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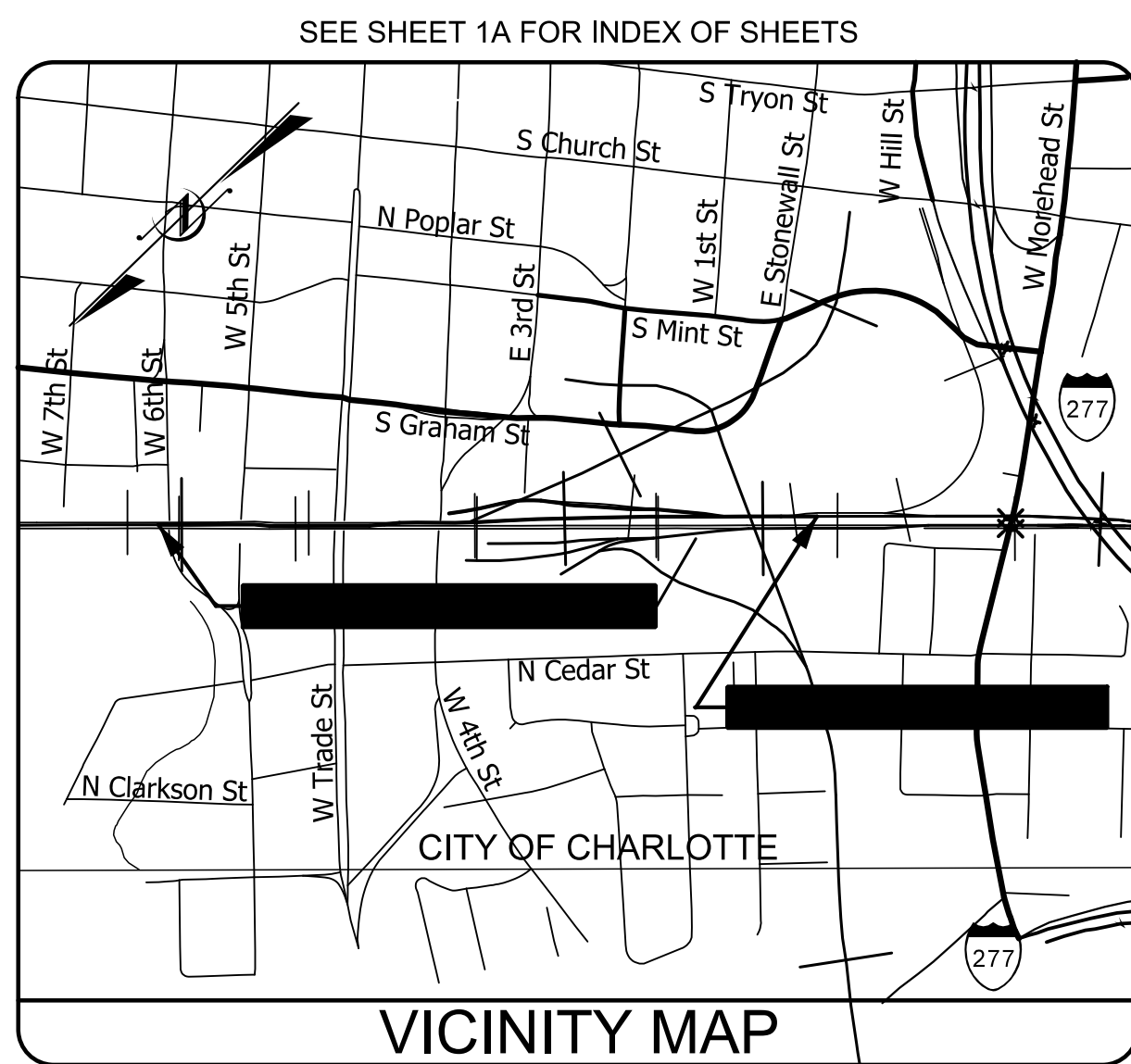
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0012DEL_P28

TIP PROJECT: P-5705BA

CONTRACT: C204058



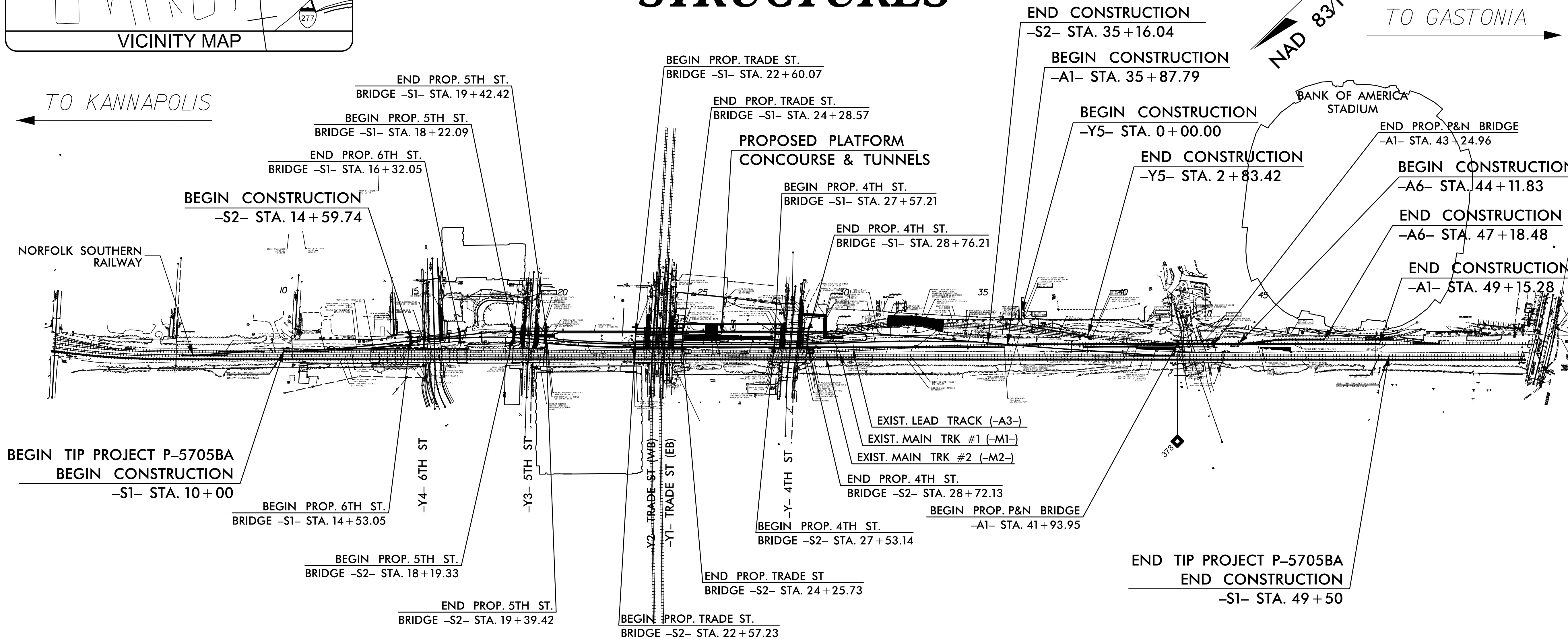
STATE OF NORTH CAROLINA
RAIL DIVISION

MECKLENBURG COUNTY

LOCATION: CHARLOTTE GATEWAY STATION - TRACK, STRUCTURE AND SIGNALS
TYPE OF WORK: DRAINAGE, PAVING, GRADING, STRUCTURE

STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5705BA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
44475.1.2		P.E. / UTIL P.E. / ROW	
44475.3.2		CONST./UTIL CONST.	



PROJECT LENGTH

LENGTH OF RAIL TIP PROJECT	0.612 MILES
LENGTH OF STRUCTURES TIP PROJECT	0.136 MILES
TOTAL LENGTH OF RAIL TIP PROJECT	0.748 MILES
LENGTH MEASURED ALONG -S1-	

NCDOT CONTACT: MATTHEW SIMMONS, P.E.
NCDOT PROJECT MANAGER

HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: MAY 15, 2018

COREY VERNIER, P.E.
RAIL PROJECT ENGINEER

DAVID HAWKINS, P.E.
STRUCTURE PROJECT ENGINEER

MATTHEW SIMMONS, P.E.
NCDOT PROJECT MANAGER

STRUCTURES ENGINEER

2/21/2018

SEAL 27812

ENGINEER DAVID W. HAWKINS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by: David Hawkins P.E.

SIGNATURE:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

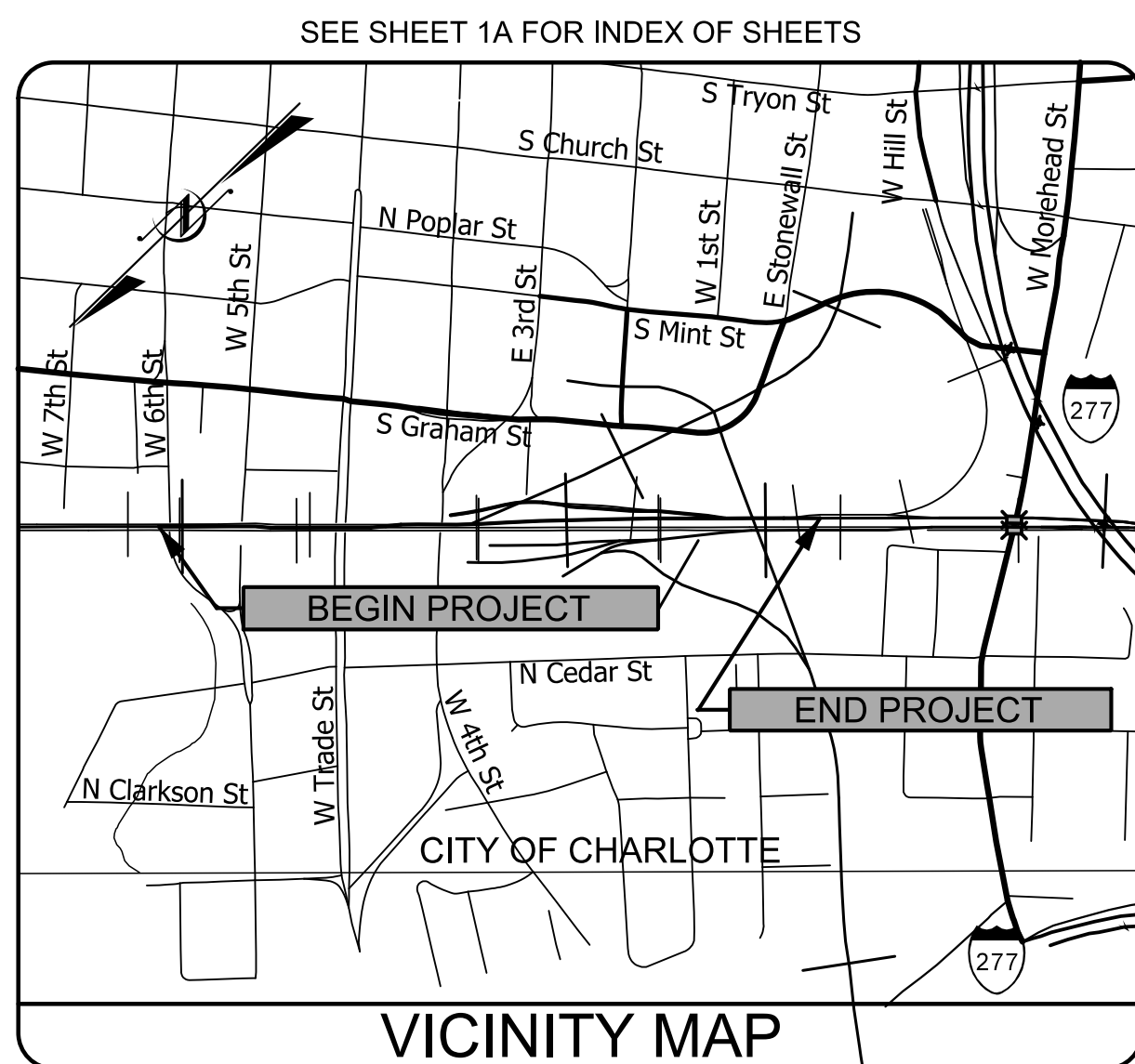
NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
DESIGN AND CONSTRUCTION

0012DEL_P28
1002ADD_P28

TIP PROJECT: P-5705BA

CONTRACT: C204058

REV #1: REVISE LETTING DATE



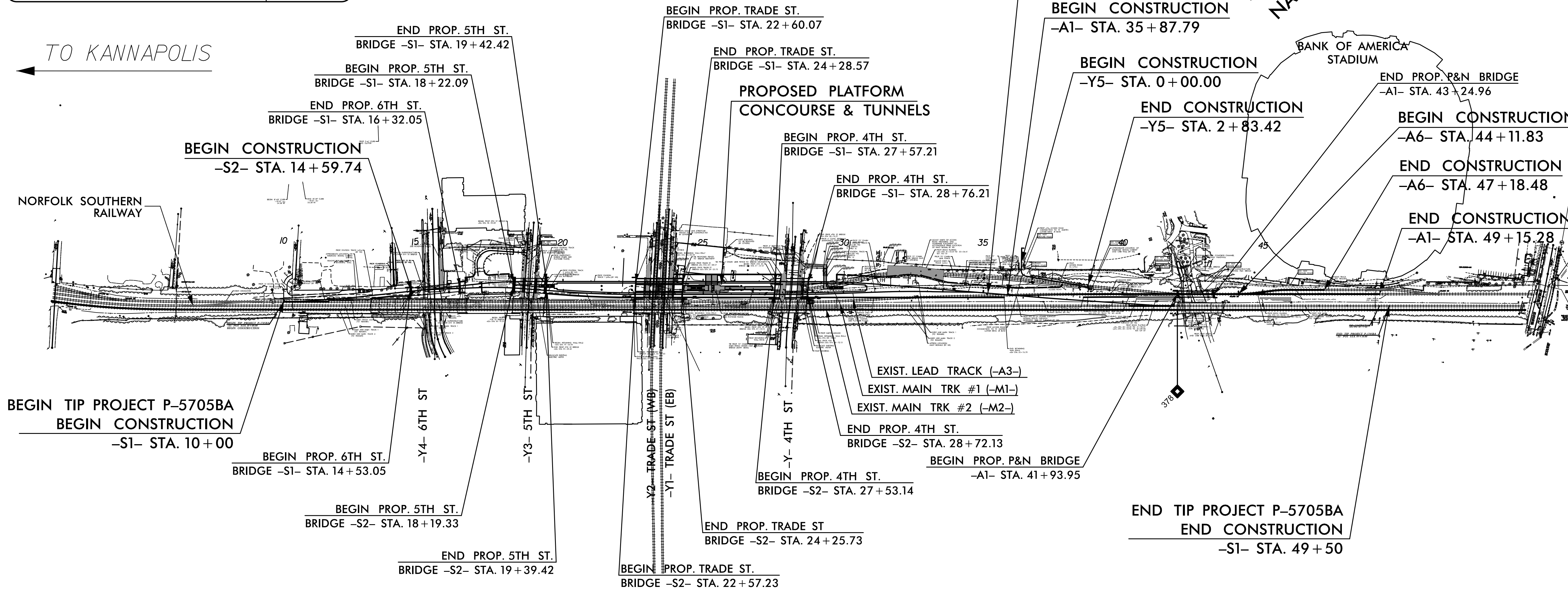
STATE OF NORTH CAROLINA
RAIL DIVISION

MECKLENBURG COUNTY

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HNTB HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
MAY 29, 2018

MATTHEW SIMMONS, P.E.
NCDOT PROJECT MANAGER

COREY VERNIER, P.E.
RAIL PROJECT ENGINEER

DAVID HAWKINS, P.E.
STRUCTURE PROJECT ENGINEER

STRUCTURES ENGINEER

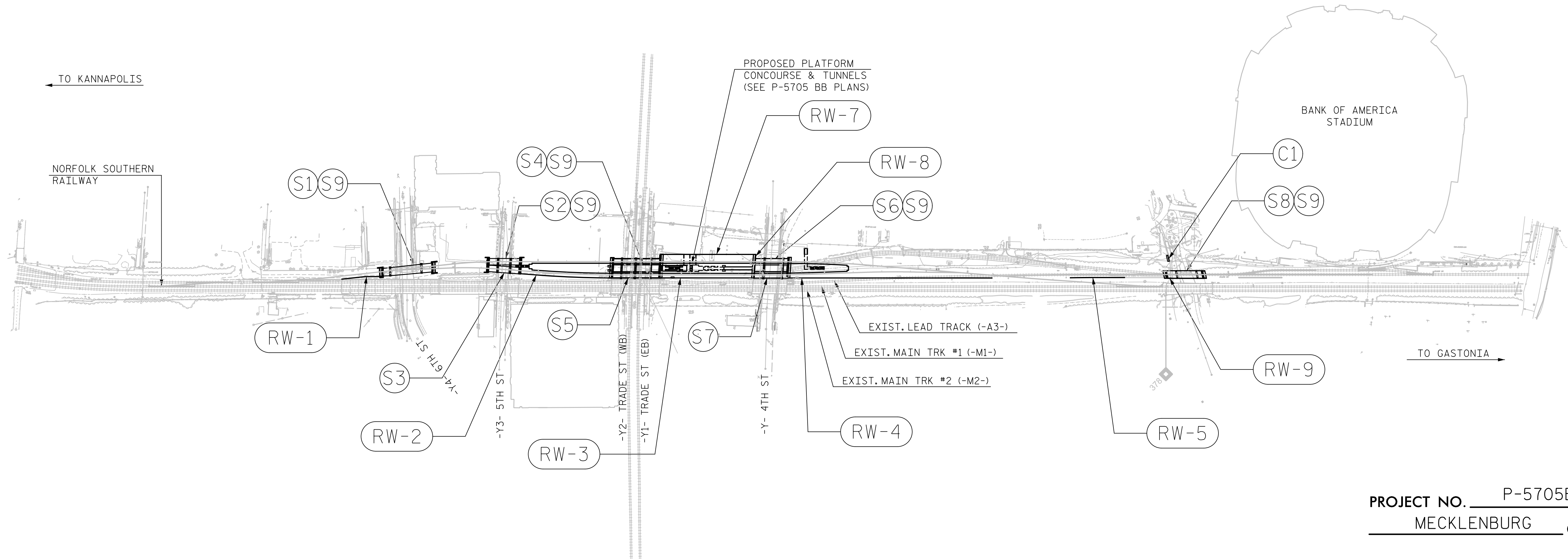
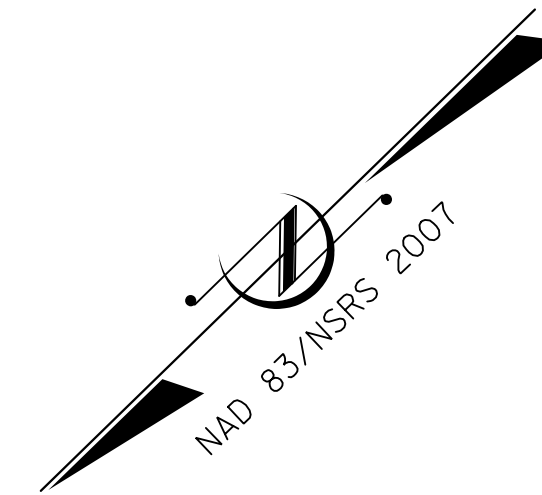
Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27812 DAVID W. HAWKINS

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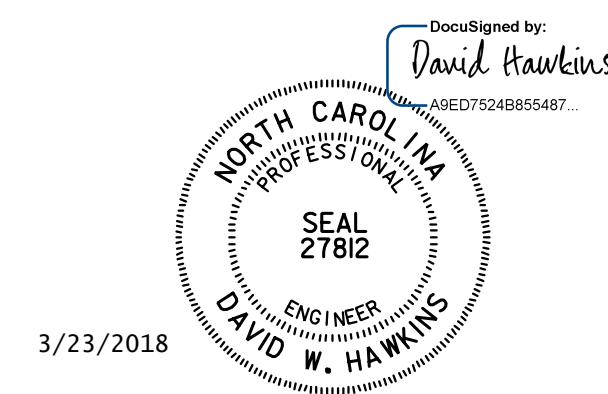
DocuSigned by: David W. Hawkins P.E. 7/11/2018 8:52:54 AM PDT

NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
DESIGN AND CONSTRUCTION

INDEX			
STR. NO.	STATION	DESCRIPTION	SHEETS
(S1)	POT 15+39.55 -S1-	BRIDGE ON STATION TRACK 1 OVER W 6TH STREET	S1-1 THRU S1-39
(S2)	POT 18+82.25 -S1-	BRIDGE ON STATION TRACK 1 OVER W 5TH STREET	S2-1 THRU S2-20
(S3)	POT 18+79.37 -S2-	BRIDGE ON STATION TRACK 2 OVER W 5TH STREET	S3-1 THRU S3-42
(S4)	POT 23+65.83 -S1-	BRIDGE ON STATION TRACK 1 OVER W TRADE STREET	S4-1 THRU S4-21
(S5)	POT 23+62.98 -S2-	BRIDGE ON STATION TRACK 2 OVER W TRADE STREET	S5-1 THRU S5-56
(S6)	POT 28+17.22 -S1-	BRIDGE ON STATION TRACK 1 OVER W 4TH STREET	S6-1 THRU S6-19
(S7)	POS 28+12.88 -S2-	BRIDGE ON STATION TRACK 2 OVER W 4TH STREET	S7-1 THRU S7-51
(S8)	POT 42+59.46 -A1-	BRIDGE ON PROPOSED LEAD TRACK OVER P&N CORRIDOR	S8-1 THRU S8-39
(S9)	N/A	ARCHITECTURAL FIN RAIL PLANS	S9-1 THRU S9-7
(C1)	POT 42+05.33 -A1-	CULVERT HEADWALL	C1-1 THRU C1-2
RW-1, RW-2, RW-3, RW-4, RW-5, RW-7, RW-8, RW-9		RETAINING WALLS	W-1 THRU W-17



PROJECT NO. P-5705BA
MECKLENBURG COUNTY



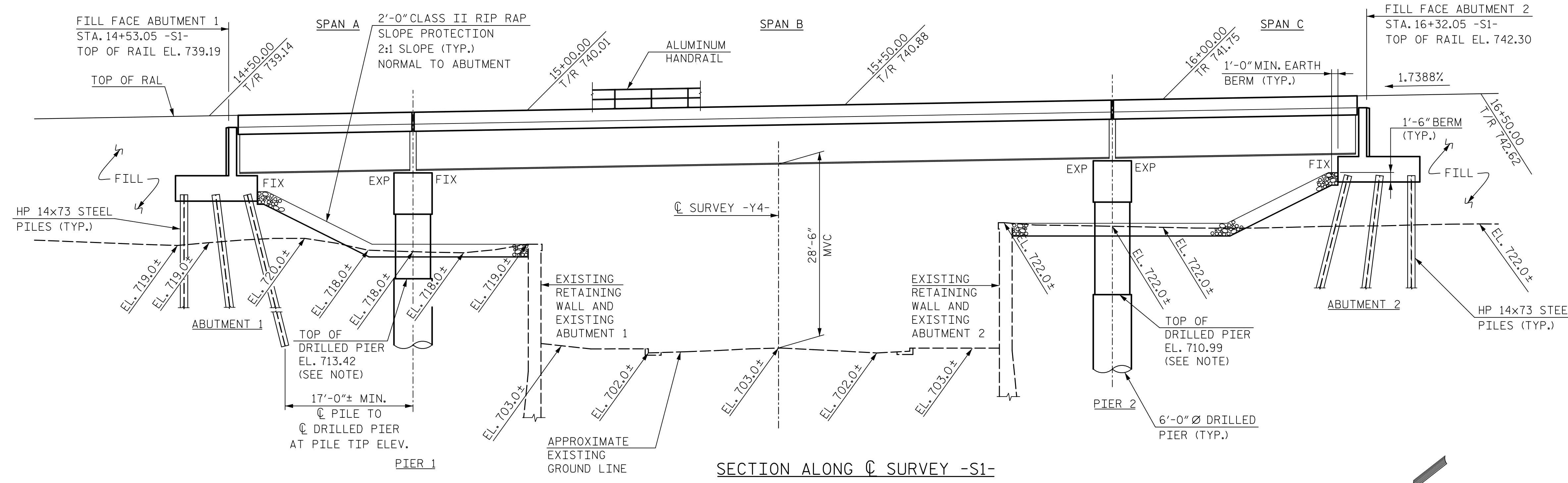
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 SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

INDEX

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO.		
	DRAWN BY <u>M. WRIGHT</u> DATE <u>9/17</u> CHECKED BY <u>D. HAWKINS</u> DATE <u>9/17</u> DWG. NO.	NO.	BY	DATE		NO.	BY
	1			3			
	2			4			

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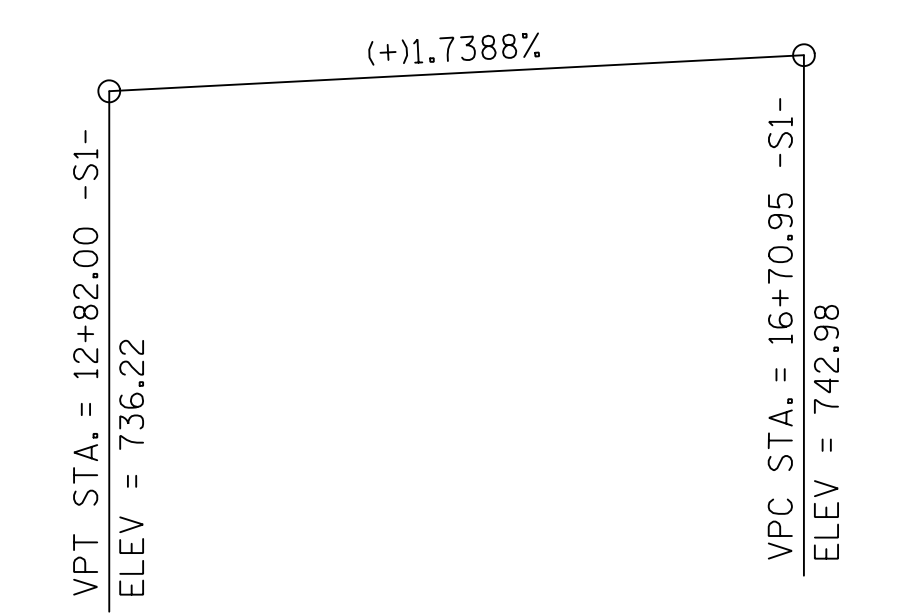
SECTION ALONG C SURVEY -Y4-

(ABUTMENTS AND PIERS ON SECTION AT RIGHT ANGLES TO ABUTMENTS AND PIERS)

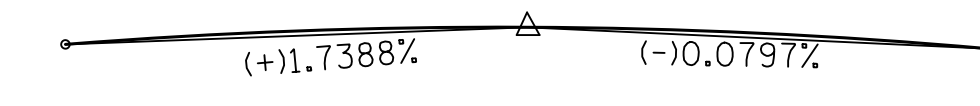
NOTES:
 SEE "GENERAL DRAWING: GENERAL NOTES (SHEET 4 OF 4)" FOR GENERAL NOTES.
 MVC = MINIMUM VERTICAL CLEARANCE
 MHC = MINIMUM HORIZONTAL CLEARANCE
 STRUCTURE DRAINAGE OUTLET LOCATION AND DIRECTION.
 TOP OF DRILLED PIERS HAVE BEEN SET TO ACCOMMODATE A FUTURE FILL SLOPE AND ROADWAY SECTION. SEE "SUBSTRUCTURE - COLUMN AND DRILLED PIER CONSTRUCTION SEQUENCE - PIER".

(SEE SURVEY DATA FOR EXISTING PAVEMENT ELEVATIONS)

GRADE DATA -Y4-

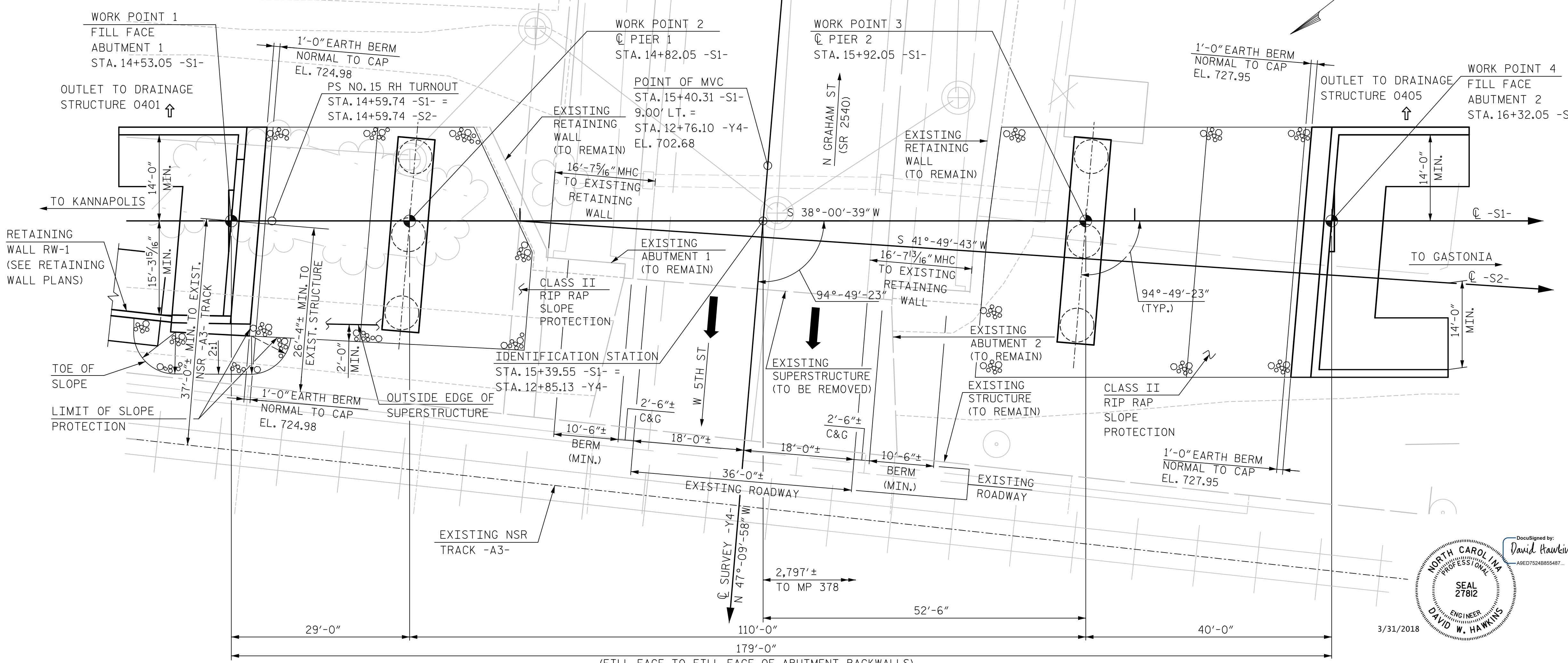


GRADE DATA -S1-



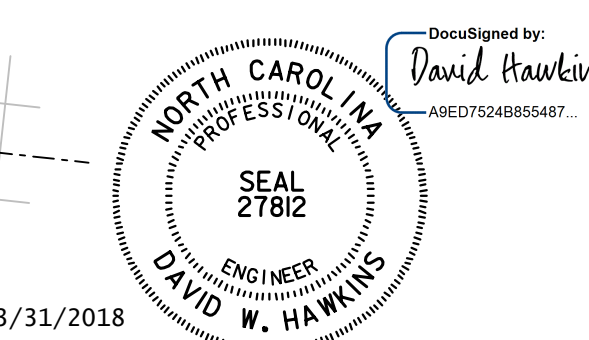
PVI STA. = 17+70.80
EL. = 744.72
VC = 200.00'

GRADE DATA -S2-



PLAN

NOTES: PILES NOT SHOWN FOR CLARITY.



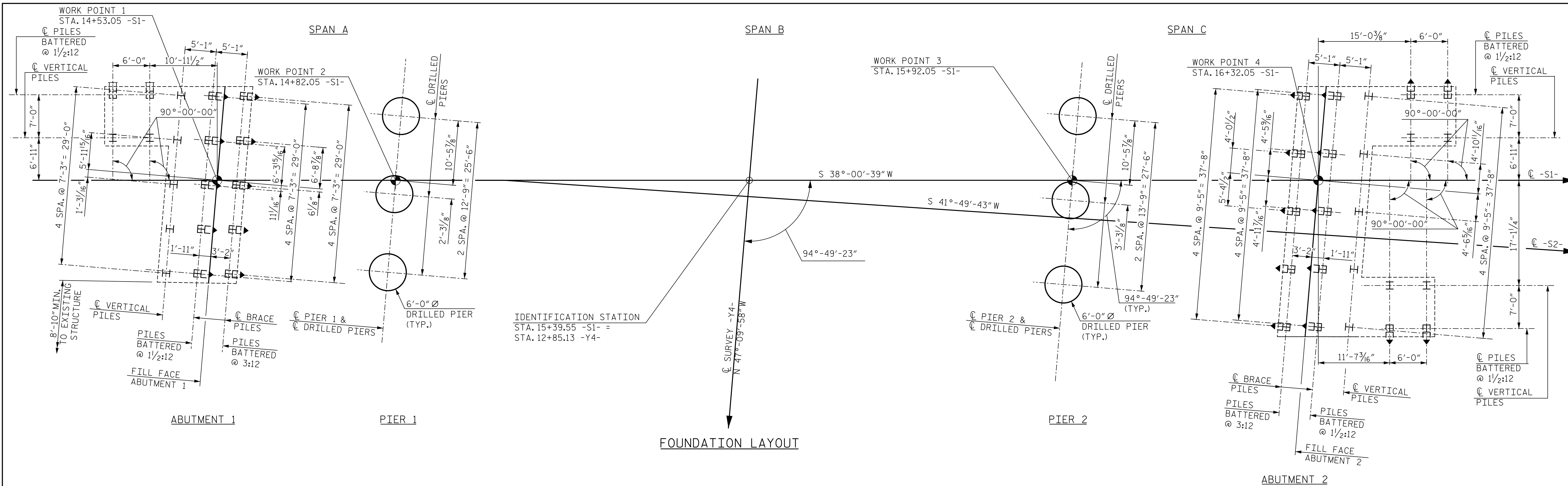
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: STA. 15+39.55 -S1- =
STA. 12+85.13 -Y4-
 MILE POST: NS 377.48
 BRIDGE NO. _____

SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE ON STATION TRACK 1
 OVER W 6TH STREET
 BETWEEN W 5TH STREET AND
 N GRAHAM STREET

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: M. WRIGHT	DATE: 9/17	DWG. NO. 1	
CHECKED BY: D. HAWKINS	DATE: 9/17		
REVISIONS			
NO.	BY	DATE	NO.
1			3
2			4
			SHEET NO. S1-1
			TOTAL SHEETS 39

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FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISION.

PILES AT ABUTMENT NO.1 ARE DESIGNED FOR AN ALLOWABLE LOAD OF 65 TONS PER PILE.

DRIVE PILES AT ABUTMENT 1 TO A REQUIRED BEARING CAPACITY OF 130 TONS PER PILE.

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

DRILLED PIERS AT PIER NO.1 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 690 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP BEARING OF 30 TSF.

INSTALL DRILLED PIERS AT PIER NO.1 TO A TIP ELEVATION NO HIGHER THAN 668.5 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FT INTO WEATHERED ROCK AND ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT PIER NO.2 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 690 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP BEARING OF 30 TSF.

INSTALL DRILLED PIERS AT PIER NO.2 TO A TIP ELEVATION NO HIGHER THAN 672.5 FT (LT), 654.5 FT (CT), AND 654.5 FT (RT) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 20 FT (LT), 15 FT (CT), AND 15 FT (RT) INTO WEATHERED ROCK AND ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

IF SLURRY CONSTRUCTION METHODS ARE USED, PERMANENT, SEGMENTAL OR CONTINUOUS STEEL CASING IS REQUIRED AT PIER 1 - DRILLED PIER 3. INSTALL CASING TO ELEVATION 690 FT.

IF SLURRY CONSTRUCTION METHODS ARE USED, INSTALL A TEMPORARY CASING A MINIMUM OF 20 FT. BELOW DRILLING GRADE PRIOR TO BEGINNING SLURRY EXCAVATION AT PIER 1 - DRILLED PIER 1 AND 2 AND PIER 2.

IF SLURRY CONSTRUCTION METHODS ARE USED, THE DRILLED PIER CONTRACTOR IS REQUIRED TO HAVE A TECHNICALLY COMPETENT REPRESENTATIVE PRESENT DURING CONSTRUCTION OF PIER 1 - DRILLED PIER 3 OR AS DIRECTED BY THE ENGINEER.

SPT ARE REQUIRED FOR DRILLED PIERS. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS. THE REQUIRED N60 SPT VALUE FOR DRILLED PIERS AT PIER NOS.1 AND 2 IS 100 BLOWS WITH 12 INCHES OR LESS PENETRATION.

AT THE CONTRACTORS OPTION, SLURRY CONSTRUCTION MAY BE USED FOR THE CONSTRUCTION OF DRILLED PIERS AT PIER NOS.1 AND 2. IF SLURRY CONSTRUCTION METHODS ARE USED, THEN POLYMER SLURRY IS REQUIRED.

SID INSPECTIONS ARE REQUIRED FOR DRILLED PIERS AT PIER NOS.1 AND 2. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

THERMAL INTEGRITY PROFILING IS REQUIRED FOR DRILLED PIERS AT PIER NOS 1 AND 2. FOR THERMAL INTEGRITY PROFILING, SEE GEOTECHNICAL SPECIAL PROVISION.

CSL TUBES AND CSL TESTING ARE REQUIRED FOR DRILLED PIERS. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PILES AT ABUTMENT 2 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 85 TONS PER PILE.

DRIVE PILES AT ABUTMENT 2 TO A REQUIRED BEARING CAPACITY OF 170 TONS PER PILE.

TEST THE FIRST PRODUCTION PILE AT ABUTMENT NOS.1 AND 2 WITH THE PDA. FOR PDA TESTING, SEE GEOTECHNICAL SPECIAL PROVISION.

NOTES:

◀☞ INDICATES PILE TO BE BATTERED IN DIRECTION OF ARROW AT THE RATE SHOWN.

ALL DIMENSIONS ARE PARALLEL OR NORMAL TO FILL FACE ABUTMENTS AND C PERS.

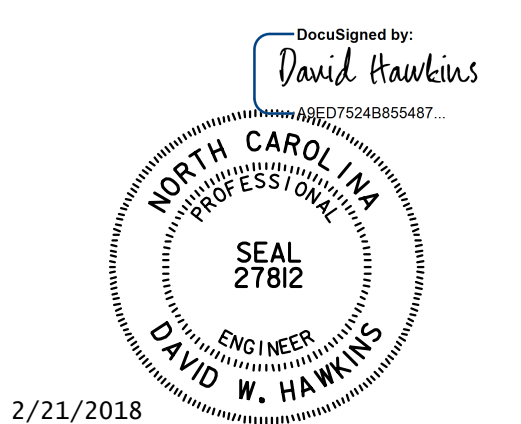
FOR FOUNDATION ELEVATIONS AND DETAILS, SEE PIER AND ABUTMENT DETAILS.

ALL PILES ARE STEEL HP 14x73.

ALL DIMENSIONS TO BATTERED PILES ARE AT BOTTOM OF CAP ELEVATION.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 2 OF 4

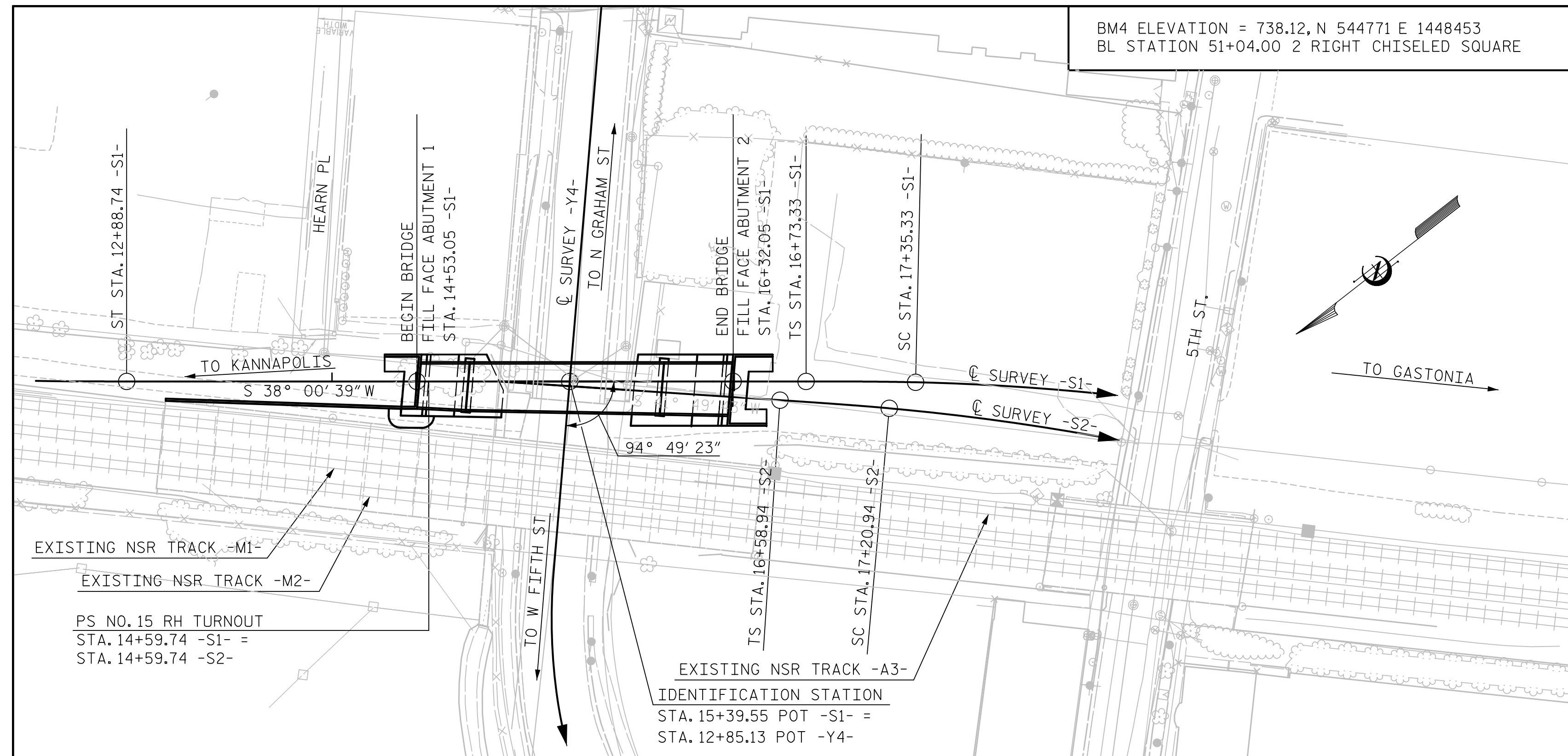


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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOUNDATION LAYOUT
 AND
 FOUNDATION NOTES

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S1-2	
	NO.	BY	DATE	NO.	BY		DATE
	1			3			
DRAWN BY <u>M. WRIGHT</u> DATE <u>11/17</u> CHECKED BY <u>J. WHEATLEY</u> DATE <u>11/17</u> DWG. NO. 2	2			4		TOTAL SHEETS 39	



BM4 ELEVATION = 738.12, N 544771 E 1448453
BL STATION 51+04.00 2 RIGHT CHISELED SQUARE

LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

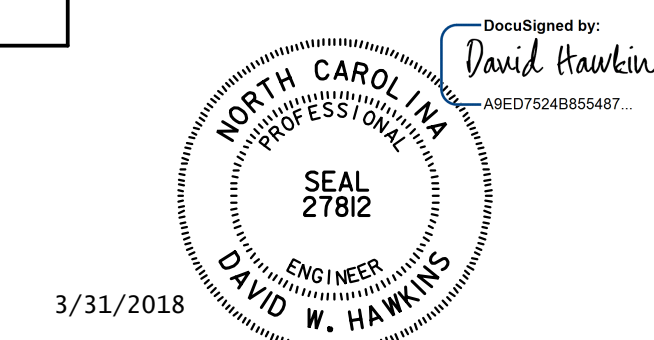
TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 15+39.55 -S1-	6'-0" DIA. DRILLED PIERS IN SOIL	6'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	PDA TESTING	SID INSPECTIONS	SPT TESTING	THERMAL INTEGRITY PROFILER	CSL TESTING	REINFORCED CONCRETE DECK SLAB	CLASS AA CONCRETE	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. 764,875 LBS. STRUCTURAL STEEL	PAINTING OF STRUCTURAL STEEL
	LUMP SUM	L.F.	L.F.	L.F.	EACH	EACH	EACH	EACH	EACH	SQ. FEET	CU. YARDS	LBS.	LBS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	---	---	---	---	---	---	---	---	---	5,132.2	---	---	---	LUMP SUM	LUMP SUM
ABUTMENT 1	---	---	---	---	---	---	---	---	---	---	103.0	10,566	---	---	---
PIER 1	---	93.0	42.0	23.4	---	3	3	3	3	---	71.2	47,859	19,442	---	---
PIER 2	---	103.5	48.0	---	---	3	3	3	3	---	85.8	57,188	22,381	---	---
ABUTMENT 2	---	---	---	---	---	---	---	---	---	---	150.9	15,168	---	---	---
TOTAL	LUMP SUM	196.5	90.0	23.4	2	6	6	6	6	5,132.2	410.9	130,781	41,823	LUMP SUM	LUMP SUM

	HP 14 x 73 STEEL PILES		PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	WATERPROOFING	METHOD B DAMPPROOFING	METAL RAIL (ALUMINUM)	CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES	STRUCTURE DRAINAGE SYSTEM AT STA. 15+39.55 -S1-	APPLICATION OF BRIDGE COATING	ASBESTOS ASSESSMENT
	NO.	L.F.	EACH	SQ. YARDS	SQ. YARDS	L.F.	L.F.	TONS	SQ. YARDS	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	---	---	---	544.5	---	437.7	352.4	---	---	LUMP SUM	LUMP SUM	LUMP SUM	---
ABUTMENT 1	19	665.0	19	9.6	90.7	---	---	145	160	---	---	LUMP SUM	---
PIER 1	---	---	---	---	---	---	---	---	---	---	---	LUMP SUM	---
PIER 2	---	---	---	---	---	---	---	---	---	---	---	LUMP SUM	---
ABUTMENT 2	23	1,226.7	23	13.4	123.3	---	---	220	245	---	---	LUMP SUM	---
TOTAL	42	1,891.7	42	567.5	214.0	437.7	352.4	365	405	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 3 OF 4



3/31/2018

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

LOCATION SKETCH AND
 TOTAL BILL OF MATERIAL

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S1-3	
	NO.	BY	DATE	NO.	BY		DATE
	1		8/17	3			
DRAWN BY <u>M. WRIGHT</u> DATE <u>8/17</u> CHECKED BY <u>D. HAWKINS</u> DATE <u>12/17</u>	DWG. NO. 3					TOTAL SHEETS 39	

0012DEL_P28
1002ADD_P28

GENERAL NOTES:

ASSUMED LIVE LOAD = AREMA E80 OR ALTERNATE LIVE LOAD

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 16TH EDITION OF AREMA'S MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES", AND NORFOLK SOUTHERN CORPORATION'S "GUIDELINES FOR DESIGN OF GRADE SEPARATED STRUCTURES UNDERPASS GRADE SEPARATION DESIGN CRITERIA".

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AREMA MANUAL FOR RAILWAY ENGINEERING, VOL. 2, CH. 9, "SEISMIC DESIGN FOR RAILWAY".

REINFORCING STEEL SHALL BE ASTM DESIGNATION A615, GRADE 60. ALL DIMENSIONS RELATING TO BAR SPACING ARE TO BAR CENTERS UNLESS NOTED. FABRICATION TO BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE", A.C.I. 315-80. ALL REINFORCING IN THE CONCRETE DECK SLAB AND PARAPETS SHALL BE EPOXY COATED.

EXPANSION JOINT MATERIAL SHALL BE EITHER RUBBER OR CORK CONFORMING WITH AASHTO SPECIFICATIONS M-153-84 EXCEPT AS SHOWN ON THE PLANS OR IN THE SPECIAL PROVISIONS. CELLULAR AND BULB TYPE WATERSTOPS AND RUBBER JOINT COMPOUNDS SHALL BE AS SHOWN ON THE PLANS AND IN THE SPECIAL PROVISIONS.

STRUCTURE DRAINAGE SYSTEM: METAL DRAINS BEHIND ABUTMENTS AND IN BALLAST TROUGH OF BRIDGE, INCLUDING DUCTILE IRON PIPE COLLECTOR SYSTEM, SHALL BE AS SHOWN ON THE PLANS AND OUTLINED IN THE SPECIAL PROVISIONS. DETAILS OF THE DRAINAGE SYSTEM SHALL BE SUBMITTED TO THE CHIEF ENGINEER BRIDGES AND STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, GA. FOR APPROVAL.

DAMPPOOFING: ~~PIER COLUMNS UP TO GROUND LINE~~ BACK OF BACKWALLS AND ABUTMENT SEATS, AND BACK OF WINGS SHALL BE DAMPPOOFED WITH METHOD "B" DAMPPOOFING.

WATERPROOFING: BRIDGE DECK AND ALL CONSTRUCTION JOINTS WHICH WILL BE COVERED BY FILL SHALL BE WATERPROOFED WITH A COLD LIQUID-APPLIED ELASTOMERIC MEMBRANE. FOR WATERPROOFING, SEE SPECIAL PROVISIONS.

WATERPROOFING IS REQUIRED AT THE FOLLOWING LOCATIONS:

1. BRIDGE DECK AND INSIDE OF CONCRETE PARAPET AS SHOWN ON "SUPERSTRUCTURE - TYPICAL SECTION" SHEET.
2. ~~ALONG FULL CIRCUMFERENCE OF EACH BOTTOM OF COLUMN TO TOP OF DRILLED PIER INTERFERENCE.~~
3. ALONG FILL FACE OF HORIZONTAL CONSTRUCTION JOINT AT TOP OF FOOTING ELEVATION AT EACH ABUTMENT.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", JANUARY 2018, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (HEREIN CALLED STANDARD SPECIFICATIONS), EXCEPT AS NOTED HEREIN, ELSEWHERE ON PLANS, OR IN THE SPECIAL PROVISIONS (STRUCTURAL STEEL IN ACCORDANCE WITH CURRENT AREMA SPECIFICATIONS).

ALL CONCRETE SHALL BE 4,500 PSI CLASS AA CONCRETE WITH NO. 57 OR 67 COARSE AGGREGATE AND SHALL BE AIR-ENTRAINED. MINIMUM CEMENT CONTENT PER CUBIC YARD OF CONCRETE SHALL BE 6.5 BAGS. NO SUBSTITUTION OF FLYASH, BLAST FURNACE SLAG OR OTHER MATERIAL WILL BE PERMITTED IN MEETING THIS MINIMUM CEMENT REQUIREMENT. CHAMFER ALL EXPOSED EDGES AND CORNERS 3/4 " EXCEPT AS NOTED. THE USE OF GROUND GRANULATED BLAST FURNACE SLAG IS NOT PERMITTED IN THIS STRUCTURE.

CONTROL OF WORK: ALL WORK INVOLVED IN THE CONSTRUCTION OF THE RAILWAY STRUCTURE SHALL BE PERFORMED SATISFACTORY TO THE ENGINEER AND COMPLIANT WITH THE DESIGN STANDARDS OF NORFOLK SOUTHERN RAILWAY COMPANY. ALL METHODS OF HANDLING THE WORK AFFECTING THE SAFETY OF RAIL OPERATIONS MUST BE APPROVED BY THE RAILWAY COMPANY, AS A SUBMITTAL THROUGH THE ENGINEER, AT LEAST 2 WEEKS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. RAIL TRAFFIC SHALL, AT ALL TIMES, BE MAINTAINED AND PROTECTED. THE CONTRACTOR SHALL NOT AT ANY TIME DELAY OR INTERFERE WITH RAIL OPERATIONS.

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

FOR METAL RAIL (ALUMINUM), SEE SPECIAL PROVISIONS.

FOR SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

FOR CONDUIT IN PARAPETS, SEE SPECIAL PROVISIONS.

FOR PORTLAND CEMENT, SEE SPECIAL PROVISIONS.

FOR FINE AND COARSE AGGREGATE, SEE SPECIAL PROVISIONS.

SEE "STRUCTURAL STEEL DETAILS" SHEET FOR STRUCTURAL STEEL NOTES.

FOR BACKFILL BEHIND ABUTMENTS AND OTHER BACKFILL AROUND THE STRUCTURE, SEE SPECIAL PROVISION "BACKFILLING AROUND STRUCTURES".

FOR PAINTING STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR WATERSTOPS, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC FLASHING, SEE SPECIAL PROVISIONS.

FOR RUBBER JOINT COMPOUNDS, SEE SPECIAL PROVISIONS.

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR RAILROAD TRACKWORK, SEE RAILROAD TRACKWORK PLANS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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.

FOR CONCRETE PARAPET, SEE SPECIAL PROVISIONS.

FOR WATERPROOFING, SEE SPECIAL PROVISIONS.

ALL BAR SUPPORTS AND ALL INCIDENTAL REINFORCING STEEL USED IN THE DECK AND PARAPET SHALL BE EPOXY COATED IN ACCORDANCE WITH THE NCDOT STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON THE DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 42+64.46 -A1-".

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

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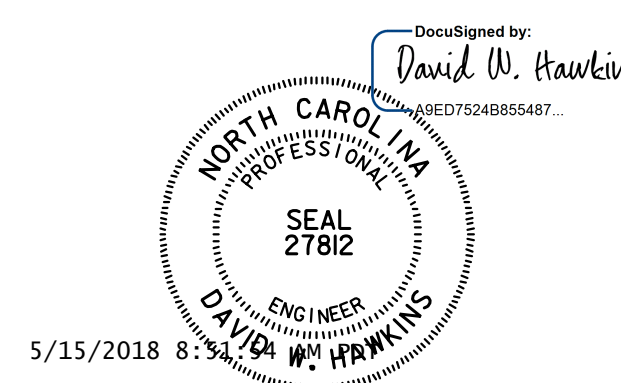
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

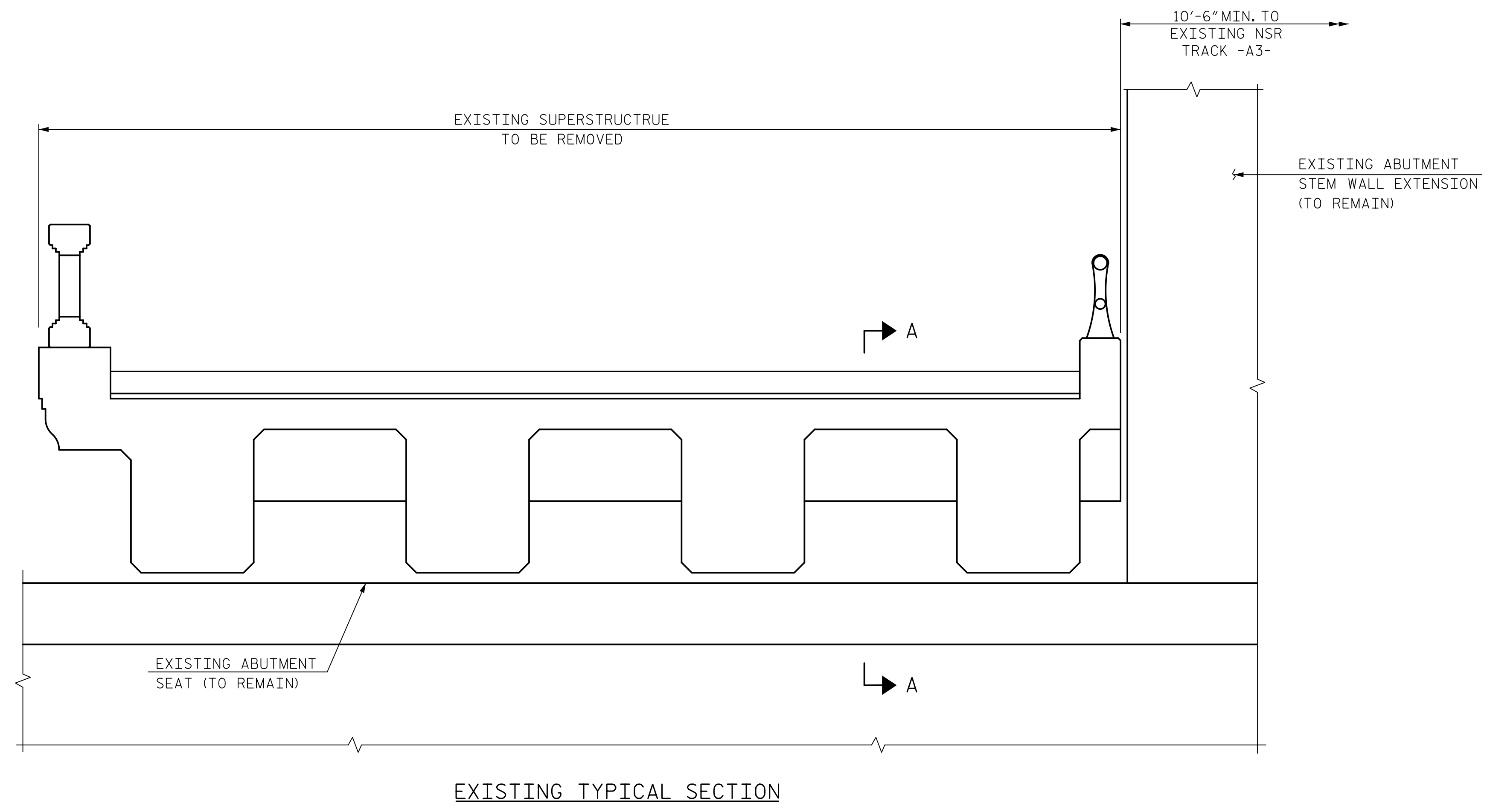
GENERAL DRAWING

GENERAL NOTES



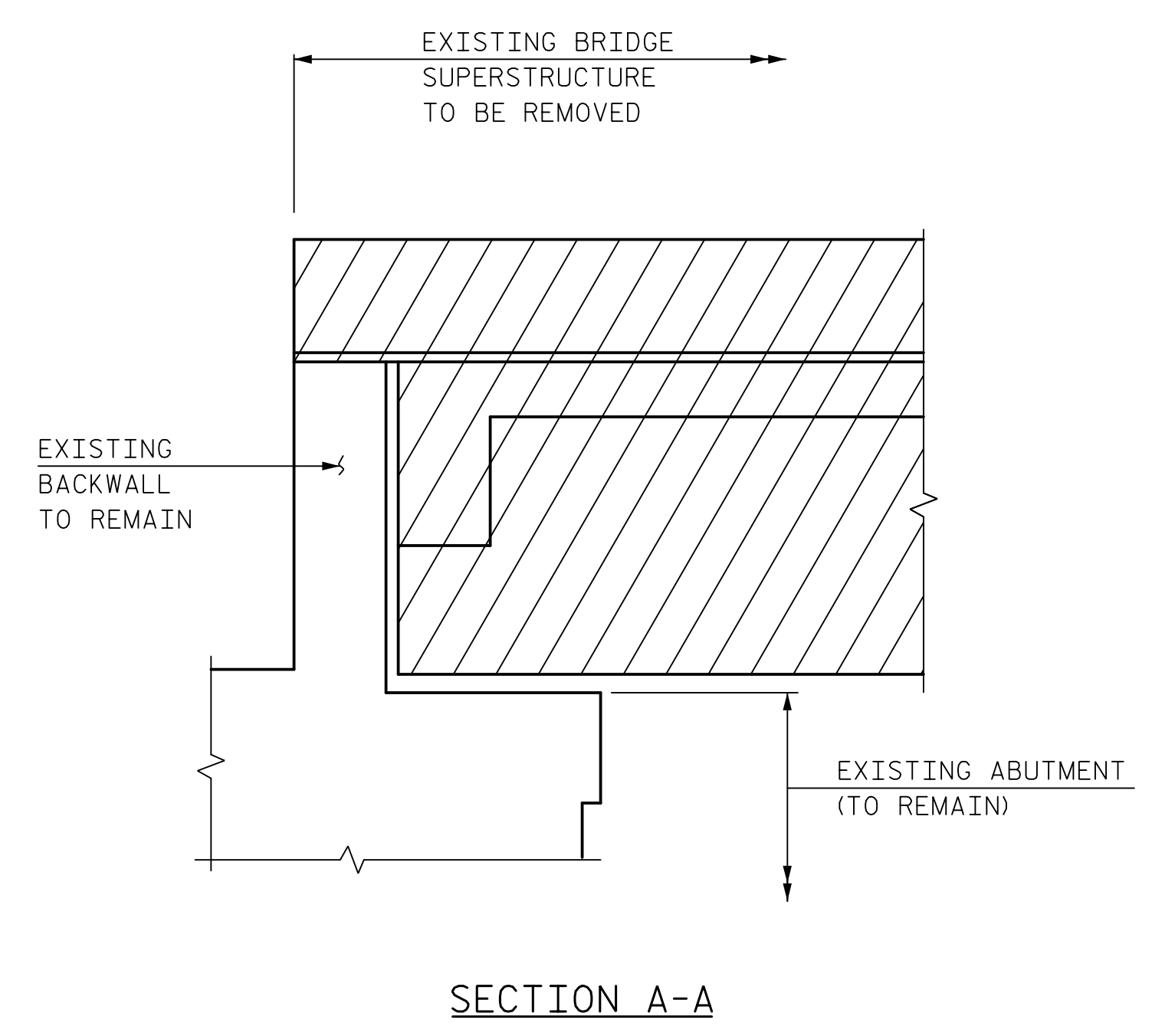
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DRAWN BY	M. WRIGHT	DATE	8/17	NO.	BY	DATE	S1-4	
CHECKED BY	D. HAWKINS	DATE	9/17	1	DWH	5/15/18	TOTAL SHEETS	
		DWG. NO. 4		2			39	



- CONSTRUCTION SEQUENCE**
1. REMOVE EXISTING SUPERSTRUCTURE TO LIMITS SHOWN.
 2. RAISE EXISTING BACKWALL AS SHOWN IN PLANS.
 3. INSTALL PROPOSED ABUTMENT AND PIER SUBSTRUCTURE.
 4. PLACE RIP-RAP SLOPE PROTECTION AND SUPERSTRUCTURE. TRACK CONTRACTOR TO CONSTRUCT TRACK AND OPEN TO RAIL TRAFFIC.

NOTES:
 FOR BACKWALL EXTENSION DETAILS AND PROPOSED TYPICAL SECTION, SEE "SEQUENCE OF CONSTRUCTION" SHEET 2 OF 2.

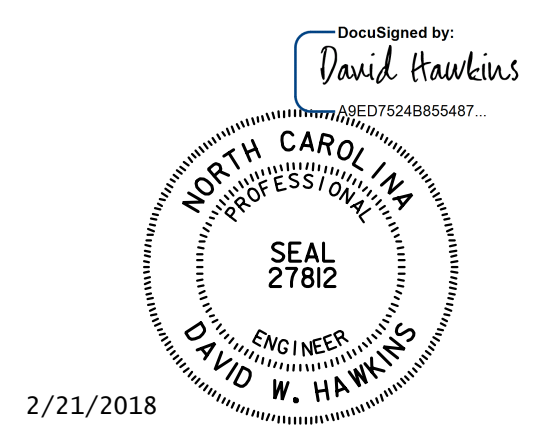


PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SEQUENCE OF CONSTRUCTION

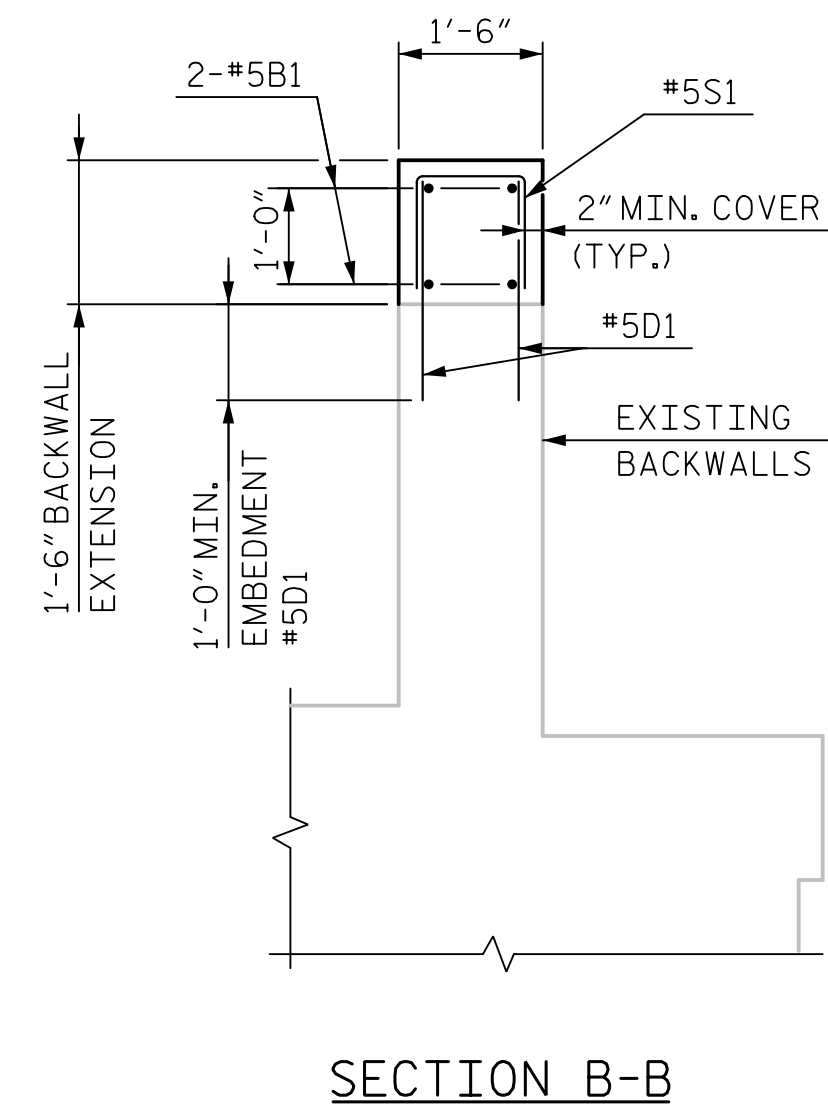
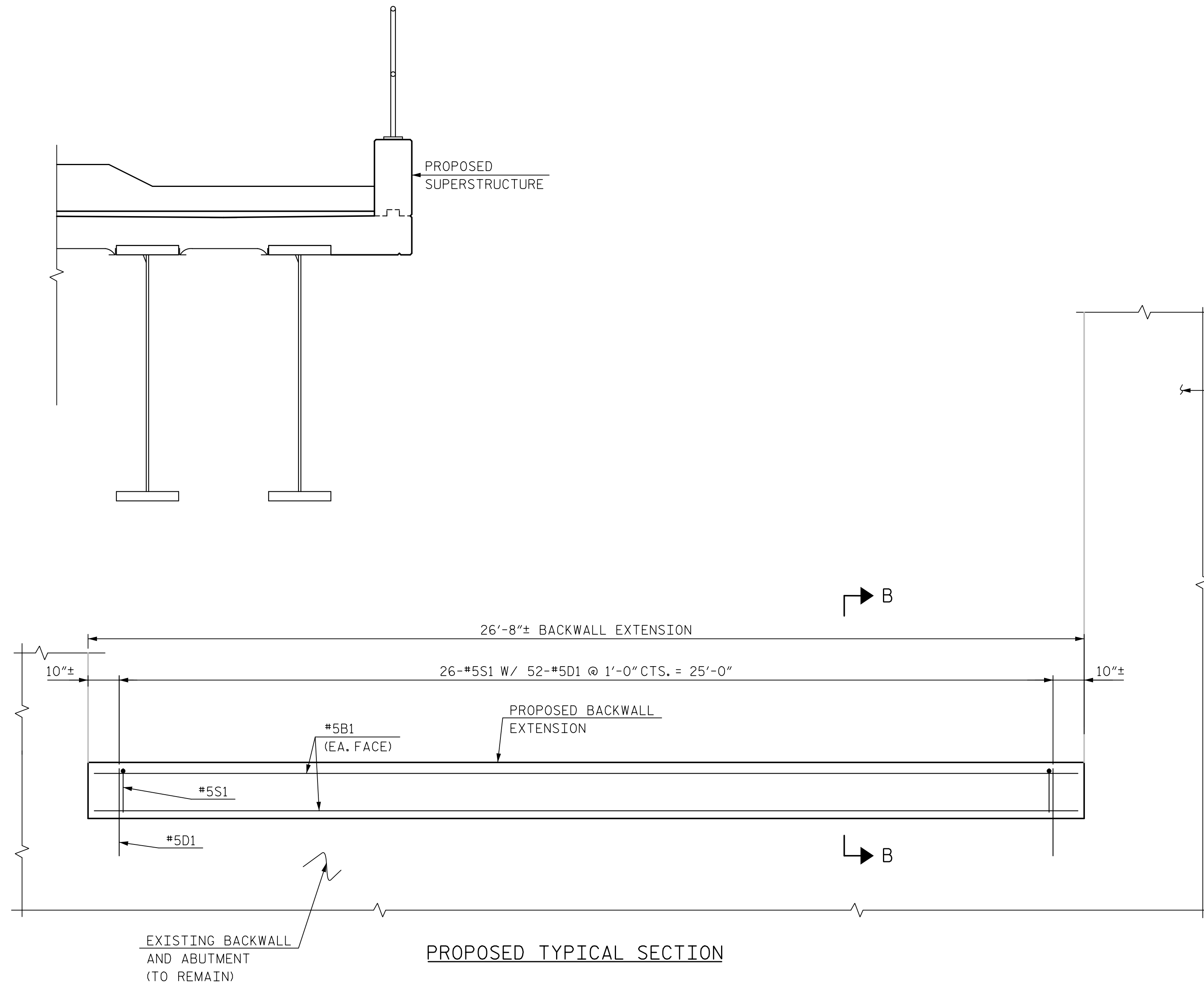


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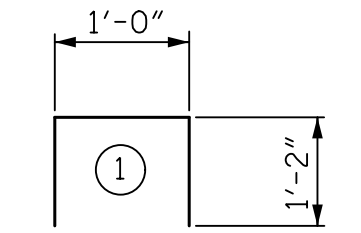
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 CHECKED BY D. HAWKINS DATE 12/17 DWG. NO. 5

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-5
1			3			TOTAL SHEETS
2			4			39



BAR TYPES



BILL OF MATERIAL

BACKWALL EXTENSION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	5	STR	26'-4"	110
D1	52	5	STR	2'-4"	127
S1	26	5	1	3'-4"	90

QUANTITIES

ITEM	TOTAL
REINFORCING STEEL:	
BACKWALL EXT. - EXISTING ABUT 1	LBS 327
BACKWALL EXT. - EXISTING ABUT 2	LBS 327
CLASS AA CONCRETE:	
BACKWALL EXT. - EXISTING ABUT 1	C.Y. 2.2
BACKWALL EXT. - EXISTING ABUT 2	C.Y. 2.2

NOTES:

PAYMENT FOR BACKWALL EXTENSION SHALL BE INCLUDED IN THE LUMP SUM COST FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 15+39.55 -S1-".

THE CONTRACTOR SHALL USE AN ADHESIVE ANCHOR SYSTEM FOR THE #5D1 DOWELS IN THE BACKWALL EXTENSION. NO FIELD TESTING IS REQUIRED. THE YIELD LOAD FOR THE #5D1 DOWELS IS 18.6 KIPS. ADHESIVE ANCHOR SYSTEM SHALL DEVELOP 125% OF THE YIELD LOAD OF THE BAR. FOR ADHESIVELY ANCHORED DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

THE TOP SURFACE OF THE EXISTING BACKWALLS SHALL BE FREE OF DEBRIS AND UNSOUND CONCRETE PRIOR TO PLACEMENT OF BACKWALL EXTENSION.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

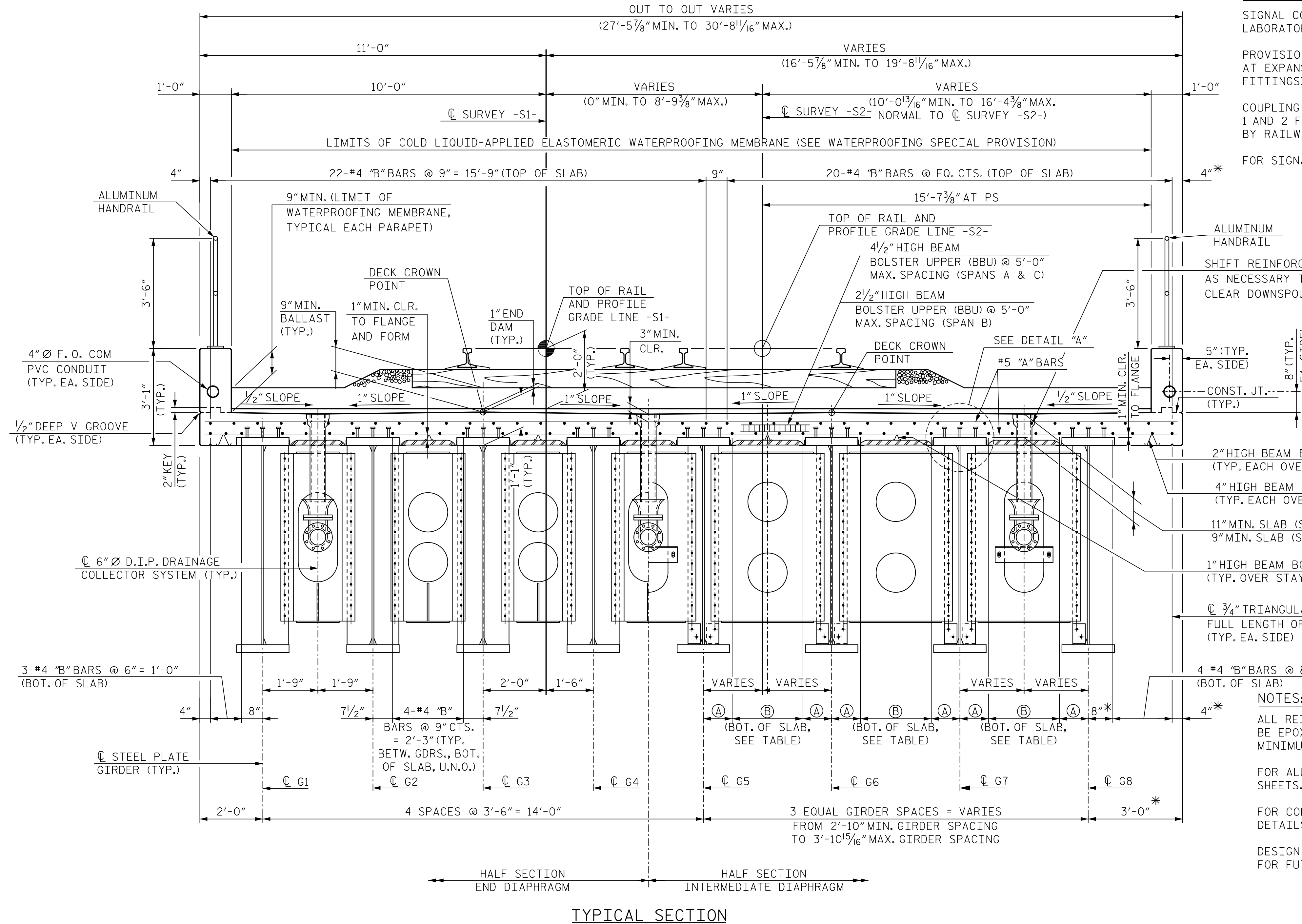
SEQUENCE OF
 CONSTRUCTION



2/21/2018

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DRAWN BY <u>M. WRIGHT</u>	DATE <u>12/17</u>	NO.	BY	DATE			
CHECKED BY <u>D. HAWKINS</u>	DATE <u>12/17</u>	1			3		
		2			4		
						TOTAL SHEETS	
						39	

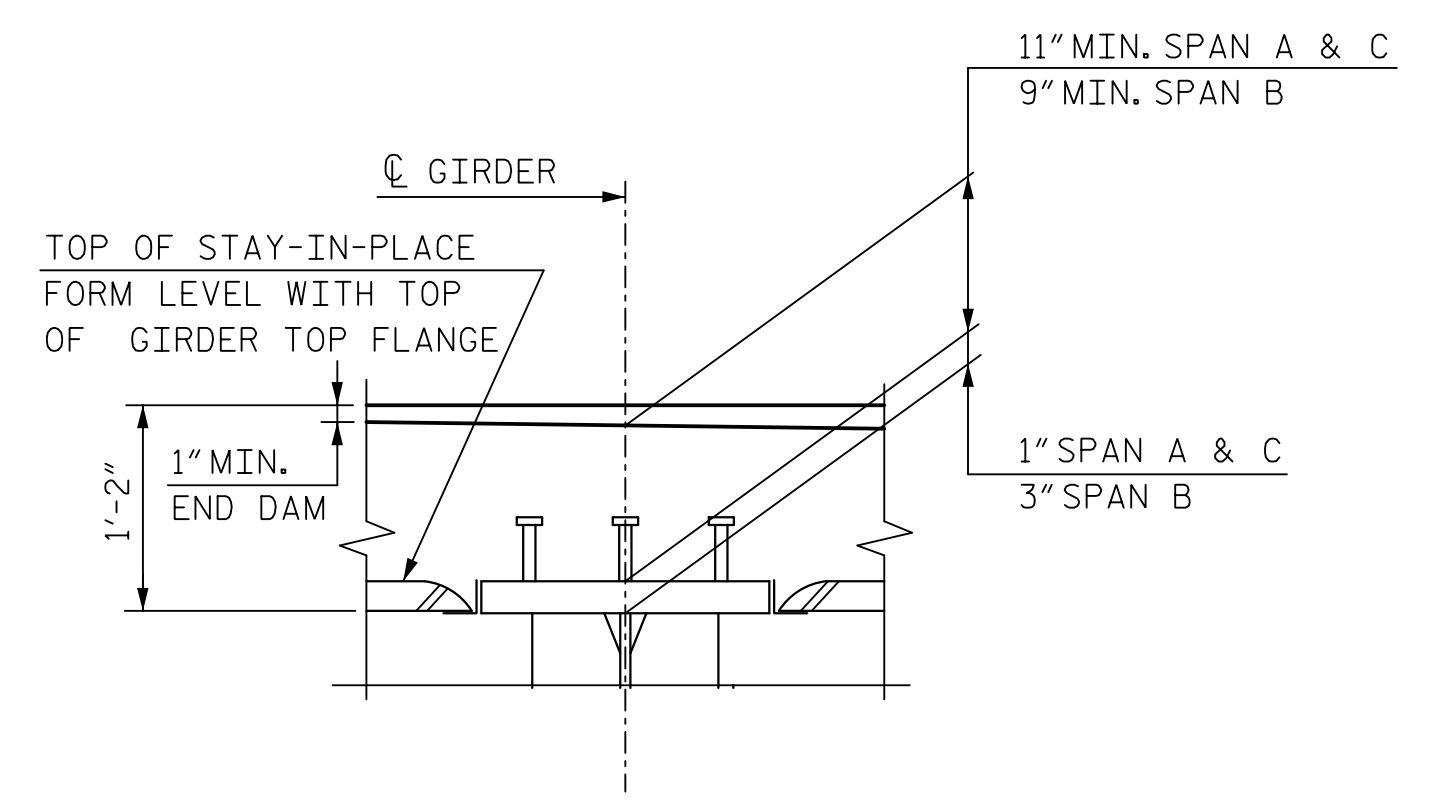


NOTES FOR SIGNAL CONDUIT IN PARAPET
 SIGNAL CONDUIT TO BE 4" DIA. IN ACCORDANCE WITH UNDERWRITER'S LABORATORY SPECIFICATIONS.
 PROVISIONS SHALL BE MADE FOR EXPANSION BETWEEN DECK SLABS AT EXPANSION JOINTS AT PIERS 1 & 2 (GALVANIZED EXPANSION FITTINGS).
 COUPLING SHALL BE PROVIDED BEHIND BACKWALL OF ABUTMENT 1 AND 2 FOR CONNECTION TO 4" DIA. RIGID PIPE (RIGID PIPE BY RAILWAY COMPANY).
 FOR SIGNAL CONDUIT IN PARAPET SEE PROJECT SPECIAL PROVISIONS.

* NORMAL TO RIGHT EDGE OF DECK

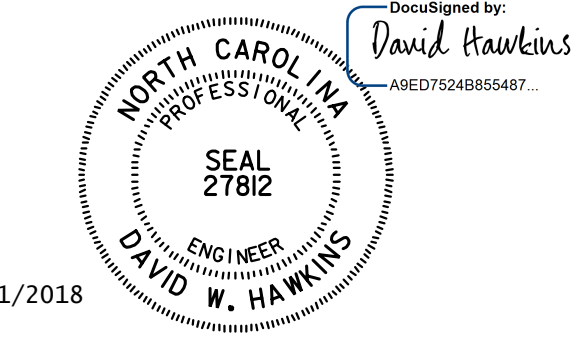
NOTES:
 ALL REINFORCING STEEL IN THE DECK AND PARAPETS SHALL BE EPOXY COATED. CLEAR COVER TO ALL REINFORCING IS 2" MINIMUM UNLESS NOTED OTHERWISE.
 FOR ALUMINUM HANDRAIL DETAILS, SEE "METAL HANDRAIL DETAILS" SHEETS.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEET.
 DESIGN INCLUDES WEIGHT OF 6" ADDITIONAL BALLAST TO ACCOUNT FOR FUTURE RESURFACING OF TRACK.

TYPICAL SECTION



DETAIL "A"

SPAN	(A)	(B) (FLARED BAY)
A	7 1/2"	4-#4B1 BARS @ EQ. CTS.
B	7 1/2"	4-#4 "B" BARS @ EQ. CTS.
C	4"	6-#4 "B" BARS @ EQ. CTS.

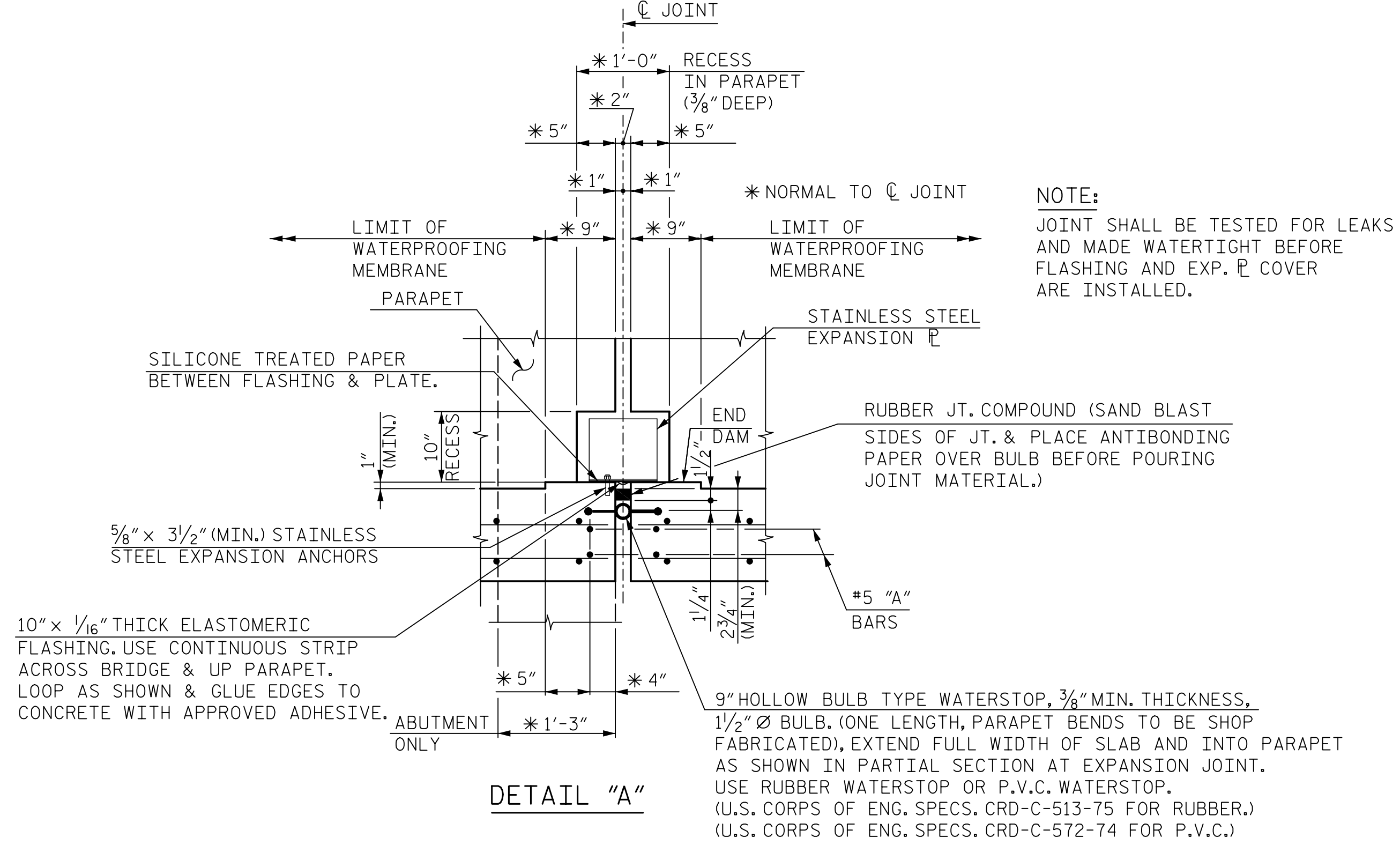
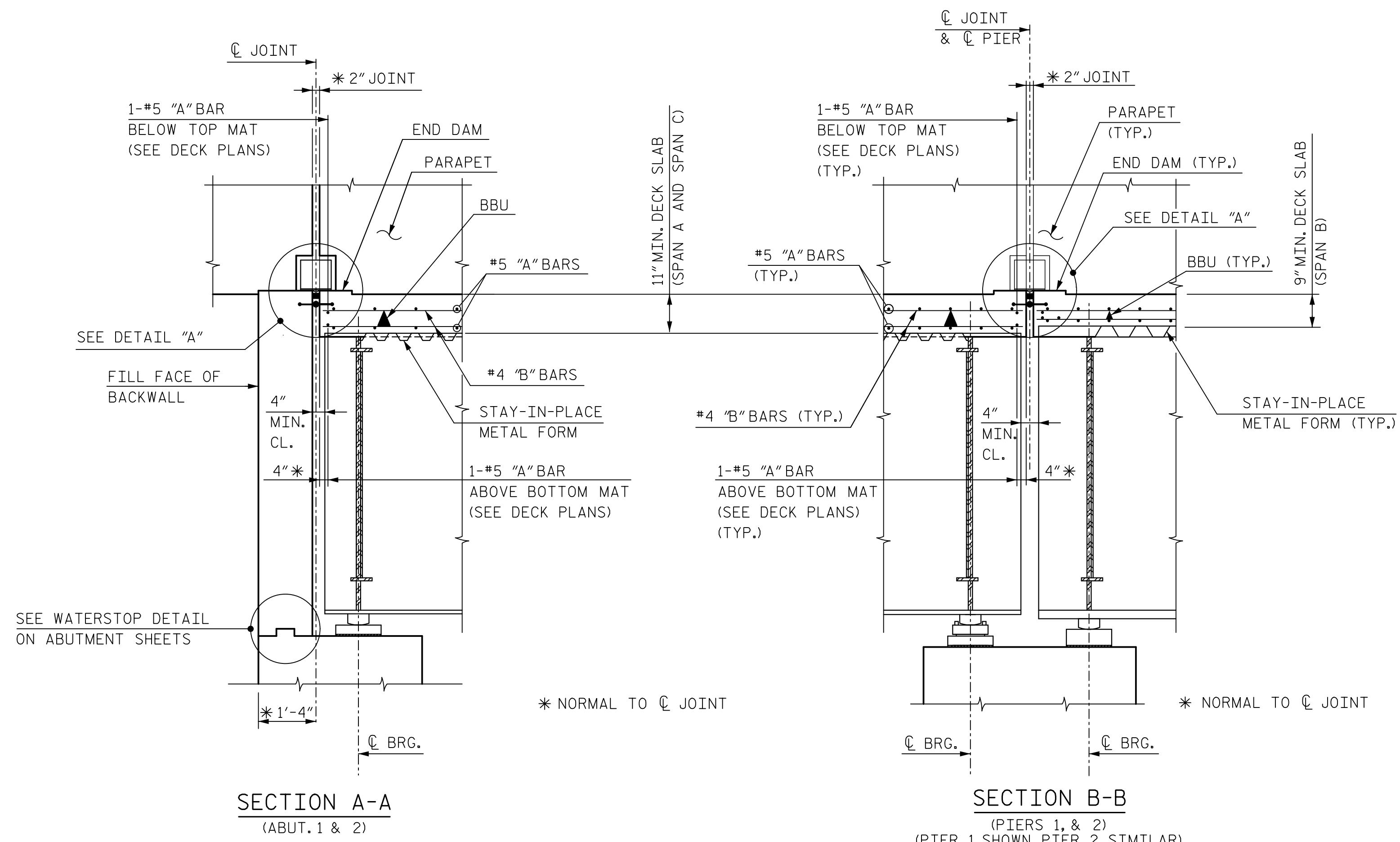


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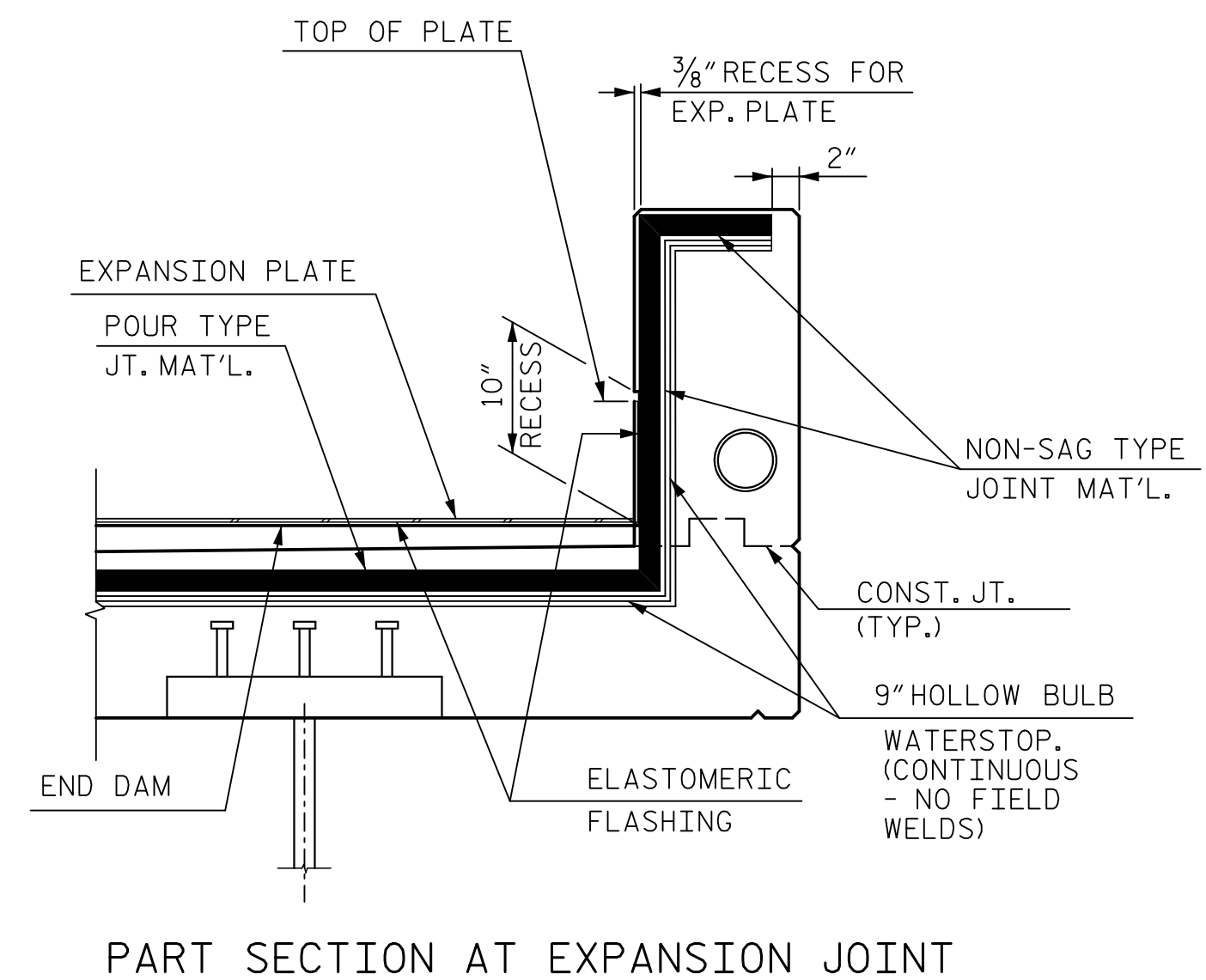
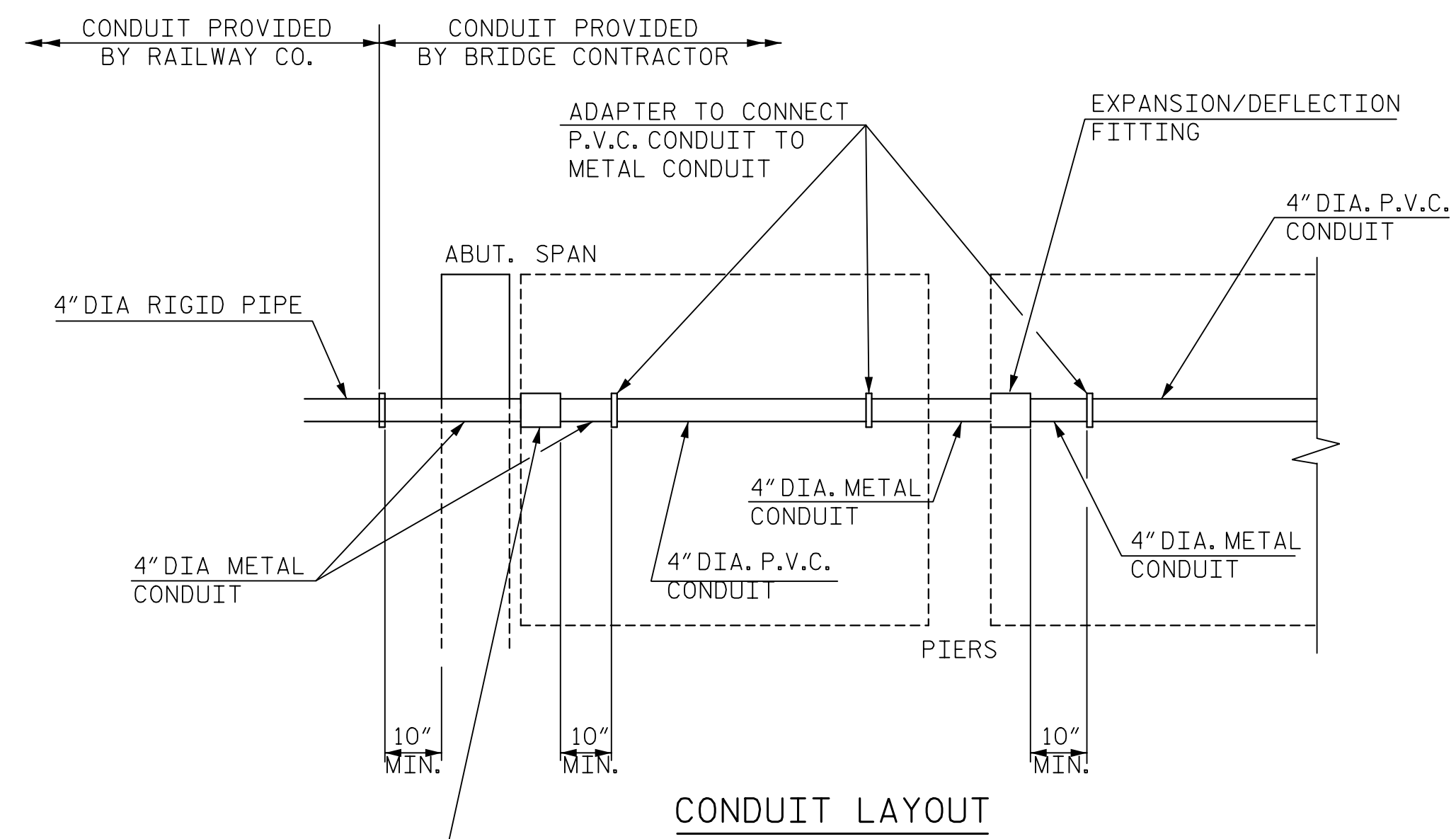
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTIONS

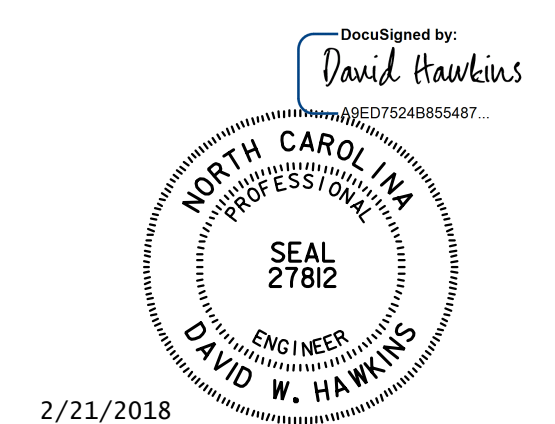
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	DRAWN BY: M. WRIGHT CHECKED BY: V. KOLLIPARA	DATE: 9/17 DATE: 9/17	NO. 3 NO. 4	BY DATE	



NOTE:
JOINT SHALL BE TESTED FOR LEAKS AND MADE WATERTIGHT BEFORE FLASHING AND EXP. PLATE COVER ARE INSTALLED.



NOTE: FOR ADDITIONAL PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEET.

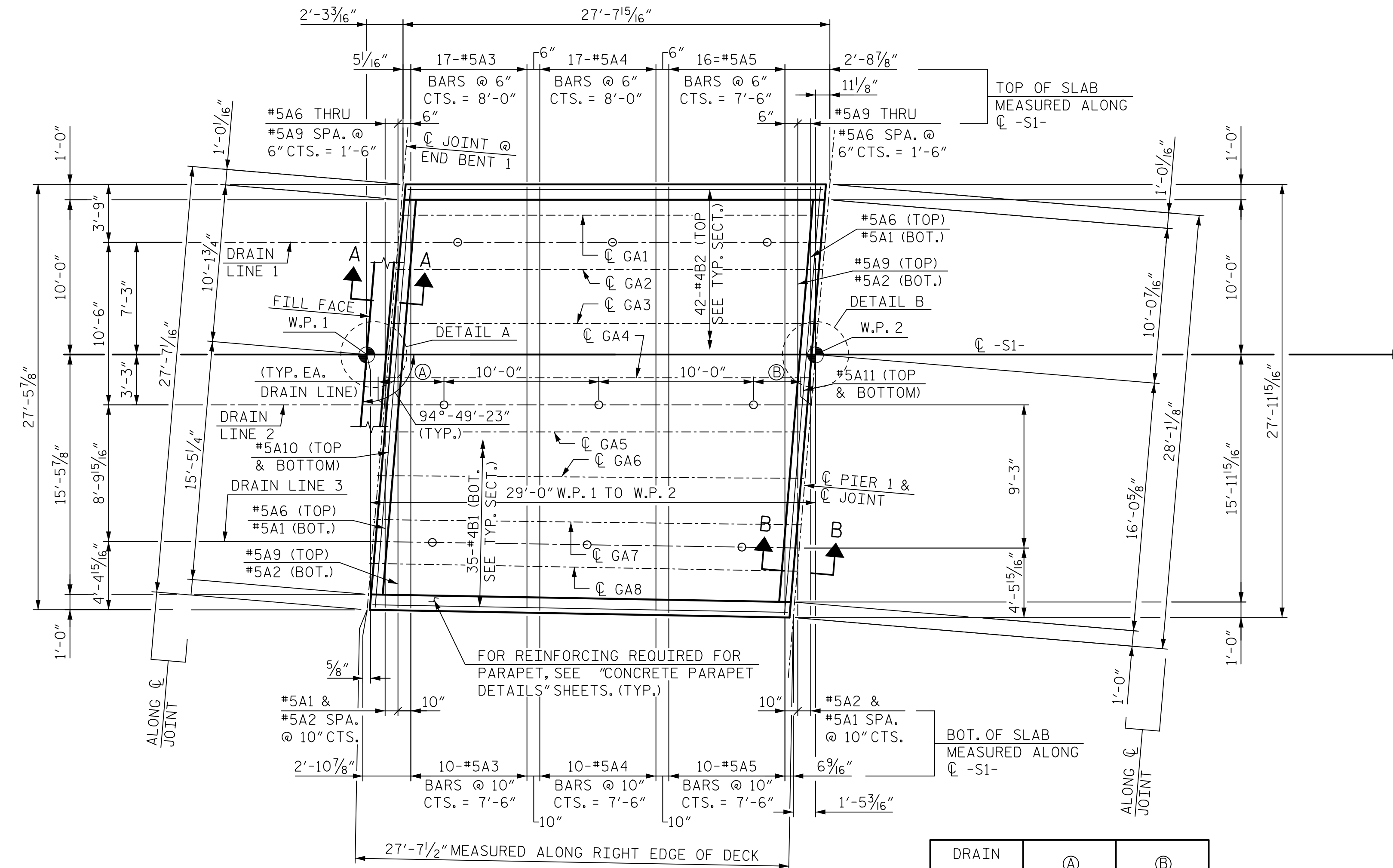


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PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

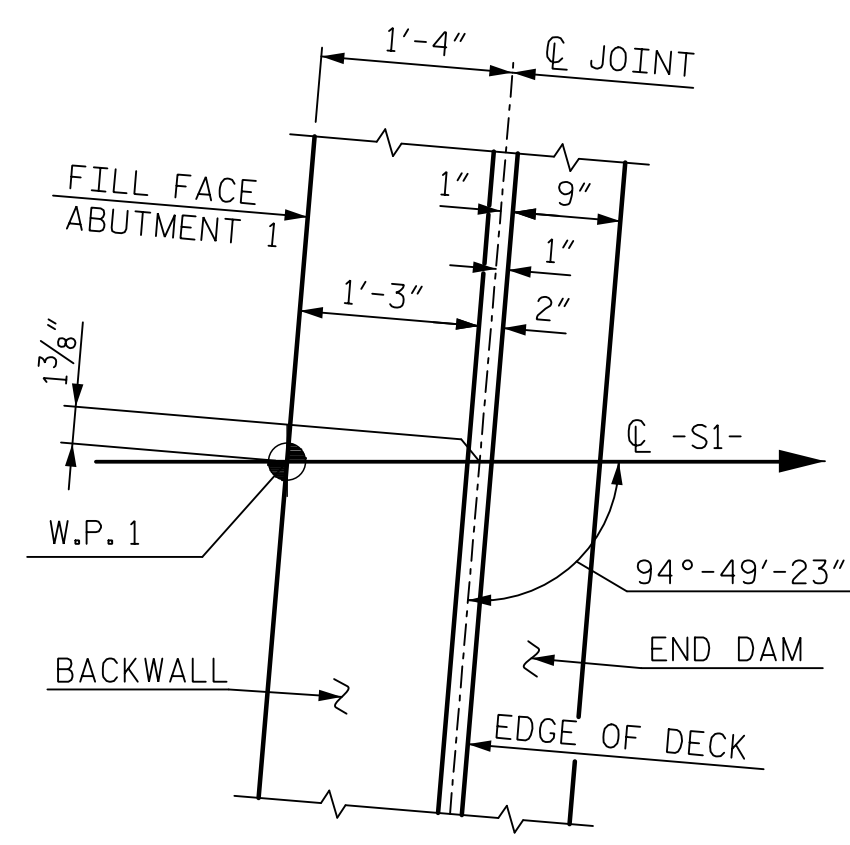
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DECK DETAILS

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	DRAWN BY: <u>M. WRIGHT</u> CHECKED BY: <u>V. KOLLIPARA</u>	DATE: <u>9/17</u> DATE: <u>9/17</u>	DWG. NO. <u>8</u>	NO. <u>1</u> BY <u></u> DATE <u></u>	NO. <u>3</u> BY <u></u> DATE <u></u>	NO. <u>4</u> BY <u></u> DATE <u></u>	

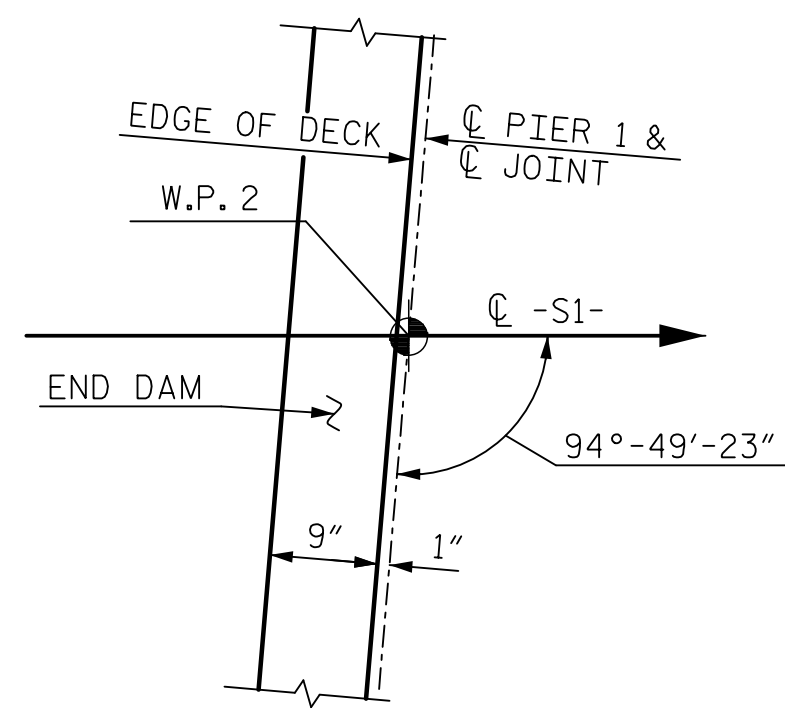


PLAN - SPAN A

DRAIN LINE	A	B
1	3'-11 3/16"	3'-8 3/4"
2	3'-11 3/16"	3'-8 3/4"
3	3'-11 1/8"	3'-8 7/16"



DETAIL A

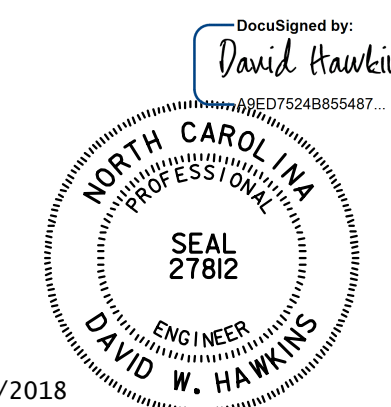


DETAIL B

NOTES:

- ALL REINFORCING SHALL BE EPOXY COATED.
- FOR SECTION A-A & B-B SEE "SUPERSTRUCTURE DETAILS" SHEET.
- FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "STRUCTURE DRAINAGE DETAILS", SHEET 4 OF 4.
- FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEET.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-



2/21/2018

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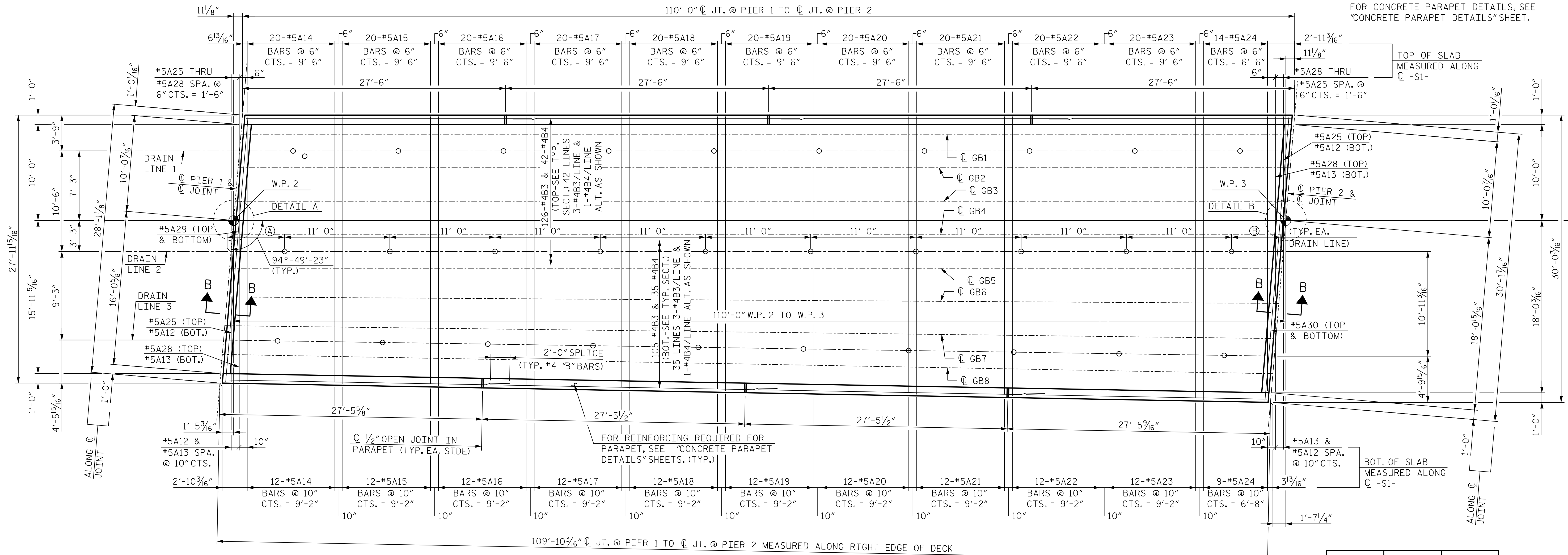
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN A

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NO.	BY	DATE	NO.	BY	DATE		S1-9	
1	M. WRIGHT	9/17	3				TOTAL SHEETS	
2	V. KOLLIPARA	9/17	4				39	

DRAWN BY: M. WRIGHT DATE: 9/17
 CHECKED BY: V. KOLLIPARA DATE: 9/17
 DWG. NO. 9

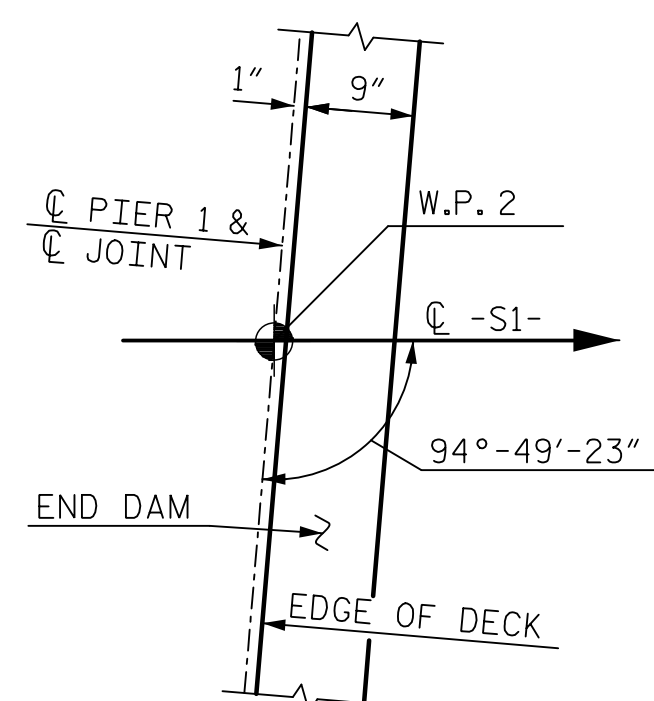
NOTES:

- ALL REINFORCING SHALL BE EPOXY COATED.
- FOR SECTION B-B SEE "SUPERSTRUCTURE DETAILS" SHEET.
- FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "STRUCTURE DRAINAGE DETAILS", SHEET 4 OF 4.
- FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEET.

