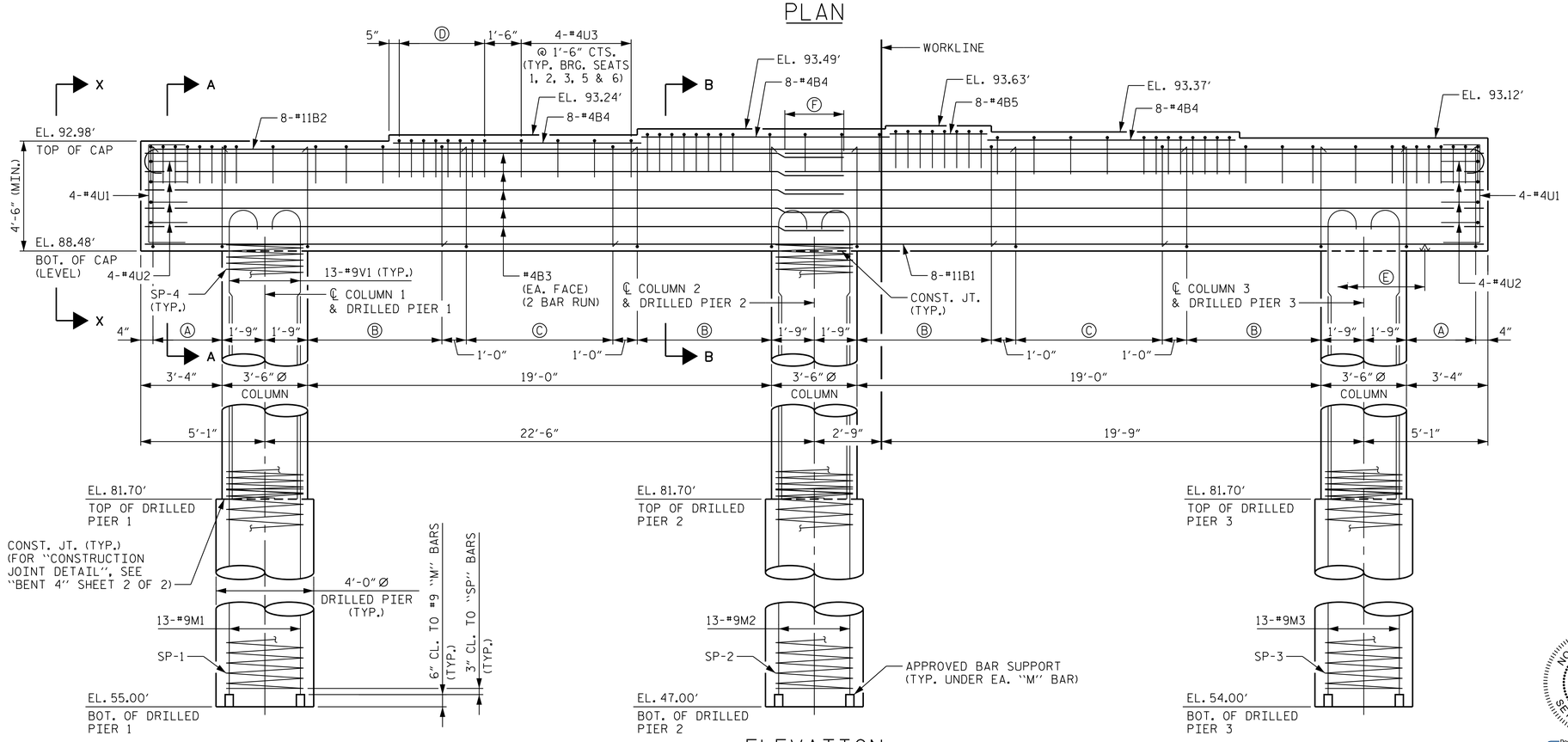
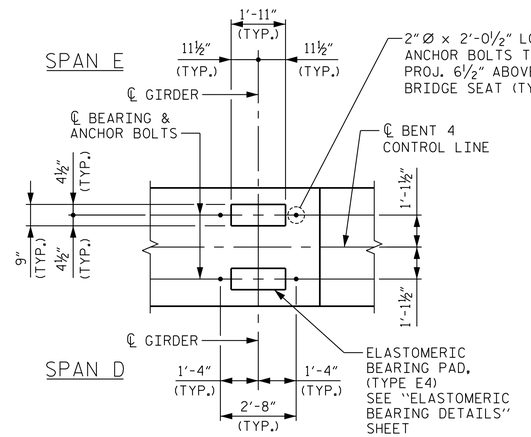


PLAN



ELEVATION

Ⓐ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓑ 12-PAIRS #5S1 (INVERT ALT. PAIRS) @ 6" CTS.
Ⓒ 7-PAIRS #5S1 (INVERT ALT. PAIRS) @ 12" CTS.
Ⓓ 8-#4U3 @ 6" CTS. (TYP. BRG. SEATS 1 - 6)
Ⓔ 3" HIGH B.B. @ 5'-0" CTS. MAX.
Ⓕ 2'-5" SPLICE (TYP. #4B3)



PLAN OF BEARINGS

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

NOTES:

FOR "VIEW X-X", SEE "BENT 4" SHEET 2 OF 2.

FOR "SECTION A-A" AND "SECTION B-B", SEE "BENT 4" SHEET 2 OF 2.

FOR REINFORCING BILL OF MATERIAL, SEE "BENT 4" SHEET 2 OF 2.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL AND ANCHOR BOLTS.

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR ADDITIONAL NOTES, SEE "GENERAL DRAWING" SHEET 2 OF 3.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3' OF EXTRA LENGTH.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 4 PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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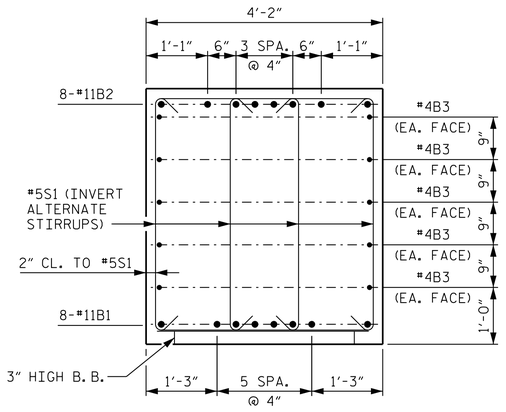
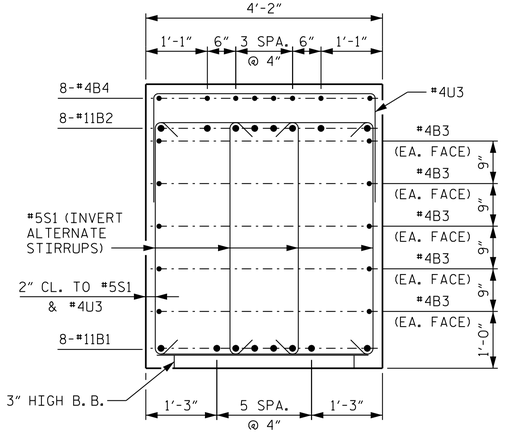
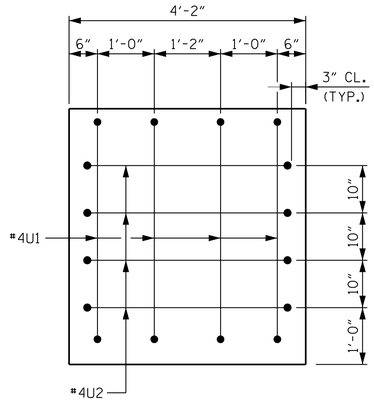