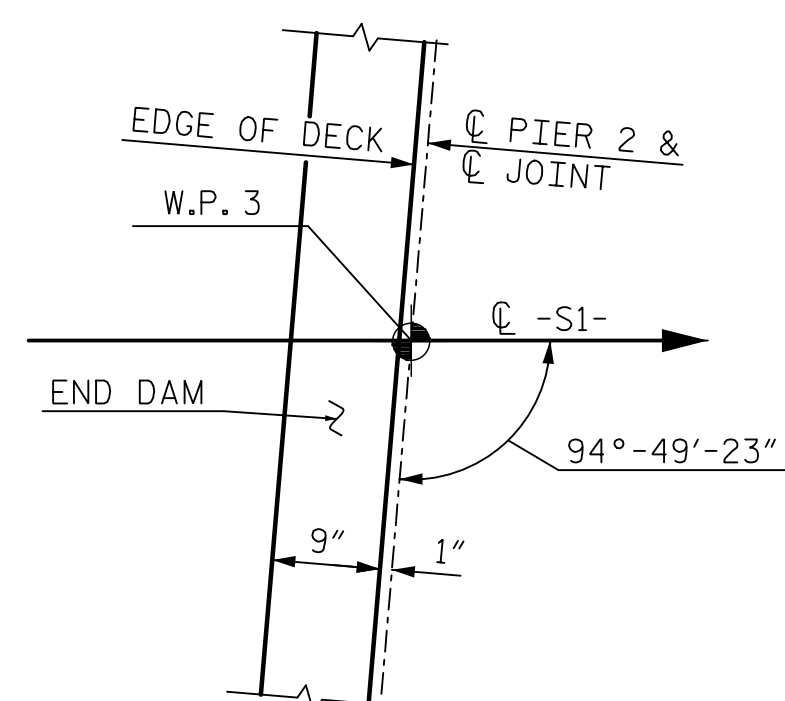


PLAN - SPAN B

DRAIN LINE	A	B
1	5'-7 ¹ / ₄ "	5'-4 ³ / ₄ "
2	5'-7 ¹ / ₄ "	5'-4 ³ / ₄ "
3	5'-7 ⁹ / ₁₆ "	5'-2 ⁷ / ₈ "

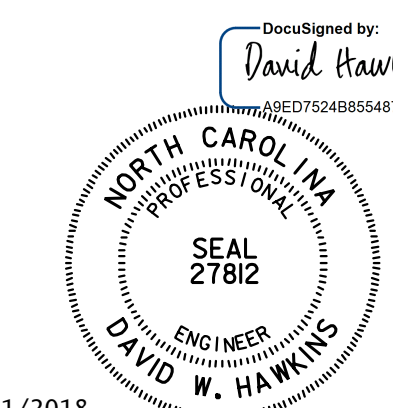


DETAIL A



DETAIL B

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-



2/21/2018

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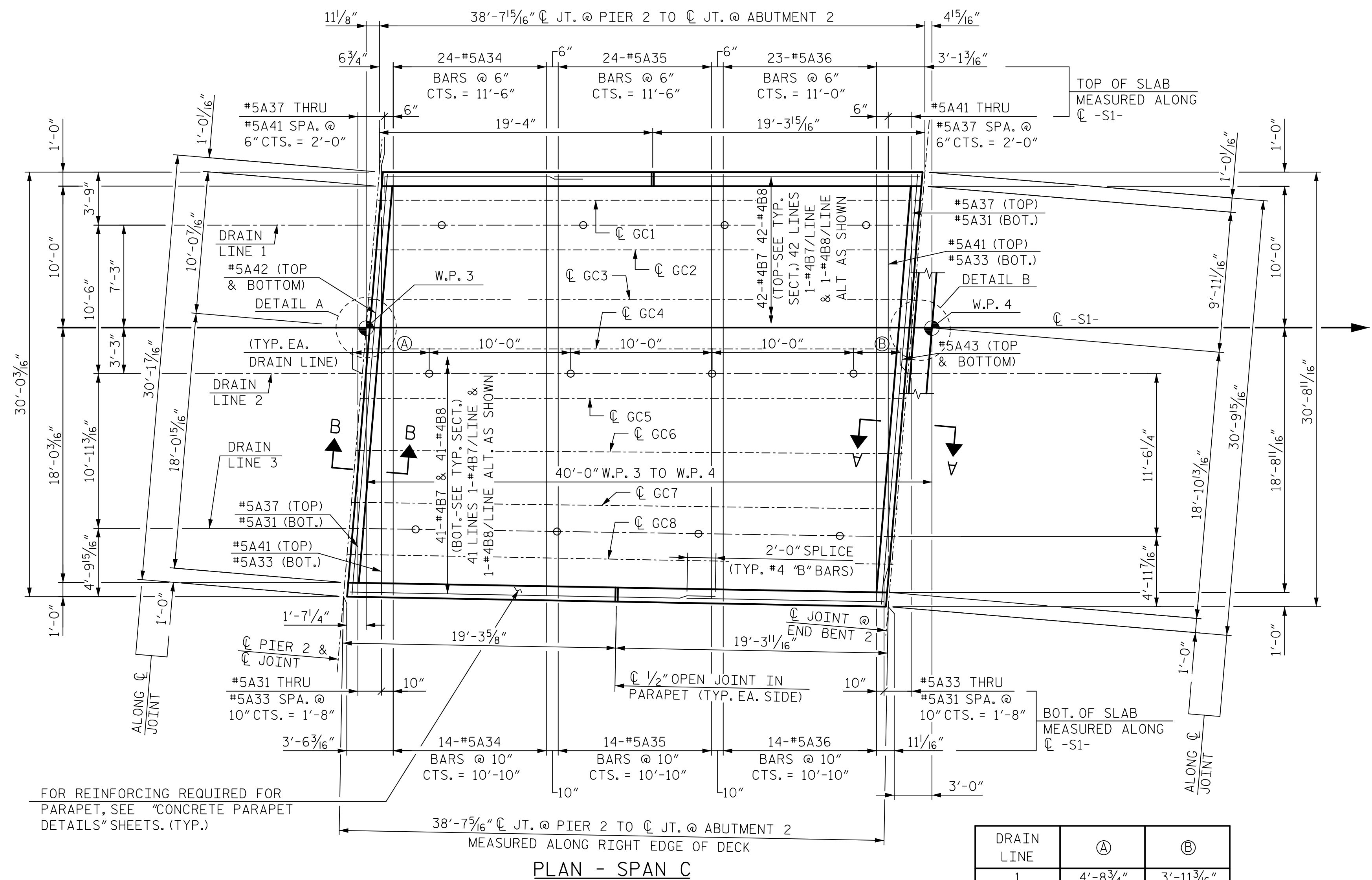
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN B

NO.	BY	DATE	REVISIONS			SHEET NO.
			NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			39

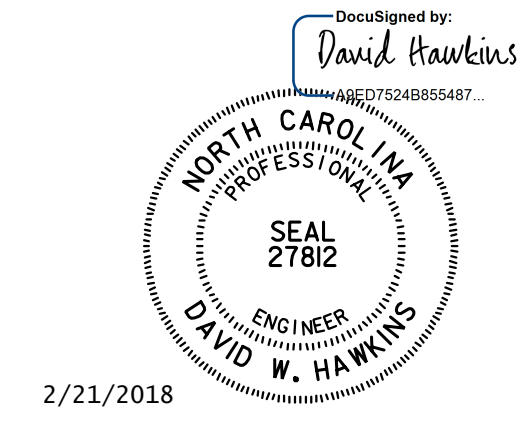
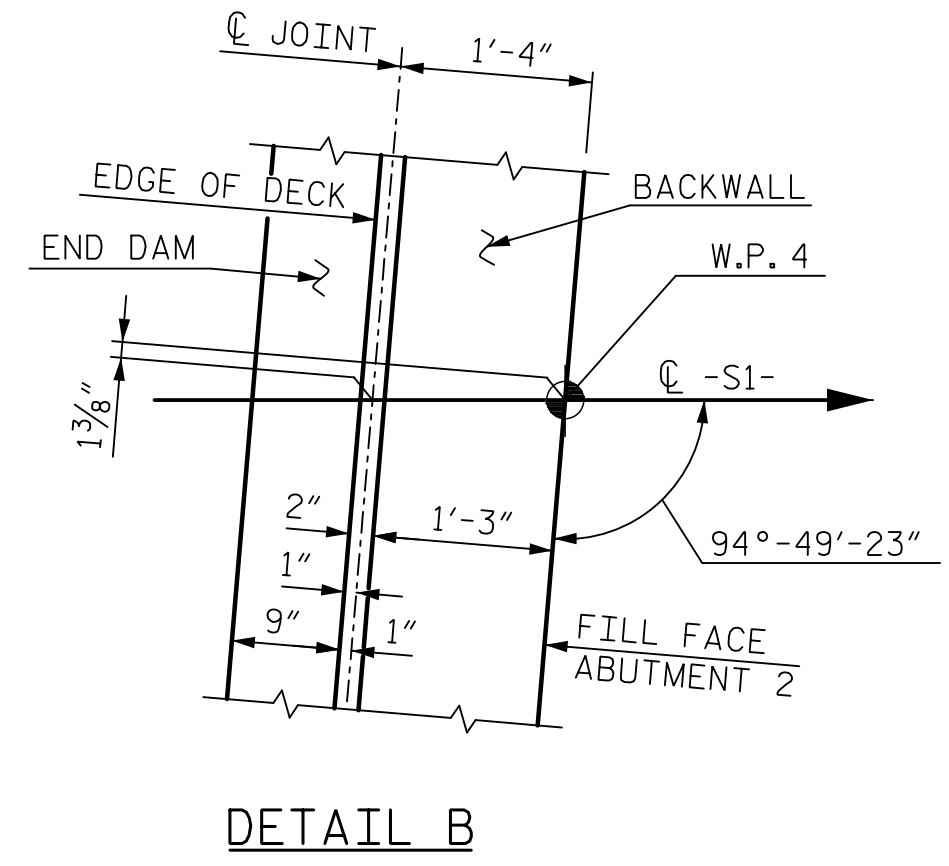
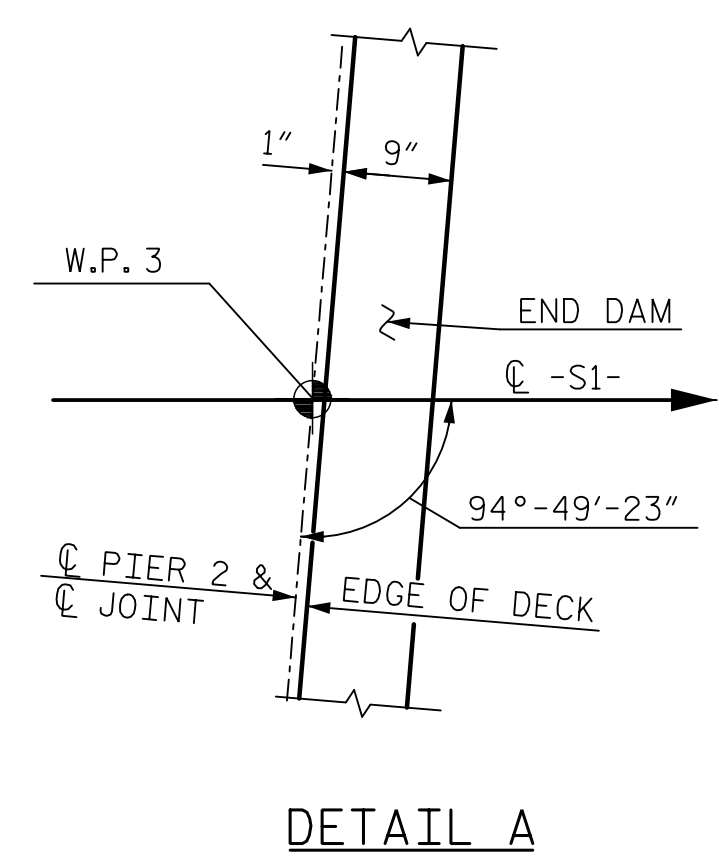
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DRAWN BY M. WRIGHT DATE 9/17
 CHECKED BY V. KOLLIPARA DATE 9/17 DWG. NO. 10

NOTES:
 ALL REINFORCING SHALL BE EPOXY COATED.
 FOR SECTION A-A & B-B SEE "SUPERSTRUCTURE DETAILS" SHEET.
 FOR DECK DRAINAGE DETAIL SEE DETAIL "B" ON "STRUCTURE DRAINAGE DETAILS", SHEET 4 OF 4.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEET.



DRAIN LINE	(A)	(B)
1	4'-8 3/4"	3'-11 3/16"
2	4'-8 3/4"	3'-11 3/16"
3	4'-8 5/16"	3'-11 1/16"



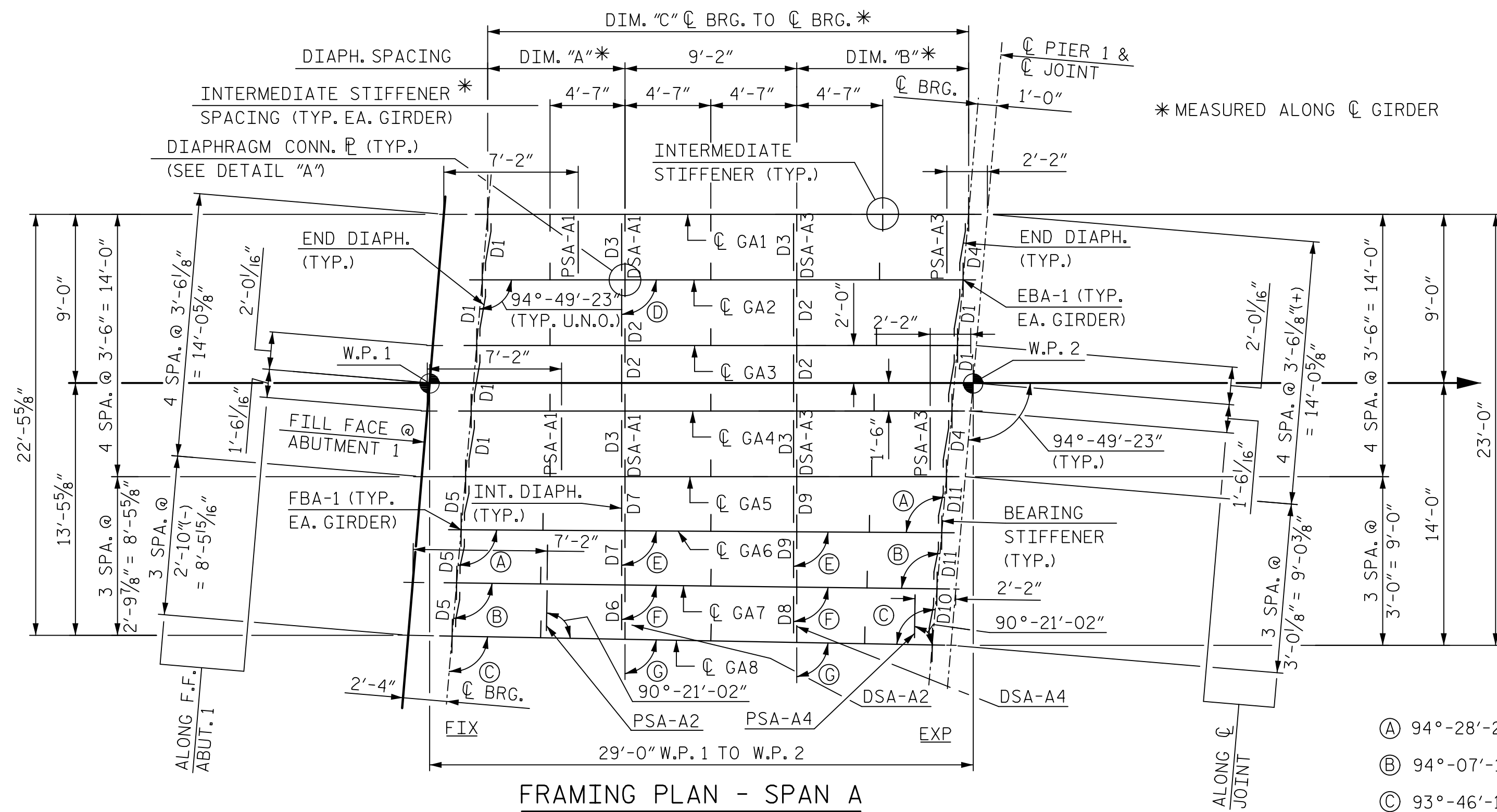
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PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN C

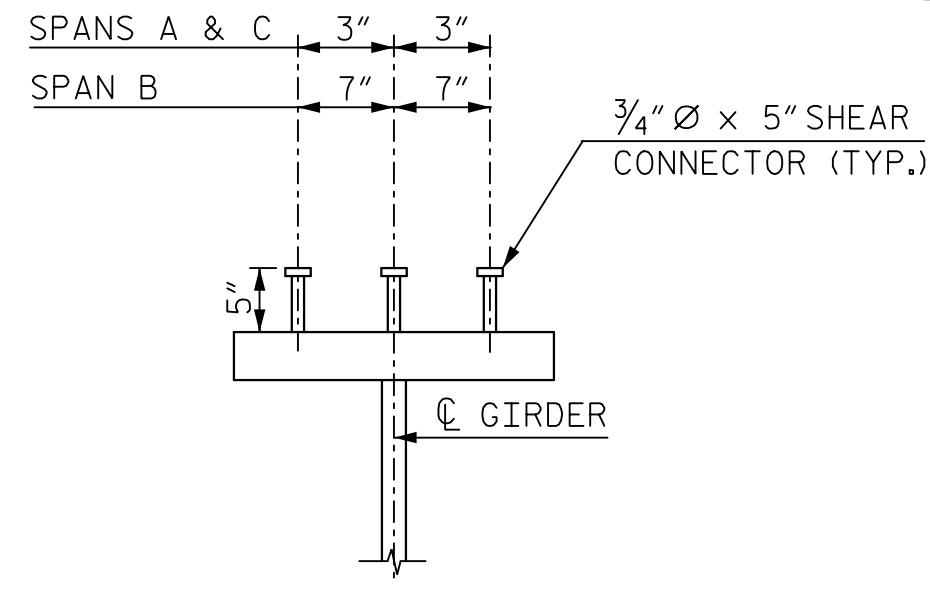
HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY: M. WRIGHT	DATE: 9/17
CHECKED BY: V. KOLLIPARA	DATE: 9/17
DWG. NO. 11	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-11
1			3			TOTAL SHEETS
2			4			39

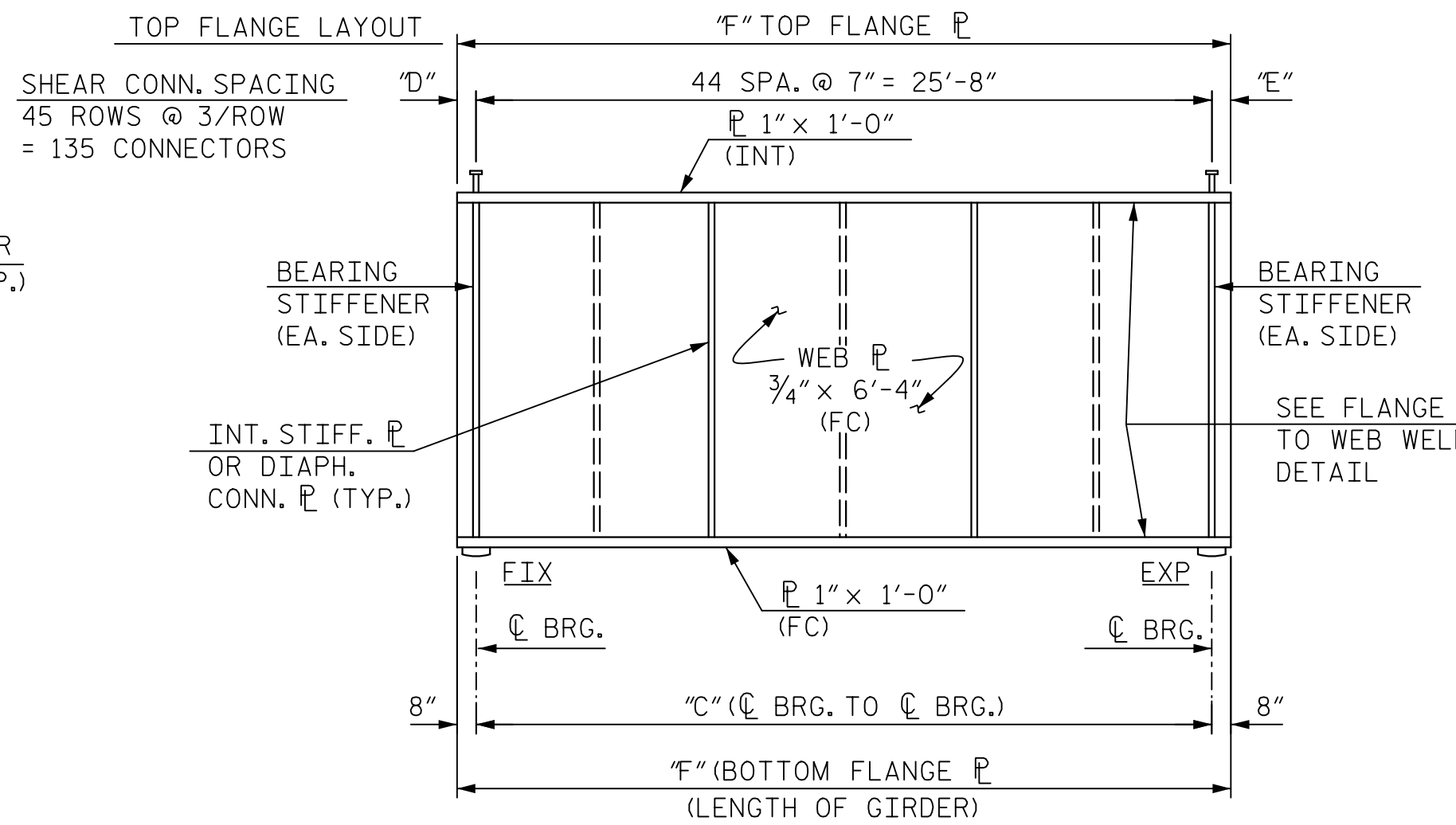


- Ⓐ 94°-28'-22" Ⓓ 90°-00'-00" (TYP. @ INT. DIAPH. U.N.O.)
- Ⓑ 94°-07'-19" Ⓔ 89°-38'-57"
- Ⓒ 93°-46'-17" Ⓕ 89°-17'-55"
- Ⓖ 88°-56'-52"

NOTES:
 ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.
 ALL ABUTMENT FILL FACES, C PIER 1 AND C BEARINGS ARE PARALLEL.
 NO SHOP CAMBER REQUIRED.
 REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:
 • STRUCTURAL STEEL NOTES
 • DIAPHRAGM DETAILS
 • STIFFENER AND CONNECTOR P DETAILS
 • SHEAR CONNECTOR DETAILS
 • FLANGE TO WEB WELD DETAIL
 FOR BEARINGS, SEE "BEARING DETAILS" SHEET.
 FOR DRAIN PIPE SUPPORT DETAILS, SEE "TYPICAL SECTION" SHEET.
 FLANGE AND WEB SHOP SPLICES SHALL BE MADE WITH FULL PENETRATION GROOVE WELDS. SEE DETAILS ON "STRUCTURAL STEEL DETAILS" SHEET. FABRICATOR IS TO SHOW WELD CONFIGURATION AND JOINT PREPARATION ON SHOP DRAWINGS FOR APPROVAL.
 FLANGE AND WEB SHOP SPLICE SHALL BE STAGGERED LONGITUDINALLY A MINIMUM OF 2'-0". SEE "STRUCTURAL STEEL DETAILS" SHEET FOR DETAIL.
 FC = FRACTURE CRITICAL
 INT = NON-FRACTURE CRITICAL MEMBERS OR COMPONENTS REQUIRING IMPROVED NOTCH TOUGHNESS.
 U.O.N. = UNLESS OTHERWISE NOTED.

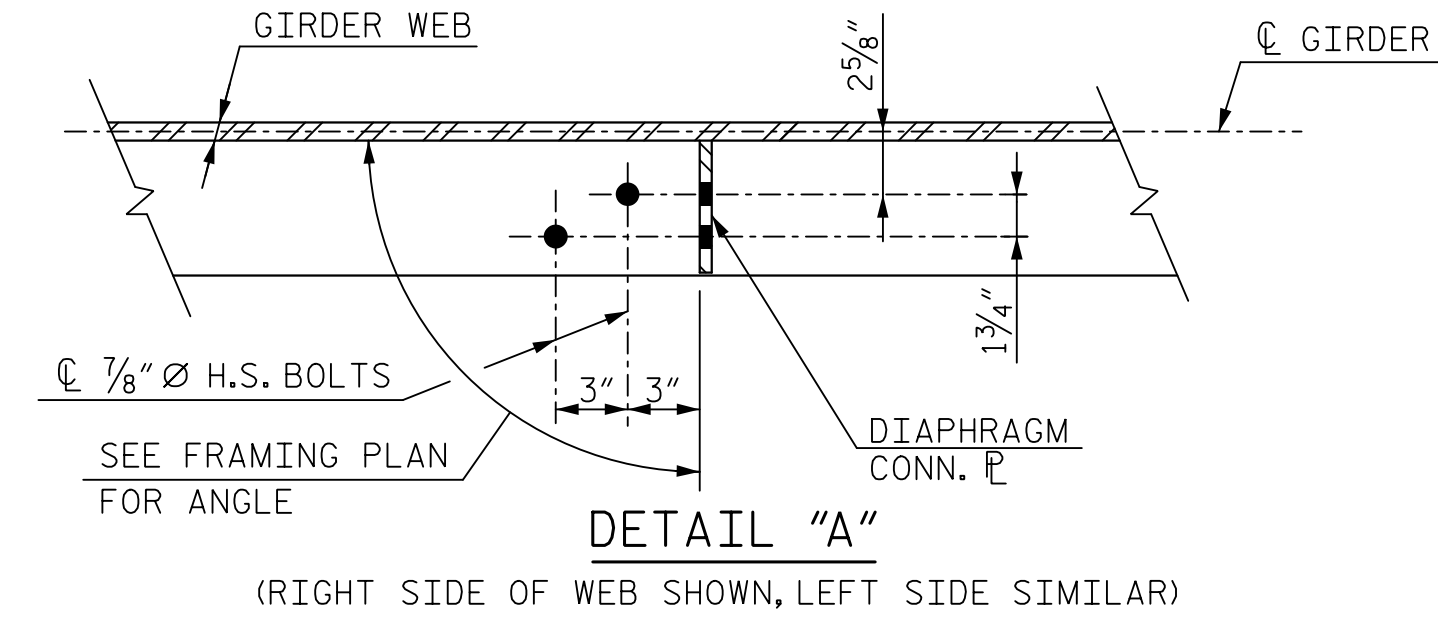


SHEAR CONNECTOR DETAIL
(TYP. ALL GIRDERS)

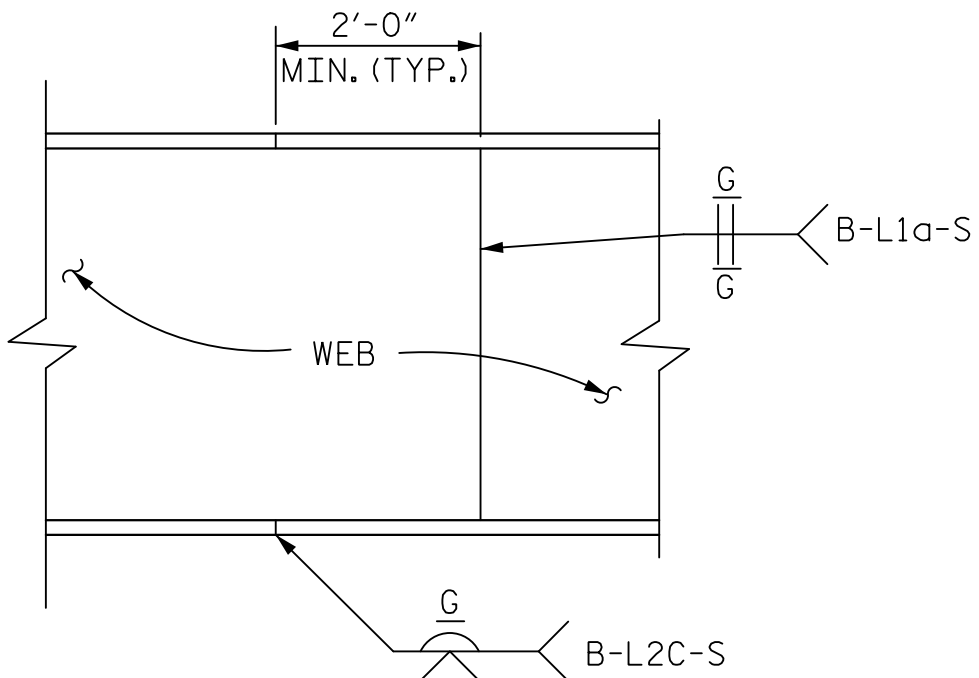


TYPICAL GIRDER ELEVATION - SPAN A
(INTERIOR GIRDER SHOWN, EXTERIOR GIRDER SIMILAR)

SPAN A GIRDER DIMENSIONS						
GIRDER	"A"	"B"	"C"	"D"	"E"	"F"
GA1	7'-3 3/8"	9'-2"	25'-7 7/8"	7 15/16"	7 15/16"	26'-11 7/8"
GA2	7'-7 3/8"	8'-10 1/2"	25'-7 7/8"	7 15/16"	7 15/16"	26'-11 7/8"
GA3	7'-10 15/16"	8'-6 15/16"	25'-7 7/8"	7 15/16"	7 15/16"	26'-11 7/8"
GA4	8'-2 1/2"	8'-3 3/8"	25'-7 7/8"	7 15/16"	7 15/16"	26'-11 7/8"
GA5	8'-6 1/16"	7'-11 3/16"	25'-7 7/8"	7 15/16"	7 15/16"	26'-11 7/8"
GA6	8'-8 15/16"	7'-8 3/4"	25'-7 11/16"	7 13/16"	7 7/8"	26'-11 11/16"
GA7	8'-11 13/16"	7'-5 3/4"	25'-7 9/16"	7 13/16"	7 3/4"	26'-11 9/16"
GA8	9'-2 1/16"	7'-2 3/4"	25'-7 7/16"	7 11/16"	7 3/4"	26'-11 1/16"

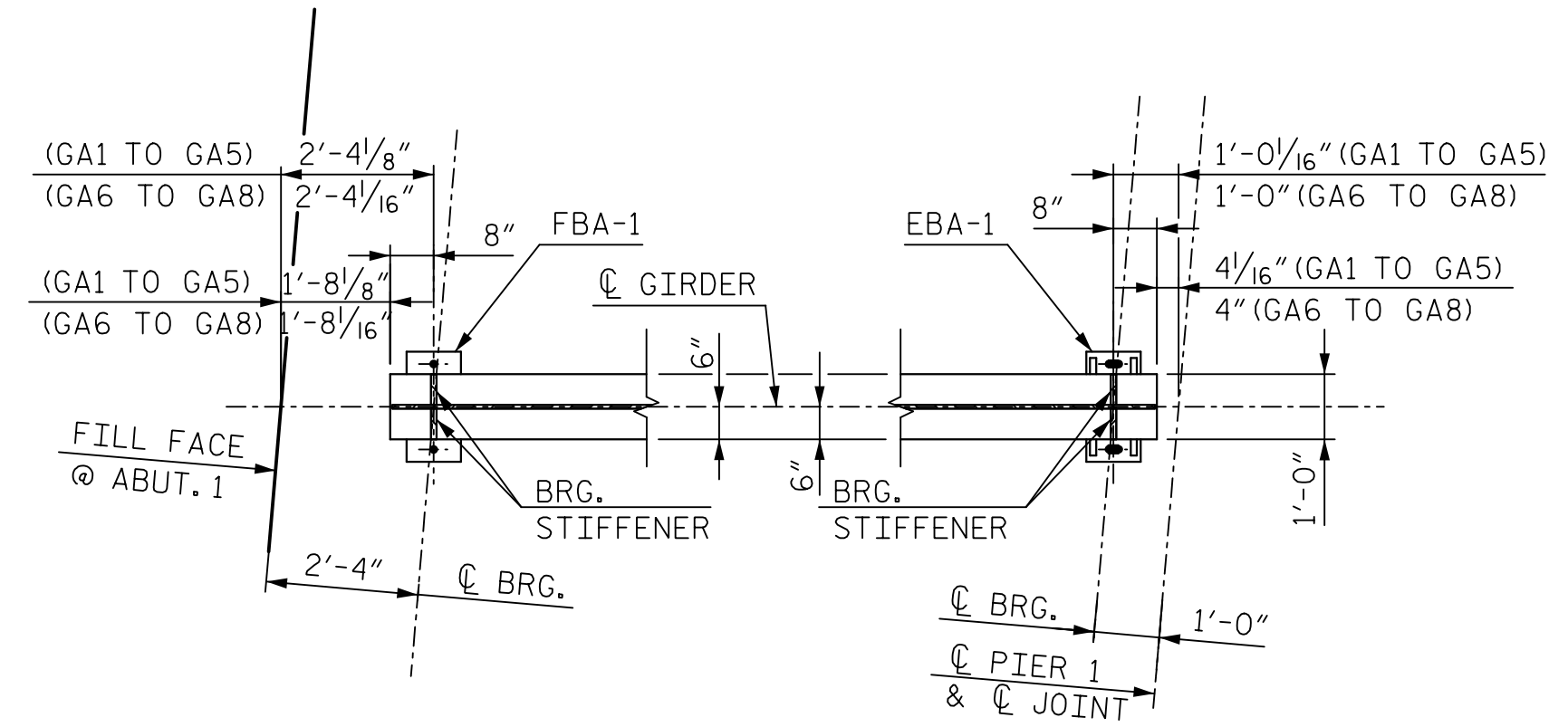


DETAIL "A"
(RIGHT SIDE OF WEB SHOWN, LEFT SIDE SIMILAR)

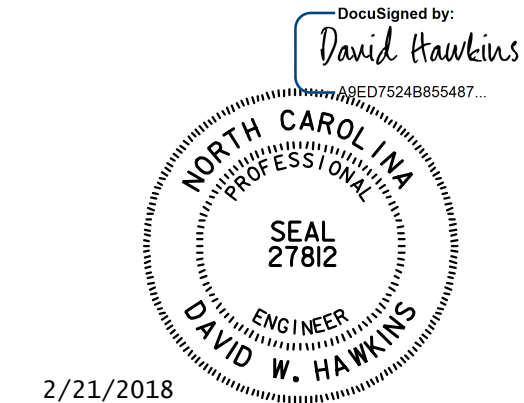


NOTES:
 ELECTROSLAG WELDING IS NOT PERMITTED.
 ULTRASONIC OR RADIOGRAPHIC INSPECTION IS REQUIRED FOR ALL FLANGE AND WEB SPLICE WELDS. SEE SPECIAL PROVISIONS.
 GRIND WELDS IN DIRECTION OF STRESS ONLY (I.E. PARALLEL TO C GIRDER).

SHOP SPLICE DETAILS



BOTTOM FLANGE GIRDER END DETAILS - SPAN A

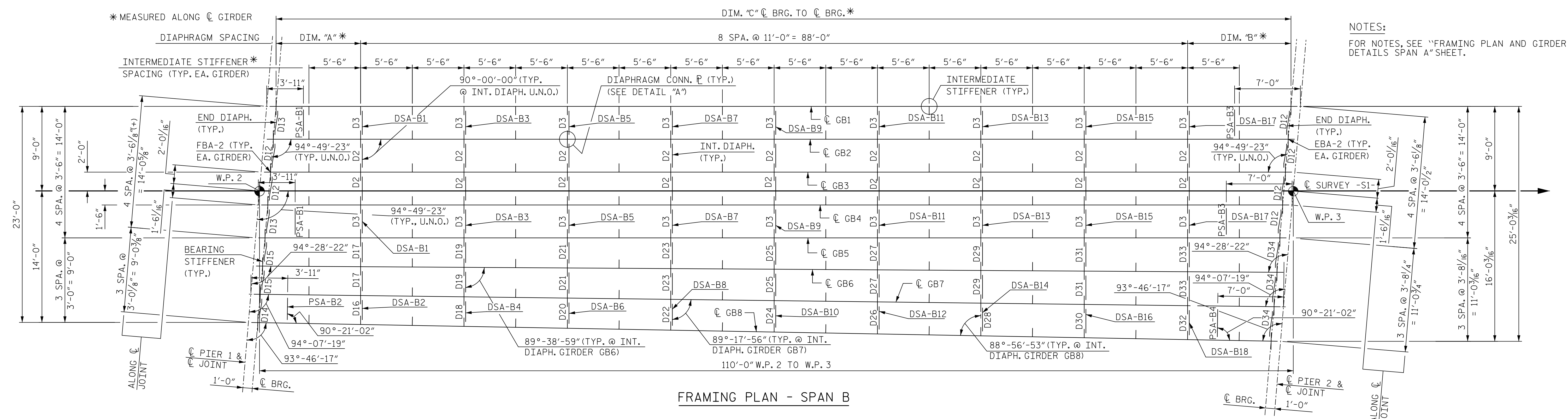


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

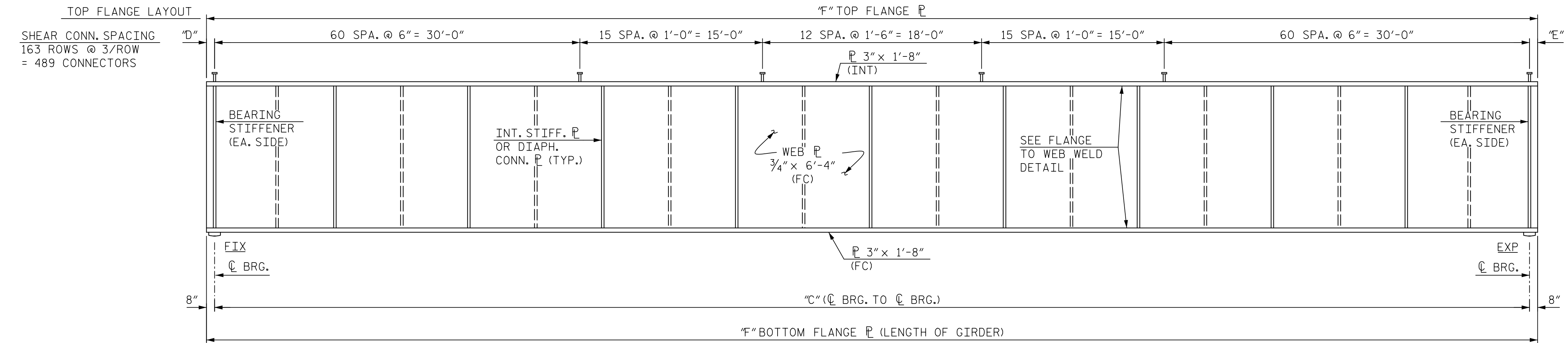
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN AND GIRDER DETAILS
 SPAN A

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S1-12		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
DRAWN BY: M. WRIGHT CHECKED BY: V. KOLLIPARA	DATE: 9/17	DATE: 9/17	DWG. NO. 12	2	4	TOTAL SHEETS 39	

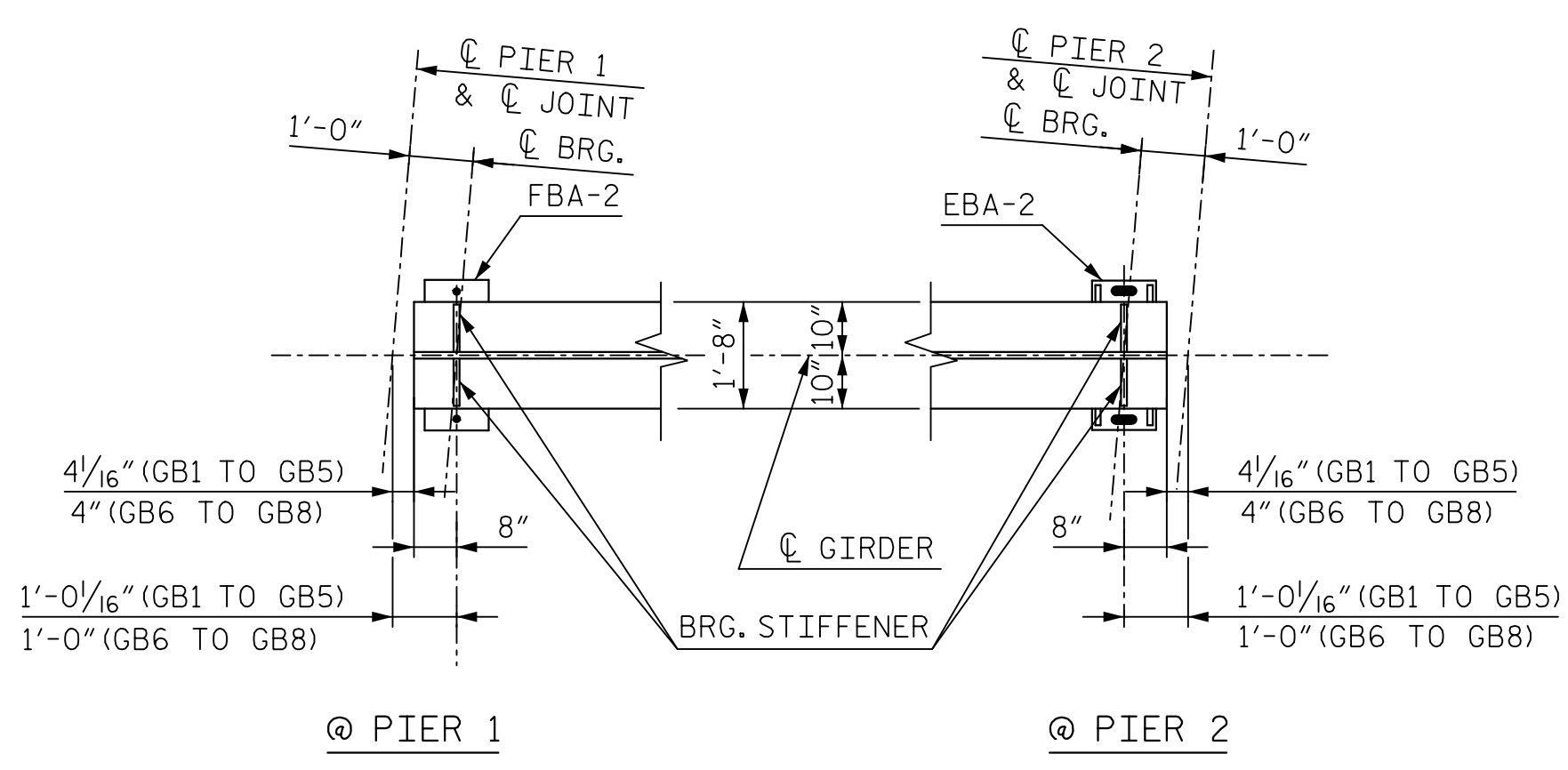


NOTES:
FOR NOTES, SEE FRAMING PLAN AND GIRDER DETAILS SPAN A SHEET.

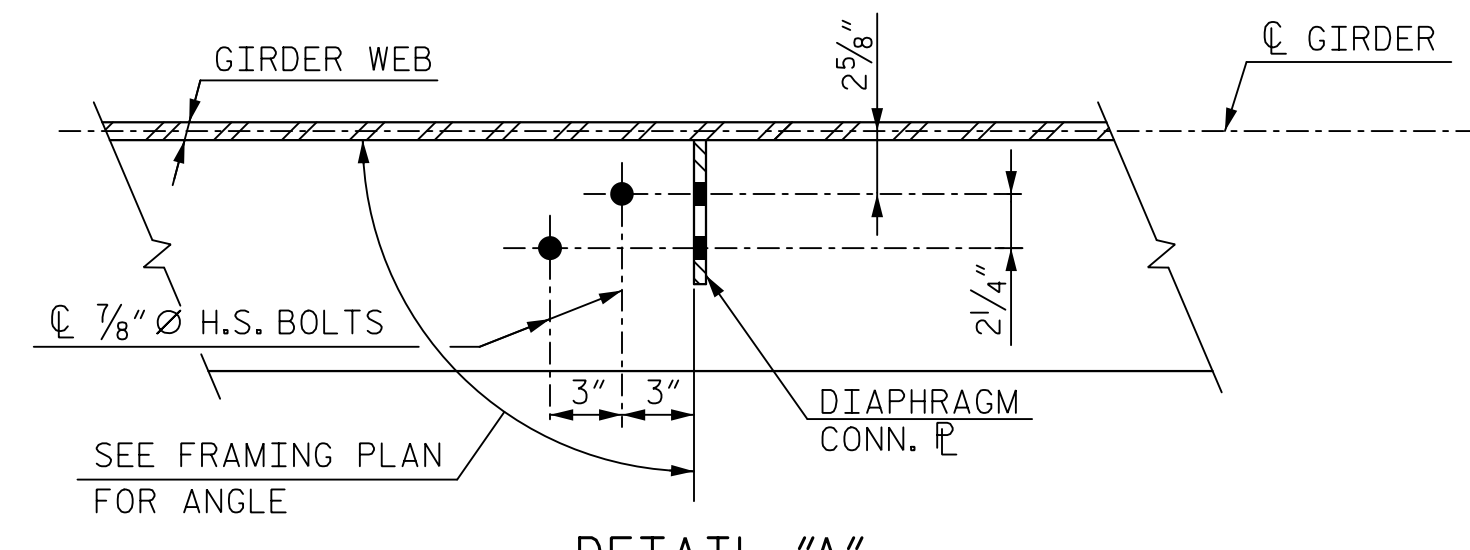


TYPICAL GIRDER ELEVATION - SPAN B
(INTERIOR GIRDER SHOWN, EXTERIOR GIRDER SIMILAR)

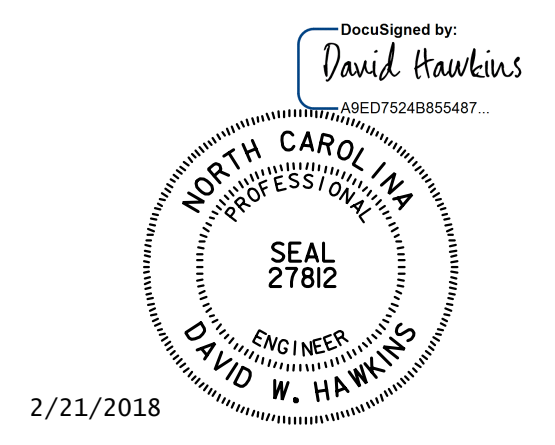
SPAN B GIRDER DIMENSIONS						
GIRDER	"A"	"B"	"C"	"D"	"E"	"F"
GB1	8'-11 ⁵ / ₁₆ "	11'-0"	107'-11 ⁵ / ₁₆ "	8"	7 ⁵ / ₁₆ "	109'-3 ⁵ / ₁₆ "
GB2	9'-3 ¹ / ₂ "	10'-8 ⁷ / ₁₆ "	107'-11 ⁵ / ₁₆ "	8"	7 ⁵ / ₁₆ "	109'-3 ⁵ / ₁₆ "
GB3	9'-7"	10'-4 ⁵ / ₁₆ "	107'-11 ⁵ / ₁₆ "	8"	7 ⁵ / ₁₆ "	109'-3 ⁵ / ₁₆ "
GB4	9'-10 ⁹ / ₁₆ "	10'-1 ³ / ₈ "	107'-11 ⁵ / ₁₆ "	8"	7 ⁵ / ₁₆ "	109'-3 ⁵ / ₁₆ "
GB5	10'-2 ¹ / ₈ "	9'-9 ³ / ₁₆ "	107'-11 ⁵ / ₁₆ "	8"	7 ⁵ / ₁₆ "	109'-3 ⁵ / ₁₆ "
GB6	10'-5 ¹ / ₈ "	9'-6 ¹ / ₈ "	107'-11 ¹ / ₄ "	7 ⁵ / ₈ "	7 ⁵ / ₈ "	109'-3 ¹ / ₄ "
GB7	10'-8 ¹ / ₄ "	9'-2 ¹ / ₁₆ "	107'-10 ¹¹ / ₁₆ "	7 ⁹ / ₁₆ "	7 ³ / ₈ "	109'-2 ¹¹ / ₁₆ "
GB8	10'-11 ¹ / ₁₆ "	8'-10 ¹¹ / ₁₆ "	107'-10 ¹ / ₈ "	7 ¹ / ₁₆ "	7 ¹ / ₁₆ "	109'-2 ¹ / ₈ "



BOTTOM FLANGE GIRDER END DETAILS - SPAN B



DETAIL "A"
(RIGHT SIDE OF WEB SHOWN, LEFT SIDE SIMILAR)



2/21/2018

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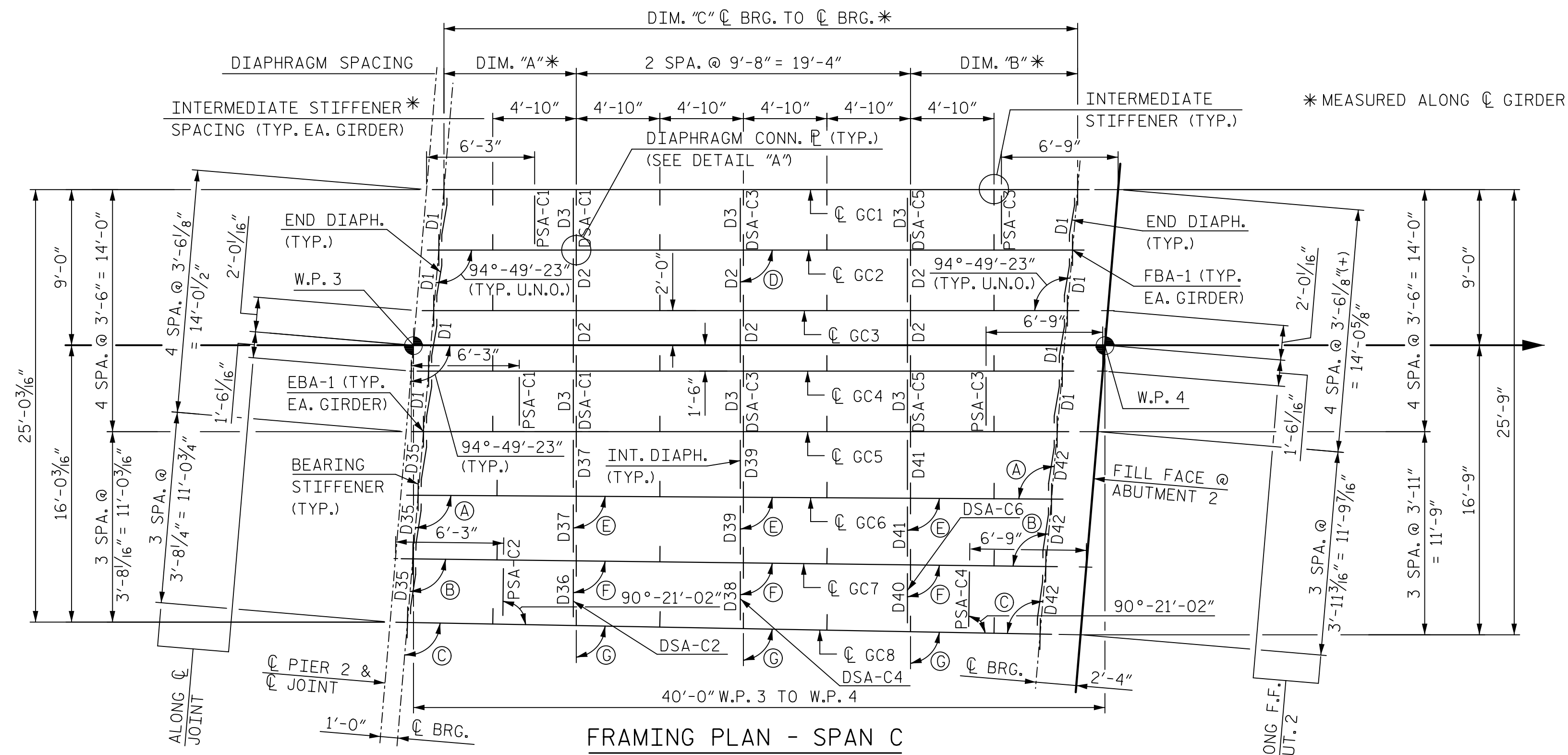
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

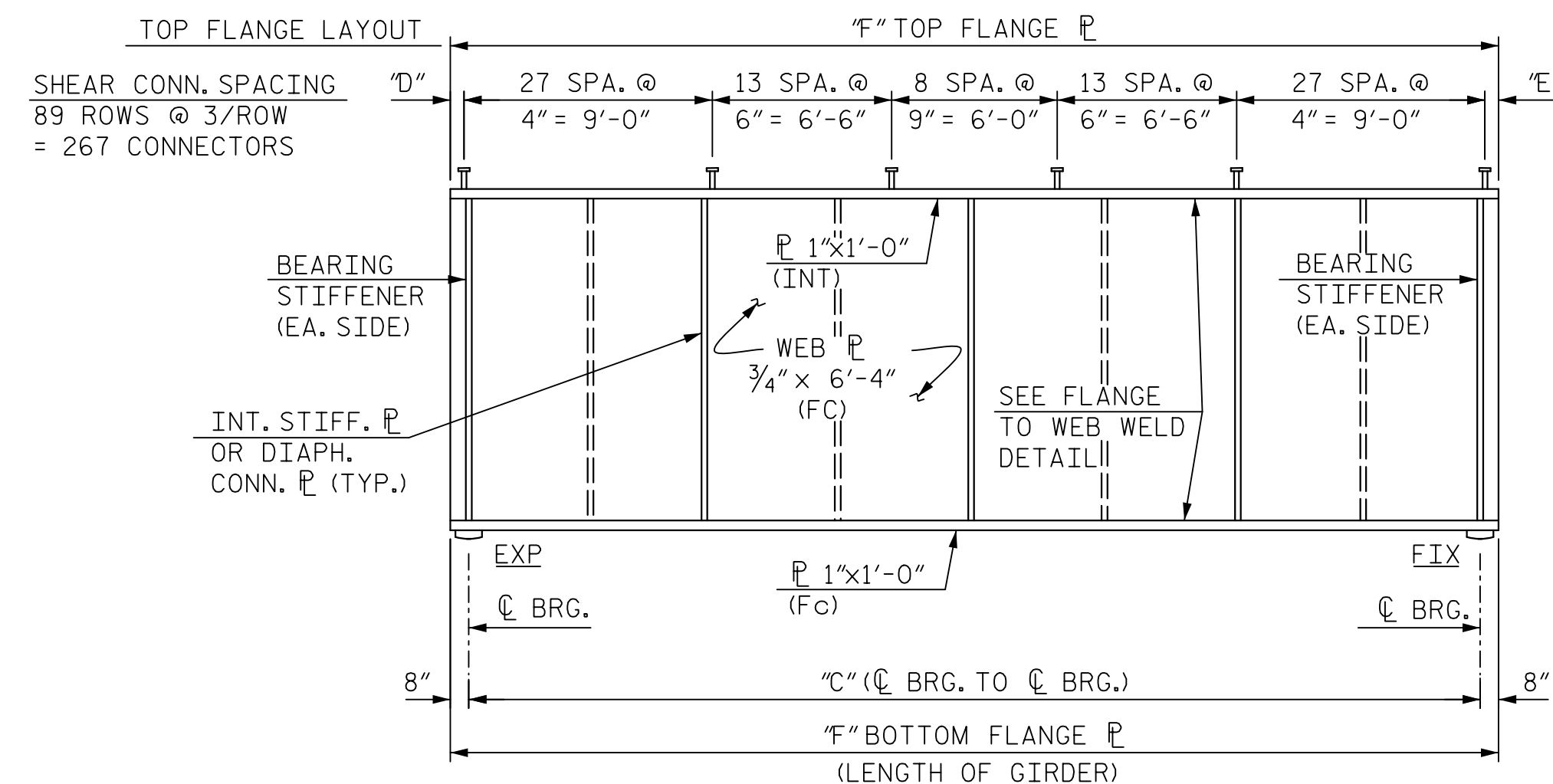
**SUPERSTRUCTURE
FRAMING PLAN
AND GIRDER DETAILS
SPAN B**

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S1-13 TOTAL SHEETS 39		
	NO.	BY	DATE	NO.		BY	DATE
	1		9/17	3			
DRAWN BY: M. WRIGHT CHECKED BY: V. KOLLIPARA	DATE: 9/17	DATE: 9/17	DWG. NO. 13	NO. 4			

NOTES:
FOR NOTES, SEE "FRAMING PLAN AND GIRDER DETAILS SPAN A" SHEET.

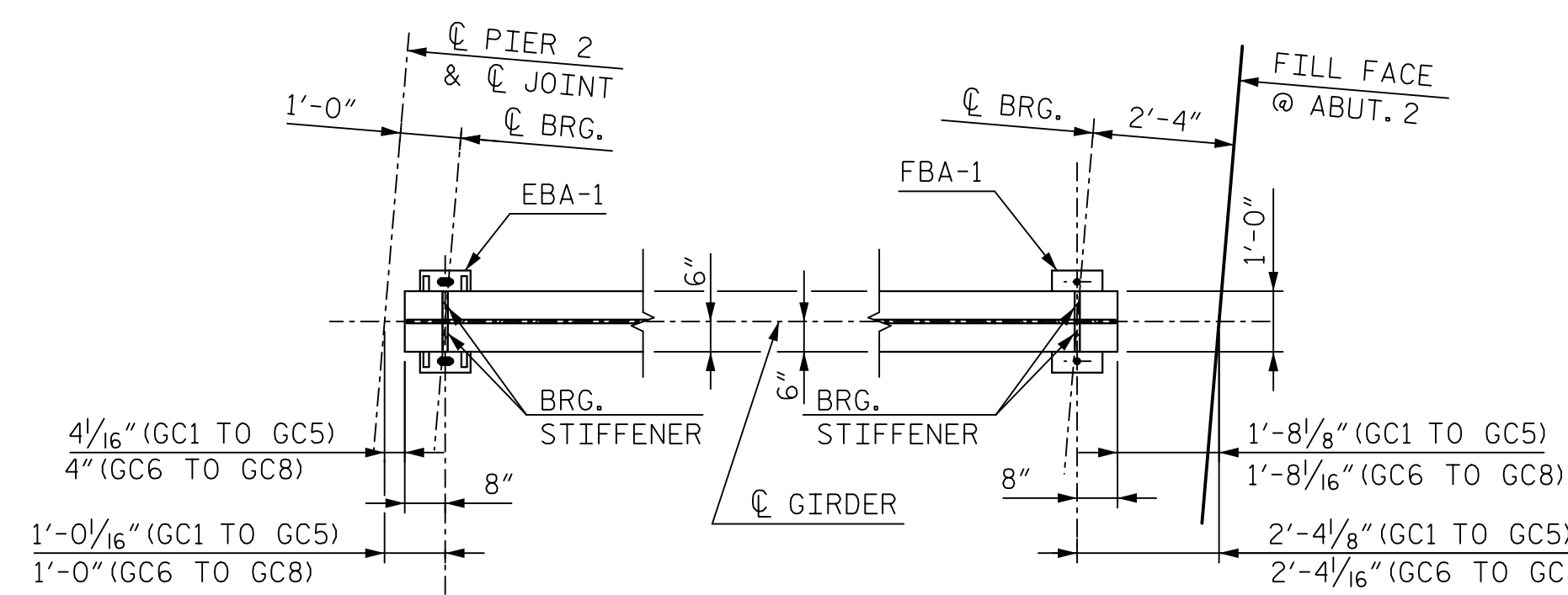
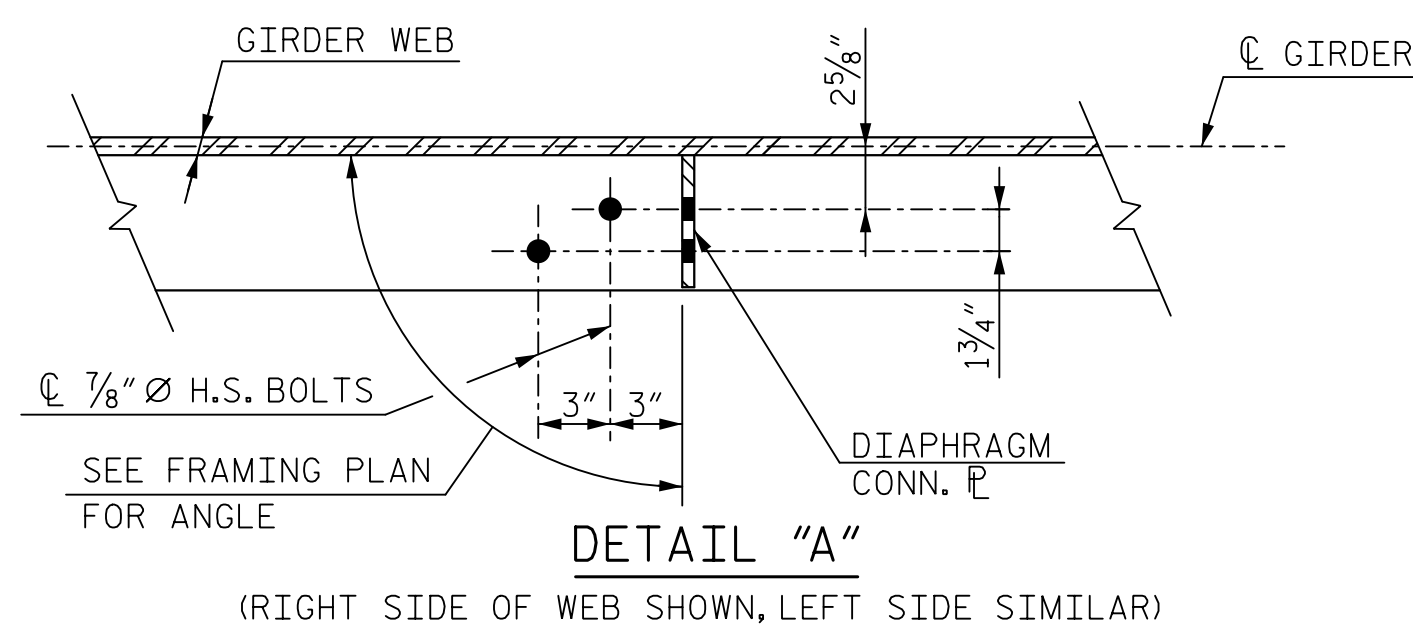


- (A) 94°-28'-22"
- (B) 94°-07'-19"
- (C) 93°-46'-17"
- (D) 90°-00'-00" (TYP. @ INT. DIAPH. U.N.O.)
- (E) 89°-38'-59"
- (F) 89°-17'-56"
- (G) 88°-56'-53"

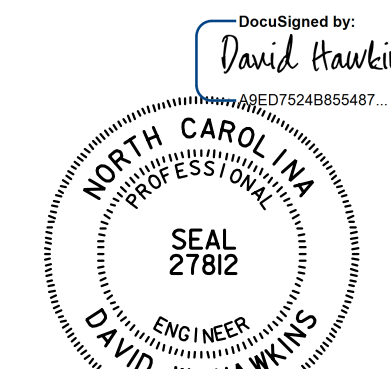


SPAN C GIRDER DIMENSIONS						
GIRDER	"A"	"B"	"C"	"D"	"E"	"F"
GC1	7'-7 7/8"	9'-8"	36'-7 7/8"	5 15/16"	5 15/16"	37'-11 7/8"
GC2	7'-11 3/8"	9'-4 1/2"	36'-7 7/8"	5 15/16"	5 15/16"	37'-11 7/8"
GC3	8'-2 15/16"	9'-0 15/16"	36'-7 7/8"	5 15/16"	5 15/16"	37'-11 7/8"
GC4	8'-6 1/2"	8'-9 3/8"	36'-7 7/8"	5 15/16"	5 15/16"	37'-11 7/8"
GC5	8'-10 1/16"	8'-5 15/16"	36'-7 7/8"	5 15/16"	5 15/16"	37'-11 7/8"
GC6	9'-1 3/4"	8'-1 1/8"	36'-7 7/8"	5 13/16"	5 13/16"	37'-11 3/8"
GC7	9'-5 1/2"	7'-9 15/16"	36'-7 7/8"	5 11/16"	5 3/4"	37'-11 1/8"
GC8	9'-9 1/4"	7'-6"	36'-7 1/4"	5 5/8"	5 5/8"	37'-11 1/4"

TYPICAL GIRDER ELEVATION - SPAN C
(INTERIOR GIRDER SHOWN, EXTERIOR GIRDER SIMILAR)



BOTTOM FLANGE GIRDER END DETAILS - SPAN C



2/21/2018

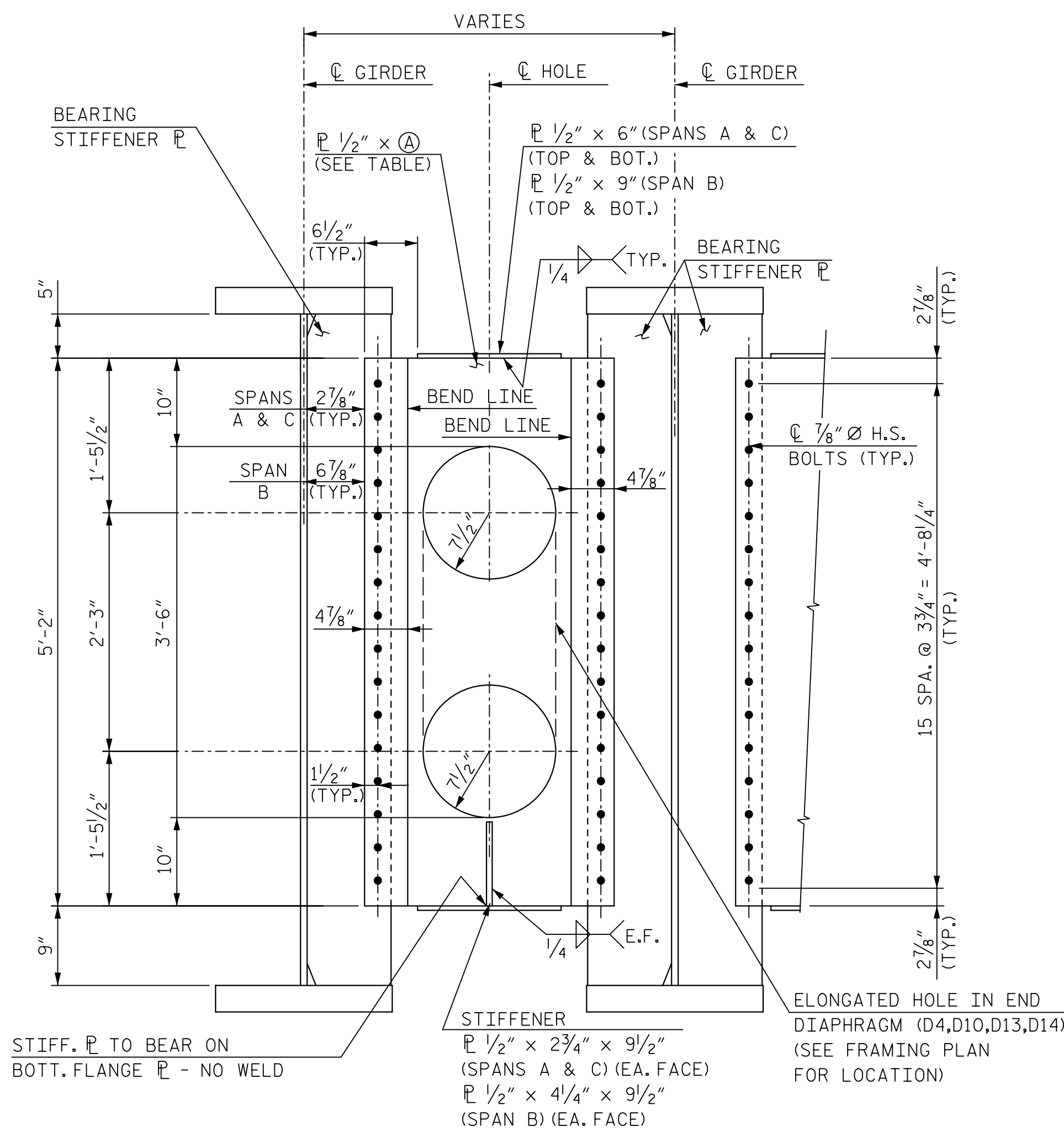
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

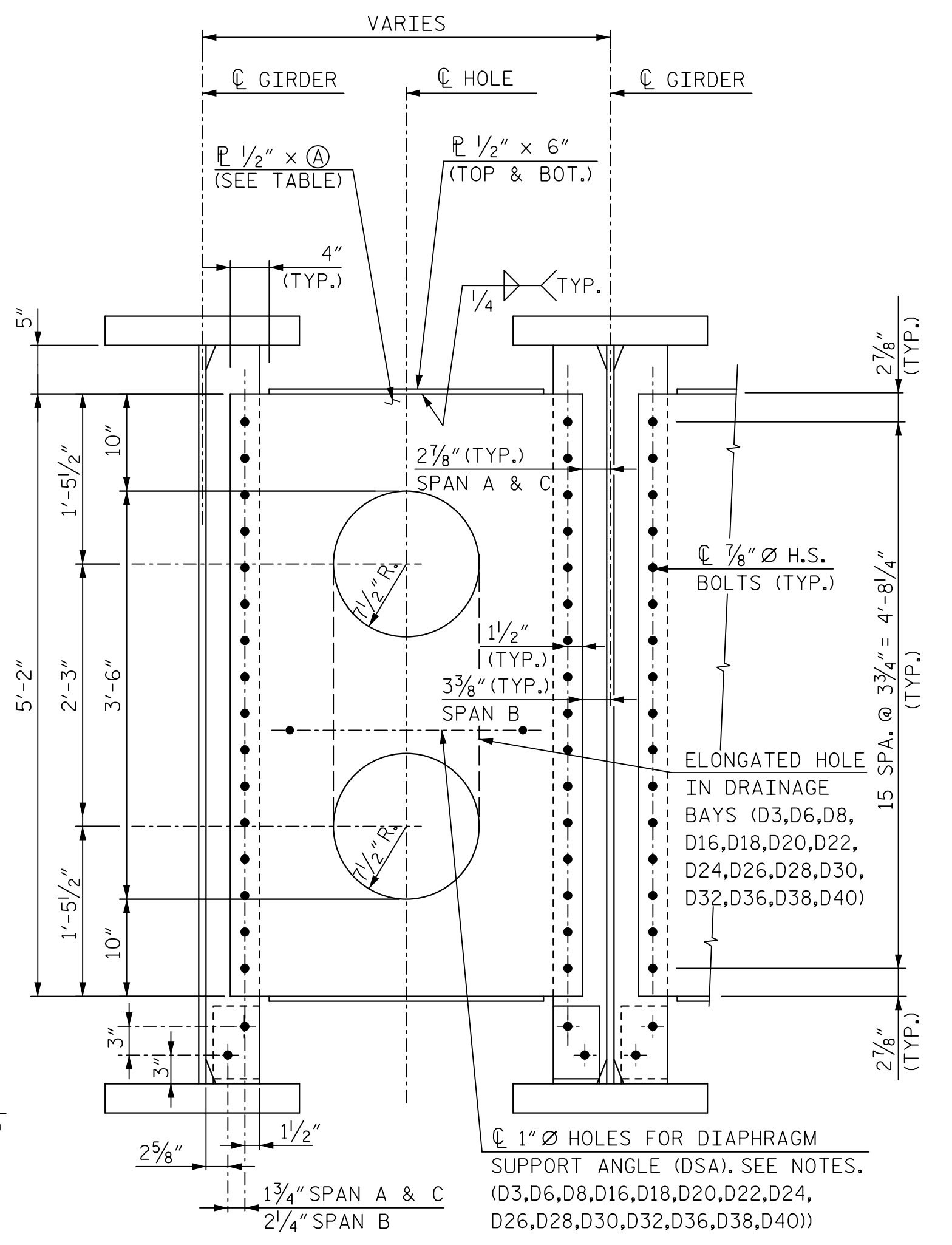
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN AND GIRDER DETAILS
SPAN C

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609		REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE			S1-14	
1			3					TOTAL SHEETS	
2			4					39	

DRAWN BY: M. WRIGHT DATE: 9/17
CHECKED BY: V. KOLLIPARA DATE: 9/17 DWG. NO. 14

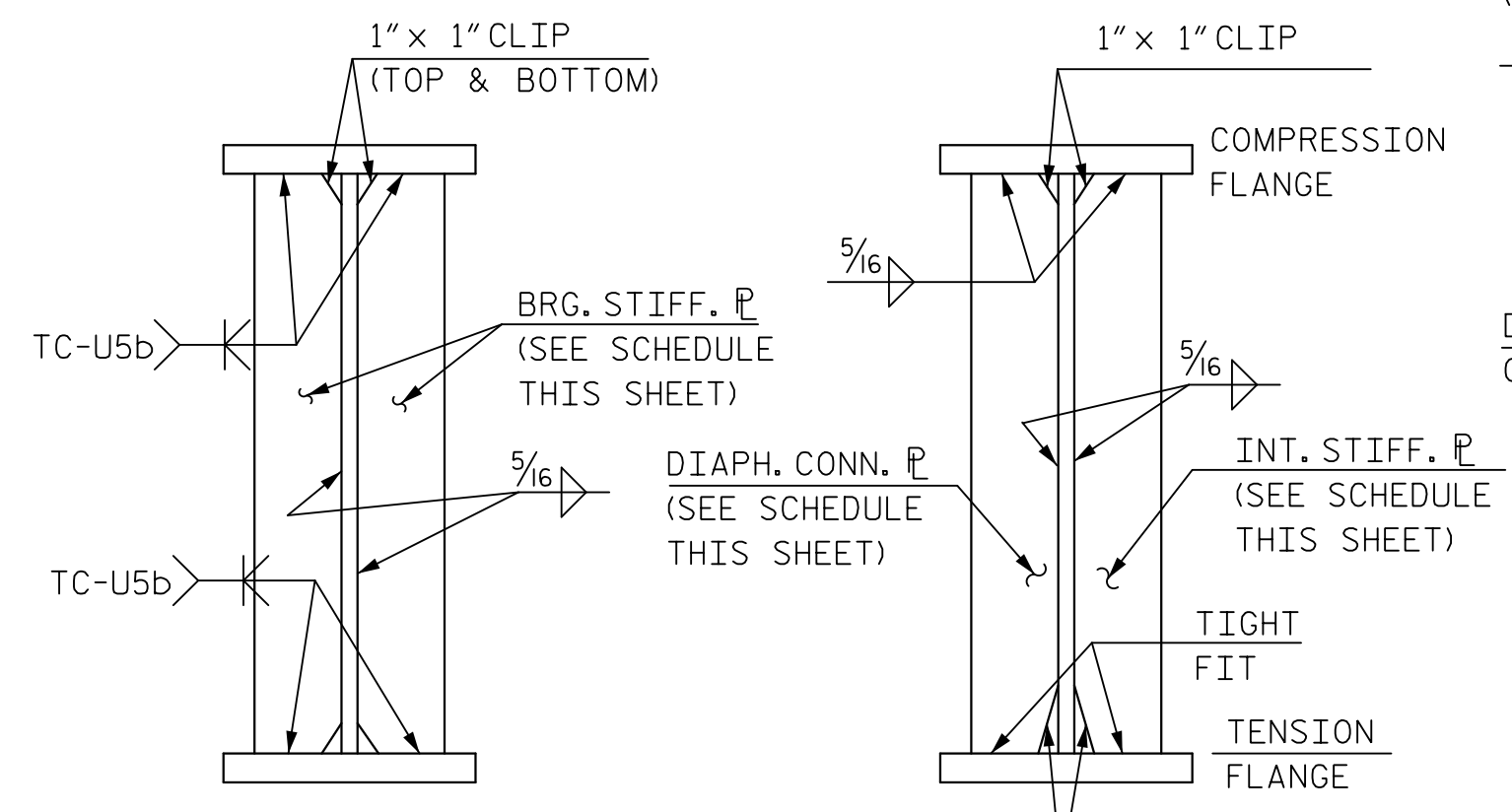


SECTION AT END DIAPHRAGM
(D1,D4,D5,D10-D15,D34,D35,D42)
(SPAN B SHOWN, SPANS A AND C SIMILAR)



SECTION AT INTERMEDIATE DIAPHRAGM
(D2,D3,D6-D9,D16-D33,D36-D41)
(SPAN B SHOWN, SPANS A AND C SIMILAR)

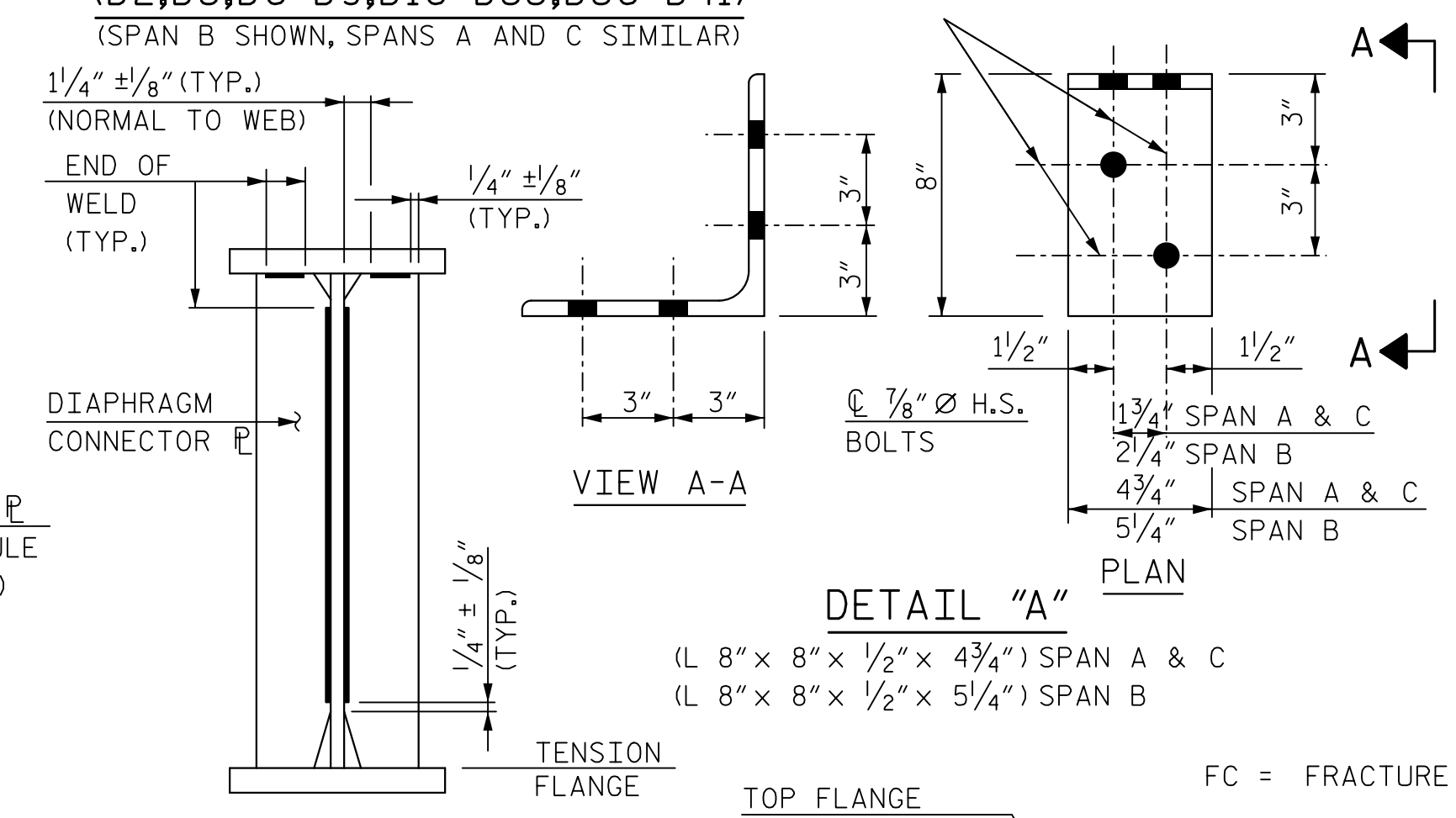
DIAPHRAGM	(A)
D1,D4 (SPAN A&C)	3'-0 1/2"
D1,D4 (SPAN B)	2'-11 1/4"
D2,D3	3'-0 1/4"
D5	2'-4 1/16"
D6,D7	2'-4 9/16"
D8,D9	2'-5 11/16"
D10,D11	2'-6 3/16"
D12,D13	2'-4 1/2"
D14,D15	1'-10 7/16"
D16,D17	2'-6 1/4"
D18,D19	2'-7"
D20,D21	2'-7 13/16"
D22,D23	2'-8 3/16"
D24,D25	2'-9 3/8"
D26,D27	2'-10 3/16"
D28,D29	2'-11"
D30,D31	2'-11 13/16"
D32,D33	3'-0 5/8"
D34	2'-6 1/2"
D35	3'-2 11/16"
D36,D37	3'-3 3/8"
D38,D39	3'-3 13/16"
D40,D41	3'-4 3/16"
D42	3'-5 3/8"



STIFFENER/CONN. PLATE DETAILS

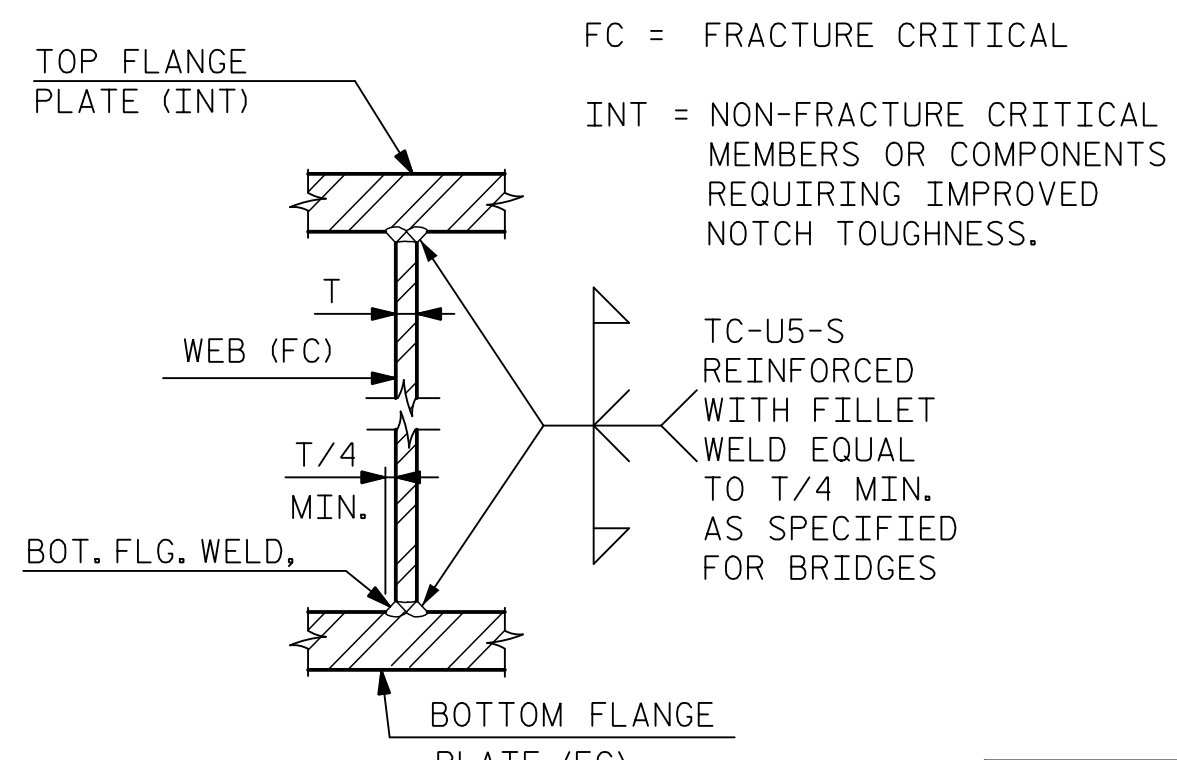
TYPE	SPANS A & C	SPAN B
BRG. STIFF. PL	PL 5/8" x 5 1/2"	PL 1" x 9 1/2"
INT. STIFF. PL	PL 1/2" x 5 1/2"	PL 1/2" x 6"
DIAPH. CONN. PL	PL 1/2" x 5 1/2"	PL 1/2" x 6"

NOTE: SEE FRAMING PLANS FOR STIFFENER/CONN. PLATE LOCATIONS



WELD TERMINATION DETAIL

DETAIL "A"
(L 8" x 8" x 1/2" x 4 3/4") SPAN A & C
(L 8" x 8" x 1/2" x 5 1/4") SPAN B



FLANGE TO WEB WELD DETAIL
NO SCALE

STRUCTURAL STEEL NOTES

DESIGN DATA:

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
- GIRDER FLANGES AND WEB: A709, GRADE 50.
 - MISCELLANEOUS MATERIAL: A709, GRADE 50.
 - ANCHOR BOLTS FOR BEARING DEVICES SHALL CONFORM TO ASTM A449. ANCHOR BOLTS, NUTS, AND PLATE WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M232.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED. ALL DIMENSIONS ARE SHOWN AT 60°F.

GIRDER BOTTOM FLANGE PLATE INCLUDING WEB TO FLANGE WELD AND TENSION ZONE OF WEB PLATE ARE DESIGNED FRACTURE CRITICAL (FC) MEMBERS. THESE COMPONENTS SHALL MEET THE IMPACT TEST REQUIREMENTS SET FORTH IN THE FRACTURE CONTROL PLAN OF THE AREMA MANUAL FOR ZONE 2 REQUIREMENTS.

NORFOLK SOUTHERN CORPORATION SHALL BE FURNISHED COPIES OF MILL TEST REPORTS FOR ALL MATERIALS EXCEPT MISCELLANEOUS PLATES AND SHAPES. REPORTS SHALL INDICATE COMPLIANCE WITH ALL SPECIFIED REQUIREMENTS.

SHOP INSPECTION SHALL BE BY NORFOLK SOUTHERN CORPORATION OR ITS AUTHORIZED AGENT. SEE STRUCTURAL STEEL SPECIAL PROVISION FOR ADDITIONAL WELDING INSPECTION OF FLANGE PLATE TO WEB PLATE WELDS.

FOR PAINTING STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

BOLTED CONNECTIONS SHALL BE MADE WITH 7/8" Ø ASTM A325, TYPE 1 HIGH STRENGTH BOLTS WITH HEAVY HEX HEAD, HEAVY HEX NUT AND HARDENED WASHERS IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS USING THE TURN OF THE NUT METHOD. DIRECT TENSION INDICATORS SHALL NOT BE USED.

SHOP DRAWINGS SHALL BE APPROVED BY THE CHIEF ENGINEER - BRIDGES AND STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, G.A. SHOP DRAWINGS SHALL BE LABELED "NORFOLK SOUTHERN MP NS-377.48".

BOLT HOLES IN STRUCTURAL STEEL MEMBERS SHALL BE STANDARD SIZE UNLESS OTHERWISE INDICATED ON THE PLANS.

HIGH STRENGTH BOLTS, NUTS & WASHERS SHALL BE MECHANICALLY GALVANIZED IN ACCORDANCE WITH ASTM B695.

ANCHOR BOLTS SHALL BE 1/4" Ø IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS AND SHALL BE GROUTED IN FORMED HOLES AFTER GIRDERS ARE ERECTED.

BEARING PADS SHALL BE USED WHENEVER STEEL MASONRY PLATE, OR OTHER STEEL BEARING PLATE, BEARS ON CONCRETE. PADS SHALL BE PREFORMED FABRIC BEARING PADS, 1/2" THICK. FOR PAD REQUIREMENTS, SEE STRUCTURAL STEEL SPECIAL PROVISIONS.

SHEAR CONNECTORS ON GIRDERS MAY BE SHIFTED AS NECESSARY TO CLEAR FLANGE SPLICE WELDS.

WEB SHOP SPLICES ARE PERMITTED TO LIMIT THE MAXIMUM REQUIRED WEB PIECE LENGTHS TO 45'-0". PERMITTED WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15'-0" OF MAXIMUM DEAD LOAD DEFLECTION AND SHALL BE LOCATED 6" MIN. FROM CONNECTOR PLATE OR INTERMEDIATE STIFFENER WELDS. FLANGE AND WEB SHOP SPLICES SHALL CONFORM TO SHOP SPLICE DETAILS SHOWN ON THE PLANS.

STRUCTURAL STEEL ELEMENTS DENOTED AS "FC" ARE FRACTURE CRITICAL AND SHALL MEET IMPACT TEST REQUIREMENTS SET FORTH IN THE FRACTURE CONTROL PLAN OF THE AREMA MANUAL, CHAPTER 15, SECTION 1.14. NOTCH TOUGHNESS REQUIREMENTS AND TESTING SHALL BE BASED ON ZONE 2 REQUIREMENTS.

STRUCTURAL STEEL ELEMENTS DENOTED AS "INT" SHALL MEET IMPACT TEST REQUIREMENTS SET FORTH IN THE FRACTURE CONTROL PLAN OF THE AREMA MANUAL, CHAPTER 15, SECTION 1.2. TESTING SHALL BE BASED ON ZONE 2 REQUIREMENTS.

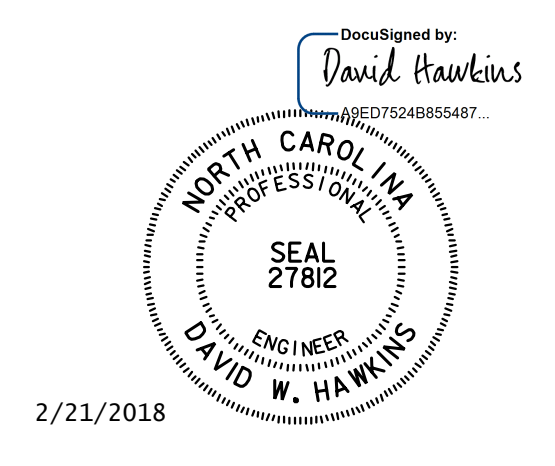
ALL WELDING CONNECTIONS SHALL BE MADE WITH SERIES E70 WELDING ELECTRODES.

FOR DETAILS OF DIAPHRAGM SUPPORT ANGLES (DSA), SEE "STRUCTURE DRAINAGE DETAILS" SHEET 4 OF 4.

FC = FRACTURE CRITICAL

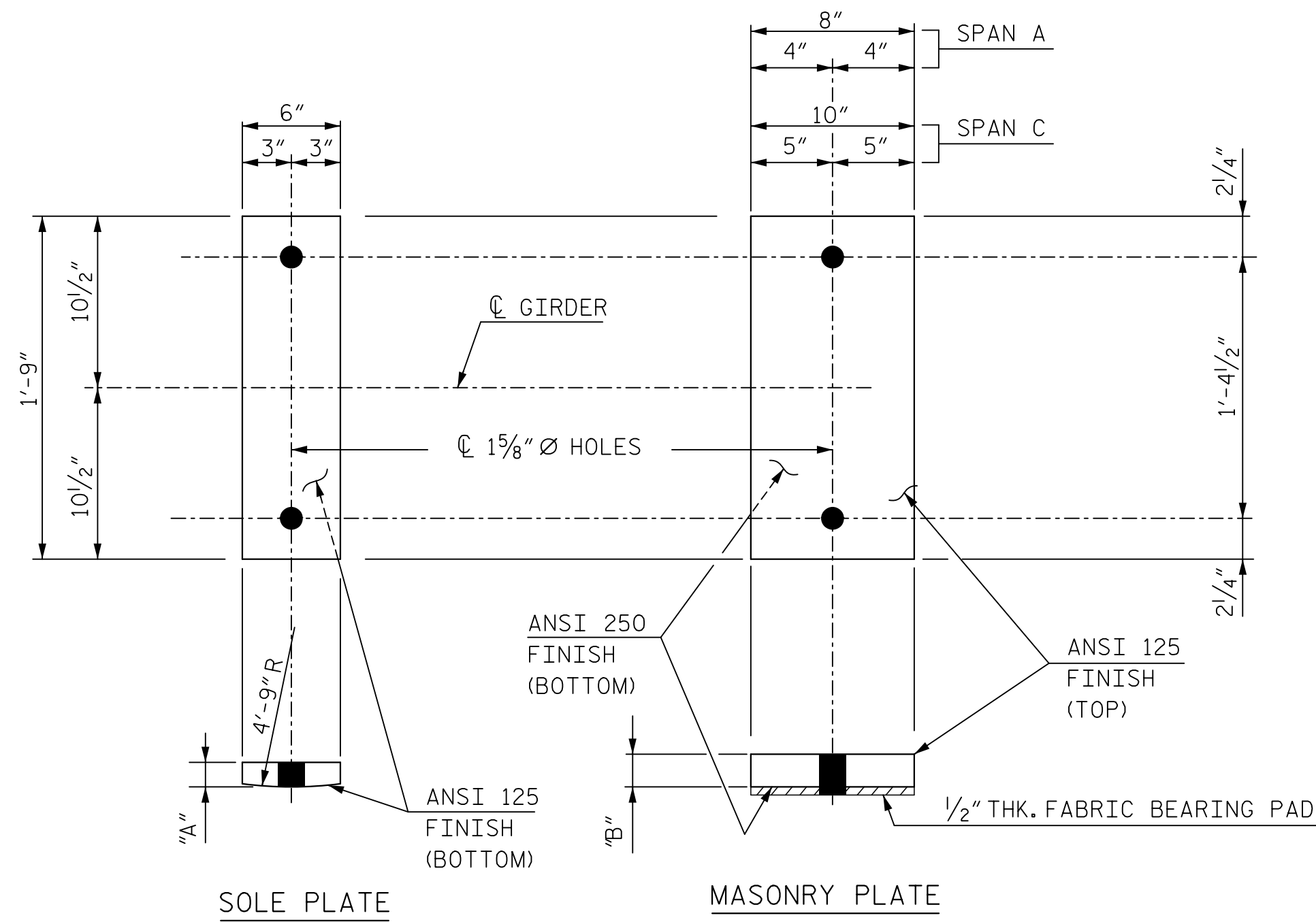
INT = NON-FRACTURE CRITICAL MEMBERS OR COMPONENTS REQUIRING IMPROVED NOTCH TOUGHNESS.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

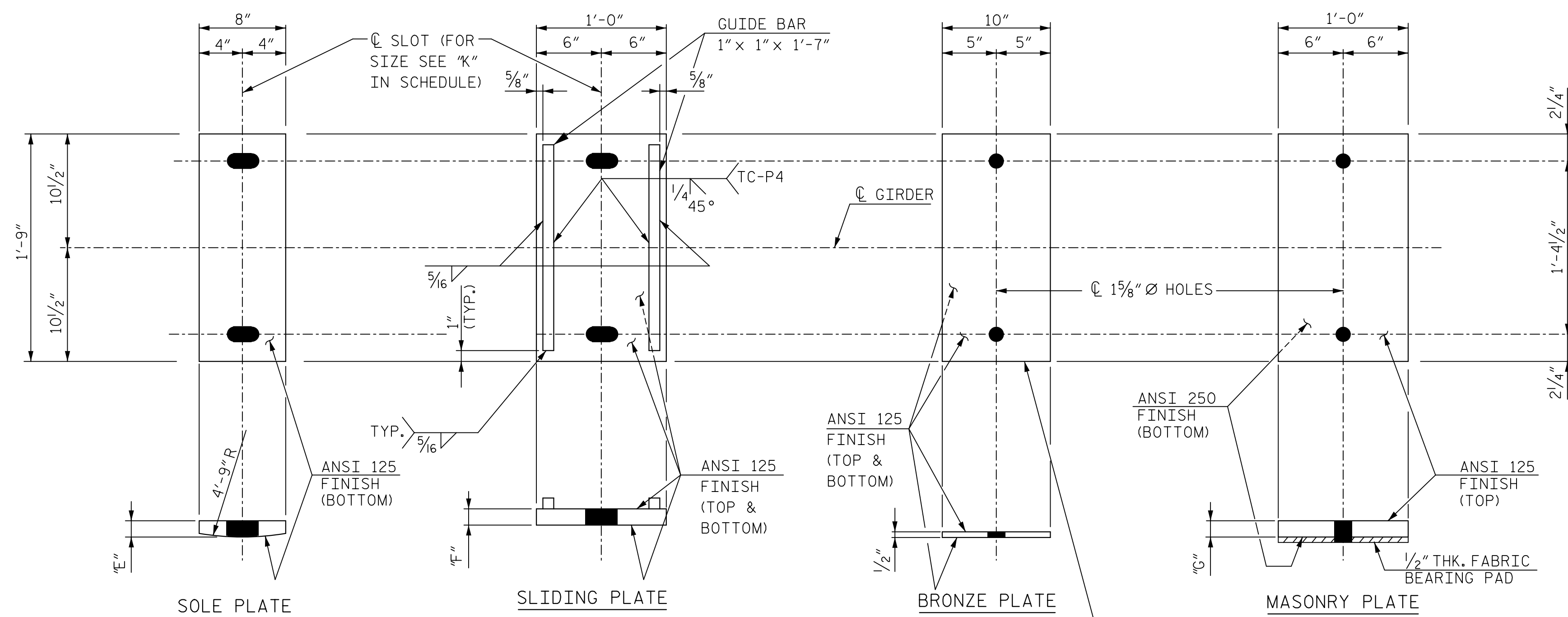


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S1-15		
	NO.	BY	DATE	NO.		BY	DATE
	1		9/17	3			
2		9/17	4				
DRAWN BY: M. WRIGHT DATE: 9/17 CHECKED BY: V. KOLLIPARA DATE: 9/17 DWG. NO. 15							
TOTAL SHEETS 39							

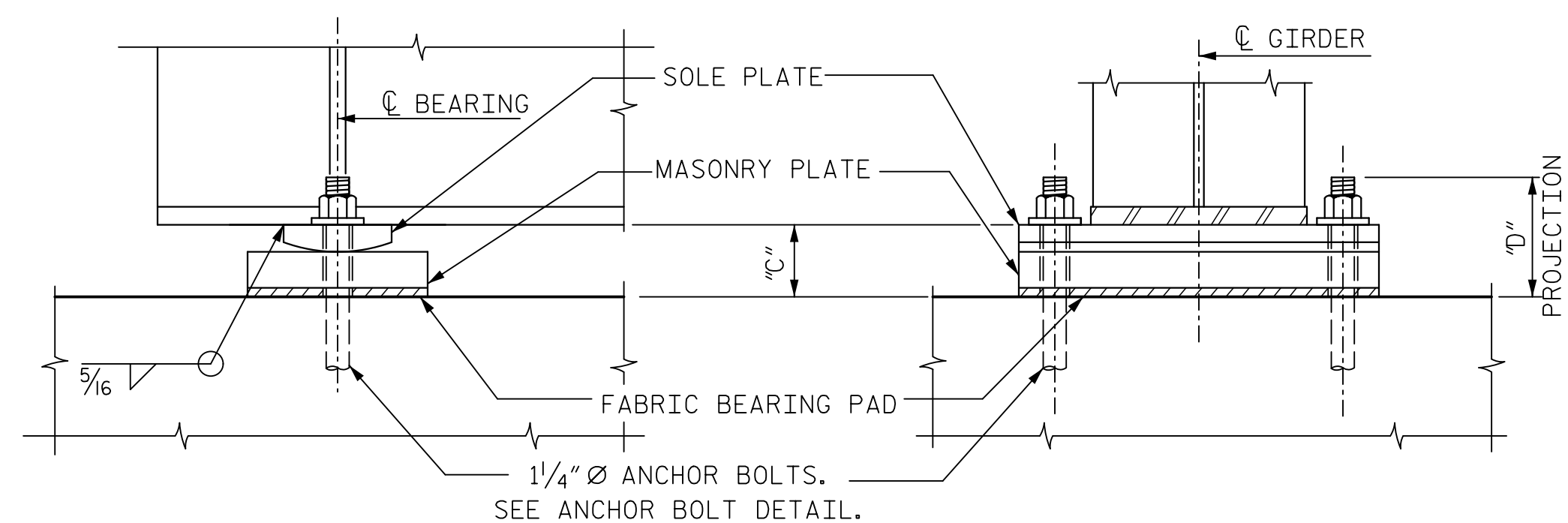


FIXED BEARINGS

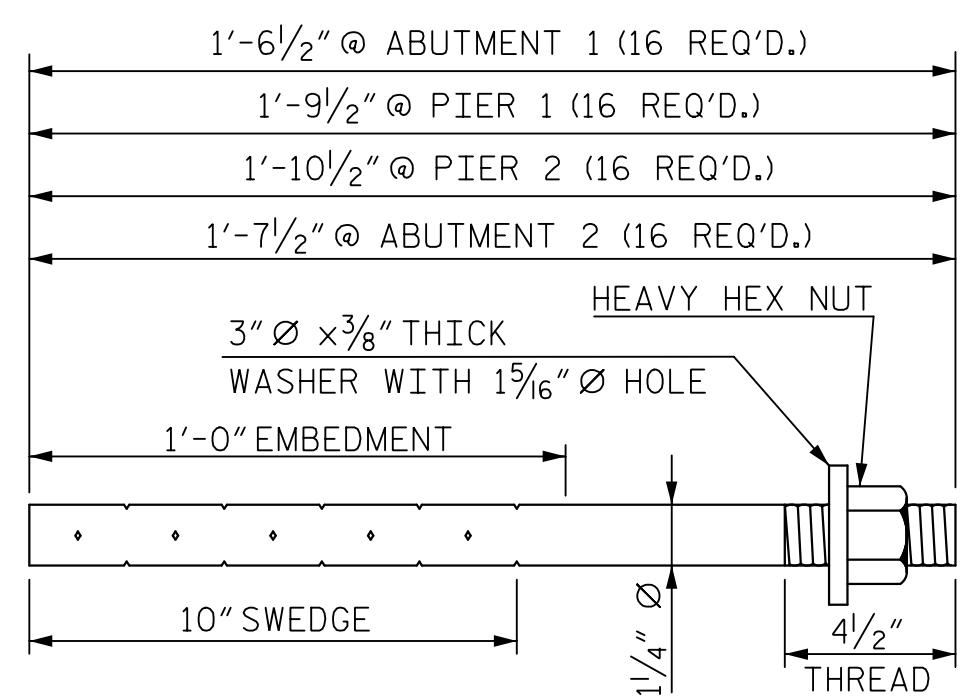


EXPANSION BEARINGS

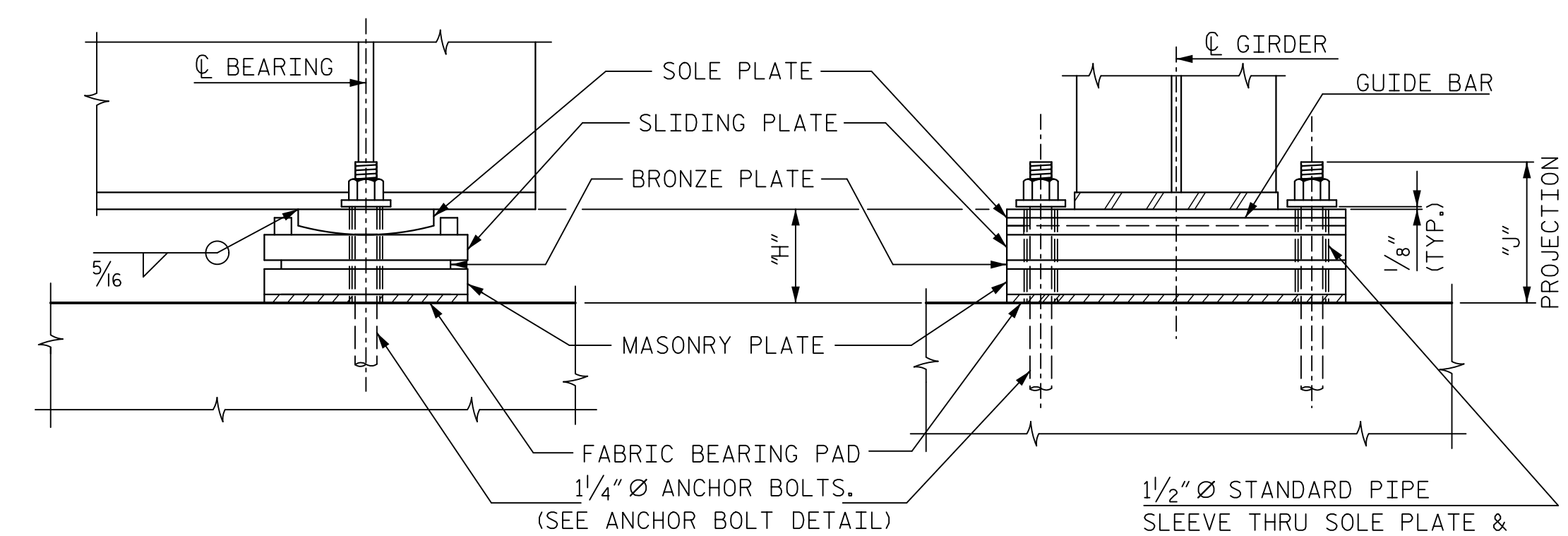
BRONZE PLATE TO BE ASTM B22 - COPPER ALLOY 911 OR ASTM B100 - COPPER ALLOY 510. TOP SURFACE TO BE SELF LUBRICATING.



FIXED BEARING ASSEMBLY (FBA-1)
(16 REQ'D)



ANCHOR BOLT DETAIL

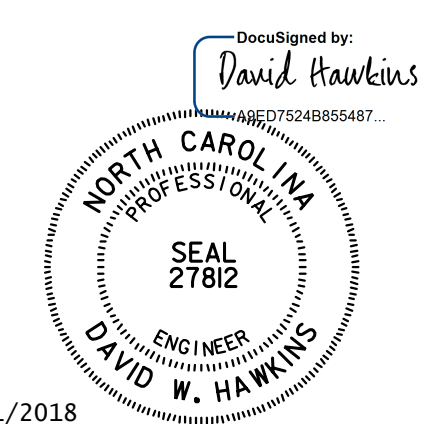


EXPANSION BEARING ASSEMBLY (EBA-1)
(16 REQ'D)

NOTES:

- ANCHOR BOLTS, SLIDING PLATE (EXPANSION BEARING) AND MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL BE HOT DIPPED GALVANIZED.
- ALL PLATE SURFACES SHALL BE PAINTED WITH A 3 COAT PAINT SYSTEM EXCEPT AS SPECIFIED BELOW.
- (A) THE SLIDING PLATE (EXPANSION BEARING) SHALL NOT BE PAINTED BUT SHALL RECEIVE A COAT OF LUBRICATION.
- (B) THE MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL NOT BE PAINTED.
- (C) THE BOTTOM SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED BUT SHALL RECEIVE A SINGLE COAT OF PRIMER APPLIED IN THE SHOP.
- (D) THE TOP SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED IN THE VICINITY OF THE WELD BETWEEN THE SOLE PLATE AND THE BOTTOM FLANGE.
- FOR PAINTING STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.
- FOR SELF LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

GIRDER	BEARING PLATE SCHEDULE									
	DIMENSIONS									
	FIXED BEARING (FBA-1)					EXPANSION BEARING (EBA-1)				
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"
AG1	1 1/2"	2 7/8"	4 1/8"	6 1/2"	1 1/2"	1 1/2"	3 1/4"	7 1/4"	9 1/2"	2" x 3 1/2"
AG2	1 1/2"	2 7/8"	4 1/8"	6 1/2"	1 1/2"	1 1/2"	3 1/8"	7 1/8"	9 1/2"	2" x 3 1/2"
AG3	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	3 1/8"	7 1/8"	9 1/2"	2" x 3 1/2"
AG4	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	3"	7"	9 1/2"	2" x 3 1/2"
AG5	1 1/2"	1 7/8"	3 7/8"	6 1/2"	1 1/2"	1 1/2"	3"	7"	9 1/2"	2" x 3 1/2"
AG6	1 1/2"	1 7/8"	3 7/8"	6 1/2"	1 1/2"	1 1/2"	2 7/8"	6 7/8"	9 1/2"	2" x 3 1/2"
AG7	1 1/2"	1 3/4"	3 3/4"	6 1/2"	1 1/2"	1 1/2"	2 7/8"	6 7/8"	9 1/2"	2" x 3 1/2"
AG8	1 1/2"	1 3/4"	3 3/4"	6 1/2"	1 1/2"	1 1/2"	2 7/8"	6 7/8"	9 1/2"	2" x 3 1/2"
CG1	1 1/2"	3"	5"	7 1/2"	1 1/2"	2"	3 3/8"	7 3/8"	10 1/2"	2" x 4"
CG2	1 1/2"	2 7/8"	4 7/8"	7 1/2"	1 1/2"	2"	3 1/4"	7 3/4"	10 1/2"	2" x 4"
CG3	1 1/2"	2 7/8"	4 7/8"	7 1/2"	1 1/2"	2"	3 1/4"	7 3/4"	10 1/2"	2" x 4"
CG4	1 1/2"	2 3/4"	4 3/4"	7 1/2"	1 1/2"	2"	3 3/8"	7 5/8"	10 1/2"	2" x 4"
CG5	1 1/2"	2 3/4"	4 3/4"	7 1/2"	1 1/2"	2"	3 3/8"	7 5/8"	10 1/2"	2" x 4"
CG6	1 1/2"	2 5/8"	4 5/8"	7 1/2"	1 1/2"	2"	3"	7 1/2"	10 1/2"	2" x 4"
CG7	1 1/2"	2 5/8"	4 5/8"	7 1/2"	1 1/2"	2"	3"	7 1/2"	10 1/2"	2" x 4"
CG8	1 1/2"	2 1/2"	4 1/2"	7 1/2"	1 1/2"	2"	2 7/8"	7 3/8"	10 1/2"	2" x 4"

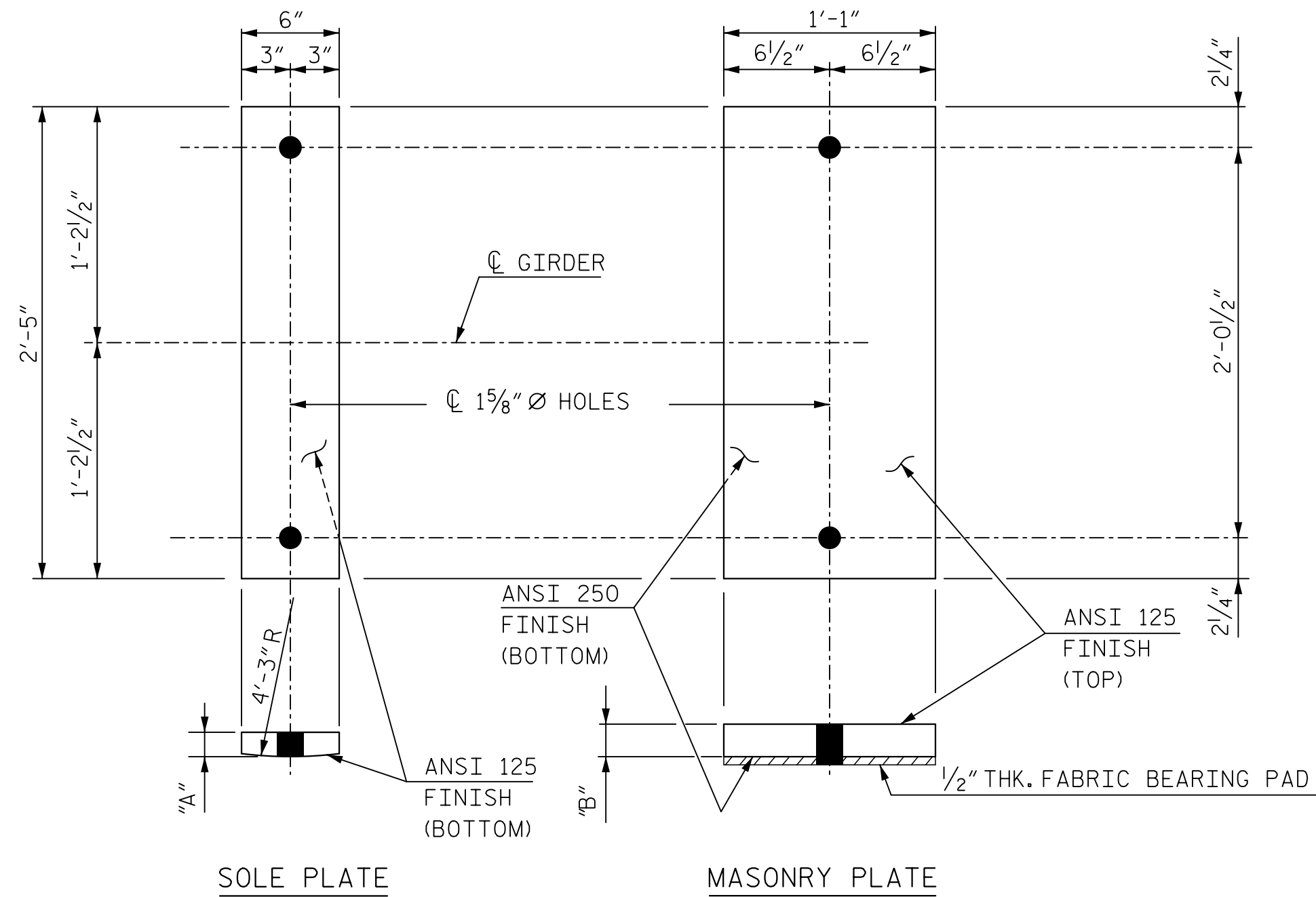


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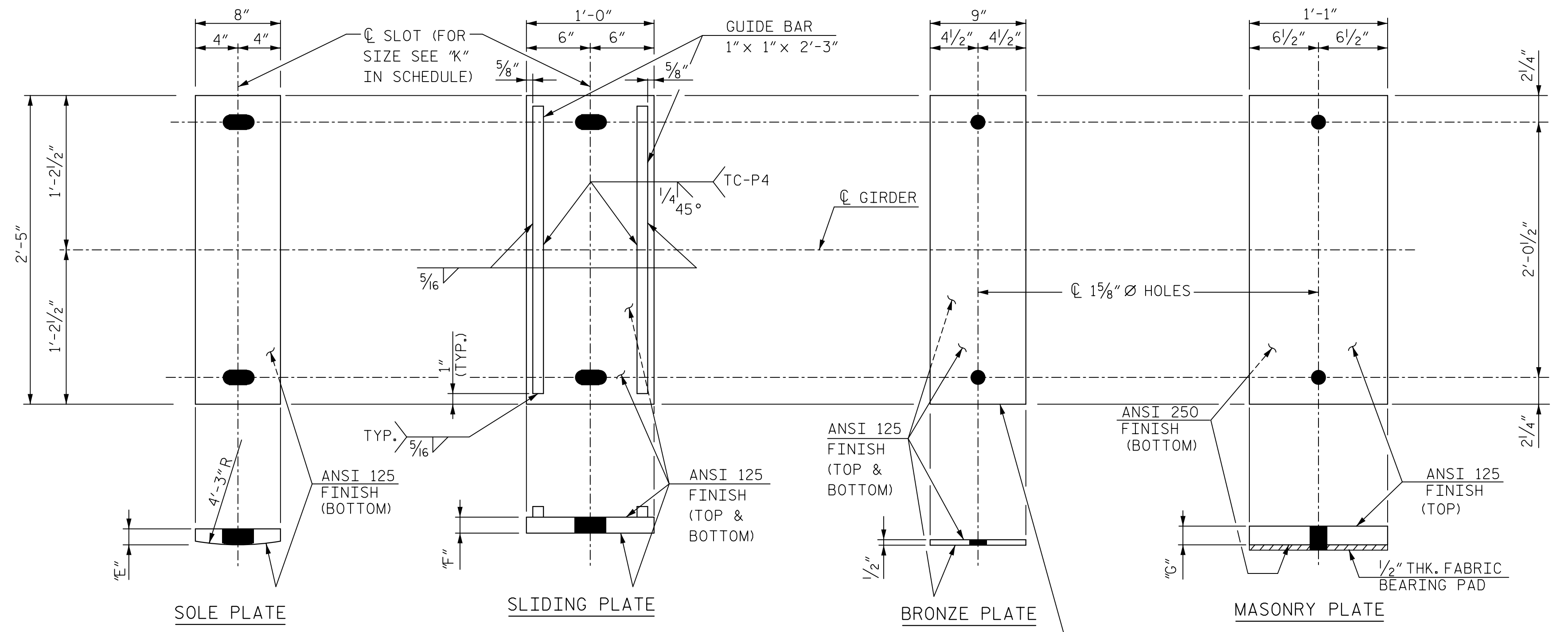
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BEARING DETAILS
 SPANS A & C

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S1-16 TOTAL SHEETS 39		
	NO.	BY	DATE	NO.		BY	DATE
	1		9/17	3			
2		9/17	4				

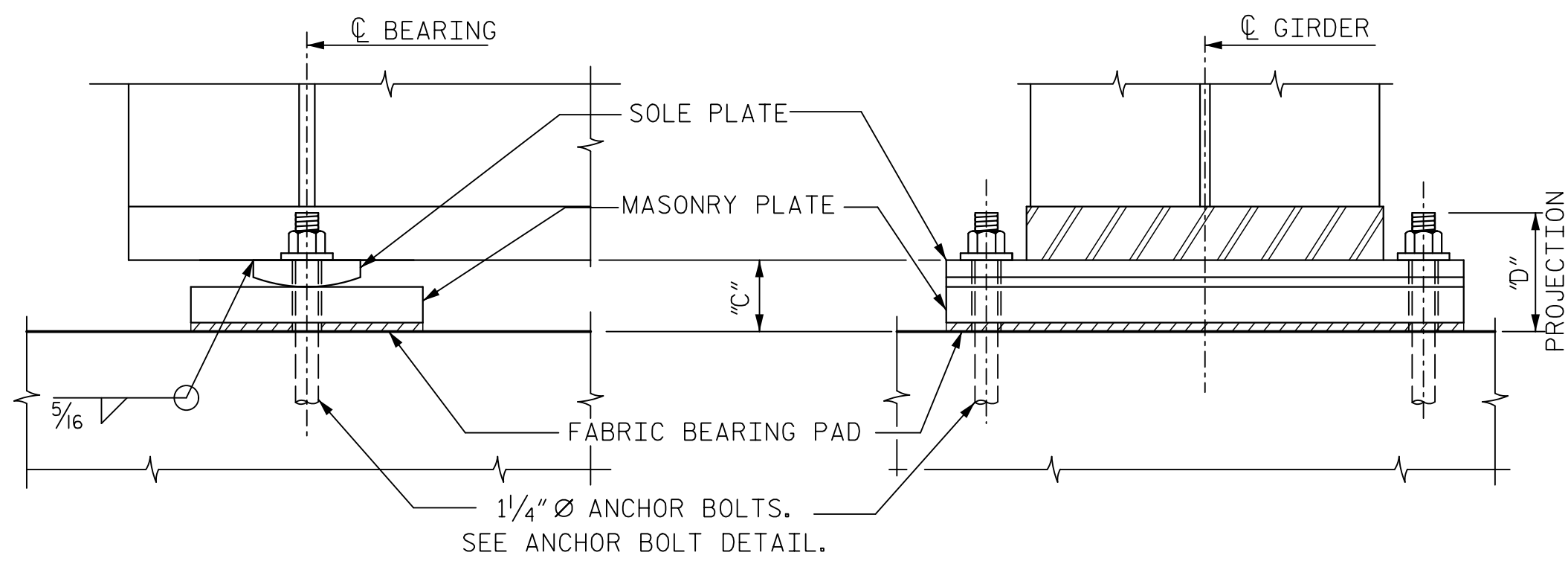


FIXED BEARINGS

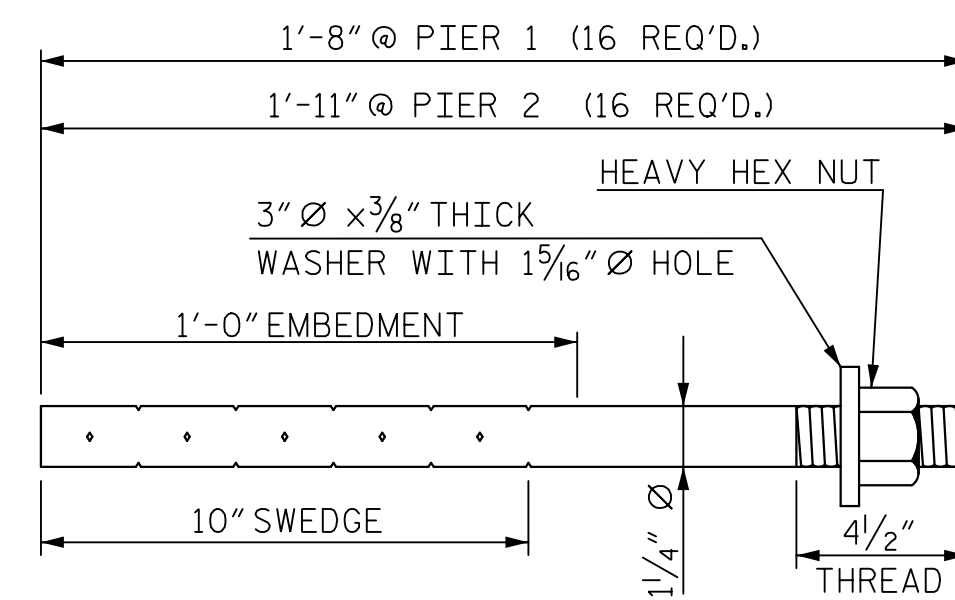


EXPANSION BEARINGS

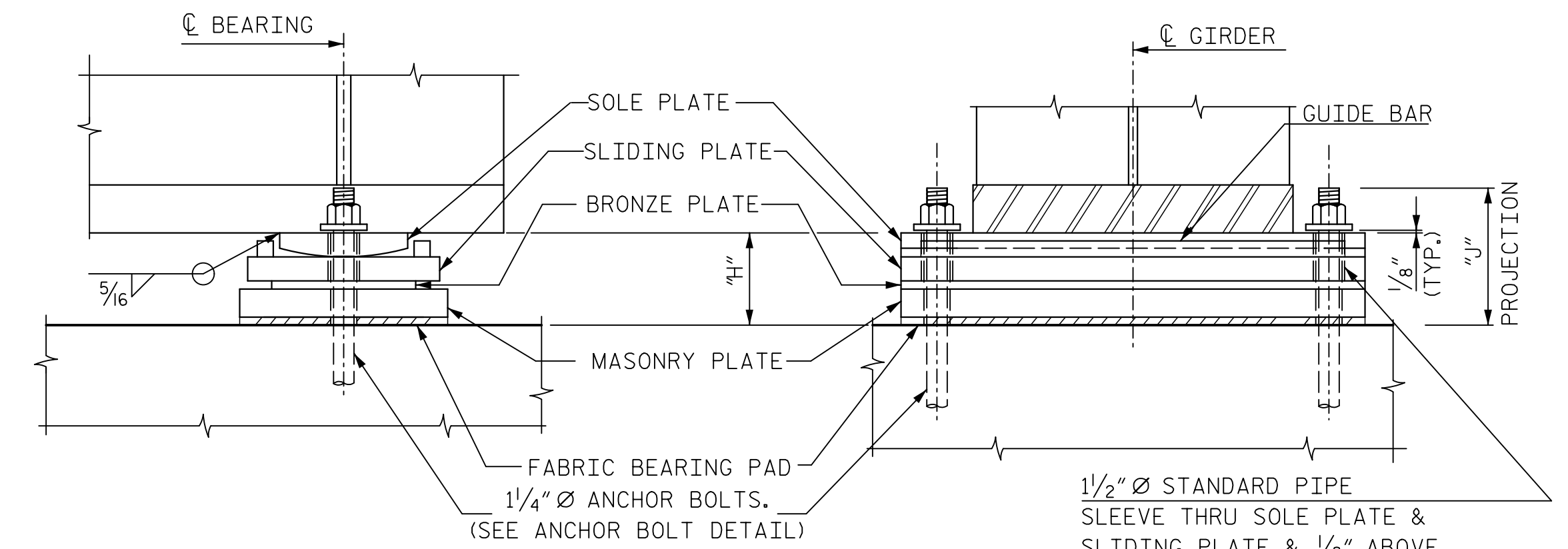
BRONZE PLATE TO BE ASTM B22 - COPPER ALLOY 911 OR ASTM B100 - COPPER ALLOY 510. TOP SURFACE TO BE SELF LUBRICATING.



FIXED BEARING ASSEMBLY (FBA-2)
(8 REQ'D)



ANCHOR BOLT DETAIL



EXPANSION BEARING ASSEMBLY (EBA-2)
(8 REQ'D)

NOTES:

ANCHOR BOLTS, SLIDING PLATE (EXPANSION BEARING) AND MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL BE HOT DIPPED GALVANIZED.

ALL PLATE SURFACES SHALL BE PAINTED WITH A 3 COAT PAINT SYSTEM EXCEPT AS SPECIFIED BELOW.

(A) THE SLIDING PLATE (EXPANSION BEARING) SHALL NOT BE PAINTED BUT SHALL RECEIVE A COAT OF LUBRICATION.

(B) THE MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL NOT BE PAINTED.

(C) THE BOTTOM SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED BUT SHALL RECEIVE A SINGLE COAT OF PRIMER APPLIED IN THE SHOP.

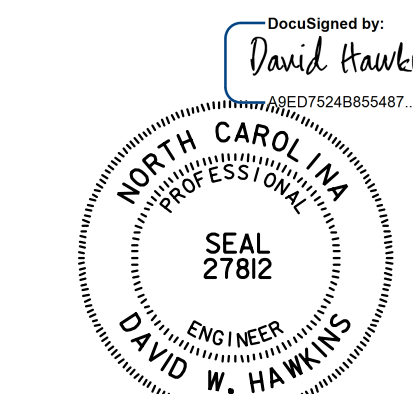
(D) THE TOP SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED IN THE VICINITY OF THE WELD BETWEEN THE SOLE PLATE AND THE BOTTOM FLANGE.

FOR PAINTING STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR SELF LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

BEARING PLATE SCHEDULE

GIRDER	DIMENSIONS (in)									
	FIXED BEARING (FBA-2)					EXPANSION BEARING (EBA-2)				
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"
BG1	1 1/2"	3 5/8"	5 5/8"	8"	1 1/2"	2 1/4"	3 5/8"	8 3/8"	11"	2" x 5"
BG2	1 1/2"	3 5/8"	5 5/8"	8"	1 1/2"	2 1/4"	3 5/8"	8 3/8"	11"	2" x 5"
BG3	1 1/2"	3 1/2"	5 1/2"	8"	1 1/2"	2 1/4"	3 1/2"	8 1/4"	11"	2" x 5"
BG4	1 1/2"	3 1/2"	5 1/2"	8"	1 1/2"	2 1/4"	3 1/2"	8 1/4"	11"	2" x 5"
BG5	1 1/2"	3 3/8"	5 3/8"	8"	1 1/2"	2 1/4"	3 3/8"	8 1/8"	11"	2" x 5"
BG6	1 1/2"	3 3/8"	5 3/8"	8"	1 1/2"	2 1/4"	3 3/8"	8 1/8"	11"	2" x 5"
BC7	1 1/2"	3 1/4"	5 1/4"	8"	1 1/2"	2 1/4"	3 1/4"	8"	11"	2" x 5"
BC8	1 1/2"	3 1/4"	5 1/4"	8"	1 1/2"	2 1/4"	3 1/4"	8"	11"	2" x 5"



2/21/2018

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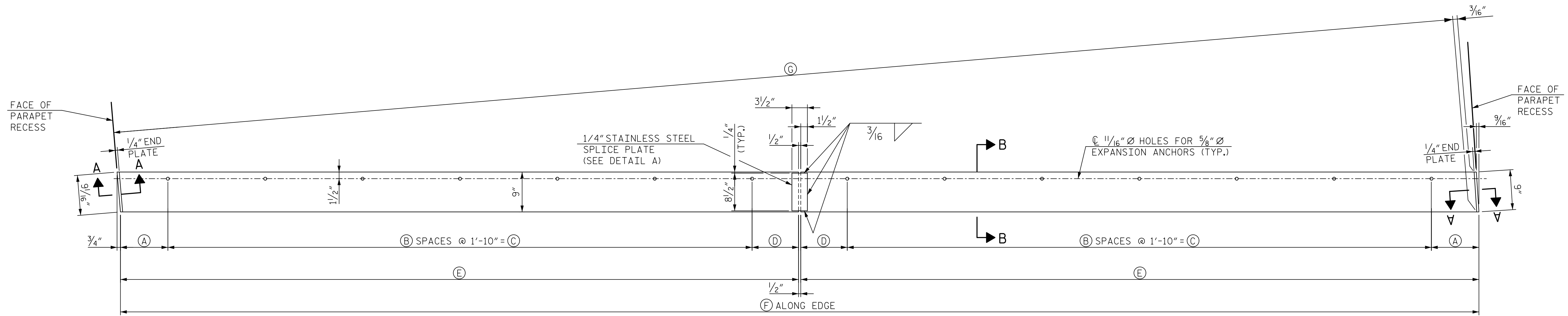
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 BEARING DETAILS
 SPAN B

HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY <u>M. WRIGHT</u>	DATE <u>9/17</u>
CHECKED BY <u>N. ZAMUDIO</u>	DATE <u>9/17</u>
DWG. NO. 17	

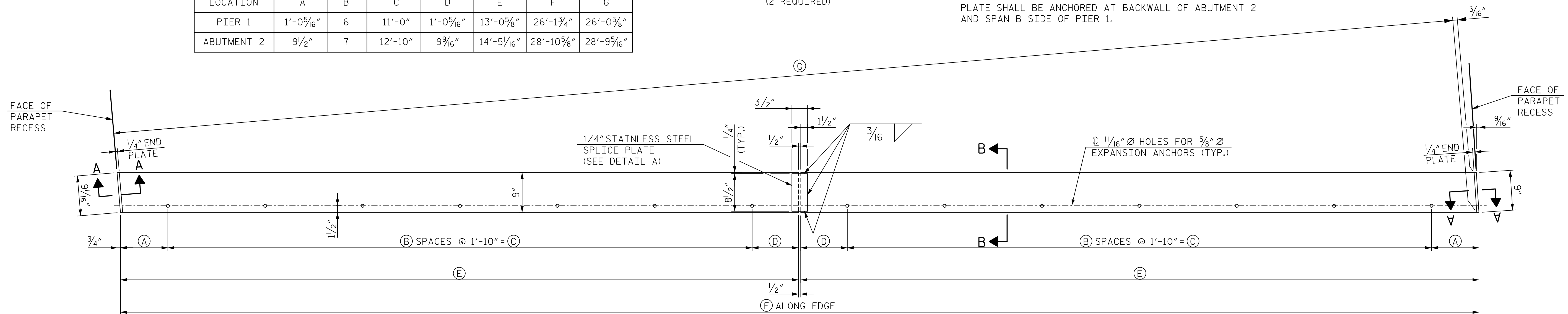
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-17
1			3			TOTAL SHEETS
2			4			39



EXPANSION PLATE A TABLE							
LOCATION	A	B	C	D	E	F	G
PIER 1	1'-0 ⁵ / ₁₆ "	6	11'-0"	1'-0 ⁵ / ₁₆ "	13'-0 ⁵ / ₁₆ "	26'-1 ³ / ₄ "	26'-0 ⁵ / ₁₆ "
ABUTMENT 2	9 ¹ / ₂ "	7	12'-10"	9 ⁹ / ₁₆ "	14'-5 ¹ / ₁₆ "	28'-10 ⁵ / ₁₆ "	28'-9 ⁵ / ₁₆ "

PLAN - EXPANSION PLATE A
(2 REQUIRED)

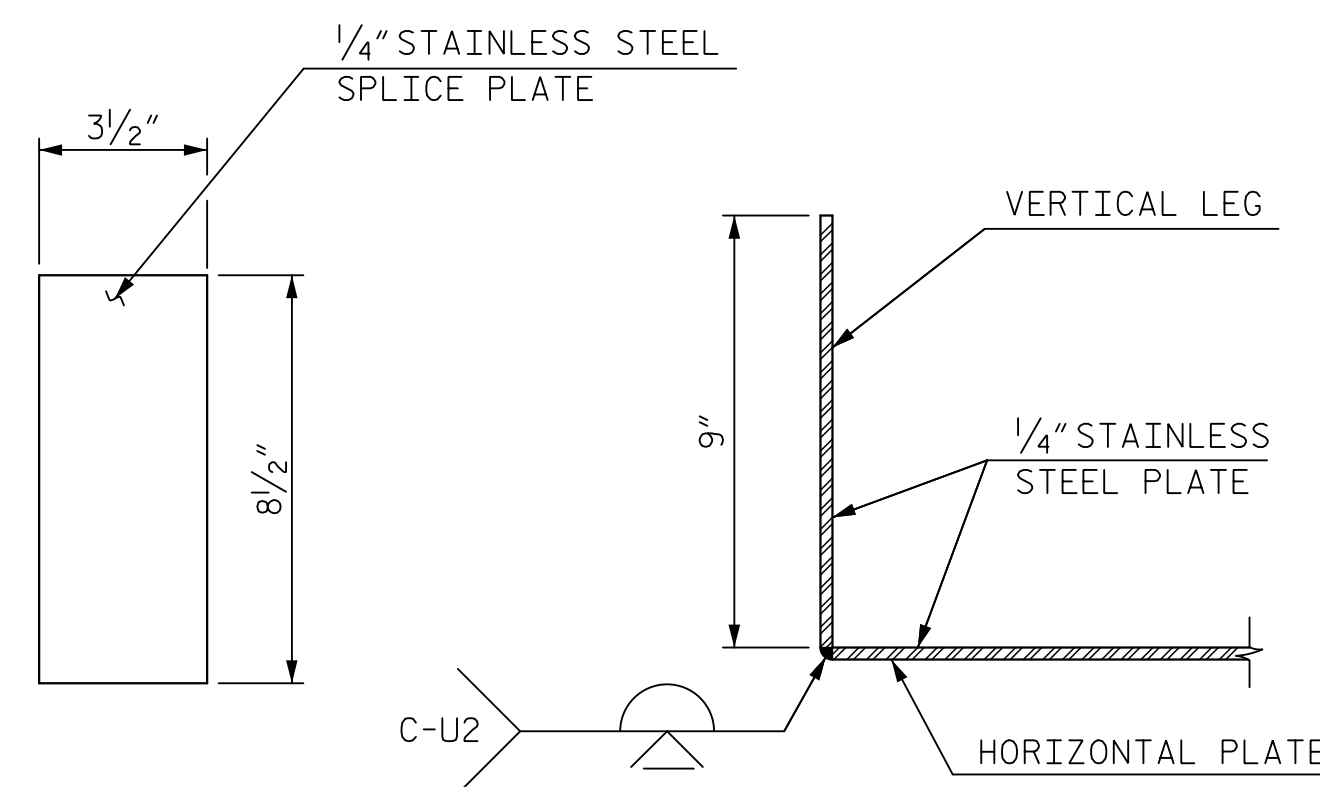
NOTE: PAYMENT FOR THE EXPANSION PLATE AND EXPANSION ANCHORS IS INCLUDED IN THE COST FOR STRUCTURE STEEL.
PLATE SHALL BE ANCHORED AT BACKWALL OF ABUTMENT 2 AND SPAN B SIDE OF PIER 1.



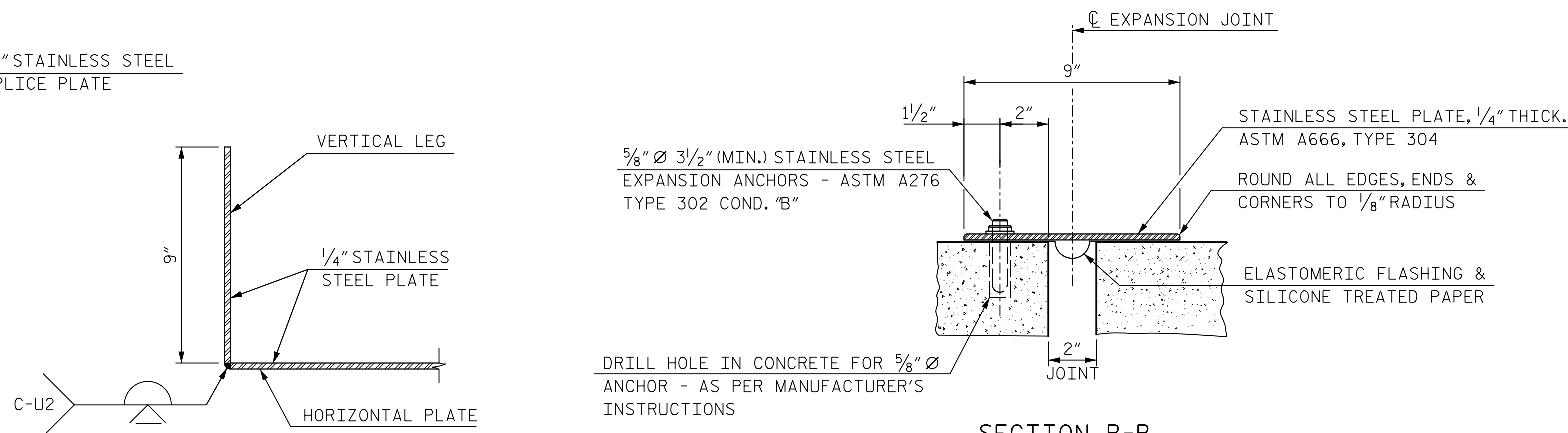
EXPANSION PLATE B TABLE							
LOCATION	A	B	C	D	E	F	G
ABUTMENT 1	10 ³ / ₄ "	6	11'-0"	10 ³ / ₁₆ "	12'-9 ⁹ / ₁₆ "	25'-7 ⁵ / ₈ "	25'-6 ⁹ / ₁₆ "
PIER 2	7 ³ / ₈ "	7	12'-10"	7 ³ / ₈ "	14'-0 ³ / ₄ "	28'-2"	28'-0 ¹ / ₁₆ "

PLAN - EXPANSION PLATE B
(2 REQUIRED)

NOTE: PAYMENT FOR THE EXPANSION PLATE AND EXPANSION ANCHORS IS INCLUDED IN THE COST FOR STRUCTURE STEEL.
PLATE SHALL BE ANCHORED AT BACKWALL OF ABUTMENT 1 AND SPAN B SIDE OF PIER 2.



DETAIL A



SECTION B-B

DETAIL OF EXPANSION ANCHOR AND PLATE

SEE DETAIL A ON "DECK DETAILS" SHEET FOR ADDITIONAL JOINT INFORMATION.



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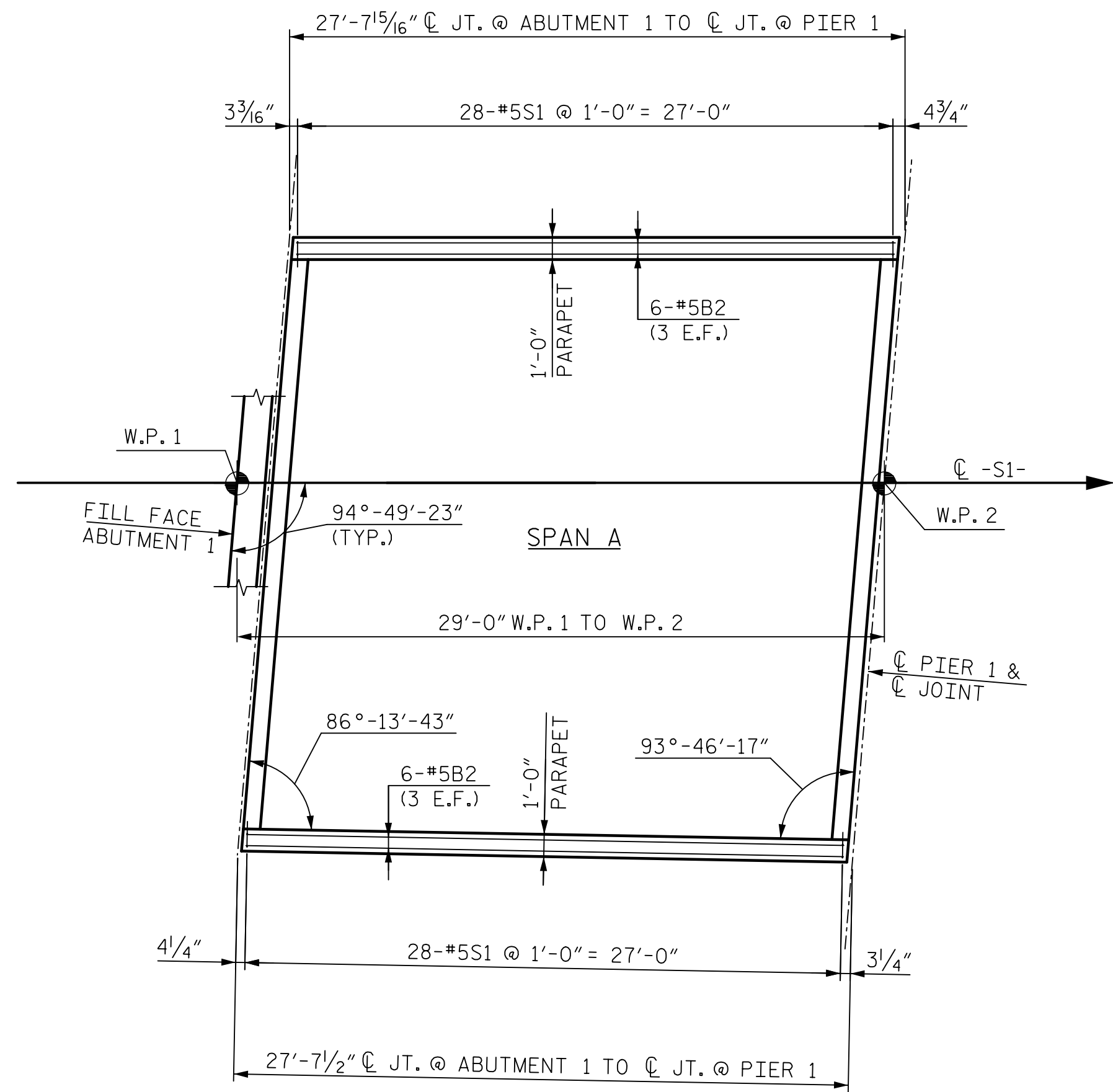
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MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

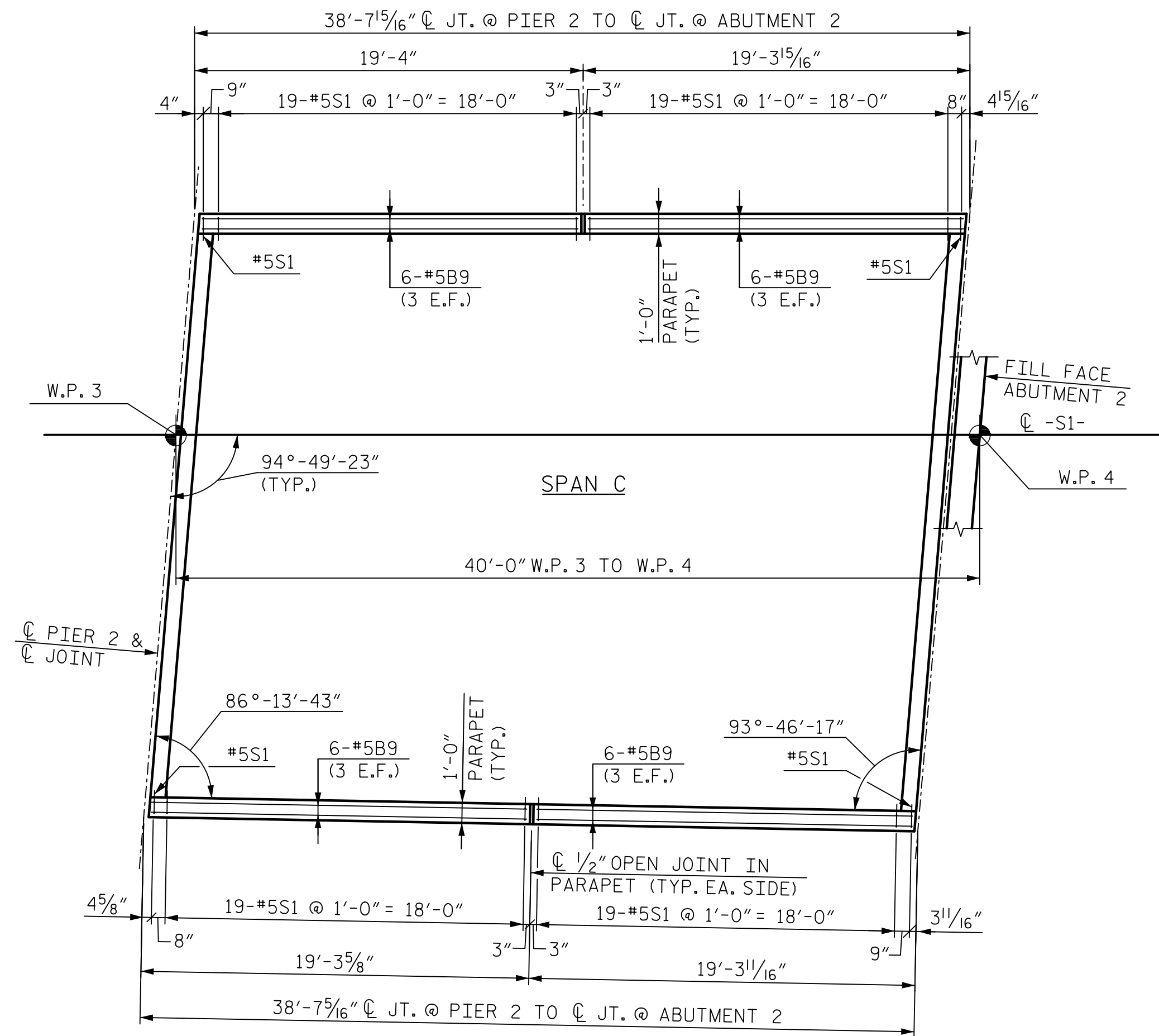
SUPERSTRUCTURE
EXPANSION
PLATE DETAILS

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DRAWN BY: <u>M. WRIGHT</u>	DATE: <u>9/17</u>	DWG. NO. <u>18</u>	
CHECKED BY: <u>V. KOLLIPARA</u>	DATE: <u>9/17</u>		

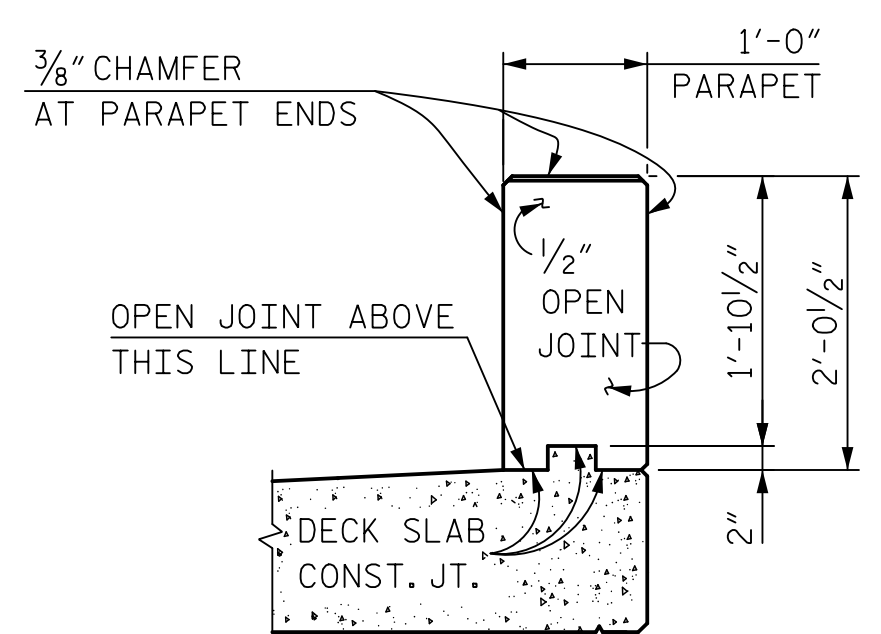
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-18
1			3			TOTAL SHEETS
2			4			39



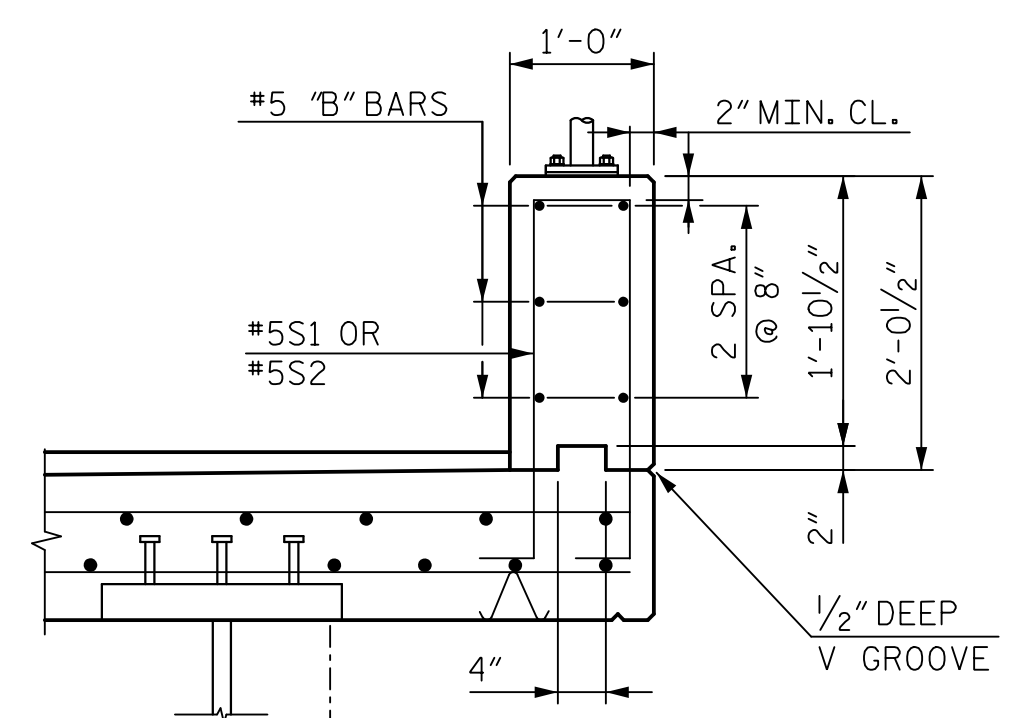
PLAN - SPAN A PARAPETS



PLAN - SPAN C PARAPETS



SECTION THRU OPEN JOINT IN PARAPET



SECTION THRU PARAPET

NOTES:

METAL HANDRAIL NOT SHOWN FOR CLARITY.

ALL HORIZONTAL DIMENSIONS SHOWN ARE MEASURED ALONG EXTERIOR FACE OF PARAPET.

ALL REINFORCING SHALL BE EPOXY COATED.

FOR LOCATION AND DETAILS OF SIGNAL CONDUIT IN CONCRETE PARAPET, SEE "TYPICAL SECTION" SHEET.

FOR ALUMINUM HANDRAIL DETAILS, SEE "METAL HANDRAIL DETAILS" SHEETS.

VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF PARAPET AND IN ACCORDANCE WITH THE SPECIAL PROVISION FOR "CONCRETE PARAPET". THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS.

E.F. = EACH FACE

PAYMENT FOR CONCRETE PARAPET SHALL BE INCLUDED IN THE UNIT COST PAY ITEM FOR CONCRETE PARAPET.

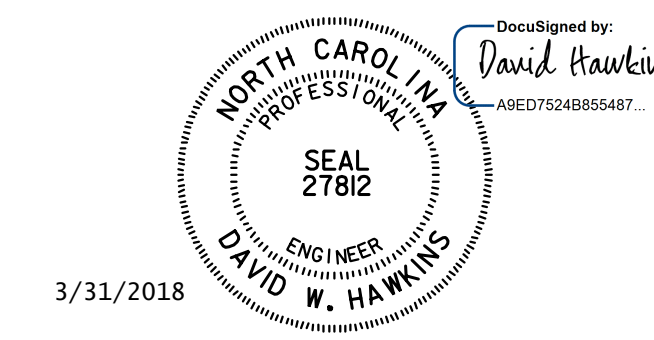
PAY LENGTH = 352.4'

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MECKLENBURG COUNTY
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SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PARAPET DETAILS

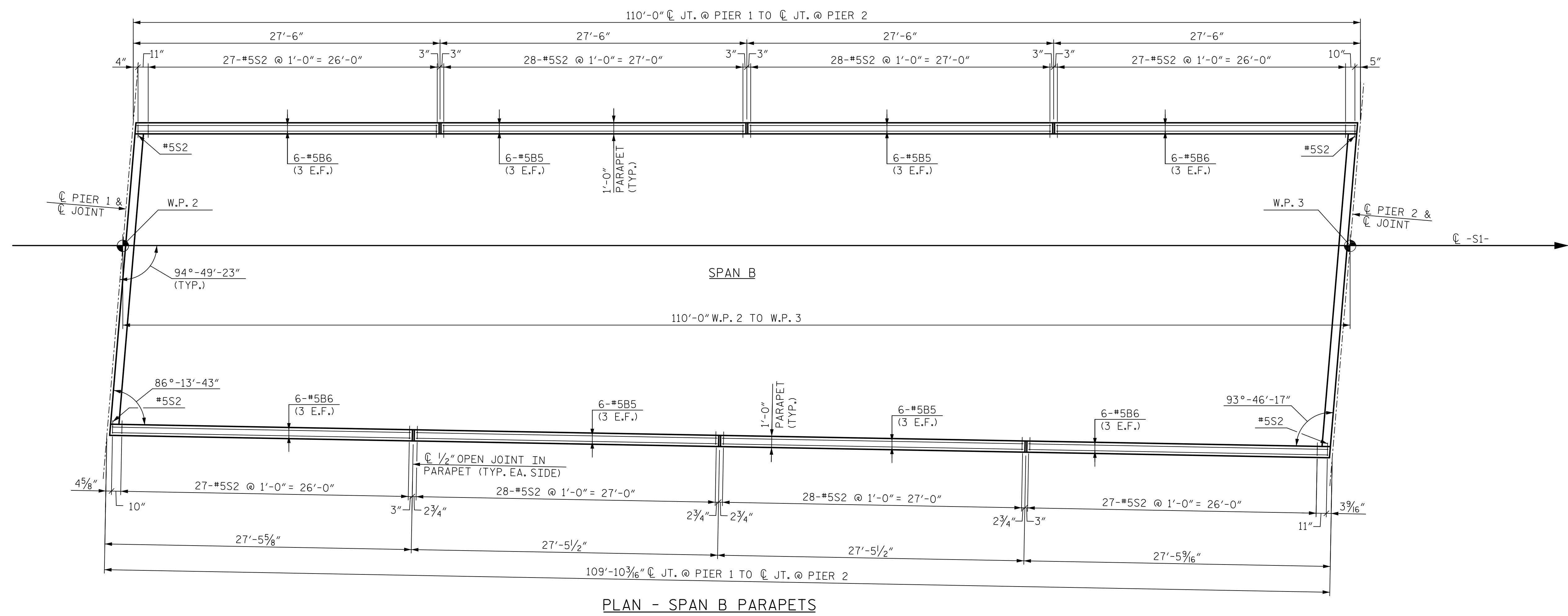


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DRAWN BY: M. WRIGHT	DATE: 9/17	DWG. NO. 19	
CHECKED BY: V. KOLLIPARA	DATE: 9/17		
REVISIONS			
NO.	BY	DATE	NO.
1			3
2			4
			SHEET NO. S1-19
			TOTAL SHEETS 39

NOTES:
FOR NOTES, SEE SHEET "PARAPET DETAILS (1 OF 2)"



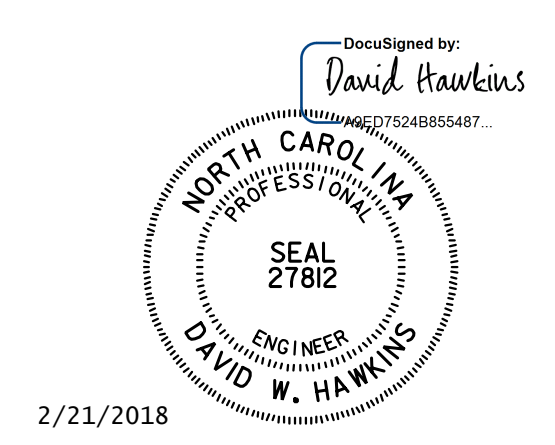
PLAN - SPAN B PARAPETS

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MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

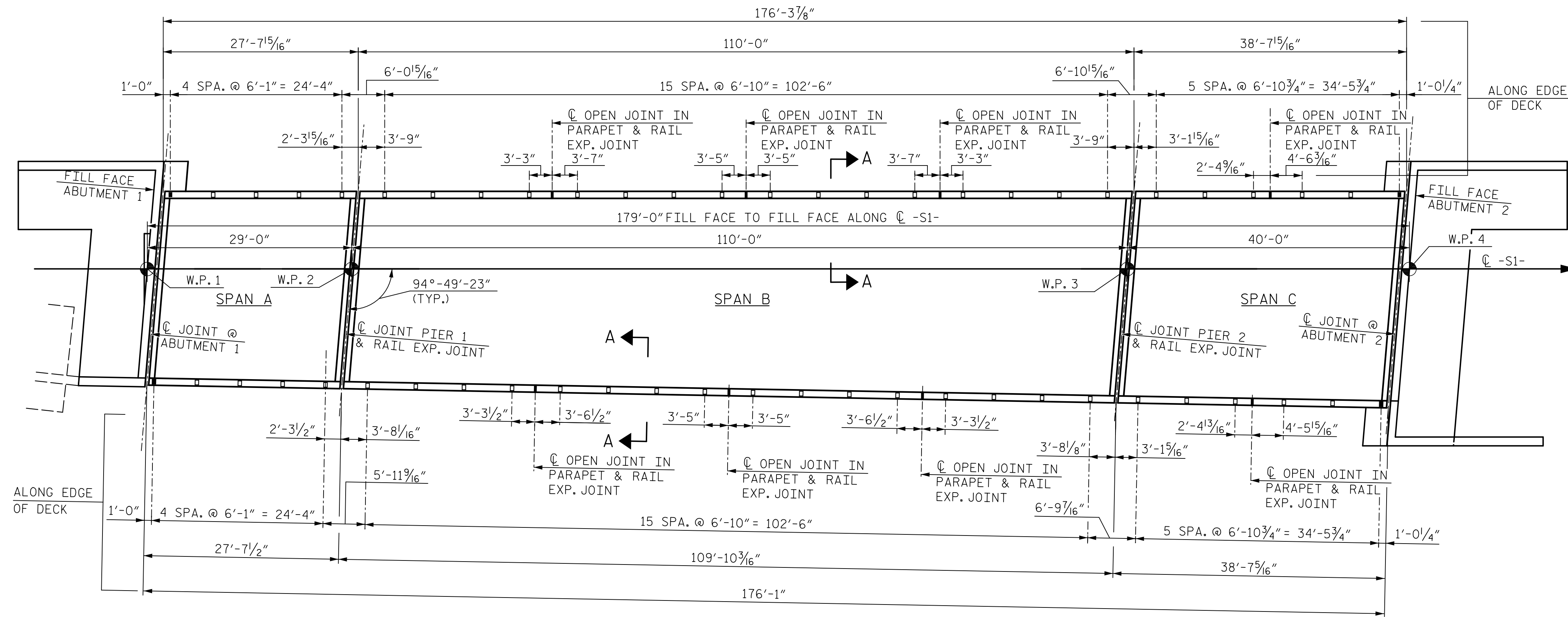
SUPERSTRUCTURE
 PARAPET DETAILS



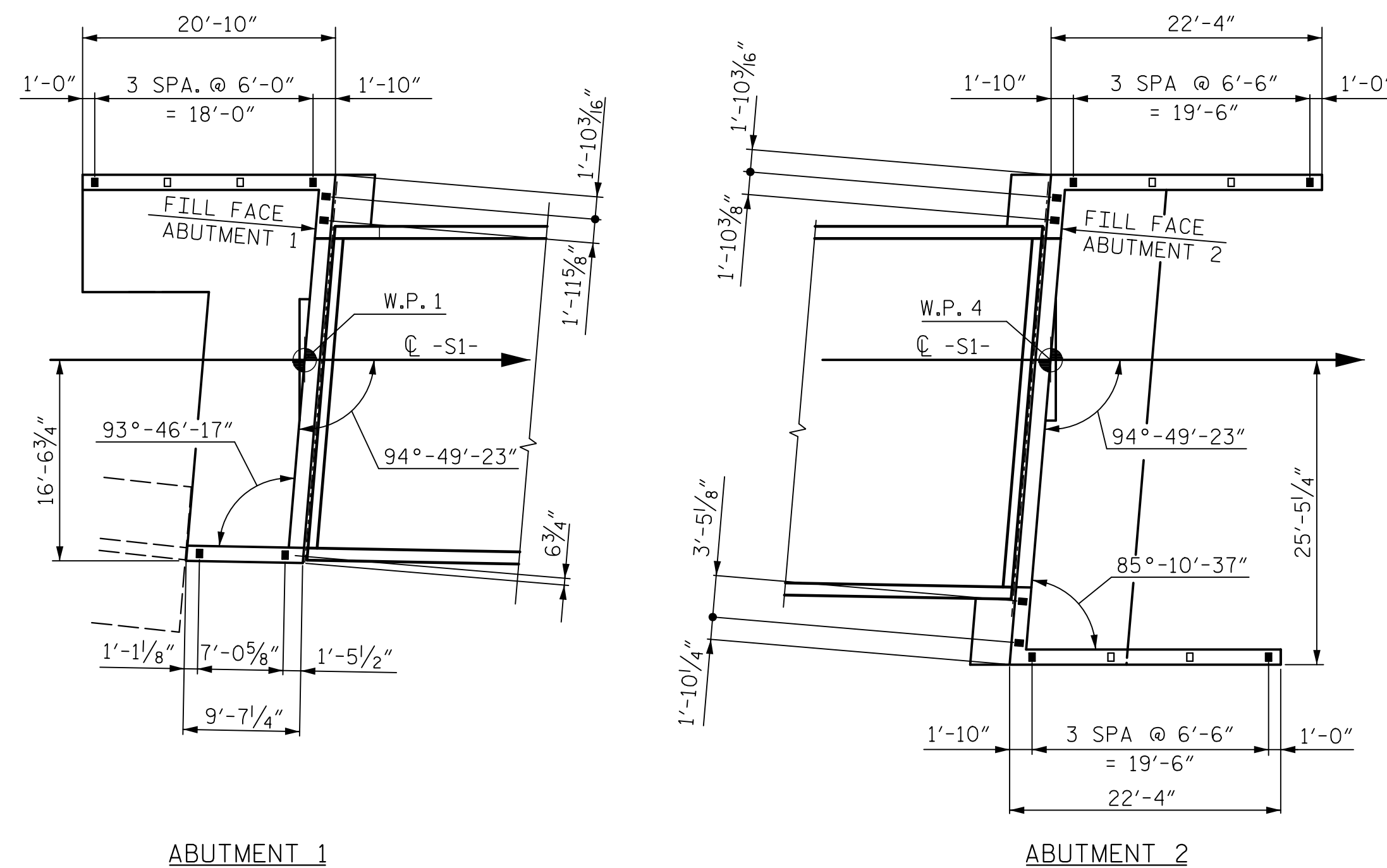
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CHECKED BY: V. KOLLIPARA	DATE: 9/17		

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1			3			TOTAL SHEETS 39
2			4			



METAL HANDRAIL POST SPACING - BRIDGE



METAL HANDRAIL POST SPACING - WINGWALLS

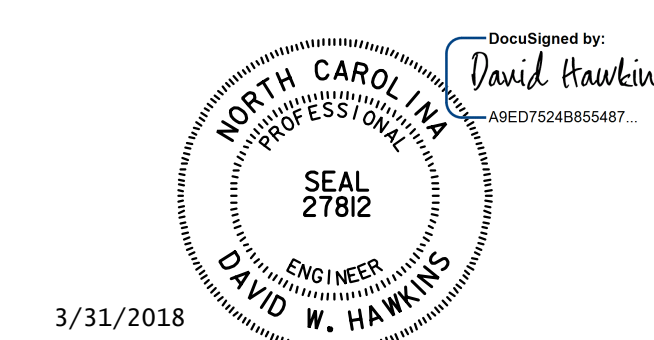
LEGEND

- - END POST
- - INTERIOR POST

NOTE: FOR SECTION A-A, SEE SHEET 2 OF 2.

ALL DIMENSIONS SHOWN ARE ALONG EXTERIOR FACE OF PARAPET/WINGWALL.

PAY LENGTH = 437.7'



3/31/2018

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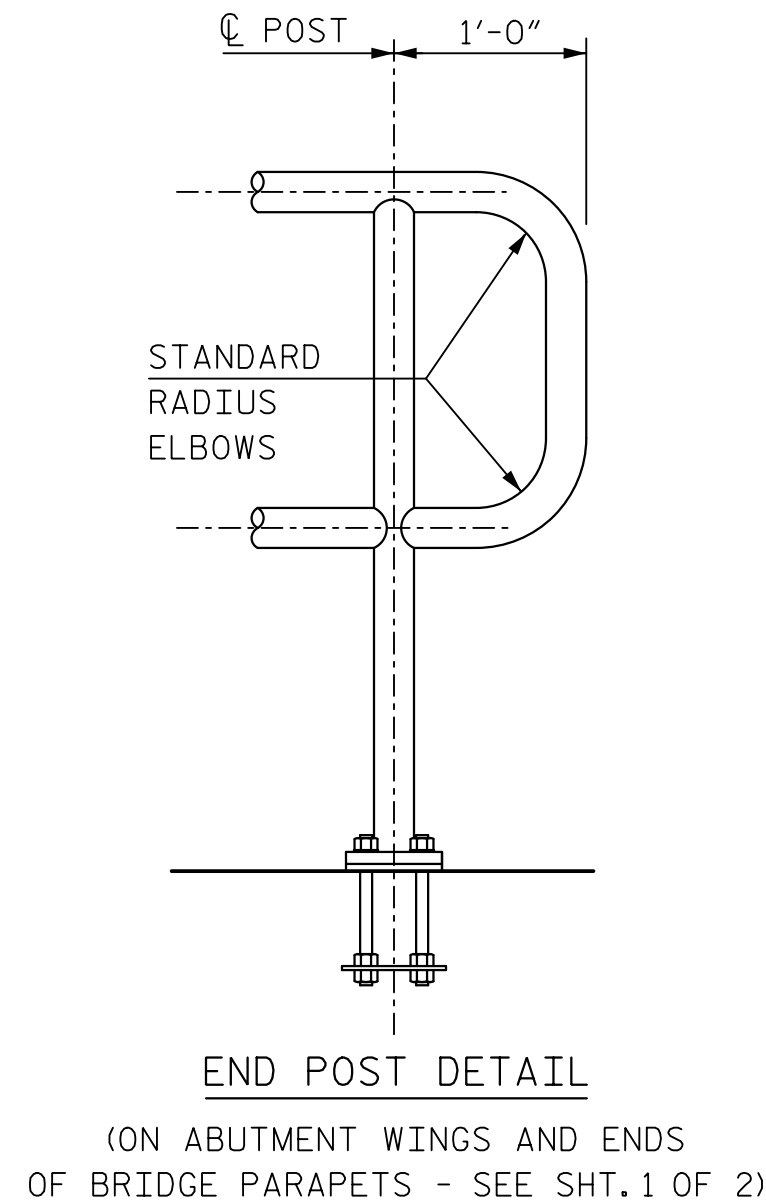
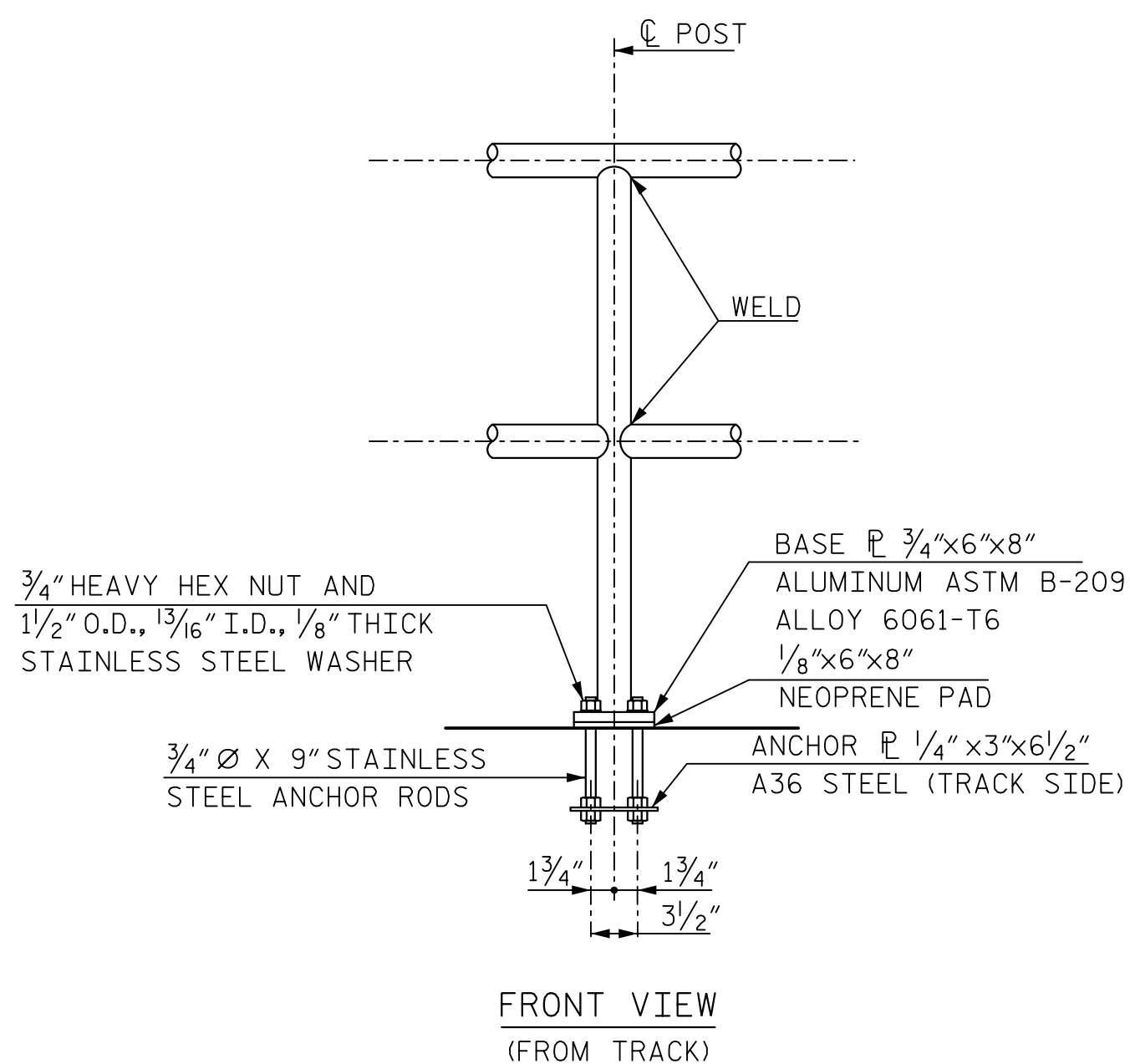
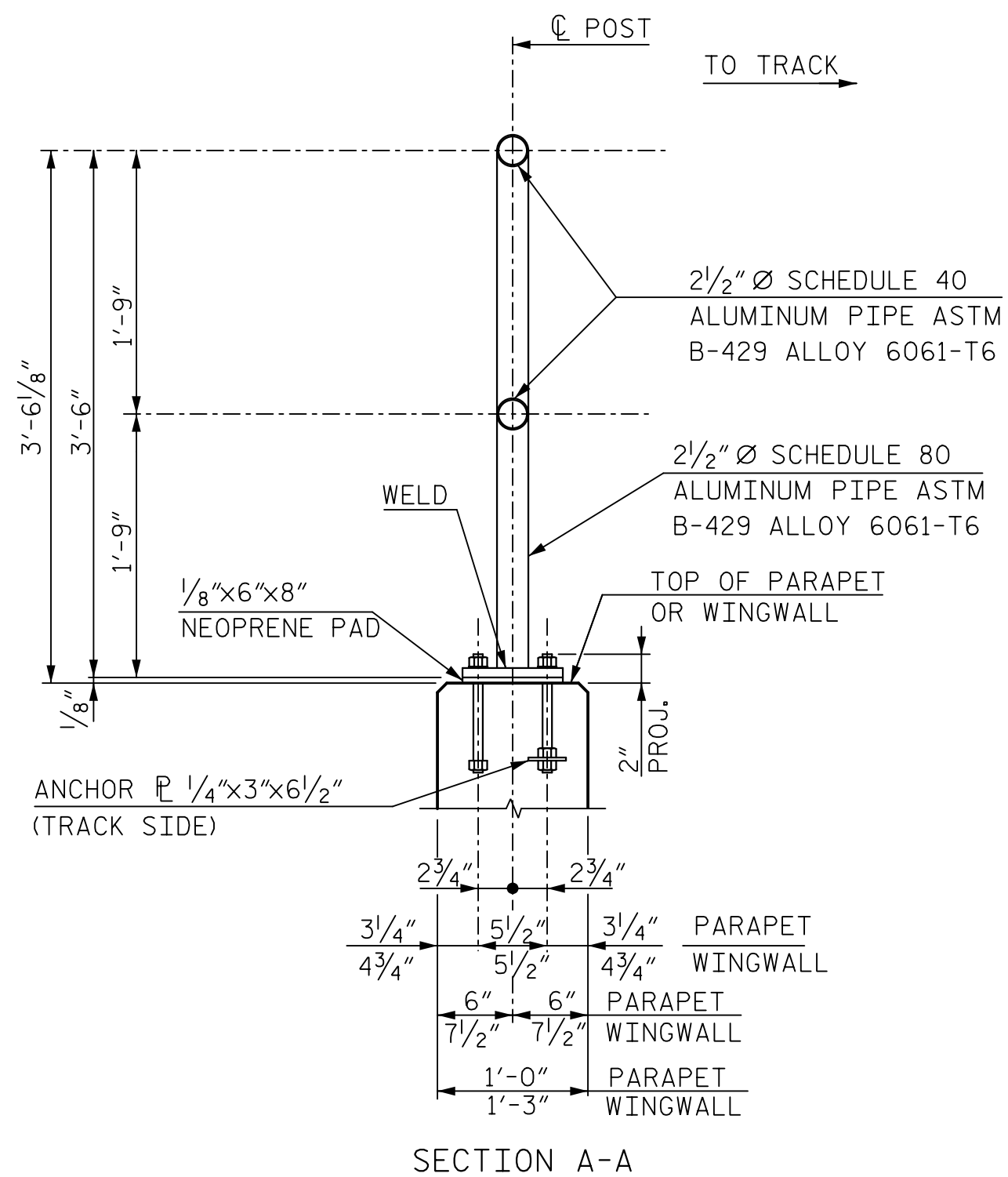
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

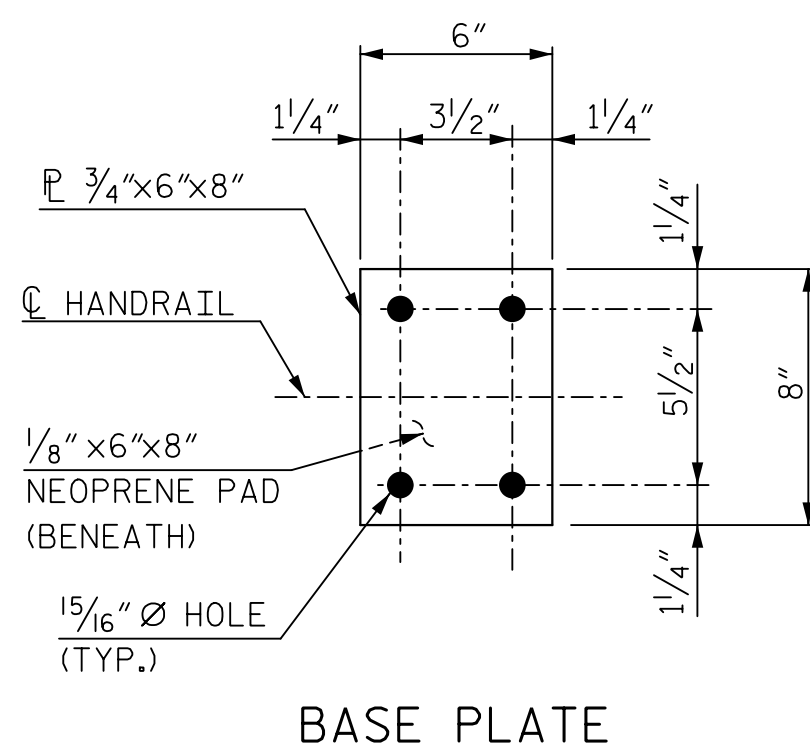
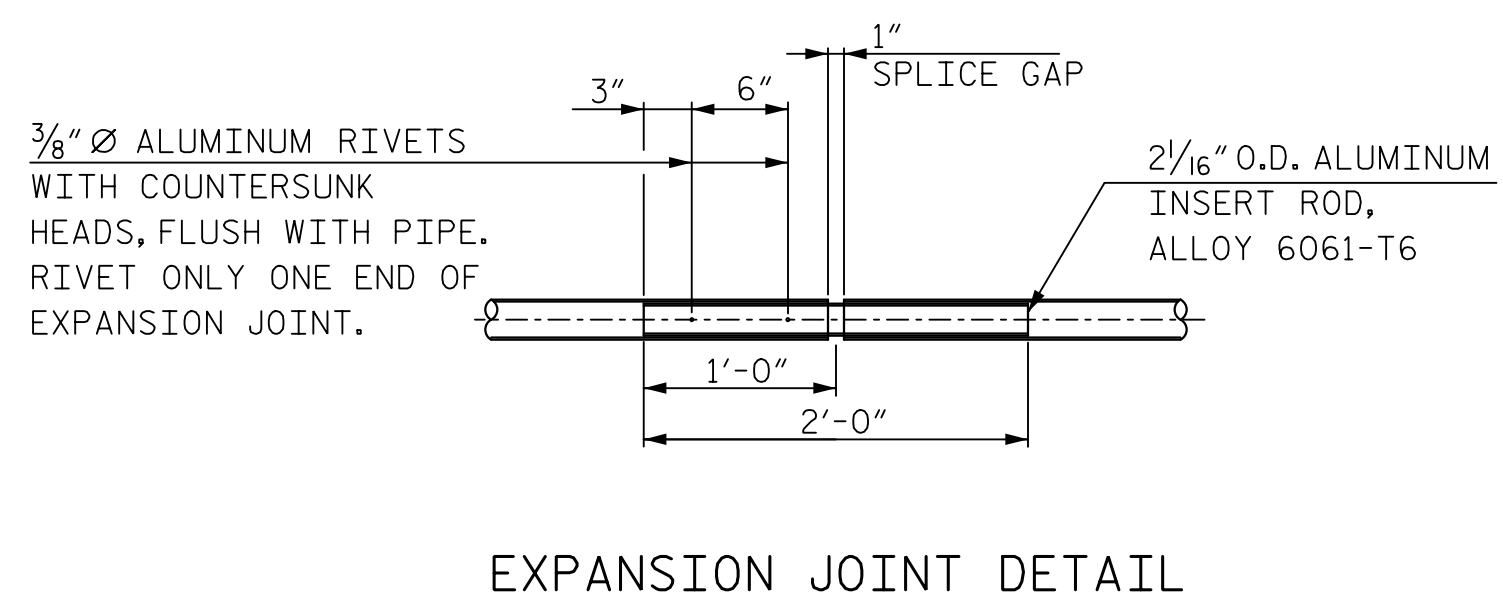
SUPERSTRUCTURE
 METAL HANDRAIL
 DETAILS

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DRAWN BY <u>M. WRIGHT</u>	DATE <u>8/17</u>	DWG. NO. <u>21</u>	
CHECKED BY <u>J. WHEATLEY</u>	DATE <u>12/17</u>		

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2			4			39



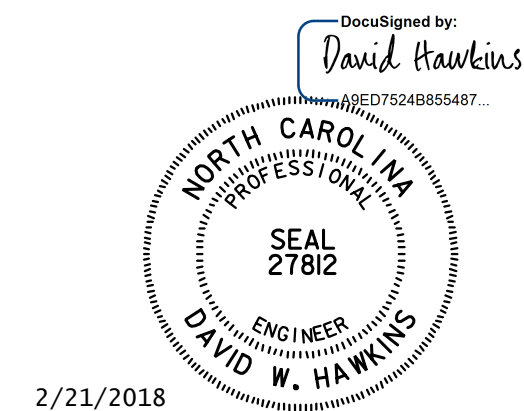
ALUMINUM HANDRAIL AND POST



NOTES:
 JOINTS IN RAILING (SPLICE GAP) SHALL BE LOCATED AS SHOWN IN POST SPACING PLAN.
 ALUMINUM PIPE TO BE ASTM B-429, ALLOY 6061-T6 AND BASE PLATE TO BE ASTM B-209, ALLOY 6061-T6.
 STAINLESS STEEL BOLTS, CAP SCREWS, AND NUTS TO BE ASTM A-276 TYPE 304. STAINLESS STEEL WASHERS TO BE ASTM A-276 TYPE 302.
 POSTS TO BE SET PERPENDICULAR TO TOP OF PARAPET AND RAILS SHALL BE PLACED PARALLEL TO THE GRADE OF THE BRIDGE.
 CERTIFIED MILL REPORTS ARE REQUIRED FOR RAIL AND POSTS. SHOP INSPECTIONS ARE NOT REQUIRED BY THE RAILROAD BUT MAY BE REQUIRED BY NCDOT.
 AFTER ANCHOR ROD NUTS HAVE BEEN TIGHTENED, THREADS SHALL BE NICKED TO LOCK NUTS.
 CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURES 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.

ANCHOR PLATES SHALL BE STEEL CONFORMING TO ASTM SPECIFICATION A36.
 ANCHOR RODS SHALL CONFORM TO ASTM SPECIFICATION A276 TYPE 302 OR 304, STAINLESS STEEL AND THREADS SHALL BE ROLLED, NOT CUT.
 UPPER ANCHOR ROD NUTS SHALL BE HEAVY HEX NUTS, PER ASTM A276 TYPE 302 OR 304 STAINLESS STEEL.
 LOWER ANCHOR ROD NUTS SHALL BE HEAVY STEEL HEX NUTS, PER ASTM A563.
 THE CENTERLINE OF ANY SPLICE AND/OR EXPANSION JOINT IS TO BE LOCATED AT LEAST 2'-0" AWAY FROM CENTERLINE OF POST. EXPANSION AND/OR SPLICE JOINTS FOR EACH RAIL OF TWO RAILINGS ARE TO BE PLACED IN THE SAME LOCATION AND IN THE SAME PANEL.
 WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS STRUCTURAL WELDING CODE - ALUMINUM.
 THE LENGTH OF METAL RAIL TO BE PAID FOR SHALL BE THE CONTINUOUS LENGTH MEASURED FROM END TO END OF RAIL, ALONG THE TOP RAIL.
 SHOP DRAWINGS FOR RAILINGS ARE REQUIRED AND SHALL BE SUBMITTED FOR APPROVAL.
 FOR METAL RAIL (ALUMINUM), SEE SPECIAL PROVISIONS.

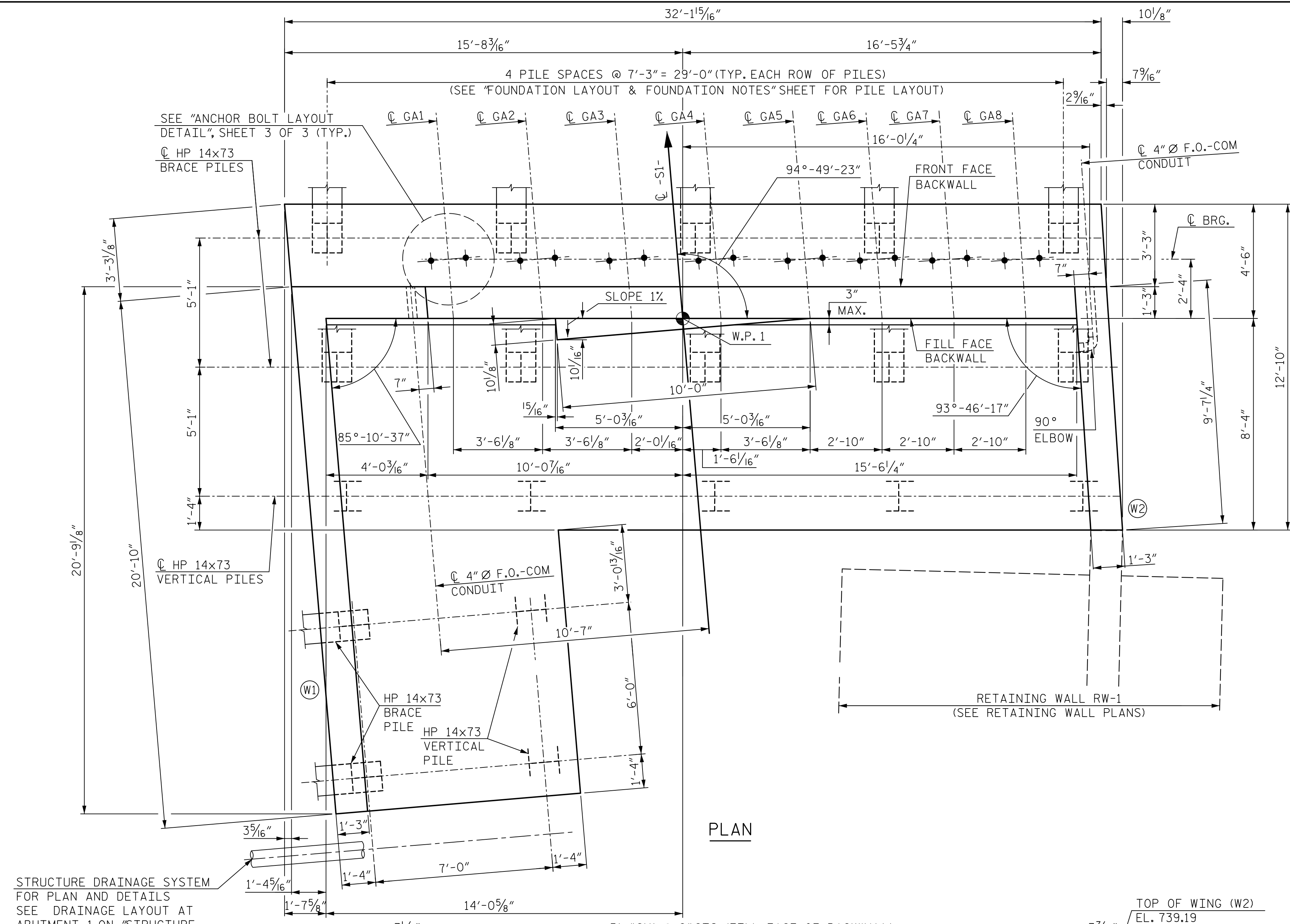
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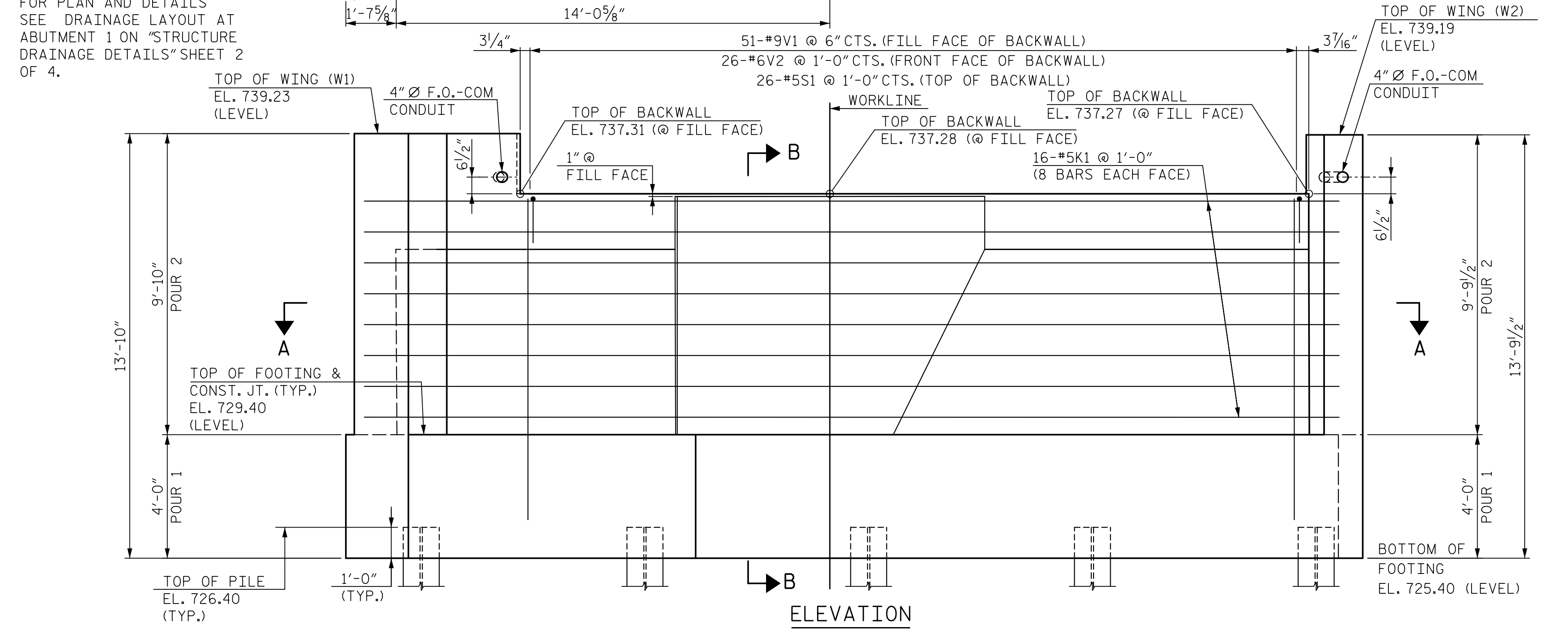
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DRAWN BY <u>J. BAYNE</u> DATE <u>9/17</u>		CHECKED BY <u>N. ZAMUDIO</u> DATE <u>9/17</u>			
REVISIONS					
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1			3		
2			4		
					SHEET NO. S1-22
					TOTAL SHEETS 39

SHEET 2 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 METAL HANDRAIL
 DETAILS



PLAN

STRUCTURE DRAINAGE SYSTEM FOR PLAN AND DETAILS SEE DRAINAGE LAYOUT AT ABUTMENT 1 ON "STRUCTURE DRAINAGE DETAILS" SHEET 2 OF 4.



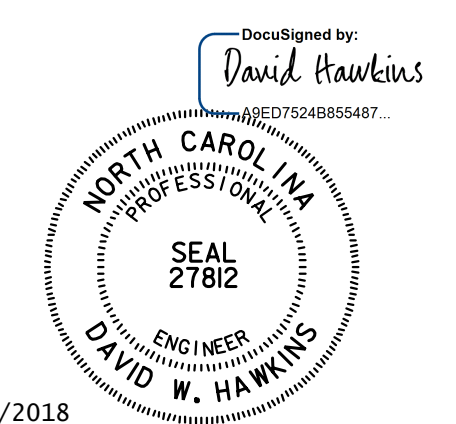
ELEVATION

NOTES:

- FOR SECTION A-A, SECTION B-B AND WINGWALL DETAILS, SEE SHEET 2 OF 3.
- FOR LAYOUT AND DETAILS OF CONTINUOUS FRENCH DRAIN SYSTEM BETWEEN ABUTMENT WINGWALLS, SEE "STRUCTURE DRAINAGE DETAILS" SHEET 4 OF 4.
- INDICATES PILE BATTERED IN DIRECTION SHOWN.
- CONDUIT TO BE 4" Ø IN ACCORDANCE WITH UNDERWRITERS LABORATORY SPECIFICATIONS.
- FOR FOOTING REINFORCING, SEE SECTION B-B SHEET 2 OF 3 AND FOOTING REINFORCING PLAN SHEET 3 OF 3.

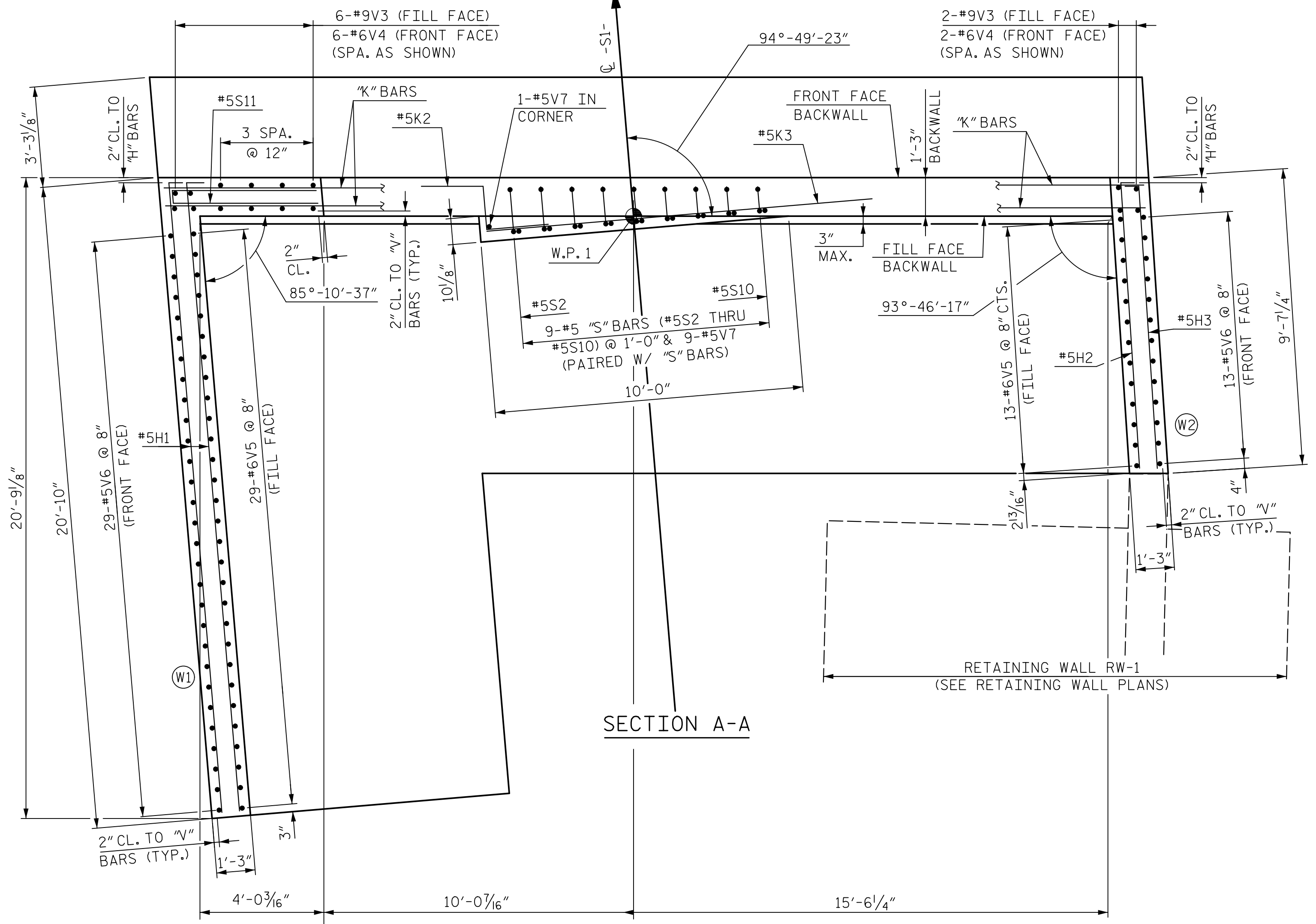
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 ABUTMENT 1

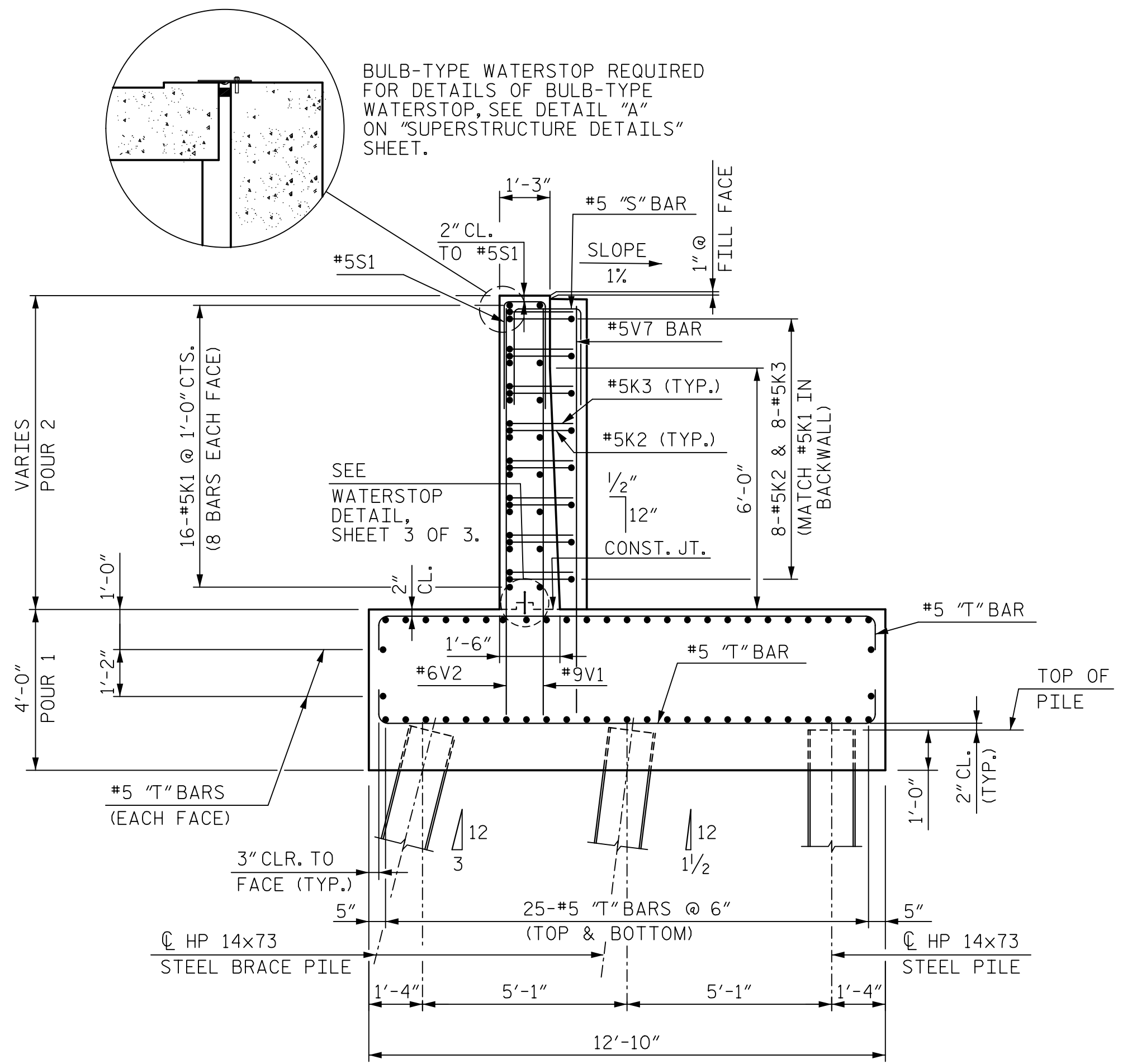


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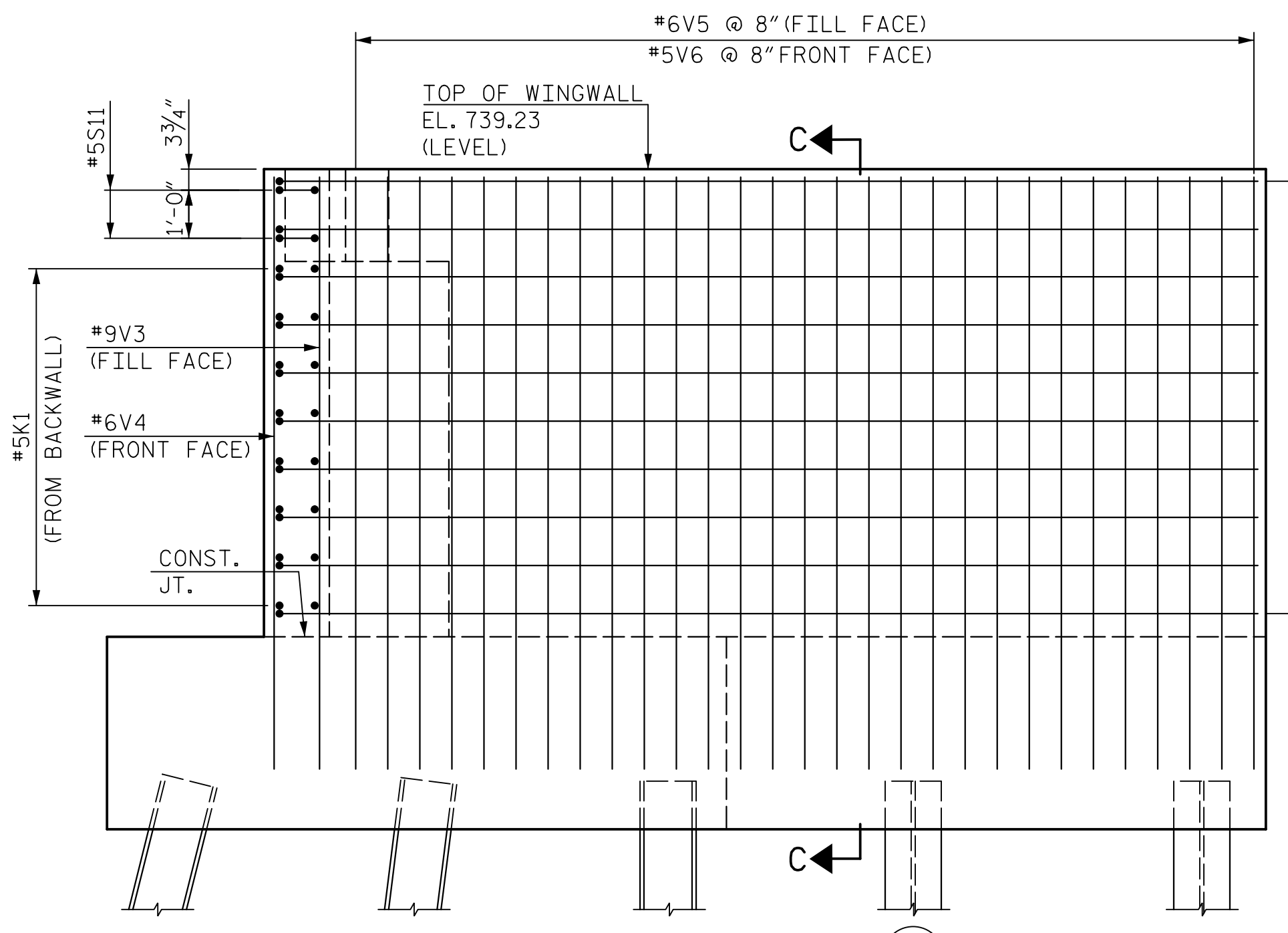
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S1-24 TOTAL SHEETS 39	
	NO.	BY	DATE	NO.	BY		DATE
	1			3			
DRAWN BY: M. WRIGHT CHECKED BY: J. WHEATLEY	DATE: 9/17 DATE: 11/17	DWG. NO. 24	2	4	3	39	



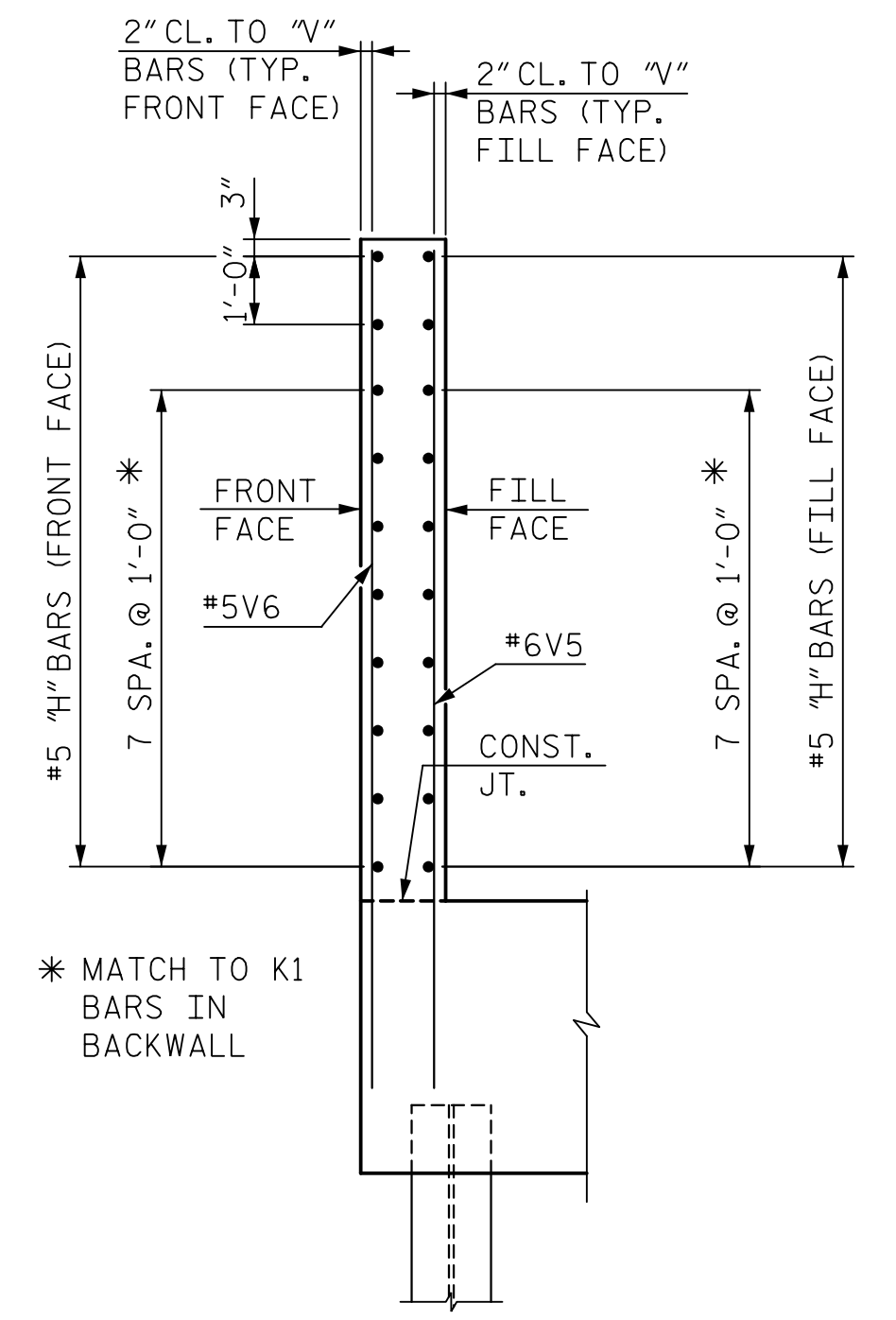
SECTION A-A



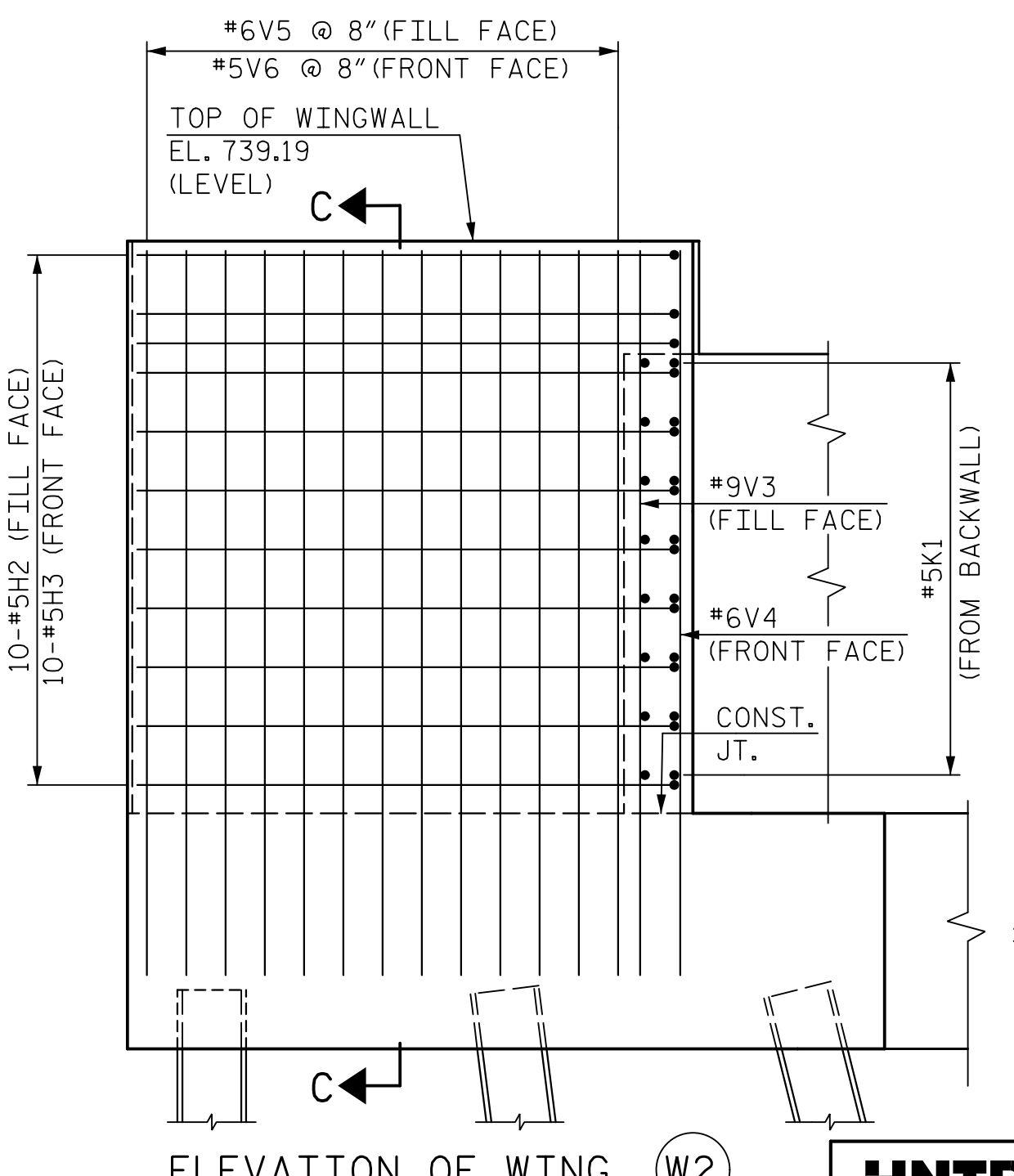
SECTION B-B



ELEVATION OF WING (W1)

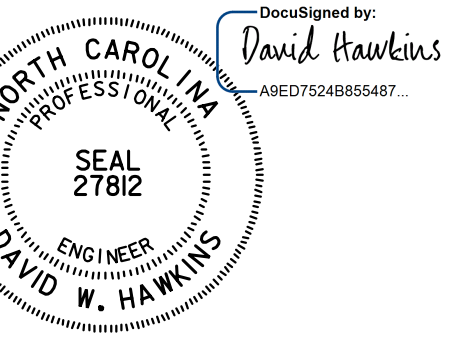


SECTION C-C



ELEVATION OF WING (W2)

NOTES:
 FOR ABUTMENT AND WINGWALL DIMENSIONS AND ELEVATIONS, SEE SHEET 1 OF 3.
 FOR LOCATIONS OF HANDRAIL ANCHORAGES IN TOP OF WINGWALLS, SEE "SUPERSTRUCTURE METAL HANDRAIL DETAILS" SHEETS.