SECTION A-A

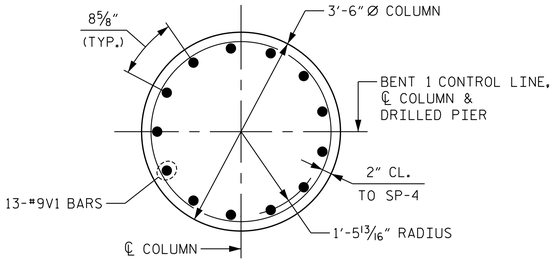


SECTION B-B

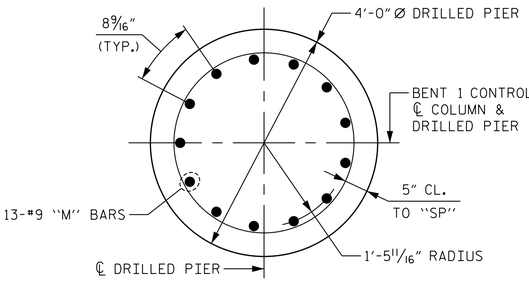


VIEW X-X

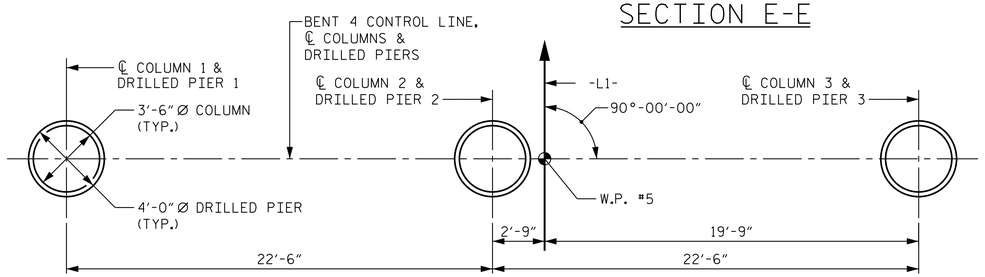
(LEFT END SHOWN, RIGHT END SIMILAR)



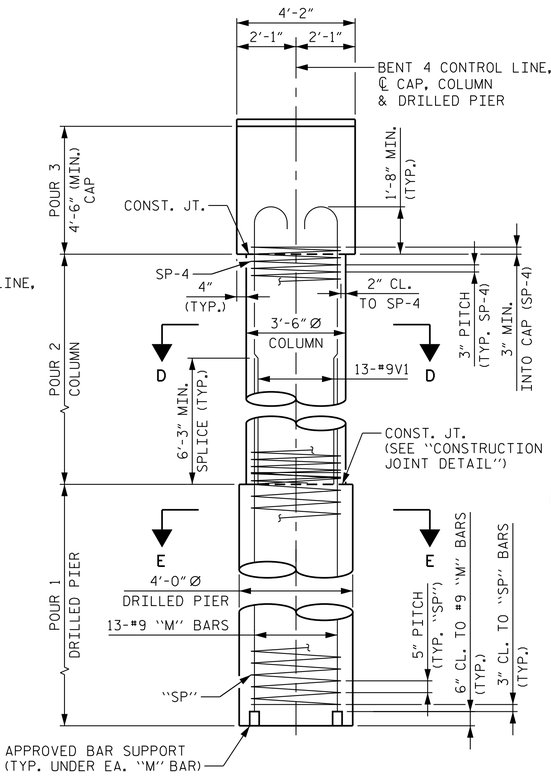
SECTION D-D



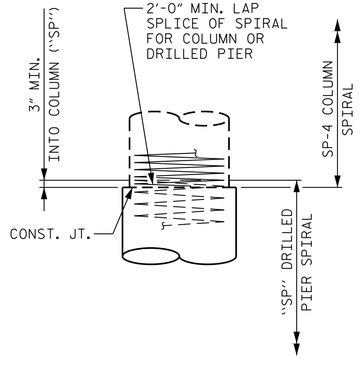
SECTION E-E



PLAN OF DRILLED PIERS & COLUMNS

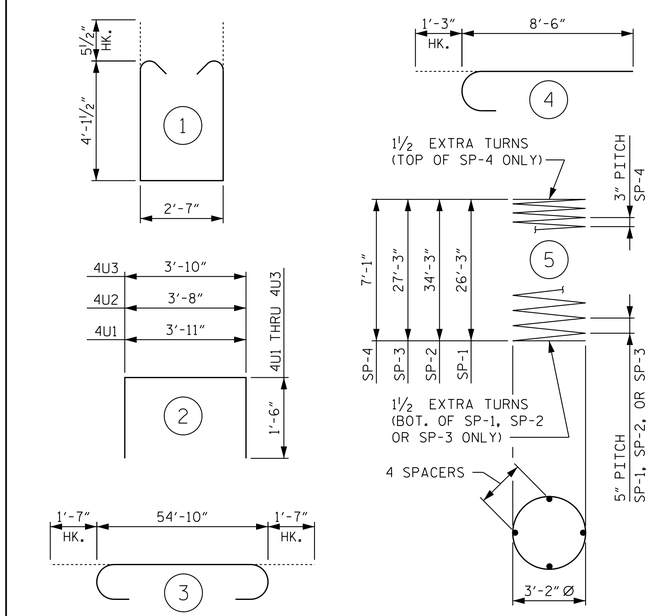


END ELEVATION



CONSTRUCTION JOINT DETAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 4

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	11	STR	54'-10"	2331
B2	8	11	3	58'-0"	2465
B3	20	4	STR	28'-8"	383
B4	24	4	STR	10'-2"	163
B5	8	4	STR	4'-0"	21
M1	13	9	STR	35'-6"	1569
M2	13	9	STR	43'-6"	1923
M3	13	9	STR	36'-5"	1610
S1	152	5	1	11'-9"	1863
U1	8	4	2	6'-11"	37
U2	8	4	2	6'-8"	36
U3	68	4	2	6'-10"	310
V1	39	9	4	9'-9"	1293
REINFORCING STEEL					14,004 LBS.
SP-1	1	**	5	631'-9"	659
SP-2	1	**	5	819'-9"	855
SP-3	1	**	5	655'-3"	683
SP-4	3	*	5	293'-0"	587
SPIRAL REINFORCING STEEL					2,784 LBS.

** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

* THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BENT 4 TOTAL QUANTITIES

CLASS A CONCRETE		
POUR 2 (COLUMNS)	C.Y.	7.2
POUR 3 (CAP)	C.Y.	40.7
TOTAL CLASS A CONCRETE	C.Y.	47.9
DRILLED PIERS, CONCRETE		
POUR 1	C.Y.	41.5
4'-0" Ø DRILLED PIERS IN SOIL	LIN. FT.	64.1
4'-0" Ø DRILLED PIERS NOT IN SOIL	LIN. FT.	25.0
CSL TUBES	LIN. FT.	374.4
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIERS	LIN. FT.	38.1

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
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SUBSTRUCTURE