3/31/2018

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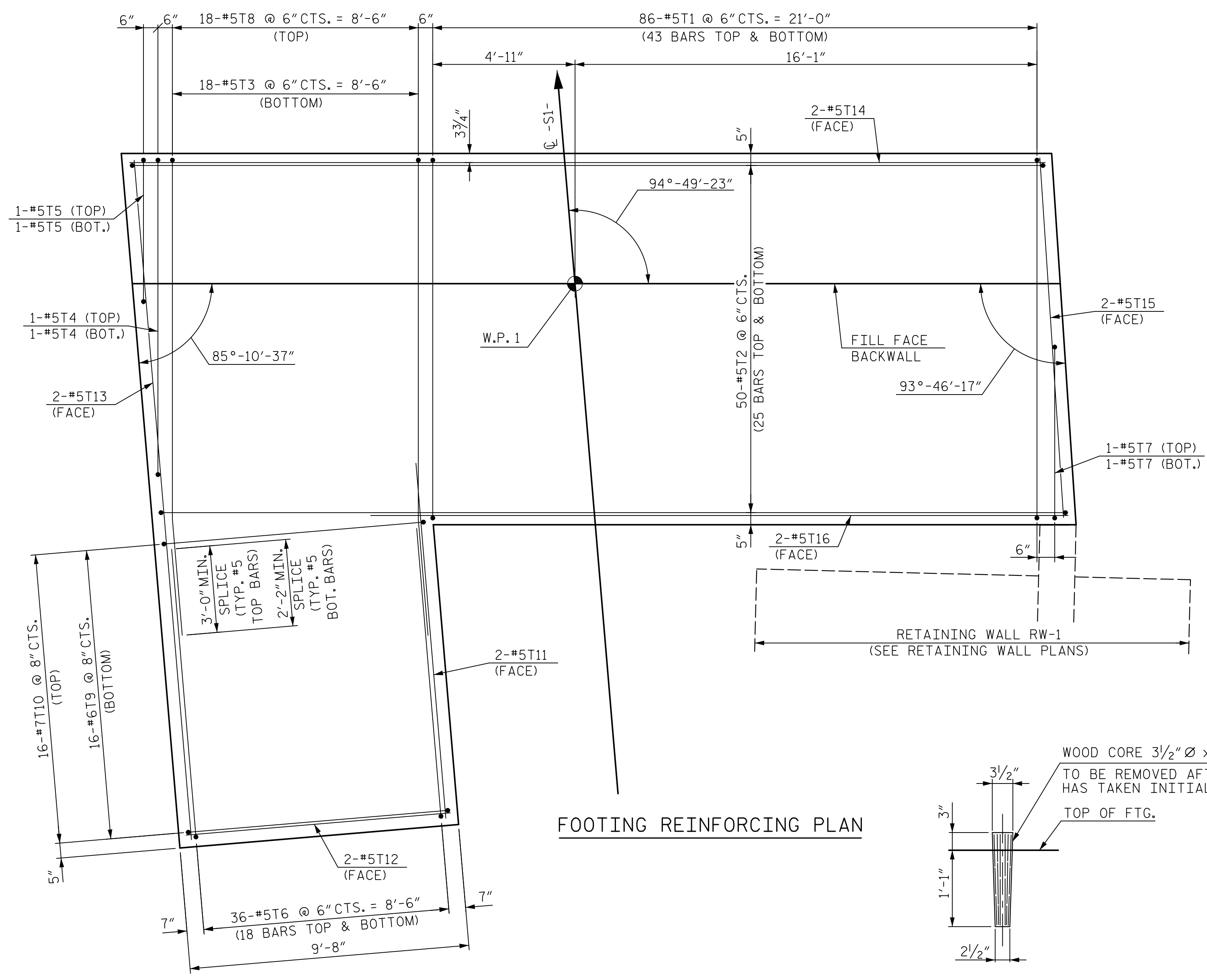
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 ABUTMENT 1

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DRAWN BY: M. WRIGHT	DATE: 9/17	DWG. NO. 25	
CHECKED BY: J. WHEATLEY	DATE: 11/17		

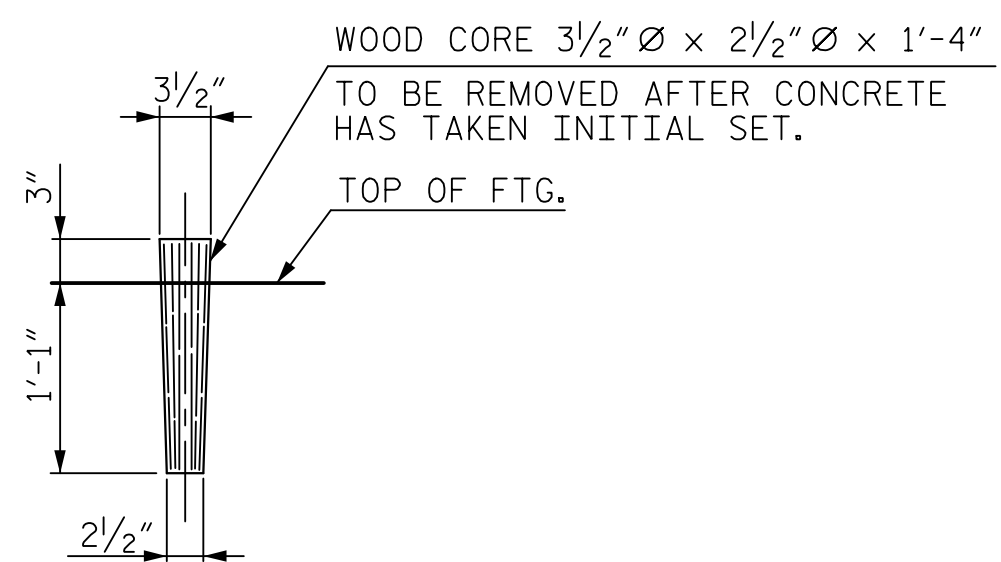
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SHEET NO. S1-25
 TOTAL SHEETS 39

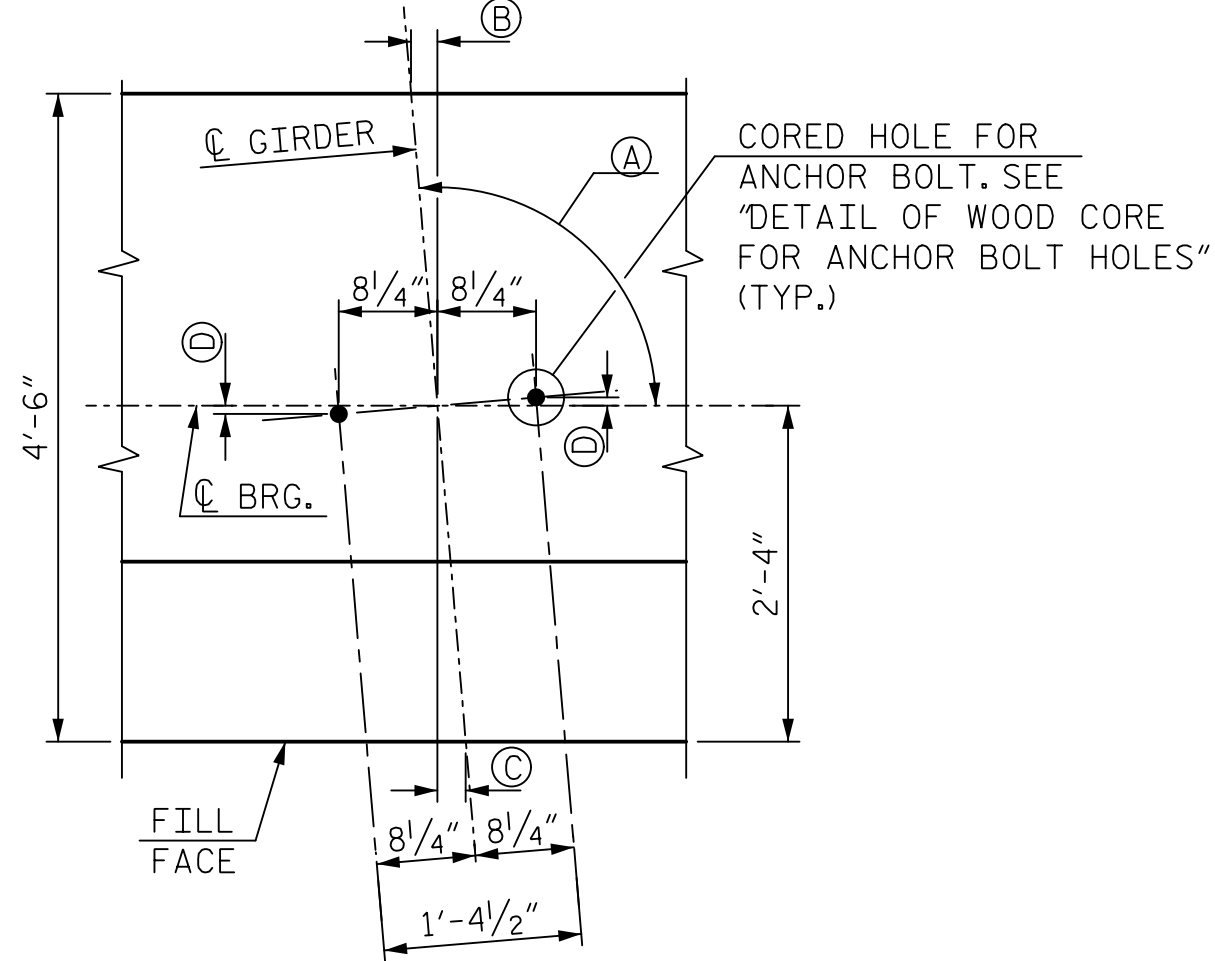


FOOTING REINFORCING PLAN

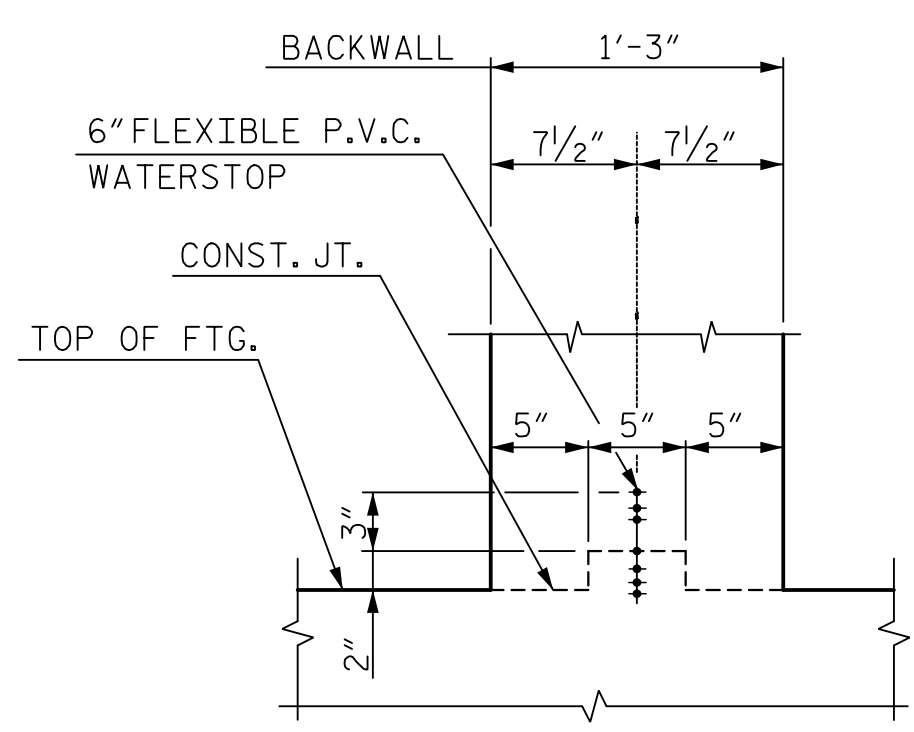
DETAIL OF WOOD CORE FOR ANCHOR BOLT HOLES



GIRDER	(A)	(B)	(C)	(D)
A1 THRU A5	94°-49'-23"	2 3/16"	2 3/8"	1 1/16"
A6	94°-28'-22"	2 1/16"	2 3/16"	5/8"
A7	94°-07'-19"	1 7/8"	2"	3/16"
A8	93°-46'-17"	1 1/16"	1 7/8"	3/16"



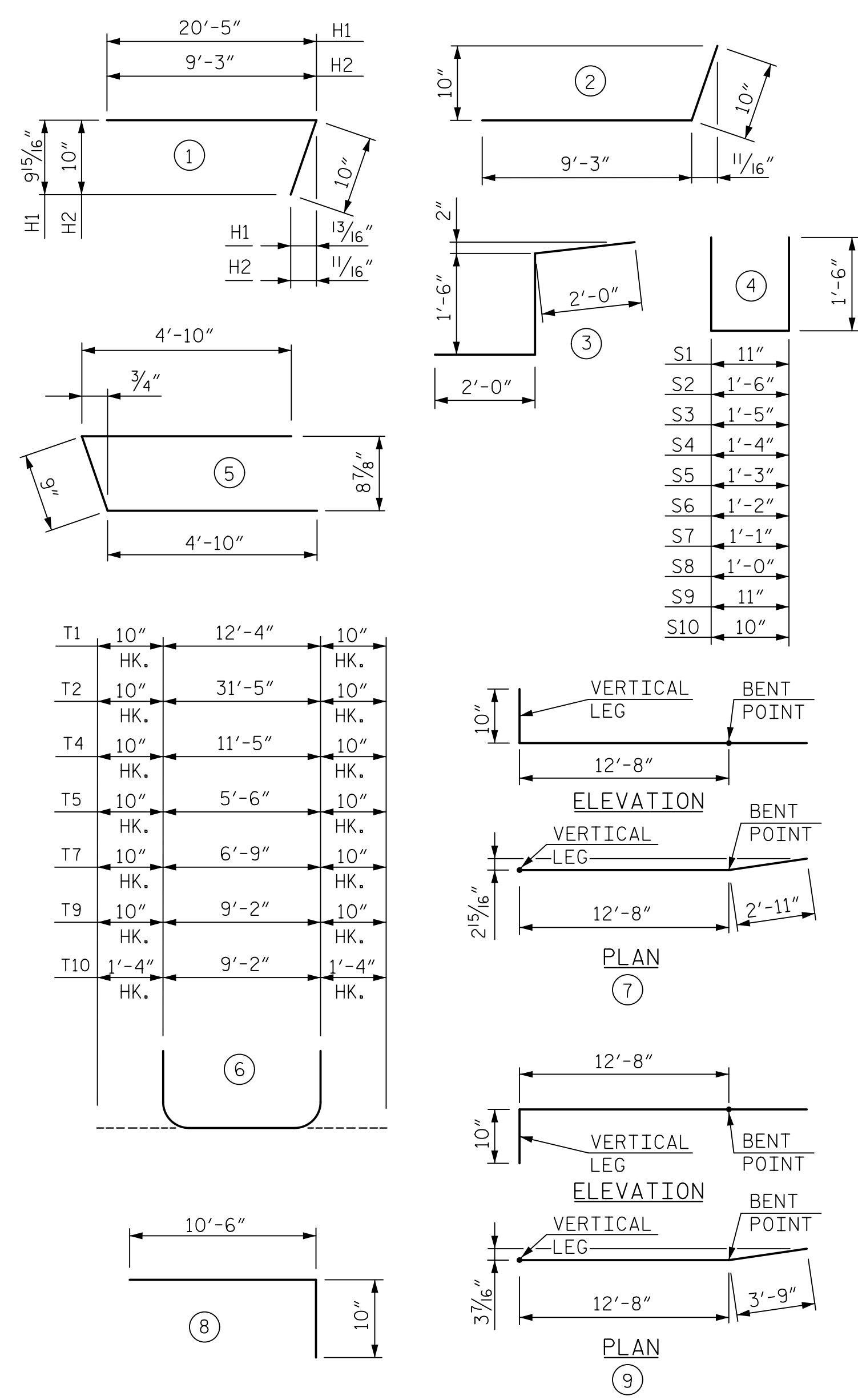
ANCHOR BOLT LAYOUT DETAIL



WATERSTOP DETAIL

QUANTITIES		
ITEM		TOTAL
REINFORCING STEEL	LBS.	10,566
CLASS AA CONCRETE BREAKDOWN:		
POUR 1 FOOTING	CU. YDS	76.6
POUR 2 BACKWALL & WINGS	CU. YDS	26.4
TOTAL	CU. YDS	103.0
HP 14 X 73 STEEL PILES	NO.	19
	L.F.	665.0

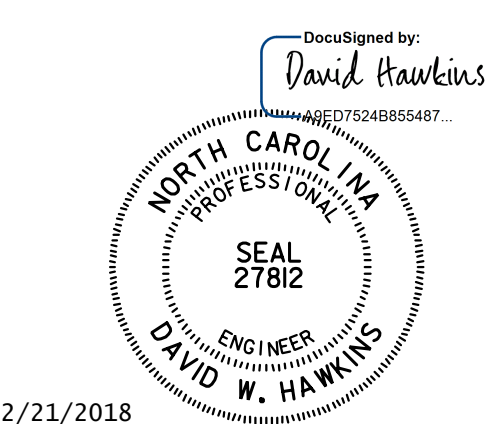
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES:

"T" BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.
FOR FOOTING LAYOUT AND DIMENSIONS, SEE SHEET 1 OF 3.



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BILL OF REINFORCING					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
ABUTMENT 1					
H1	20	5	1	21'-3"	443
H2	10	5	1	10'-1"	105
H3	10	5	2	10'-1"	105
K1	16	5	STR	31'-8"	528
K2	8	5	3	5'-6"	46
K3	8	5	STR	12'-7"	105
S1	26	5	4	3'-11"	106
S2	1	5	4	4'-6"	5
S3	1	5	4	4'-5"	5
S4	1	5	4	4'-4"	5
S5	1	5	4	4'-3"	4
S6	1	5	4	4'-2"	4
S7	1	5	4	4'-1"	4
S8	1	5	4	4'-0"	4
S9	1	5	4	3'-11"	4
S10	1	5	4	3'-10"	4
S11	2	5	5	10'-5"	22
T1	86	5	6	14'-0"	1,256
T2	50	5	6	33'-1"	1,725
T3	18	5	7	16'-4"	307
T4	2	5	6	13'-1"	27
T5	2	5	6	7'-2"	15
T6	36	5	8	11'-4"	426
T7	2	5	6	8'-5"	18
T8	18	5	9	17'-3"	324
T9	16	6	6	10'-10"	260
T10	16	7	6	11'-10"	387
T11	2	5	STR	8'-6"	18
T12	2	5	STR	9'-2"	19
T13	2	5	STR	23'-7"	49
T14	2	5	STR	31'-7"	66
T15	2	5	STR	12'-4"	26
T16	2	5	STR	24'-2"	50
V1	51	9	STR	10'-4"	1,792
V2	26	6	STR	10'-4"	404
V3	8	9	STR	12'-3"	333
V4	8	6	STR	12'-3"	147
V5	42	6	STR	12'-3"	773
V6	42	5	STR	12'-3"	537
V7	10	5	STR	10'-4"	108
				TOTAL	10,566

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

SHEET 3 OF 3
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
ABUTMENT 1

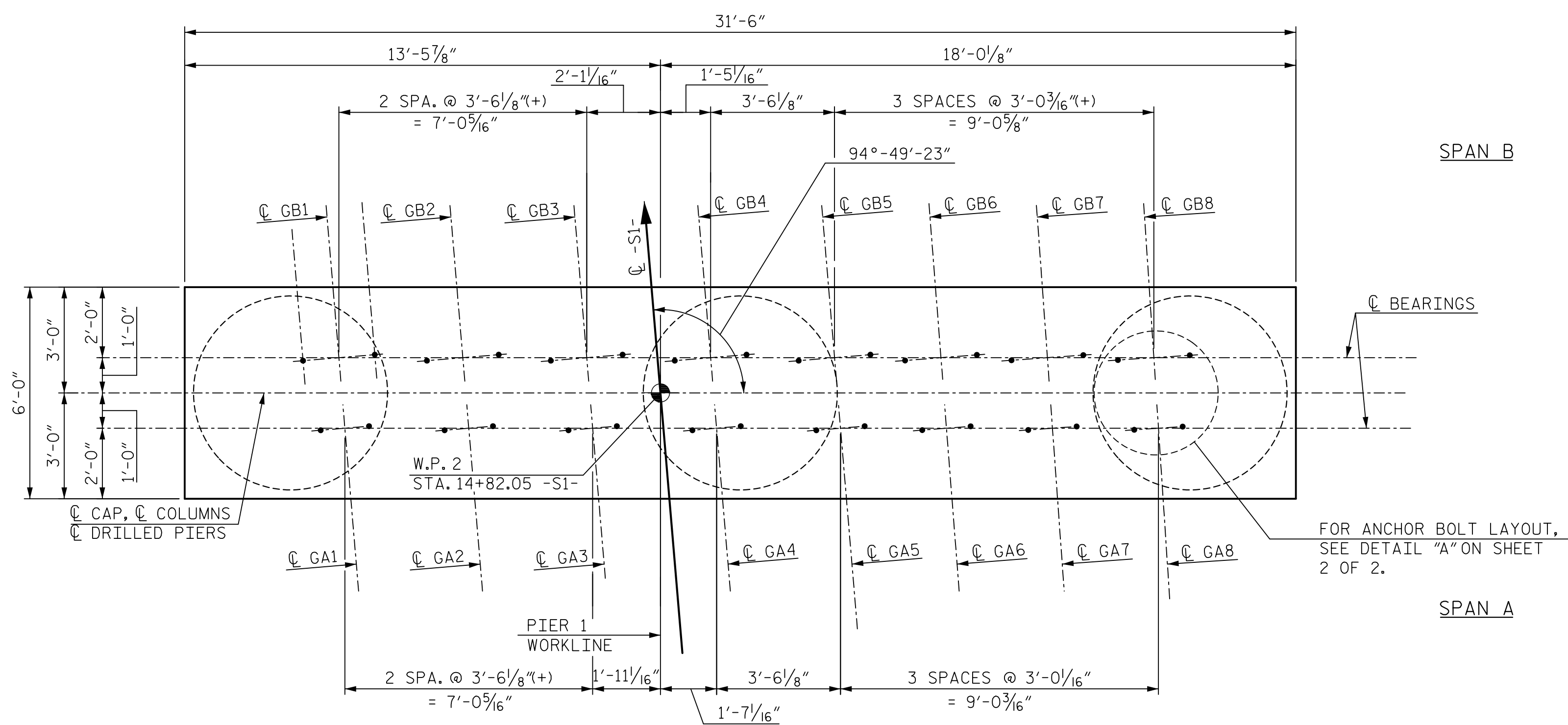
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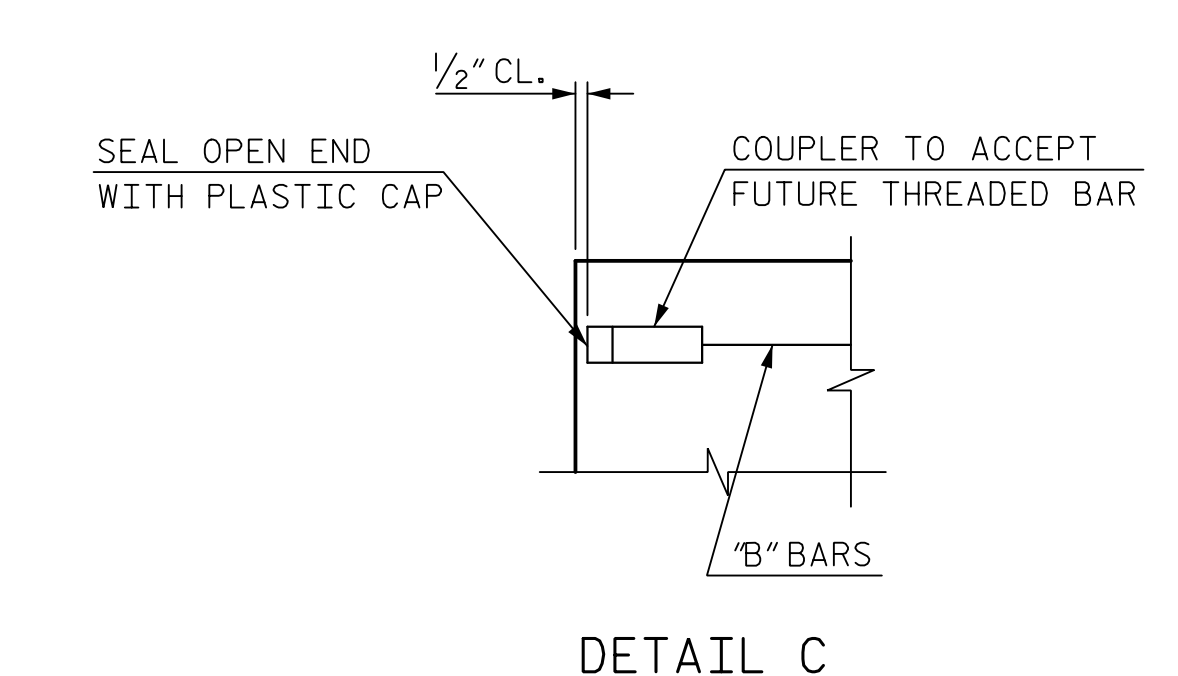
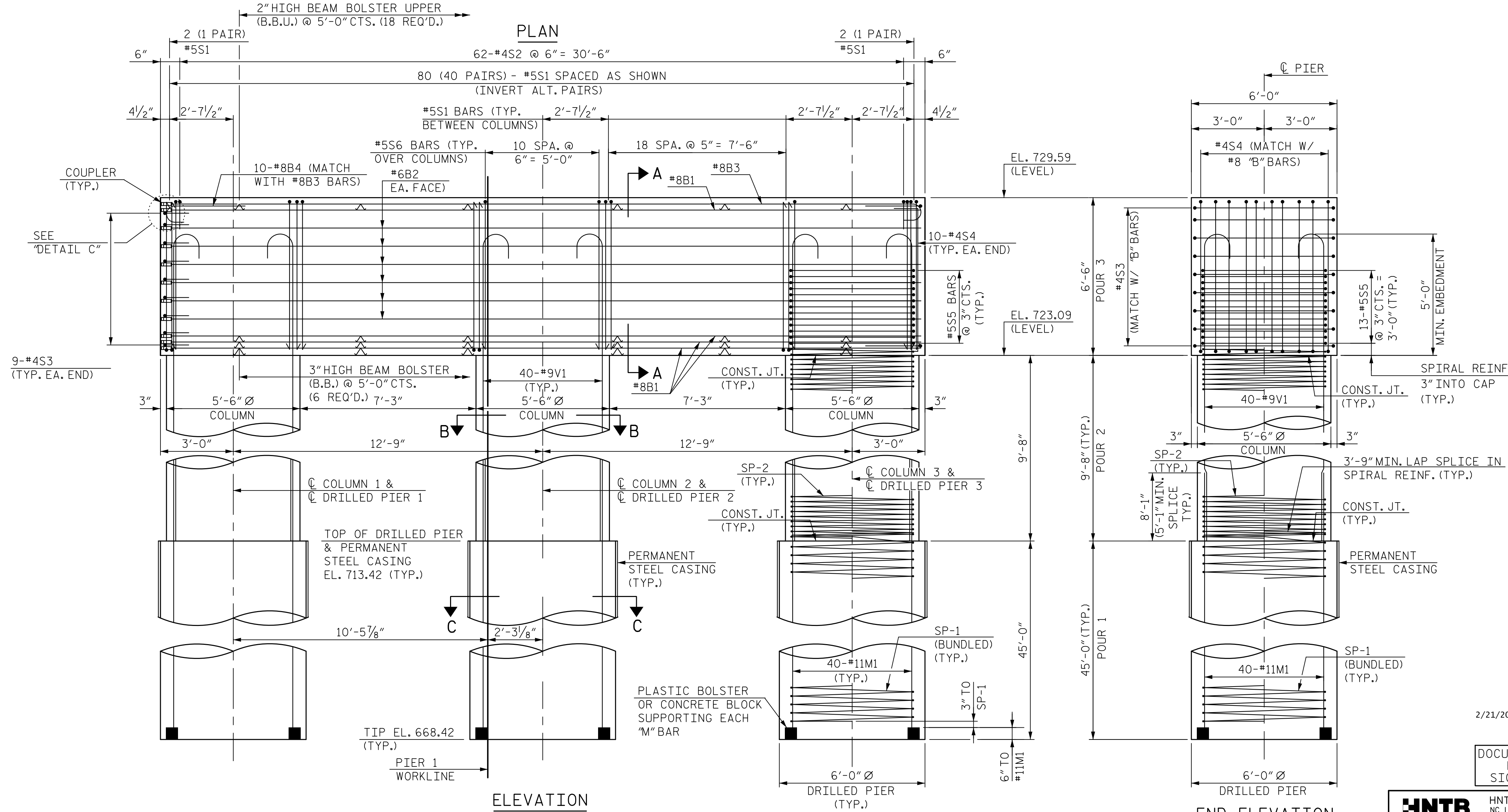
DRAWN BY M. WRIGHT DATE 9/17
CHECKED BY J. WHEATLEY DATE 11/17 DWG. NO. 26

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
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2			4		

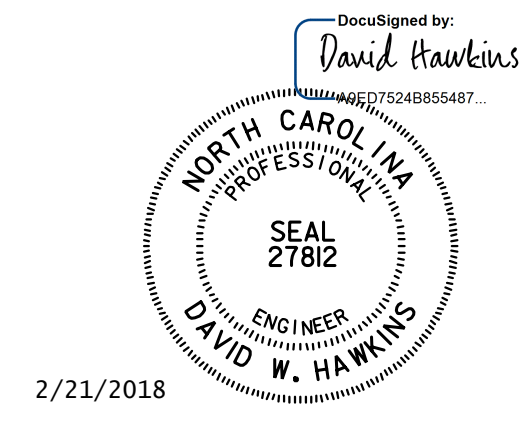
SHEET NO. S1-26
TOTAL SHEETS 39



NOTES:
 ALL DIMENSIONS SHOWN ARE PARALLEL OR NORMAL TO C PIER UNLESS NOTED.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FT. OF EXTRA LENGTH.



PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

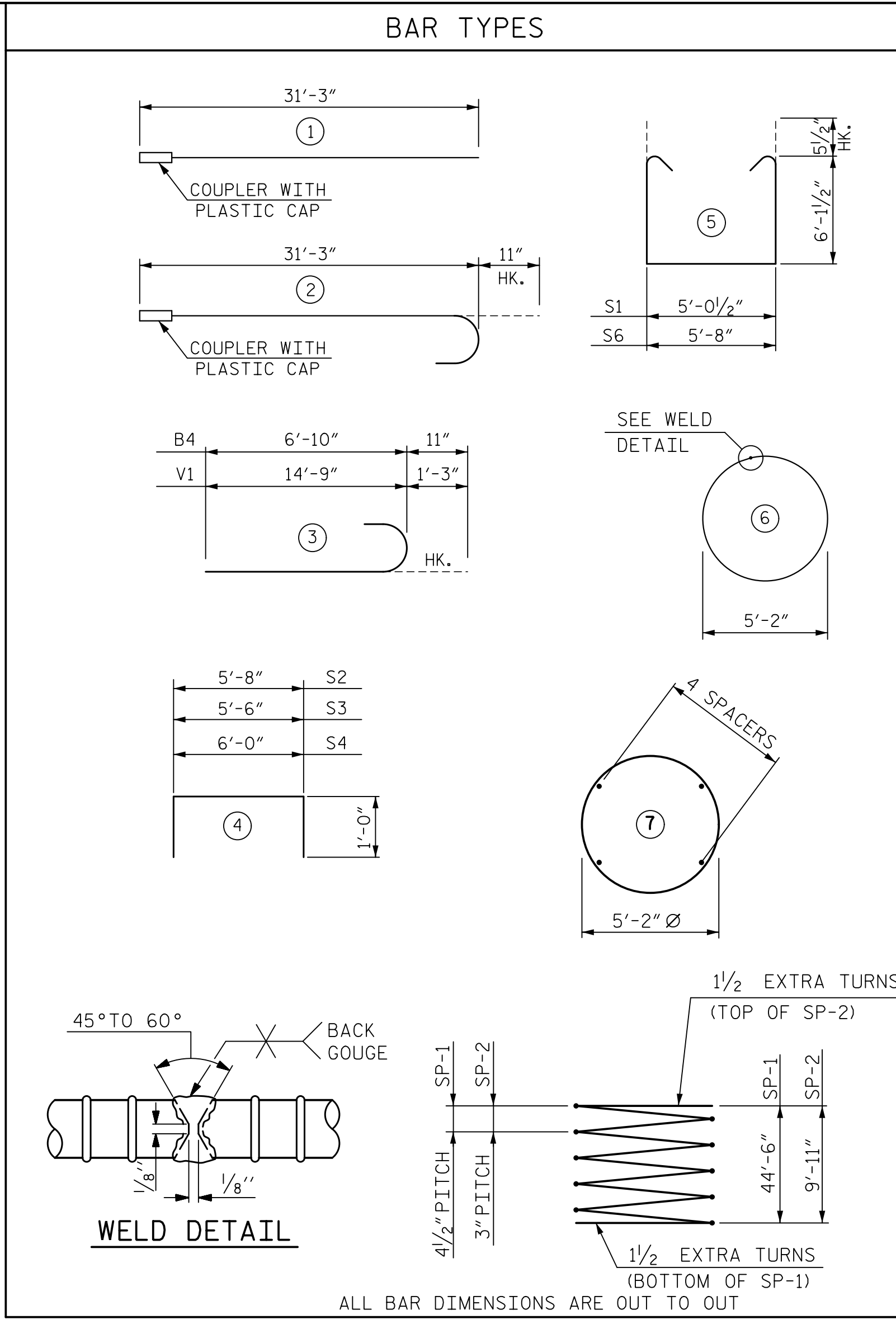
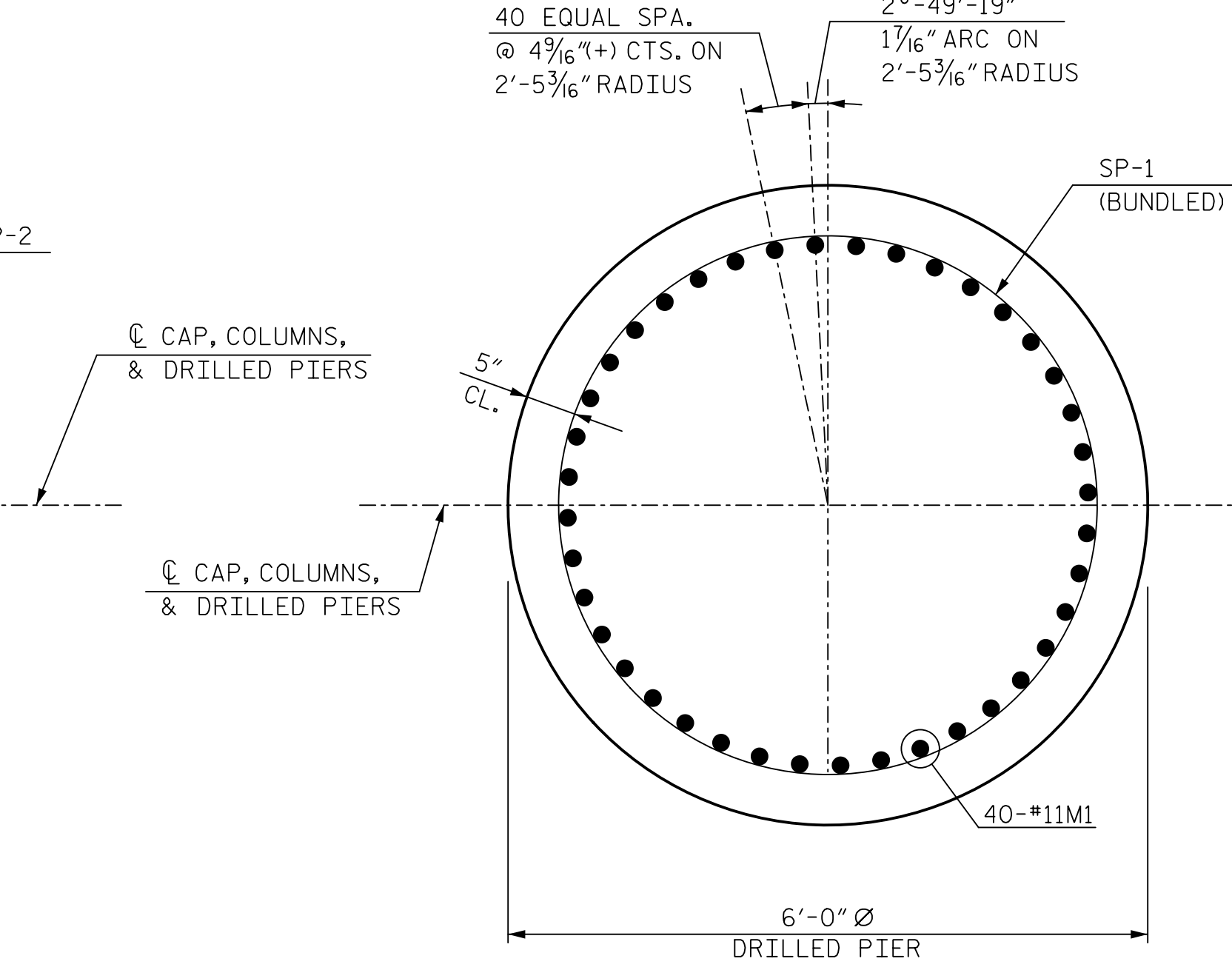
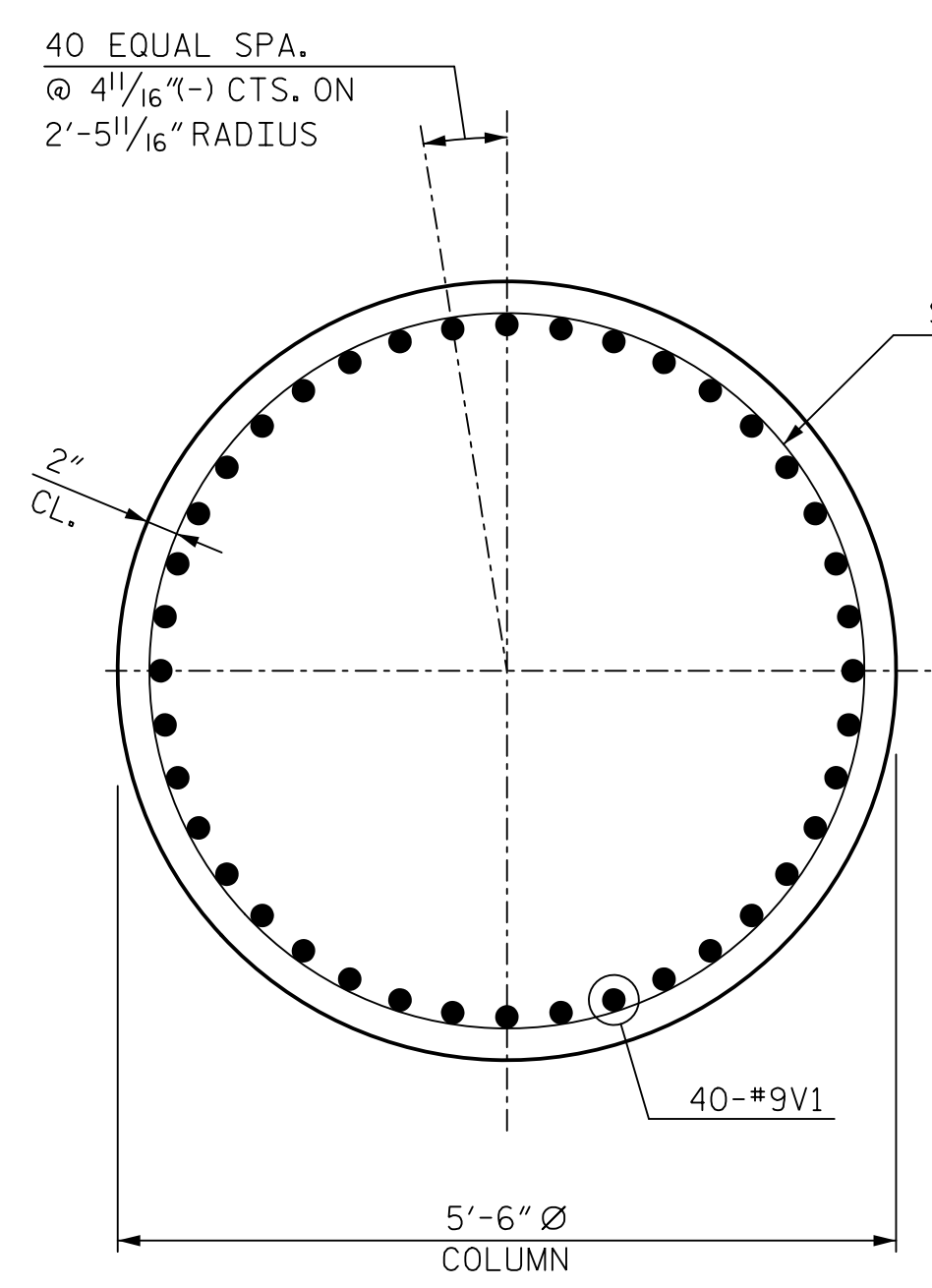
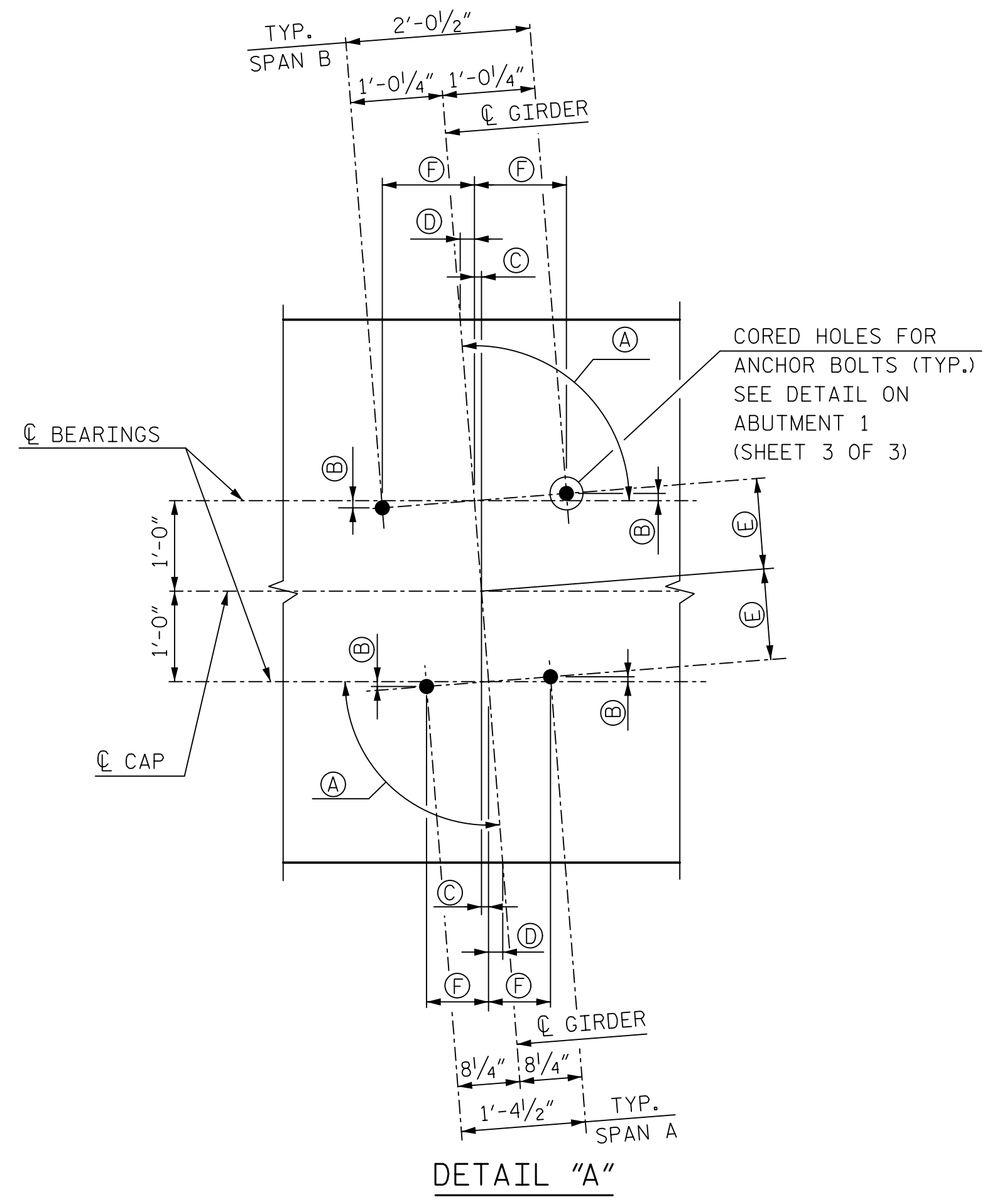
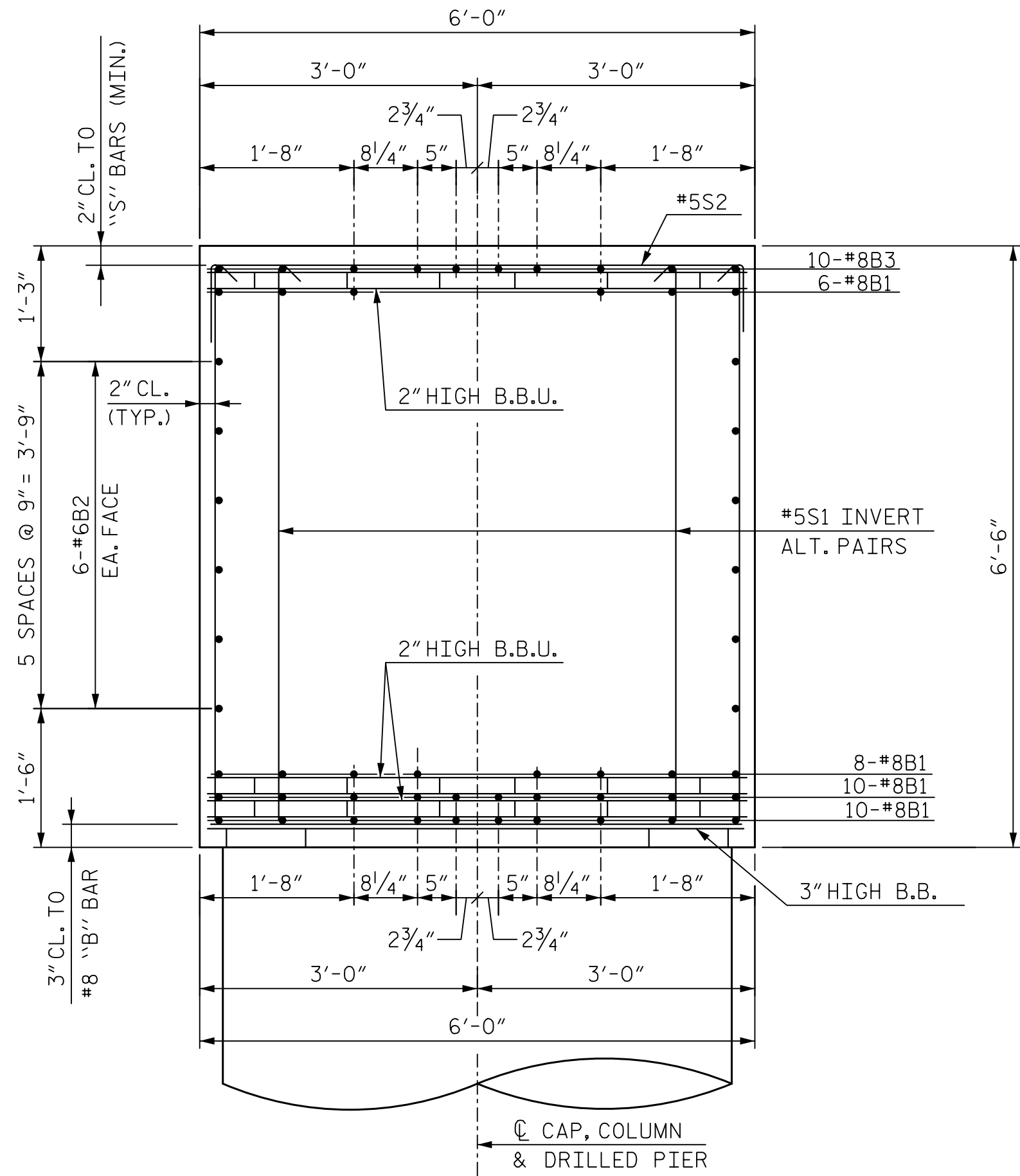


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DRAWN BY: M. WRIGHT	DATE: 11/17	SHEET NO. S1-27	
CHECKED BY: D. HAWKINS	DATE: 12/17	TOTAL SHEETS 39	

REVISIONS			
NO.	BY	DATE	DATE
1		3	
2		4	

SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 PIER 1



BILL OF MATERIAL					
PIER 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	34	8	1	31'-3"	2,837
B2	12	6	1	31'-3"	563
B3	10	8	2	32'-2"	859
B4	10	8	3	7'-9"	207
S1	80	5	5	18'-3"	1,523
S2	62	4	4	7'-8"	318
S3	18	4	4	7'-6"	90
S4	20	4	4	8'-0"	107
S5*	39	5	6	16'-1"	654
S6	33	5	5	18'-10"	648
M1	120	11	STR	52'-7"	33,525
V1	120	9	3	16'-0"	6,528
SP-1	6	**	7	1,927'-6"	17,371
SP-2	3	***	7	661'-10"	2,071

QUANTITIES	
ITEM	TOTAL
REINFORCING STEEL	LBS 47,859
SPIRAL COLUMN REINFORCING STEEL	LBS 19,442
CLASS AA CONCRETE:	
POUR 2	C.Y. 25.7
POUR 3	C.Y. 45.5
TOTAL	C.Y. 71.2
6'-0" DIA. DRILLED PIERS	NO. 3
DRILLED PIER IN SOIL	L.F. 93.0
DRILLED PIER NOT IN SOIL	L.F. 42.0
DRILLED PIER CONCRETE POUR 1	C.Y. 141.4
PERMANENT STEEL CASING FOR 6'-0" DIA. DRILLED PIER	L.F. 23.4
SID INSPECTIONS	EACH 3
SPT TESTING	EACH 3
CSL TESTING	EACH 3
THERMAL INTEGRITY PROFILER	EACH 3

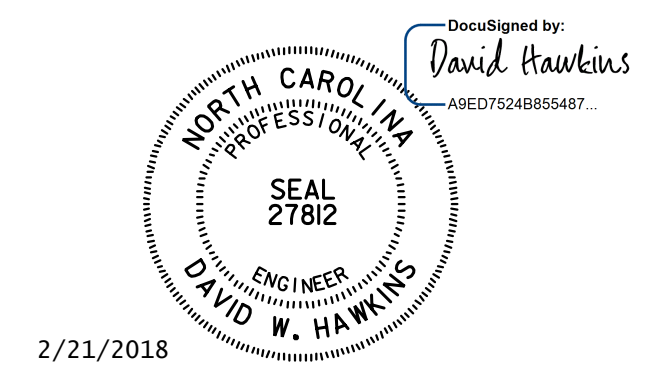
GIRDER	(A)	(B)	(C)	(D)	(E)	(F)
A1 THRU A5	94°-49'-23"	1 1/16"	1"	2"	1'-0 1/16"	8 1/4"
A6	94°-28'-22"	5/8"	1 5/16"	1 7/8"	1'-0 1/16"	8 1/4"
A7	94°-07'-19"	5/8"	7/8"	1 3/4"	1'-0 1/16"	8 1/4"
A8	93°-46'-17"	9/16"	1 3/16"	1 9/16"	1'-0"	8 1/4"
B1 THRU B5	94°-49'-23"	1 1/16"	1"	2"	1'-0 1/16"	1'-0 3/16"
B6	94°-28'-22"	1 5/16"	1 5/16"	1 7/8"	1'-0 1/16"	1'-0 3/16"
B7	94°-07'-19"	7/8"	7/8"	1 3/4"	1'-0 1/16"	1'-0 1/4"
B8	93°-46'-17"	1 3/16"	1 3/16"	1 9/16"	1'-0"	1'-0 1/4"

* #5S5 CIRCULAR TIES SHALL BE ASTM DESIGNATION A706, GRADE 60. FABRICATION TO BE IN ACCORDANCE WITH THE 'MANUAL OF STANDARD PRACTICE', A.C.I. 315.80.

** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE BUNDLED #6 PLAIN OR DEFORMED BAR.

*** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-



2/21/2018
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CHECKED BY: D. HAWKINS	DATE: 12/17		

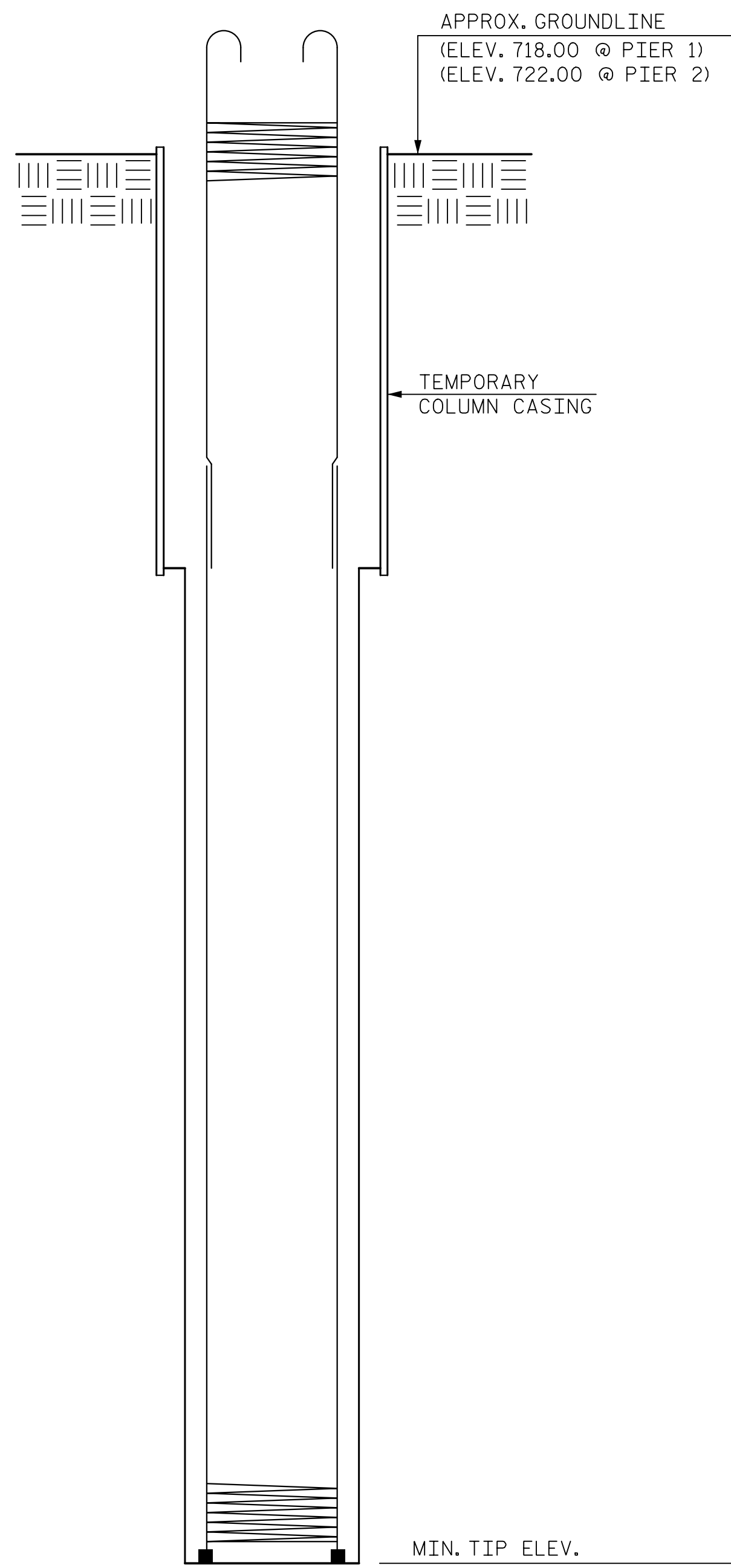
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 PIER 1

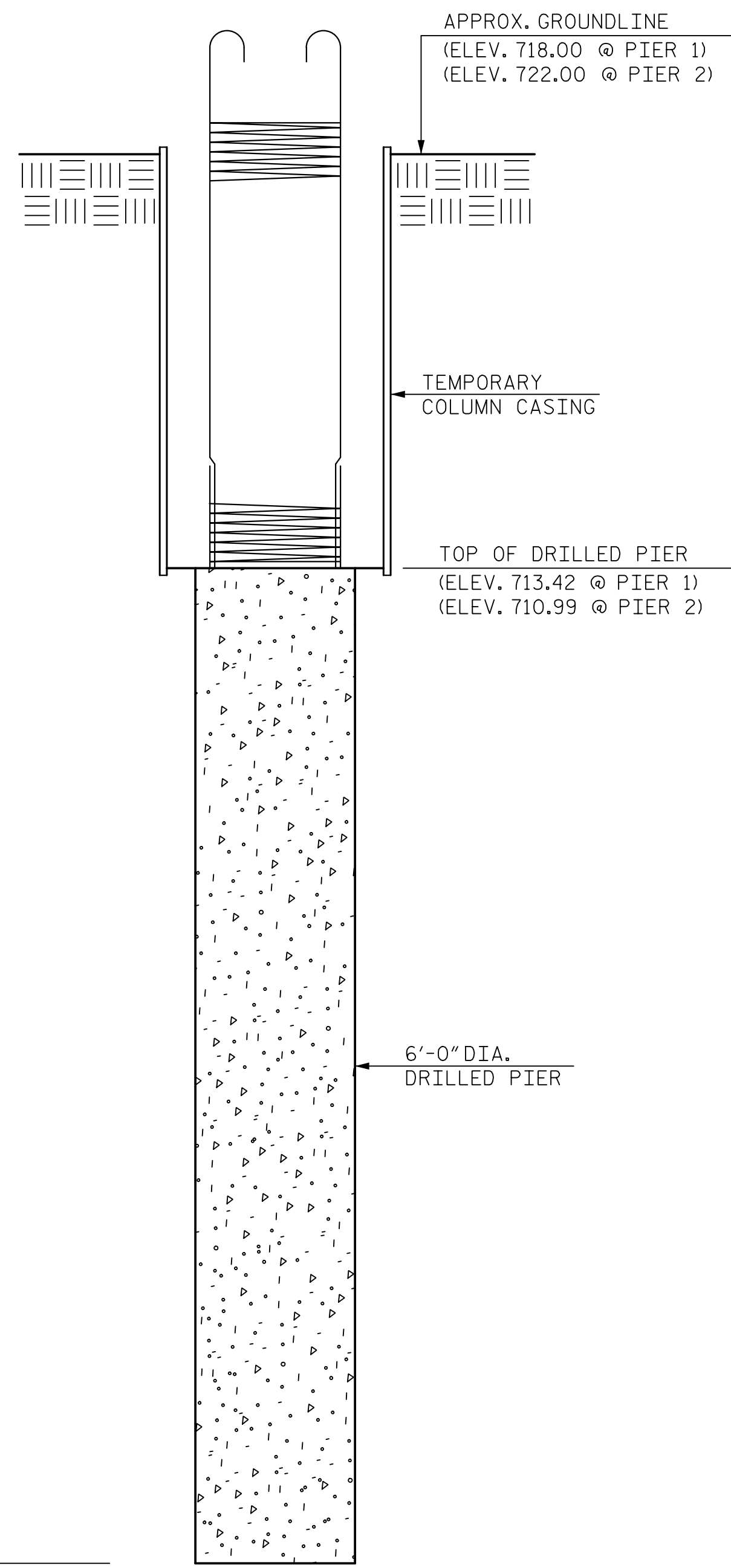
REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

TOTAL SHEETS: 39



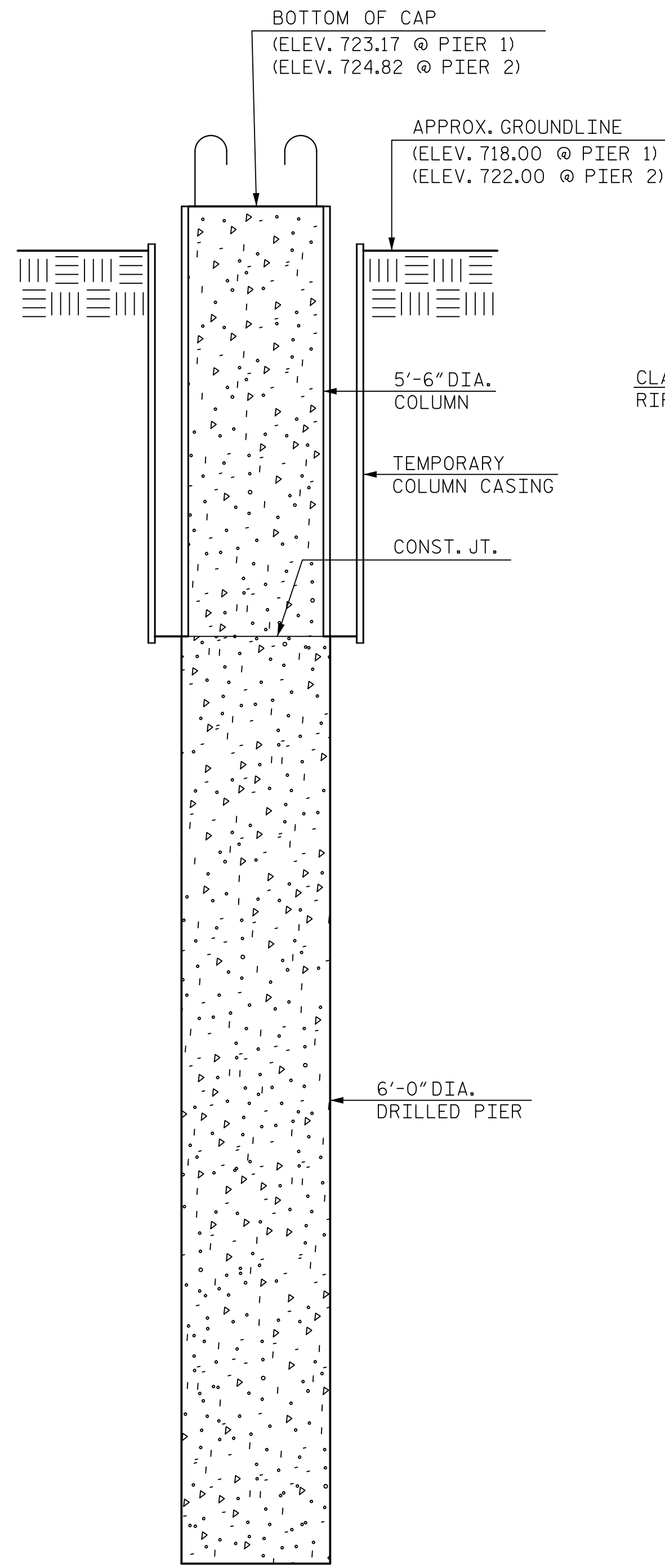
STEP 1

1. INSTALL TEMPORARY COLUMN CASING.
2. EXCAVATE DRILLED PIER TO TIP ELEVATION IN ACCORDANCE WITH DRILLED PIERS SPECIAL PROVISION.
3. INSTALL REBAR CAGE FOR DRILLED PIER. INSTALL REBAR CAGE FOR COLUMN IF DESIRED.



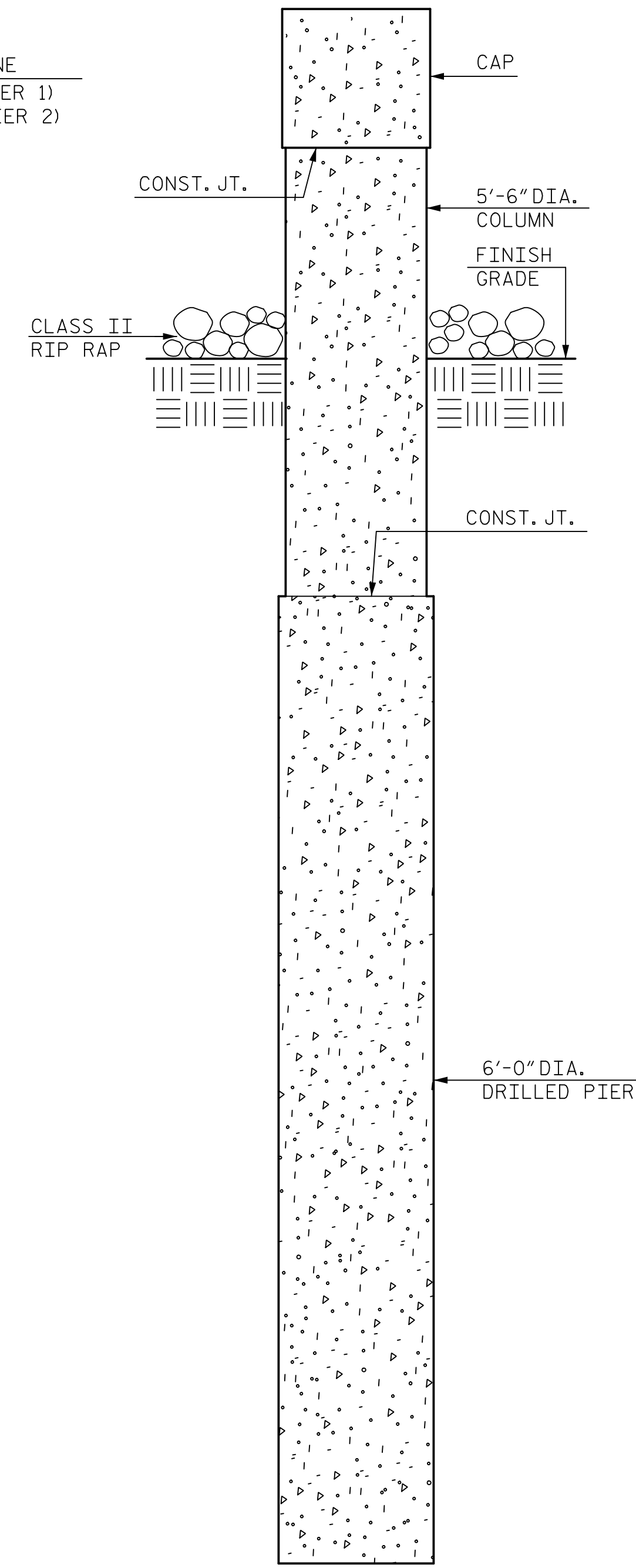
STEP 2

1. POUR CONCRETE FOR DRILLED PIER TO TOP OF DRILLED PIER ELEVATION AS INDICATED.



STEP 3

1. PLACE 5'-6" DIA. TEMPORARY COLUMN FORM.
2. INSTALL REBAR CAGE FOR COLUMN, IF NOT ALREADY INSTALLED.
3. POUR CONCRETE FOR COLUMN TO BOTTOM OF CAP ELEVATION AS INDICATED.
4. REMOVE COLUMN FORMS.
5. PROTECT THE COLUMN AND BACKFILL WITH CLEAN SAND.
6. EXTRACT TEMPORARY COLUMN CASING.
7. COMPLETE BRIDGE AND SHIFT RAILROAD TRAFFIC.



STEP 4

1. EXCAVATE TO FINISH GRADE.



2/21/2018

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DRAWN BY: M. WRIGHT DATE: 11/17
 CHECKED BY: D. HAWKINS DATE: 12/17 DWG. NO. 29

NOTES:

FOR COLUMN EXCAVATION SEE COLUMN EXCAVATION SPECIAL PROVISION.

THE CONTRACTOR SHALL DETERMINE THE DIAMETER OF TEMPORARY COLUMN CASING SUCH THAT THE WORK CAN BE COMPLETED. PROVIDE TEMPORARY COLUMN CASING A MINIMUM DIAMETER 6" GREATER THAN THE LARGEST CASING USED FOR DRILLED PIER CONSTRUCTION, AND A MINIMUM THICKNESS IN ACCORDANCE WITH TABLE 411-1 OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.

THE CONTRACTOR HAS THE OPTION TO INSTALL THE COLUMN AND DRILLED PIER REINFORCING AT ONE TIME. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE ALIGNMENT AND POSITION OF THE REINFORCING CAGE.

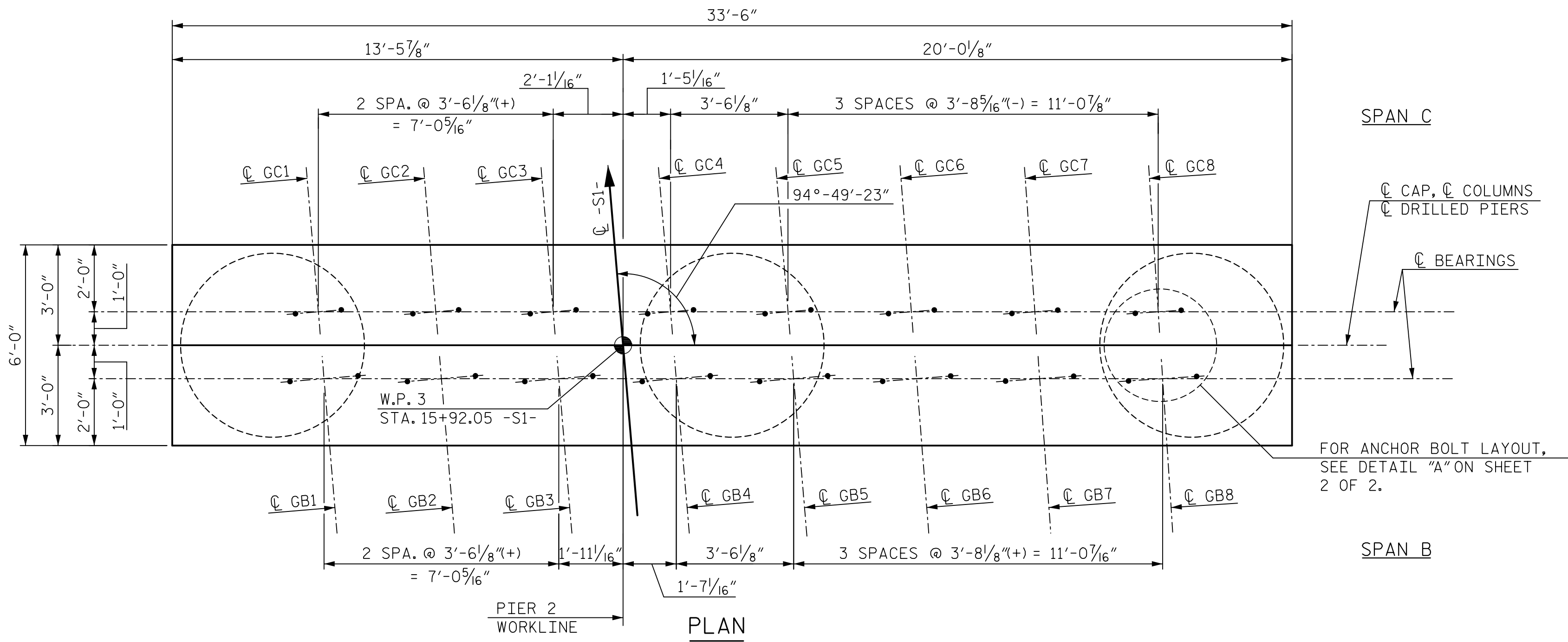
CONTRACTOR SHALL ENSURE THAT THE TOP OF THE DRILLED PIER IS CLEAN AND FREE OF DEBRIS BEFORE PLACING COLUMN CONCRETE.

PROJECT NO. P-5705BA
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STATE OF NORTH CAROLINA
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 RALEIGH

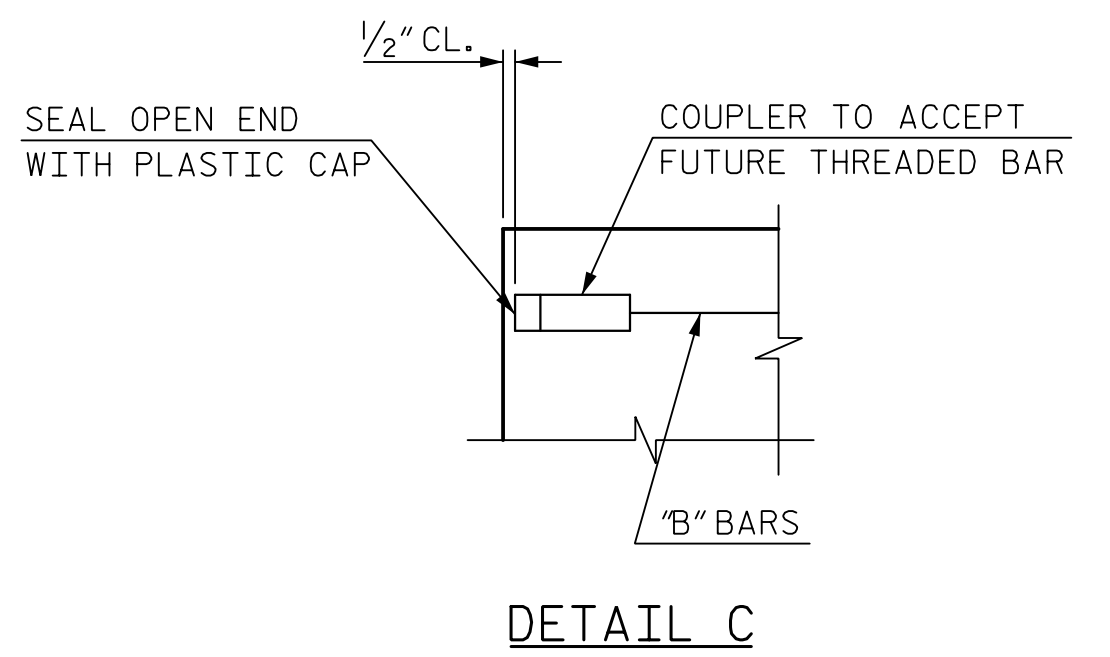
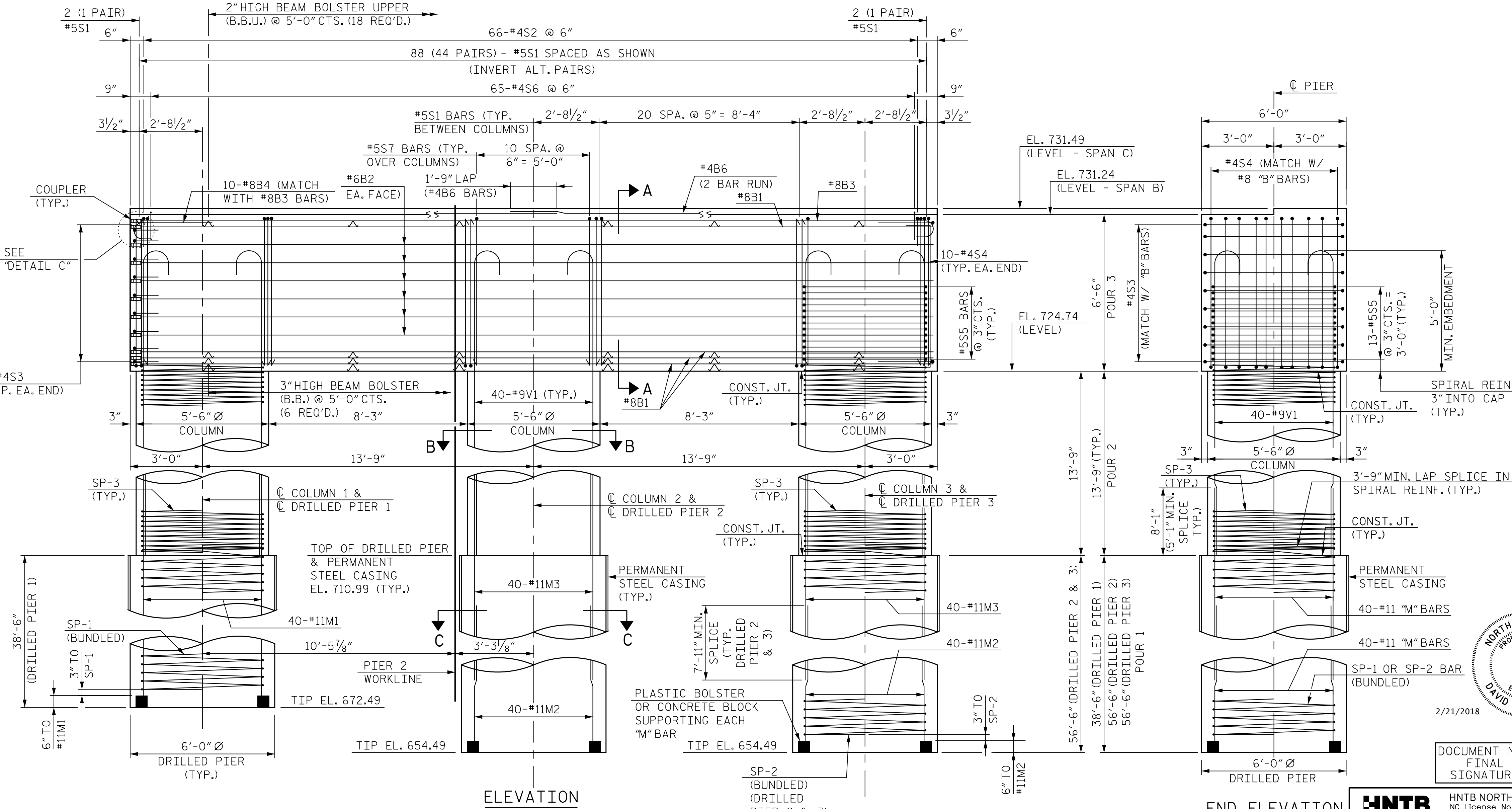
**SUPERSTRUCTURE
 COLUMN AND DRILLED
 PIER CONSTRUCTION
 SEQUENCE - PIERS**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-29
1			3			TOTAL SHEETS
2			4			39



NOTES:

ALL DIMENSIONS SHOWN ARE PARALLEL OR NORMAL TO ϕ PIER UNLESS NOTED.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FT. OF EXTRA LENGTH.

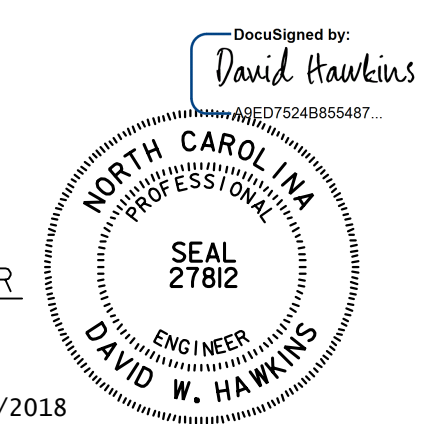


PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 PIER 2**

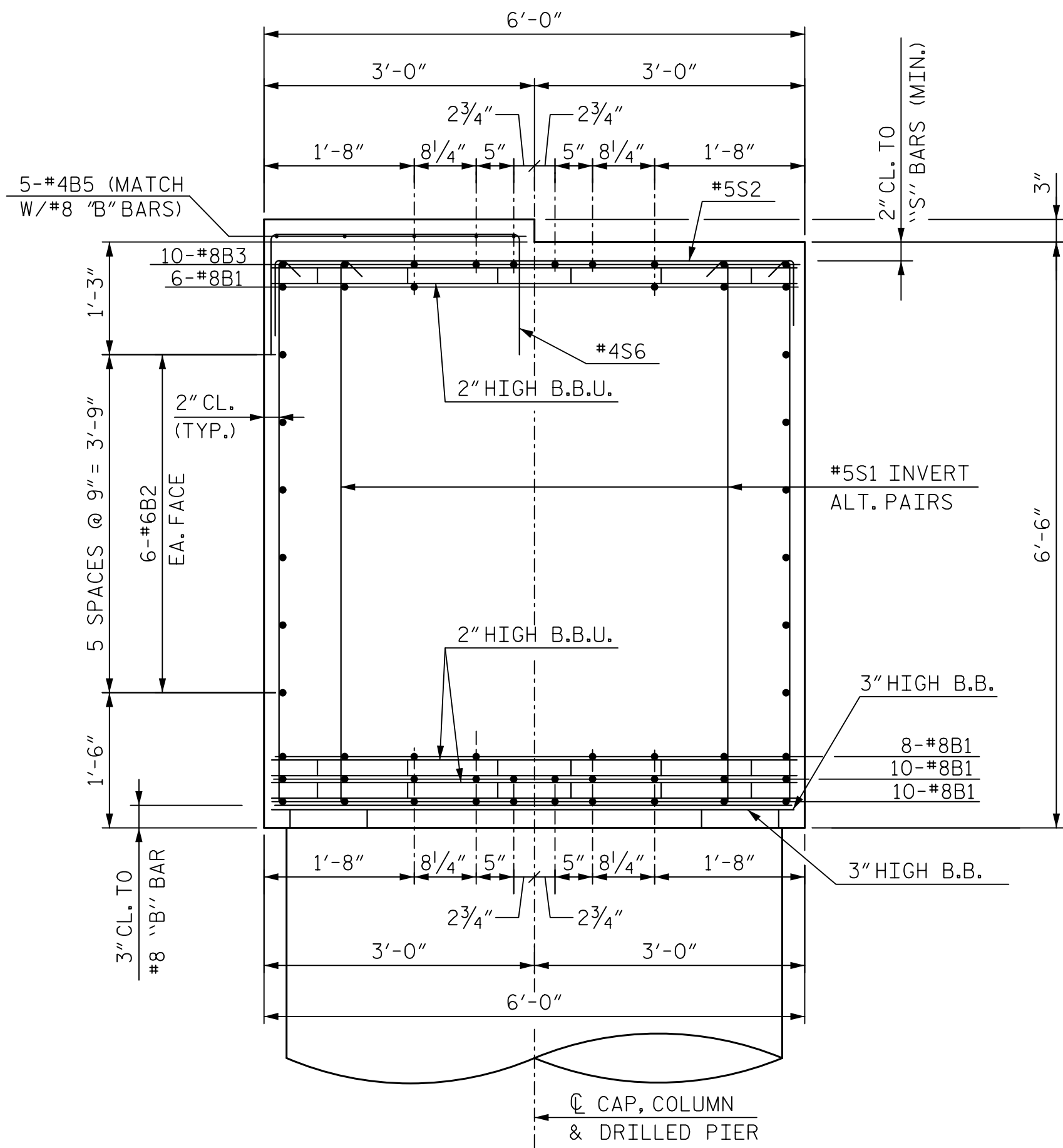


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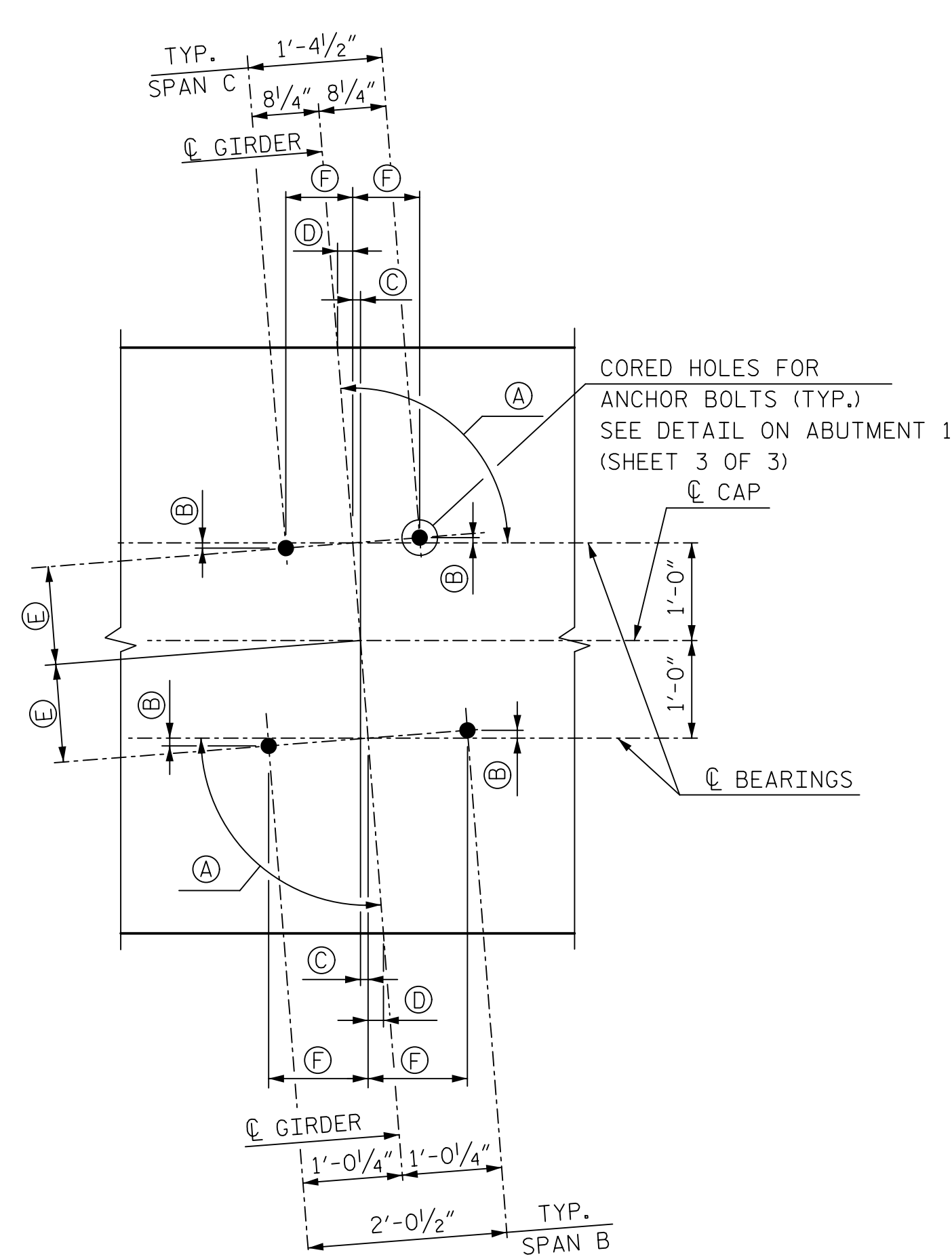
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 NC License No. C-1554
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DRAWN BY: M. WRIGHT DATE: 12/17
 CHECKED BY: D. HAWKINS DATE: 12/17
 DWG. NO. 30

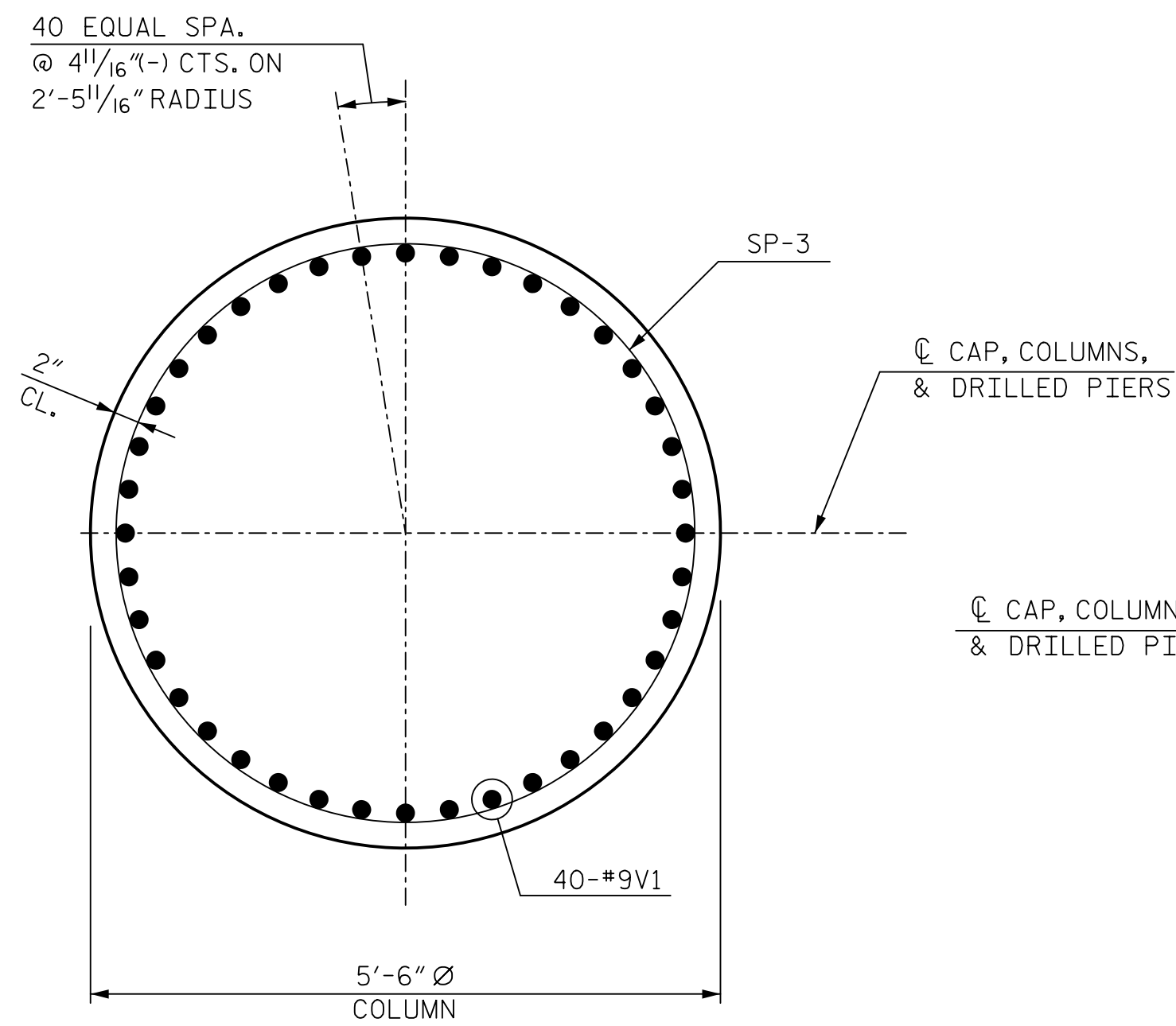
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1			3			TOTAL SHEETS
2			4			39



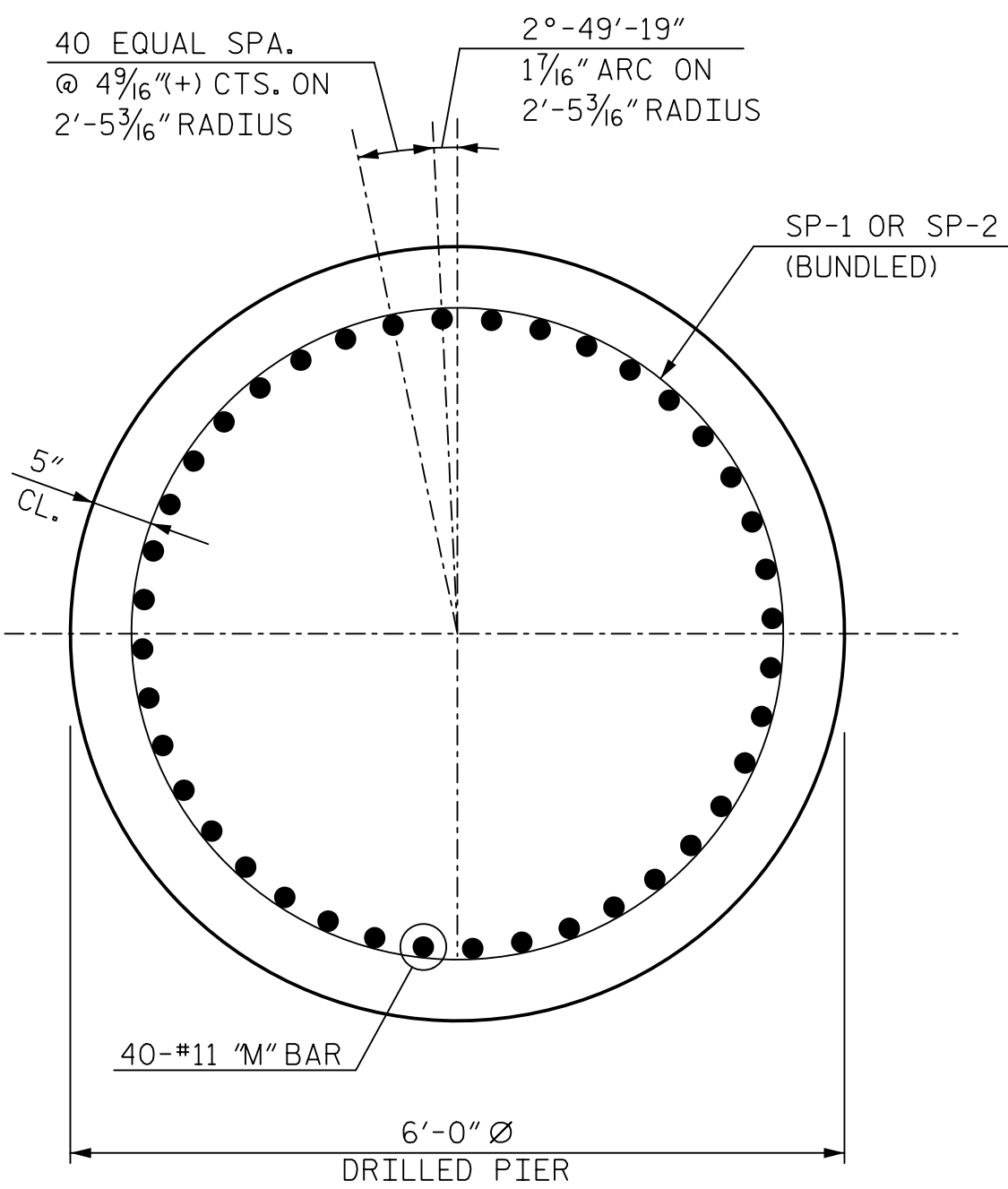
SECTION A-A



DETAIL "A"



SECTION B-B



SECTION C-C

BAR TYPES

BILL OF MATERIAL

PIER 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	34	8	1	33'-3"	3,018
B2	12	6	1	33'-3"	599
B3	10	8	2	34'-2"	912
B4	10	8	3	7'-9"	207
B5	10	4	STR	17'-6"	117
S1	88	5	5	18'-3"	1,675
S2	66	4	4	7'-8"	338
S3	18	4	4	7'-6"	90
S4	20	4	4	8'-0"	107
S5	* 39	5	6	16'-1"	654
S6	65	4	4	5'-4"	232
S7	33	5	5	18'-10"	648
M1	40	11	STR	46'-1"	9,794
M2	80	11	STR	22'-0"	9,351
M3	80	11	STR	50'-0"	21,252
V1	120	9	3	20'-1"	8,194
SP-1	2	**	7	1,649'-5"	4,955
SP-2	4	**	7	2,419'-4"	14,535
SP-3	3	**	7	924'-1"	2,891

QUANTITIES

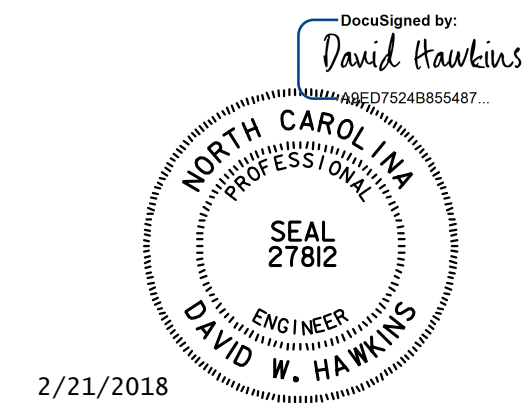
ITEM	TOTAL
REINFORCING STEEL	LBS 57,188
SPIRAL COLUMN REINFORCING STEEL	LBS 22,381
CLASS AA CONCRETE:	
POUR 2	C.Y. 36.5
POUR 3	C.Y. 49.3
TOTAL	C.Y. 85.8
6'-0" DIA. DRILLED PIERS	NO. 3
DRILLED PIER IN SOIL	L.F. 103.5
DRILLED PIER NOT IN SOIL	L.F. 48.0
DRILLED PIER CONCRETE POUR 1	C.Y. 158.7
SID INSPECTIONS	EACH 3
SPT TESTING	EACH 3
CSL TESTING	EACH 3
THERMAL INTEGRITY PROFILER	EACH 3

ANCHOR BOLT LAYOUT DIMENSION TABLE

GIRDER	(A)	(B)	(C)	(D)	(E)	(F)
B1 THRU B5	94°-49'-23"	1 1/16"	1"	2"	1'-0 1/16"	1'-0 3/16"
B6	94°-28'-22"	1 5/16"	1 5/16"	1 7/8"	1'-0 1/16"	1'-0 3/16"
B7	94°-07'-19"	7/8"	7/8"	1 3/4"	1'-0 1/16"	1'-0 1/4"
B8	93°-46'-17"	1 3/16"	1 3/16"	1 9/16"	1'-0"	1'-0 1/4"
C1 THRU C5	94°-49'-23"	1 1/16"	1"	2"	1'-0 1/16"	8/4"
C6	94°-28'-22"	5/8"	1 5/16"	1 7/8"	1'-0 1/16"	8/4"
C7	94°-07'-19"	9/16"	7/8"	1 3/4"	1'-0 1/16"	8/4"
C8	93°-46'-17"	9/16"	1 3/16"	1 9/16"	1'-0"	8/4"

- * #5S5 CIRCULAR TIES SHALL BE ASTM DESIGNATION A706, GRADE 60. FABRICATION TO BE IN ACCORDANCE WITH THE 'MANUAL OF STANDARD PRACTICE', A.C.I. 315.80.
- ** THE SP-1 AND SP-2 SPIRAL REINFORCING STEEL SHALL BE BUNDLED #6 PLAIN OR DEFORMED BAR.
- *** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

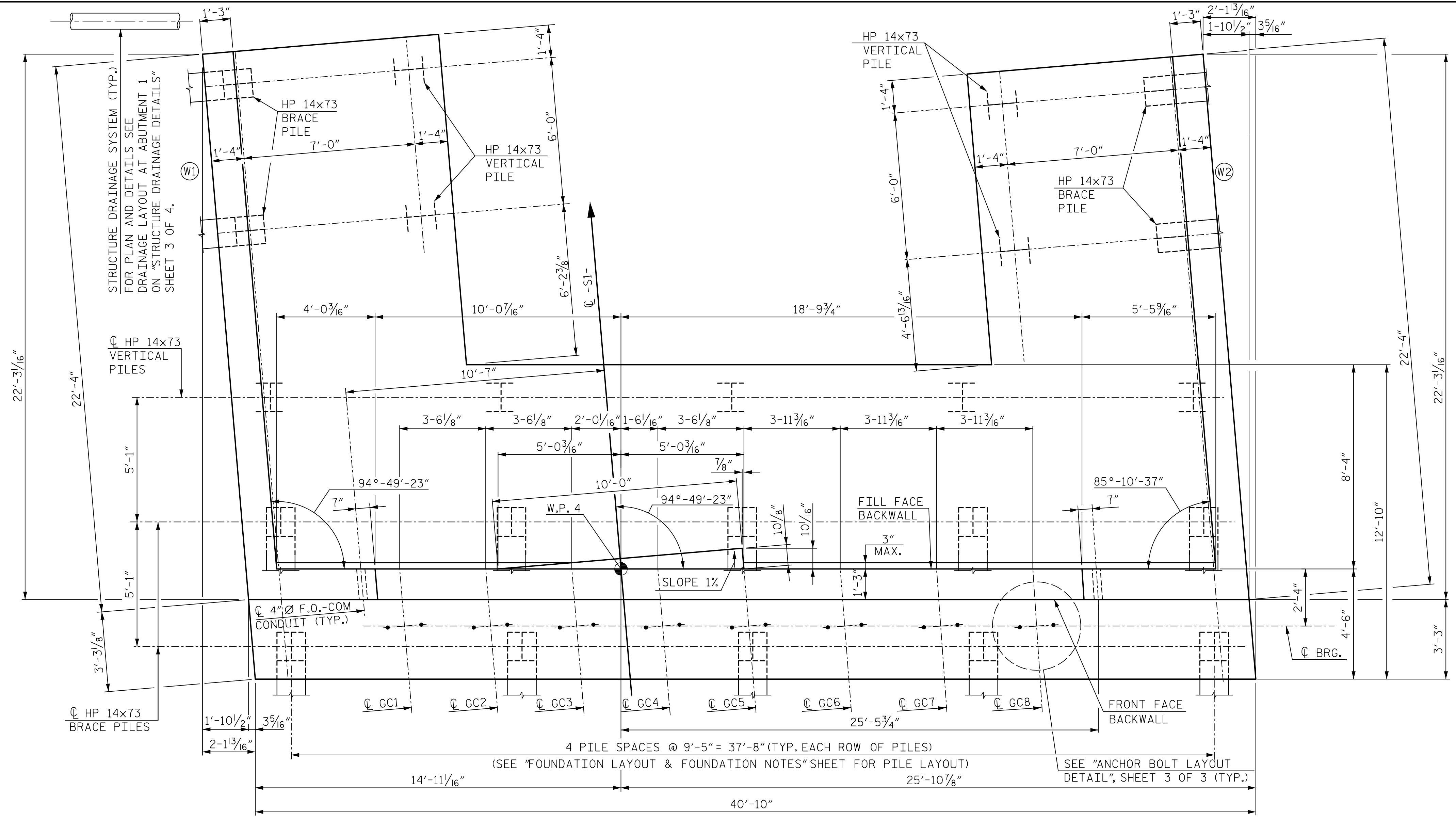
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-



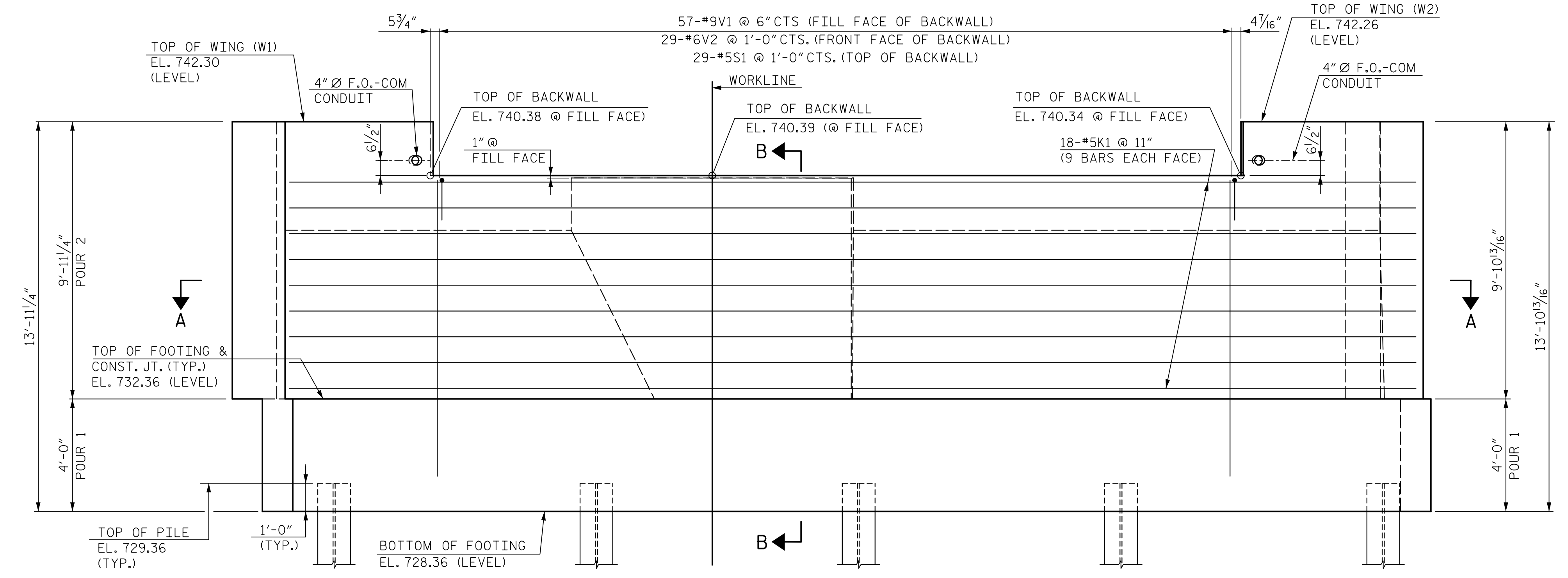
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S1-31		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
DRAWN BY <u>M. WRIGHT</u> DATE <u>11/17</u> CHECKED BY <u>D. HAWKINS</u> DATE <u>12/17</u> DWG. NO. 31					TOTAL SHEETS 39		

SHEET 2 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 PIER 2



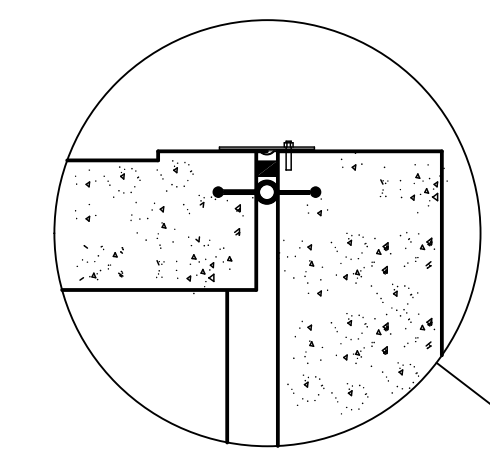
PLAN



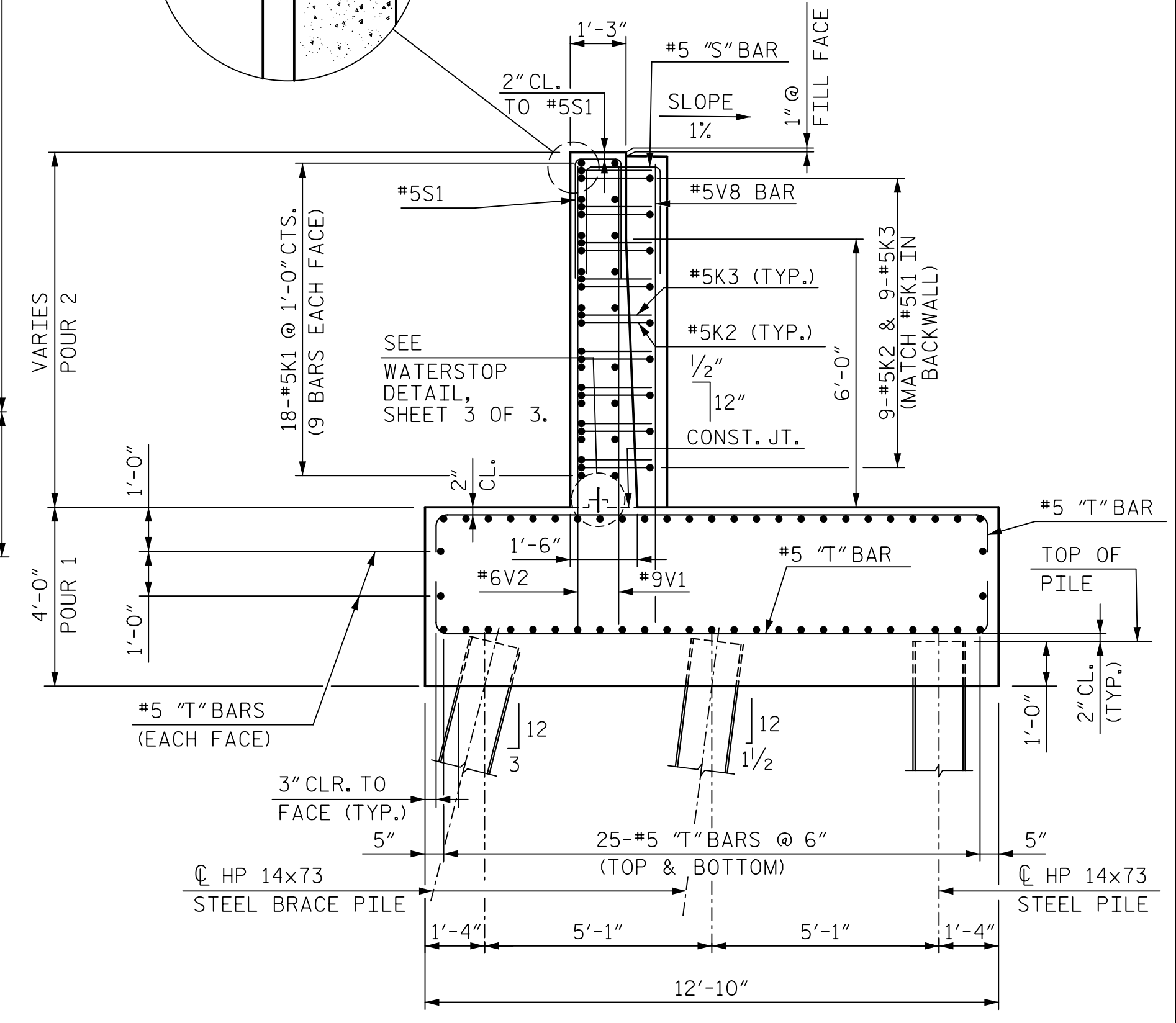
ELEVATION

NOTES:

- FOR SECTION A-A AND WINGWALL DETAILS, SEE SHEET 2 OF 3.
- FOR LAYOUT AND DETAILS OF CONTINUOUS FRENCH DRAIN SYSTEM BETWEEN ABUTMENT WINGWALLS, SEE "STRUCTURE DRAINAGE DETAILS" SHEET 4 OF 4.
- INDICATES PILE BATTERED IN DIRECTION SHOWN.
- CONDUIT TO BE 4" Ø IN ACCORDANCE WITH UNDERWRITERS LABORATORY SPECIFICATIONS.
- FOR FOOTING REINFORCING, SHEET 3 OF 3.



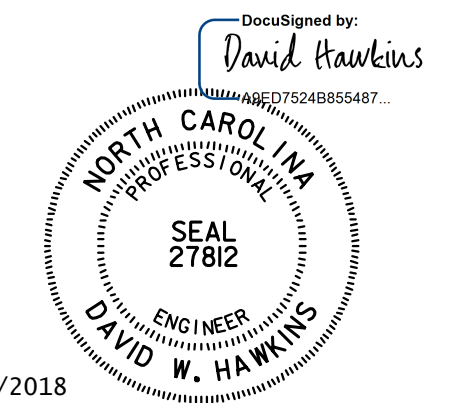
BULB-TYPE WATERSTOP REQUIRED FOR DETAILS OF BULB-TYPE WATERSTOP, SEE DETAIL "A" ON "SUPERSTRUCTURE DETAILS" SHEET.



SECTION B-B

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 1 OF 3

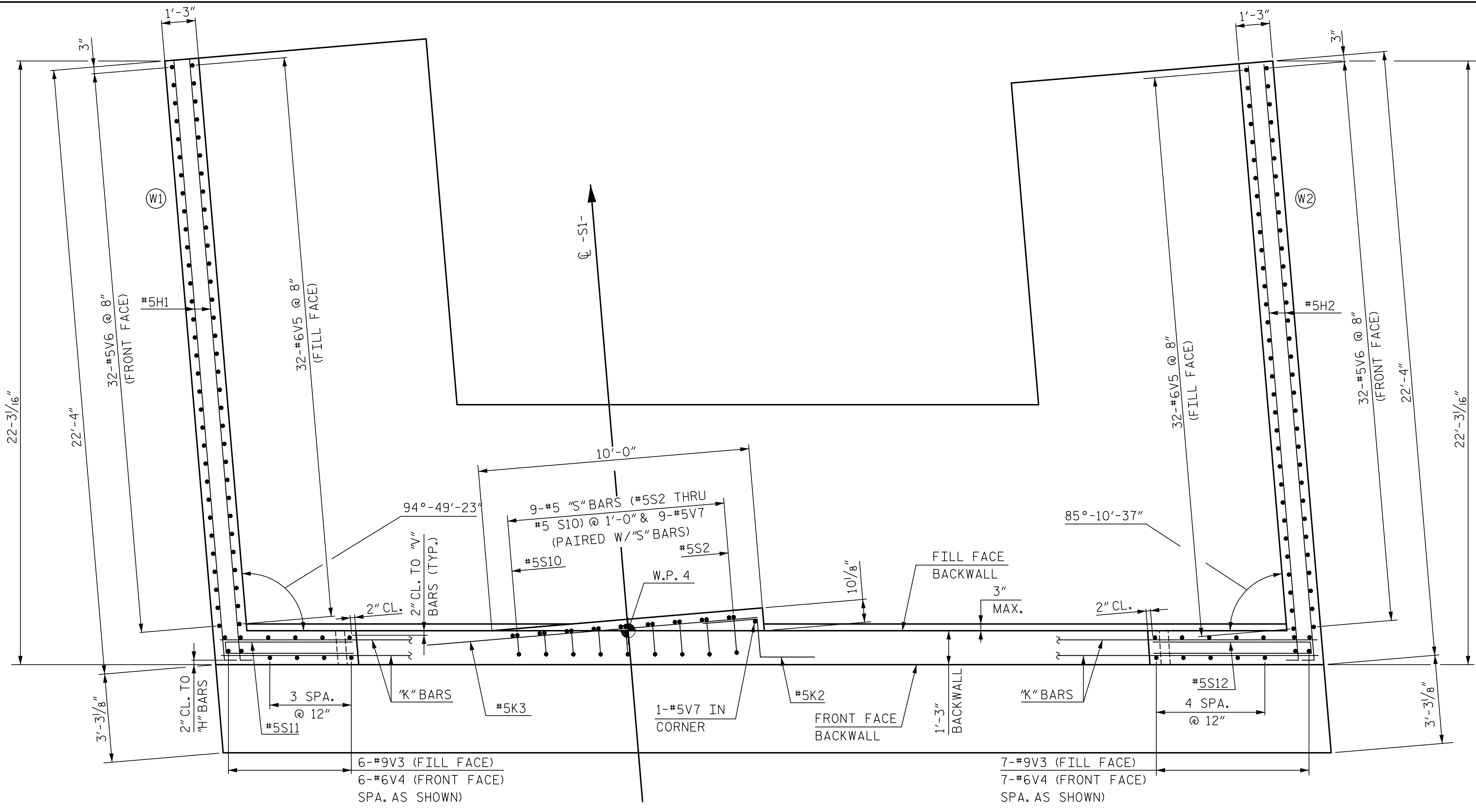


2/21/2018

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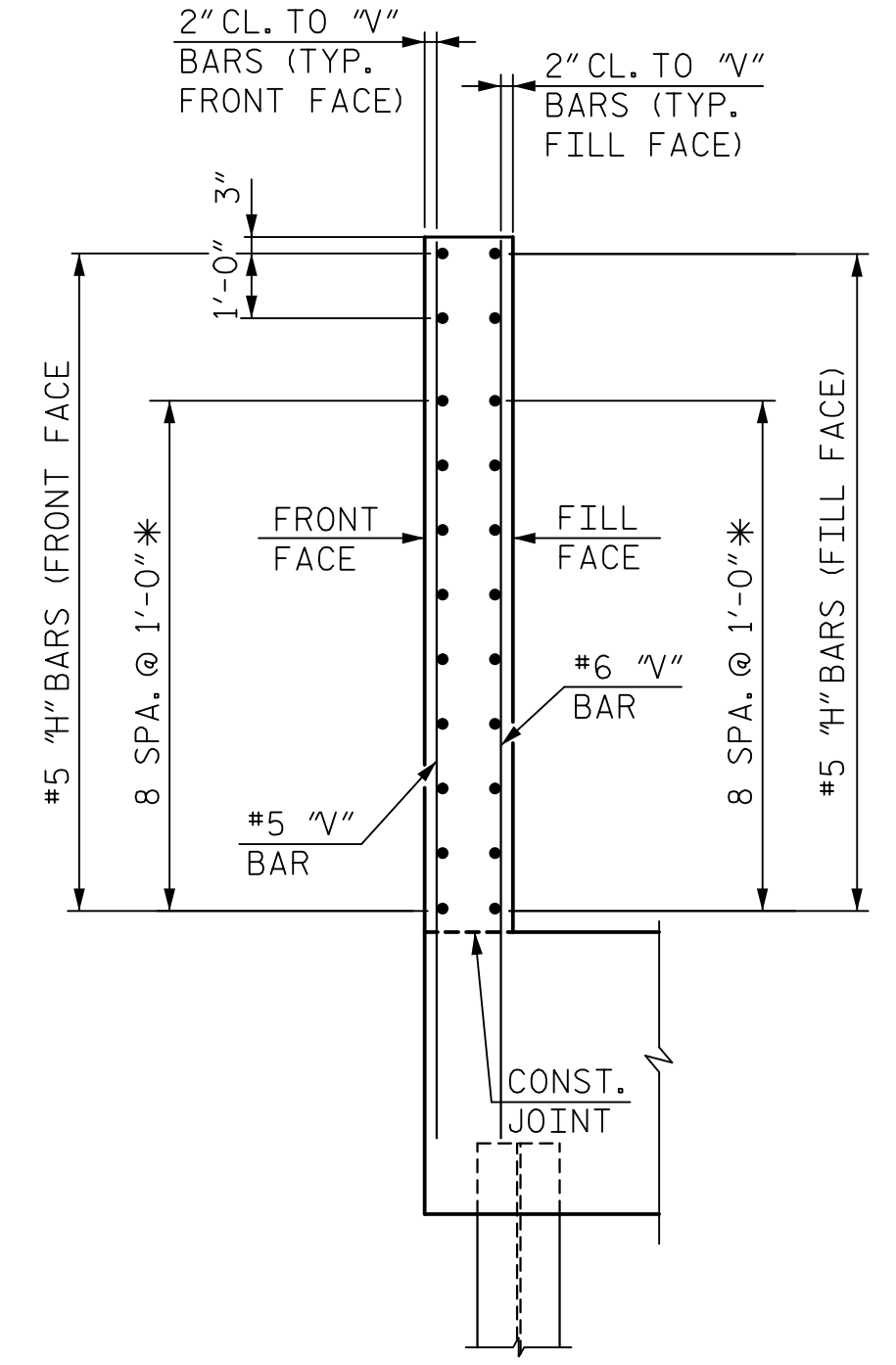
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DRAWN BY: M. WRIGHT	DATE: 11/17	CHECKED BY: J. WHEATLEY	DATE: 11/17
DWG. NO. 32			

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
SUBSTRUCTURE ABUTMENT 2			
SHEET NO. S1-32			
TOTAL SHEETS 39			
REVISIONS			
NO.	BY	DATE	NO.
1			3
2			4

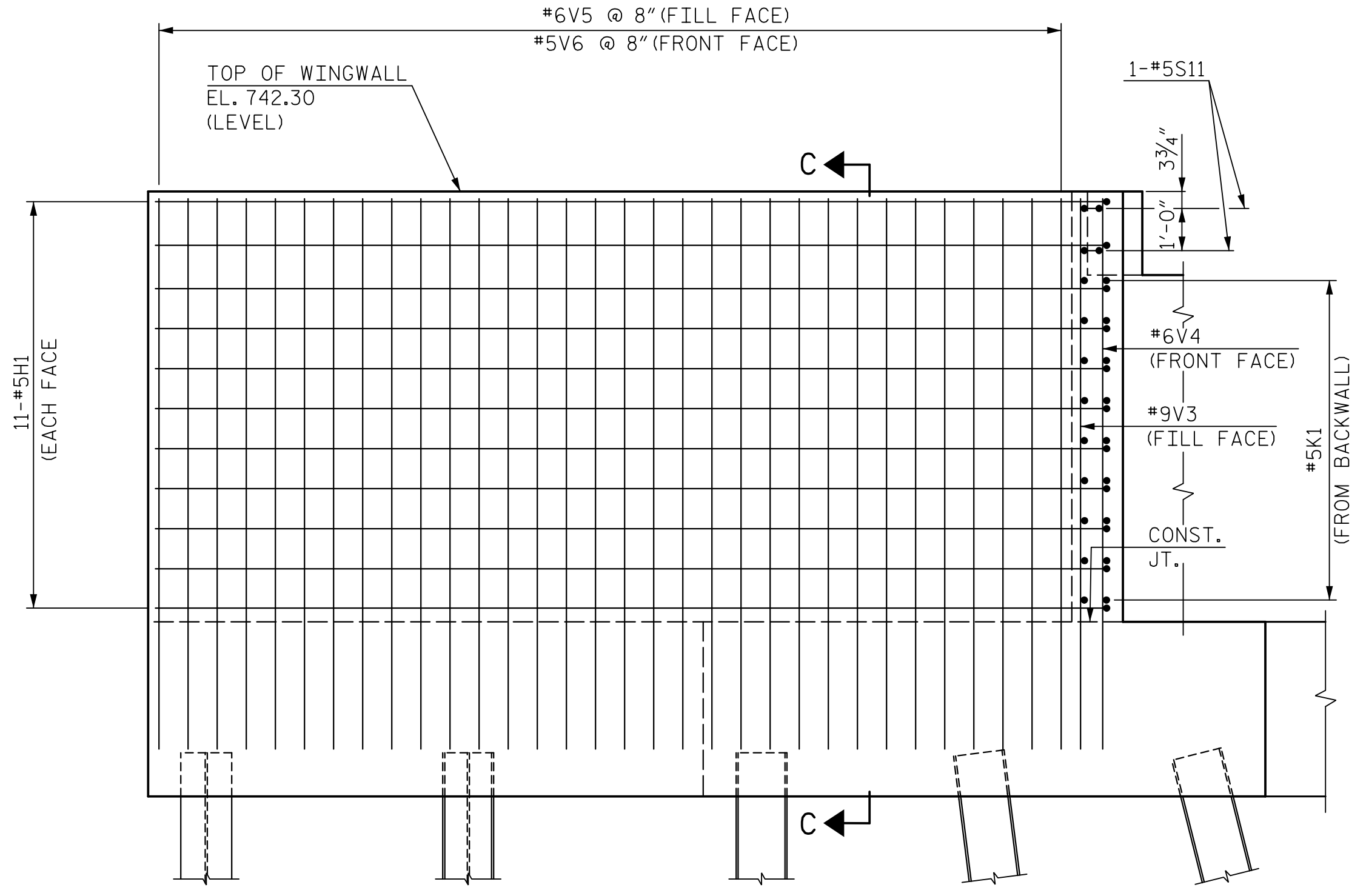


SECTION A-A

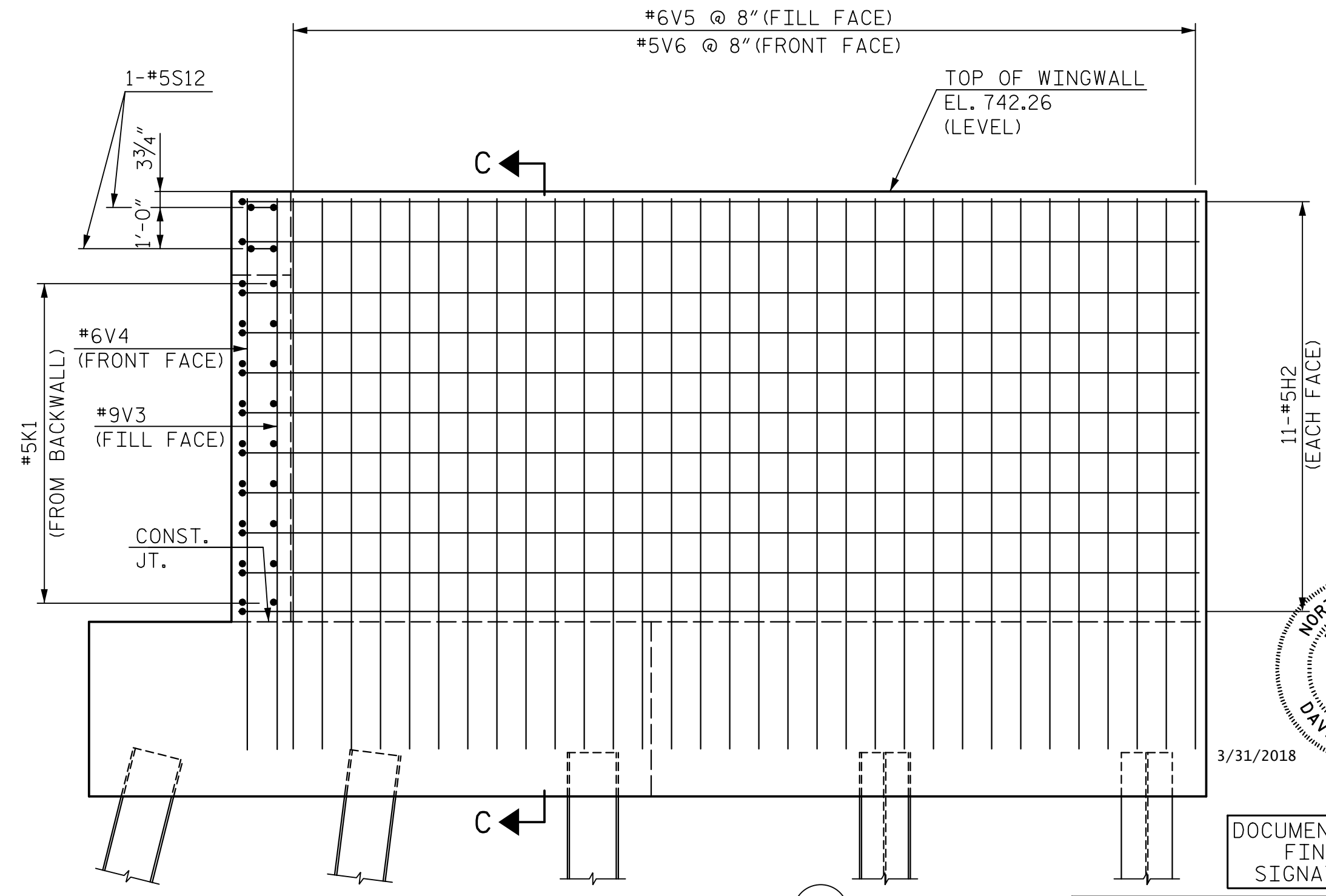
NOTES:
 FOR ABUTMENT AND WINGWALL DIMENSIONS AND ELEVATIONS, SEE SHEET 1 OF 3.
 FOR LOCATIONS OF HANDRAIL ANCHORAGES IN TOP OF WINGWALLS, SEE "SUPERSTRUCTURE METAL HANDRAIL DETAILS" SHEETS.



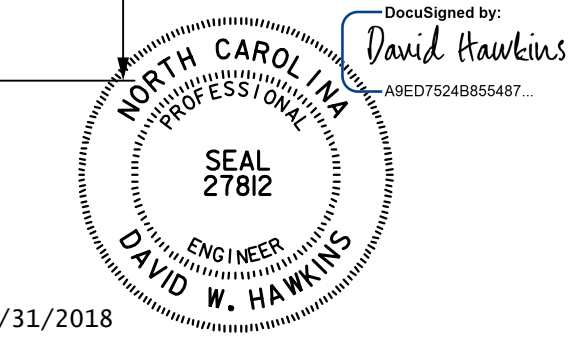
SECTION C-C



ELEVATION OF WING W1



ELEVATION OF WING W2



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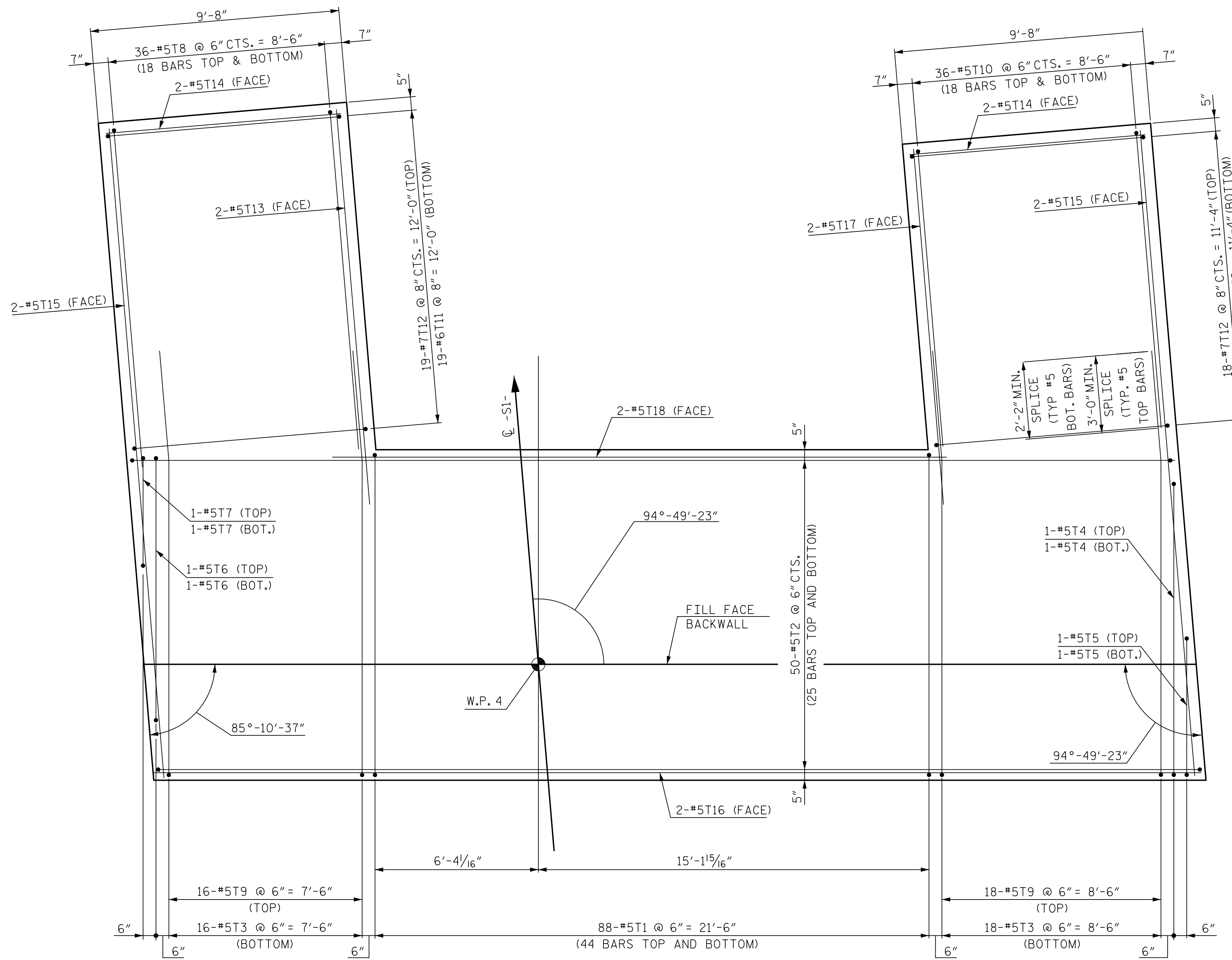
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

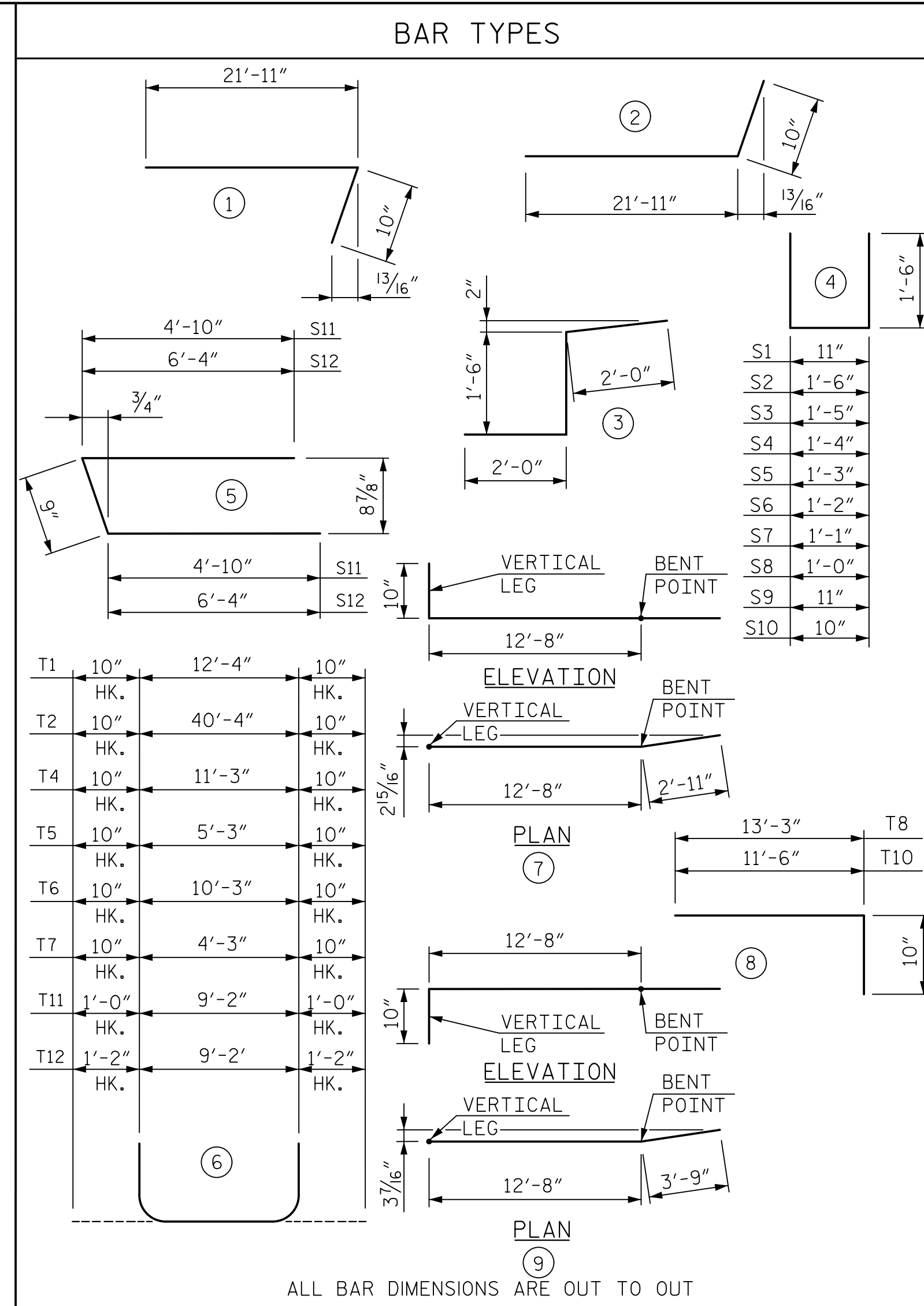
SUBSTRUCTURE
 ABUTMENT 2

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DRAWN BY: M. WRIGHT	DATE: 11/17	DWG. NO. 33	
CHECKED BY: J. WHEATLEY	DATE: 11/17		
REVISIONS			
NO.	BY	DATE	NO.
1			3
2			4

SHEET NO.	S1-33
TOTAL SHEETS	39



FOOTING REINFORCING PLAN



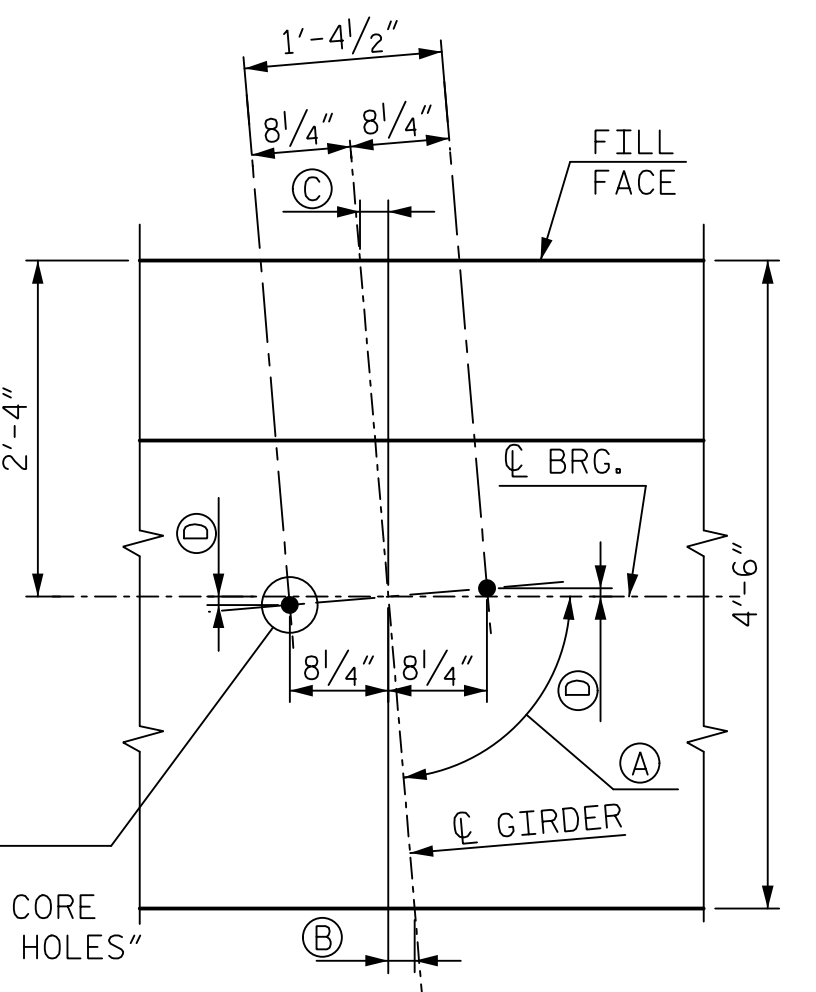
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF REINFORCING					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
ABUTMENT 2					
H1	22	5	2	22'-9"	522
H2	22	5	1	22'-9"	522
K1	18	5	STR	40'-6"	760
K2	9	5	3	5'-6"	52
K3	9	5	STR	12'-7"	118
S1	29	5	4	3'-11"	118
S2	1	5	4	4'-6"	5
S3	1	5	4	4'-5"	5
S4	1	5	4	4'-4"	5
S5	1	5	4	4'-3"	4
S6	1	5	4	4'-2"	4
S7	1	5	4	4'-1"	4
S8	1	5	4	4'-0"	4
S9	1	5	4	3'-11"	4
S10	1	5	4	3'-10"	4
S11	2	5	5	10'-5"	22
S12	2	5	5	13'-5"	28
T1	88	5	6	14'-0"	1,285
T2	50	5	6	42'-0"	2,190
T3	34	5	7	16'-5"	582
T4	2	5	6	12'-11"	27
T5	2	5	6	6'-11"	14
T6	2	5	6	11'-11"	25
T7	2	5	6	5'-11"	12
T8	36	5	8	14'-1"	529
T9	34	5	9	17'-3"	612
T10	36	5	8	12'-4"	463
T11	37	6	6	11'-2"	621
T12	37	7	6	11'-6"	870
T13	2	5	STR	15'-5"	32
T14	4	5	STR	9'-2"	38
T15	4	5	STR	25'-1"	105
T16	2	5	STR	40'-3"	84
T17	2	5	STR	13'-10"	29
T18	2	5	STR	25'-10"	54
V1	57	9	STR	10'-6"	2,035
V2	29	6	STR	10'-6"	457
V3	13	9	STR	12'-5"	549
V4	13	6	STR	12'-5"	242
V5	64	6	STR	12'-5"	1,194
V6	64	5	STR	12'-5"	829
V7	10	5	STR	10'-5"	109
TOTAL					15,168

QUANTITIES		
ITEM		TOTAL
REINFORCING STEEL	LBS.	15,168
CLASS AA CONCRETE BREAKDOWN:		
POUR 1 FOOTING	CU. YDS.	113.4
POUR 2 BACKWALL & WINGS	CU. YDS.	37.5
TOTAL	CU. YDS.	150.9
HP 14 X 73 STEEL PILES	NO.	23
	L.F.	1,226.7

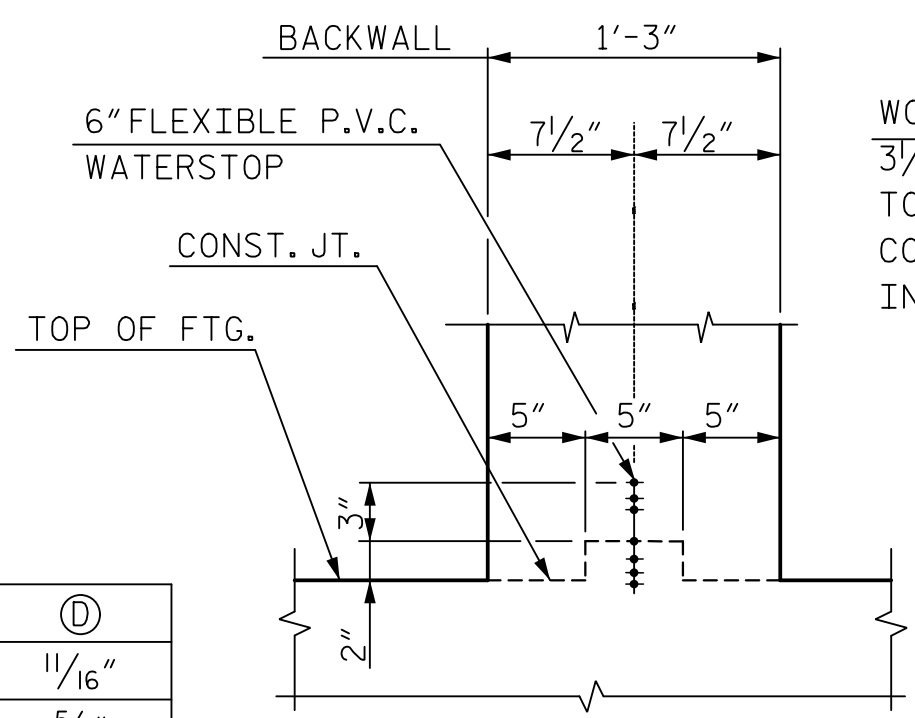
NOTES:
 "T" BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR FOOTING LAYOUT AND DIMENSIONS, SEE SHEET 1 OF 3.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

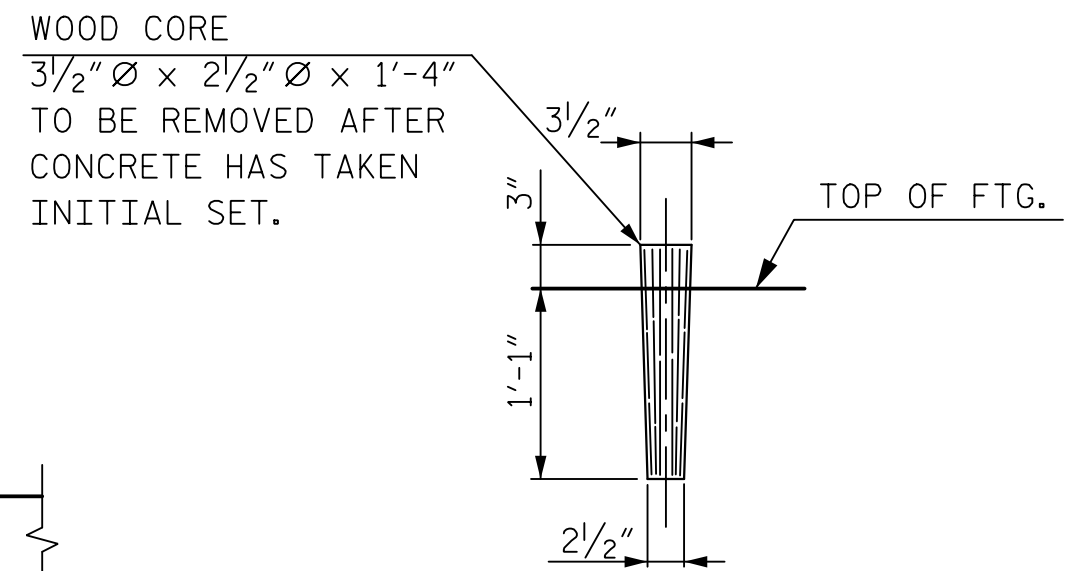


ANCHOR BOLT LAYOUT DETAIL

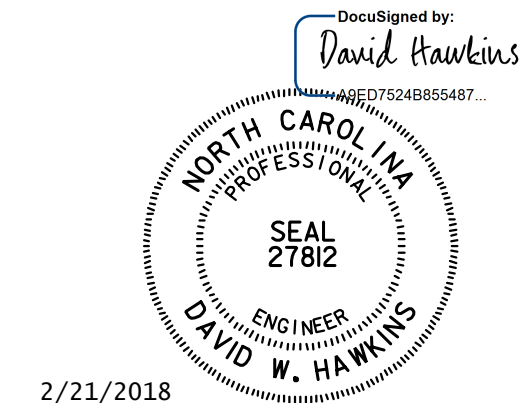
GIRDER	A	B	C	D
A1 THRU A5	85°-10'-37"	2 3/16"	2 3/8"	1 1/16"
A6	85°-31'-41"	2 1/16"	2 3/16"	3/8"
A7	85°-52'-39"	1 7/8"	2"	9/16"
A8	86°-16'-32"	1 1/16"	1 7/8"	1/2"



WATERSTOP DETAIL



DETAIL OF WOOD CORE FOR ANCHOR BOLT HOLES



2/21/2018

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DWG. NO. 34

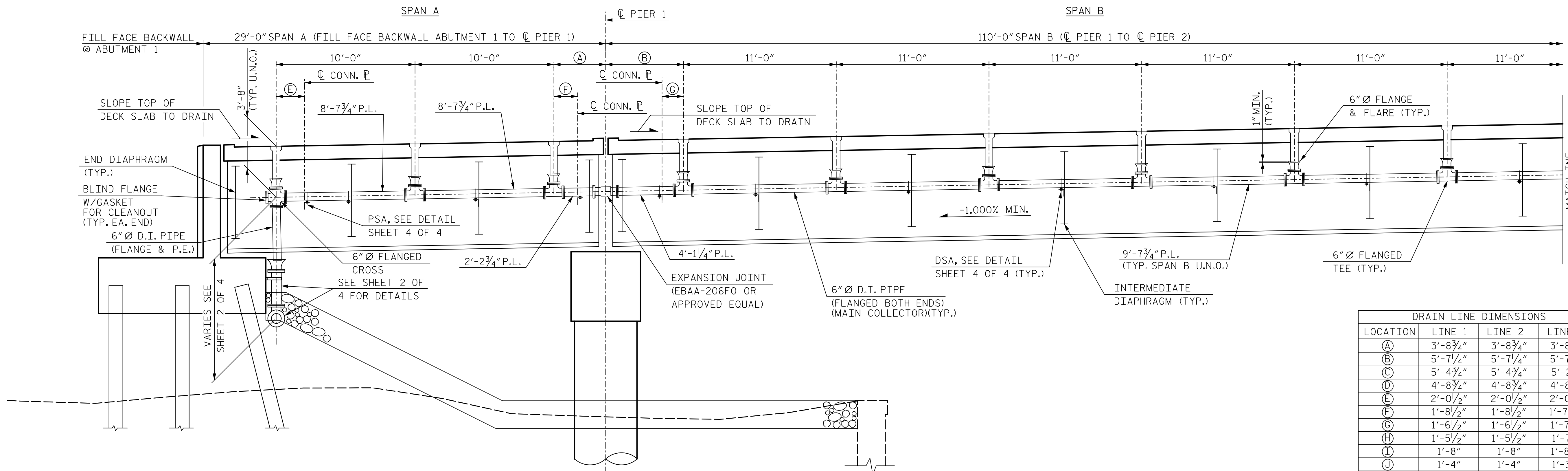
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

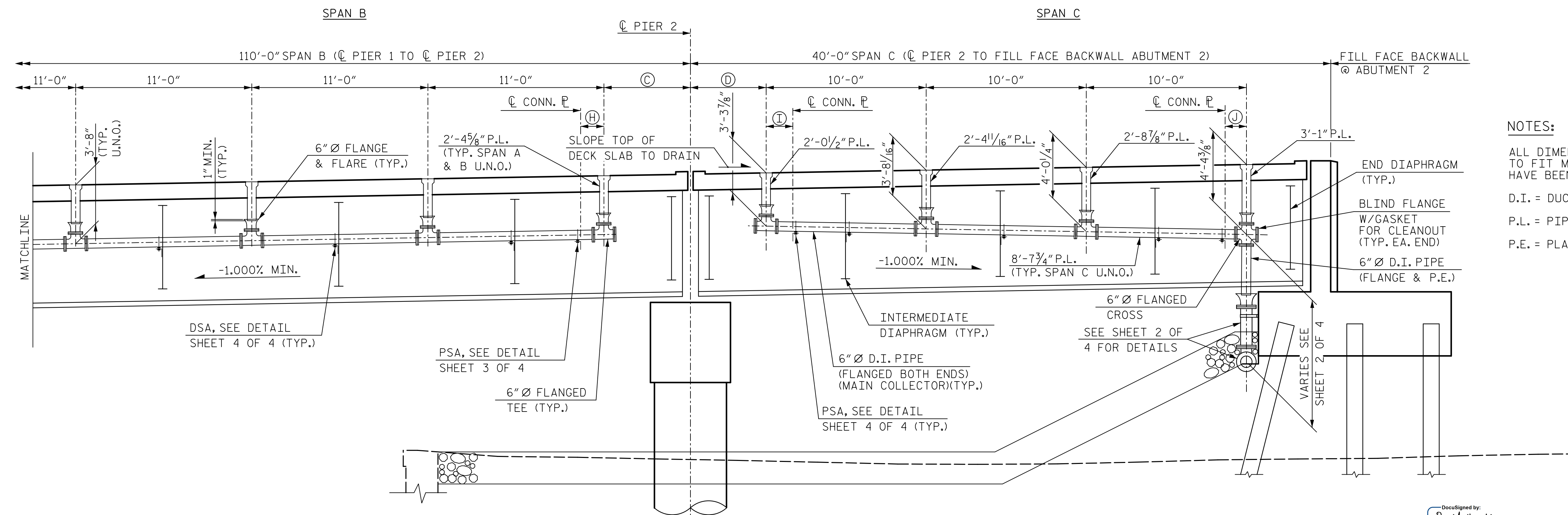
SUBSTRUCTURE
 ABUTMENT 2

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S1-34
 TOTAL SHEETS 39



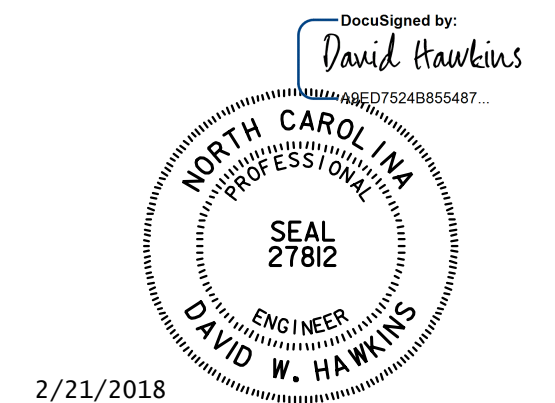
DRAIN LINE DIMENSIONS			
LOCATION	LINE 1	LINE 2	LINE 3
(A)	3'-8 ³ / ₄ "	3'-8 ³ / ₄ "	3'-8 ⁷ / ₁₆ "
(B)	5'-7 ¹ / ₄ "	5'-7 ¹ / ₄ "	5'-7 ⁹ / ₁₆ "
(C)	5'-4 ³ / ₄ "	5'-4 ³ / ₄ "	5'-2 ⁷ / ₈ "
(D)	4'-8 ³ / ₄ "	4'-8 ³ / ₄ "	4'-8 ⁵ / ₁₆ "
(E)	2'-0 ¹ / ₂ "	2'-0 ¹ / ₂ "	2'-0 ⁹ / ₁₆ "
(F)	1'-8 ¹ / ₂ "	1'-8 ¹ / ₂ "	1'-7 ¹⁵ / ₁₆ "
(G)	1'-6 ¹ / ₂ "	1'-6 ¹ / ₂ "	1'-7 ¹ / ₁₆ "
(H)	1'-5 ¹ / ₂ "	1'-5 ¹ / ₂ "	1'-7 ¹ / ₄ "
(I)	1'-8"	1'-8"	1'-8 ⁹ / ₁₆ "
(J)	1'-4"	1'-4"	1'-3 ⁷ / ₈ "



NOTES:
 ALL DIMENSIONS ARE SUBJECT TO ADJUSTMENTS TO FIT MEASUREMENTS TAKEN AFTER DECKS HAVE BEEN POURED.
 D.I. = DUCTILE IRON
 P.L. = PIPE LENGTH
 P.E. = PLAIN END

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

DRAINAGE DETAILS - SPANS A, B & C



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 CHECKED BY: D. HAWKINS DATE: 9/17 DWG. NO. 35

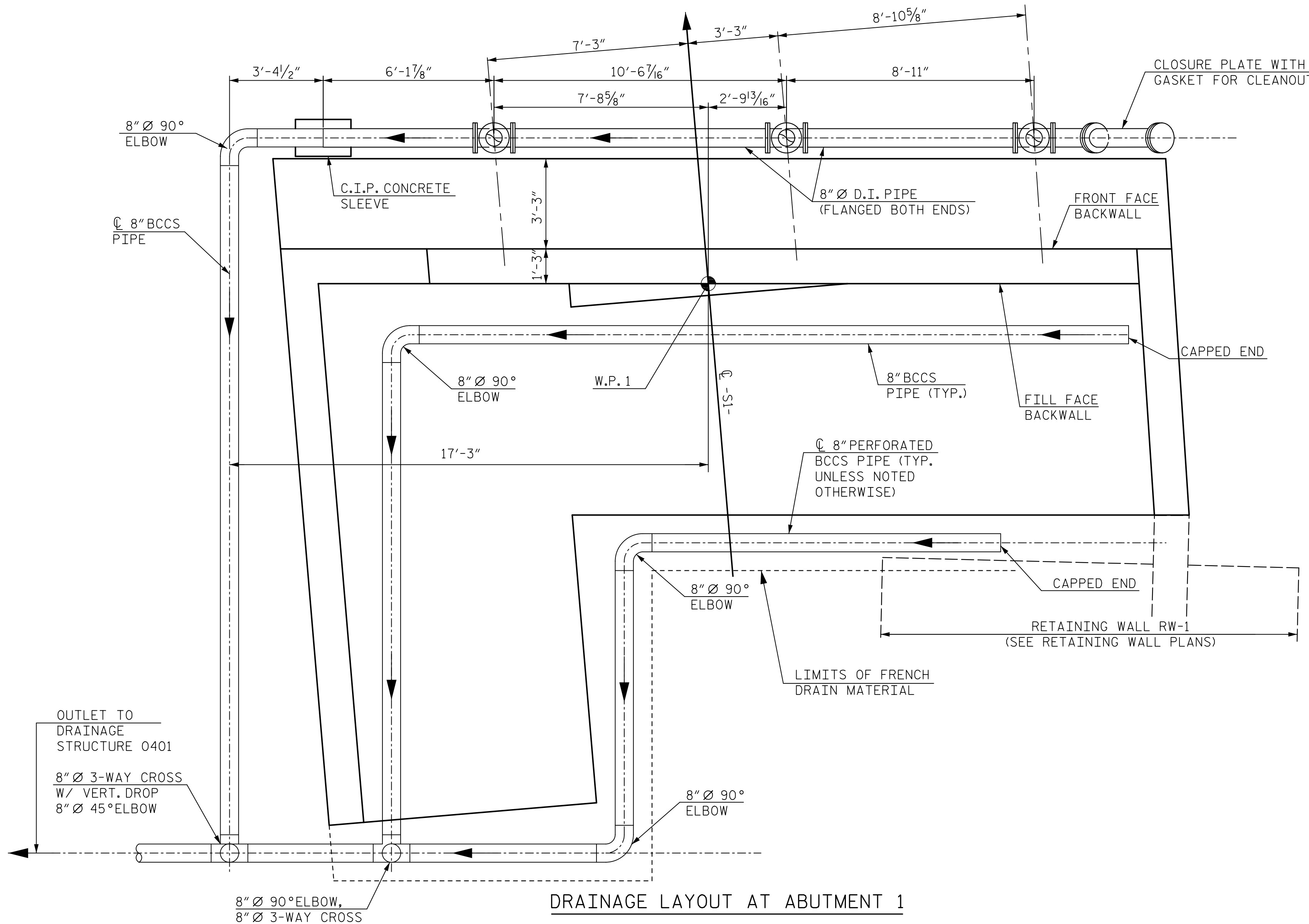
SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

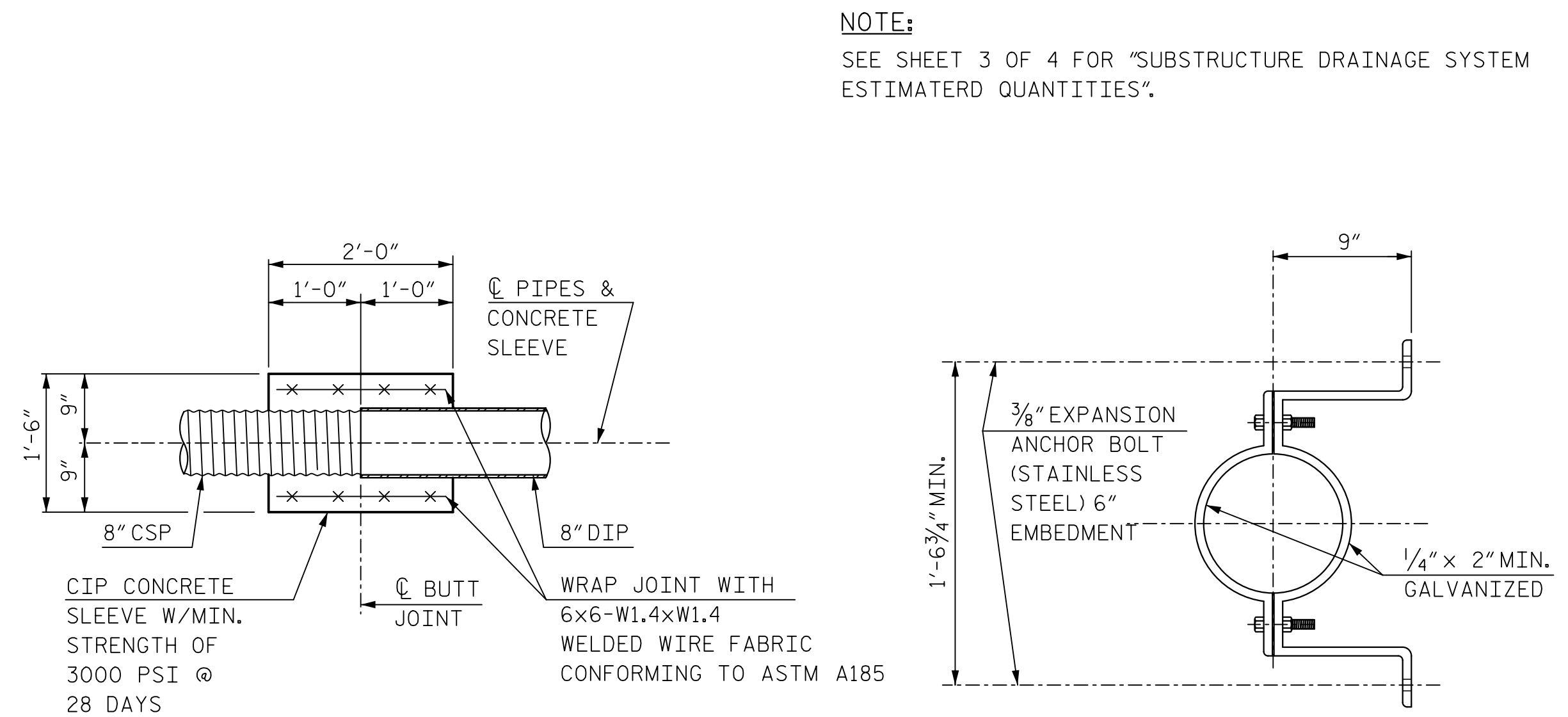
SUPERSTRUCTURE
 DRAINAGE PLAN

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO. S1-35
 TOTAL SHEETS 39

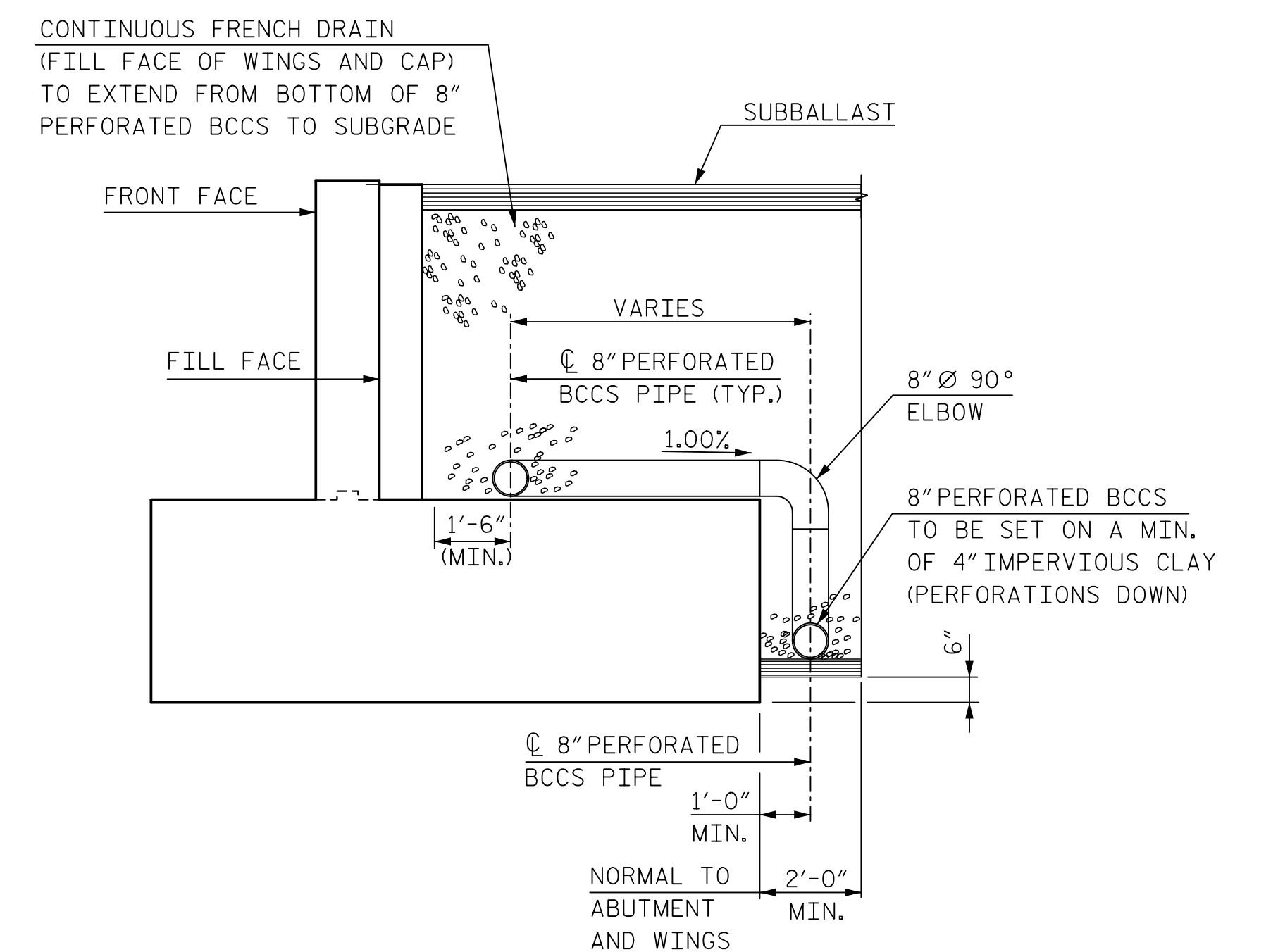


DRAINAGE LAYOUT AT ABUTMENT 1

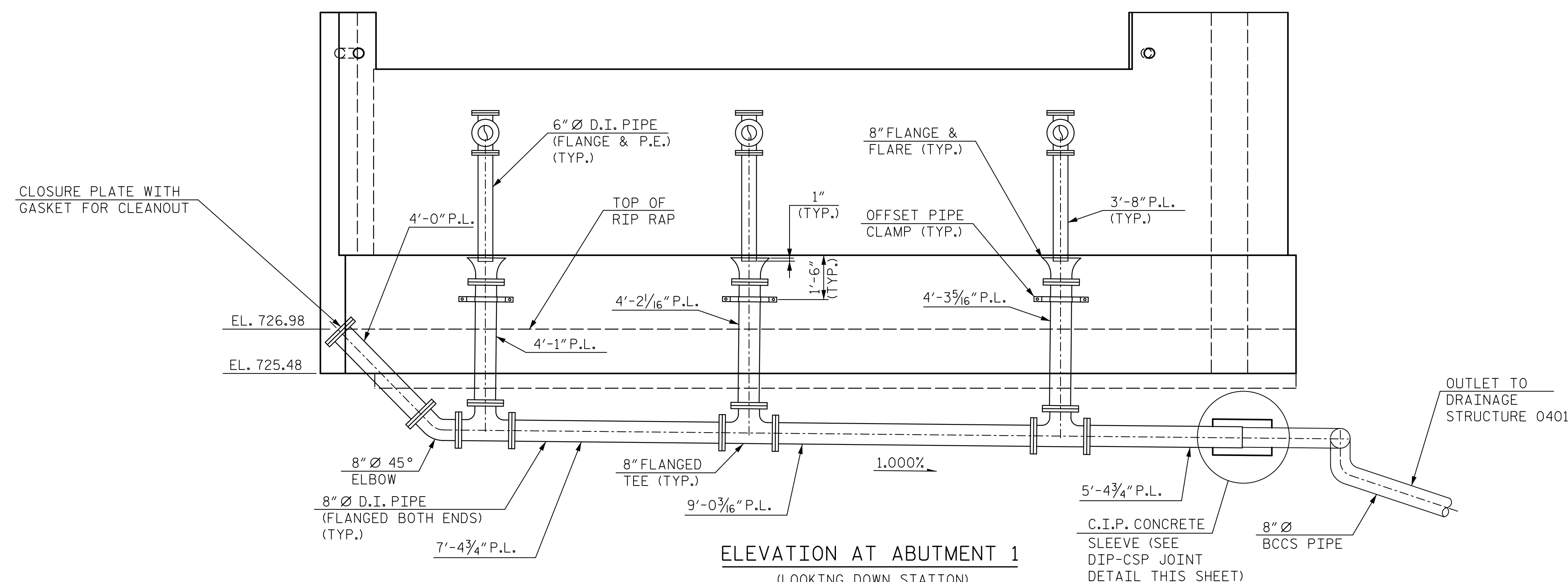


DIP-CSP JOINT DETAIL

OFFSET PIPE CLAMP DETAIL



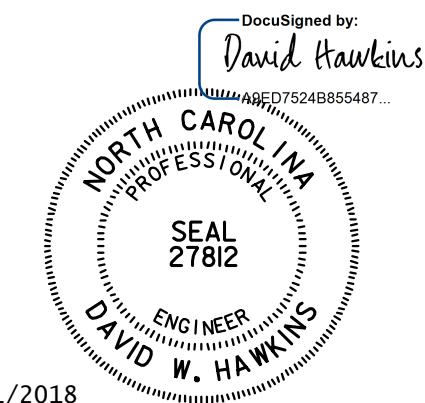
CONTINUOUS FRENCH DRAIN DETAIL



ELEVATION AT ABUTMENT 1 (LOOKING DOWN STATION)

NOTE:
SEE SHEET 3 OF 4 FOR "SUBSTRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES".

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-



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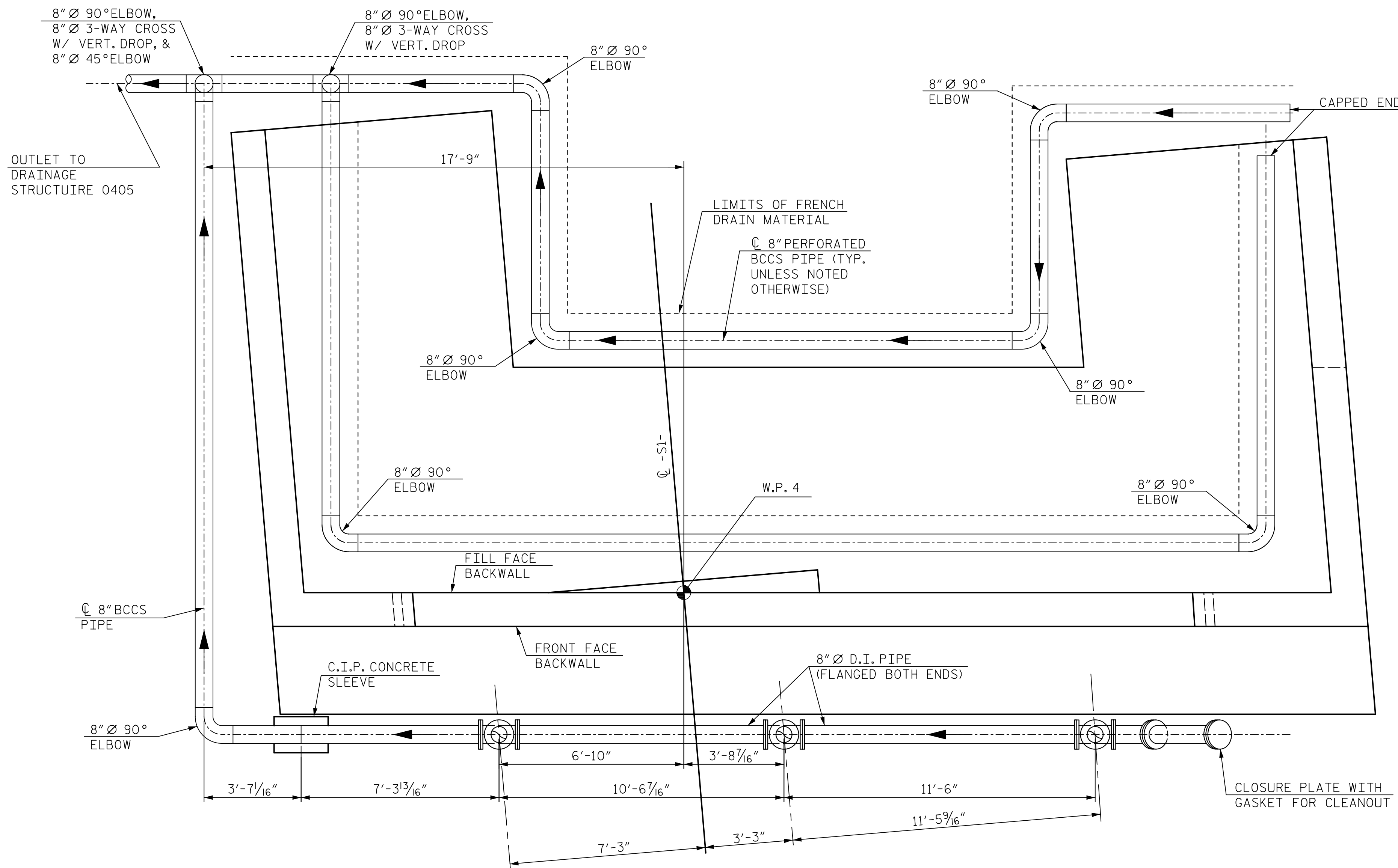
DRAWN BY M. WRIGHT DATE 9/17
CHECKED BY J. WHEATLEY DATE 12/17 DWG. NO. 36

SHEET 2 OF 4

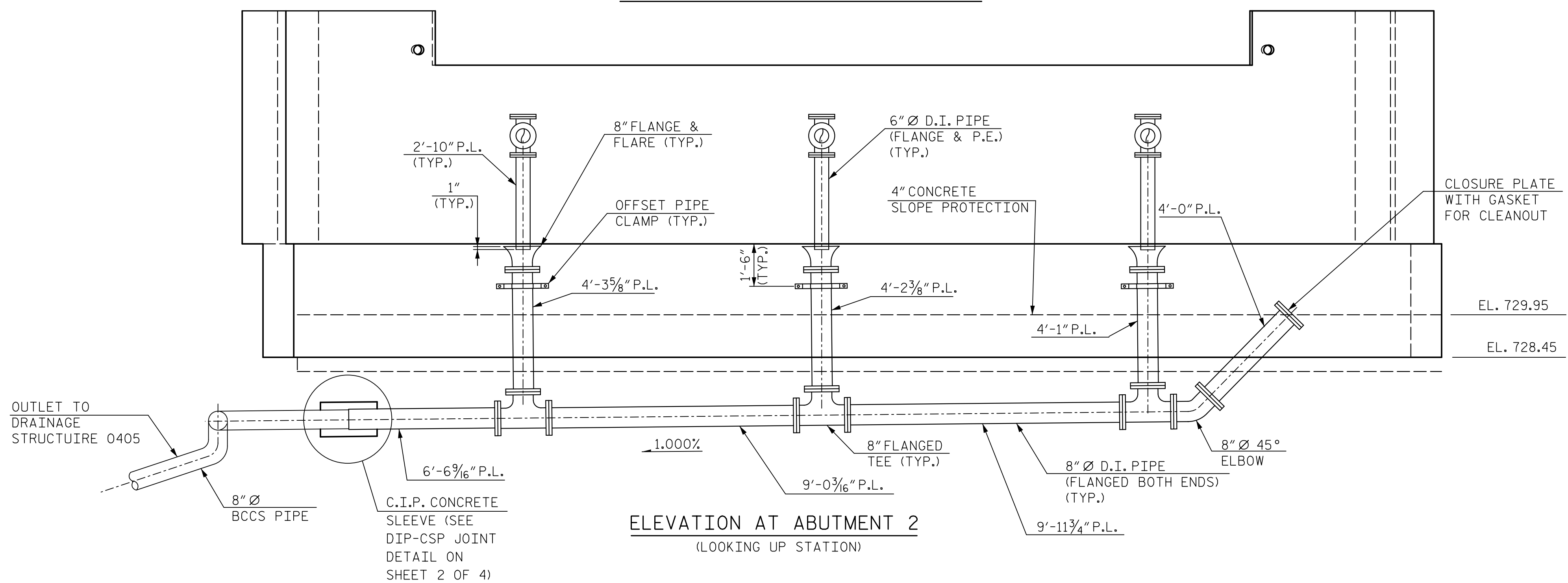
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRUCTURE
DRAINAGE DETAILS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-36
1			3			TOTAL SHEETS
2			4			39



DRAINAGE LAYOUT AT ABUTMENT 2



ELEVATION AT ABUTMENT 2
(LOOKING UP STATION)

NOTE:
SEE SHEET 2 OF 4 FOR "CONTINUOUS FRENCH DRAIN DETAIL",
"DIP-CSP JOINT DETAIL", AND "OFFSET PIPE CLAMP DETAIL".

SUBSTRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
8" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGED BOTH ENDS)	FEET	68.5
8" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGE & P.E.)	FEET	11.9
8" I.D. DUCTILE IRON PIPE FLANGED FITTINGS, 250 psi P.R.	LBS	1,530
8" I.D. DUCTILE IRON BLIND FLANGES	LBS	84
8" I.D. OFFSET PIPE CLAMPS	EA.	6
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGE & P.E.)	FEET	19.5

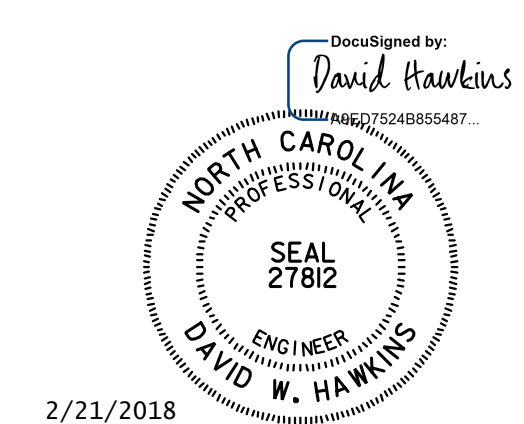
* INCLUDES U-BOLTS, ANGLES, NUTS, BOLTS, WASHERS AND PLATES.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: 15+39.55 -S1-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STRUCTURE
 DRAINAGE DETAILS



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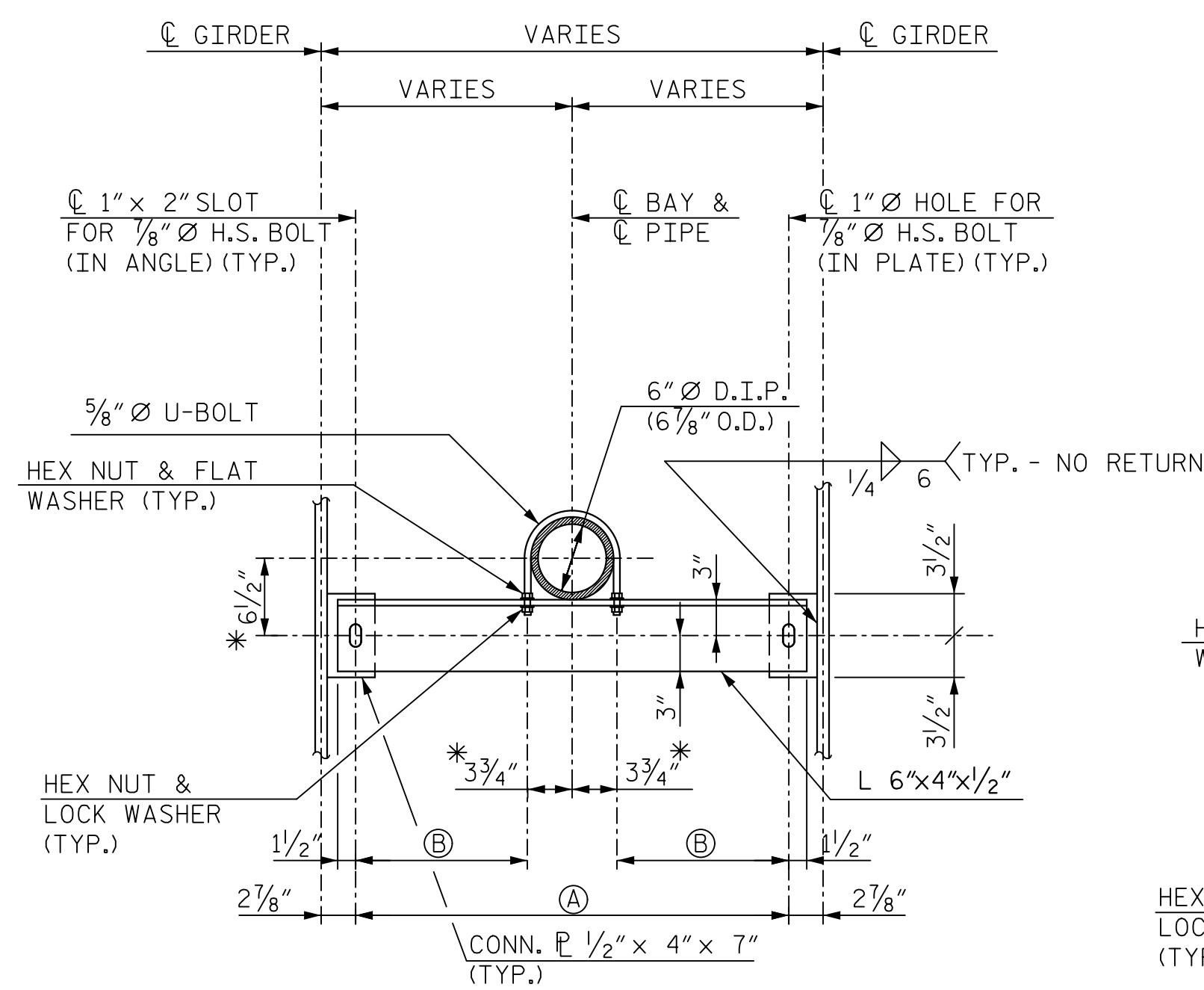
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DRAWN BY M. WRIGHT DATE 7/17
 CHECKED BY J. WHEATLEY DATE 12/17

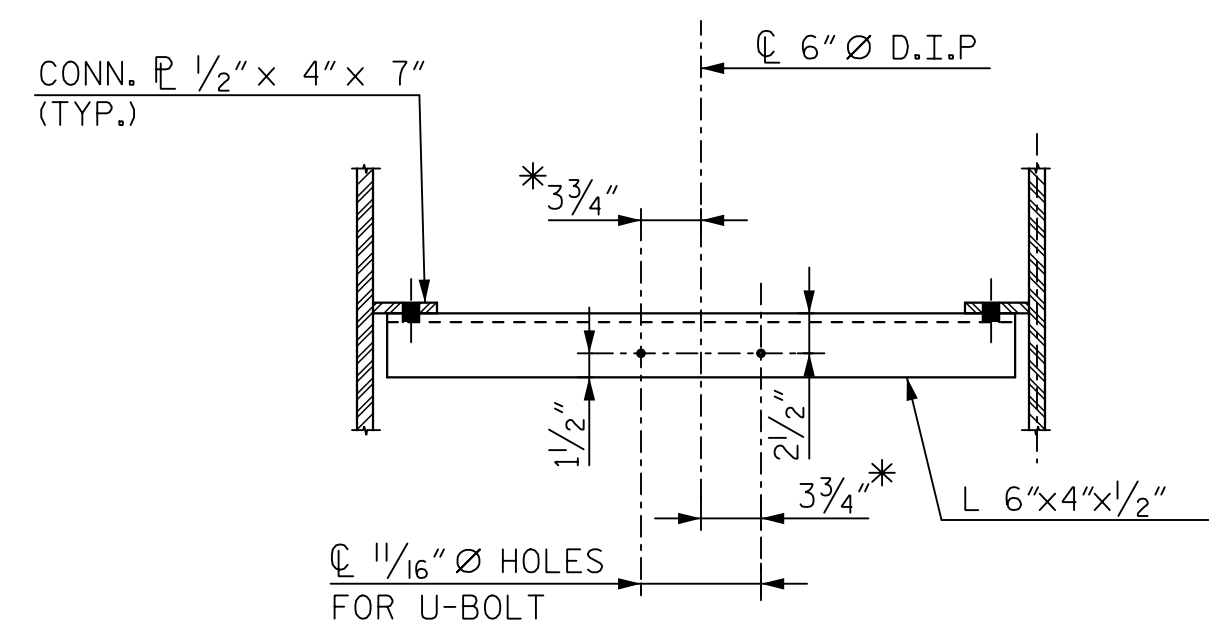
DWG. NO. 37

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-37
1			3			TOTAL SHEETS
2			4			39

PSA TABLE		
PSA	(A)	(B)
PSA-A1, PSA-A3	3'-0 ¹ / ₄ "	1'-2 ³ / ₈ "
PSA-A2	2'-4 ³ / ₄ "	10 ⁵ / ₈ "
PSA-A4	2'-6 ¹ / ₈ "	11 ⁵ / ₈ "
PSA-B1, PSA-B3	3'-0 ¹ / ₄ "	1'-2 ³ / ₈ "
PSA-B2	2'-6 ⁵ / ₈ "	11 ⁹ / ₁₆ "
PSA-B4	3'-1 ⁷ / ₈ "	1'-3 ³ / ₁₆ "
PSA-C1, PSA-C3	3'-0 ¹ / ₄ "	1'-2 ³ / ₈ "
PSA-C2	3'-2 ⁷ / ₈ "	1'-3 ¹¹ / ₁₆ "
PSA-C4	3'-4 ⁷ / ₈ "	1'-4 ¹¹ / ₁₆ "



ELEVATION

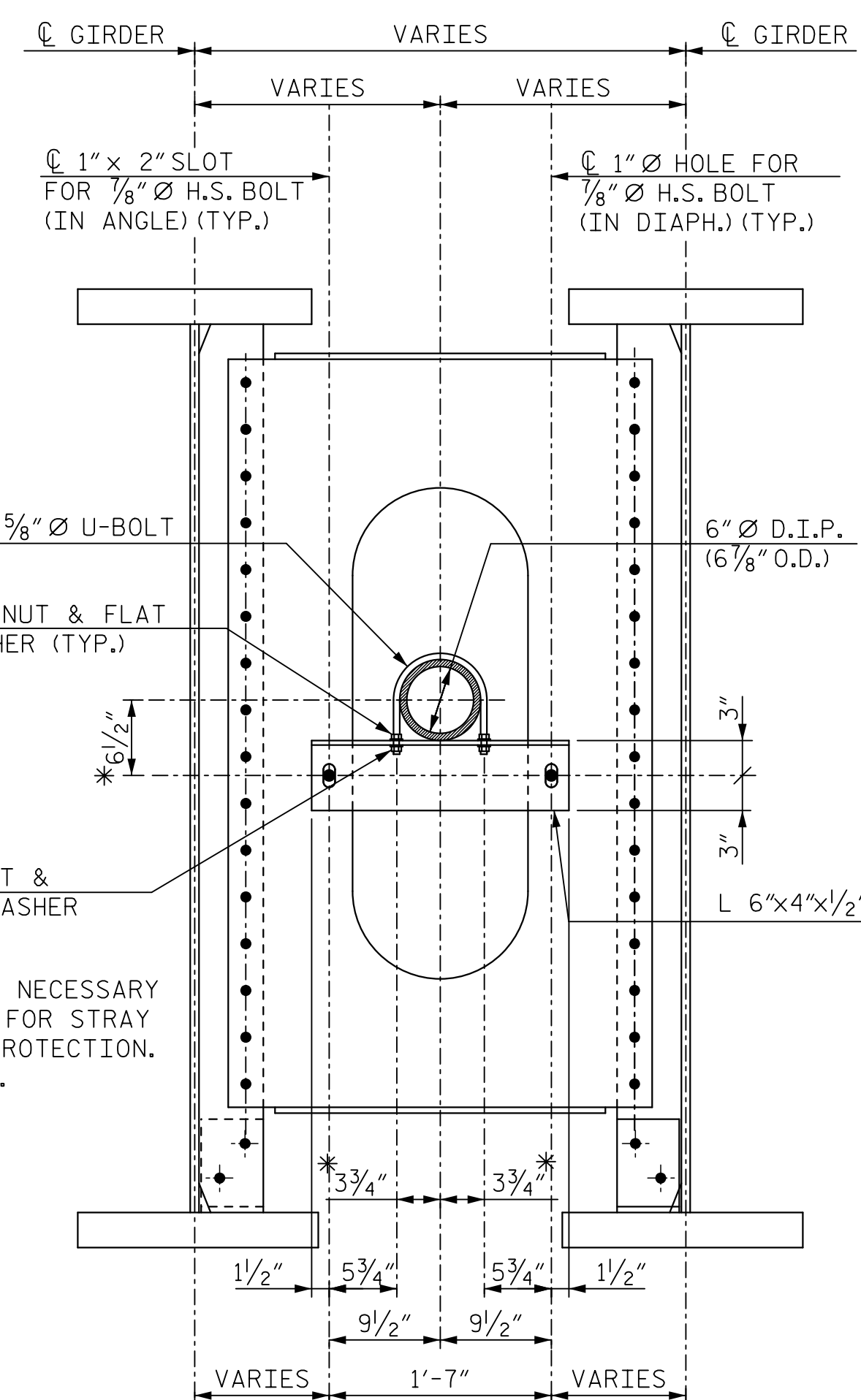


PLAN

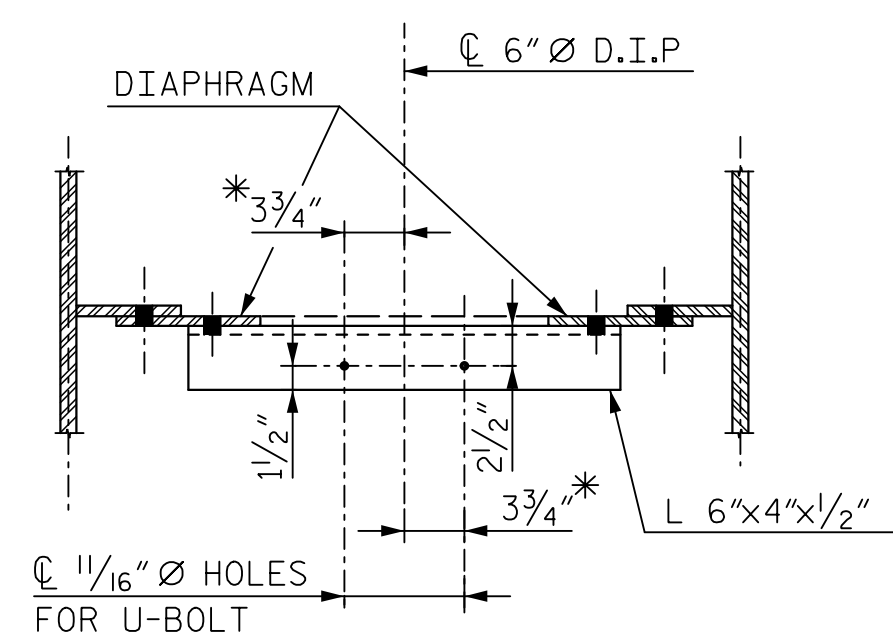
PIPE SUPPORT ANGLE (PSA)
(18 REQ'D.)

* ADJUST AS NECESSARY TO ALLOW FOR STRAY CURRENT PROTECTION. SEE NOTES.

NOTE:
DIAPHRAGM FLANGE NOT SHOWN FOR CLARITY

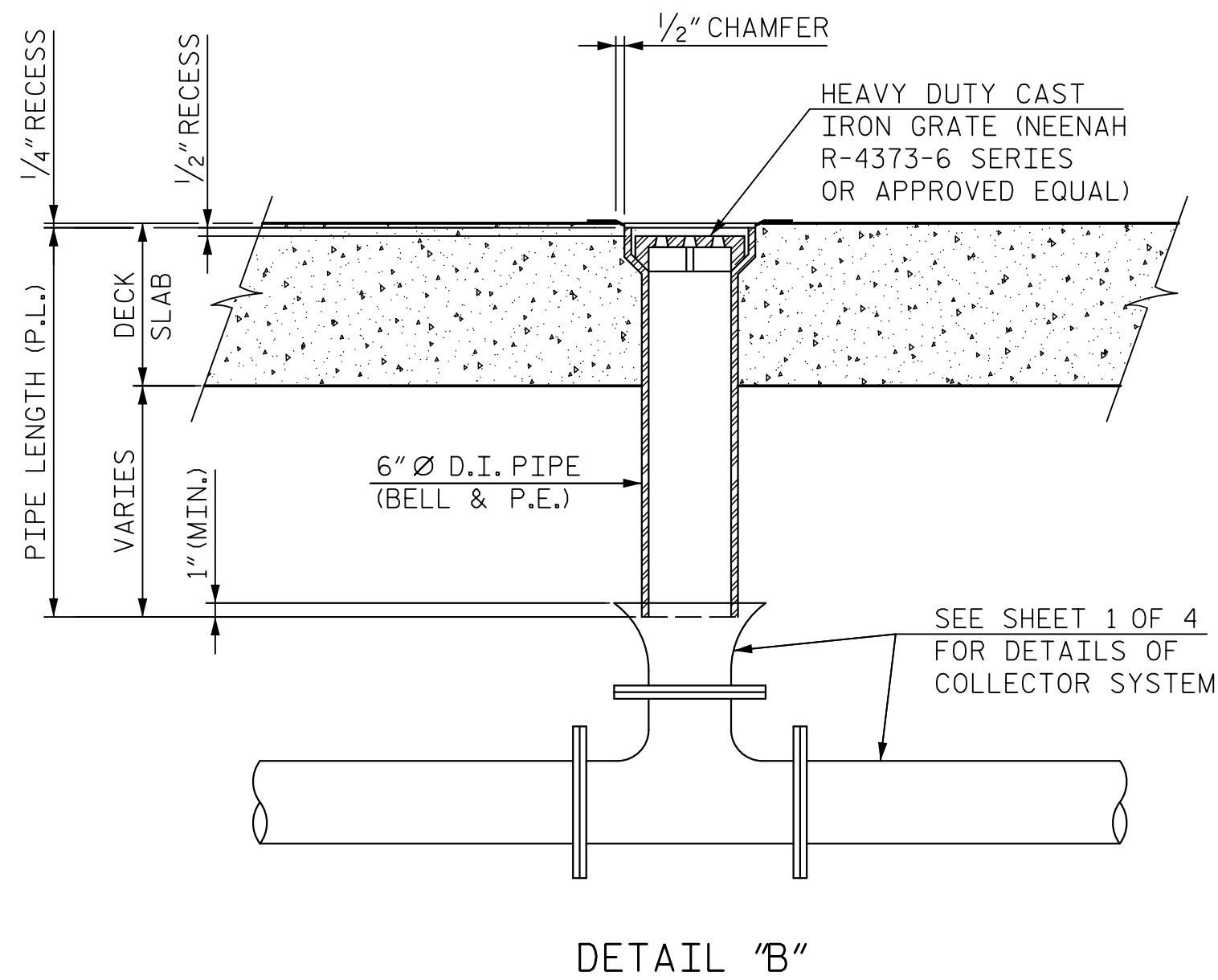


ELEVATION

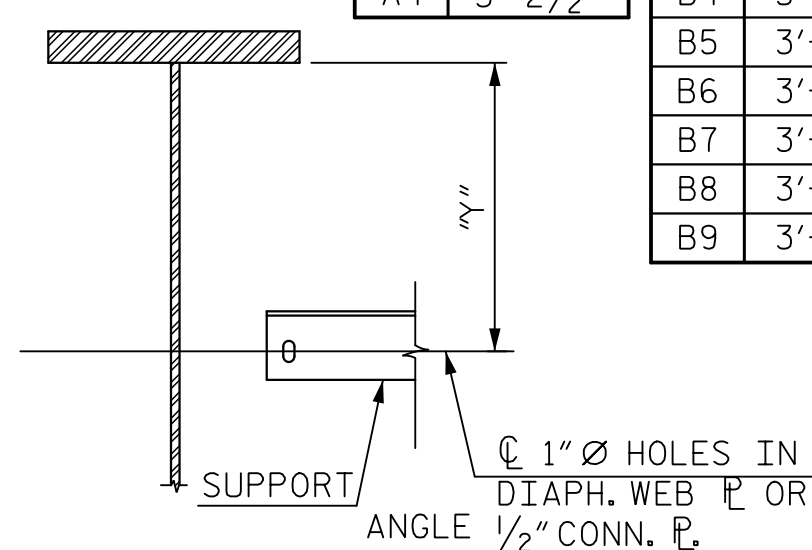


PLAN

DIAPHRAGM SUPPORT ANGLE (DSA)
(42 REQ'D.)



DETAIL "B"



DETAIL "A"

DSA	"Y"	DSA	"Y"	DSA	"Y"	DSA	"Y"	PSA	"Y"
A1	3'-2 ¹ / ₂ "	B1	3'-2 ¹ / ₂ "	B10	3'-2 ¹ / ₂ "	C1	3'-0 ¹ / ₁₆ "	A1	3'-2 ¹ / ₂ "
A2	3'-2 ¹ / ₂ "	B2	3'-2 ¹ / ₂ "	B11	3'-2 ¹ / ₂ "	C2	3'-0 ¹ / ₈ "	A2	3'-2 ¹ / ₂ "
A3	3'-2 ¹ / ₂ "	B3	3'-2 ¹ / ₂ "	B12	3'-2 ¹ / ₂ "	C3	3'-4 ¹ / ₈ "	A3	3'-2 ¹ / ₂ "
A4	3'-2 ¹ / ₂ "	B4	3'-2 ¹ / ₂ "	B13	3'-2 ¹ / ₂ "	C4	3'-4 ⁷ / ₈ "	A4	3'-2 ¹ / ₂ "
		B5	3'-2 ¹ / ₂ "	B14	3'-2 ¹ / ₂ "	C5	3'-8 ¹ / ₈ "	B1	3'-2 ¹ / ₂ "
		B6	3'-2 ¹ / ₂ "	B15	3'-2 ¹ / ₂ "	C6	3'-8 ⁵ / ₁₆ "	B2	3'-2 ¹ / ₂ "
		B7	3'-2 ¹ / ₂ "	B16	3'-2 ¹ / ₂ "			B3	3'-2 ¹ / ₂ "
		B8	3'-2 ¹ / ₂ "	B17	3'-2 ¹ / ₂ "			B4	3'-2 ¹ / ₂ "
		B9	3'-2 ¹ / ₂ "	B18	3'-2 ¹ / ₂ "			C1	2'-11 ¹ / ₈ "
								C2	2'-11 ³ / ₈ "
								C3	3'-10 ³ / ₈ "
								C4	3'-10 ³ / ₈ "

ALL PIPES, FLANGES AND FITTINGS SHALL BE CLASS 53 DUCTILE IRON.
ALL BENDS TO BE SHORT RADIUS, INCLUDING FLANGE & FLARE BENDS, UNLESS OTHERWISE NOTED.

FOR LOCATIONS AND DESIGNATIONS OF DSA & PSA, SEE FRAMING PLAN.
PIPE LENGTHS SHOWN ALLOW FOR 1/8" THICK GASKETS TO BE USED AT ALL BOLTED FLANGE CONNECTIONS.

MAKE FINAL PIPE ALIGNMENT AND TIGHTEN U-BOLTS AFTER RAILROAD TRACK HAS BEEN LAID ACROSS THE BRIDGE.

PAYMENT FOR ALL MATERIALS, FABRICATION, INSTALLATION AND ADJUSTMENTS RELATED TO STRUCTURE DRAINAGE SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR "STRUCTURE DRAINAGE SYSTEM". NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR ANY COMPONENT OF THE STRUCTURE DRAINAGE SYSTEM INCLUDING, BUT NOT LIMITED TO:

- o DUCTILE IRON PIPE AND FITTINGS AND CAST IRON GRATES
- o GASKETS AND PVC OR NEOPRENE COATED STRIPS
- o STEEL SUPPORT ANGLES AND PLATES
- o U-BOLTS AND H.S. BOLTS, WASHERS AND NUTS
- o OFFSET PIPE CLAMPS AND EXPANSION ANCHOR BOLTS
- o EXPANSION JOINT

PROVIDE PVC OR NEOPRENE-COATED STRIPS, EPOXY-CEMENTED TO THE U-BOLT OR PIPE FOR STRAY CURRENT PROTECTION.

THE OUTSIDE COATING FOR D.I. PIPE SHALL BE PAINTED WITH A SHOP PRIME COAT OF INORGANIC ZINC PRIMER AND A FINISH (FIELD) COATING OF ACRYLIC PAINT AS SPECIFIED FOR THE STRUCTURAL STEEL.

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

SUPER STRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGED BOTH ENDS)	FEET	409'-1 ¹ / ₂ "
6" I.D. DUCTILE IRON PIPE, CLASS 53 (BELL & P.E.)	FEET	123'-9 ⁹ / ₁₆ "
6" I.D. DUCTILE IRON PIPE FLANGED FITTINGS, 250 psi P.R.	LBS	7,035
6" I.D. DUCTILE IRON BLIND FLANGES	LBS	300
EXPANSION JOINT	EA.	3
HEAVY DUTY CAST IRON GRATES	EA.	51
PIPE SUPPORT ANGLES (PSA) *	EA.	18
DIAPHRAGM SUPPORT ANGLES (DSA) *	EA.	42

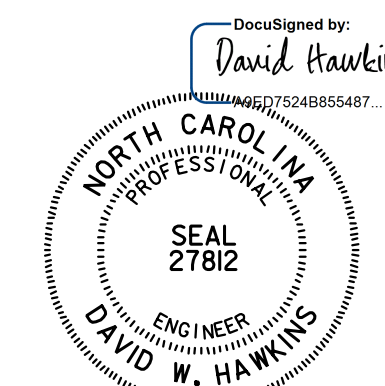
* INCLUDES U-BOLTS, ANGLES, NUTS, BOLTS, WASHERS AND PLATES.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DRAINAGE PLAN



2/21/2018

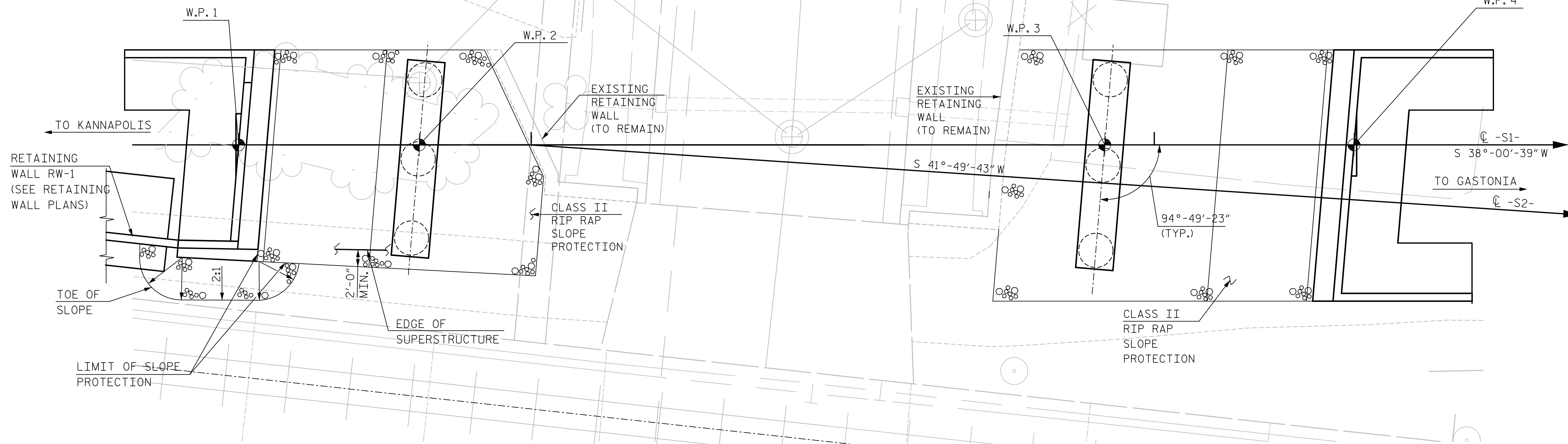
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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DRAWN BY: M. WRIGHT	DATE: 9/17
CHECKED BY: D. HAWKINS	DATE: 9/17
DWG. NO. 38	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S1-38
1			3			TOTAL SHEETS
2			4			39

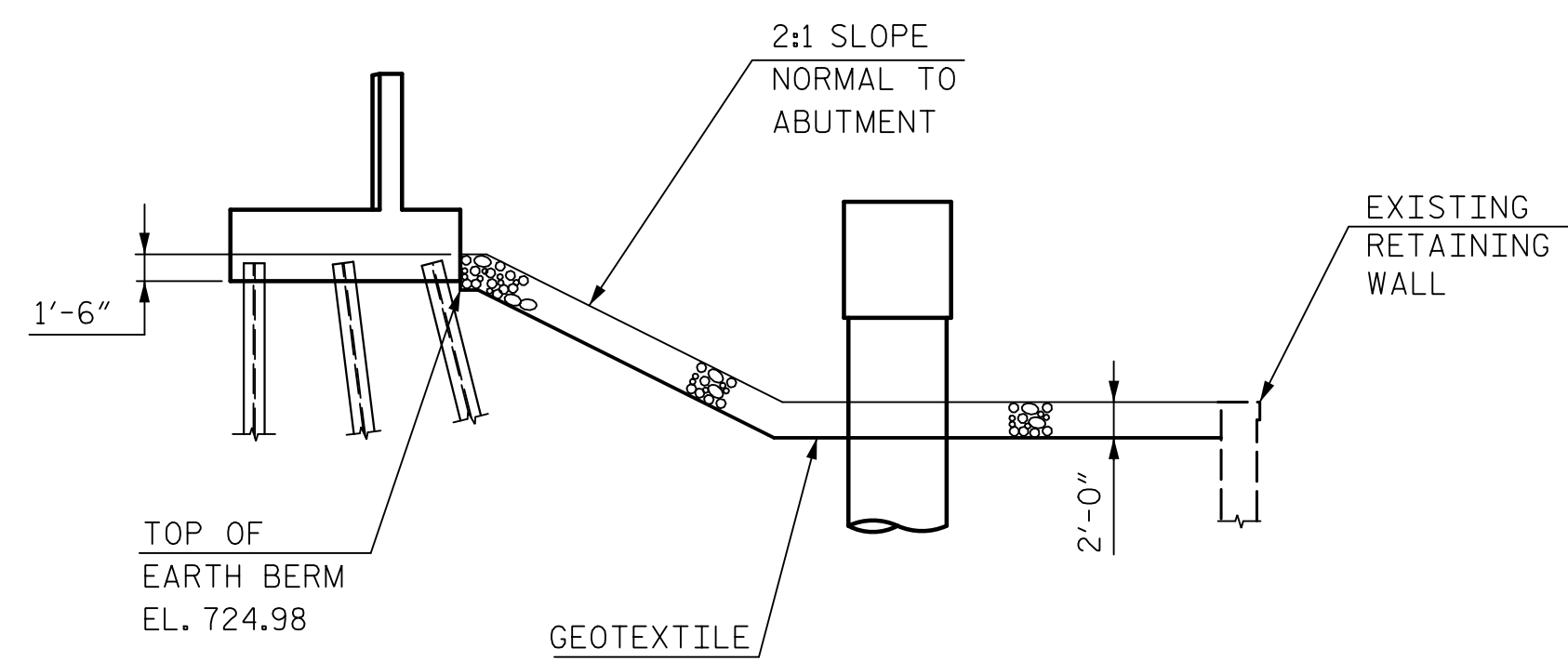
NOTES:
FOR BERM WIDTH DIMENSIONS AND BERM ELEVATIONS, SEE GENERAL DRAWING.

FOR RETAINING WALL RW-1, SEE RETAINING WALL PLANS.

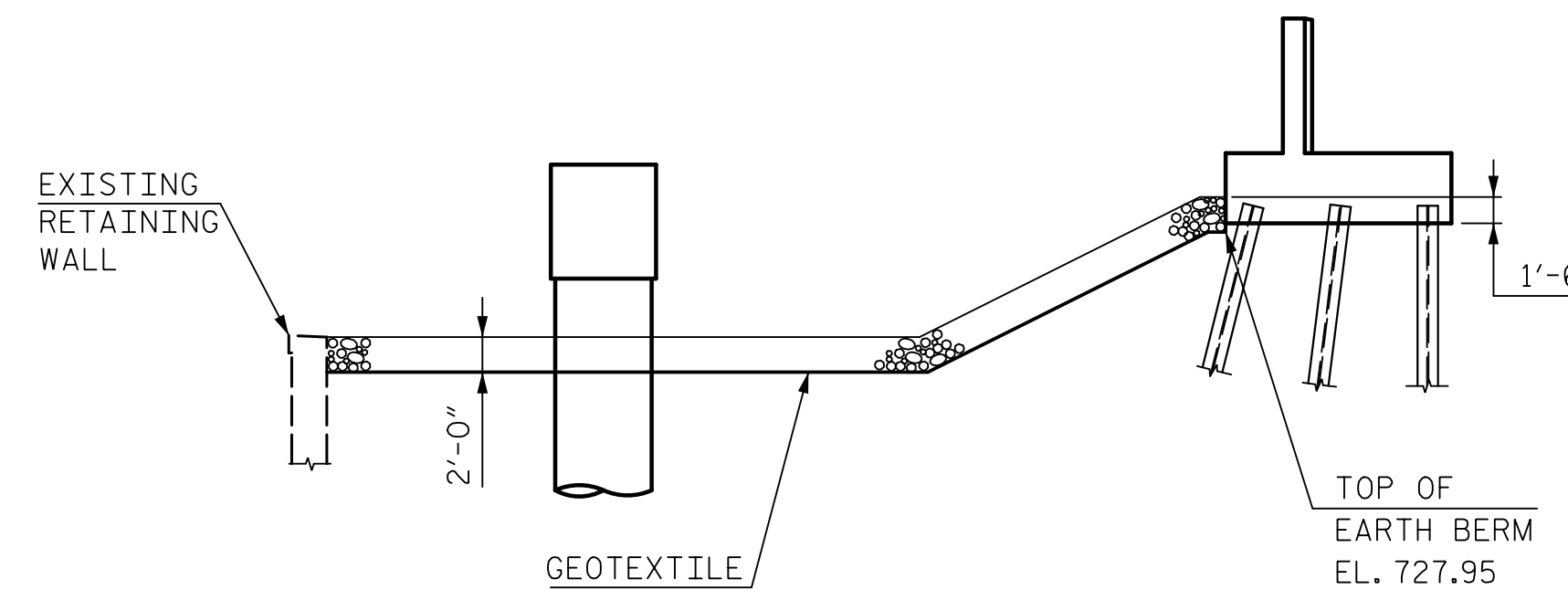


PLAN

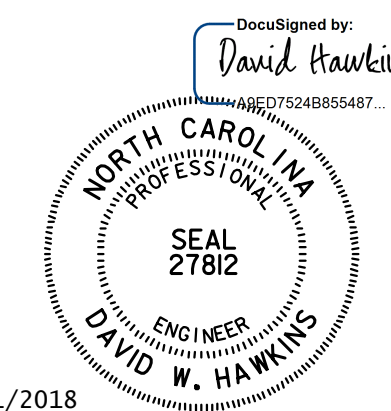
BRIDGE @ STA. 15+39.55 -S1-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
ABUTMENT 1	145	160
ABUTMENT 2	220	245



SECTION ALONG C -S1-



PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: 15+39.55 -S1-



2/21/2018

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP
DETAILS

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S1-39		
	NO.	BY	DATE	NO.		BY	DATE
	1	J. BAYNE	12/17	3			
DRAWN BY: J. BAYNE CHECKED BY: D. HAWKINS	DATE: 12/17	DATE: 12/17	DWG. NO. 39	2	4	TOTAL SHEETS 39	

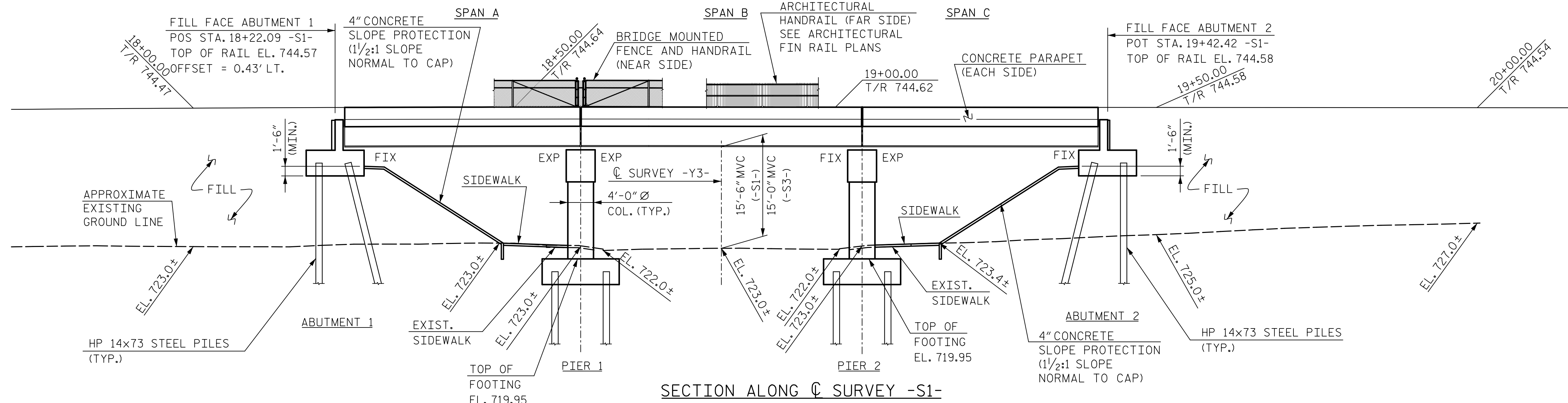
18+00

19+00

+50

20+00

0012DEL_P28



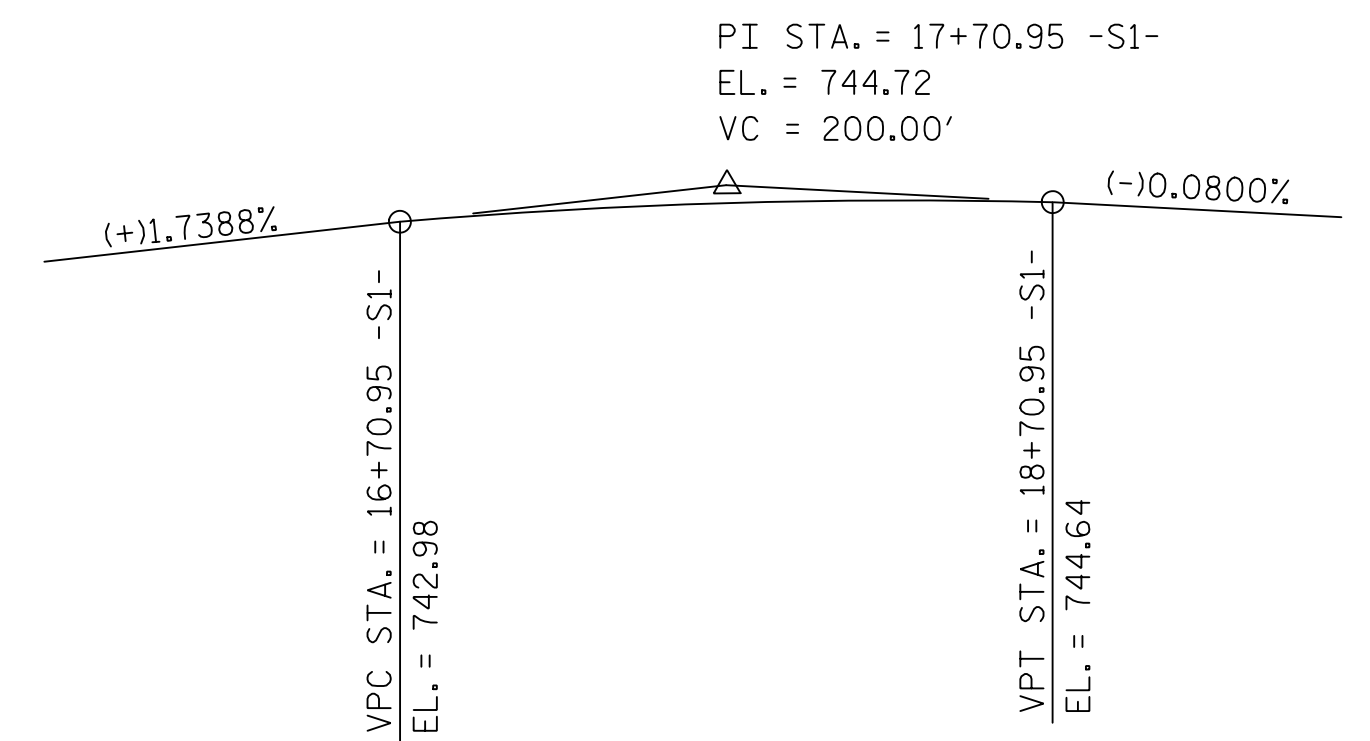
NOTES:
 SEE "GENERAL DRAWING: GENERAL NOTES (SHEET 3 OF 3)" FOR GENERAL NOTES.
 FOR SUBSTRUCTURE SHEETS, REFER TO "BRIDGE ON TRACK 2 OVER W 5TH STREET" PLANS.
 MVC = MINIMUM VERTICAL CLEARANCE
 MHC = MINIMUM HORIZONTAL CLEARANCE
 ← STRUCTURE DRAINAGE OUTLET LOCATION AND DIRECTION.