BENT 4 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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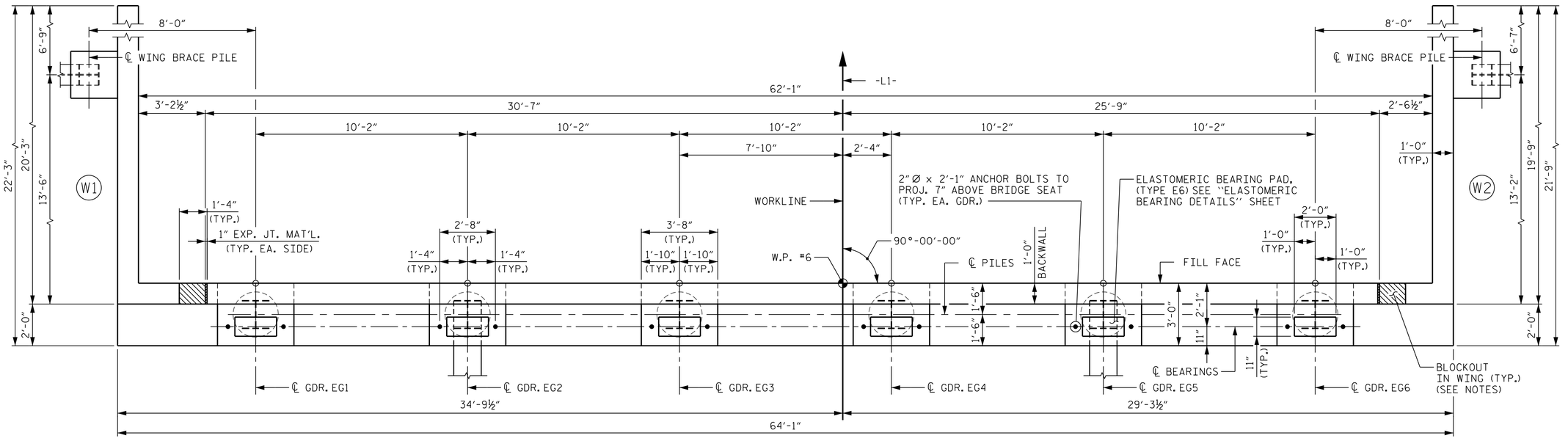
NOTES:

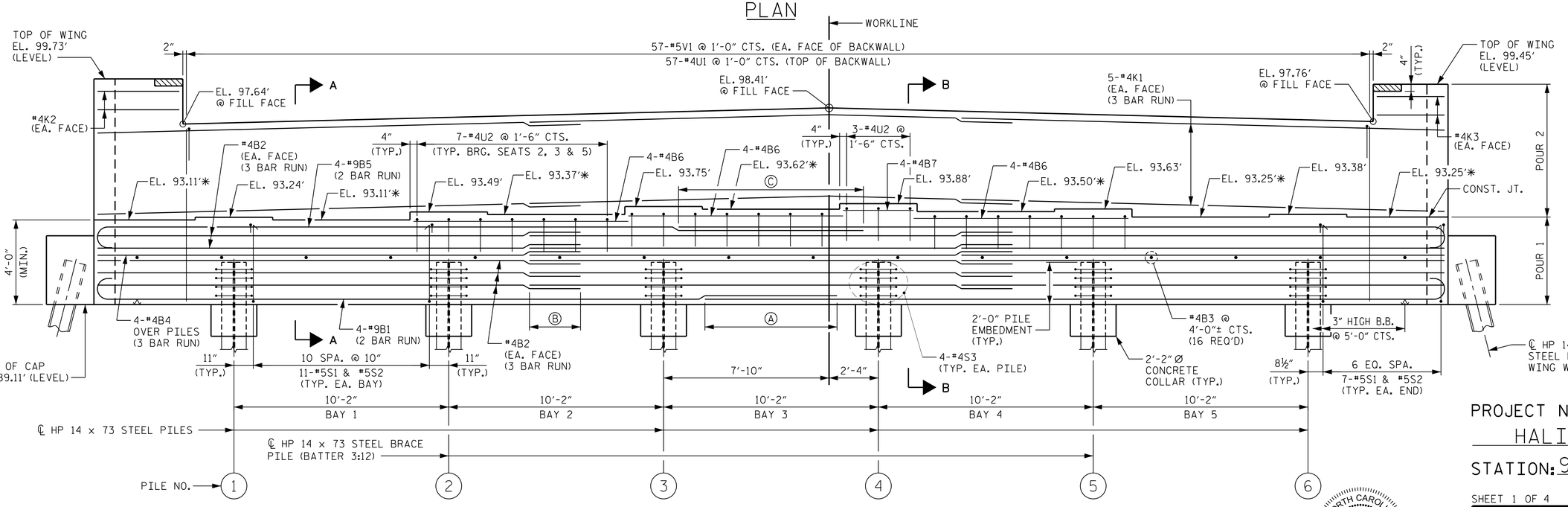
FOE NOTES, SEE "END BENT 2" SHEET 2 OF 4.

FOR "SECTION A-A", SEE "END BENT 2" SHEET 4 OF 4.

FOR "SECTION B-B", SEE "END BENT 2" SHEET 4 OF 4.



PLAN



Ⓐ 6'-3" MIN. SPLICE (#9B1 BARS)

Ⓑ 2'-5" MIN. SPLICE (#4B2, #4B4 & #4K1 BARS)

Ⓒ 8'-9" MIN. SPLICE (#9B5 BARS)

ELEVATION

*FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A", SHEET 4 OF 4.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE

END BENT 2 PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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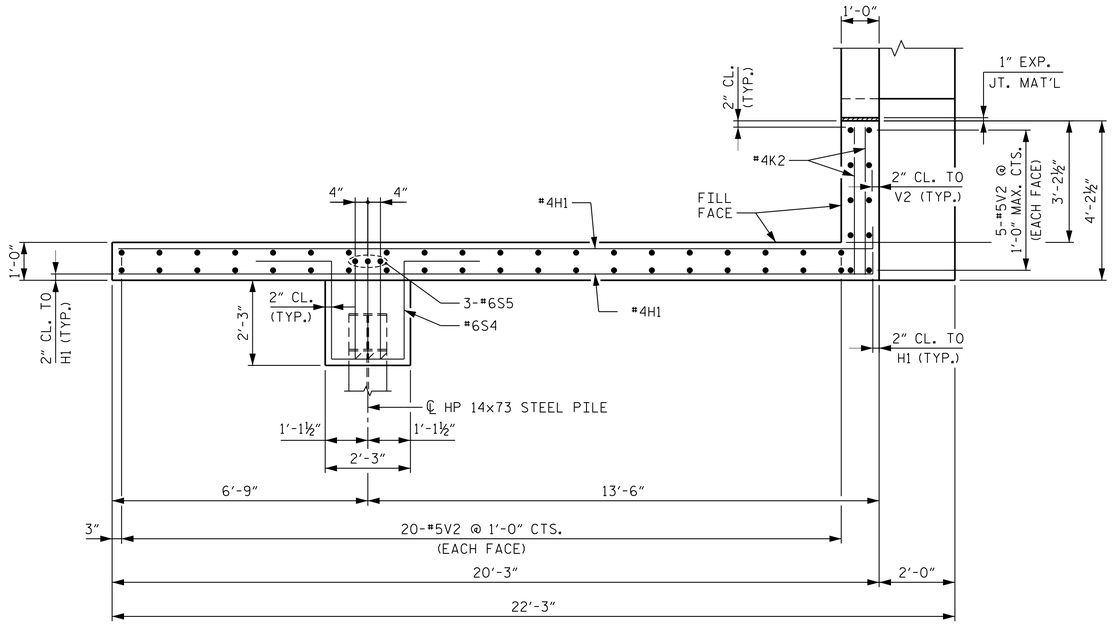
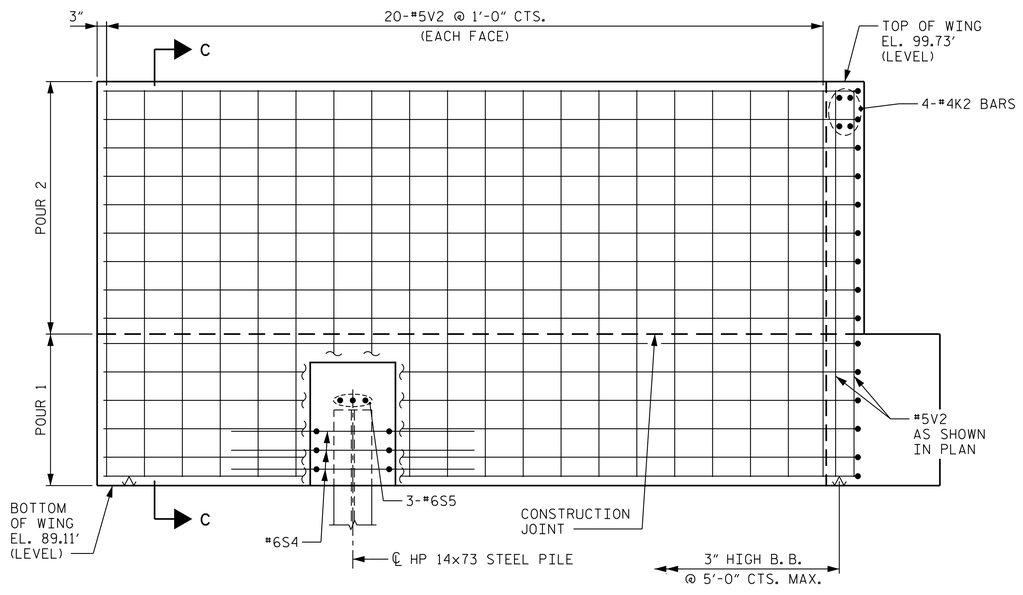
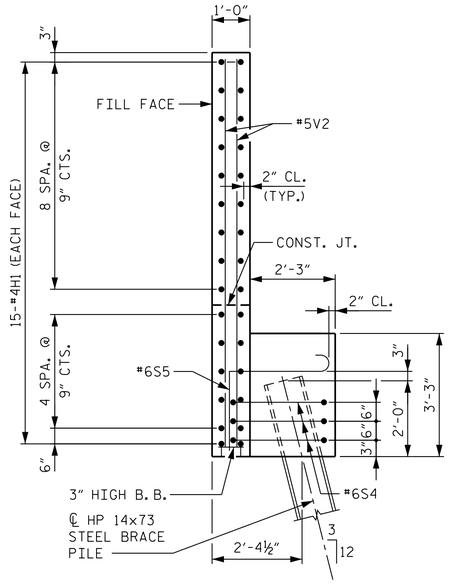


PLAN OF LEFT WING (W1)



ELEVATION OF LEFT WING (W1)



SECTION C-C

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

FOR "PILE SPLICE DETAILS", SEE "END BENT 2" SHEET 4 OF 4.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
SECTIONS AND DETAILS

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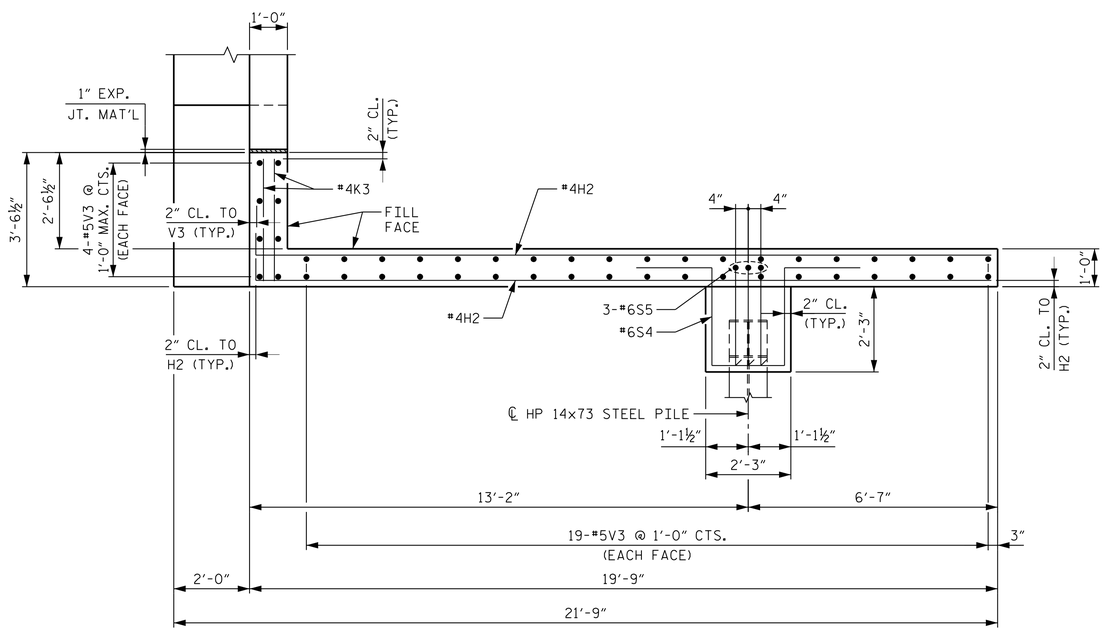
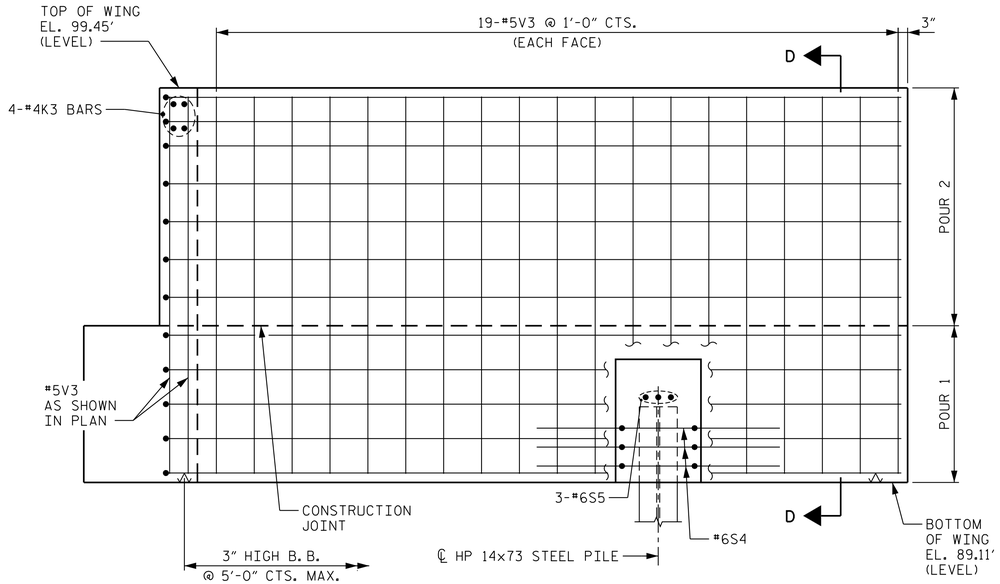
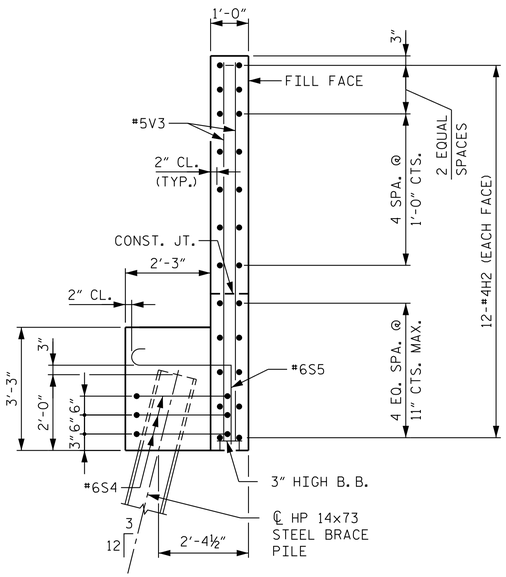


PLAN OF RIGHT WING (W2)



ELEVATION OF RIGHT WING (W2)



SECTION D-D

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE

END BENT 2 SECTIONS AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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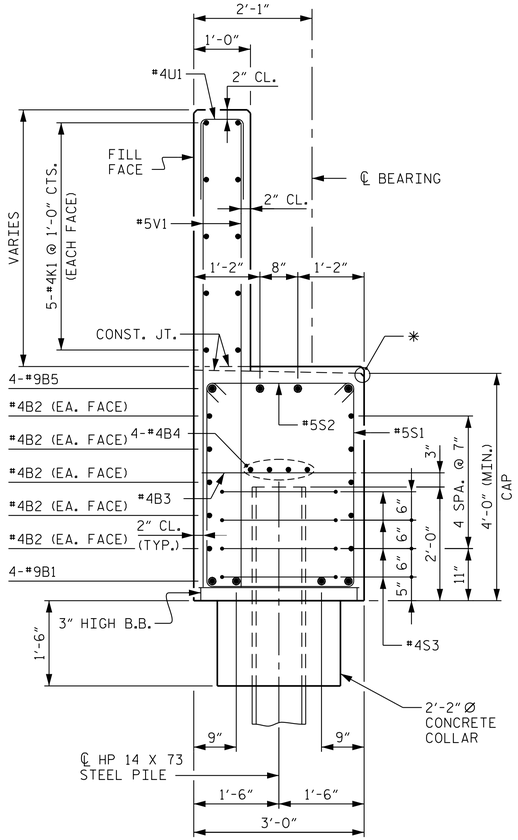
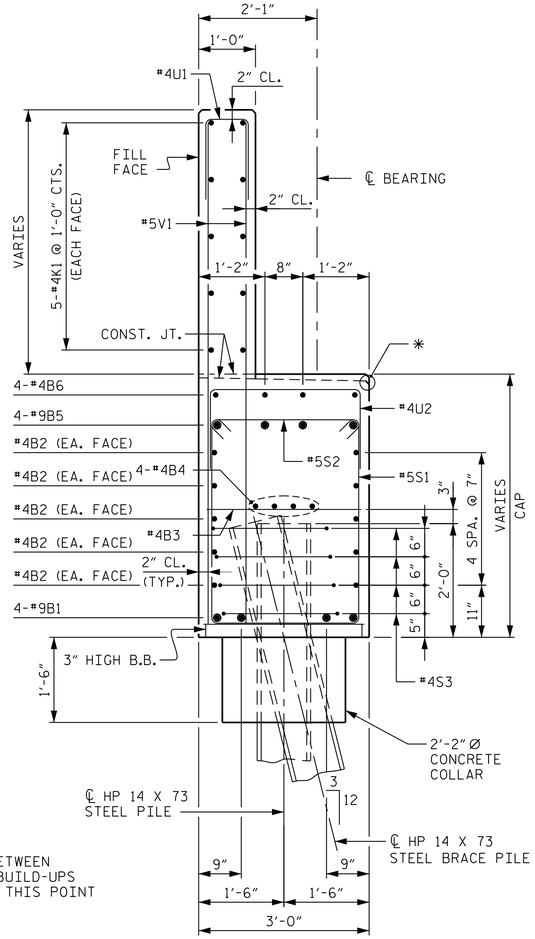
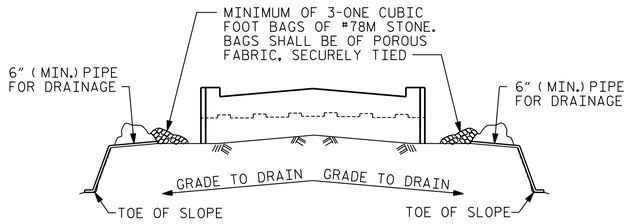


SECTION A-A



* ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS ARE TAKEN AT THIS POINT

SECTION B-B

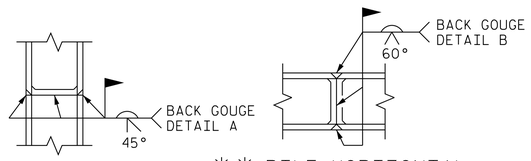


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

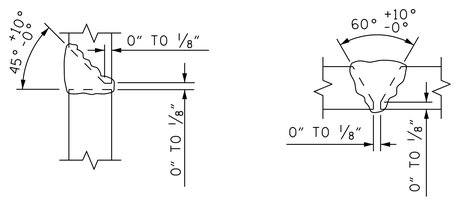
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL

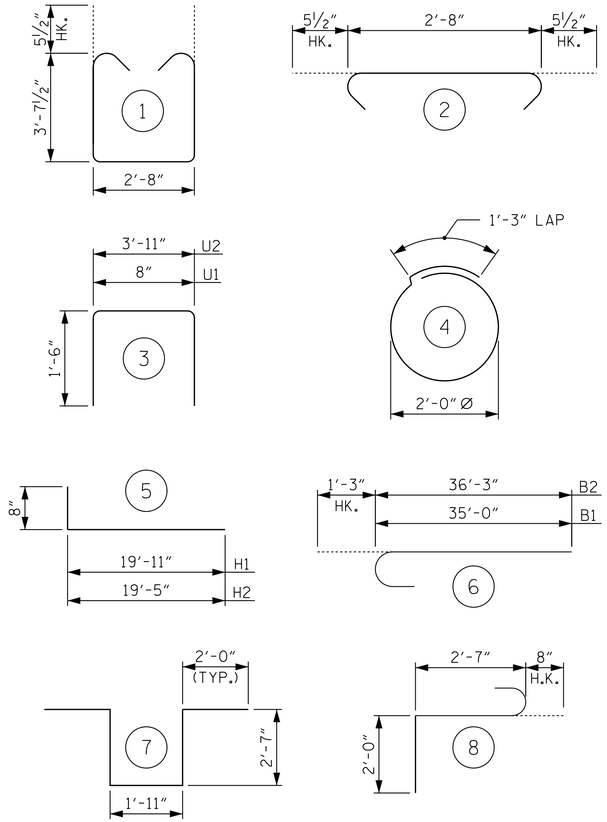


DETAIL A DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	6	36'-3"	986
B2	30	4	STR	22'-11"	459
B3	16	4	STR	2'-8"	29
B4	12	4	STR	22'-11"	184
B5	8	9	6	37'-6"	1020
B6	12	4	STR	10'-2"	81
B7	4	4	STR	3'-4"	9
H1	30	4	5	20'-7"	412
H2	24	4	5	20'-1"	322
K1	30	4	STR	22'-11"	459
K2	4	4	STR	3'-10"	10
K3	4	4	STR	3'-2"	8
S1	69	5	1	10'-10"	780
S2	69	5	2	3'-7"	258
S3	24	4	4	7'-7"	122
S4	6	6	7	11'-1"	100
S5	6	6	8	5'-3"	47
U1	57	4	3	3'-8"	140
U2	24	4	3	5'-8"	91
V1	114	5	STR	8'-1"	961
V2	50	5	STR	10'-3"	535
V3	46	5	STR	10'-0"	480

REINFORCING STEEL	7,493 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 (CAP, LOWER WING WALLS, & COLLARS)	38.8 C.Y.
POUR #2 (BACKWALL & UPPER WING WALLS)	20.6 C.Y.
TOTAL CLASS A CONCRETE	59.4 C.Y.
HP 14x73 STEEL PILES	
NO. 8	220 LIN. FT.
STEEL PILE POINTS	8 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	8 EA.