-S1- TRACK CURVE DATA

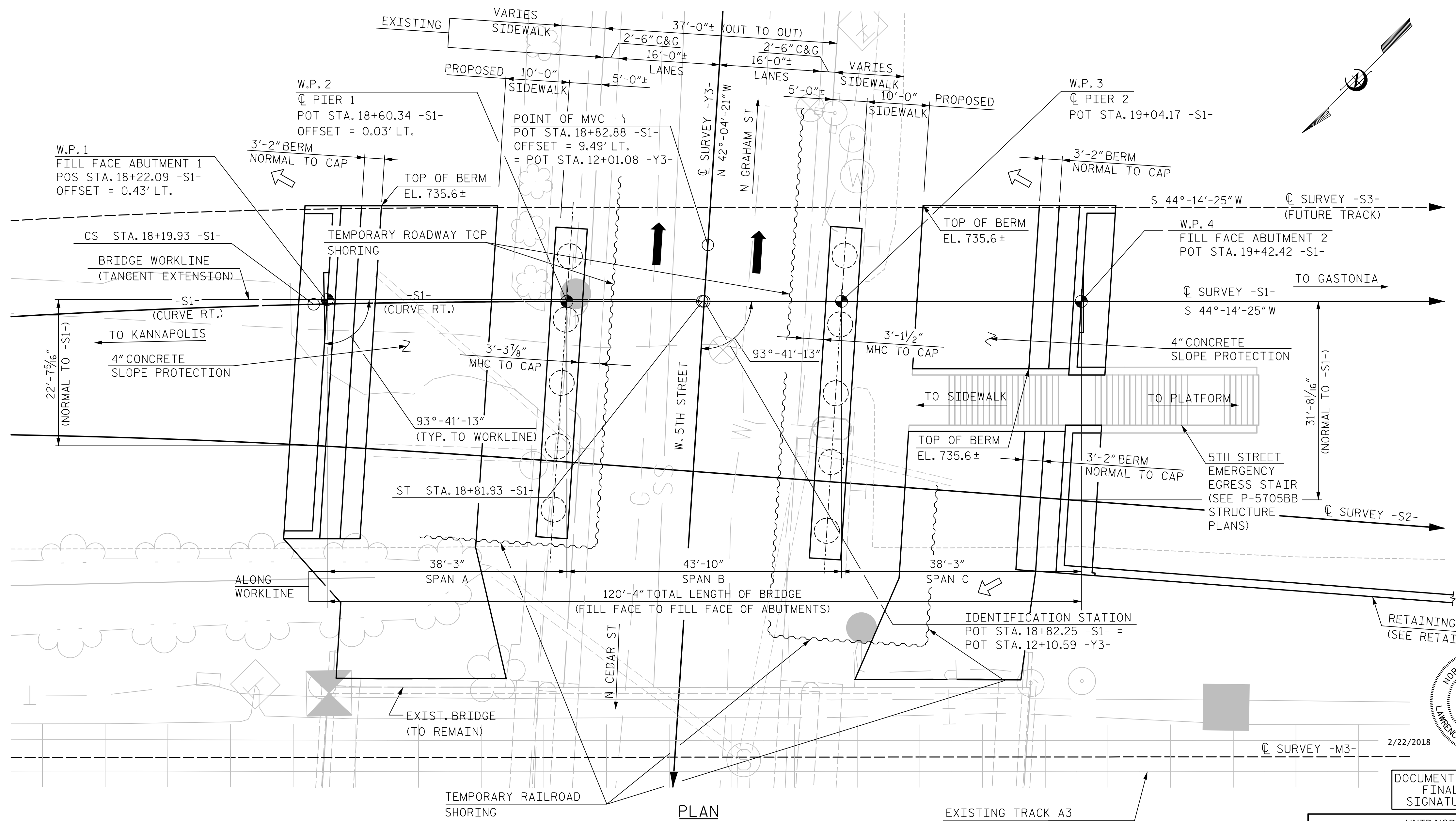
PI STA. 17+77.65	PI STA. 18+40.60
$\Delta = 3^\circ-35'-44.1''$ (RT.)	$\Theta_s = 1^\circ-19'-01.9''$ (RT.)
D = 4°-15'-00.0"	Ls = 62.00'
L = 84.60'	LT = 41.33'
T = 42.32'	ST = 20.67'
R = 1,348.45'	

SEE ROADWAY PLANS FOR EXISTING PAVEMENT ELEVATIONS.

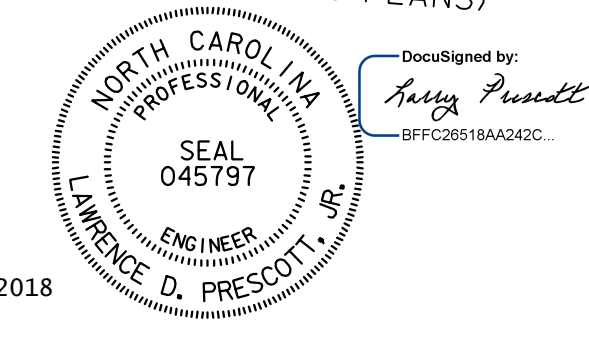
GRADE DATA -Y3-



GRADE DATA -S1-



NOTES: PILES NOT SHOWN FOR CLARITY.
 ALL ABUTMENTS AND PIERS ARE PARALLEL.
 SUBSTRUCTURE AND TEMPORARY RAILROAD SHORING SHOWN FOR INFORMATION ONLY, SEE NOTES.



2/22/2018

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PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+82.25 -S1- =
 POC STA. 12+10.59 -Y3-
 SHEET 1 OF 3 MILE POST: NS 377.55
 BRIDGE NO.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
BRIDGE ON TRACK 1
OVER W 5TH STREET
BETWEEN W TRADE STREET
AND W 6TH STREET

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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

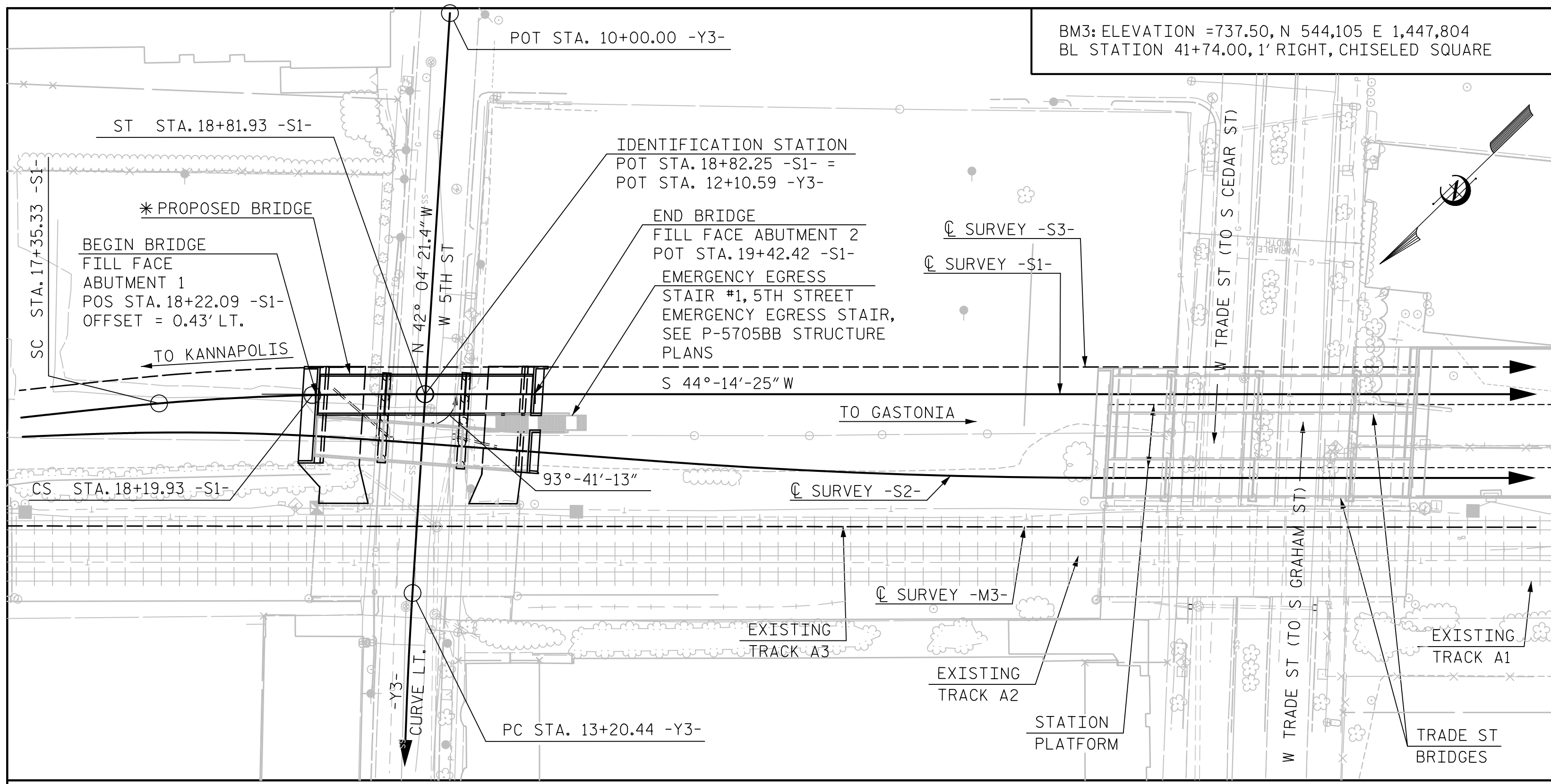
DRAWN BY: M. WRIGHT DATE: 2/17
 CHECKED BY: V. KOLLIPARA DATE: 2/17

DWG. NO. 1

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

TOTAL SHEETS: 20

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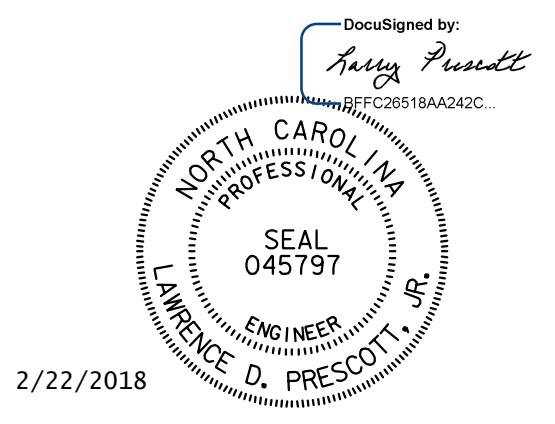
NOTE:
 FOR SUBSTRUCTURE BILL OF MATERIAL,
 REFER TO "BRIDGE ON TRACK 2 OVER
 W 5TH STREET" PLANS.
 * SUBSTRUCTURE SHOWN FOR INFORMATION ONLY.
 FOR SUBSTRUCTURE SHEETS, REFER TO "BRIDGE
 ON TRACK 2 OVER W 5TH STREET" PLANS.

LOCATION SKETCH FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL									
	REINFORCED CONCRETE DECK SLAB	APPROX. 177,963 LBS. STRUCTURAL STEEL	PAINTING OF STRUCTURAL STEEL	WATERPROOFING	METAL RAIL (STEEL) & FENCE	CONCRETE PARAPET	SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES	STRUCTURE DRAINAGE SYSTEM AT STATION 18+82.25 -S1-	APPLICATION OF BRIDGE COATING
	SQ. FEET	LUMP SUM	LUMP SUM	SQ. YARDS	L.F.	L.F.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	2,636.1	LUMP SUM	LUMP SUM	290.2	117.7	235.3	LUMP SUM	LUMP SUM	LUMP SUM
TOTAL	2,636.1	LUMP SUM	LUMP SUM	290.2	117.7	235.3	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 2 OF 3



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 LOCATION SKETCH
 AND
 TOTAL BILL OF MATERIAL

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S2-2	
	NO.	BY	DATE	NO.	BY		DATE
	1		9/17	3			
DRAWN BY <u>C. GERDING</u> DATE <u>9/17</u> CHECKED BY <u>J. VECLITCH</u> DATE <u>9/17</u> DWG. NO. 2	2			4		TOTAL SHEETS 20	

0012DEL_P28

GENERAL NOTES:

ASSUMED LIVE LOAD = AREMA E80 OR ALTERNATE LIVE LOAD

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 EDITION OF AREMA'S "MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES", AND NORFOLK SOUTHERN CORPORATION'S "GUIDELINES FOR DESIGN OF HIGHWAY SEPARATION STRUCTURES UNDER RAILROAD (UNDERPASS GRADE SEPARATION)"

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 EDITION OF AREMA'S "MANUAL FOR RAILWAY ENGINEERING, VOL. 2, CH. 9, SEISMIC DESIGN FOR RAILWAY" FOR SOIL SITE CLASS OF C PER RECOMMENDATION OF THE GEOTECHNICAL ENGINEER OF RECORD.

REINFORCING STEEL SHALL BE ASTM DESIGNATION A615, GRADE 60. ALL DIMENSIONS RELATING TO BAR SPACING ARE TO BAR CENTERS UNLESS NOTED. FABRICATION TO BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE", A.C.I. 315-80. ALL REINFORCING IN THE CONCRETE DECK SLAB AND PARAPETS SHALL BE EPOXY COATED.

EXPANSION JOINT MATERIAL SHALL BE EITHER RUBBER OR CORK CONFORMING WITH AASHTO SPECIFICATIONS M-153-84 EXCEPT AS SHOWN ON THE PLANS OR IN THE SPECIAL PROVISIONS. CELLULAR AND BULB TYPE WATERSTOPS AND RUBBER JOINT COMPOUNDS SHALL BE AS SHOWN ON THE PLANS AND IN THE SPECIAL PROVISIONS.

STRUCTURE DRAINAGE SYSTEM: METAL DRAINS BEHIND ABUTMENTS AND IN BALLAST TROUGH OF BRIDGE, INCLUDING DUCTILE IRON PIPE COLLECTOR SYSTEM, SHALL BE AS SHOWN ON THE PLANS AND OUTLINED IN THE SPECIAL PROVISIONS. DETAILS OF THE DRAINAGE SYSTEM SHALL BE SUBMITTED TO THE CHIEF ENGINEER BRIDGES AND STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, GA. FOR APPROVAL.

DAMP PROOFING: PIER COLUMNS UP TO GROUND LINE, BACK OF BACKWALLS AND ABUTMENT SEATS, AND BACK OF WINGS SHALL BE DAMP PROOFED WITH METHOD "B" DAMP PROOFING.

WATER PROOFING: BRIDGE DECK AND ALL CONSTRUCTION JOINTS WHICH WILL BE COVERED BY FILL SHALL BE WATER PROOFED WITH A COLD LIQUID-APPLIED ELASTOMERIC MEMBRANE. FOR WATER PROOFING, SEE SPECIAL PROVISIONS.

WATER PROOFING IS REQUIRED AT THE FOLLOWING LOCATIONS:

- BRIDGE DECK AND INSIDE OF CONCRETE PARAPET AS SHOWN ON DWG. NO. 4 "TYPICAL SECTION"
- ALONG FULL CIRCUMFERENCE OF EACH BOTTOM OF COLUMN TO TOP OF FOOTING INTERFERENCE.
- ALONG FILL FACE OF HORIZONTAL CONSTRUCTION JOINT AT TOP OF FOOTING ELEVATION AT EACH ABUTMENT.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", JANUARY 2012, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (HEREIN CALLED STANDARD SPECIFICATIONS), EXCEPT AS NOTED HEREIN, ELSEWHERE ON PLANS, OR IN THE SPECIAL PROVISIONS (STRUCTURAL STEEL IN ACCORDANCE WITH CURRENT AREMA SPECIFICATIONS).

ALL CONCRETE SHALL BE 4,500 PSI CLASS AA CONCRETE PER SECTION 1000 OF THE NCDOT SPECIFICATIONS WITH NO. 57 OR 67 COARSE AGGREGATE AND SHALL BE AIR-ENTRAINED. MINIMUM CEMENT CONTENT PER CUBIC YARD OF CONCRETE SHALL BE 6.5 BAGS. NO SUBSTITUTION OF FLYASH, BLAST FURNACE SLAG OR OTHER MATERIAL WILL BE PERMITTED IN MEETING THIS MINIMUM CEMENT REQUIREMENT. CHAMFER ALL EXPOSED EDGES AND CORNERS 3/4" EXCEPT AS NOTED. THE USE OF GROUND GRANULATED BLAST FURNACE SLAG IS NOT PERMITTED IN THIS STRUCTURE.

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

CONTROL OF WORK: ALL WORK INVOLVED IN THE CONSTRUCTION OF THE RAILWAY STRUCTURE SHALL BE PERFORMED SATISFACTORY TO THE ENGINEER AND COMPLIANT WITH THE DESIGN STANDARDS OF NORFOLK SOUTHERN RAILWAY COMPANY. ALL METHODS OF HANDLING THE WORK AFFECTING THE SAFETY OF RAIL OPERATIONS MUST BE APPROVED BY THE RAILWAY COMPANY, AS A SUBMITTAL THROUGH THE ENGINEER, AT LEAST TWO WEEKS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. RAIL TRAFFIC SHALL, AT ALL TIMES, BE MAINTAINED AND PROTECTED. THE CONTRACTOR SHALL NOT AT ANY TIME DELAY OR INTERFERE WITH RAIL OPERATIONS.

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

FOR METAL RAIL (STEEL) AND FENCE, SEE SPECIAL PROVISIONS.

FOR SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

FOR CONDUIT IN PARAPETS, SEE SPECIAL PROVISIONS.

FOR PORTLAND CEMENT, SEE SPECIAL PROVISIONS.

FOR FINE AND COARSE AGGREGATE, SEE SPECIAL PROVISIONS.

SEE "STRUCTURAL STEEL DETAILS" SHEET FOR STRUCTURAL STEEL NOTES.

FOR BACKFILL BEHIND ABUTMENTS AND OTHER BACKFILL AROUND THE STRUCTURE, SEE SPECIAL PROVISION "BACKFILLING AROUND STRUCTURES".

FOR PAINTING STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR WATERSTOPS, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC FLASHING, SEE SPECIAL PROVISIONS.

FOR RUBBER JOINT COMPOUNDS, SEE SPECIAL PROVISIONS.

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR RAILROAD TRACKWORK, SEE RAILROAD TRACKWORK PLANS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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.

FOR CONCRETE PARAPET, SEE SPECIAL PROVISIONS.

FOR WATERPROOFING, SEE SPECIAL PROVISIONS.

INDEX OF DRAWINGS

- GENERAL DRAWING: GENERAL PLAN AND ELEVATION (SHEET 1 OF 3)
- GENERAL DRAWING: LOCATION SKETCH AND TOTAL BOM (SHEET 2 OF 3)
- GENERAL DRAWING: GENERAL NOTES (SHEET 3 OF 3)
- SUPERSTRUCTURE: TYPICAL SECTION
- SUPERSTRUCTURE: DECK DETAILS
- SUPERSTRUCTURE: PLAN OF DECK - SPAN A
- SUPERSTRUCTURE: PLAN OF DECK - SPAN B
- SUPERSTRUCTURE: PLAN OF DECK - SPAN C
- SUPERSTRUCTURE: FRAMING PLAN AND GIRDER DETAILS - SPAN A & C
- SUPERSTRUCTURE: FRAMING PLAN AND GIRDER DETAILS - SPAN B
- SUPERSTRUCTURE: STRUCTURAL STEEL DETAILS
- SUPERSTRUCTURE: BEARING DETAILS SPANS A, B & C
- SUPERSTRUCTURE: EXPANSION PLATE DETAILS
- SUPERSTRUCTURE: CONCRETE PARAPET DETAILS (SHEET 1 OF 2)
- SUPERSTRUCTURE: CONCRETE PARAPET DETAILS (SHEET 2 OF 2)
- SUPERSTRUCTURE: BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (SHEET 1 OF 2)
- SUPERSTRUCTURE: BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (SHEET 2 OF 2)
- SUPERSTRUCTURE: BILL OF MATERIAL
- STRUCTURE DRAINAGE DETAILS (SHEET 1 OF 2)
- STRUCTURE DRAINAGE DETAILS (SHEET 2 OF 2)

FOR SUBSTRUCTURE SHEETS, REFER TO "BRIDGE ON TRACK 2 OVER W 5TH. STREET" PLANS.

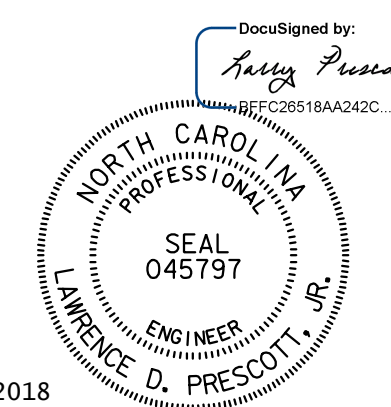
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

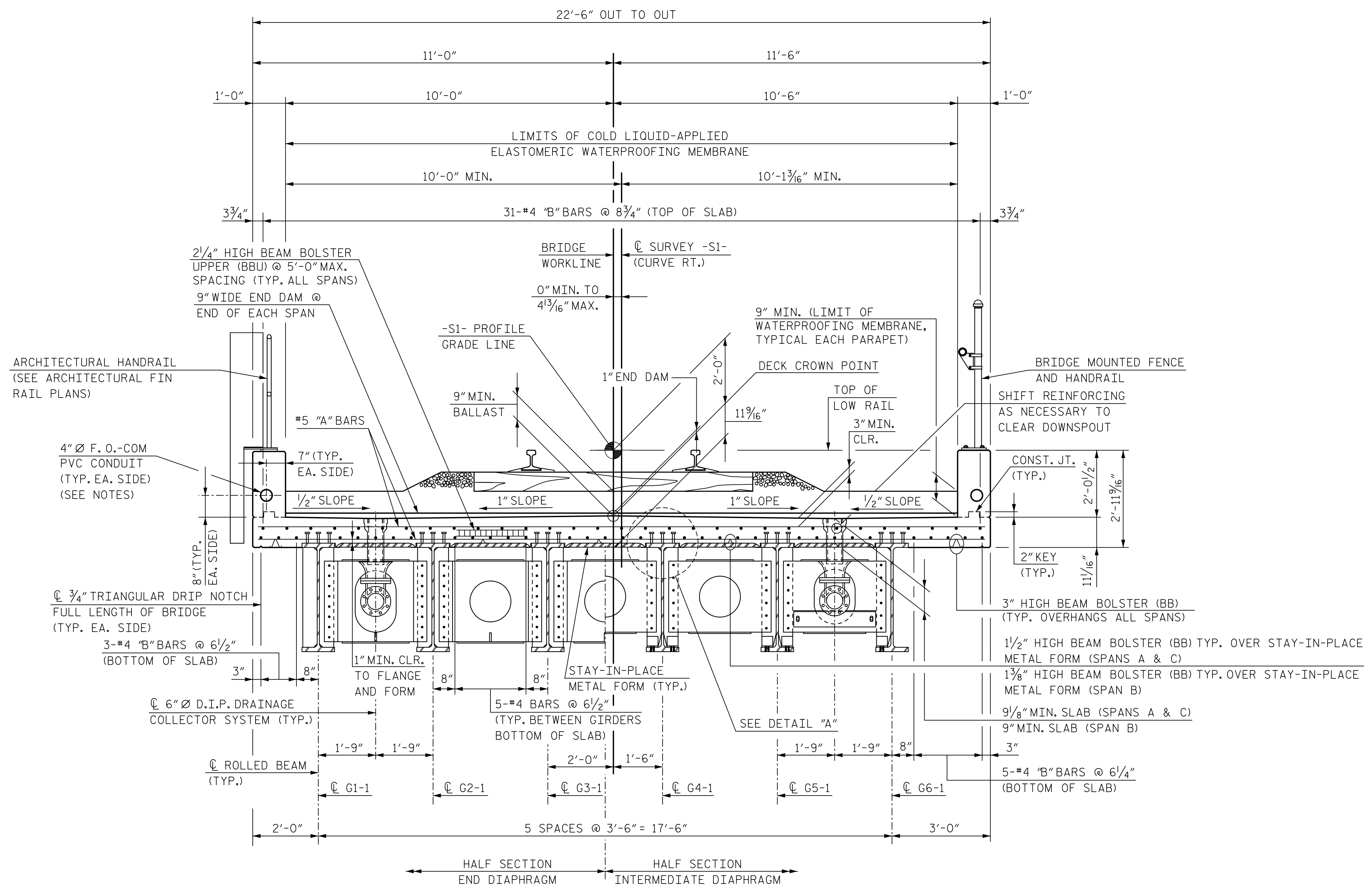
GENERAL NOTES



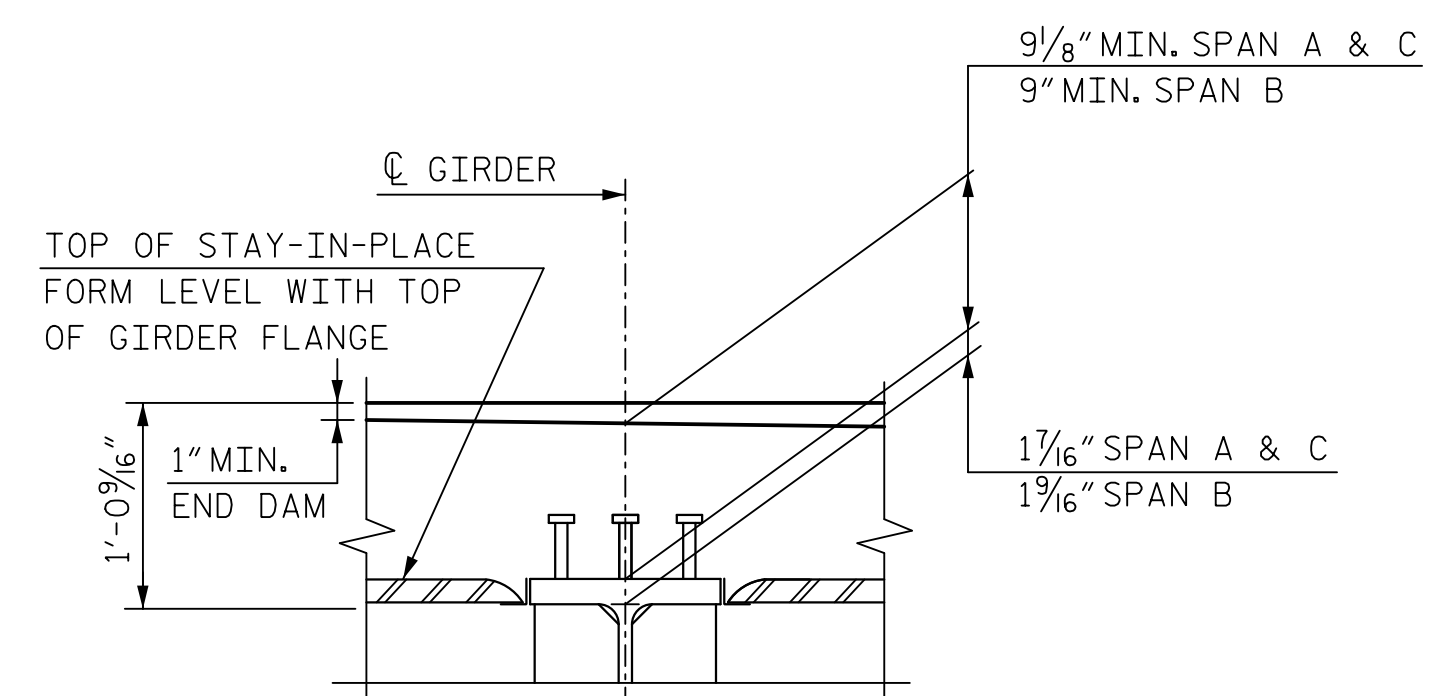
2/22/2018

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HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S2-3
	NO.	BY	DATE	NO.	BY	
DRAWN BY <u>C. GERDING</u> DATE <u>9/17</u>						TOTAL SHEETS
CHECKED BY <u>J. VECLITCH</u> DATE <u>9/17</u>						20
DWG. NO. 3						



TYPICAL SECTION

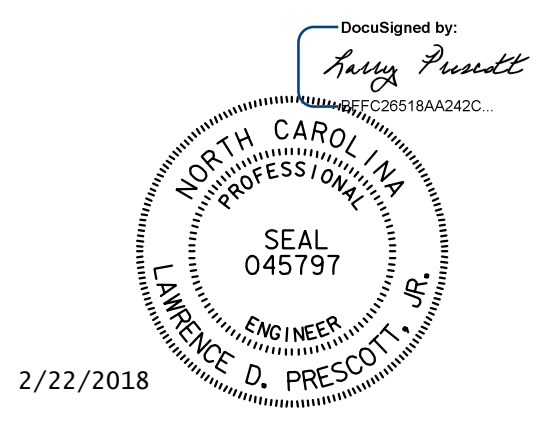


DETAIL "A"

NOTES FOR SIGNAL CONDUIT IN PARAPET
 SIGNAL CONDUIT TO BE 4" DIA. IN ACCORDANCE WITH UNDERWRITER'S LABORATORY SPECIFICATIONS.
 PROVISIONS SHALL BE MADE FOR EXPANSION BETWEEN DECK SLABS AT EXPANSION JOINTS AT PIERS 1 & 2 (GALVANIZED EXPANSION FITTINGS).
 COUPLING SHALL BE PROVIDED BEHIND BACKWALL OF ABUTMENTS 1 AND 2 FOR CONNECTION TO 4" DIA. RIGID PIPE (RIGID PIPE BY RAILWAY COMPANY).
 FOR SIGNAL CONDUIT IN PARAPET SEE PROJECT SPECIAL PROVISIONS.

NOTES:
 ALL REINFORCING STEEL IN THE DECK AND PARAPETS SHALL BE EPOXY COATED. CLEAR COVER TO ALL REINFORCING IS 2" MINIMUM UNLESS NOTED OTHERWISE.
 FOR HANDRAIL AND FENCE DETAILS, SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS" SHEETS.
 FOR ARCHITECTURAL HANDRAIL DETAILS, SEE ARCHITECTURAL FIN RAIL PLANS.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.
 DESIGN INCLUDES WEIGHT OF 6" ADDITIONAL BALLAST TO ACCOUNT FOR FUTURE RESURFACING OF TRACK.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

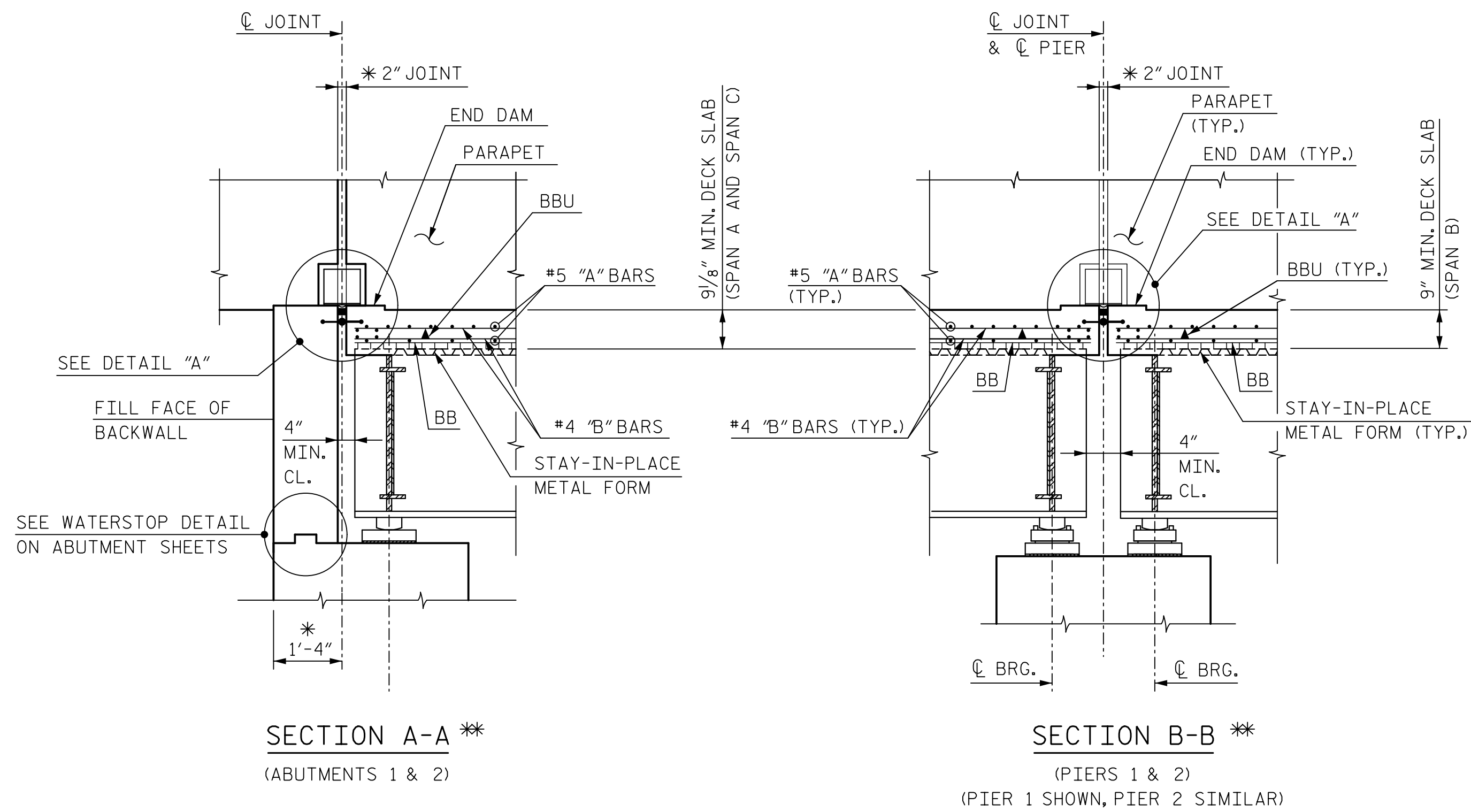


2/22/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

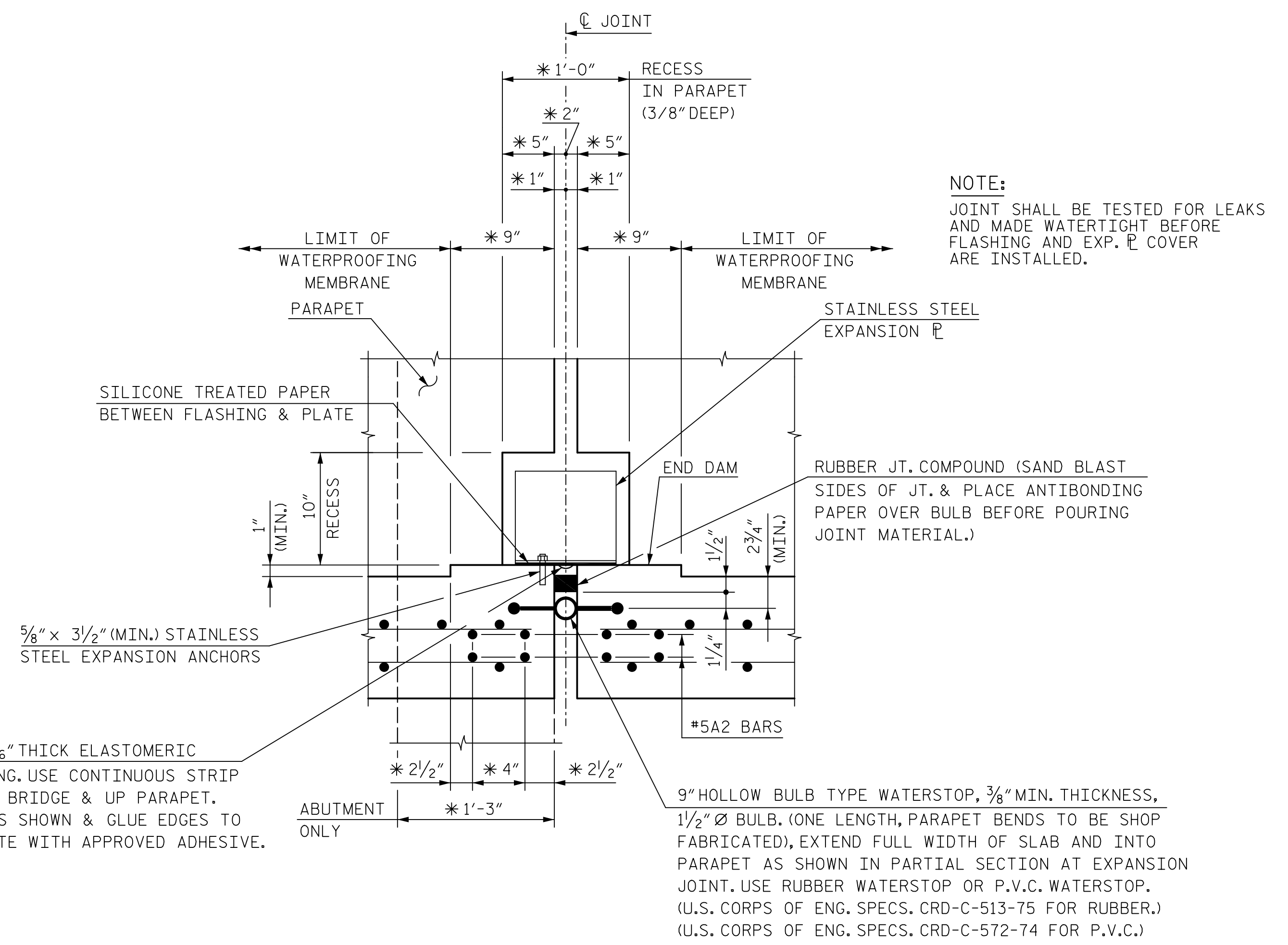
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S2-4 TOTAL SHEETS 20	
	NO.	BY	DATE	NO.	BY		DATE
	1			3			
DRAWN BY: C. GERDING CHECKED BY: J. VECLITCH	DATE: 9/17 DATE: 9/17	DWG. NO. 4	2				



SECTION A-A **
(ABUTMENTS 1 & 2)

SECTION B-B **
(PIERS 1 & 2)
(PIER 1 SHOWN, PIER 2 SIMILAR)

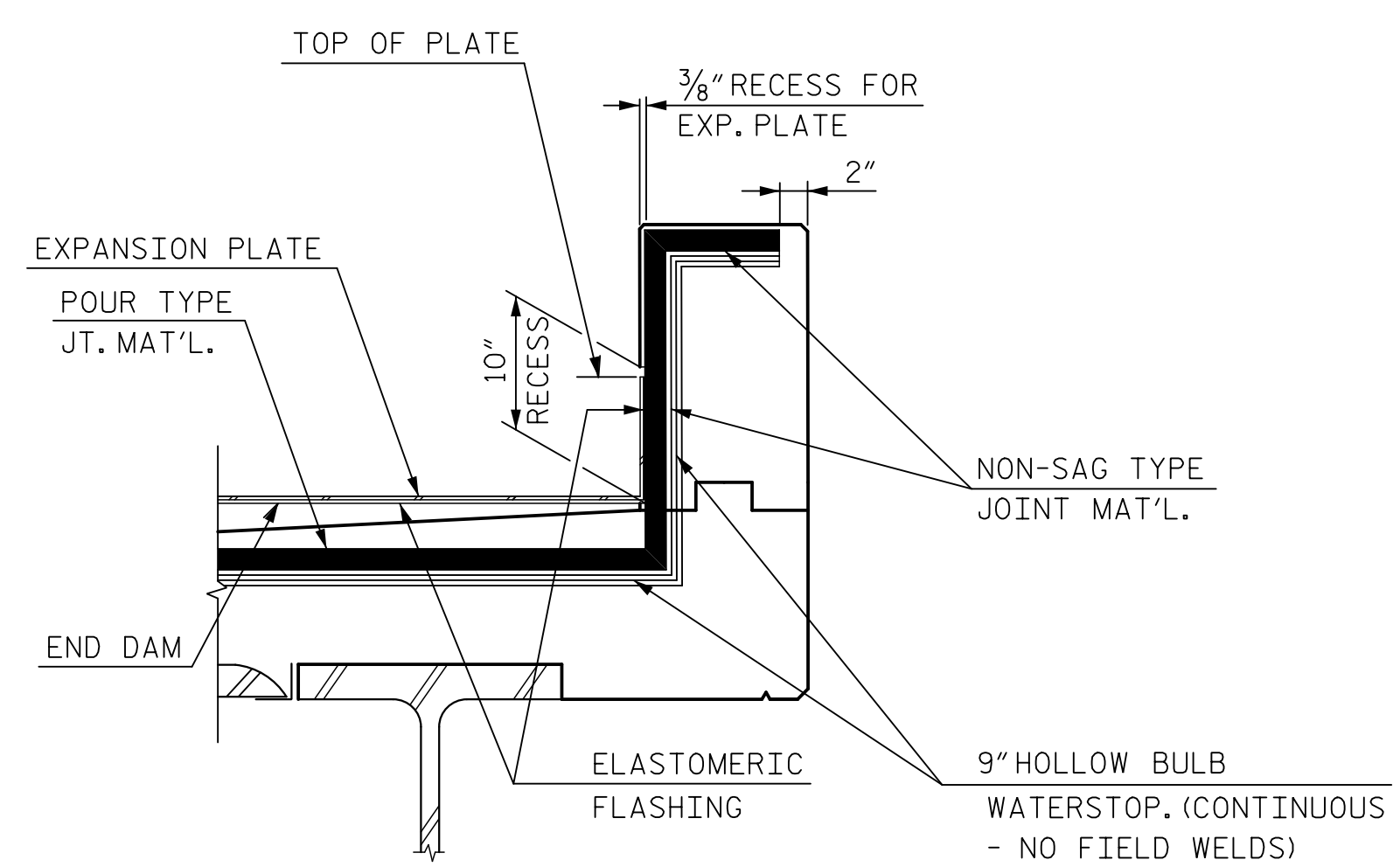
* NORMAL TO C JOINT
** SEE "PLAN OF DECK" SHEETS FOR SECTION LOCATIONS



NOTE:
JOINT SHALL BE TESTED FOR LEAKS AND MADE WATERTIGHT BEFORE FLASHING AND EXP. PLATE COVER ARE INSTALLED.

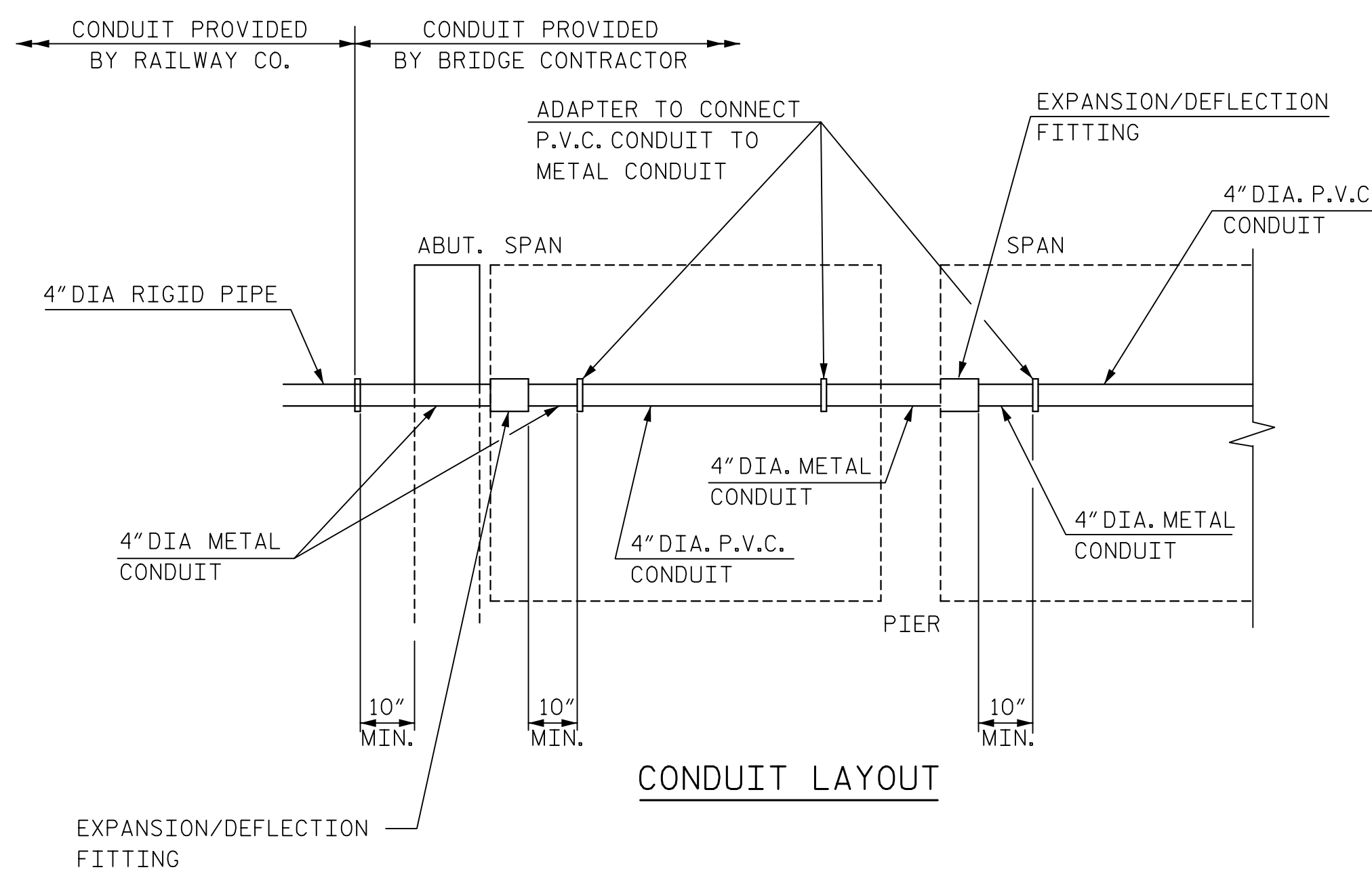
10" x 1/16" THICK ELASTOMERIC FLASHING. USE CONTINUOUS STRIP ACROSS BRIDGE & UP PARAPET. LOOP AS SHOWN & GLUE EDGES TO CONCRETE WITH APPROVED ADHESIVE.

DETAIL A



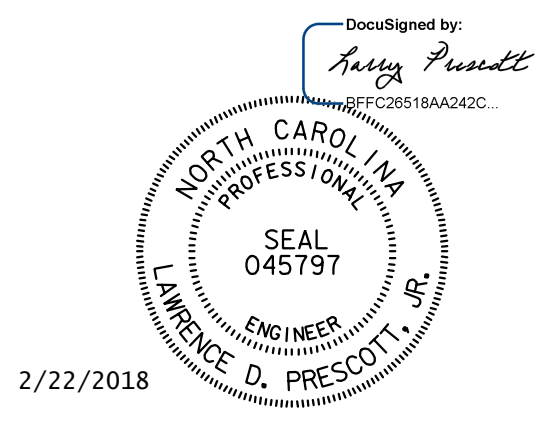
PART SECTION AT EXPANSION JOINT

NOTE: FOR ADDITIONAL PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.



CONDUIT LAYOUT

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+82.25 -S1-

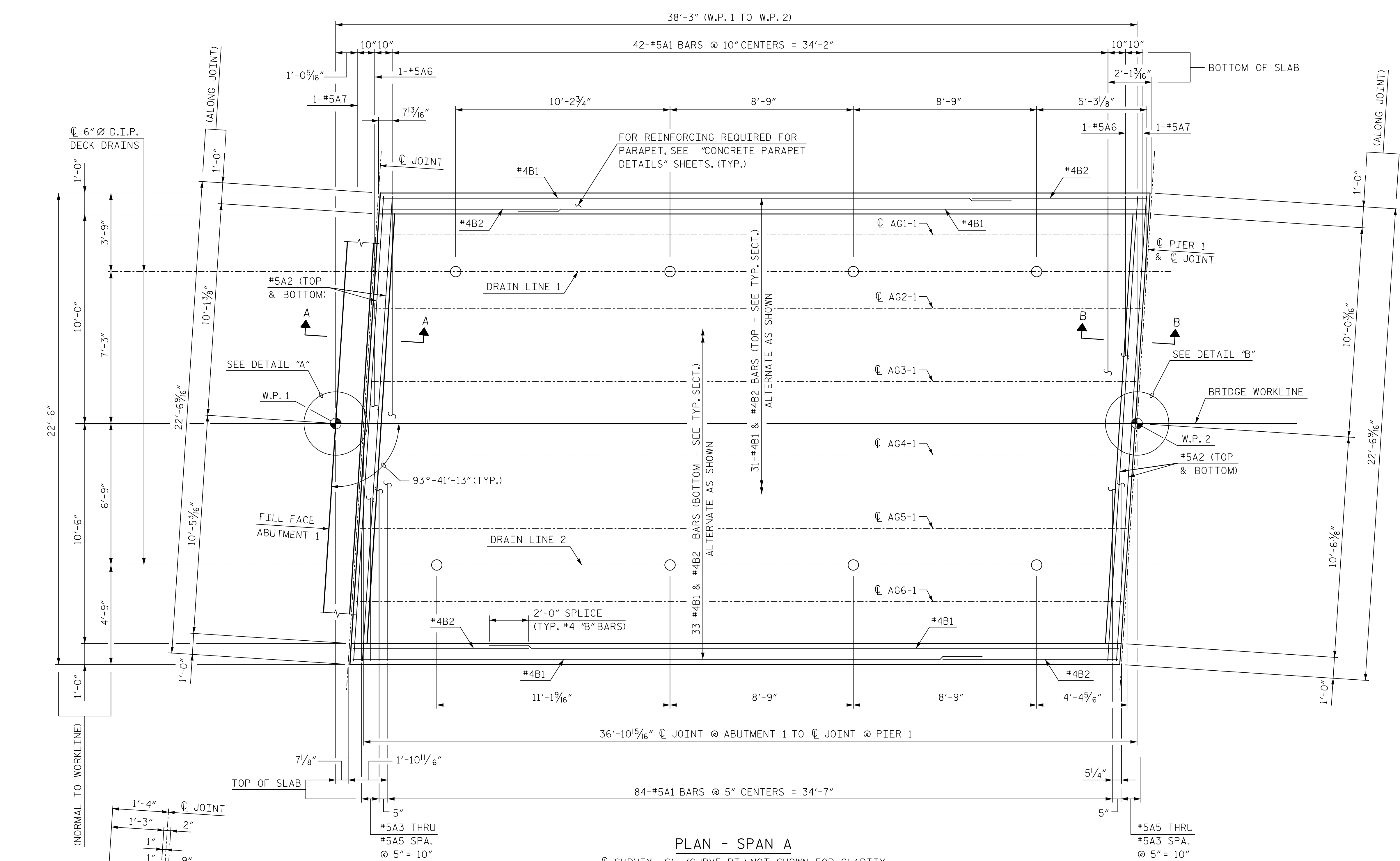


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB HNTB NORTH CAROLINA, P.C.
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343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

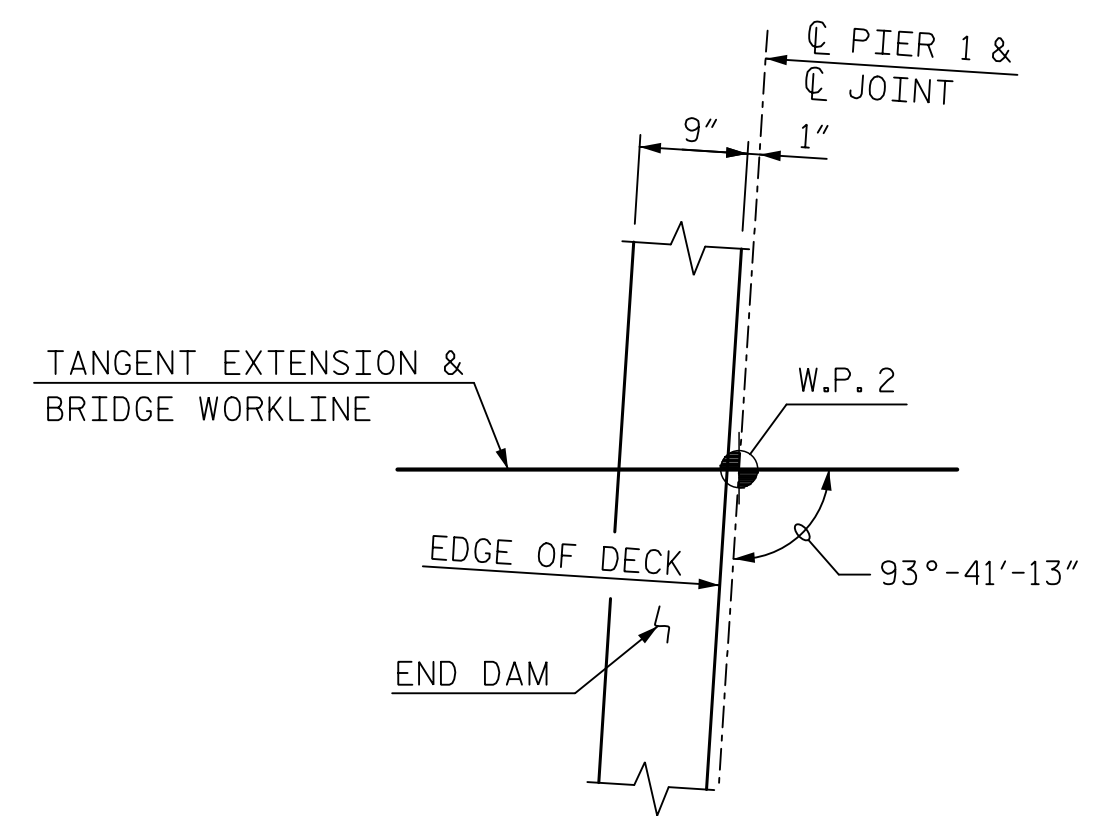
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CHECKED BY: J. VECLITCH DATE: 9/17 DWG. NO. 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S2-5
SUPERSTRUCTURE DECK DETAILS						TOTAL SHEETS 20
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

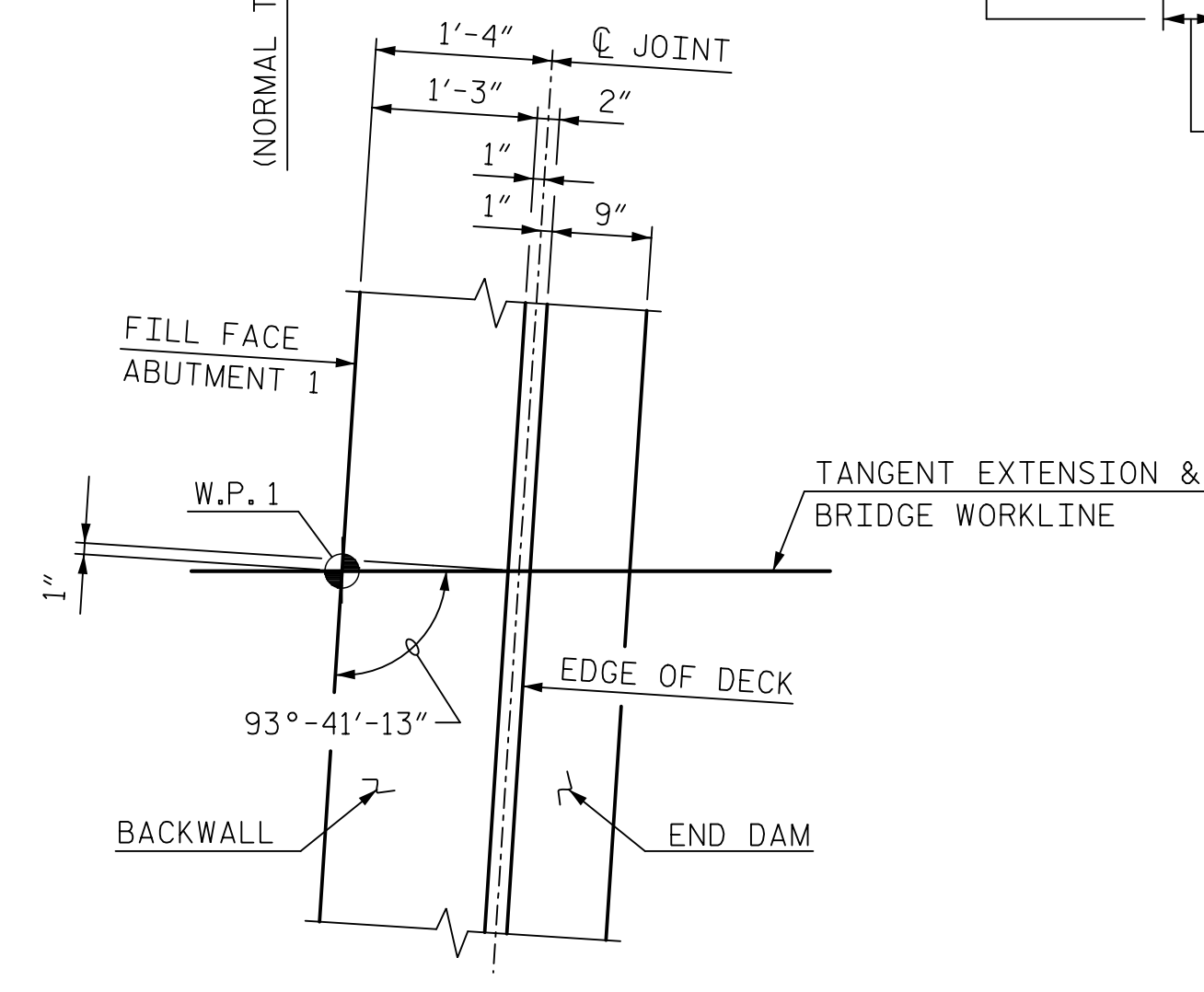


PLAN - SPAN A
 ☉ SURVEY -S1- (CURVE RT.) NOT SHOWN FOR CLARITY. DIMENSIONS ARE FROM THE INTERSECTION OF TANGENT EXTENSION & BRIDGE WORKLINE AND FILL FACE OF ABUTMENTS OR ☉ PIER UNLESS SHOWN OTHERWISE.

NOTES:
 ALL DECK REINFORCING SHALL BE EPOXY COATED.
 FOR SECTIONS "A-A" & "B-B" SEE "DECK DETAILS" SHEET.
 FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "DRAINAGE DETAILS", SHEET 2 OF 2.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.

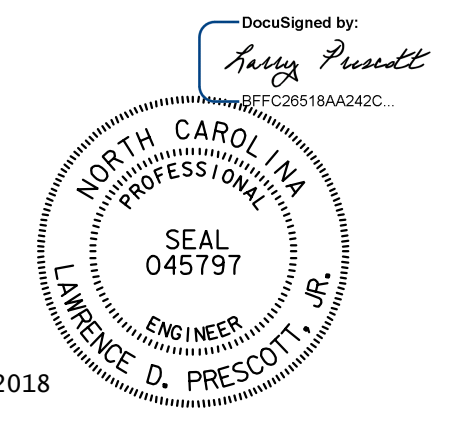


DETAIL B



DETAIL A

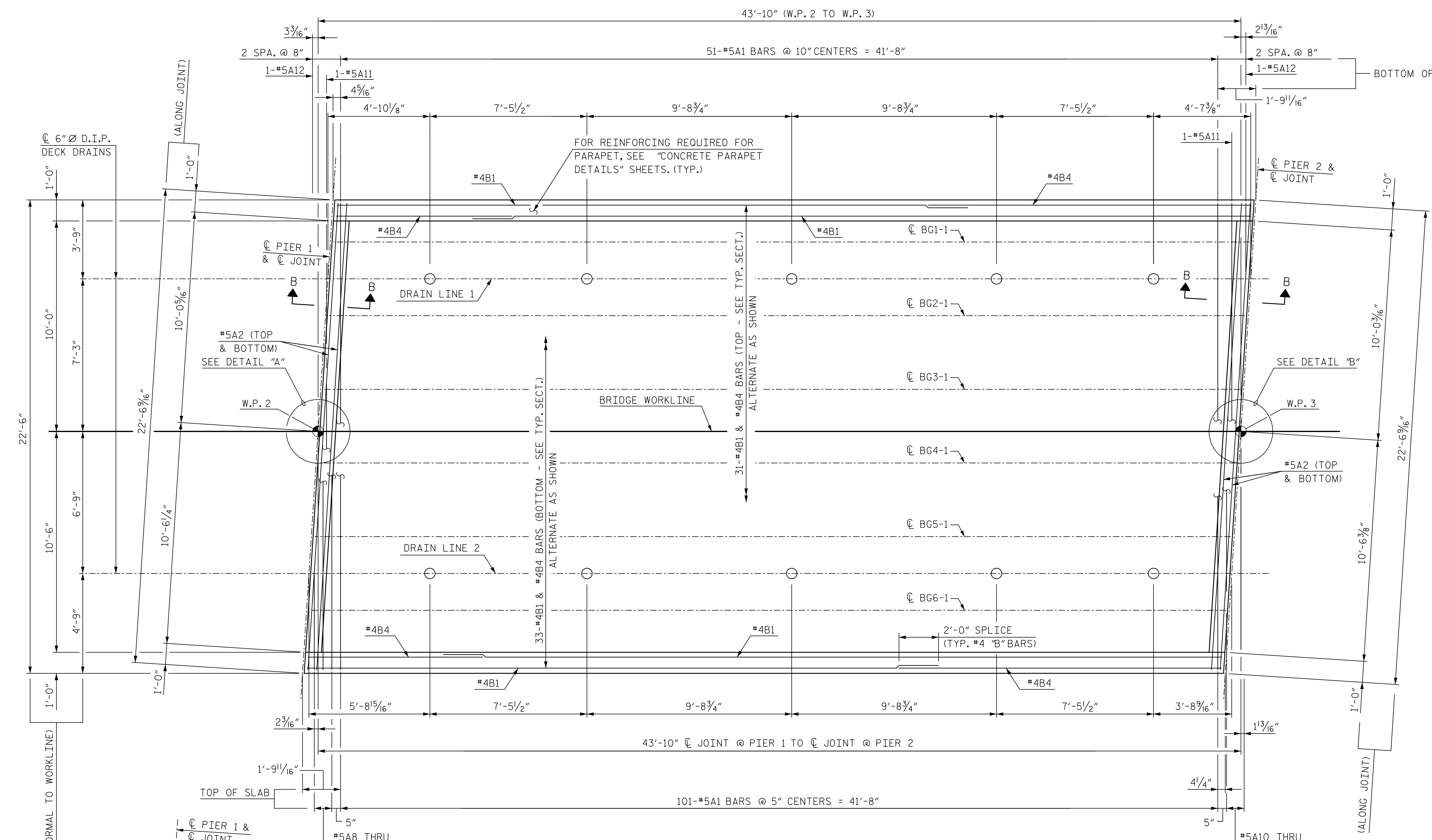
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+82.25 -S1-



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN A

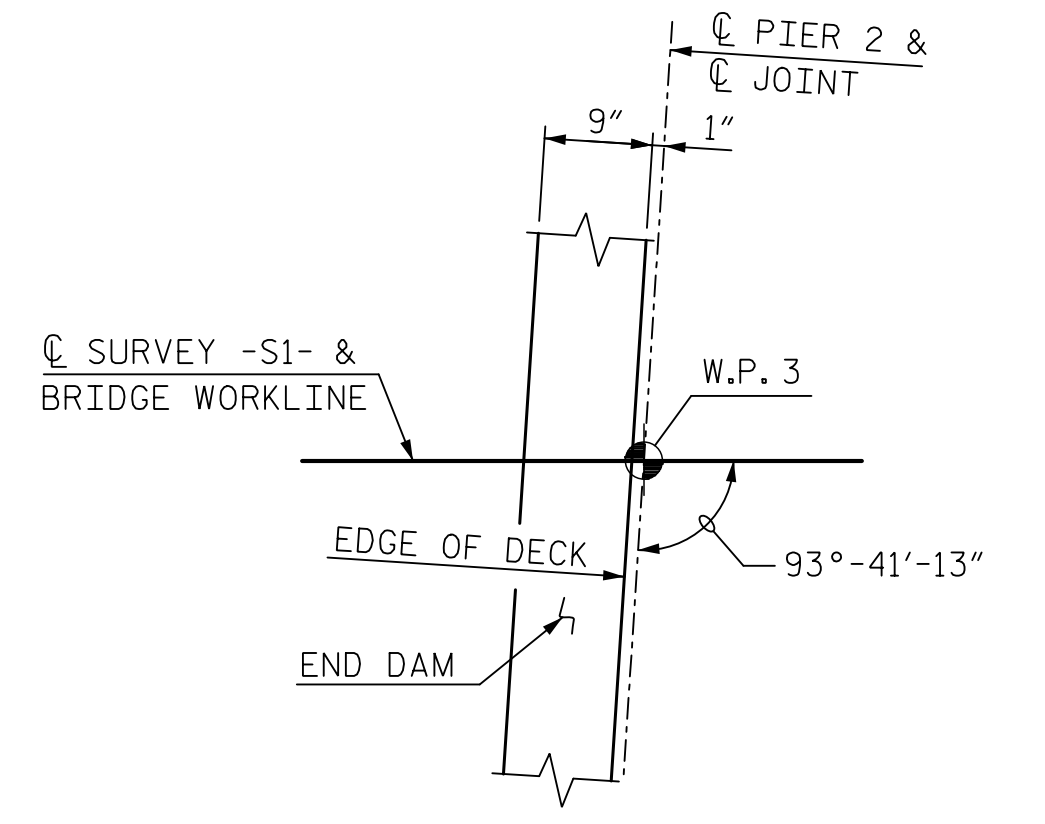
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S2-6 TOTAL SHEETS 20		
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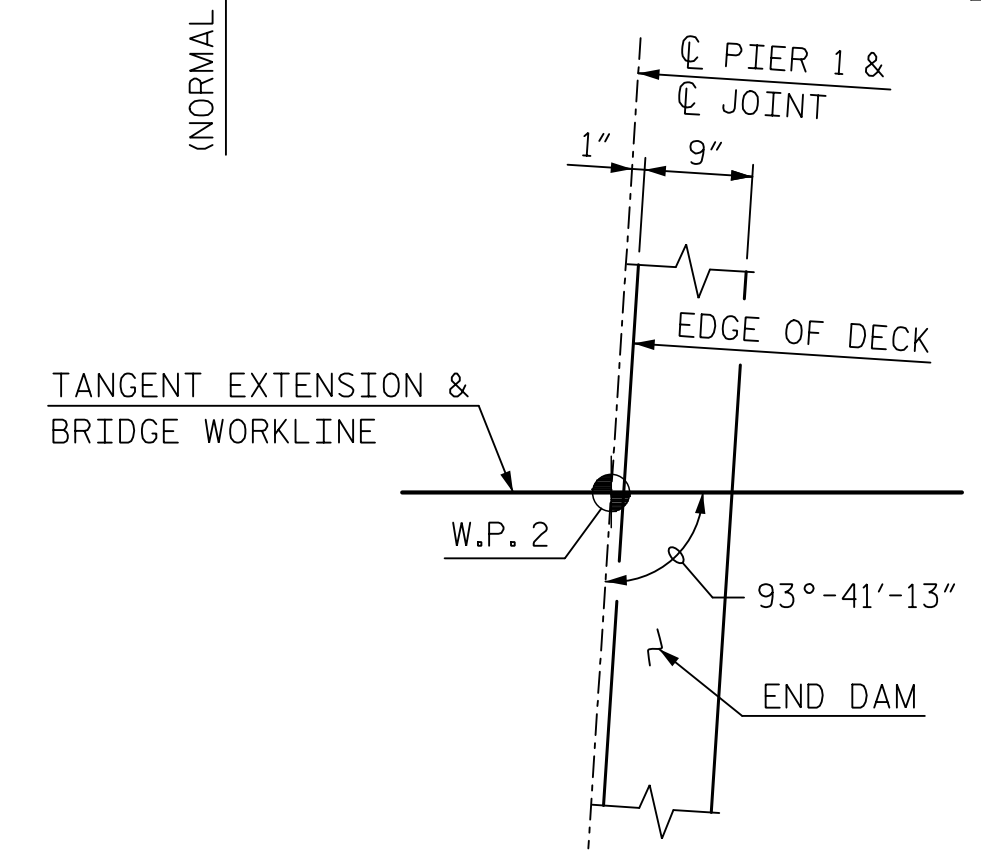
PLAN - SPAN B

@ SURVEY -S1- (CURVE RT.) NOT SHOWN FOR CLARITY.
 DIMENSIONS ARE FROM THE INTERSECTION OF TANGENT
 EXTENSION & BRIDGE WORKLINE OR @ SURVEY -S1-
 & BRIDGE WORKLINE AND @ PIER UNLESS SHOWN
 OTHERWISE.

NOTES:
 ALL DECK REINFORCING SHALL BE EPOXY COATED.
 FOR SECTION "B-B" SEE "DECK DETAILS"
 SHEET.
 FOR DECK DRAIN DETAIL SEE DETAIL "B" ON
 "DRAINAGE DETAILS", SHEET 2 OF 2.
 FOR CONCRETE PARAPET DETAILS, SEE
 "CONCRETE PARAPET DETAILS" SHEETS.

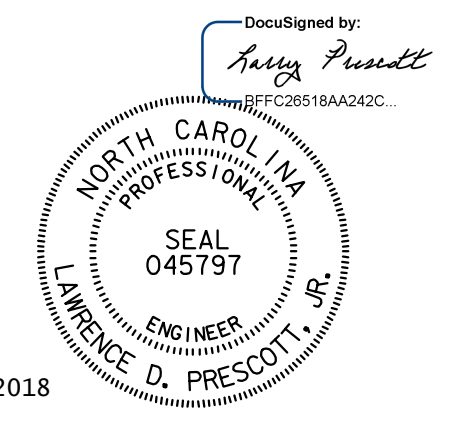


DETAIL B



DETAIL A

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-



2/22/2018

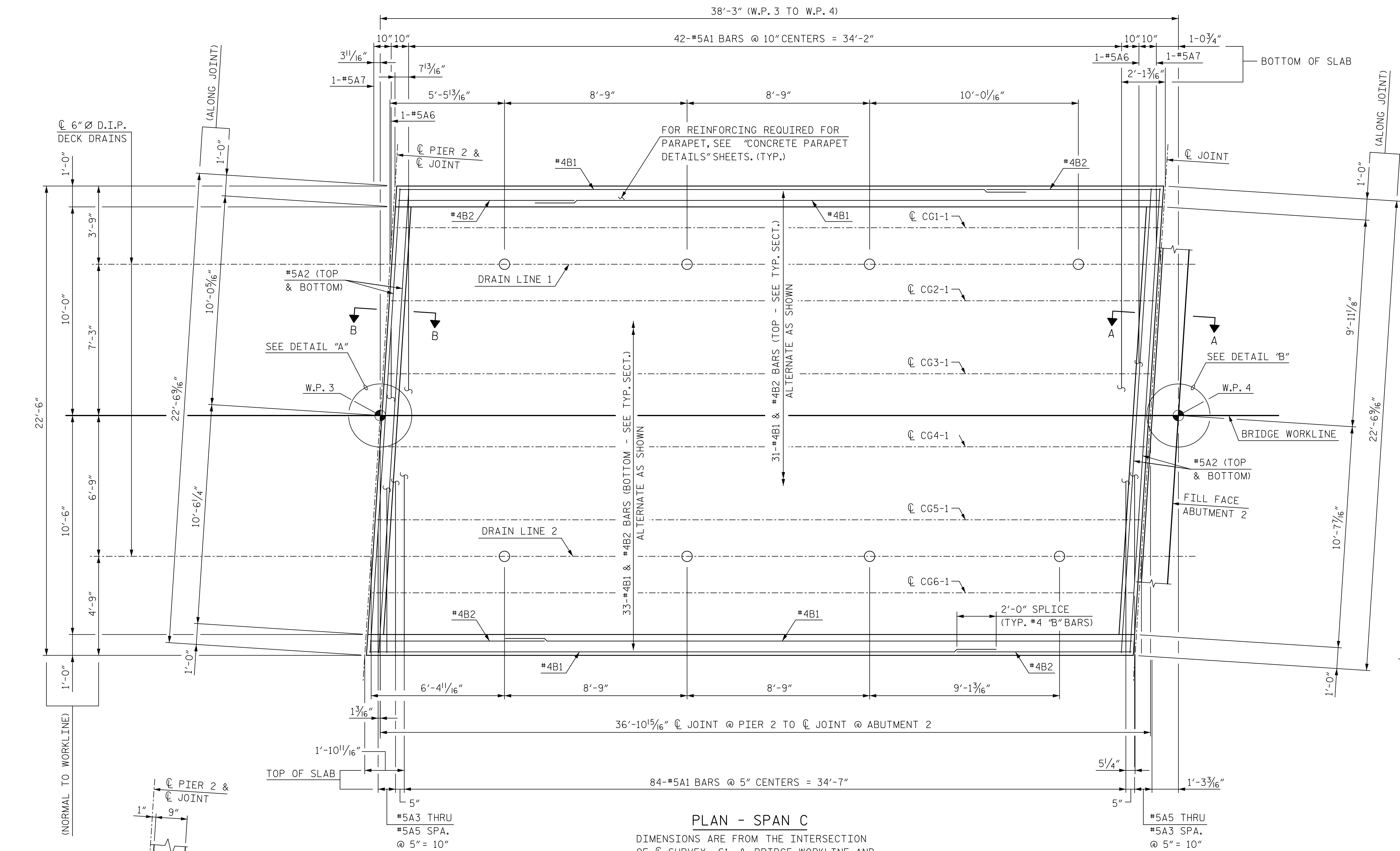
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
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 PLAN OF DECK - SPAN B

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: C. GERDING	DATE: 9/17	DWG. NO. 7	
CHECKED BY: J. VECLITCH	DATE: 9/17		

REVISIONS				SHEET NO.
NO.	BY	DATE	NO.	DATE
1			3	
2			4	

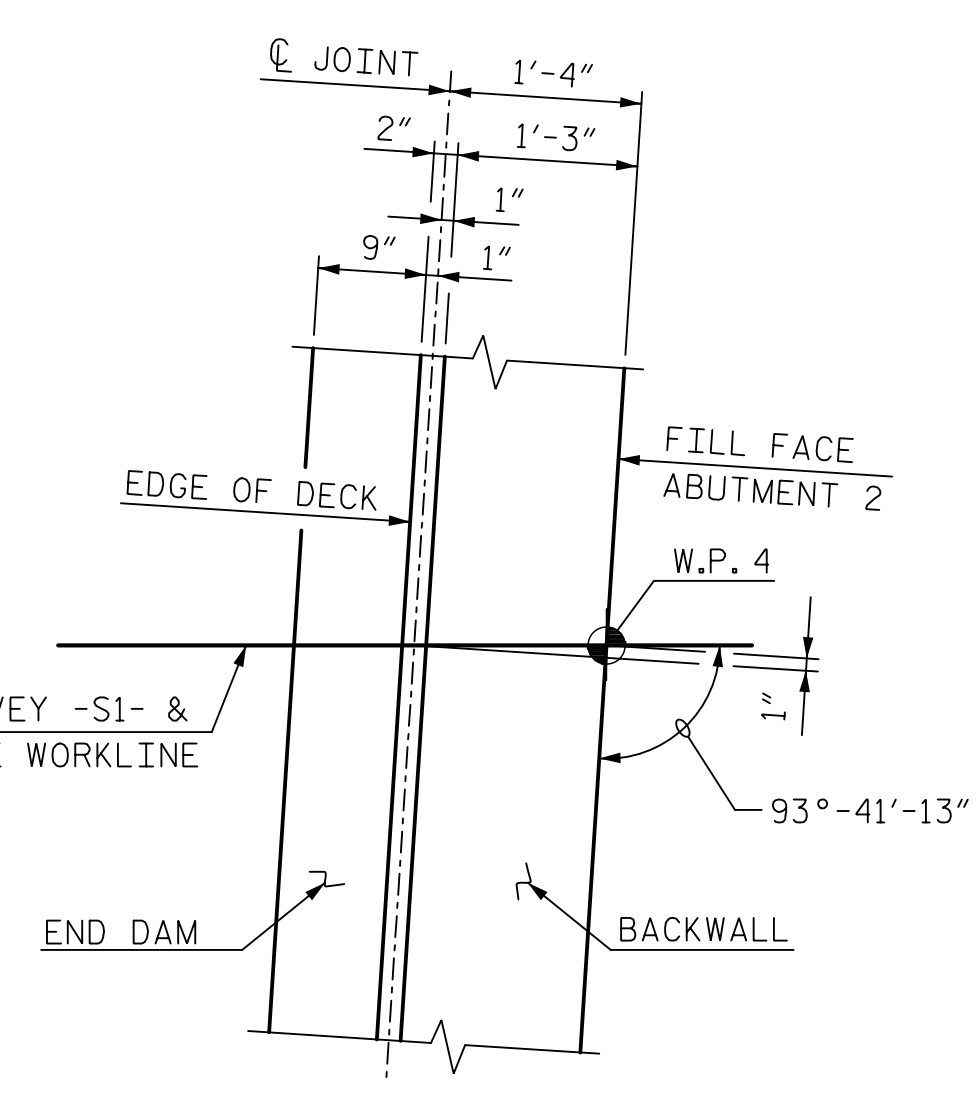
TOTAL SHEETS: 20



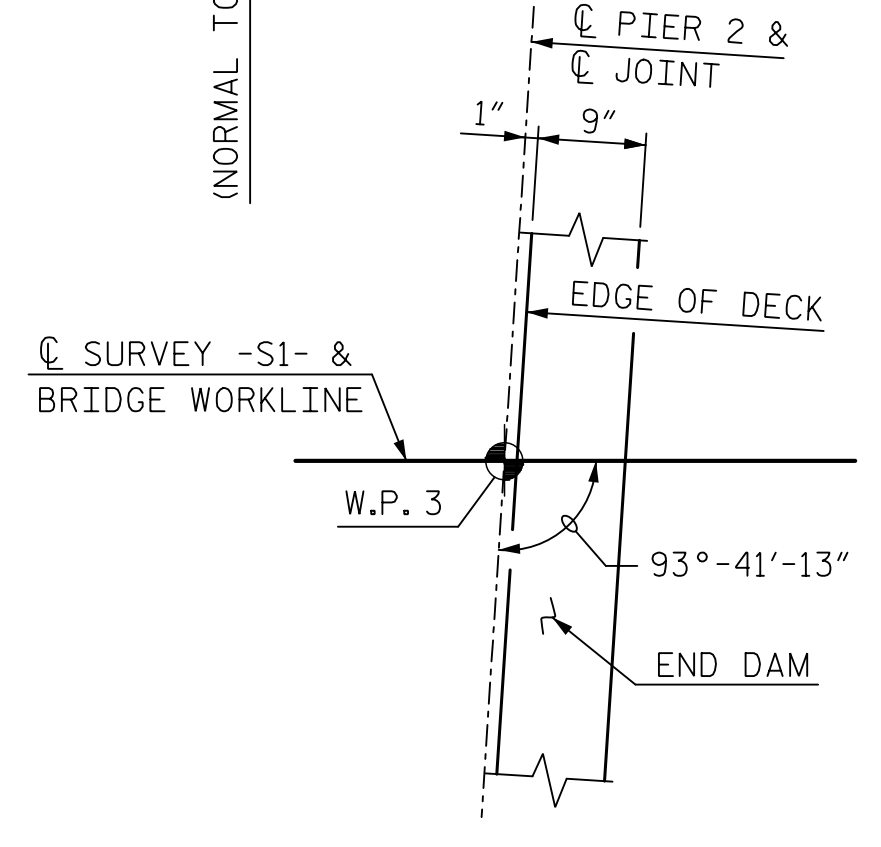
PLAN - SPAN C

DIMENSIONS ARE FROM THE INTERSECTION OF \square SURVEY -S1- & BRIDGE WORKLINE AND FILL FACE OF ABUTMENTS OR \square PIER UNLESS SHOWN OTHERWISE.

NOTES:
 ALL DECK REINFORCING SHALL BE EPOXY COATED.
 FOR SECTIONS "A-A" & "B-B" SEE "DECK DETAILS" SHEET.
 FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "DECK DRAINAGE DETAILS", SHEET 2 OF 2.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.



DETAIL B



DETAIL A

DocuSigned by:
 Larry Prescott
 019122918AA2A2C
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 045737
 LAWRENCE D. PRESCOTT, III
 2/22/2018

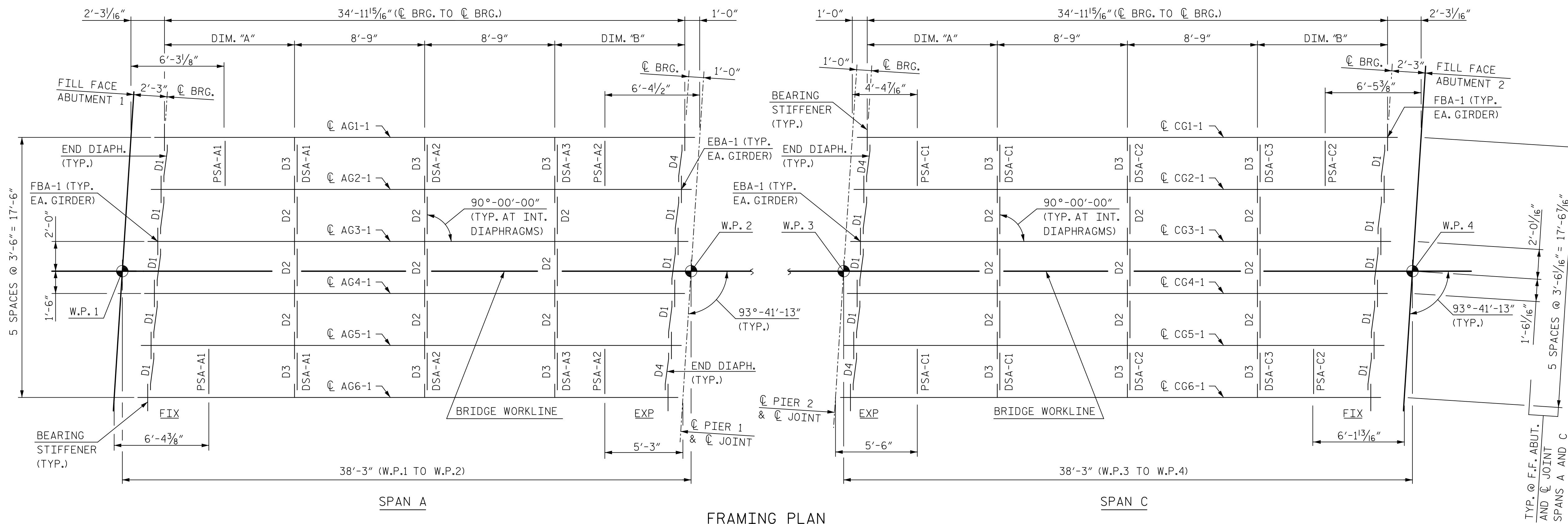
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-
 SUPERSTRUCTURE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN C

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 NC License No. C-1554
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
 DRAWN BY: C. GERDING DATE: 9/17
 CHECKED BY: J. VECLATCH DATE: 9/17
 DWG. NO. 8

NO.	REVISIONS				SHEET NO.
	BY	DATE	NO.	DATE	
1			3		TOTAL SHEETS
2			4		20



NOTES:

ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.

ALL ABUTMENT FILL FACES, CL PIERS AND CL BEARINGS ARE PARALLEL.

NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.

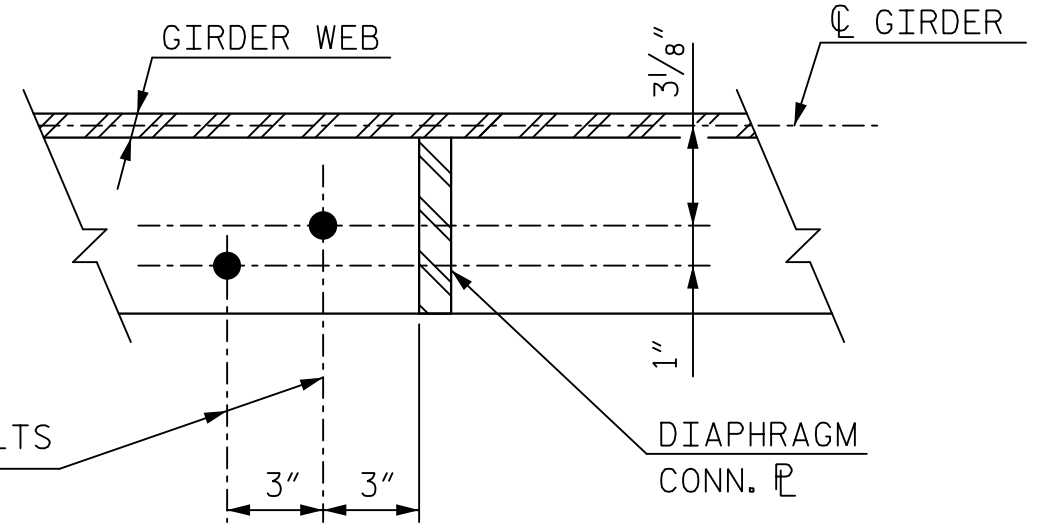
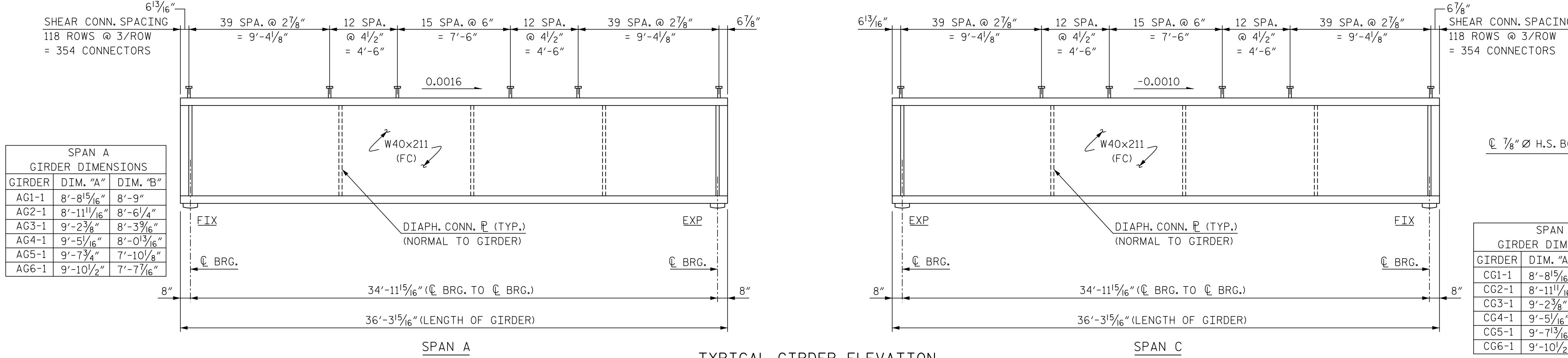
REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:

- STRUCTURAL STEEL NOTES
- DIAPHRAGM DETAILS
- STIFFENER AND CONNECTOR P DETAILS
- SHEAR CONNECTOR DETAILS

FOR BEARINGS, SEE "BEARING DETAILS SPANS A, B & C" SHEET.

FOR DRAIN PIPE SUPPORT DETAILS, SEE "DRAINAGE DETAILS" SHEET 2 OF 2.

FC = "FRACTURE CRITICAL"

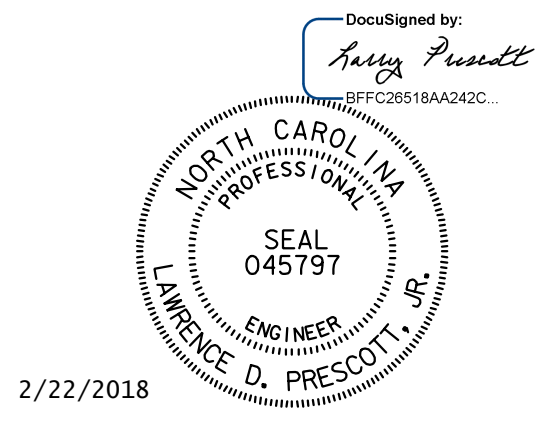
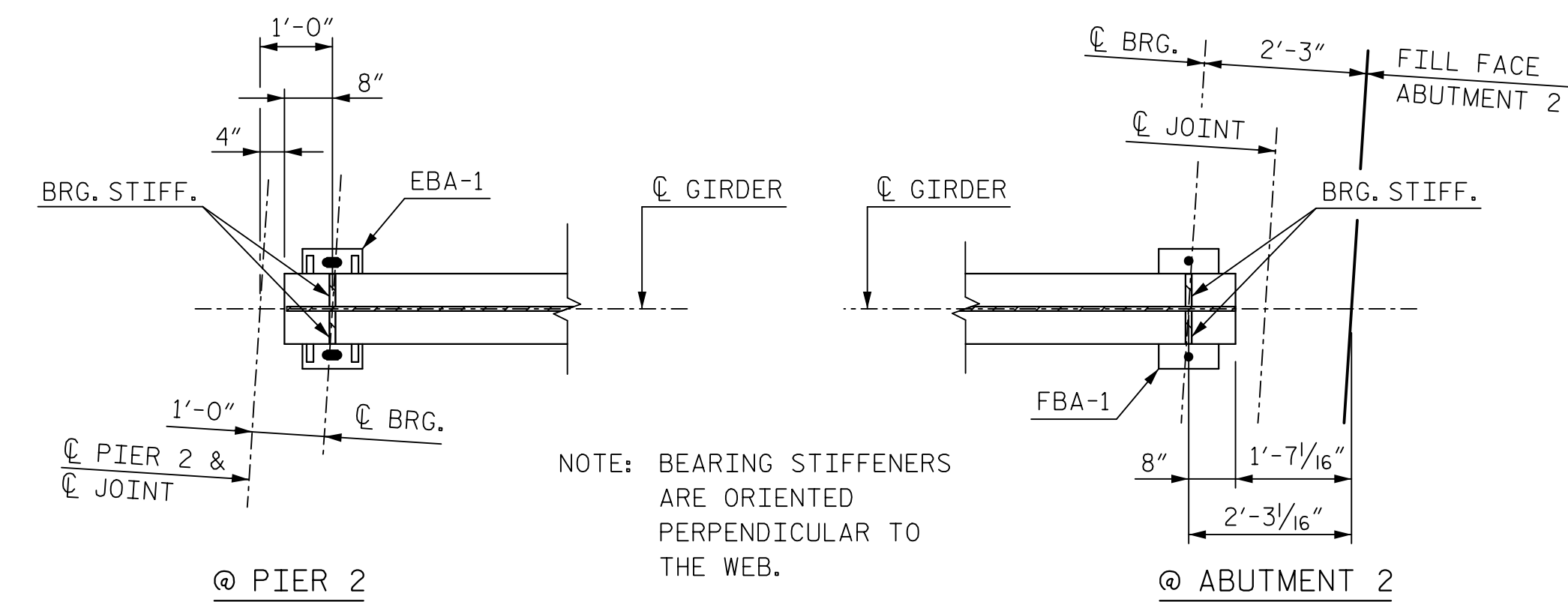
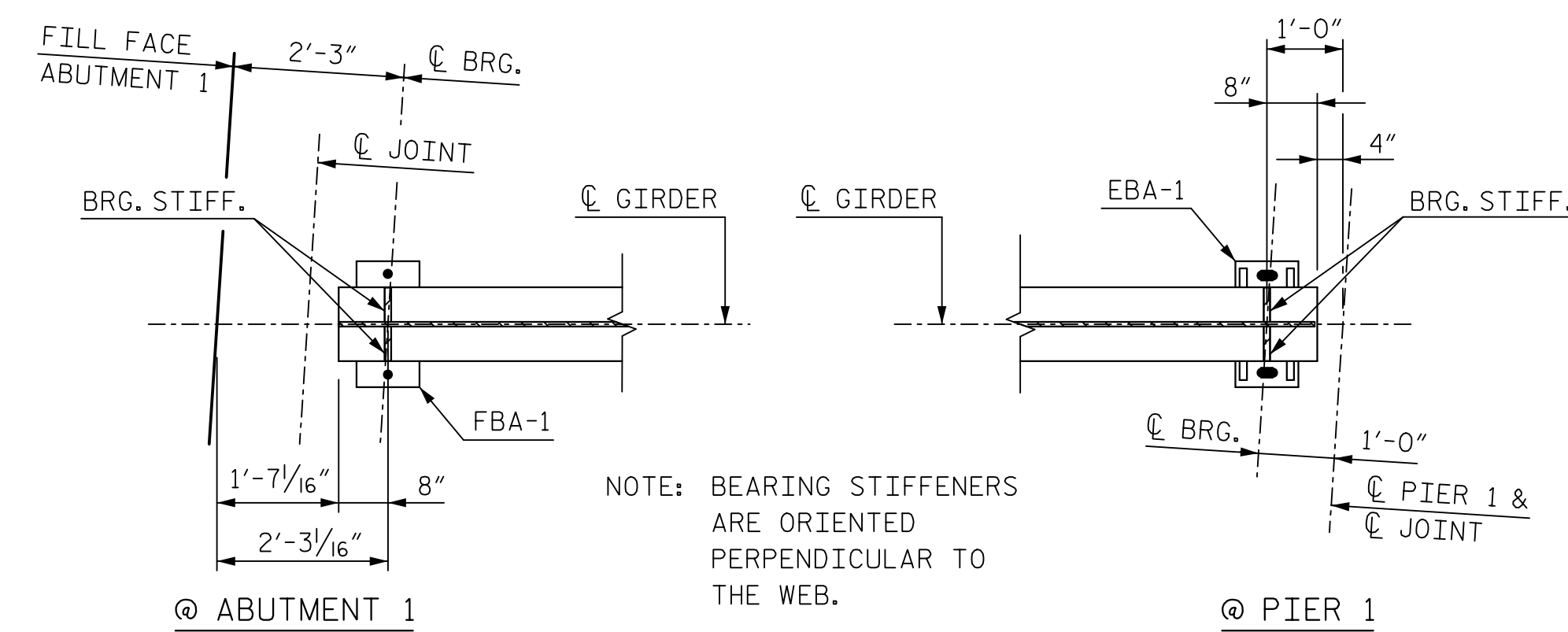


SPAN A GIRDER DIMENSIONS

GIRDER	DIM. "A"	DIM. "B"
AG1-1	8'-8 1/16"	8'-9"
AG2-1	8'-11 1/16"	8'-6 1/4"
AG3-1	9'-2 3/8"	8'-3 3/16"
AG4-1	9'-5 1/16"	8'-0 13/16"
AG5-1	9'-7 3/4"	7'-10 1/8"
AG6-1	9'-10 1/2"	7'-7 1/16"

SPAN C GIRDER DIMENSIONS

GIRDER	DIM. "A"	DIM. "B"
CG1-1	8'-8 1/16"	8'-9"
CG2-1	8'-11 1/16"	8'-6 1/4"
CG3-1	9'-2 3/8"	8'-3 3/16"
CG4-1	9'-5 1/16"	8'-0 13/16"
CG5-1	9'-7 13/16"	7'-10 1/8"
CG6-1	9'-10 1/2"	7'-7 1/16"



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

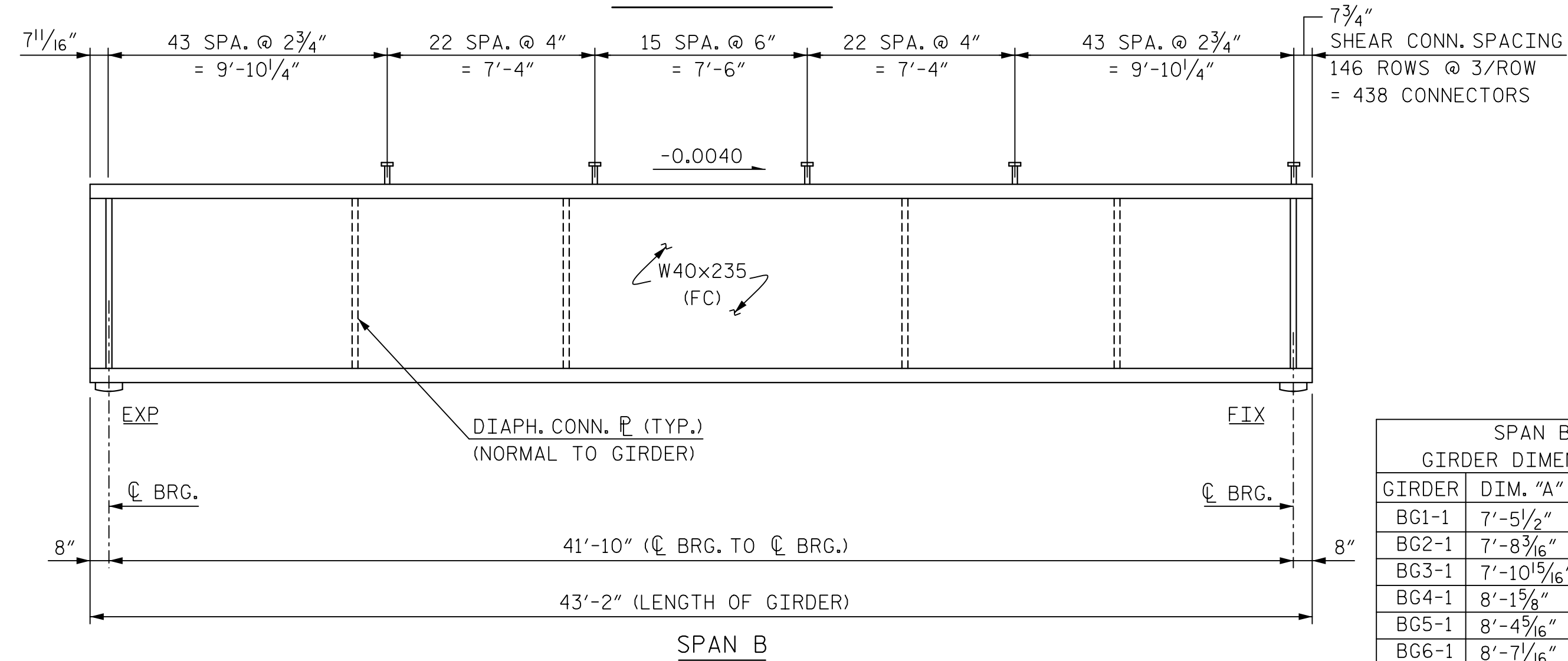
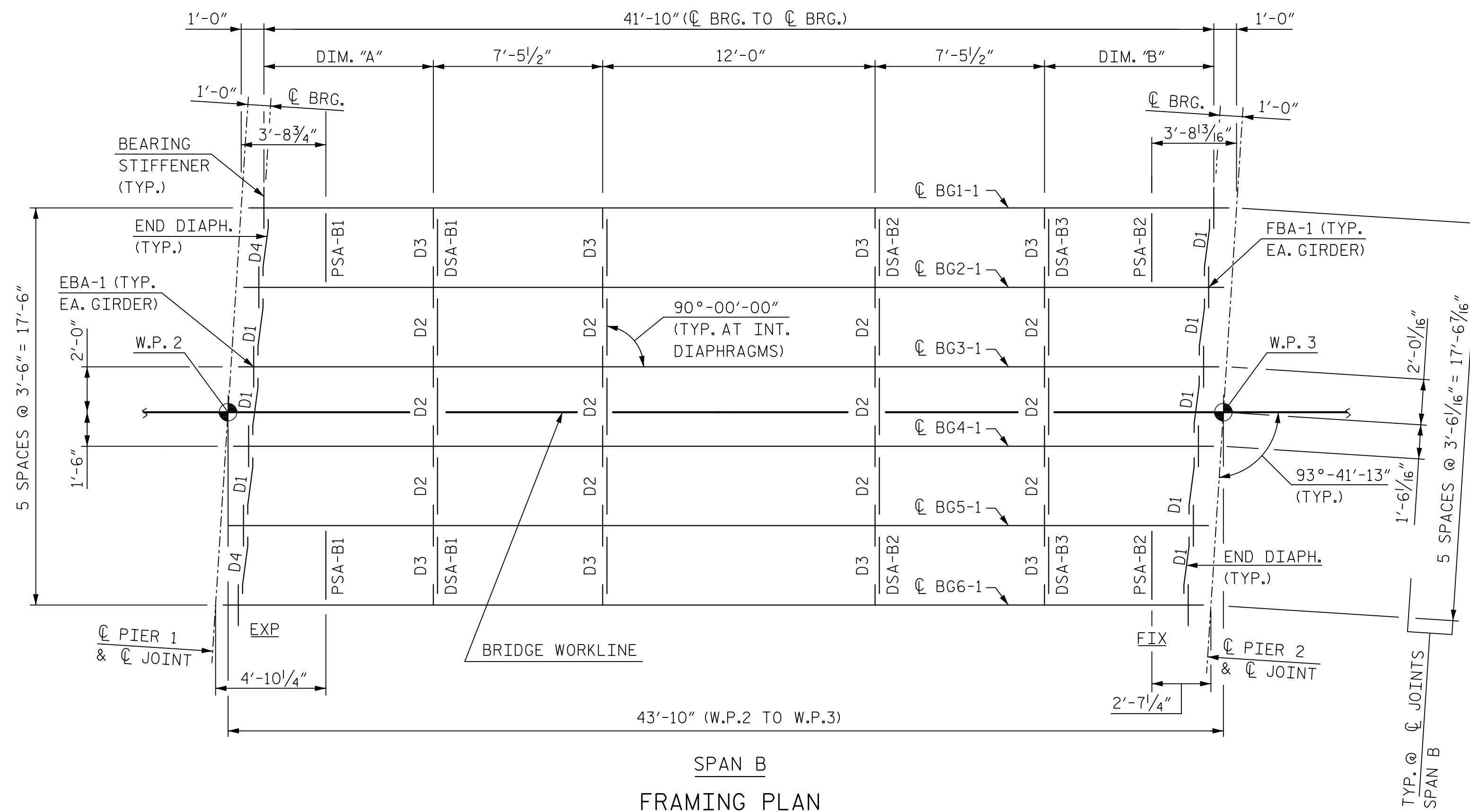
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