DRAWN BY: D. D. LOWERY	DATE: 03/18	
CHECKED BY: C. T. POOLE	DATE: 03/18	
DESIGN ENGINEER OF RECORD: S. A. DENNEY	DATE: 03/18	

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney E8EB154CC9ED410... 5/15/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 2
SECTIONS AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55
1			3			TOTAL SHEETS
2			4			58

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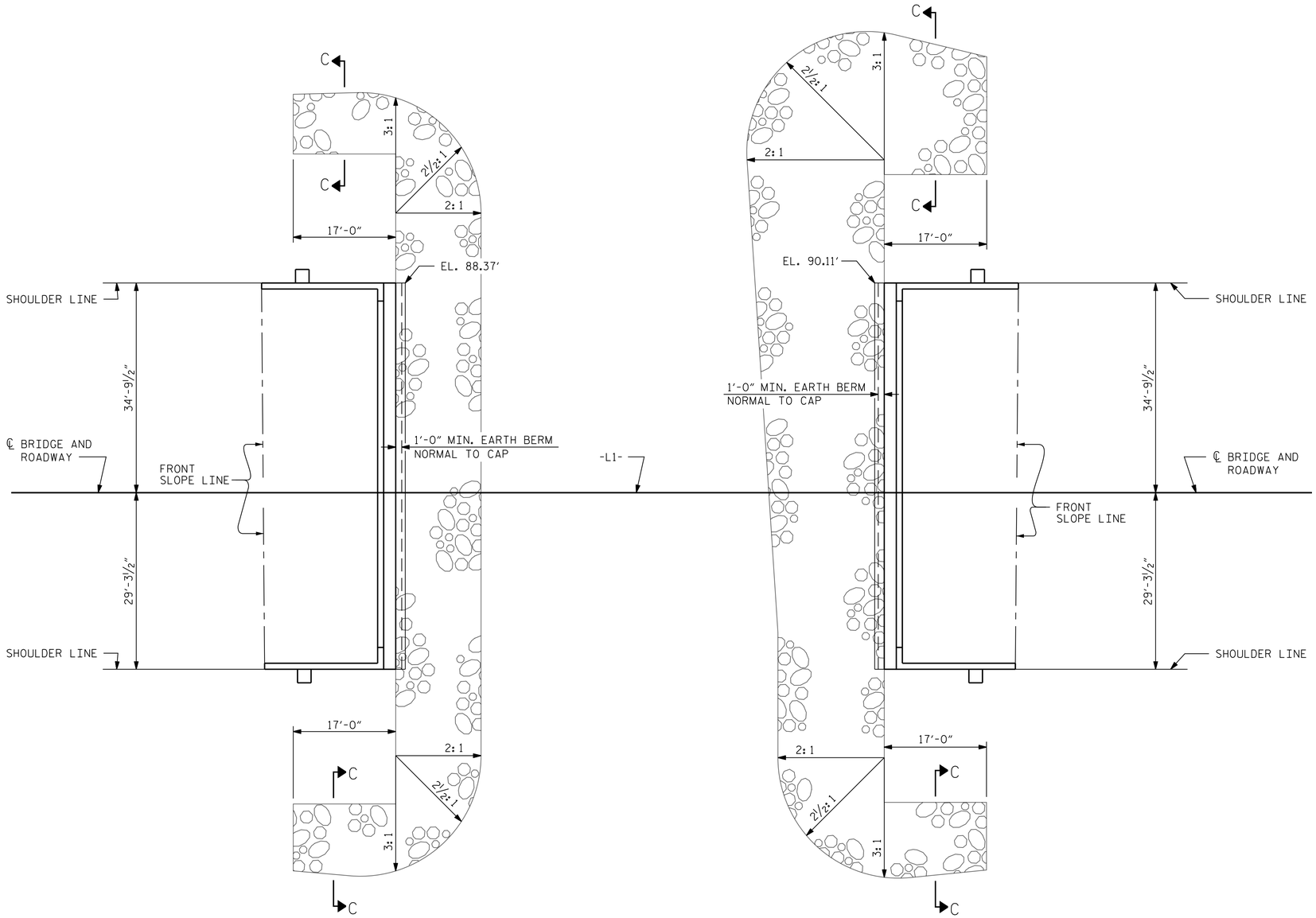
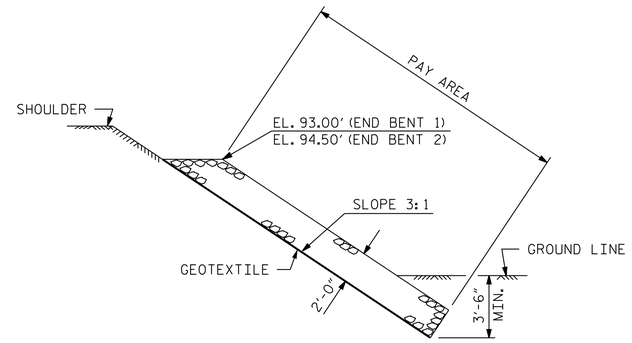


END BENT 1

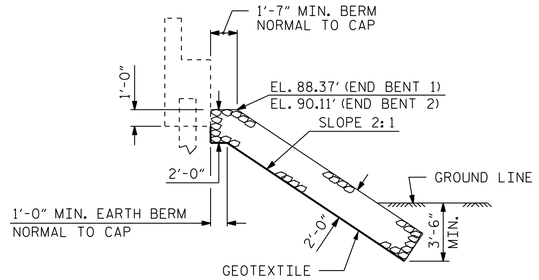
END BENT 2

NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



SECTION C-C



℄ SECTION

BERM RIP RAPPED

ESTIMATED QUANTITIES		
BRIDGE @ STA. 99+17.60 -L1-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	260	289
END BENT 2	337	374

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
1			3			TOTAL SHEETS
2			4			58

DRAWN BY: D. D. LOWERY DATE: 03/18
CHECKED BY: S. A. DENNEY DATE: 03/18
DESIGN ENGINEER OF RECORD: S. A. DENNEY DATE: 03/18

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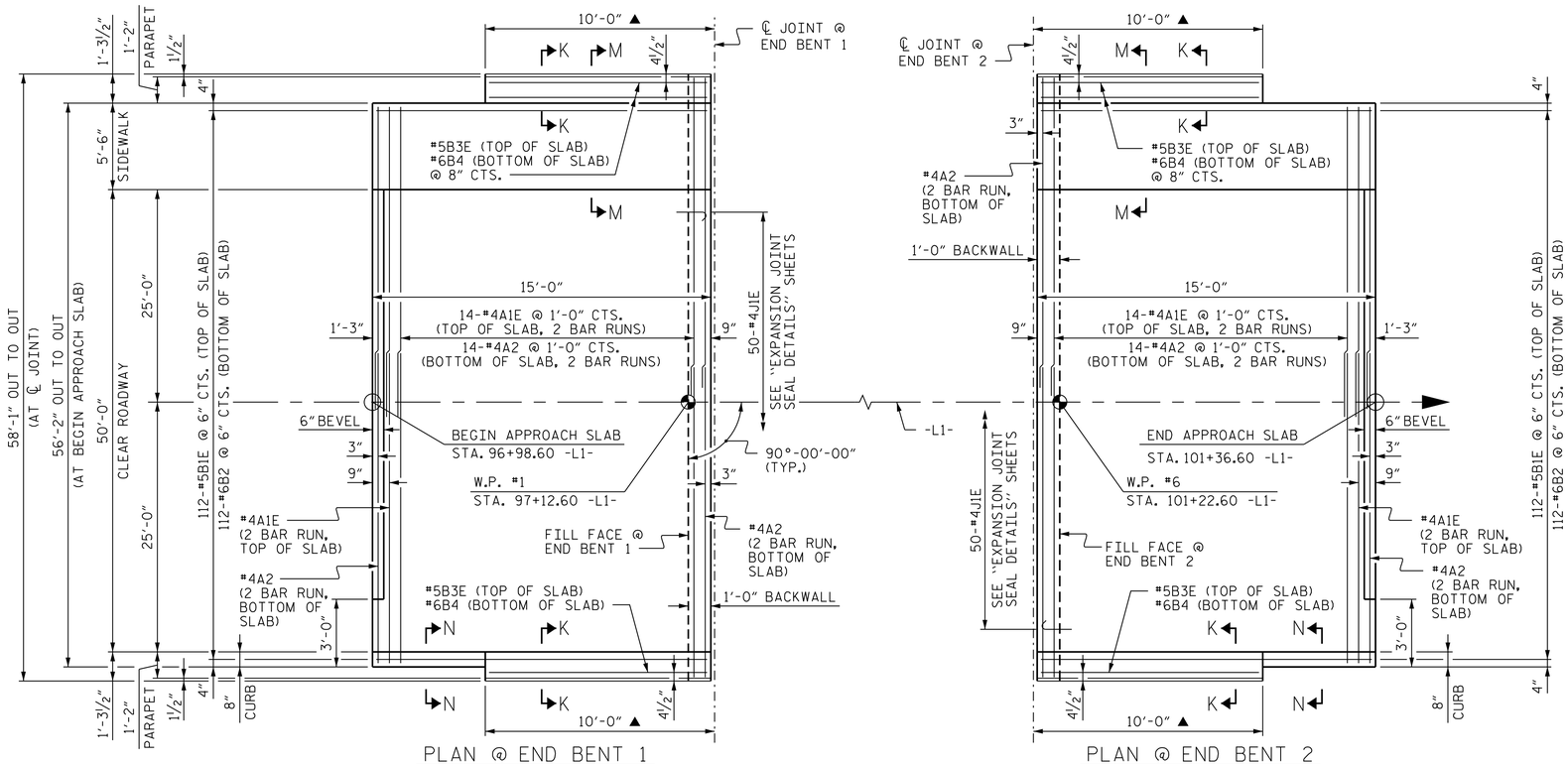
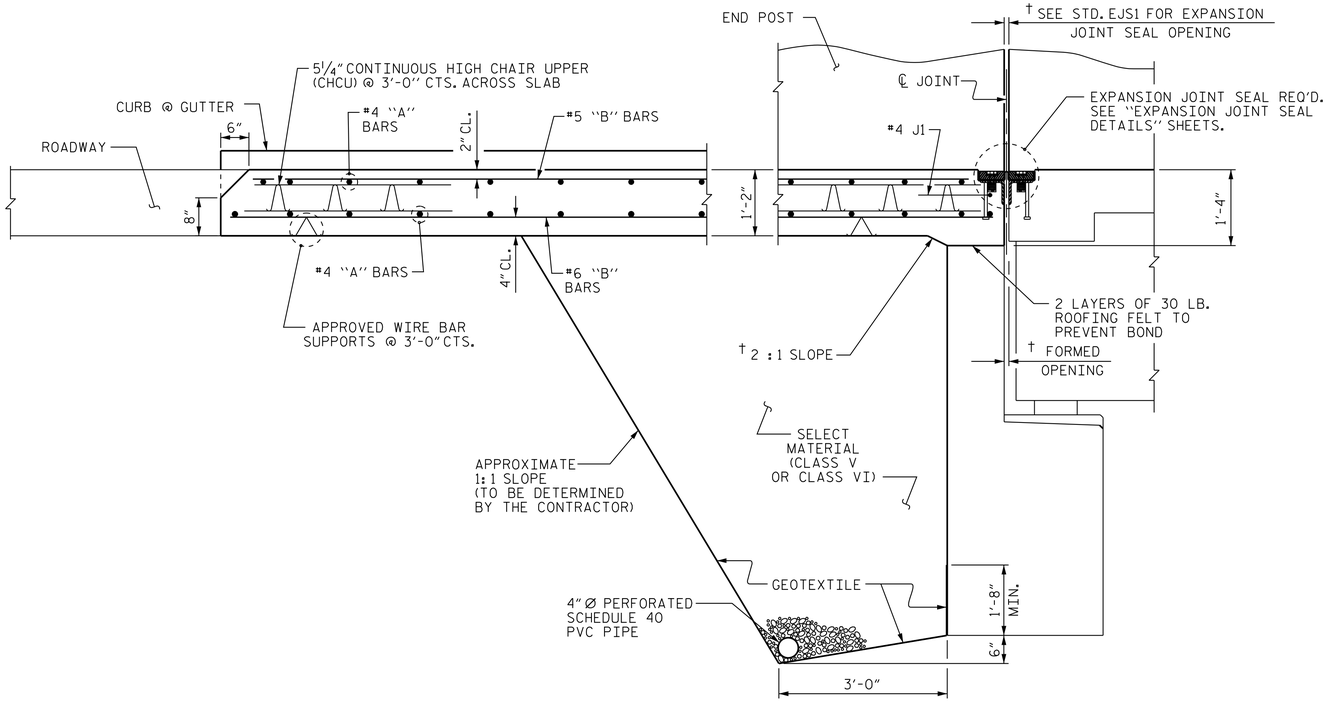
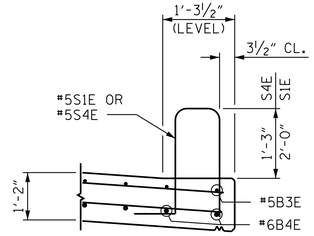


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.

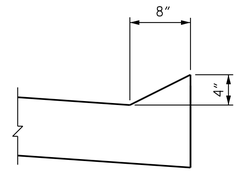


SECTION THRU SLAB

(TYPE II - MODIFIED APPROACH SLAB)



SECTION K-K



SECTION N-N

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR SIDEWALK DETAILS, SEE "BRIDGE APPROACH SLAB DETAILS" SHEET 2 OF 2.

▲ MEASURED FROM ℄ JOINT ALONG OUTSIDE FACE ON CONCRETE PARAPET.

FOR SECTION "M-M" SEE SHEET 2 OF 2.