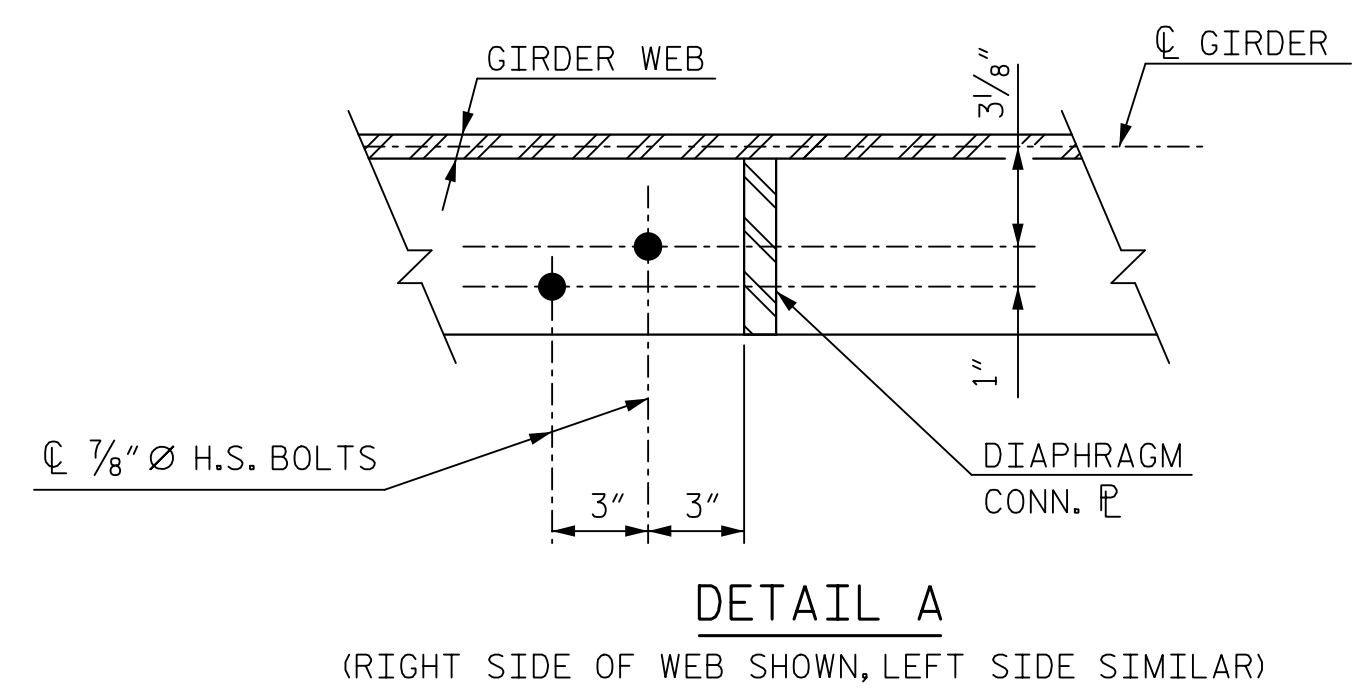
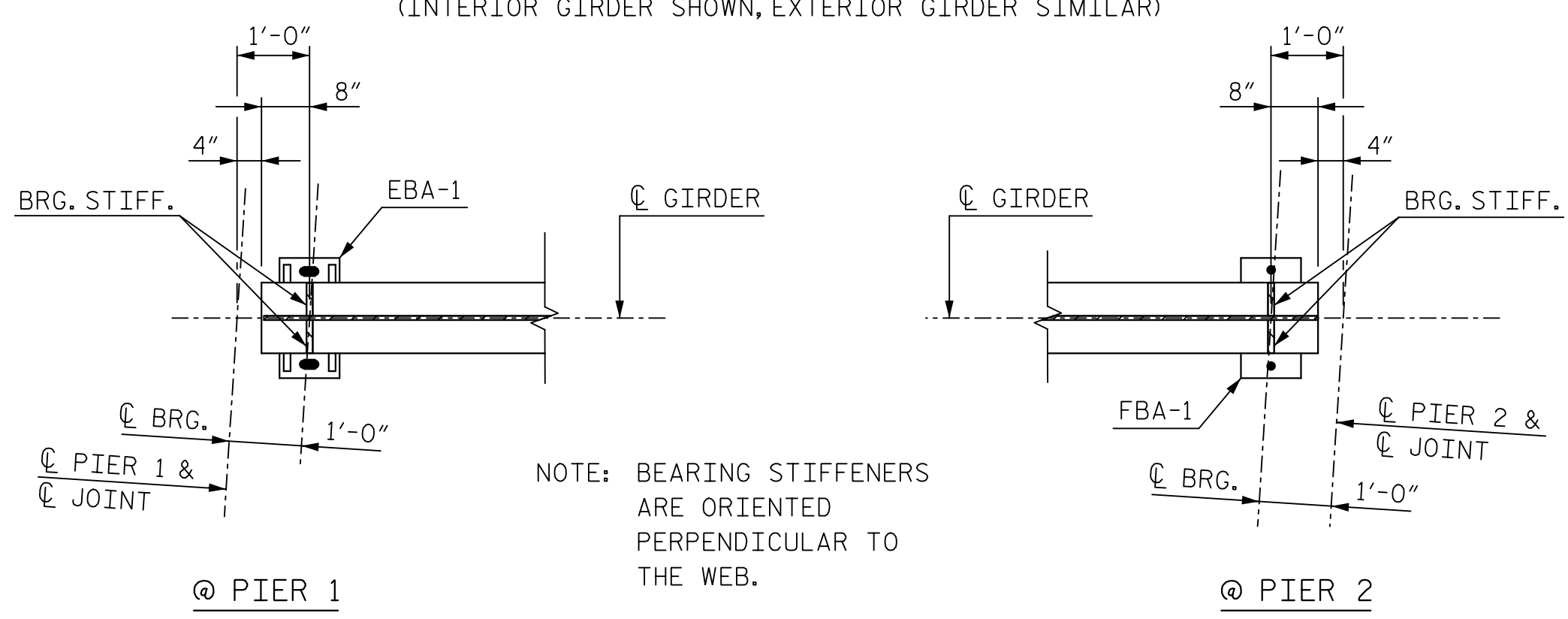
SUPERSTRUCTURE FRAMING PLAN AND GIRDER DETAILS SPANS A & C

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	NO.	BY	DATE	NO.		BY	DATE
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DRAWN BY: C. GERDING DATE: 9/17
 CHECKED BY: J. VECLITCH DATE: 9/17
 DWG. NO. 9

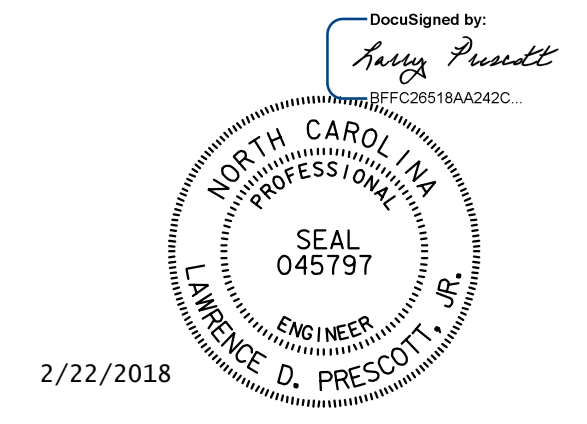


SPAN B GIRDER DIMENSIONS		
GIRDER	DIM. "A"	DIM. "B"
BG1-1	7'-5 1/2"	7'-5 1/2"
BG2-1	7'-8 3/16"	7'-2 13/16"
BG3-1	7'-10 5/16"	7'-0 1/16"
BG4-1	8'-1 5/8"	6'-9 3/8"
BG5-1	8'-4 9/16"	6'-6 11/16"
BG6-1	8'-7 1/16"	6'-3 5/16"



NOTES:
 ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.
 ALL ABUTMENT FILL FACES, C PIER AND C BEARINGS ARE PARALLEL.
 NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.
 REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:
 • STRUCTURAL STEEL NOTES
 • DIAPHRAGM DETAILS
 • STIFFENER AND CONNECTOR P DETAILS
 • SHEAR CONNECTOR DETAILS
 FOR BEARINGS, SEE "BEARING DETAILS SPANS A, B & C" SHEET.
 FOR DRAIN PIPE SUPPORT DETAILS, SEE "DRAINAGE DETAILS" SHEET 2 OF 2.
 FC = "FRACTURE CRITICAL"

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-



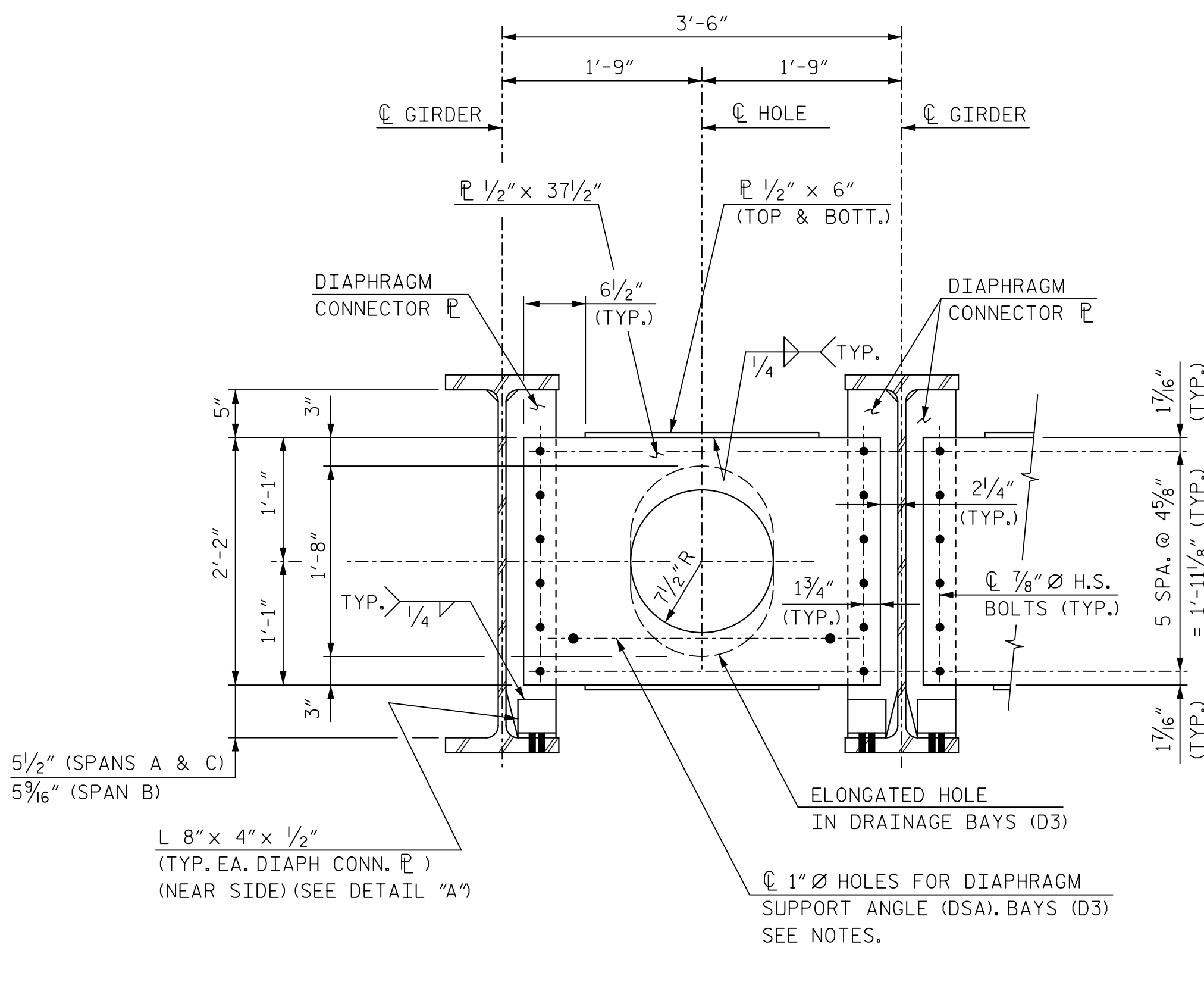
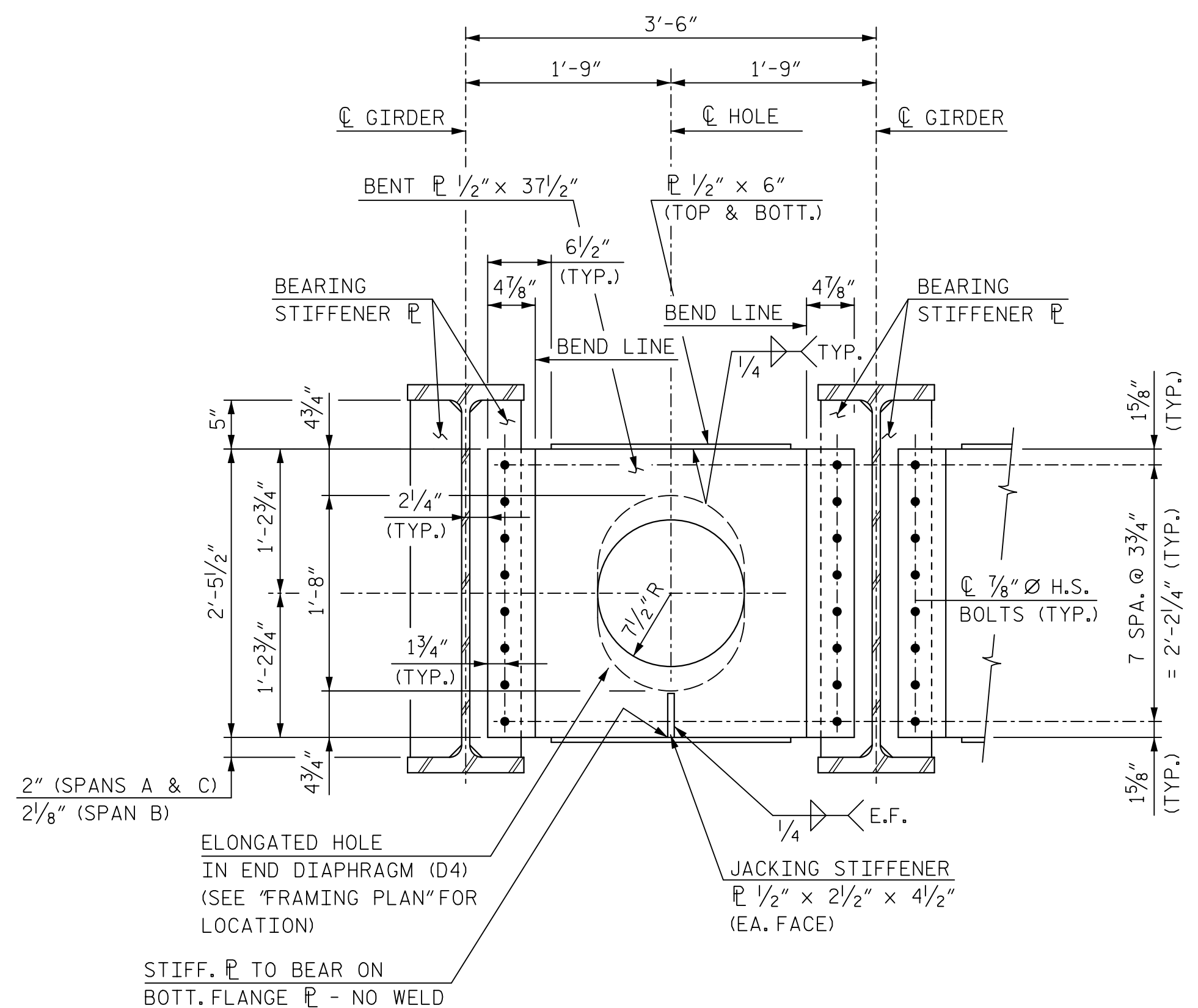
2/22/2018

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN
 AND GIRDER DETAILS
 SPAN B

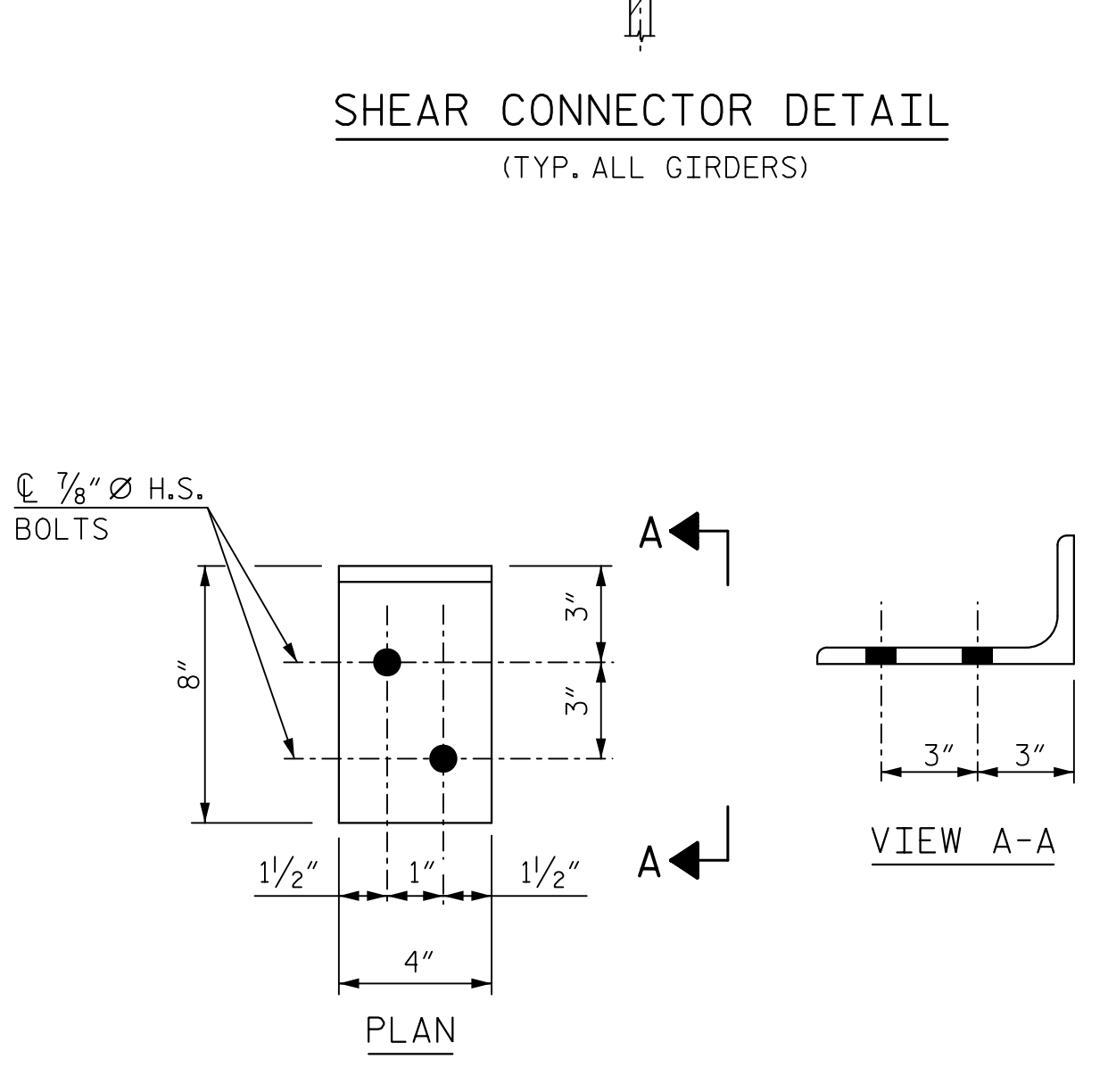
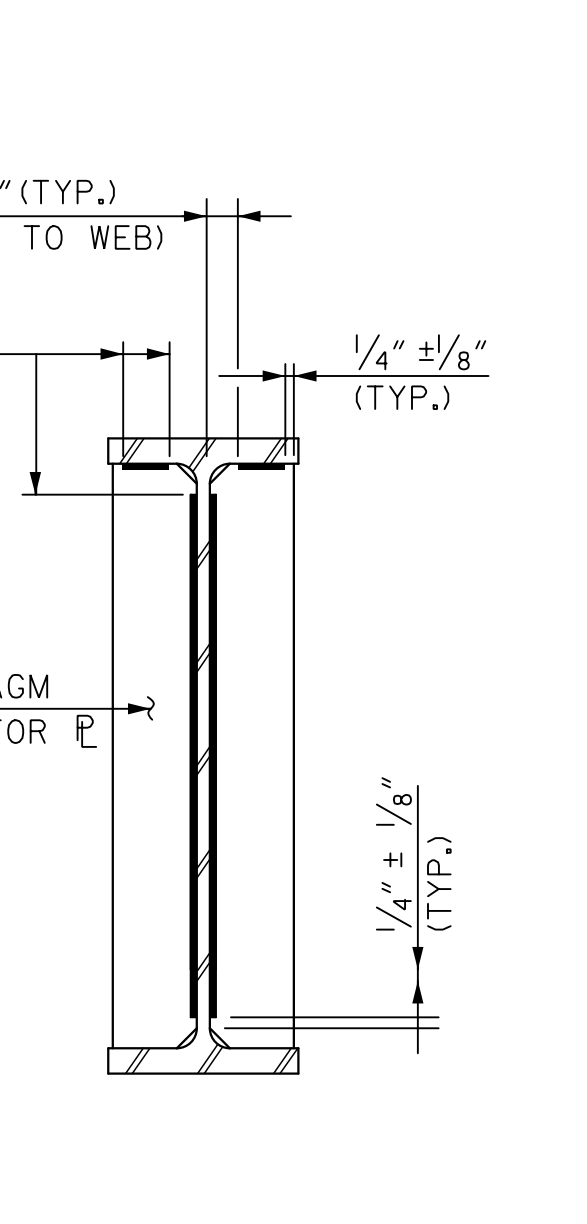
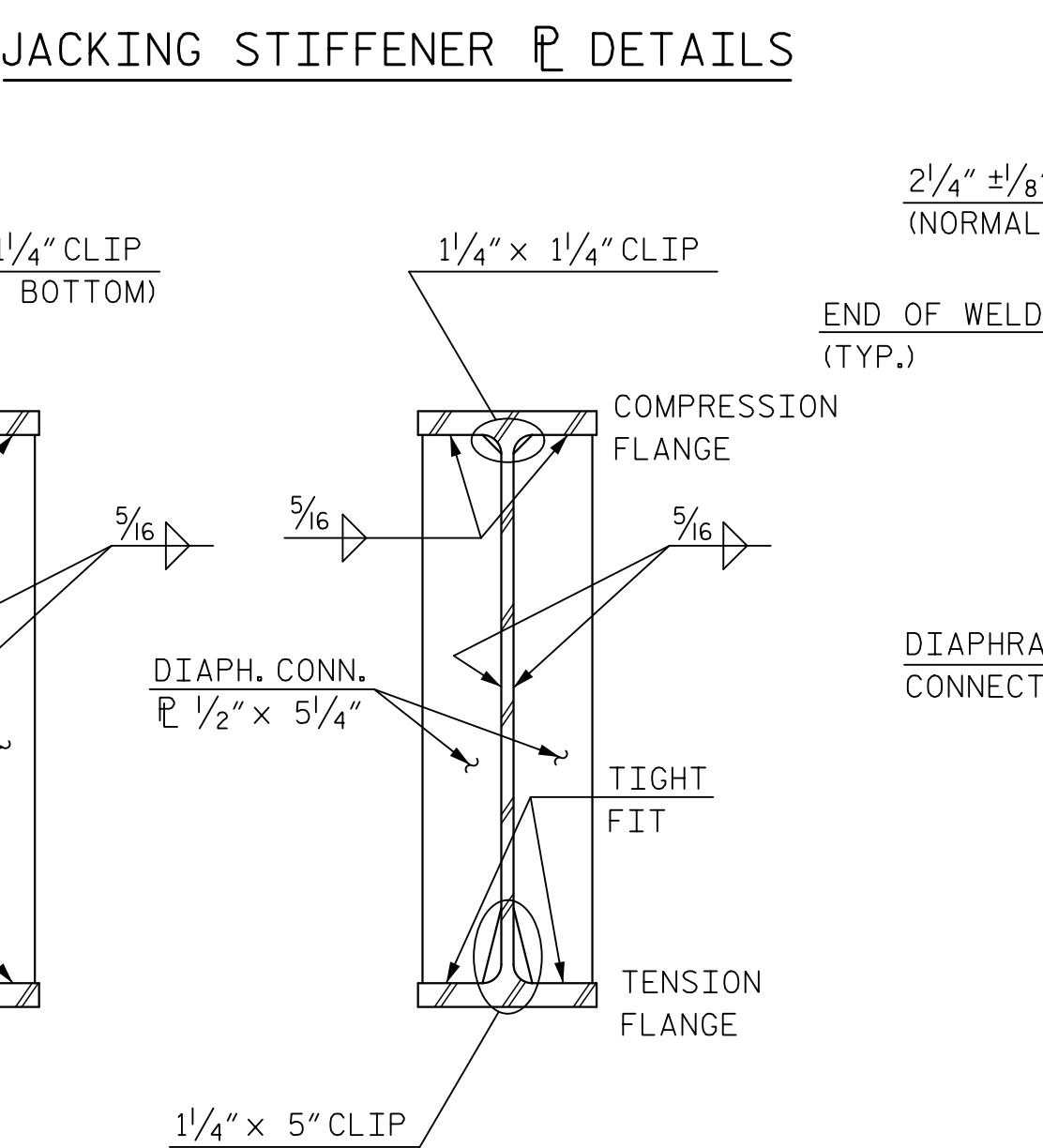
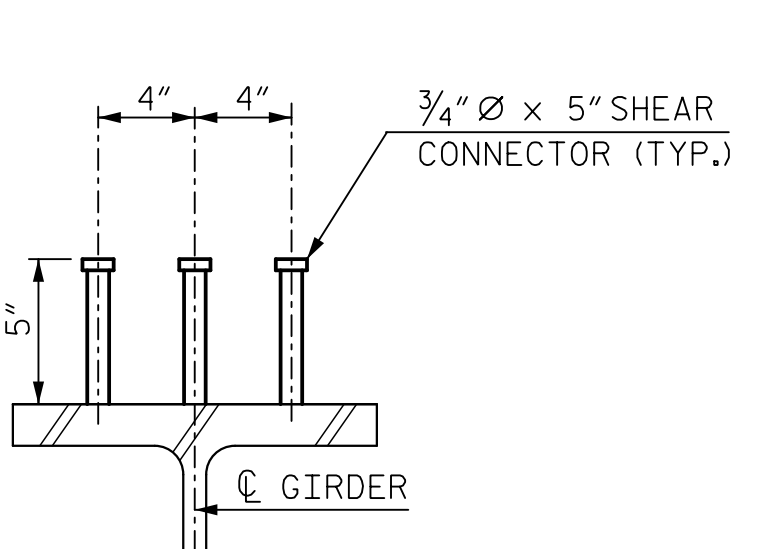
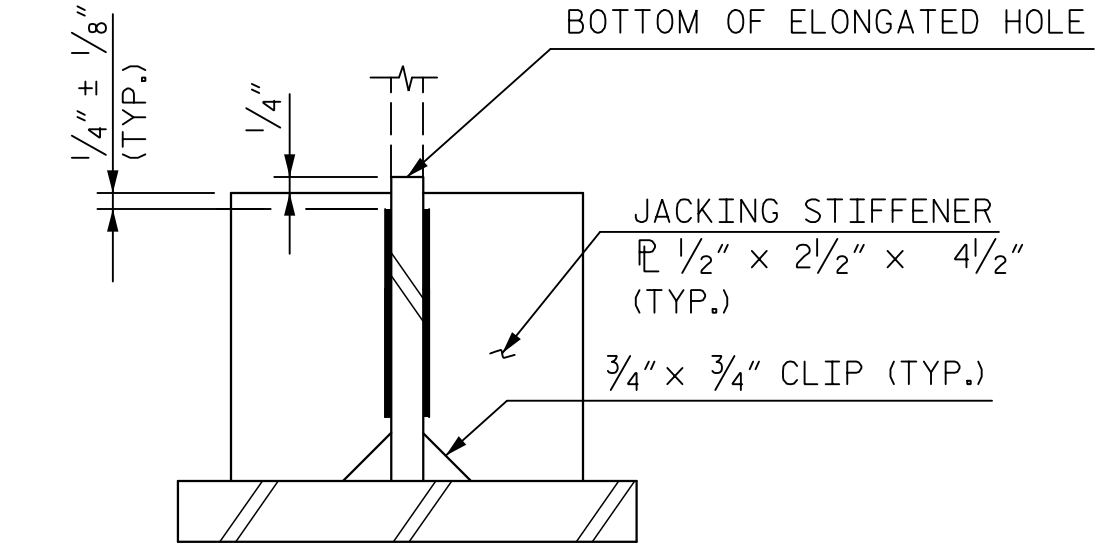
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	1		9/17	3			
2		9/17	4				

DRAWN BY C. GERDING DATE 9/17
 CHECKED BY J. VECLITCH DATE 9/17 DWG. NO. 10



SECTION AT END DIAPHRAGM (D1 & D4)
(DIAPHRAGMS ARE FROM BEARING STIFFENER TO BEARING STIFFENER)

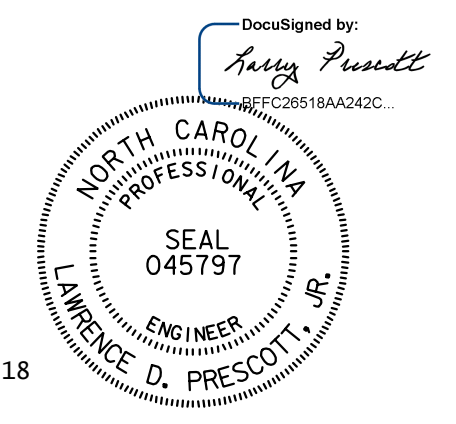
SECTION AT INTERMEDIATE DIAPHRAGM (D2 & D3)
(DIAPHRAGMS ARE NORMAL TO GIRDER LINES)



NOTES:
FOR DIAPHRAGM LOCATIONS, SEE "FRAMING PLAN AND GIRDER DETAILS" SHEETS.
FOR DETAILS OF DIAPHRAGM SUPPORT ANGLES (DSA), SEE "DRAINAGE DETAILS" SHEET 2 OF 2.

STRUCTURAL STEEL NOTES
STRUCTURAL STEEL: $f_s = 27.5$ KSI. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:
W40x211 (SPANS A & C) AND W40x235 (SPAN B) MAIN GIRDERS:
A709, GRADE 50, WITH SUPPLEMENTALS S84-F2, S91 AND S93 APPLYING, AND WITH IMPACT TEST REQUIREMENT OF 25 ft-lb @ 40°F AS GOVERNED BY ASTM A673 FOR TEST FREQUENCY "P".
MISCELLANEOUS MATERIAL: A709, GRADE 50.
ANCHOR BOLTS FOR BEARING DEVICES SHALL CONFORM TO ASTM F1554, GRADE 105. ANCHOR BOLTS, NUTS, AND PLATE WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM F2329.
STRUCTURAL STEEL ELEMENTS DENOTED AS "FC" ARE FRACTURE CRITICAL AND SHALL MEET IMPACT TEST REQUIREMENTS SET FORTH IN THE FRACTURE CONTROL PLAN OF THE AREMA MANUAL, CHAPTER 15, SECTION 1.2. TESTING SHALL BE BASED ON ZONE 2 REQUIREMENTS.
ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.
MILL TEST REPORTS: NORFOLK SOUTHERN CORPORATION SHALL BE FURNISHED COPIES OF MILL TEST REPORTS FOR ALL MATERIALS EXCEPT MISCELLANEOUS PLATES AND SHAPES. REPORTS SHALL INDICATE COMPLIANCE WITH ALL SPECIFIED REQUIREMENTS.
INSPECTION: SHOP INSPECTION BY NORFOLK SOUTHERN CORPORATION OR ITS AUTHORIZED AGENT.
PAINTING STRUCTURAL STEEL: FOR ACRYLIC PAINT SYSTEM FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.
BOLTED CONNECTIONS SHALL BE MADE WITH 7/8" Ø ASTM A325, TYPE 1 HIGH STRENGTH BOLTS WITH HARDENED WASHERS IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS USING THE TURN OF THE NUT METHOD. DIRECT TENSION INDICATORS SHALL NOT BE USED.
SHOP DRAWINGS: SHOP DRAWINGS SHALL BE APPROVED BY THE CHIEF ENGINEER - BRIDGES AND STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, G.A. SHOP DRAWINGS SHALL BE LABELED "NORFOLK SOUTHERN MP 377.55."
HOLES: OPEN HOLES AS NOTED.
HIGH STRENGTH BOLTS, NUTS & WASHERS: ASTM DESIGNATION A325 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM B695.
BEARING PADS SHALL BE USED WHENEVER STEEL MASONRY PLATE, OR OTHER STEEL BEARING PLATE, BEARS ON CONCRETE. PADS SHALL BE PREFORMED FABRIC BEARING PADS, 1/2" THICK. PREFORMED FABRIC BEARING PADS SHALL BE SHOCK PAD STYLE NO 15175 AS MANUFACTURED BY ALERT MANUFACTURING AND SUPPLY COMPANY, CHICAGO, ILLINOIS, OR FABREEKA PADS AS MANUFACTURED BY FABREEKA PRODUCTS COMPANY, BOSTON, MASSACHUSETTS, OR SORBTEX PADS AS MANUFACTURED BY VOSS ENGINEERING, INC., CHICAGO, ILLINOIS, OR APPROVED EQUAL.
ALL CONNECTIONS SHALL BE MADE WITH SERIES E70 ELECTRODES.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+82.25 -S1-

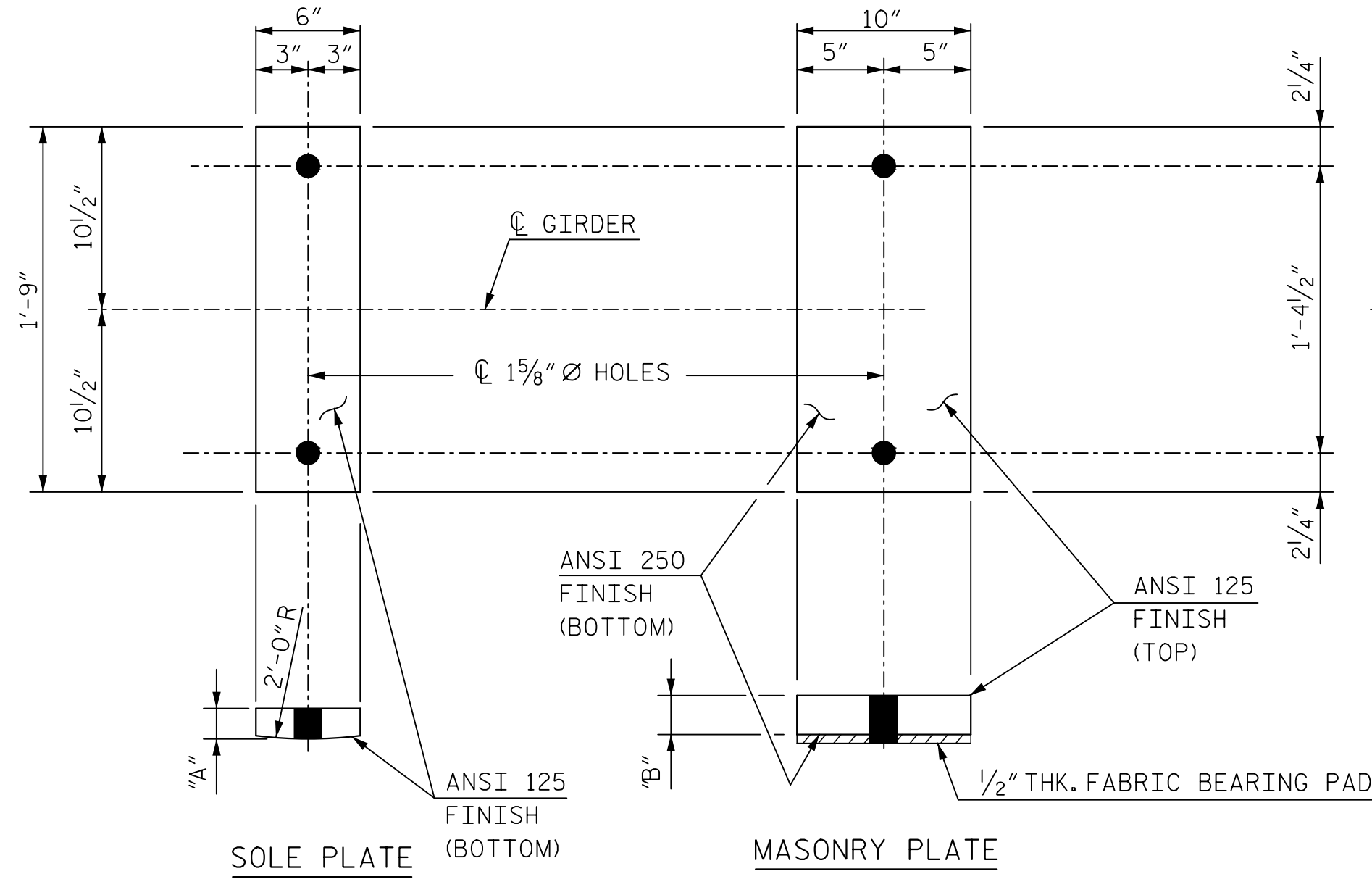


2/22/2018

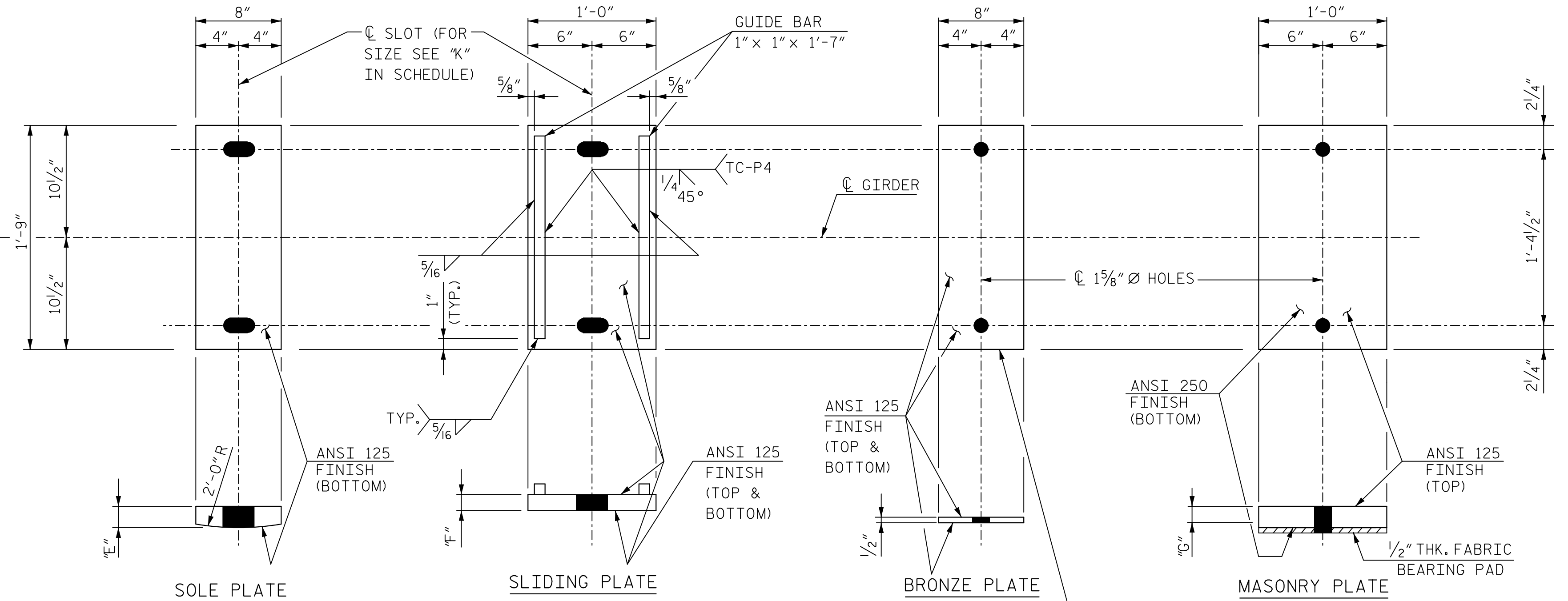
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY: C. GERDING	DATE: 9/17	DWG. NO. 11	
CHECKED BY: S. TIPPETT	DATE: 9/17		

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUPERSTRUCTURE		SHEET NO. S2-11	
		STRUCTURAL STEEL DETAILS			
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
				TOTAL SHEETS	20

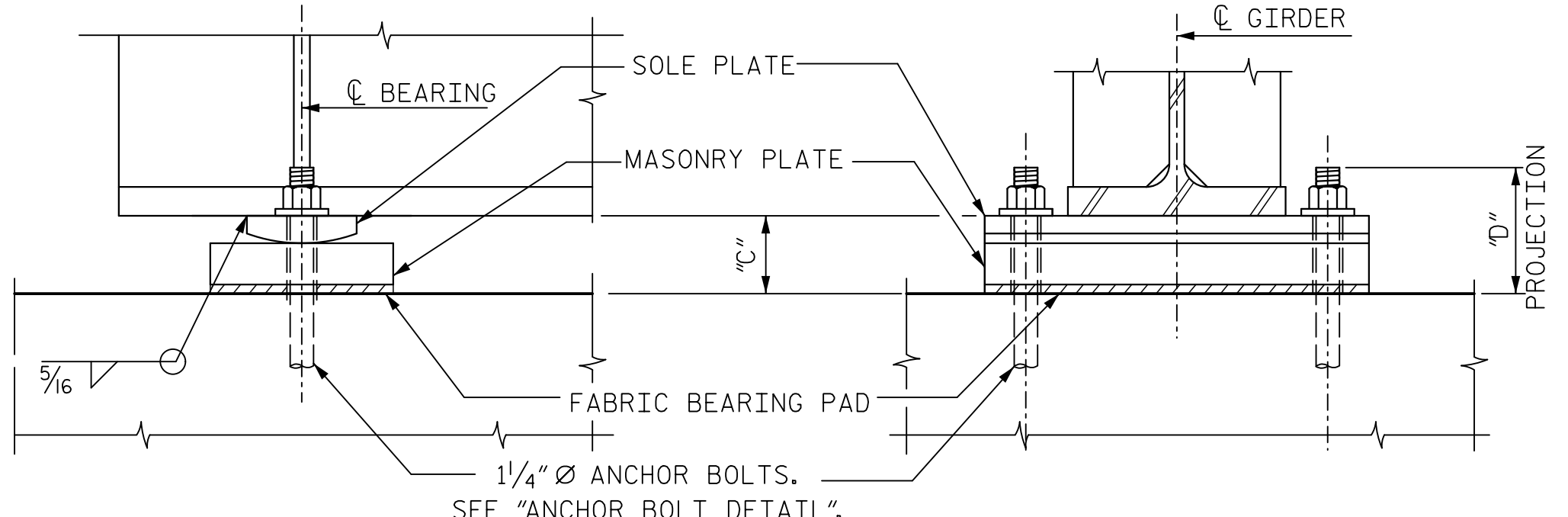


FIXED BEARINGS



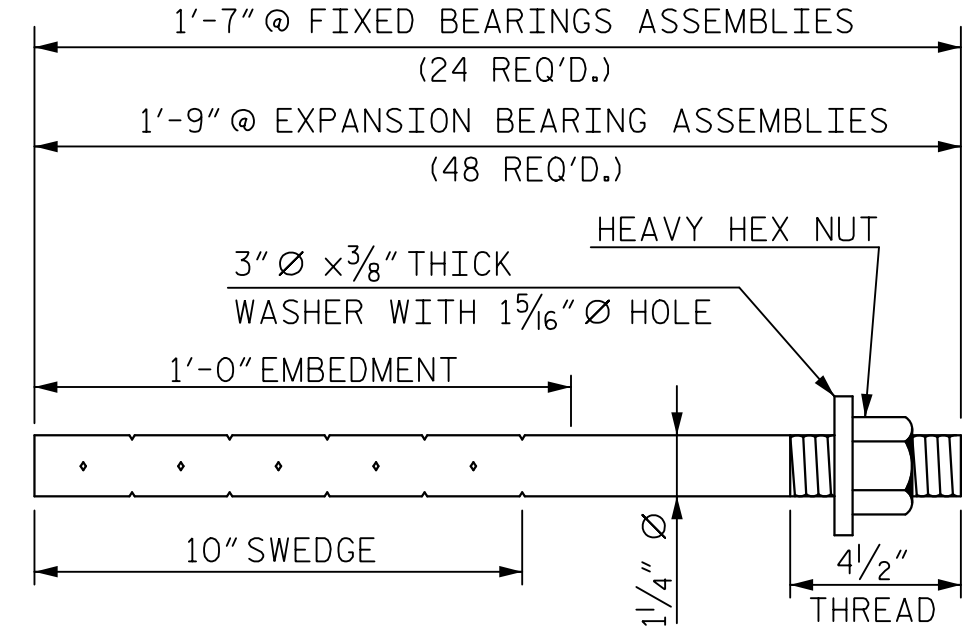
EXPANSION BEARINGS

BRONZE PLATE TO BE ASTM B22 - COPPER ALLOY 911 OR ASTM B100 - COPPER ALLOY 510. TOP SURFACE TO BE SELF LUBRICATING.

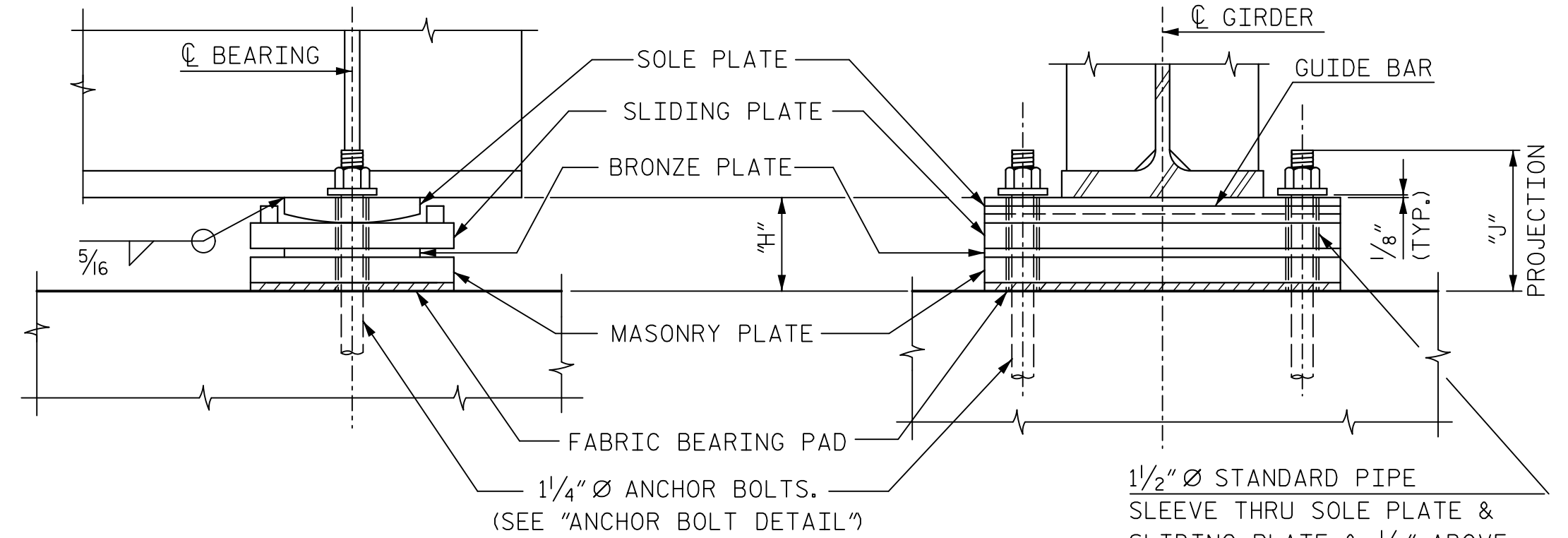


FIXED BEARING ASSEMBLY (FBA-1)

(18 REQ'D)



ANCHOR BOLT DETAIL



EXPANSION BEARING ASSEMBLY (EBA-1)

(18 REQ'D)

BEARING PLATE SCHEDULE

GIRDER	DIMENSIONS (in)									
	FIXED BEARING (FBA-1)					EXPANSION BEARING (EBA-1)				
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"
AG1	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
AG2	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
AG3	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
AG4	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
AG5	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
AG6	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
BG1	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
BG2	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
BG3	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
BG4	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
BG5	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
BG6	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
CG1	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
CG2	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
CG3	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
CG4	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
CG5	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"
CG6	1 3/4"	2 1/4"	4 1/2"	6 3/4"	2"	1 1/2"	2"	6 1/2"	8 7/8"	2" x 3 1/2"

NOTES:
ANCHOR BOLTS, SLIDING PLATE (EXPANSION BEARING) AND MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL BE HOT DIPPED GALVANIZED.

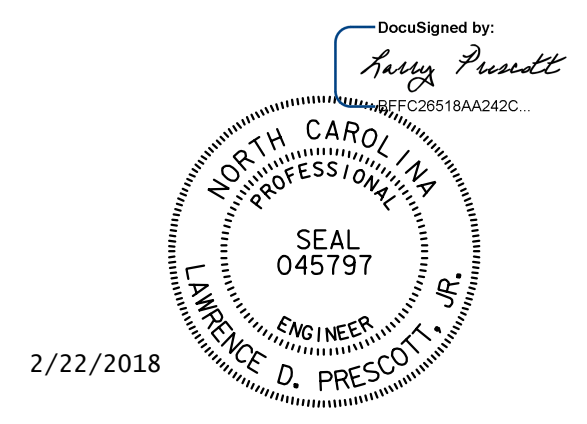
ANCHOR BOLTS SHALL BE 1/4" Ø ASTM F1554, GRADE 105 IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS AND SHALL BE GROUTED IN FORMED HOLES AFTER GIRDERS ARE ERECTED.

ALL PLATE SURFACES SHALL BE PAINTED WITH A 3 COAT PAINT SYSTEM EXCEPT AS SPECIFIED BELOW.

- (A) THE SLIDING PLATE (EXPANSION BEARING) SHALL NOT BE PAINTED BUT SHALL RECEIVE A COAT OF LUBRICATION.
- (B) THE MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL NOT BE PAINTED.
- (C) THE BOTTOM SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED BUT SHALL RECEIVE A SINGLE COAT OF PRIMER APPLIED IN THE SHOP.
- (D) THE TOP SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED IN THE VICINITY OF THE WELD BETWEEN THE SOLE PLATE AND THE BOTTOM FLANGE.

FOR ACRYLIC PAINT SYSTEM FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR SELF LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.



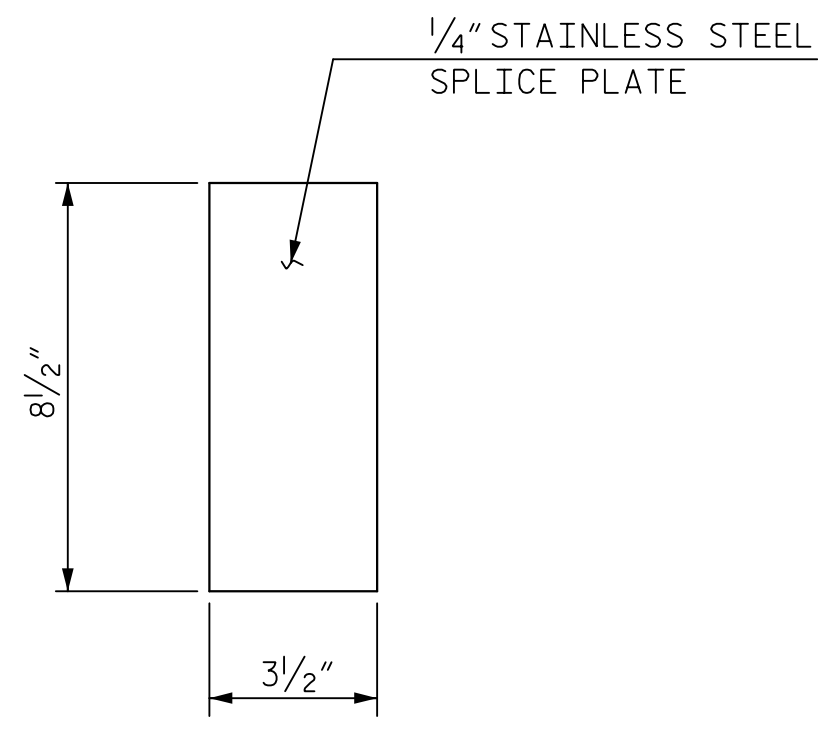
2/22/2018

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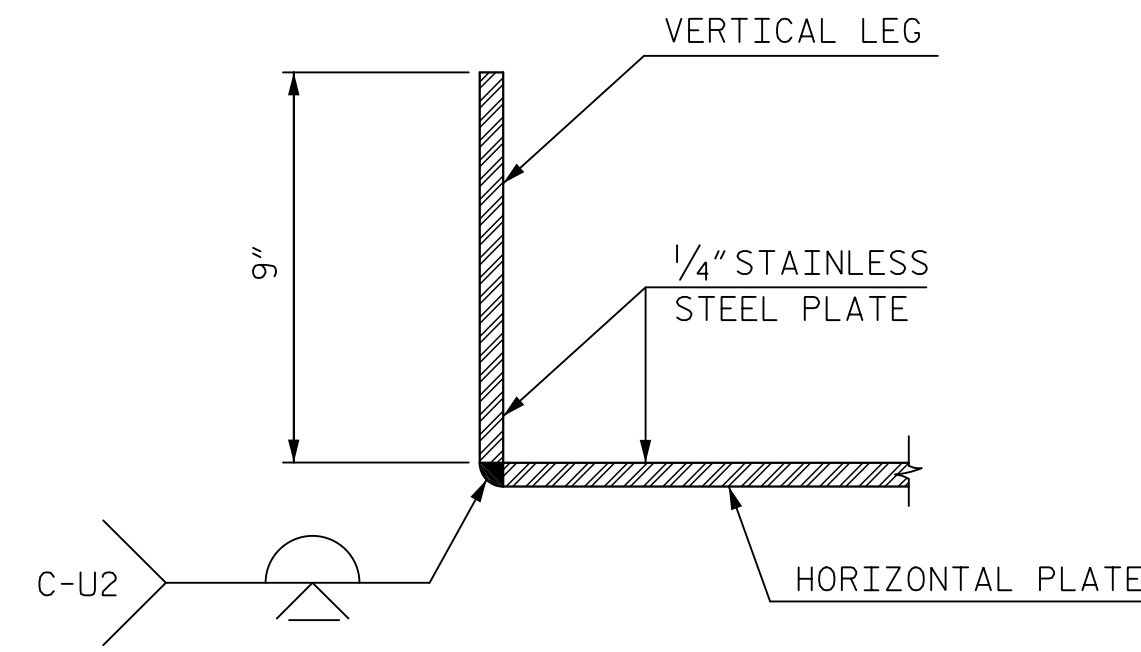
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+82.25 -S1-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BEARING DETAILS
SPANS A, B & C

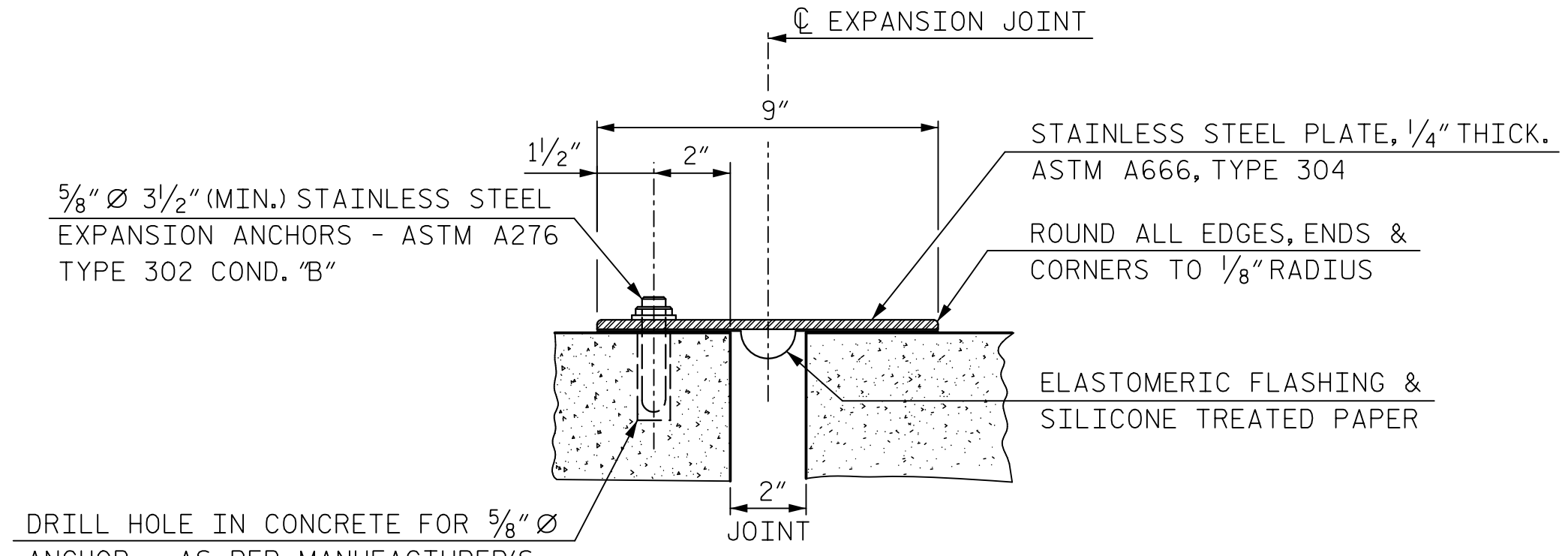
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S2-12		
	NO.	BY	DATE	NO.		BY	DATE
	1		9/17	3			
2		9/17	4				
DRAWN BY: C. GERDING CHECKED BY: S. TIPPETT DATE: 9/17 DATE: 9/17 DWG. NO. 12						TOTAL SHEETS 20	



DETAIL A



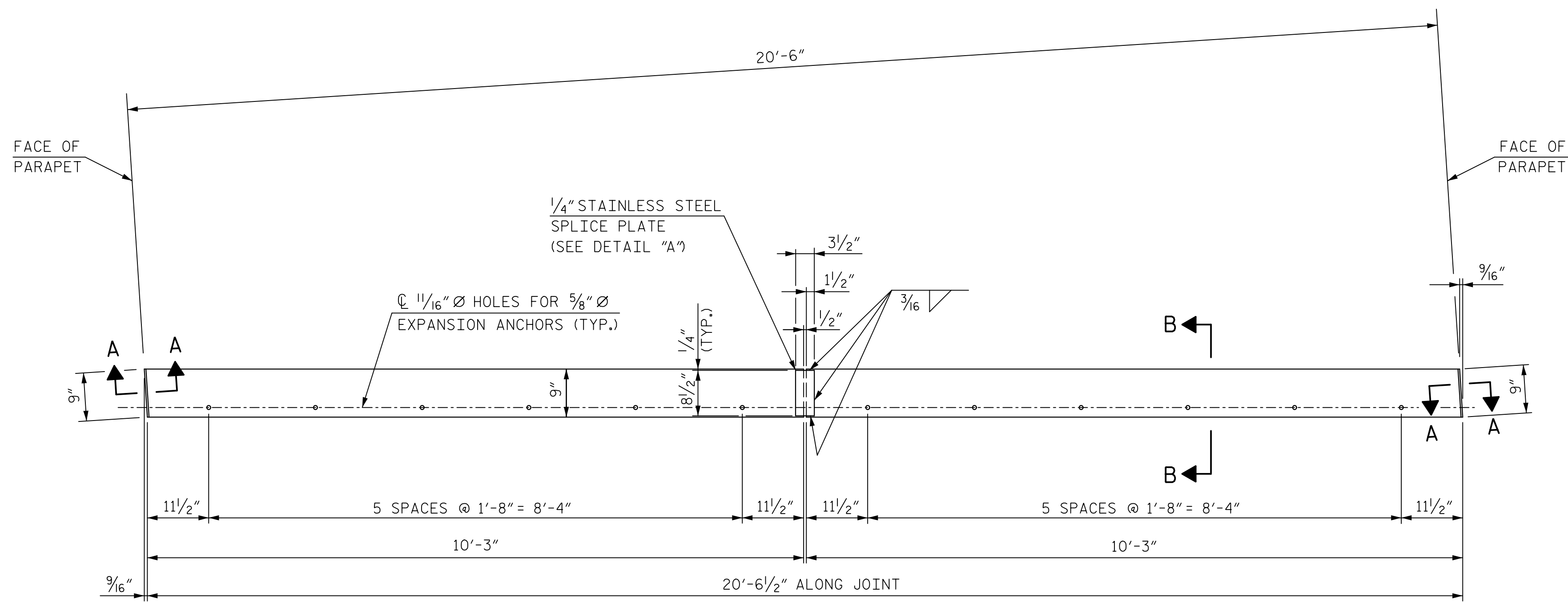
SECTION A-A



SECTION B-B

(DETAIL OF EXPANSION ANCHOR AND PLATE)

SEE DETAIL "A" ON "SUPERSTRUCTURE DECK DETAILS" SHEET FOR ADDITIONAL JOINT INFORMATION.

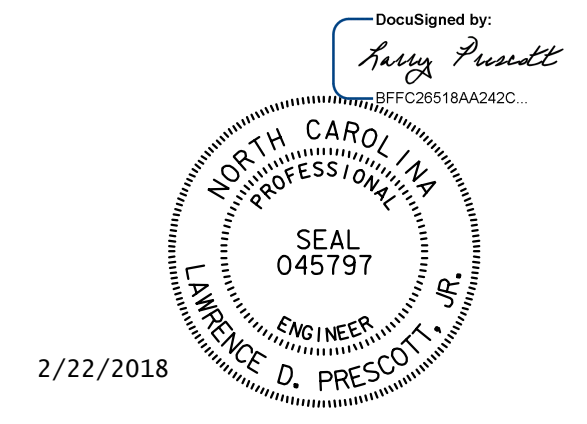


PLAN - EXPANSION PLATE

(4 REQUIRED)

NOTE: PAYMENT FOR THE EXPANSION PLATE AND EXPANSION ANCHORS IS INCLUDED IN THE COST FOR STRUCTURE STEEL.

PLATE SHALL BE ANCHORED AT BACKWALL OF ABUTMENT 1 & 2, SPAN B SIDE OF PIER 1 AND SPAN B SIDE OF PIER 2.

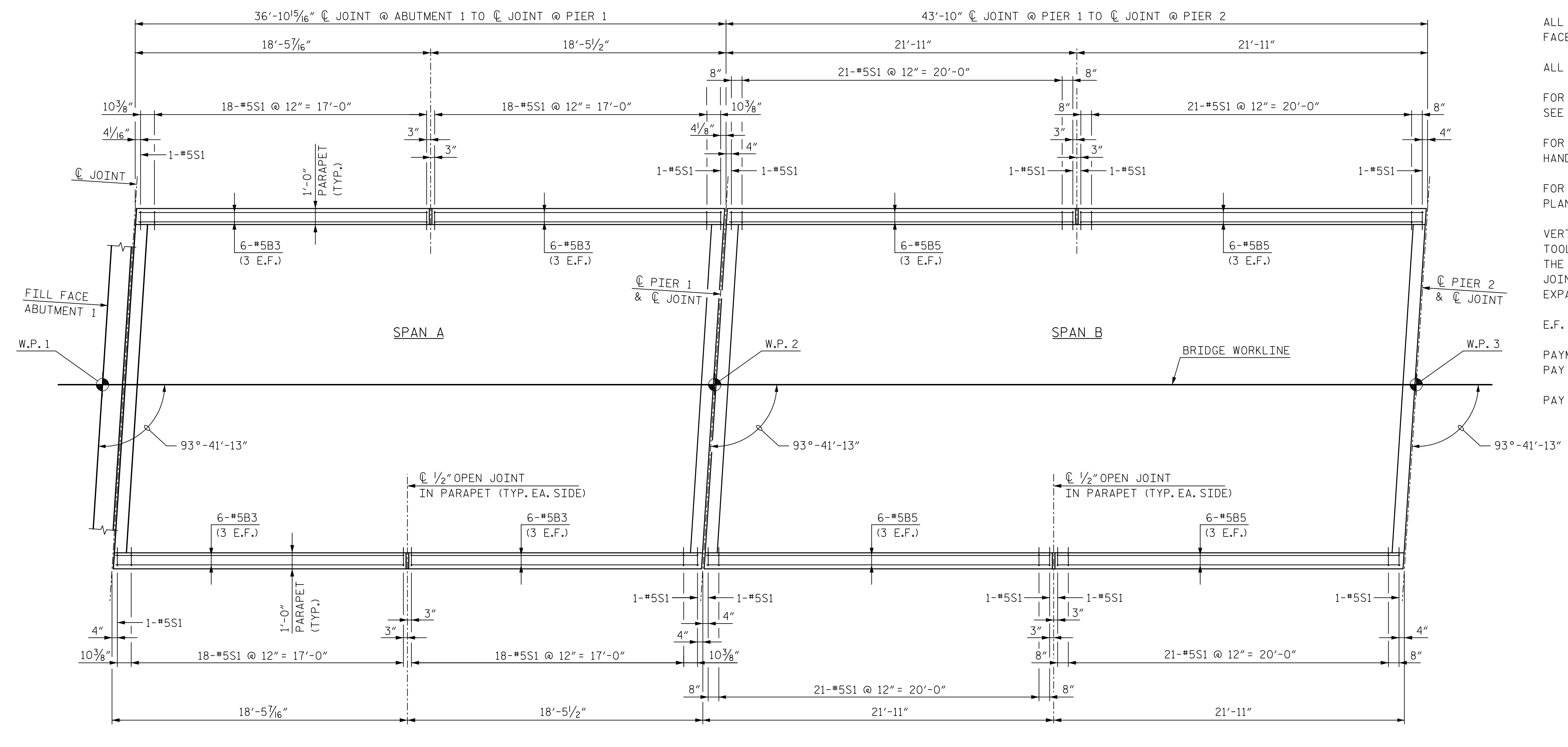


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

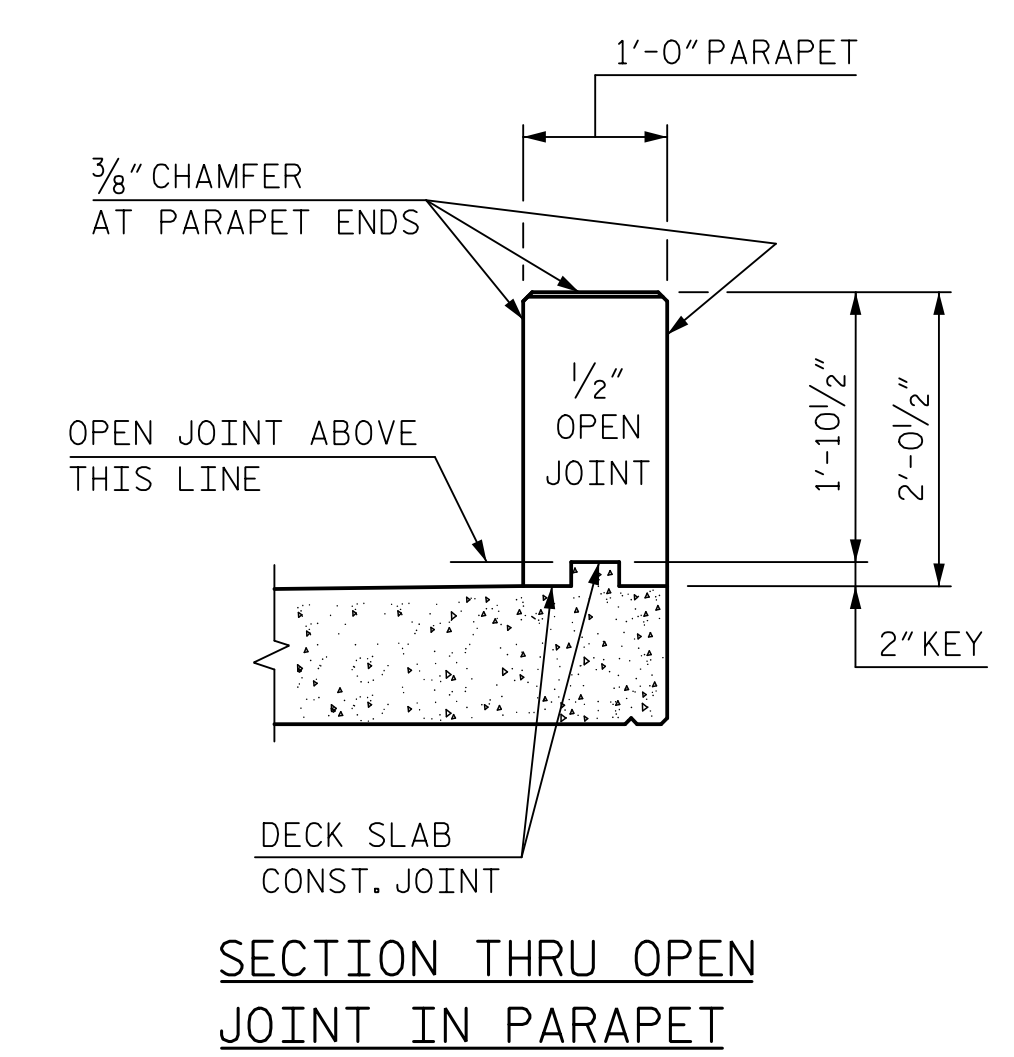
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 EXPANSION PLATE DETAILS

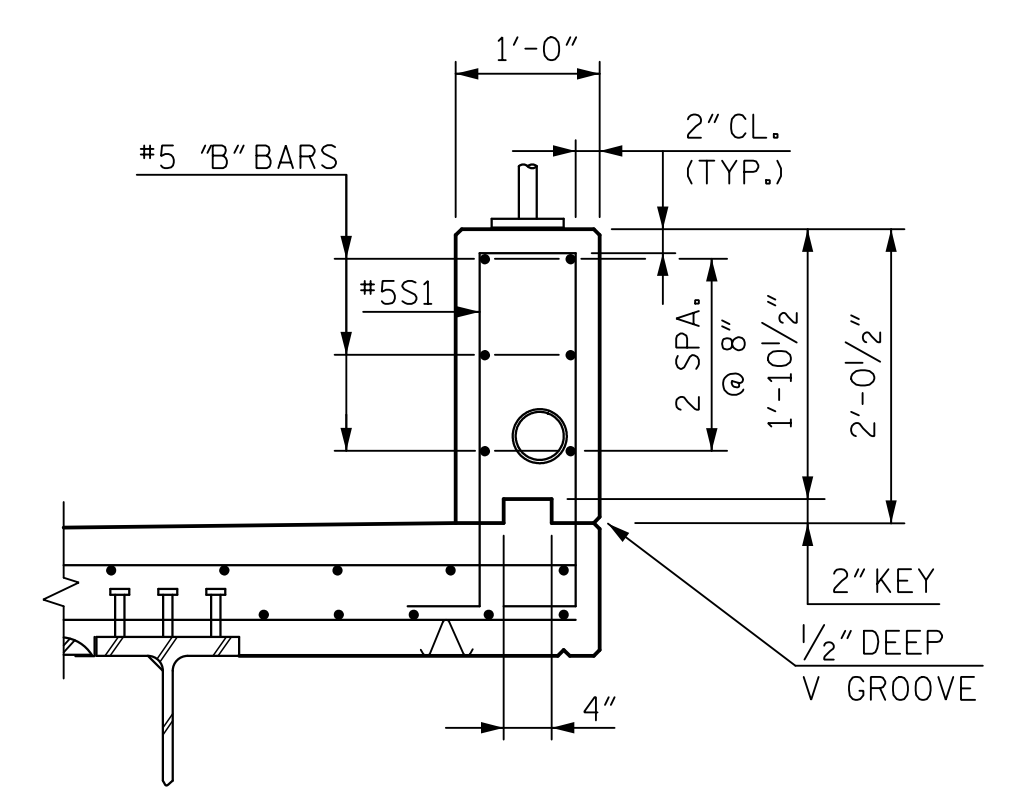
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S2-13 TOTAL SHEETS 20	
	DRAWN BY <u>C. GERDING</u> DATE <u>9/17</u> CHECKED BY <u>S. TIPPETT</u> DATE <u>9/17</u>	NO. <u>1</u> BY <u></u> DATE <u></u>	NO. <u>3</u> BY <u></u> DATE <u></u>	NO. <u>4</u> BY <u></u> DATE <u></u>	NO. <u></u> BY <u></u> DATE <u></u>		NO. <u></u> BY <u></u> DATE <u></u>
	DWG. NO. 13						



PLAN - SPAN A & SPAN B PARAPETS



SECTION THRU OPEN JOINT IN PARAPET

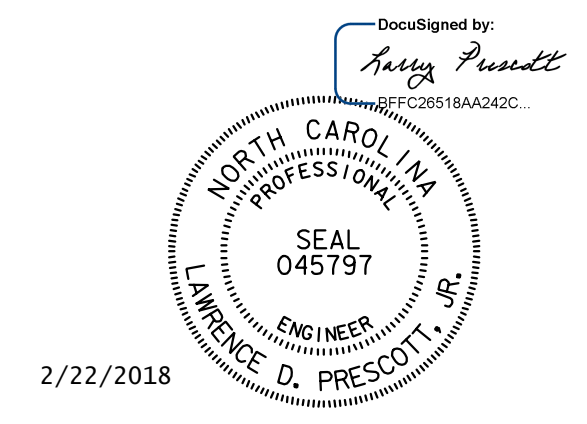


SECTION THRU PARAPET

NOTES:
 METAL HANDRAIL NOT SHOWN FOR CLARITY.
 ALL HORIZONTAL DIMENSIONS SHOWN ARE MEASURED ALONG EXTERIOR FACE OF PARAPET.
 ALL PARAPET REINFORCING SHALL BE EPOXY COATED.
 FOR LOCATION AND DETAILS OF SIGNAL CONDUIT IN CONCRETE PARAPET, SEE "TYPICAL SECTION" SHEET.
 FOR HANDRAIL AND FENCE DETAILS, SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS" SHEETS.
 FOR ARCHITECTURAL HANDRAIL DETAILS, SEE ARCHITECTURAL FIN RAIL PLANS.
 VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF PARAPET AND IN ACCORDANCE WITH THE SPECIAL PROVISION FOR "CONCRETE PARAPET". THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS.
 E.F. = EACH FACE
 PAYMENT FOR CONCRETE PARAPET SHALL BE INCLUDED IN THE UNIT COST PAY ITEM FOR CONCRETE PARAPET.
 PAY LENGTH = 235.3'

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 1 OF 2



2/22/2018

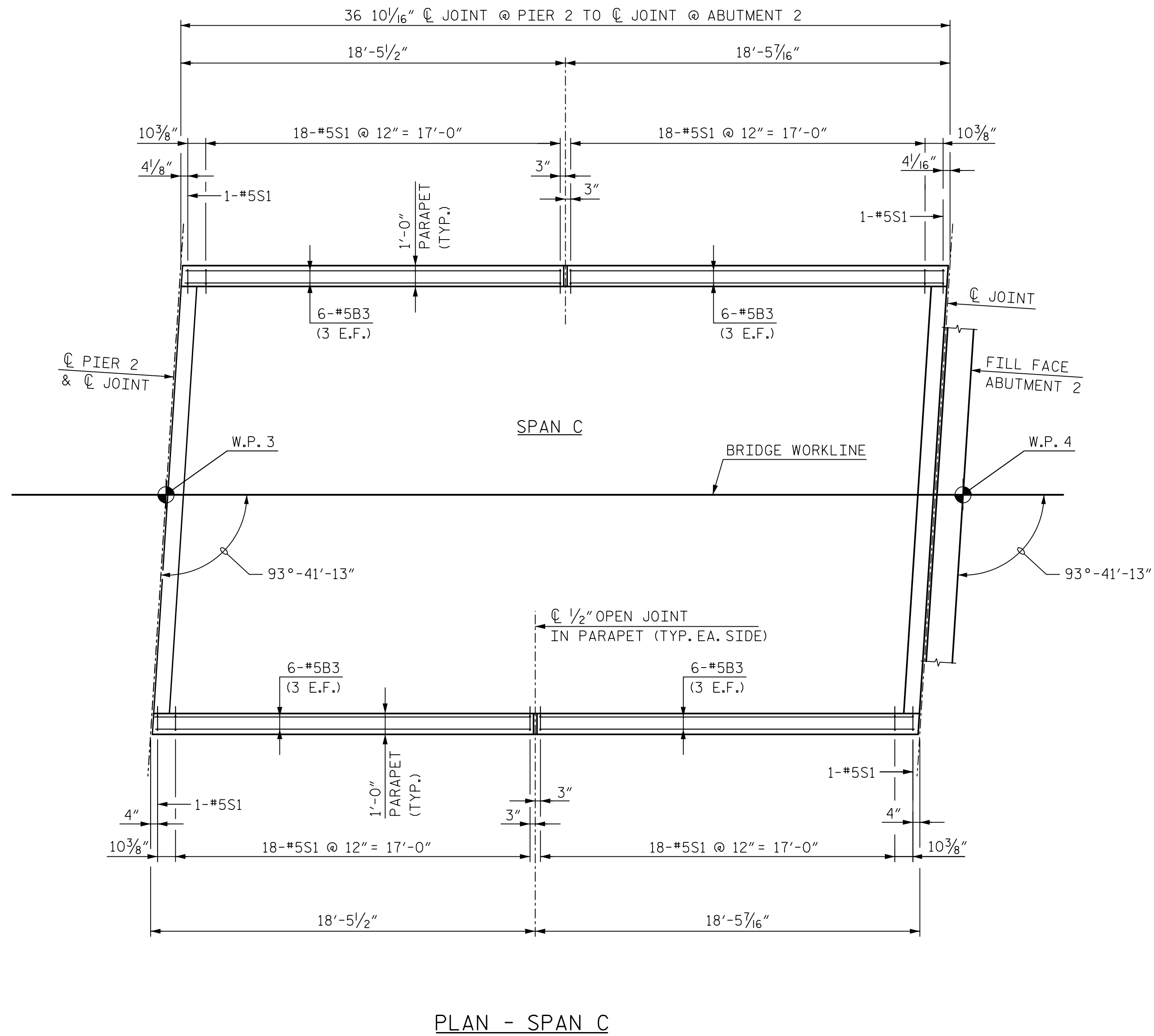
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET DETAILS

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: C. GERDING	DATE: 9/17	DWG. NO. 14	
CHECKED BY: S. TIPPETT	DATE: 9/17		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S2-14
1			3			TOTAL SHEETS
2			4			20

NOTES:
SEE "CONCRETE PARAPET DETAILS (1 OF 2)" SHEET FOR NOTES.

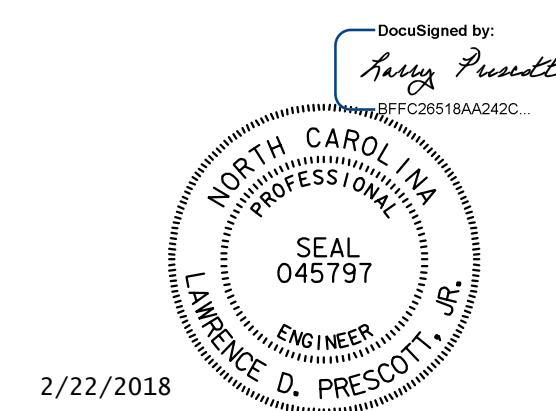


PLAN - SPAN C

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET DETAILS

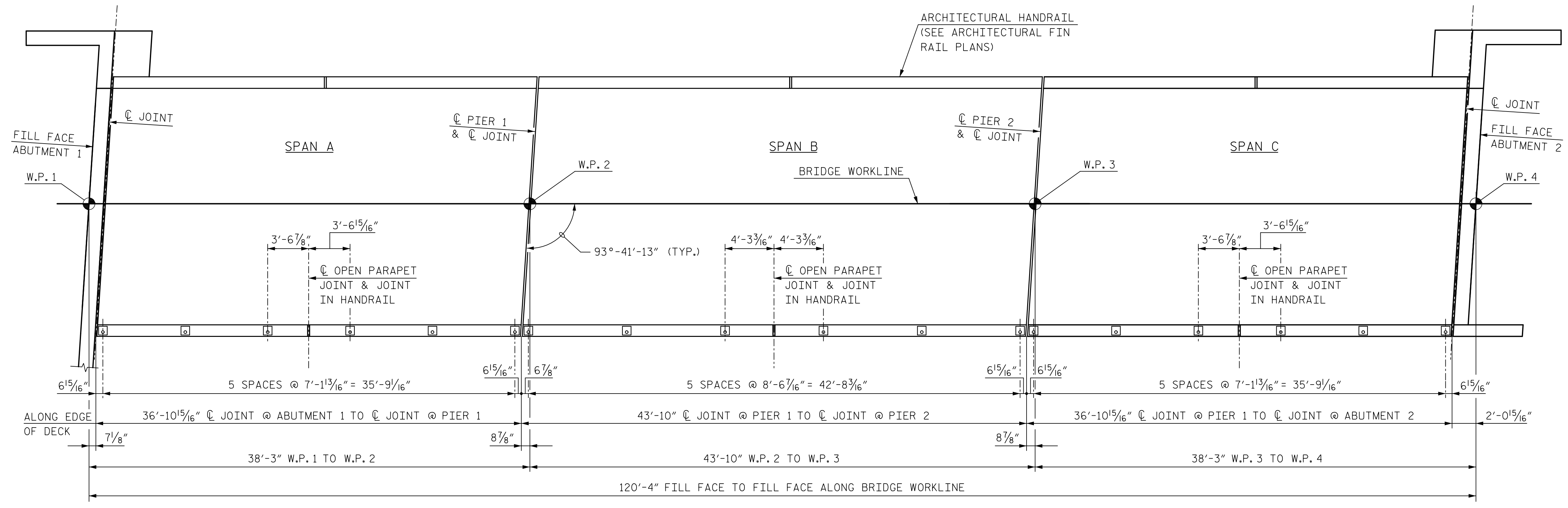


2/22/2018

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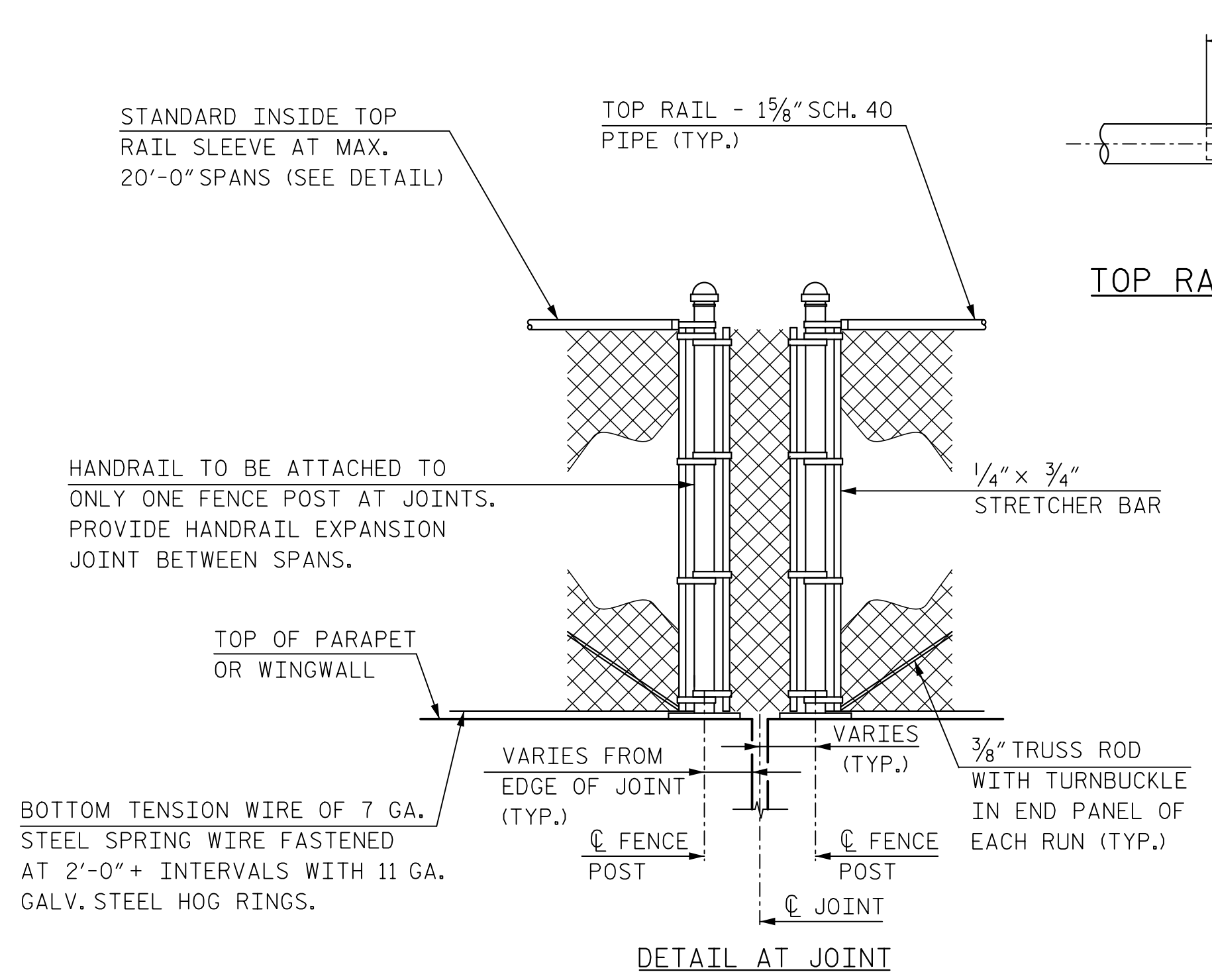
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO.
	NO.	BY	DATE	NO.	BY	DATE
	1		9/17	3		
DRAWN BY <u>C. GERDING</u> DATE <u>9/17</u> CHECKED BY <u>S. TIPPETT</u> DATE <u>9/17</u>	DWG. NO.	15	TOTAL SHEETS	20		

0012DEL_P28

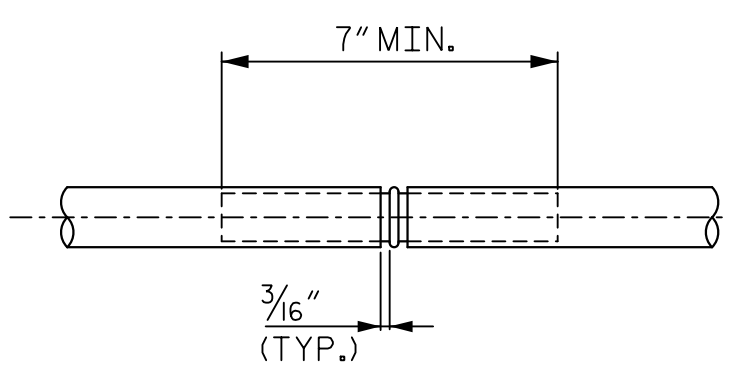


FENCE AND HANDRAIL POST SPACING - BRIDGE AND WINGWALLS

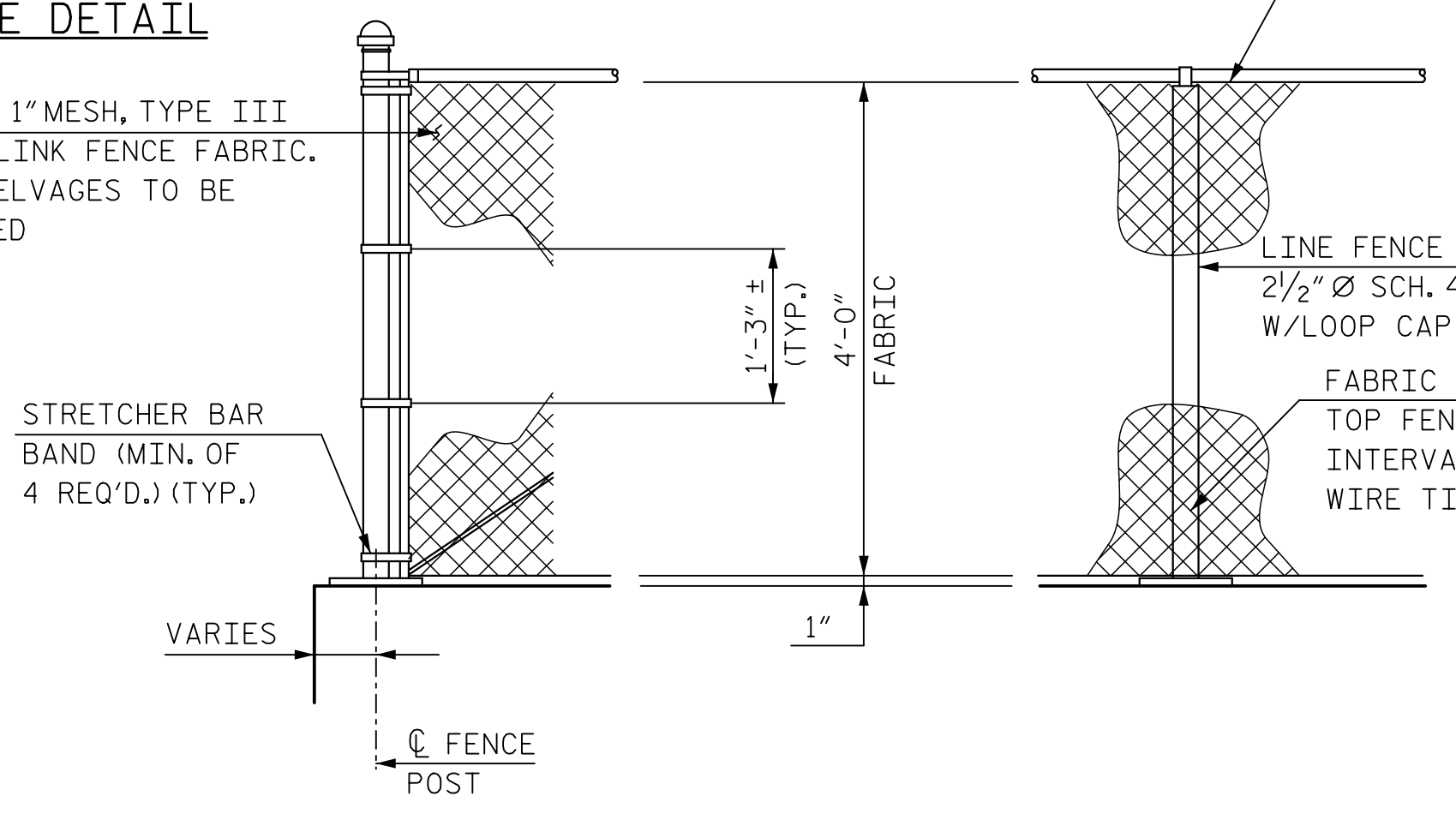
- NOTES:**
- FENCE FRAMEWORK INCLUDING BASE PLATES TO HAVE A FUSION BONDED BLACK VINYL COATING IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM F-1043.
 - FENCE POSTS AND RAIL SHALL BE SCHEDULE 40 STEEL PIPE IN ACCORDANCE WITH ASTM F-1043.
 - PROVISIONS SHALL BE MADE FOR THE DRAINAGE OF WATER FROM INSIDE THE FENCE POSTS.
 - CHAIN LINK FABRIC AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM F-668 AND HAVE A BONDED BLACK FUSION VINYL COATING.
 - MISCELLANEOUS METAL COMPONENTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.
 - EXPANSION/ADHESIVE ANCHORS SHALL BE STAINLESS STEEL IN ACCORDANCE WITH ASTM F-593
 - POST TO BE SET PERPENDICULAR TO TOP OF CURB AND RAILS SHALL BE PLACED PARALLEL TO THE GRADE OF THE BRIDGE.
 - CERTIFIED MILL REPORTS ARE REQUIRED FOR POST, RAIL, AND FENCE FABRIC. SHOP INSPECTION IS NOT REQUIRED.
 - WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE.
 - SEE SHEET 2 OF 2 FOR ADDITIONAL HANDRAIL DETAILS.
 - "SHOP DRAWINGS FOR RAILING/FENCING ARE REQUIRED AND SHALL BE SUBMITTED FOR APPROVAL."



TOP RAIL SLEEVE DETAIL

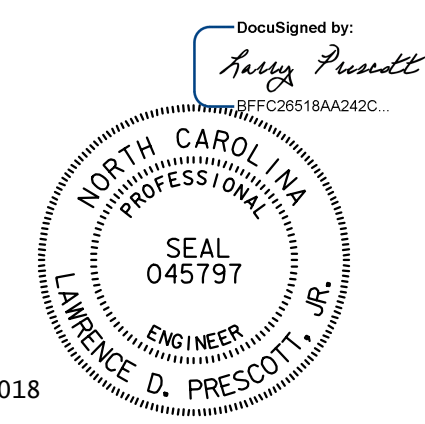


9 GAGE, 1" MESH, TYPE III CHAIN LINK FENCE FABRIC. BOTH SELVAGES TO BE KNUCKLED



DETAILS FOR CHAIN LINK FENCE

DETAIL AT END

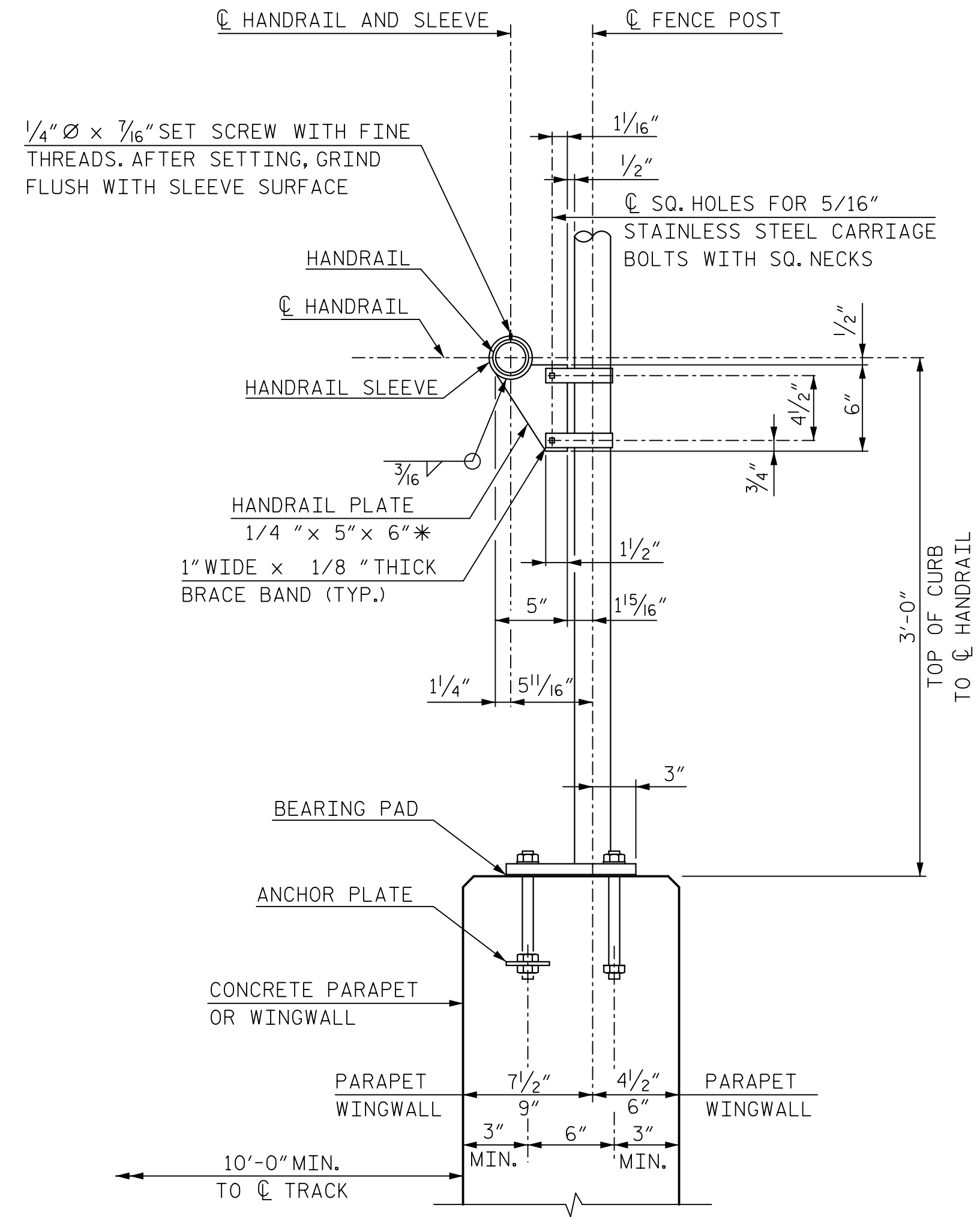


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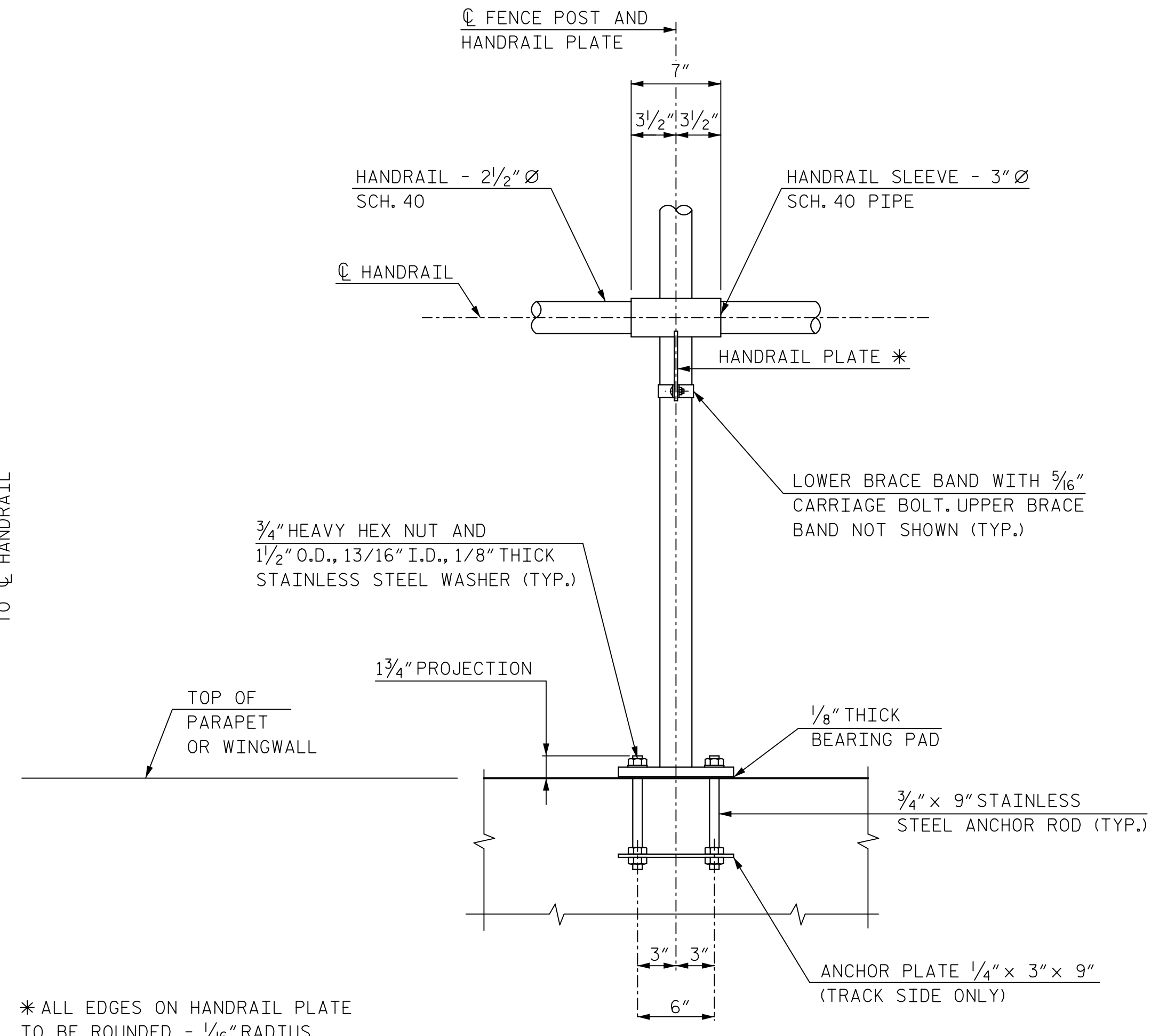
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BRIDGE MOUNTED FENCE
 AND HANDRAIL DETAILS

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S2-16 TOTAL SHEETS 20	
	NO.	BY	DATE	NO.	BY		DATE
	1		9/17	3			
DRAWN BY: C. GERDING CHECKED BY: S. TIPPETT	DATE: 9/17 DATE: 9/17	DWG. NO. 16	2	4	20		



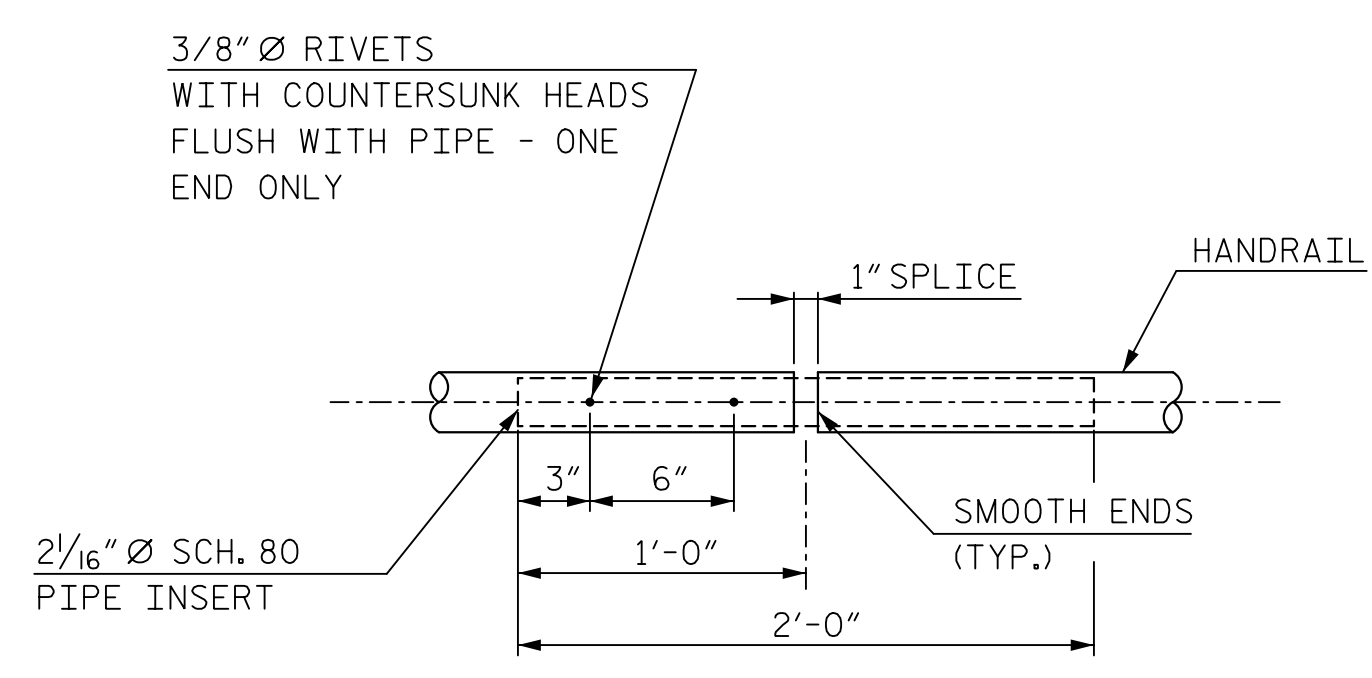
SECTION



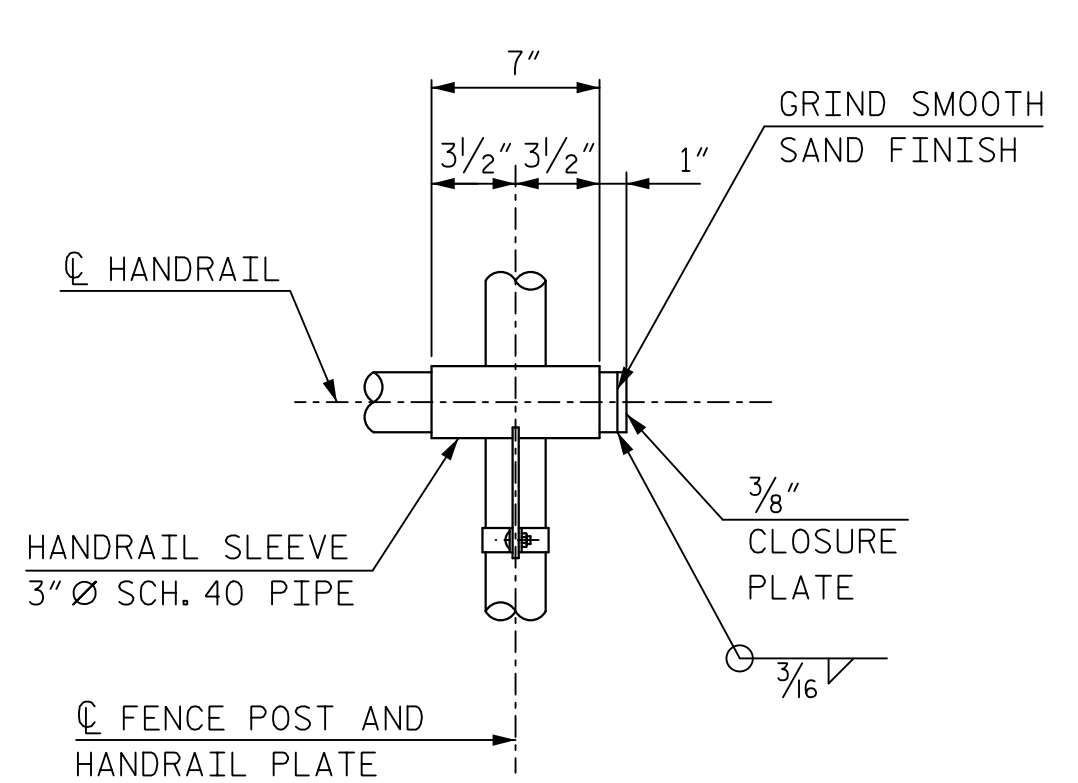
FRONT VIEW

* ALL EDGES ON HANDRAIL PLATE TO BE ROUNDED - 1/16" RADIUS

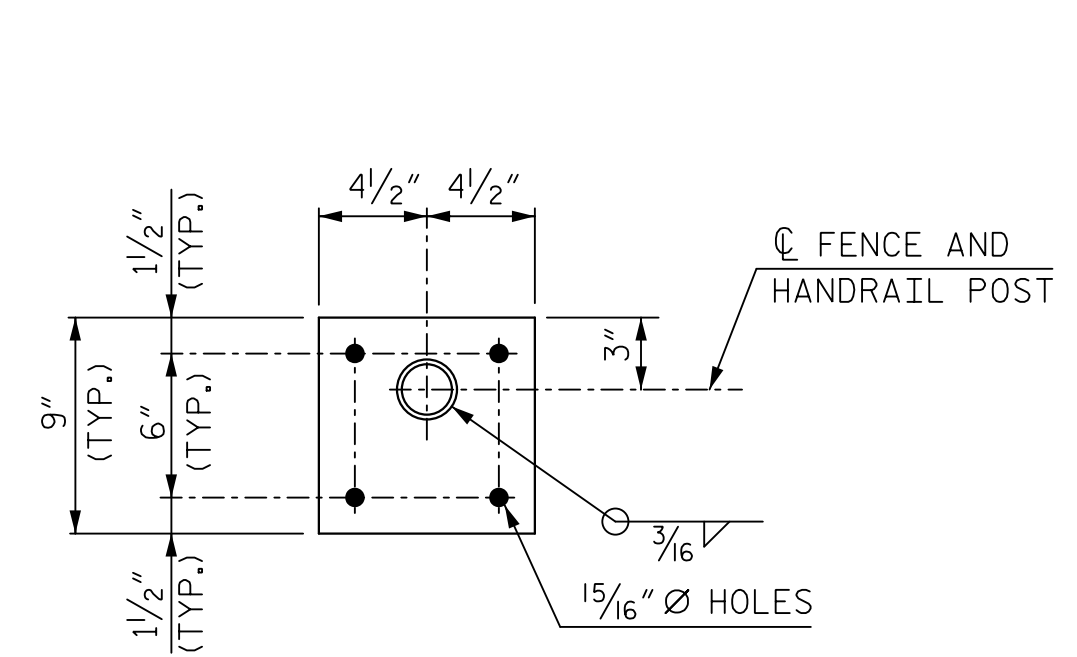
DETAILS FOR PIPE RAILING



HANDRAIL JOINT DETAIL



END CLOSURE DETAIL



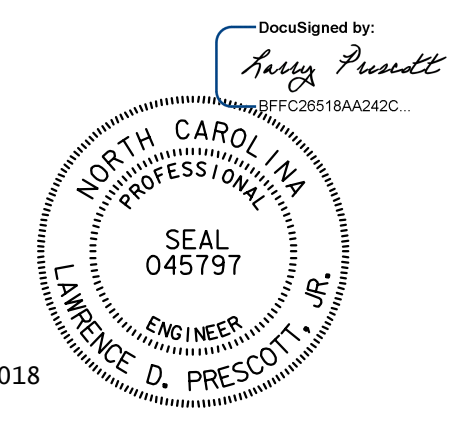
BASE PLATE DETAIL

NOTES:

- SEE "BRIDGE MOUNTED FENCE AND HANDRAIL POST SPACING DETAILS" ON SHEET 1 OF 2 FOR JOINT IN HANDRAIL SPACING.
- ALL HANDRAIL PIPE, SLEEVES, AND EXPANSION JOINTS TO BE SMOOTH AND FREE OF SHARP EDGES.
- HANDRAIL PIPE SHALL BE SCHEDULE 40 STEEL PIPE IN ACCORDANCE WITH ASTM F-1043.
- STAINLESS STEEL BOLTS, NUTS, AND ANCHOR RODS TO BE ASTM A-276, TYPE 304. STAINLESS STEEL WASHERS TO BE ASTM A-276, TYPE 302. ANCHOR ROD THREADS SHALL BE ROLLED, NOT CUT.
- POST TO BE SET PERPENDICULAR TO TOP OF CURB AND RAILS SHALL BE PLACED PARALLEL TO THE GRADE OF THE BRIDGE.
- CERTIFIED MILL REPORTS ARE REQUIRED FOR POST AND RAIL. SHOP INSPECTION IS NOT REQUIRED.
- AFTER ANCHOR BOLT AND OTHER BOLT NUTS HAVE BEEN TIGHTENED, THREADS SHALL BE NICKED TO LOCK NUTS.
- THE BRACE BANDS USED TO SECURE HANDRAIL SLEEVE SHALL BE OF SUCH SIZE NECESSARY TO CLAMP TIGHTLY TO FENCE POST.
- WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS BRIDGE WELDING CODE.
- ANCHOR PLATE SHALL BE STEEL CONFORMING TO ASTM SPECIFICATION A36.
- UPPER ANCHOR ROD NUTS SHALL BE HEAVY HEX NUTS, PER ASTM A276 TYPE 302 OR 304 STAINLESS STEEL.
- LOWER ANCHOR ROD NUTS SHALL BE HEAVY HEX NUTS, PER ASTM A307.
- HANDRAIL, HANDRAIL SLEEVES, AND ALL SUPPORT COMPONENTS TO HAVE A FUSION BONDED BLACK VINYL COATING IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM F-1043.
- "SHOP DRAWINGS FOR RAILING/FENCING ARE REQUIRED AND SHALL BE SUBMITTED FOR APPROVAL."