FOR SECTION "K-K" REINFORCING DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS 5 AND 6 OF 7.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

DocuSigned by: Seth A. Denney EBEB154CC9ED410... 5/15/2018

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1			3			TOTAL SHEETS
2			4			58

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ASSEMBLED BY : D. D. LOWERY		DATE :	03/18
CHECKED BY : A. L. PHILLIPS		DATE :	03/18
DRAWN BY : EEM 3/95	REV. 12/21/11		MAA/GM
CHECKED BY : VAP 3/95	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

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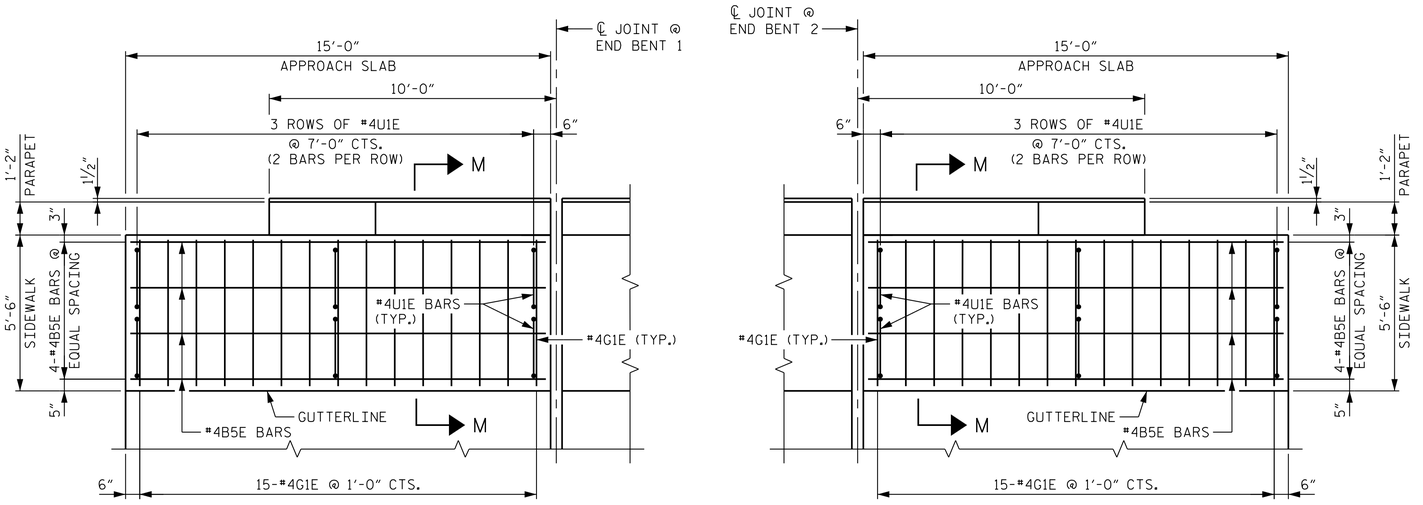
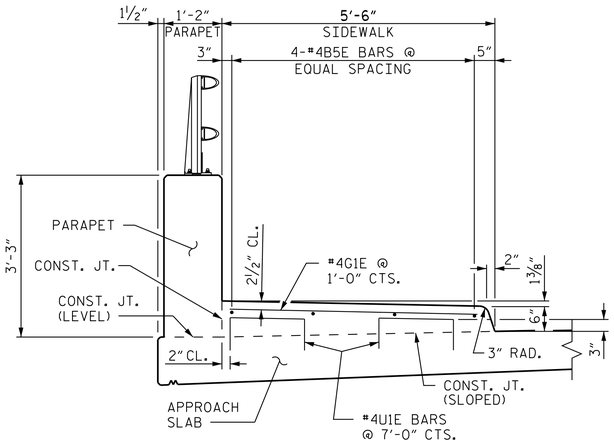
5/14/2018

STD. NO. BAS2 (SHT 3)

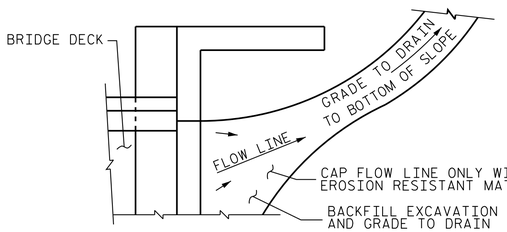


PLAN OF SIDEWALKS



SECTION M-M

SIDEWALK DETAILS



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

ASSEMBLED BY : D.D. LOWERY		DATE :	03/18
CHECKED BY : A.L. PHILLIPS		DATE :	03/18
DRAWN BY : FCJ	11/88	REV. 7/12	MAA/GM
CHECKED BY : ARB	11/88	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

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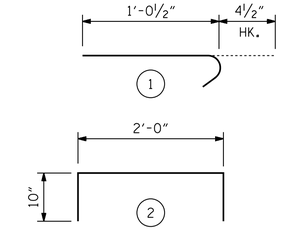
BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

THE QUANTITY OF #4J1E BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1E BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1E BARS SPECIFIED, ADDITIONAL J1E BARS WILL NOT BE REQUIRED.

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

NOTES

THE COST OF THE CONCRETE PARAPETS ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR ''CONCRETE PARAPET''.

THE CONCRETE PARAPETS ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN CONCRETE PARAPETS SHALL BE EPOXY COATED.

#4U1E BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER APPROACH SLAB HAS BEEN SCREEDED OFF.

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	30	#4	STR	29'-11"	600
A2	32	#4	STR	29'-9"	636
B1E	112	#5	STR	14'-0"	1635
B2	112	#6	STR	14'-8"	2467
B3E	3	#5	STR	9'-3"	29
B4	3	#6	STR	9'-7"	43
B5E	4	#4	STR	14'-4"	38
G1E	15	#4	STR	5'-2"	52
J1E	50	#4	1	1'-5"	47
U1E	6	#4	2	3'-8"	15
REINFORCING STEEL **				LBS.	3146
EPOXY COATED REINFORCING STEEL **				LBS.	2416
CLASS AA CONCRETE BREAKDOWN					
POUR 1 (SLAB) **				C.Y.	37.6
POUR 2 (SIDEWALK) **				C.Y.	1.9
TOTAL				C.Y.	39.5

APPROACH SLAB AT EB #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	30	#4	STR	29'-11"	600
A2	32	#4	STR	29'-9"	636
B1E	112	#5	STR	14'-0"	1635
B2	112	#6	STR	14'-8"	2467
B3E	3	#5	STR	9'-3"	29
B4	3	#6	STR	9'-7"	43
B5E	4	#4	STR	14'-4"	38
G1E	15	#4	STR	5'-2"	52
J1E	50	#4	1	1'-5"	47
U1E	6	#4	2	3'-8"	15
REINFORCING STEEL **				LBS.	3146
EPOXY COATED REINFORCING STEEL **				LBS.	2416
CLASS AA CONCRETE BREAKDOWN					
POUR 1 (SLAB) **				C.Y.	37.6
POUR 2 (SIDEWALK) **				C.Y.	1.9
TOTAL				C.Y.	39.5

''E'' INDICATES EPOXY COATED REINFORCING STEEL.

** QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED. FOR REINFORCING STEEL REQUIRED FOR THE PARAPET, SEE ''CONCRETE PARAPET DETAIL'' SHEETS.

PROJECT NO. R-3822

HALIFAX COUNTY

STATION: 99+17.60 -L1-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033752 ENGINEER SETH A. DENNEY

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-58
1			3			TOTAL SHEETS
2			4			58

STD. NO. BAS4 (SHT 2)

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS - - - - - - - - - - - - - - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD -	SEE PLANS
IMPACT ALLOWANCE - - - - - - - - - - - - - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36 - -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W - -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50 - -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60 - - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION - - - - - - - - - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR - - - - - - - - - - - - - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER - - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH - - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5⁄16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1⁄16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

REV. 6-16-95 EEM (c) RGW REV. 5-7-03 RWW (c) JTE REV. 10-1-11 MAA (c) GM
REV. 8-16-99 RWW (c) LES REV. 5-1-06 TLA (c) GM REV. 12-17 MAA (c) THC

STD. NO. SN