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 2 OF 2

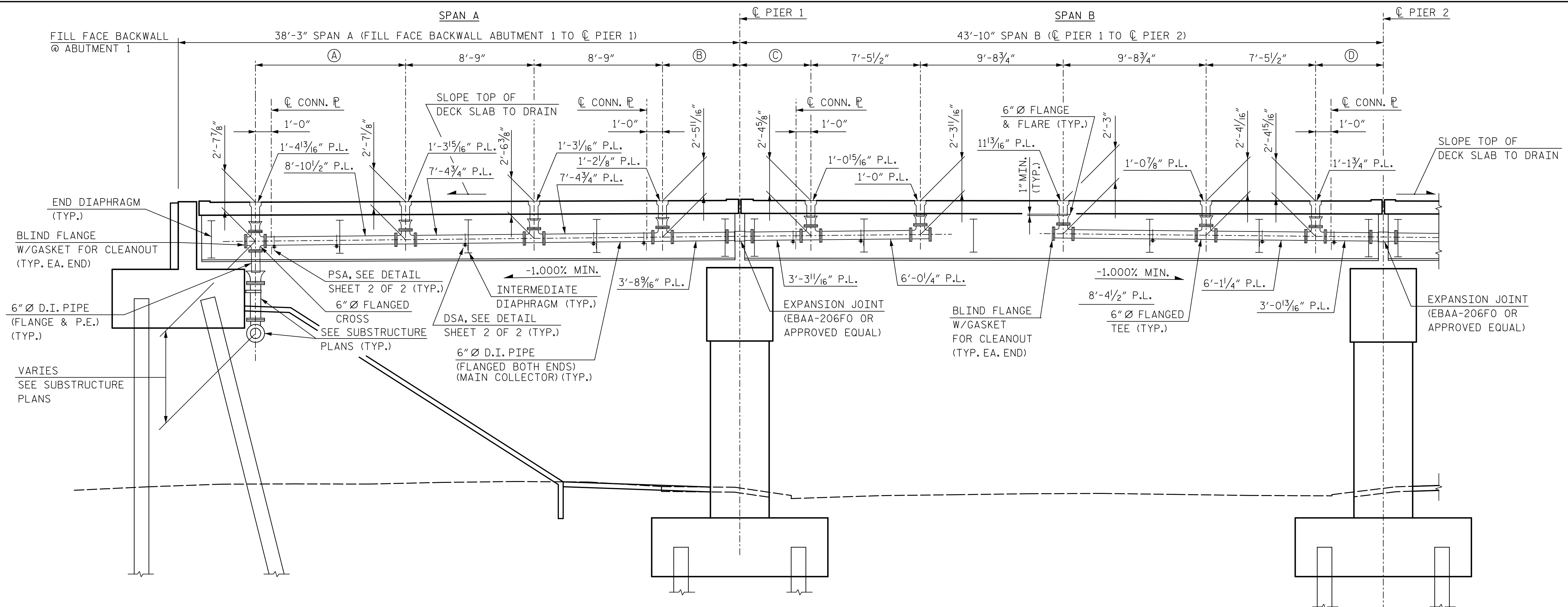


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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BRIDGE MOUNTED FENCE
 AND HANDRAIL DETAILS

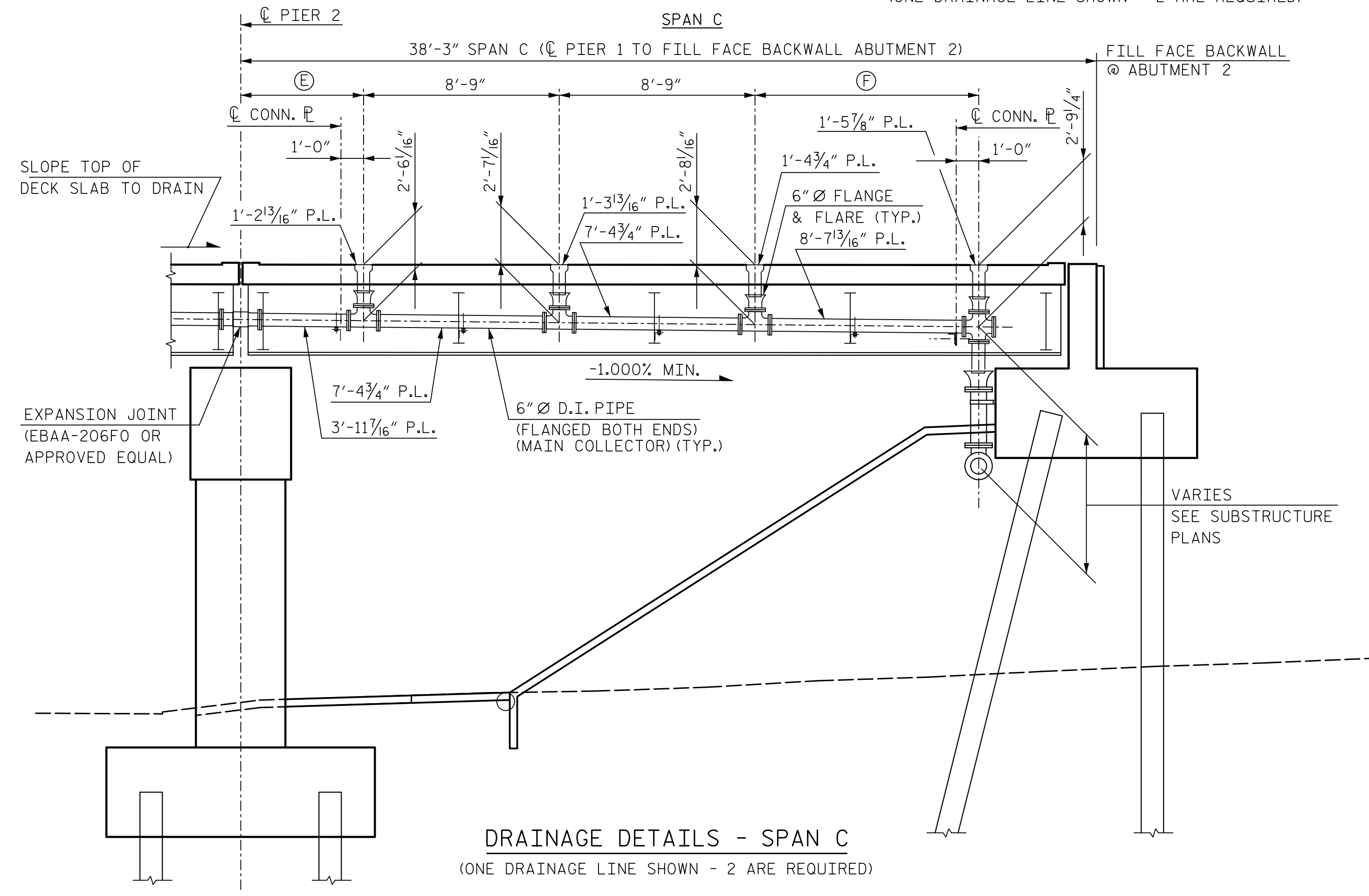
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S2-17		
	NO.	BY	DATE	NO.		BY	DATE
	1		9/17	3			
DRAWN BY: C.GERDING CHECKED BY: S.TIPPETT	DATE: 9/17 DATE: 9/17	DWG. NO. 17	TOTAL SHEETS 20				

0012DEL_P28



DRAINAGE DETAILS - SPANS A & B
(ONE DRAINAGE LINE SHOWN - 2 ARE REQUIRED)

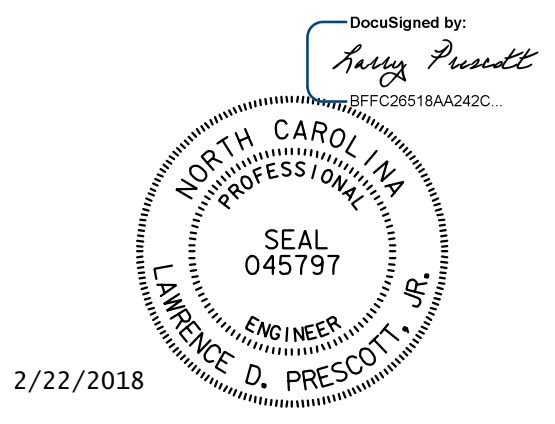
DRAIN LINE DIMENSIONS		
LOCATION	LINE 1	LINE 2
(A)	10'-2 3/4"	11'-1 3/16"
(B)	5'-3 1/8"	4'-4 5/16"
(C)	4'-10 1/8"	5'-8 5/16"
(D)	4'-7 3/8"	3'-8 3/16"
(E)	5'-5 13/16"	6'-4 1/16"
(F)	10'-0 1/16"	9'-1 3/16"



DRAINAGE DETAILS - SPAN C
(ONE DRAINAGE LINE SHOWN - 2 ARE REQUIRED)

NOTES:
ALL DIMENSIONS ARE SUBJECT TO ADJUSTMENTS TO FIT MEASUREMENTS TAKEN AFTER DECKS HAVE BEEN POURED.
D.I. = DUCTILE IRON
P.L. = PIPE LENGTH
P.E. = PLAIN END

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+82.25 -S1-



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NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: C. GERDING DATE: 9/17
CHECKED BY: S. TIPPETT DATE: 9/17

DWG. NO. 19

SHEET 1 OF 2

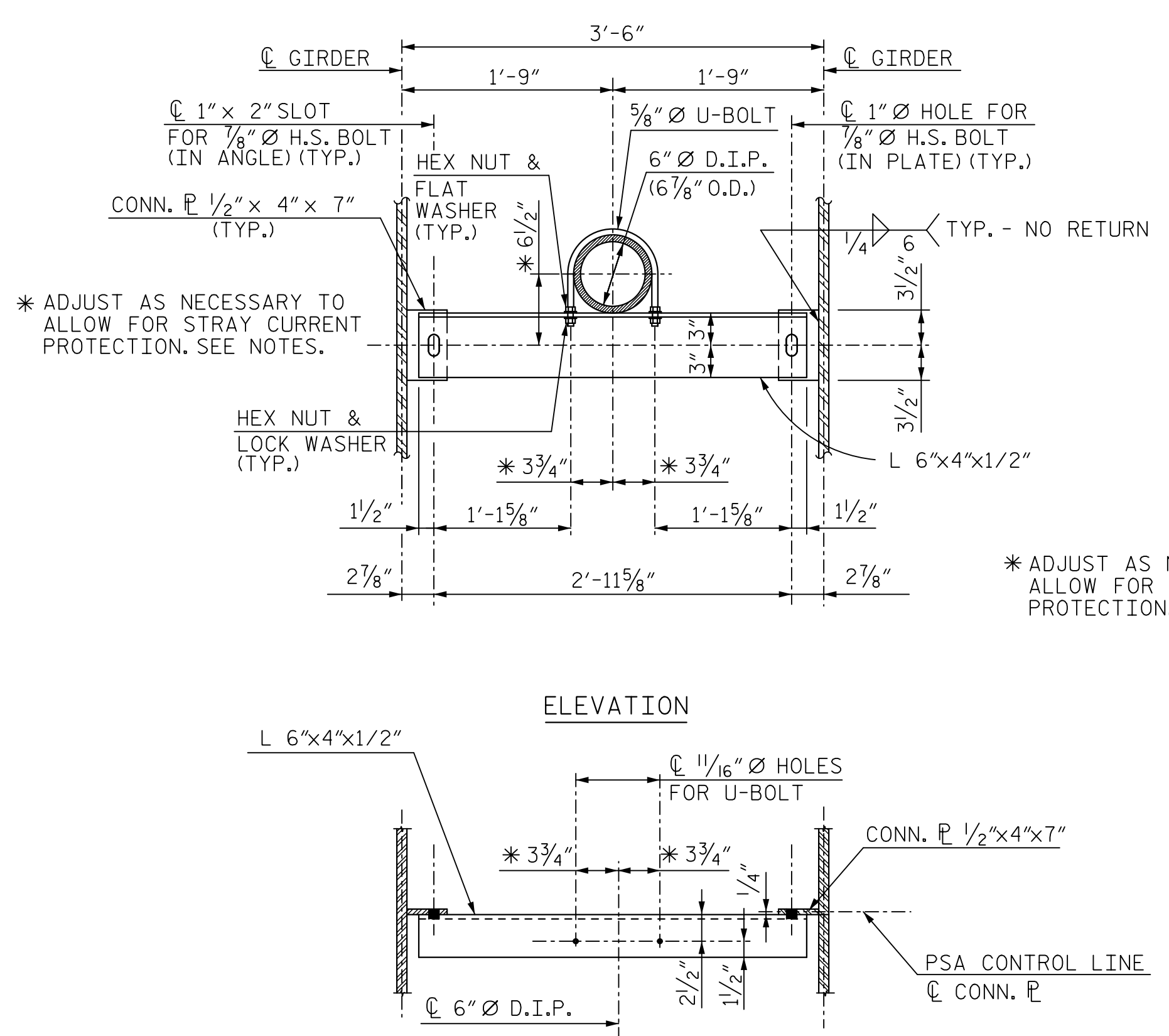
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DRAINAGE DETAILS

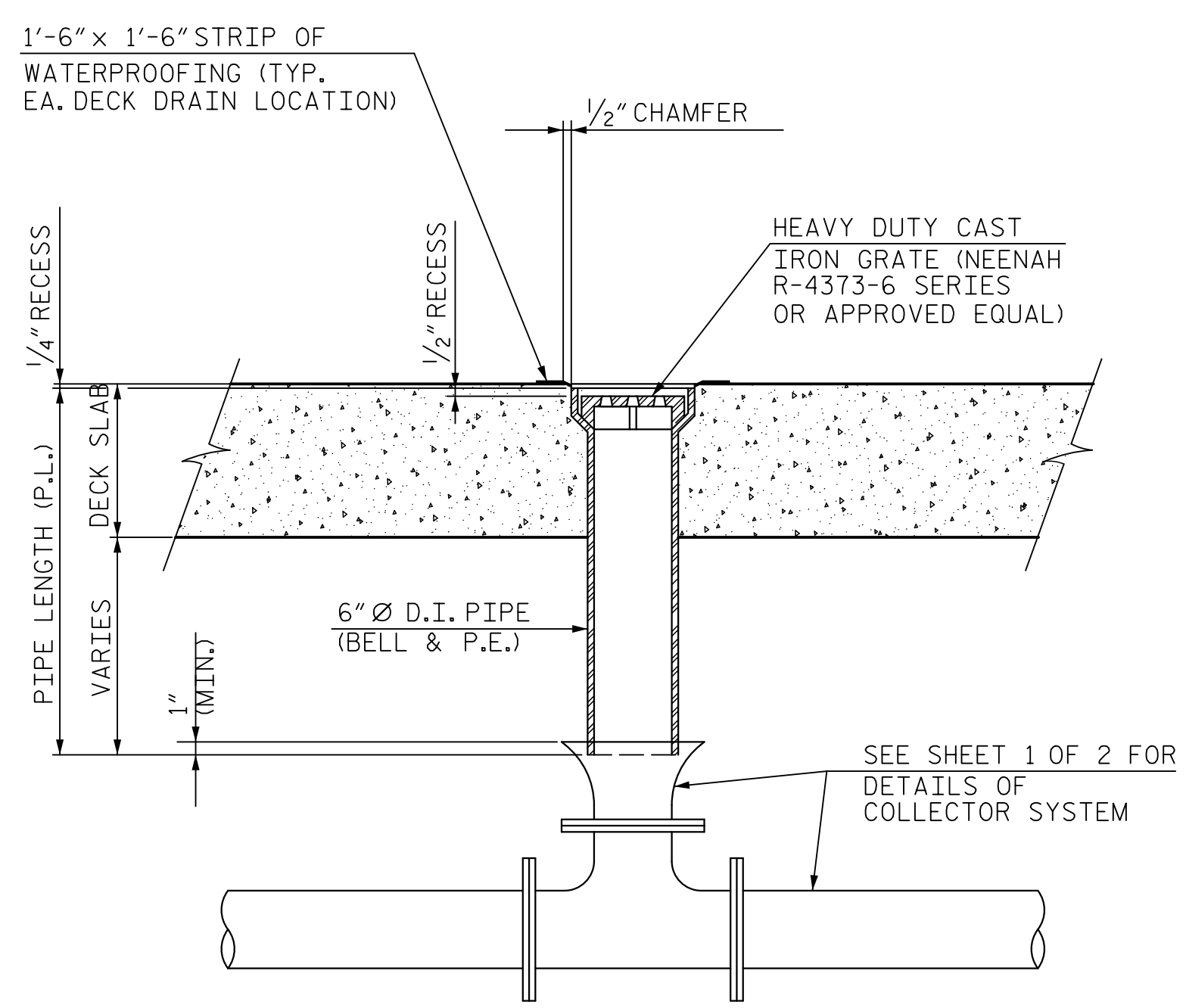
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SHEET NO. S2-19
TOTAL SHEETS 20

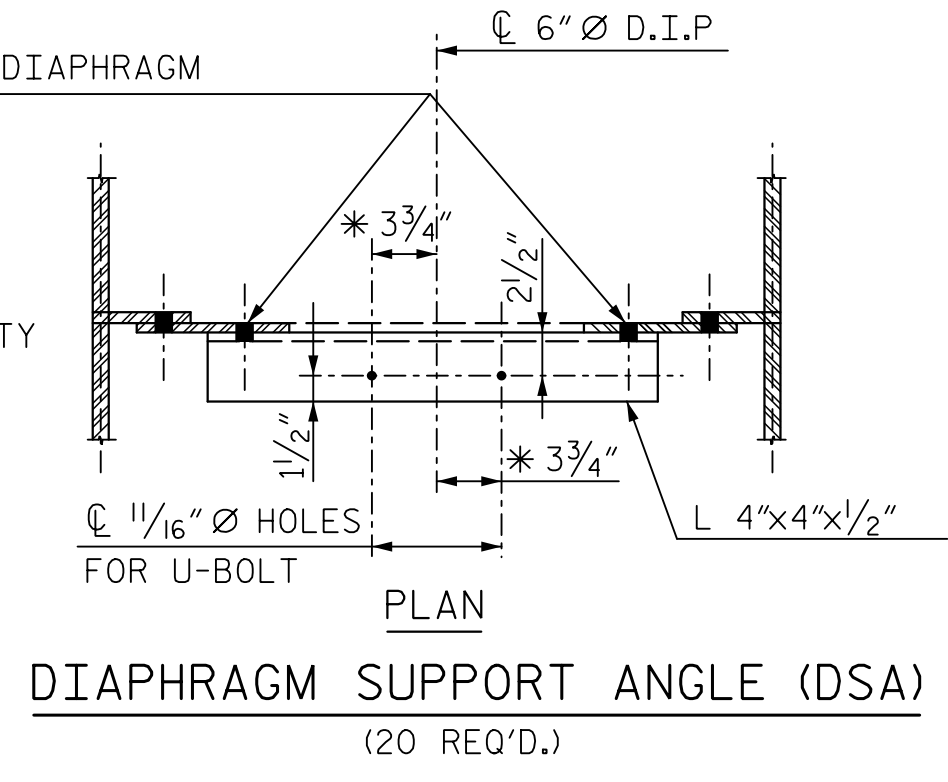
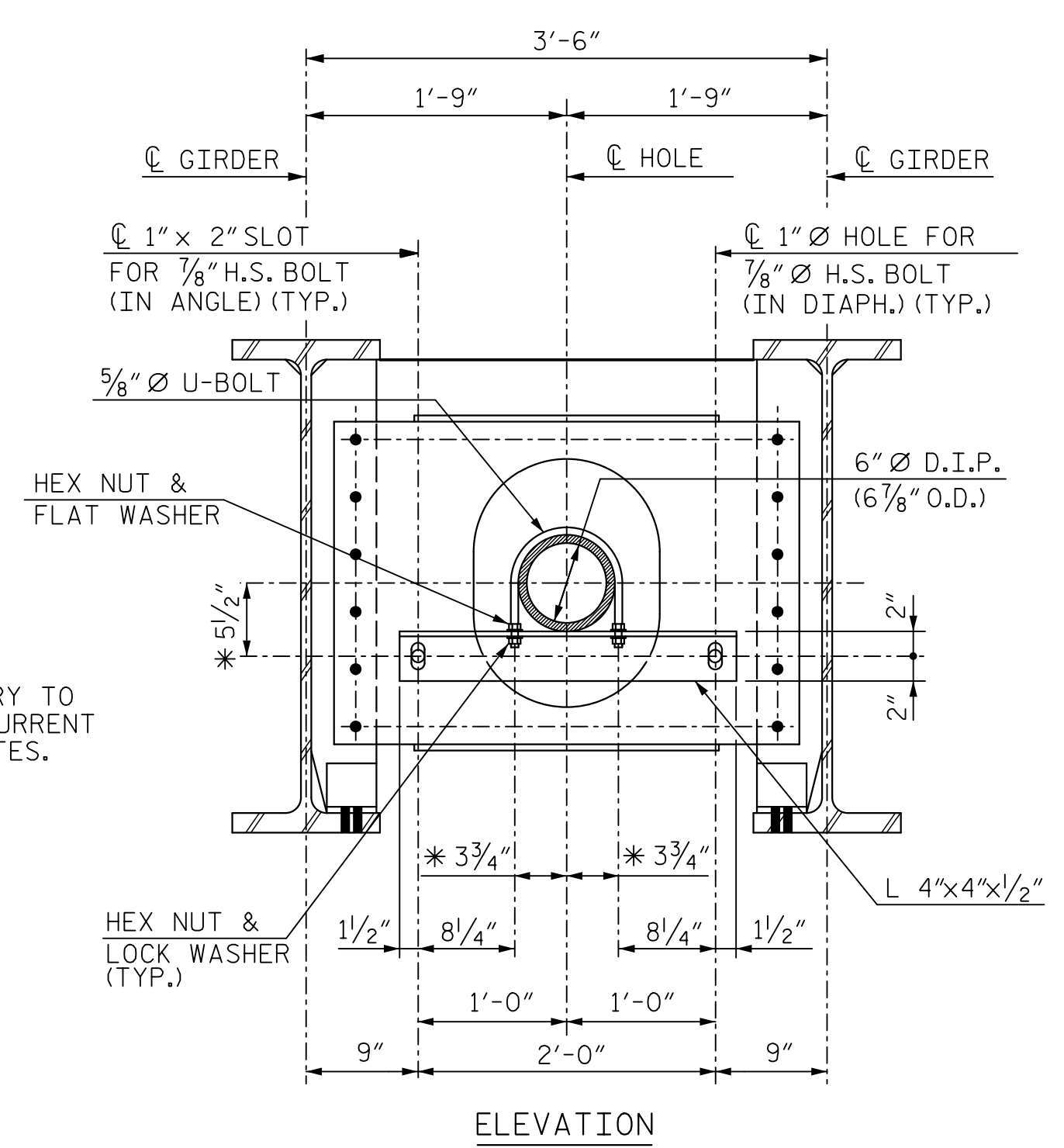
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PIPE SUPPORT ANGLE (PSA)
(12 REQ'D.)

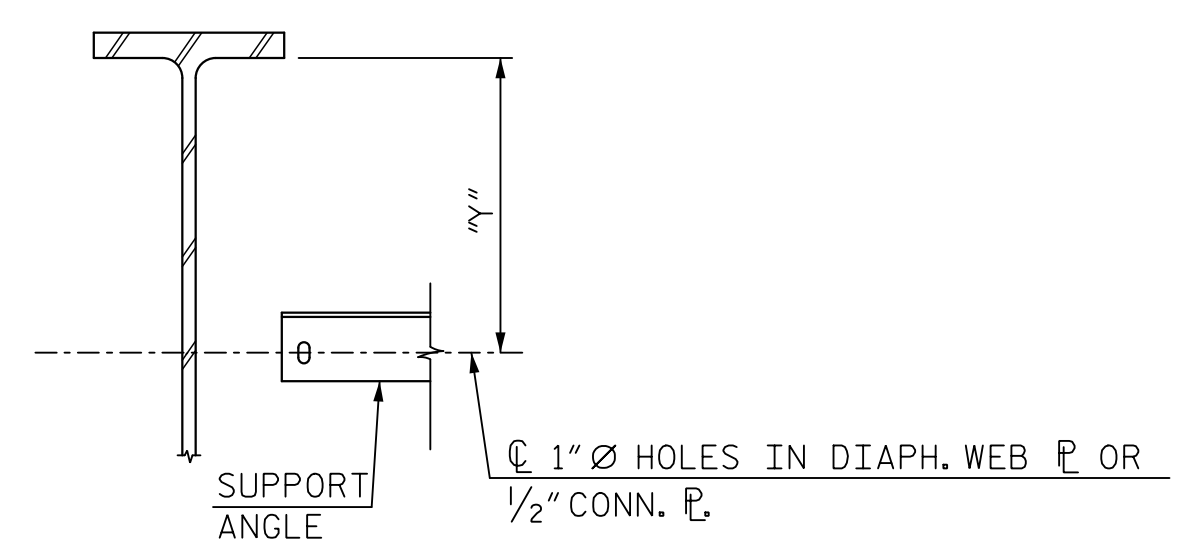


DETAIL B



DIAPHRAGM SUPPORT ANGLE (DSA)
(20 REQ'D.)

NOTE:
DIAPHRAGM FLANGE \bar{P}
NOT SHOWN FOR CLARITY



DETAIL A

DSA	"Y"	DSA	"Y"	DSA	"Y"	PSA	"Y"
A1	2'-2 ⁵ / ₈ "	B1	1'-10 ³ / ₁₆ "	C1	2'-1 ⁵ / ₈ "	A1	2'-4 ¹ / ₁₆ "
A2	2'-1 ¹³ / ₁₆ "	B2	1'-10 ³ / ₁₆ "	C2	2'-2 ⁵ / ₈ "	A2	2'-1 ⁹ / ₁₆ "
A3	2'-0 ¹⁵ / ₁₆ "	B3	1'-11 ⁵ / ₈ "	C3	2'-3 ³ / ₁₆ "	B1	2'-0 ³ / ₈ "
						B2	2'-1 ¹ / ₈ "
						C1	2'-2"
						C2	2'-5 ¹ / ₁₆ "

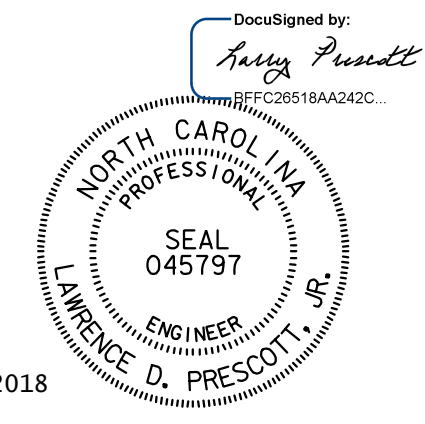
NOTES:

- ALL PIPES, FLANGES AND FITTINGS SHALL BE CLASS 53 DUCTILE IRON.
- ALL BENDS TO BE SHORT RADIUS, INCLUDING FLANGE & FLARE BENDS, UNLESS OTHERWISE NOTED.
- FOR LOCATIONS AND DESIGNATIONS OF DSA & PSA, SEE FRAMING PLAN.
- PIPE LENGTHS SHOWN ALLOW FOR 1/8" THICK GASKETS TO BE USED AT ALL BOLTED FLANGE CONNECTIONS.
- MAKE FINAL PIPE ALIGNMENT AND TIGHTEN U-BOLTS AFTER RAILROAD TRACK HAS BEEN LAID ACROSS THE BRIDGE.
- PAYMENT FOR ALL MATERIALS, FABRICATION, INSTALLATION AND ADJUSTMENTS RELATED TO STRUCTURE DRAINAGE SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR "STRUCTURE DRAINAGE SYSTEM". NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE FOR ANY COMPONENT OF THE STRUCTURE DRAINAGE SYSTEM INCLUDING, BUT NOT LIMITED TO:
 - DUCTILE IRON PIPE AND FITTINGS AND CAST IRON GRATES
 - GASKETS AND PVC OR NEOPRENE COATED STRIPS
 - STEEL SUPPORT ANGLES AND PLATES
 - U-BOLTS AND H.S. BOLTS, WASHERS AND NUTS
 - OFFSET PIPE CLAMPS AND EXPANSION ANCHOR BOLTS
 - EXPANSION JOINT
 - BALL JOINT
- PROVIDE PVC OR NEOPRENE-COATED STRIPS, EPOXY-CEMENTED TO THE U-BOLT OR PIPE FOR STRAY CURRENT PROTECTION.
- THE OUTSIDE COATING FOR D.I. PIPE SHALL BE PAINTED WITH A SHOP PRIME COAT OF INORGANIC ZINC PRIMER AND A FINISH (FIELD) COATING OF ACRYLIC PAINT AS SPECIFIED FOR THE STRUCTURAL STEEL.
- FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

STRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGED BOTH ENDS)	FEET	163.3
6" I.D. DUCTILE IRON PIPE, CLASS 53 (BELL & P.E.)	FEET	32
6" I.D. DUCTILE IRON PIPE FLANGED FITTINGS, 250 psi P.R.	LBS	3690
6" I.D. DUCTILE IRON BLIND FLANGES	LBS	200
EXPANSION JOINT	EA.	4
HEAVY DUTY CAST IRON GRATES	EA.	26
PIPE SUPPORT ANGLES (PSA) *	EA.	12
DIAPHRAGM SUPPORT ANGLES (DSA) *	EA.	18

* INCLUDES U-BOLTS, ANGLES, NUTS, BOLTS, WASHERS AND PLATES.

DRAINAGE QUANTITIES PROVIDED ARE FOR SUPERSTRUCTURE ONLY. FOR SUBSTRUCTURE QUANTITIES, REFER TO "BRIDGE ON TRACK 2 OVER W 5TH. STREET" PLANS.



2/22/2018

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PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+82.25 -S1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

DRAINAGE DETAILS

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S2-20 TOTAL SHEETS 20		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
DRAWN BY: C. GERDING CHECKED BY: S. TIPPETT	DATE: 9/17 DATE: 9/17	DWG. NO. 20	2	4			

18+00

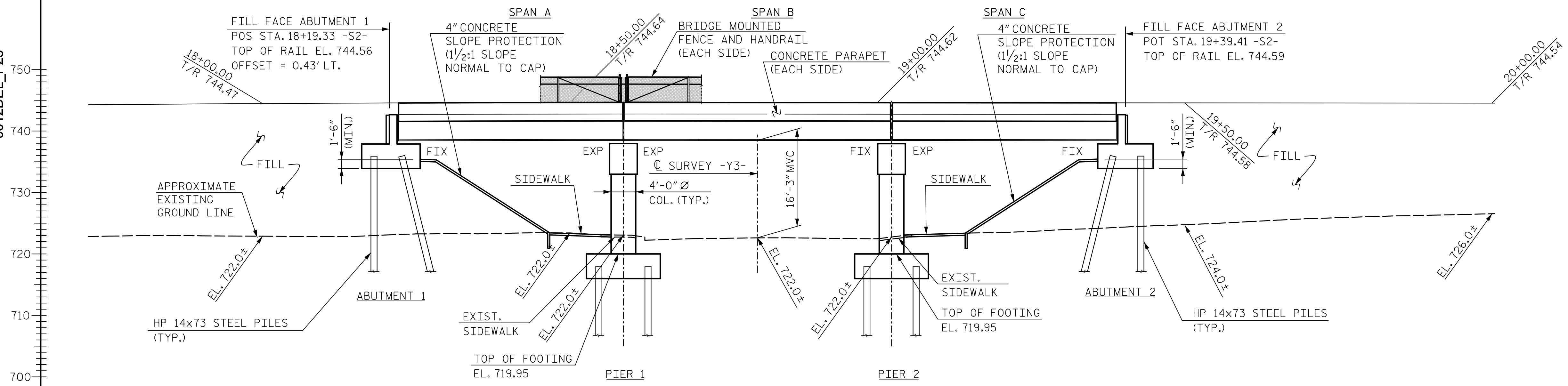
+50

19+00

+50

20+00

0012DEL_P28



SECTION ALONG Q SURVEY -S2-
(ABUTMENTS AND PIERS ON SECTION AT RIGHT ANGLES TO ABUTMENTS AND PIERS)

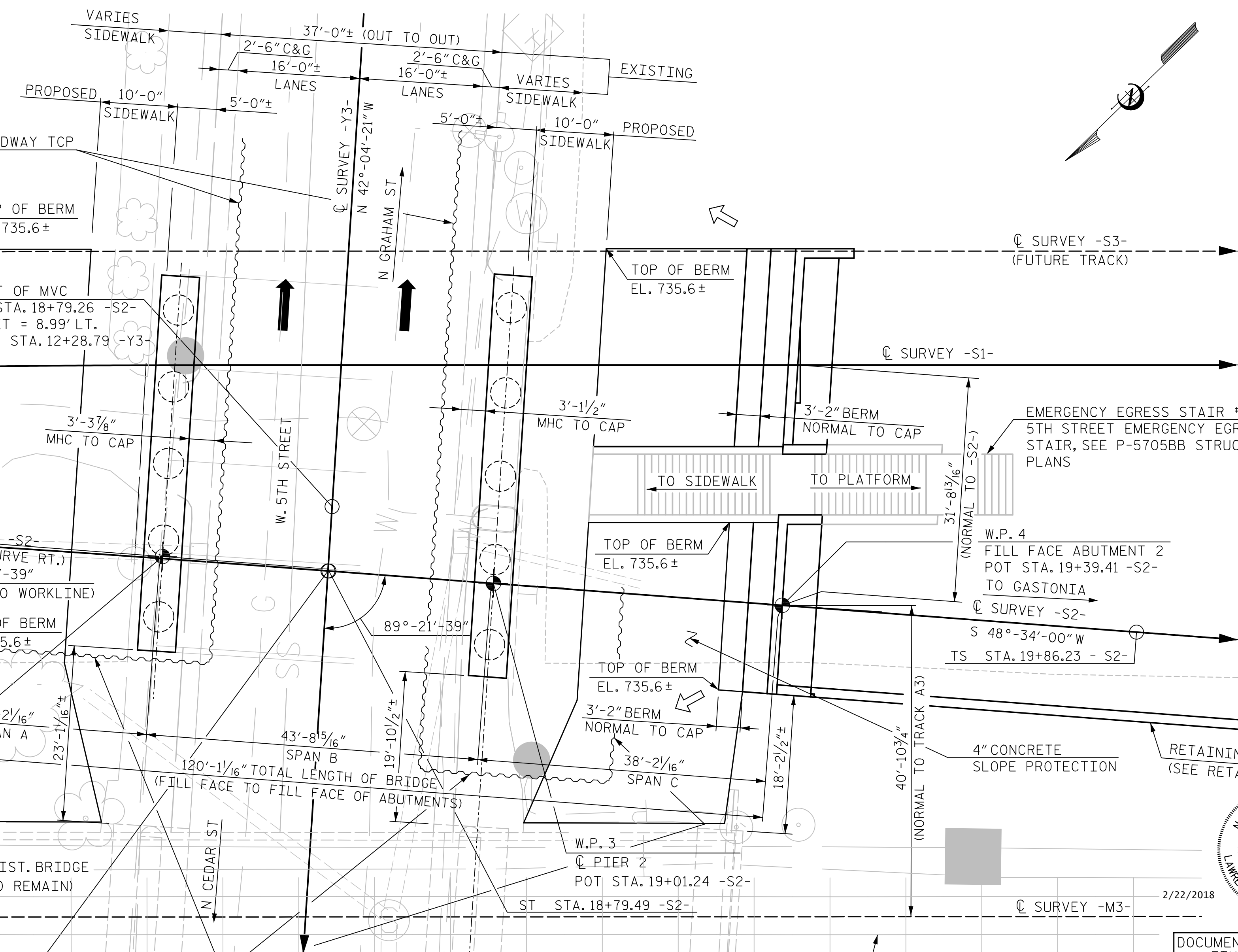
NOTES:
SEE "GENERAL DRAWING: GENERAL NOTES (SHEET 5 OF 5)" FOR GENERAL NOTES.
MVC = MINIMUM VERTICAL CLEARANCE
MHC = MINIMUM HORIZONTAL CLEARANCE
← STRUCTURE DRAINAGE OUTLET LOCATION AND DIRECTION.

-S2- TRACK CURVE DATA

PI STA. 17+69.25	PIs STA. 18+38.16
$\Delta = 4^{\circ}-06'-12.7''$ (RT.)	$\Theta_s = 1^{\circ}-19'-01.9''$ (RT.)
$D = 4^{\circ}-15'-00.0''$	$L_s = 62.00'$
$L = 96.55'$	$LT = 41.33'$
$T = 48.31'$	$ST = 20.67'$
$R = 1,348.45'$	

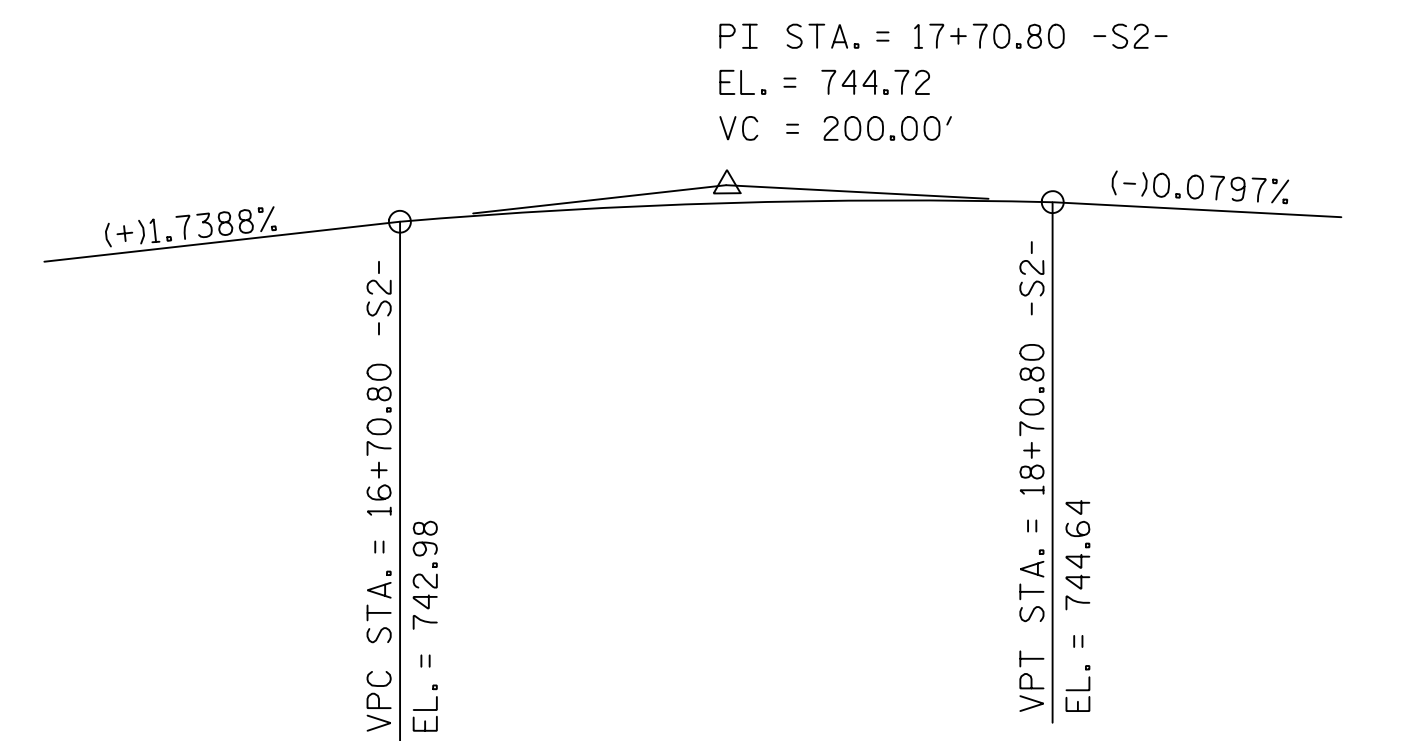
SEE ROADWAY PLANS FOR EXISTING PAVEMENT ELEVATIONS.

GRADE DATA -Y3-



PLAN

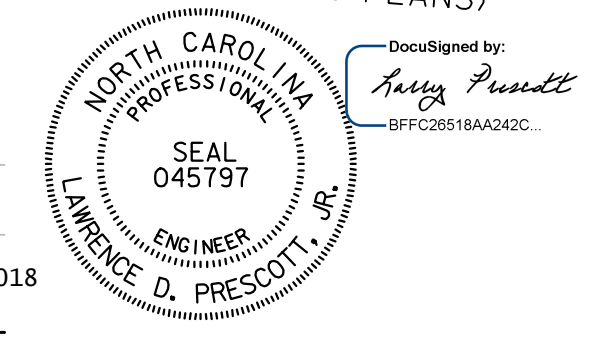
NOTES: PILES NOT SHOWN FOR CLARITY.
ALL ABUTMENTS AND PIERS ARE PARALLEL.



GRADE DATA -S2-

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2- =
POT STA. 12+37.78 -Y3-
MILE POST: NS 377.55
BRIDGE NO. _____

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
BRIDGE ON TRACK 2
OVER W 5TH STREET
BETWEEN W TRADE STREET
AND W 6TH STREET



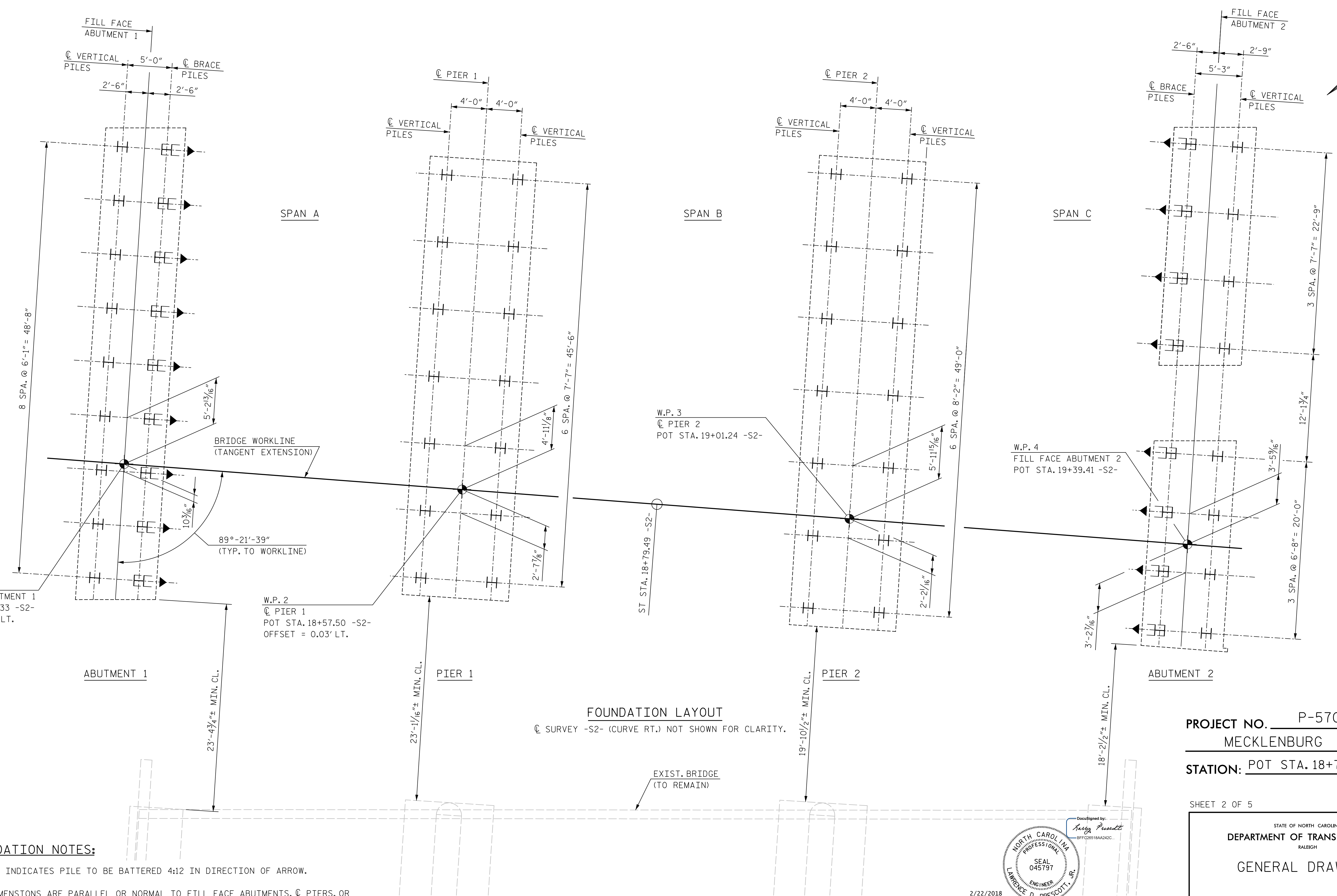
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NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT DATE: 2/17
CHECKED BY: V. KOLLIPARA DATE: 2/17

DWG. NO. 1

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-1
1			3			TOTAL SHEETS
2			4			42

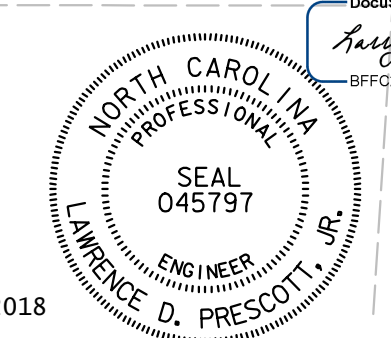


FOUNDATION LAYOUT

☉ SURVEY -S2- (CURVE RT.) NOT SHOWN FOR CLARITY.

FOUNDATION NOTES:

- ◀ INDICATES PILE TO BE BATTERED 4:12 IN DIRECTION OF ARROW.
- ALL DIMENSIONS ARE PARALLEL OR NORMAL TO FILL FACE ABUTMENTS, ☉ PIERS, OR WORKLINE.
- ALL PILES ARE STEEL HP 14x73.
- ALL DIMENSIONS TO BATTERED PILES ARE AT BOTTOM OF CAP ELEVATION.
- FOR FOUNDATION NOTES, SEE SHEET 3 OF 5.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOUNDATION LAYOUT

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: C. GERDING	DATE: 10/17	DWG. NO. 2	
CHECKED BY: J. VECLITCH	DATE: 10/17		

REVISIONS				SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

TOTAL SHEETS: 42

0012DEL_P28

FOUNDATION NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISION.

PILES AT ABUTMENT 1 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 90 TONS PER PILE.

DRIVE PILES AT ABUTMENT 1 TO A REQUIRED BEARING CAPACITY OF 180 TONS PER PILE.

PILES AT ABUTMENT 2 LEFT ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 105 TONS PER PILE.

DRIVE PILES AT ABUTMENT LEFT 2 TO A REQUIRED BEARING CAPACITY OF 210 TONS PER PILE.

PILES AT ABUTMENT 2 RIGHT ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 100 TONS PER PILE.

DRIVE PILES AT ABUTMENT 2 RIGHT TO A REQUIRED BEARING CAPACITY OF 200 TONS PER PILE.

PILES AT PIER 1 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 135 TONS PER PILE.

DRIVE PILES AT PIER 1 TO A REQUIRED BEARING CAPACITY OF 270 TONS PER PILE.

PILES AT PIER 2 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 135 TONS PER PILE.

DRIVE PILES AT PIER 2 TO A REQUIRED BEARING CAPACITY OF 270 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE AT ABUTMENT 1, PIER 1, PIER 2 AND ABUTMENT 2 WITH THE PDA DURING DRIVING, RESTRICTING, OR REDRIVING IS REQUIRED AT THIS SITE. FOR PDA TESTING, SEE GEOTECHNICAL SPECIAL PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20,000 TO 40,000 FT-LBS. PER BLOW WILL BE REQUIRED TO DRIVE PILES AT THIS SITE. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH THE GEOTECHNICAL SPECIAL PROVISION.

FOR FOUNDATION ELEVATIONS AND DETAILS, SEE PIER AND ABUTMENT DETAILS.

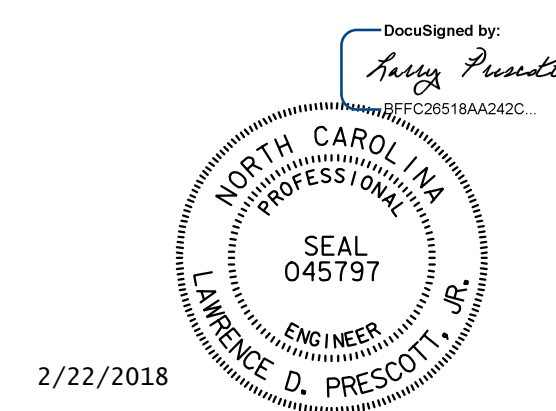
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOUNDATION NOTES



2/22/2018

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS						SHEET NO.
	NO.	BY	DATE	NO.	BY	DATE	S3-3
	1		10/17	3			TOTAL SHEETS
DRAWN BY <u>C. GERDING</u>	DATE <u>10/17</u>	DWG. NO. <u>3</u>	2		4	42	
CHECKED BY <u>J. VECLITCH</u>	DATE <u>10/17</u>						

0012DEL_P28

GENERAL NOTES:

ASSUMED LIVE LOAD = AREMA E80 OR ALTERNATE LIVE LOAD

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 EDITION OF AREMA'S "MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES", AND NORFOLK SOUTHERN CORPORATION'S "GUIDELINES FOR DESIGN OF HIGHWAY SEPARATION STRUCTURES UNDER RAILROAD (UNDERPASS GRADE SEPARATION)"

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 EDITION OF AREMA'S "MANUAL FOR RAILWAY ENGINEERING, VOL. 2, CH. 9, SEISMIC DESIGN FOR RAILWAY" FOR SOIL SITE CLASS OF C PER RECOMENDATION OF THE GEOTECHNICAL ENGINEER OF RECORD.

REINFORCING STEEL SHALL BE ASTM DESIGNATION A615, GRADE 60. ALL DIMENSIONS RELATING TO BAR SPACING ARE TO BAR CENTERS UNLESS NOTED. FABRICATION TO BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE", A.C.I. 315-80. ALL REINFORCING IN THE CONCRETE DECK SLAB AND PARAPETS SHALL BE EPOXY COATED.

EXPANSION JOINT MATERIAL SHALL BE EITHER RUBBER OR CORK CONFORMING WITH AASHTO SPECIFICATIONS M-153-84 EXCEPT AS SHOWN ON THE PLANS OR IN THE SPECIAL PROVISIONS. CELLULAR AND BULB TYPE WATERSTOPS AND RUBBER JOINT COMPOUNDS SHALL BE AS SHOWN ON THE PLANS AND IN THE SPECIAL PROVISIONS.

STRUCTURE DRAINAGE SYSTEM: METAL DRAINS BEHIND ABUTMENTS AND IN BALLAST TROUGH OF BRIDGE, INCLUDING DUCTILE IRON PIPE COLLECTOR SYSTEM, SHALL BE AS SHOWN ON THE PLANS AND OUTLINED IN THE SPECIAL PROVISIONS. DETAILS OF THE DRAINAGE SYSTEM SHALL BE SUBMITTED TO THE CHIEF ENGINEER BRIDGES AND STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, GA. FOR APPROVAL.

DAMPPOOFING: PIER COLUMNS UP TO GROUND LINE, BACK OF BACKWALLS AND ABUTMENT SEATS, BACK OF WINGS AND BACK OF U-WALLS SHALL BE DAMPPOOFED WITH METHOD "B" DAMPPOOFING.

WATERPROOFING: BRIDGE DECK AND ALL CONSTRUCTION JOINTS WHICH WILL BE COVERED BY FILL SHALL BE WATERPROOFED WITH A COLD LIQUID-APPLIED ELASTOMERIC MEMBRANE. FOR WATERPROOFING, SEE SPECIAL PROVISIONS.

WATERPROOFING IS REQUIRED AT THE FOLLOWING LOCATIONS:

1. BRIDGE DECK AND INSIDE OF CONCRETE PARAPET AS SHOWN ON DWG. NO. 6 "TYPICAL SECTION".
2. ALONG FULL CIRCUMFERENCE OF EACH BOTTOM OF COLUMN TO TOP OF FOOTING INTERFERFACE.
3. ALONG FILL FACE OF HORIZONTAL CONSTRUCTION JOINT AT TOP OF FOOTING ELEVATION AT EACH ABUTMENT.
4. BACK OF STAIR U-WALLS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", JANUARY 2012, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (HEREIN CALLED STANDARD SPECIFICATIONS), EXCEPT AS NOTED HEREIN, ELSEWHERE ON PLANS, OR IN THE SPECIAL PROVISIONS (STRUCTURAL STEEL IN ACCORDANCE WITH CURRENT AREMA SPECIFICATIONS).

ALL CONCRETE SHALL BE 4,500 PSI CLASS AA CONCRETE PER SECTION 1000 OF THE NCDOT SPECIFICATIONS WITH NO. 57 OR 67 COARSE AGGREGATE AND SHALL BE AIR-ENTRAINED. MINIMUM CEMENT CONTENT PER CUBIC YARD OF CONCRETE SHALL BE 6.5 BAGS. NO SUBSTITUTION OF FLYASH, BLAST FURNACE SLAG OR OTHER MATERIAL WILL BE PERMITTED IN MEETING THIS MINIMUM CEMENT REQUIREMENT. CHAMFER ALL EXPOSED EDGES AND CORNERS 3/4" EXCEPT AS NOTED. THE USE OF GROUND GRANULATED BLAST FURNACE SLAG IS NOT PERMITTED IN THIS STRUCTURE.

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

CONTROL OF WORK: ALL WORK INVOLVED IN THE CONSTRUCTION OF THE RAILWAY STRUCTURE SHALL BE PERFORMED SATISFACTORY TO THE ENGINEER AND COMPLIANT WITH THE DESIGN STANDARDS OF NORFOLK SOUTHERN RAILWAY COMPANY. ALL METHODS OF HANDLING THE WORK AFFECTING THE SAFETY OF RAIL OPERATIONS MUST BE APPROVED BY THE RAILWAY COMPANY, AS A SUBMITTAL THROUGH THE ENGINEER, AT LEAST TWO WEEKS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. RAIL TRAFFIC SHALL, AT ALL TIMES, BE MAINTAINED AND PROTECTED. THE CONTRACTOR SHALL NOT AT ANY TIME DELAY OR INTERFERE WITH RAIL OPERATIONS.

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

FOR METAL RAIL (STEEL) AND FENCE, SEE SPECIAL PROVISIONS.

FOR METAL RAIL (ALUMINUM), SEE SPECIAL PROVISIONS.

FOR SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

FOR CONDUIT IN PARAPETS, SEE SPECIAL PROVISIONS.

FOR PORTLAND CEMENT, SEE SPECIAL PROVISIONS.

FOR FINE AND COARSE AGGREGATE, SEE SPECIAL PROVISIONS.

SEE "STRUCTURAL STEEL DETAILS" SHEET FOR STRUCTURAL STEEL NOTES.

FOR BACKFILL BEHIND ABUTMENTS AND OTHER BACKFILL AROUND THE STRUCTURE, SEE SPECIAL PROVISION "BACKFILLING AROUND STRUCTURES".

FOR PAINTING STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR WATERSTOPS, SEE SPECIAL PROVISIONS.

FOR ELASTOMERIC FLASHING, SEE SPECIAL PROVISIONS.

FOR RUBBER JOINT COMPOUNDS, SEE SPECIAL PROVISIONS.

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR RAILROAD TRACKWORK, SEE RAILROAD TRACKWORK PLANS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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.

FOR CONCRETE PARAPET, SEE SPECIAL PROVISIONS.

FOR WATERPROOFING, SEE SPECIAL PROVISIONS.

FOR TEMPORARY SHORING, SEE SPECIAL PROVISIONS.

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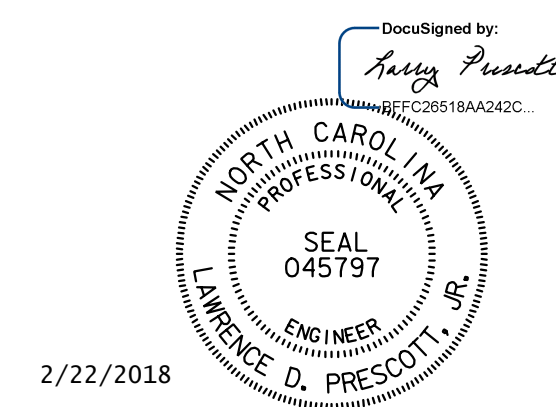
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

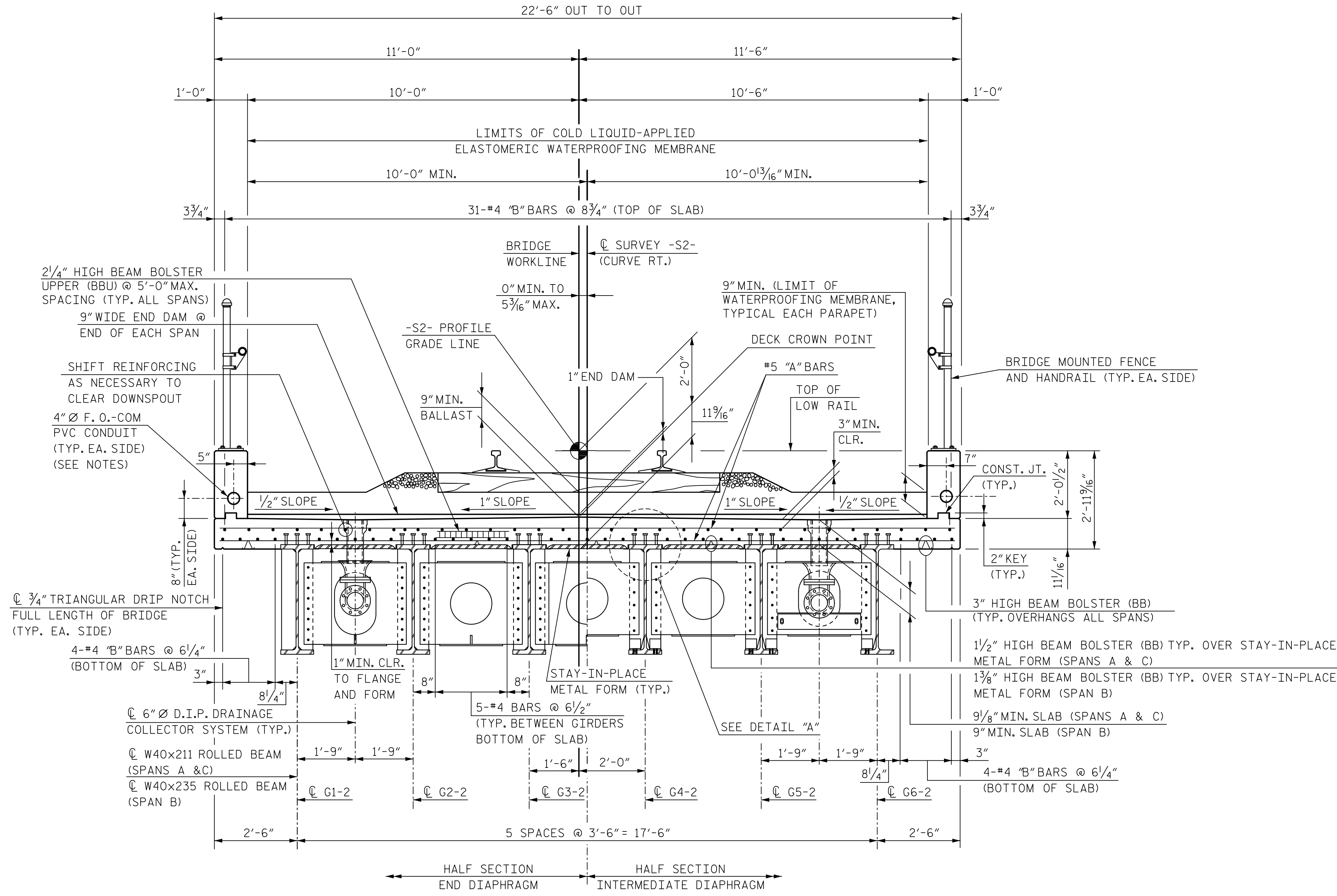
GENERAL NOTES



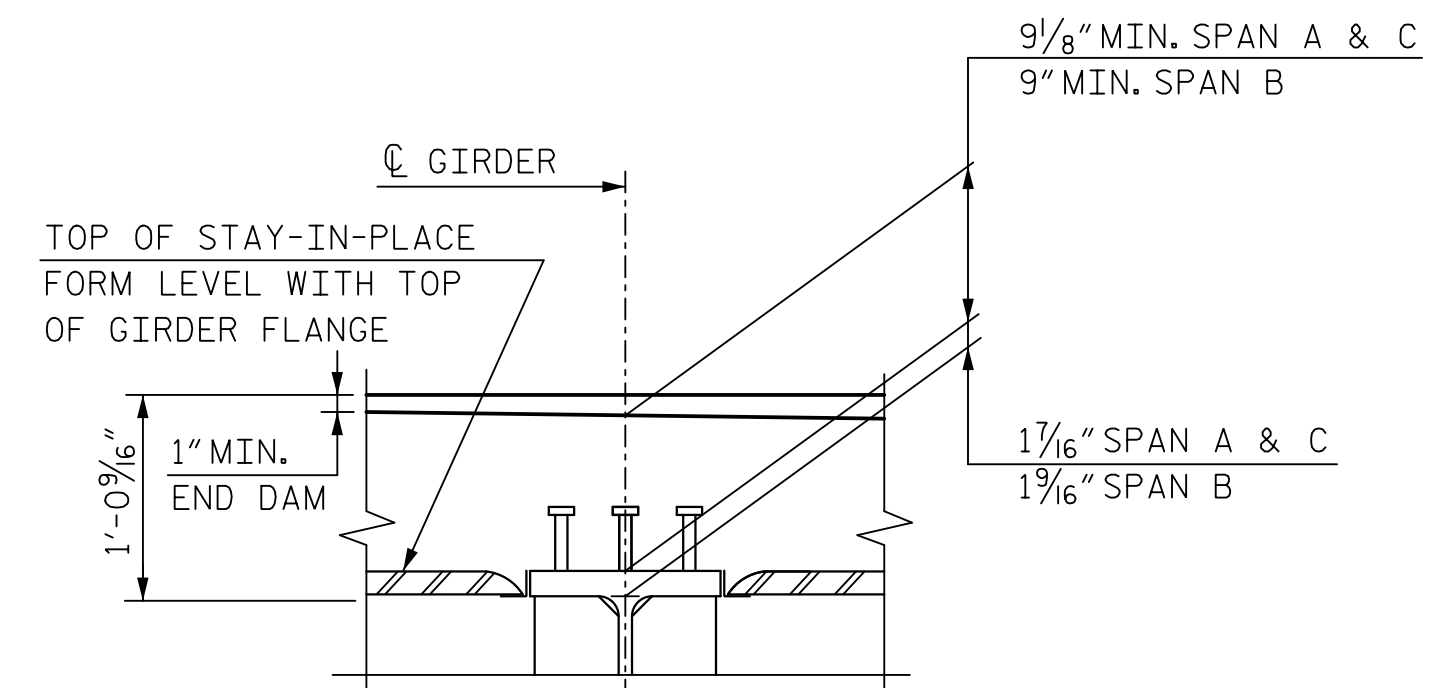
2/22/2018

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HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS						SHEET NO. S3-5 TOTAL SHEETS 42
	NO.	BY	DATE	NO.	BY	DATE	
	1		9/17	3			
DRAWN BY <u>C. GERDING</u> DATE <u>9/17</u> CHECKED BY <u>S. TIPPETT</u> DATE <u>9/17</u>			DWG. NO. 5	2	4		



TYPICAL SECTION



DETAIL "A"

NOTES FOR SIGNAL CONDUIT IN PARAPET

SIGNAL CONDUIT TO BE 4\"/>

PROVISIONS SHALL BE MADE FOR EXPANSION BETWEEN DECK SLABS AT EXPANSION JOINTS AT PIERS 1 & 2 (GALVANIZED EXPANSION FITTINGS).

COUPLING SHALL BE PROVIDED BEHIND BACKWALL OF ABUTMENTS 1 AND 2 FOR CONNECTION TO 4\"/>

FOR SIGNAL CONDUIT IN PARAPET SEE PROJECT SPECIAL PROVISIONS.

NOTES:

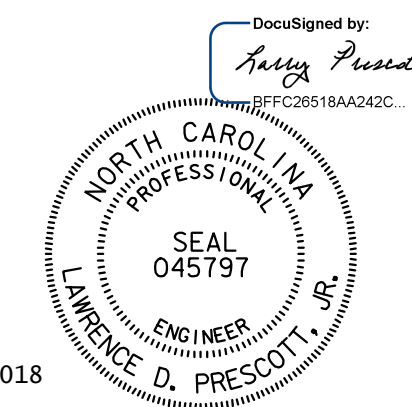
ALL REINFORCING STEEL IN THE DECK AND PARAPETS SHALL BE EPOXY COATED. CLEAR COVER TO ALL REINFORCING IS 2\"/>

FOR HANDRAIL AND FENCE DETAILS, SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS" SHEETS.

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

DESIGN INCLUDES WEIGHT OF 6\"/>

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-

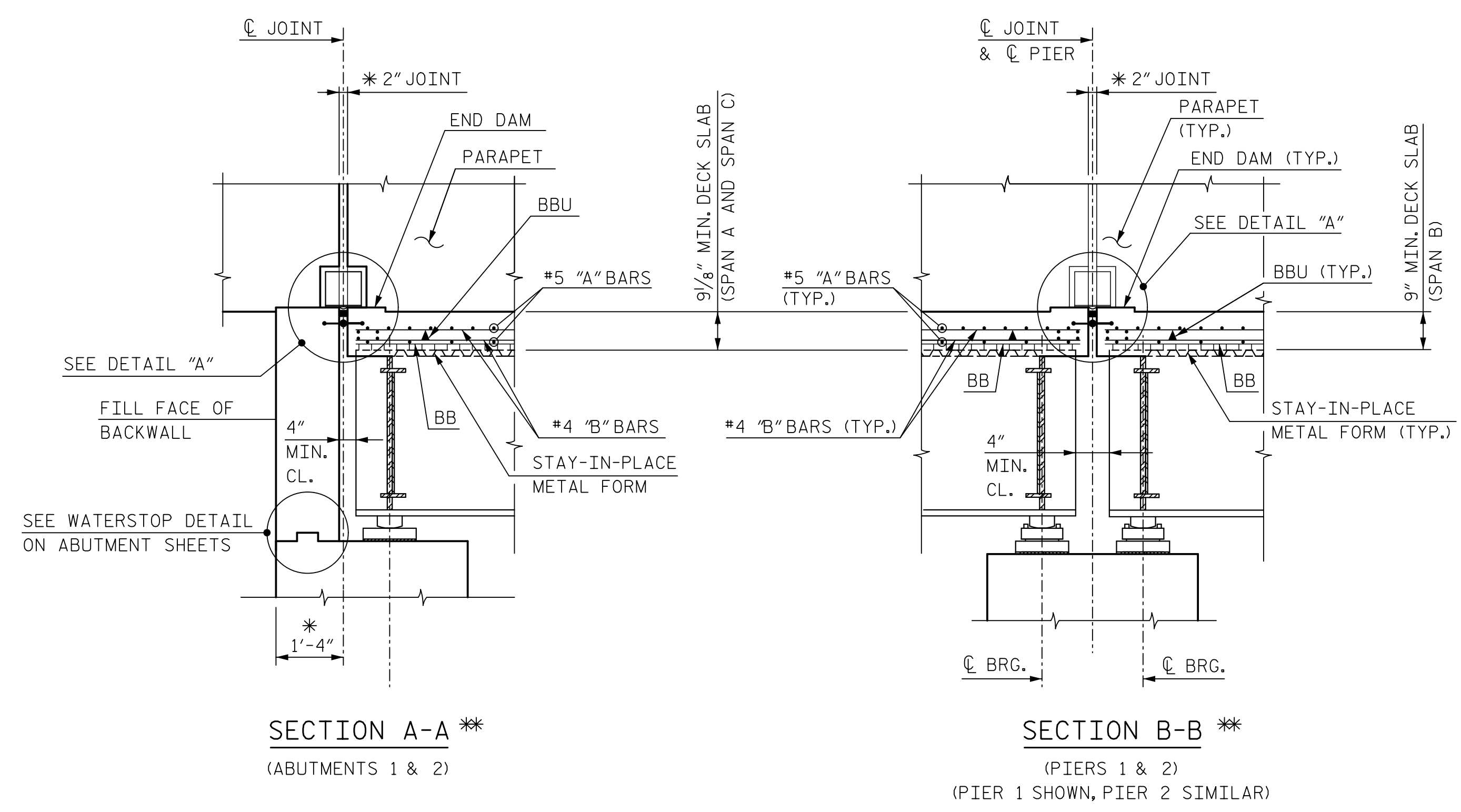


2/22/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

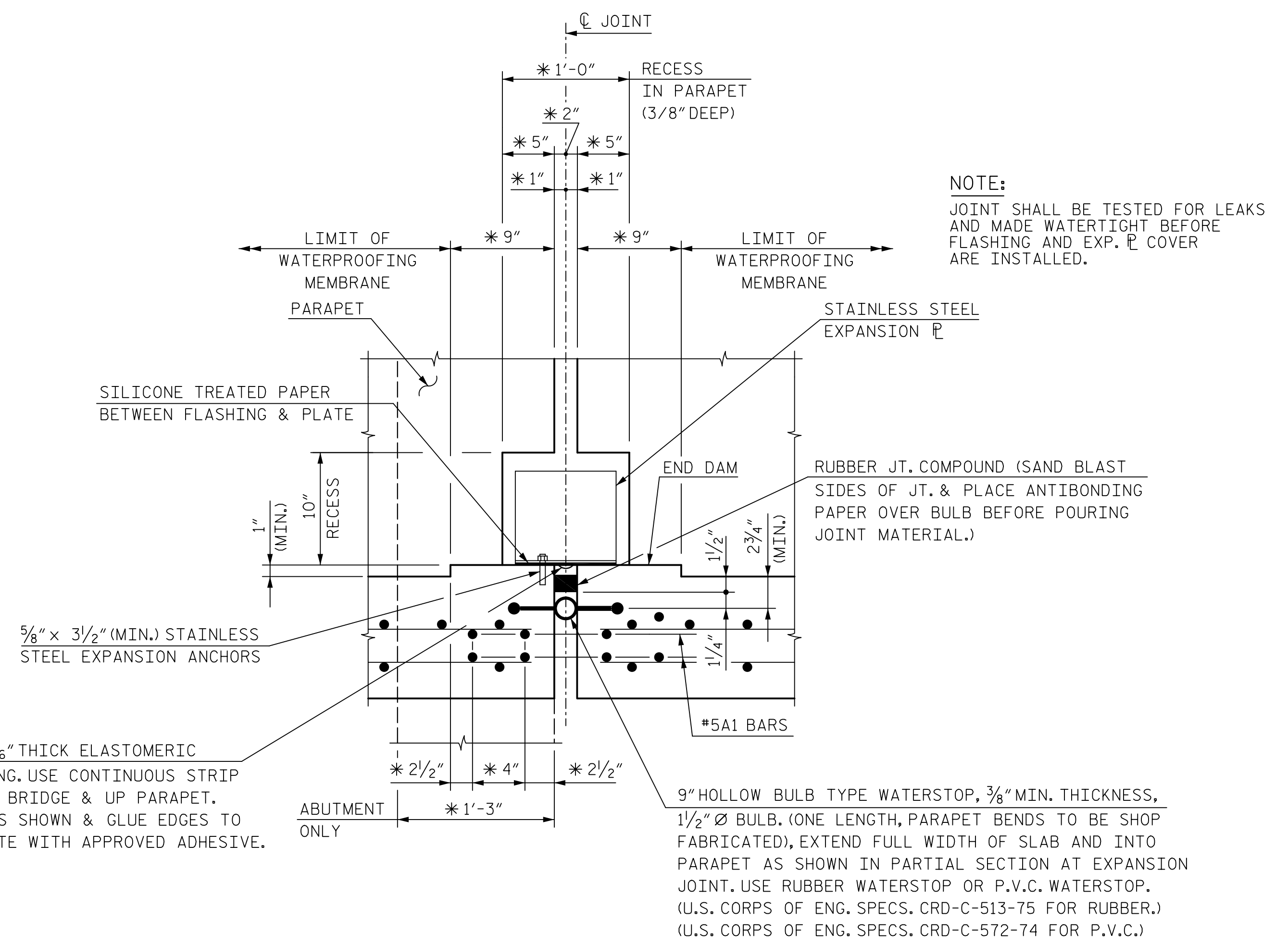
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS						SHEET NO. S3-6
	NO.	BY	DATE	NO.	BY	DATE	
	1			3			
DRAWN BY <u>C. GERDING</u> CHECKED BY <u>S. TIPPETT</u>	DATE <u>9/17</u> DATE <u>9/17</u>	DATE <u>9/17</u> DATE <u>9/17</u>	DWG. NO. 6		TOTAL SHEETS 42		



SECTION A-A **
(ABUTMENTS 1 & 2)

SECTION B-B **
(PIERS 1 & 2)
(PIER 1 SHOWN, PIER 2 SIMILAR)

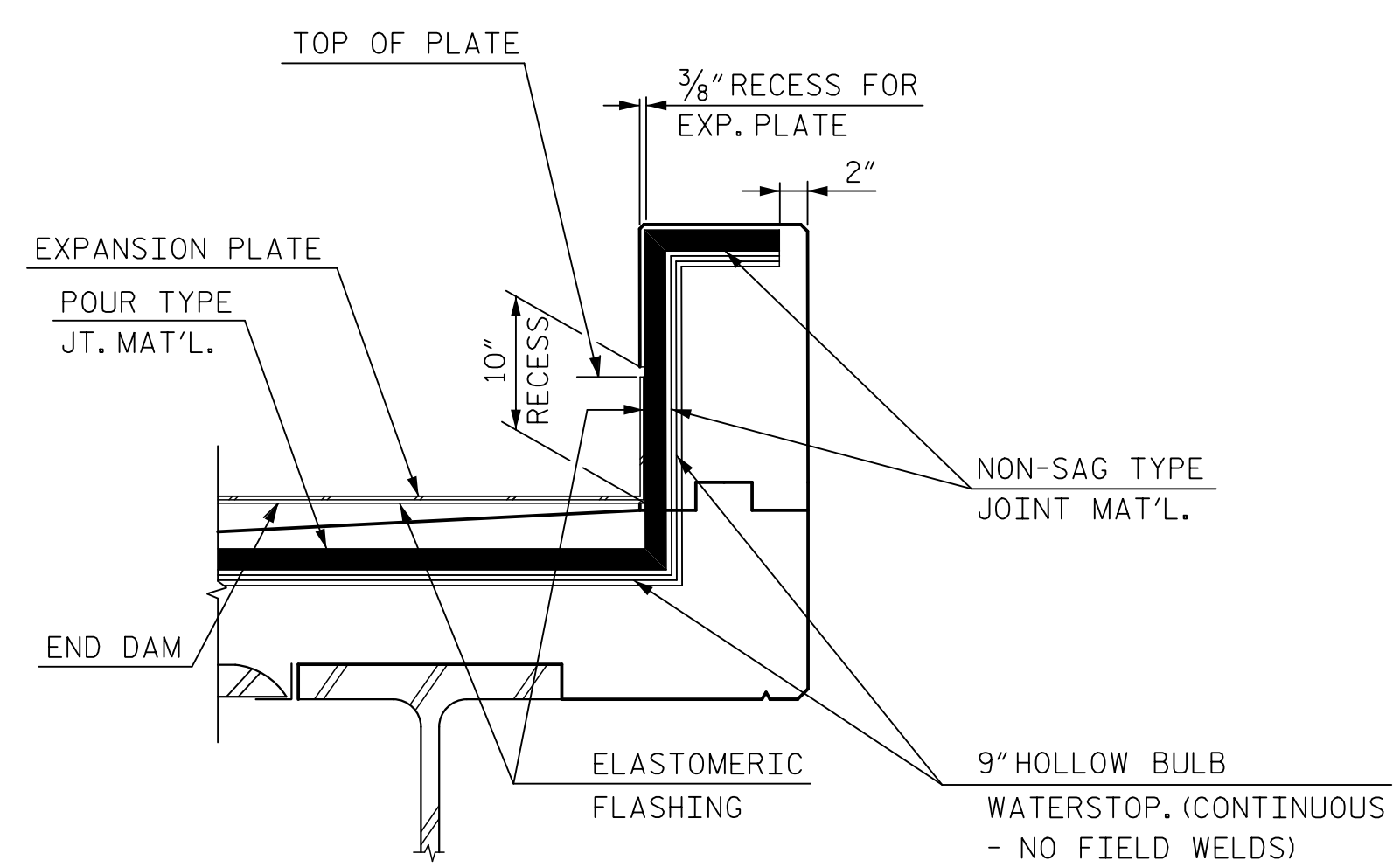
* NORMAL TO C JOINT
** SEE "PLAN OF DECK" SHEETS FOR SECTION LOCATIONS



NOTE:
JOINT SHALL BE TESTED FOR LEAKS AND MADE WATERTIGHT BEFORE FLASHING AND EXP. PLATE COVER ARE INSTALLED.

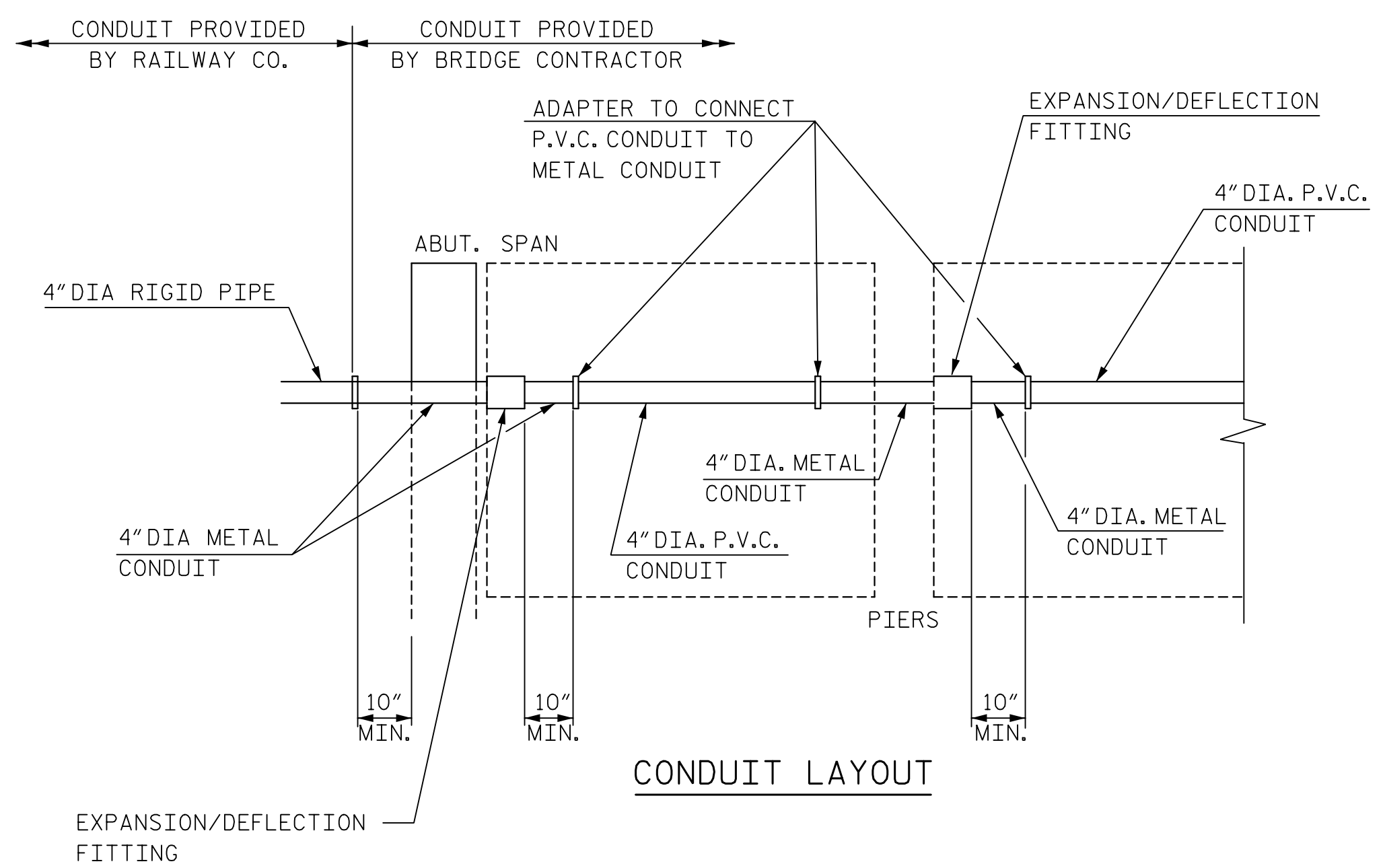
10" x 1/16" THICK ELASTOMERIC FLASHING. USE CONTINUOUS STRIP ACROSS BRIDGE & UP PARAPET. LOOP AS SHOWN & GLUE EDGES TO CONCRETE WITH APPROVED ADHESIVE.

DETAIL A



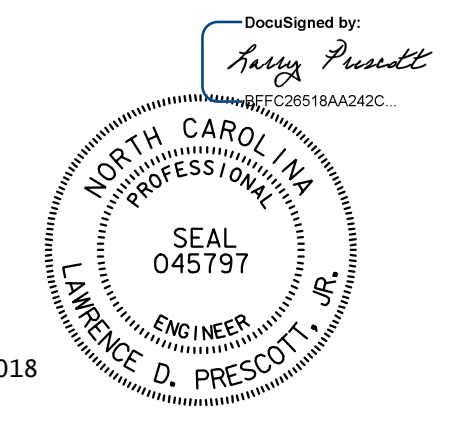
PART SECTION AT EXPANSION JOINT

NOTE: FOR ADDITIONAL PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.



CONDUIT LAYOUT

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-



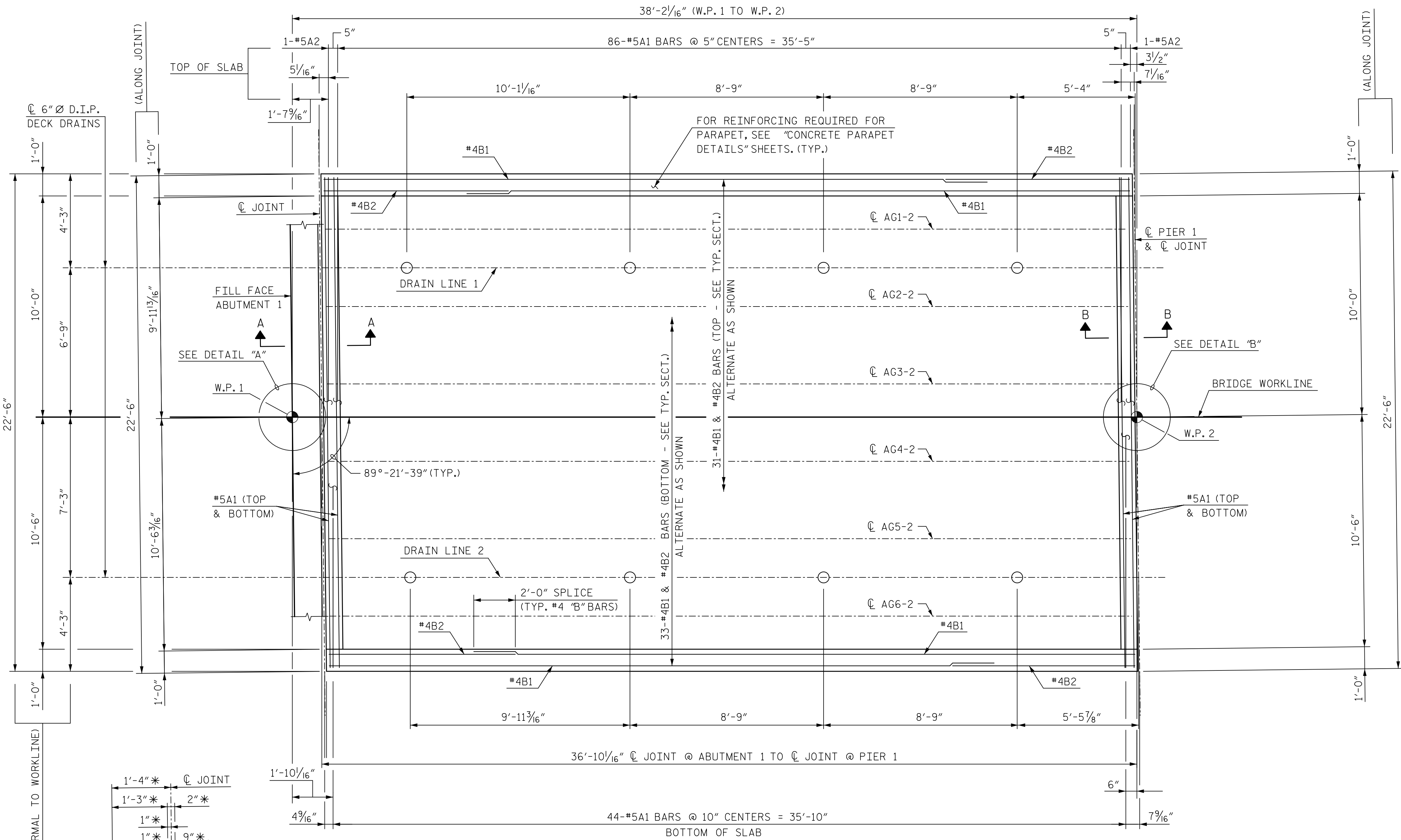
2/22/2018

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NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

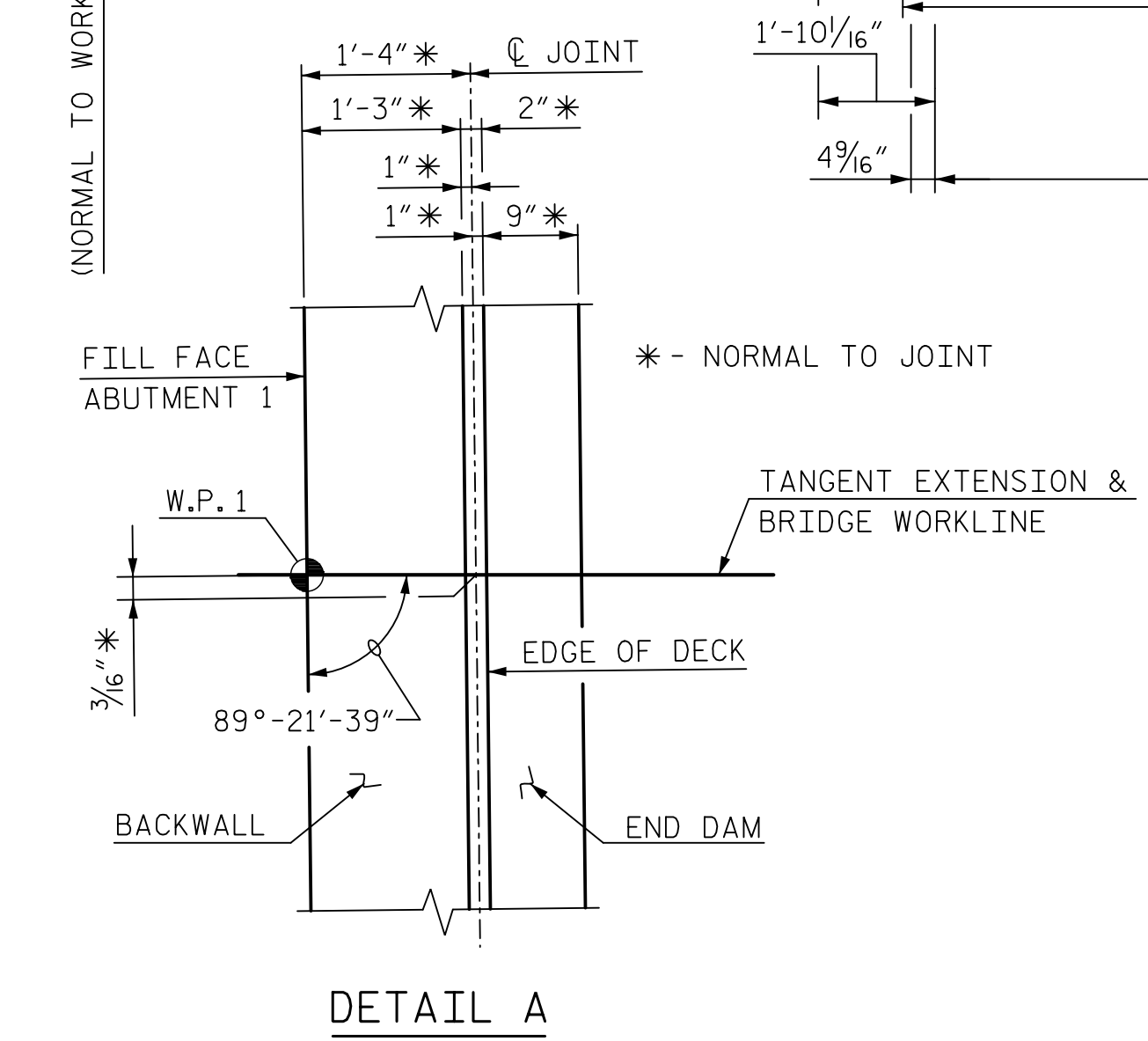
DRAWN BY C. GERDING DATE 9/17
CHECKED BY S. TIPPETT DATE 9/17 DWG. NO. 7

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S3-7
SUPERSTRUCTURE						TOTAL SHEETS 42
DECK DETAILS						
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			

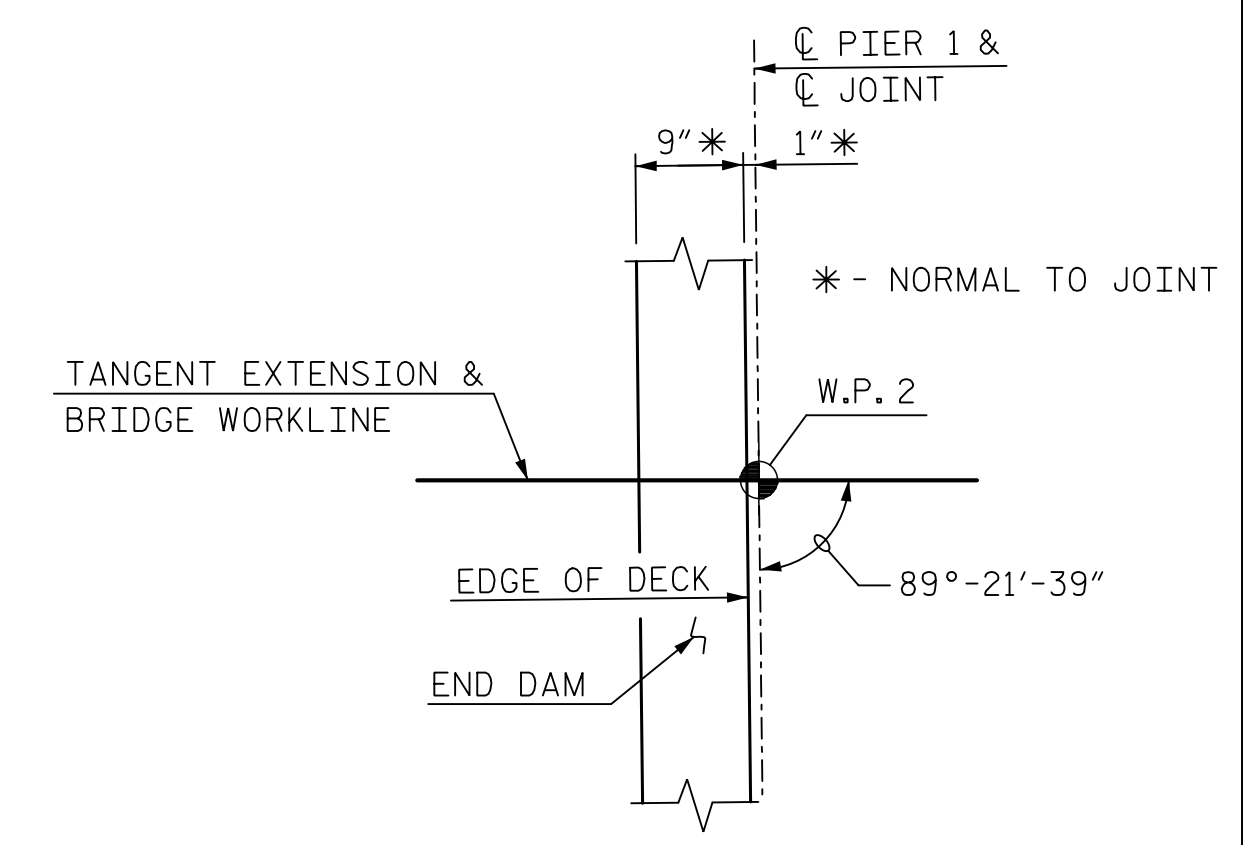


PLAN - SPAN A
 SURVEY -S2- (CURVE RT.) NOT SHOWN FOR CLARITY. DIMENSIONS ARE FROM THE INTERSECTION OF TANGENT EXTENSION & BRIDGE WORKLINE AND FILL FACE OF ABUTMENTS OR CENTERLINE OF PIER UNLESS SHOWN OTHERWISE.

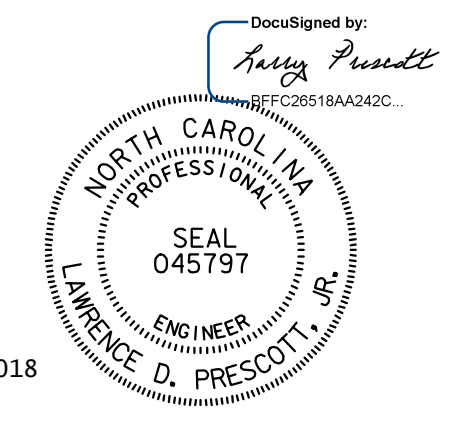
- NOTES:**
 ALL DECK REINFORCING SHALL BE EPOXY COATED.
 FOR SECTION "A-A" & "B-B" SEE "DECK DETAILS" SHEET.
 FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "DRAINAGE DETAILS", SHEET 2 OF 4.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.



DETAIL A



DETAIL B



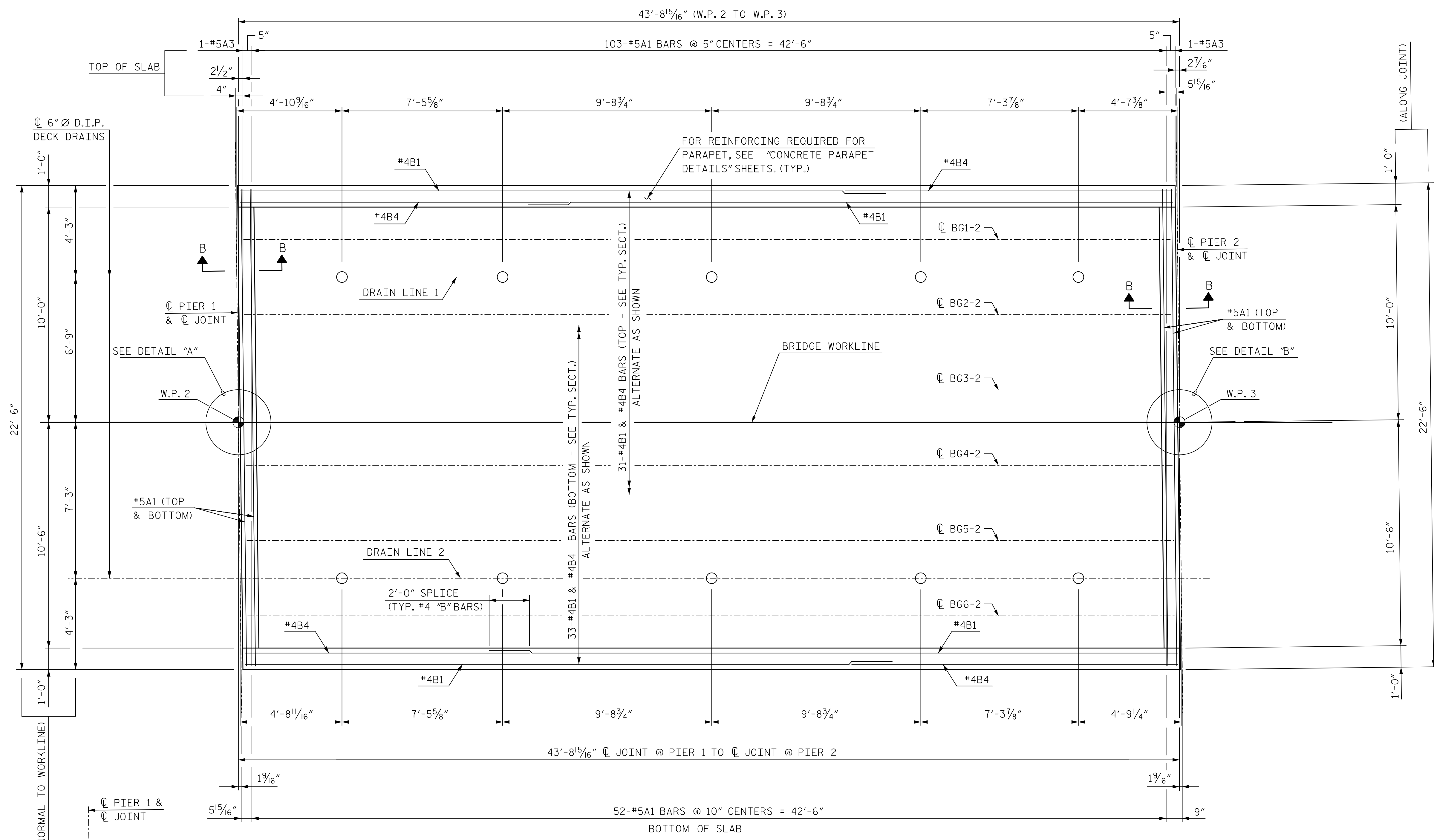
2/22/2018

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PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

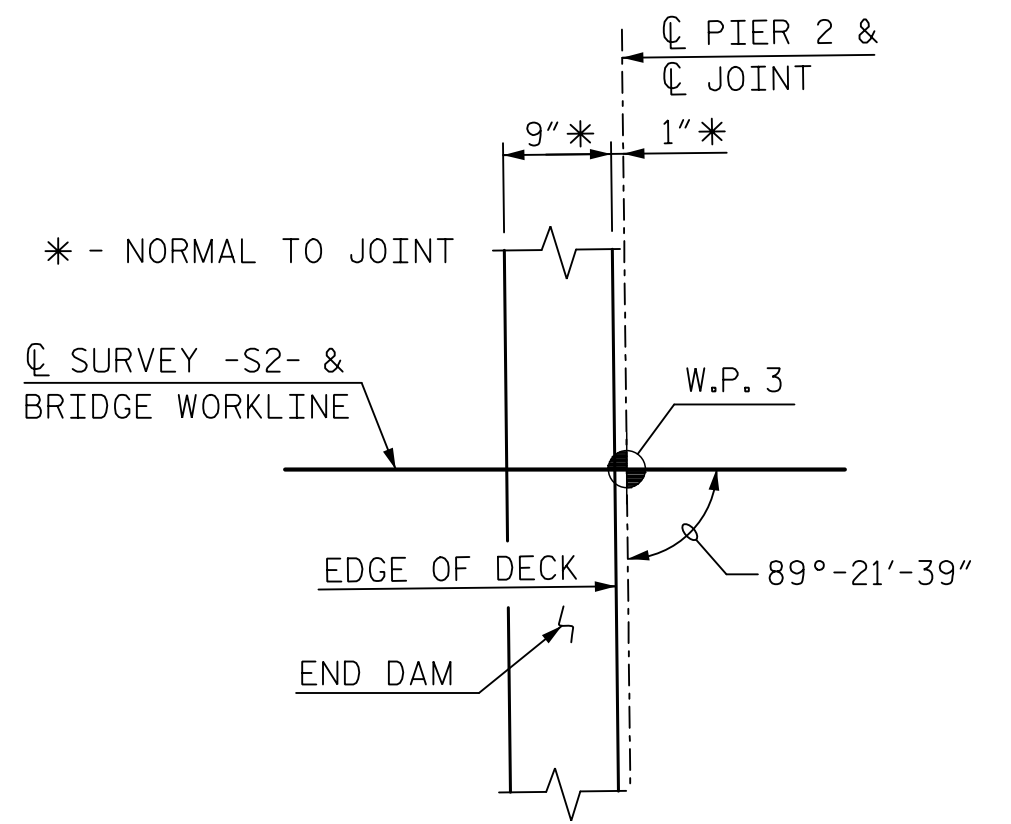
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN A

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS					SHEET NO. S3-8 TOTAL SHEETS 42	
	NO.	BY	DATE	NO.	BY		DATE
	1			3			
DRAWN BY: <u>C. GERDING</u> DATE: <u>9/17</u> CHECKED BY: <u>S. TIPPETT</u> DATE: <u>9/17</u> DWG. NO. 8	2			4			

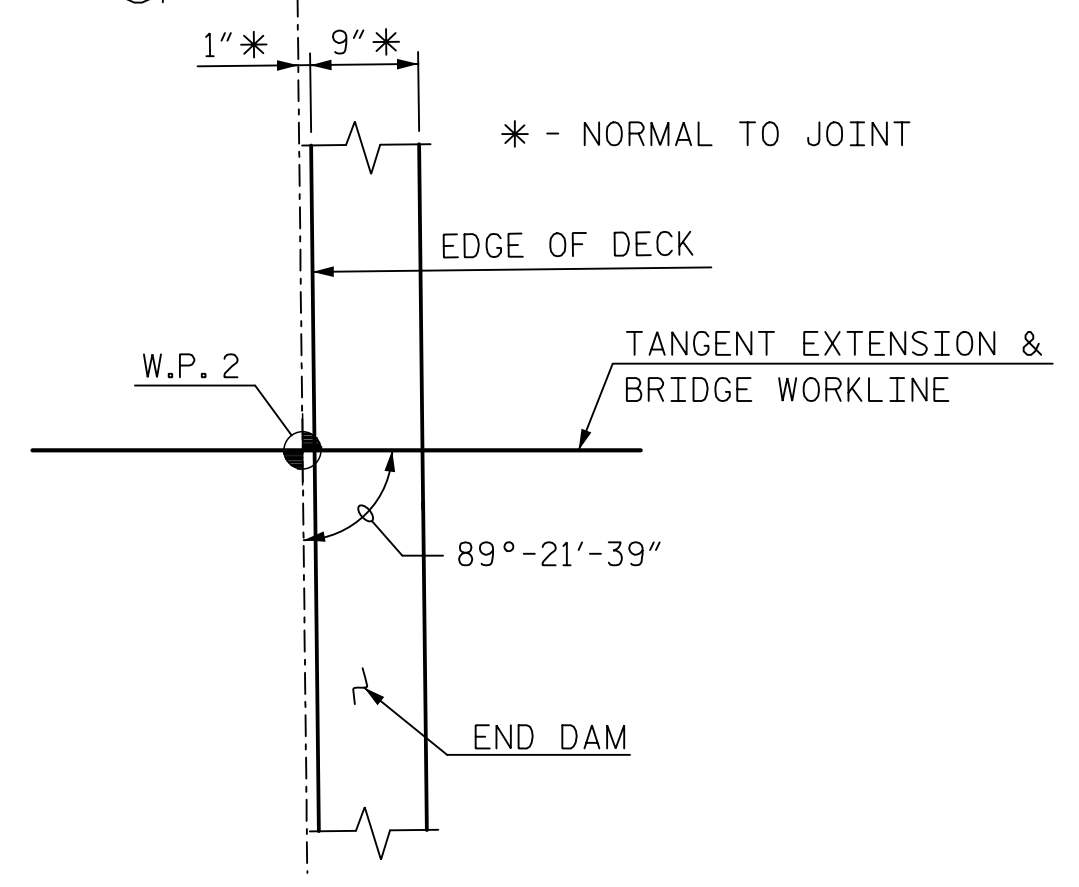


PLAN - SPAN B
 ☉ SURVEY -S2- (CURVE RT.) NOT SHOWN FOR CLARITY. DIMENSIONS ARE FROM THE INTERSECTION OF TANGENT EXTENSION & BRIDGE WORKLINE OR ☉ SURVEY -S2- & BRIDGE WORKLINE AND ☉ PIER UNLESS SHOWN OTHERWISE.

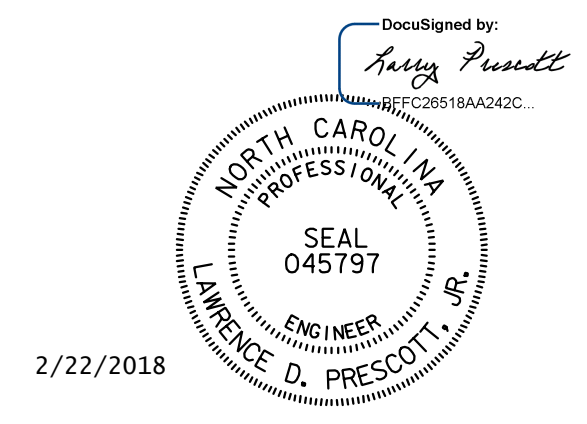
NOTES:
 ALL DECK REINFORCING SHALL BE EPOXY COATED.
 FOR SECTION "A-A" & "B-B" SEE "DECK DETAILS" SHEET.
 FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "DRAINAGE DETAILS", SHEET 2 OF 4.
 FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.



DETAIL B



DETAIL A

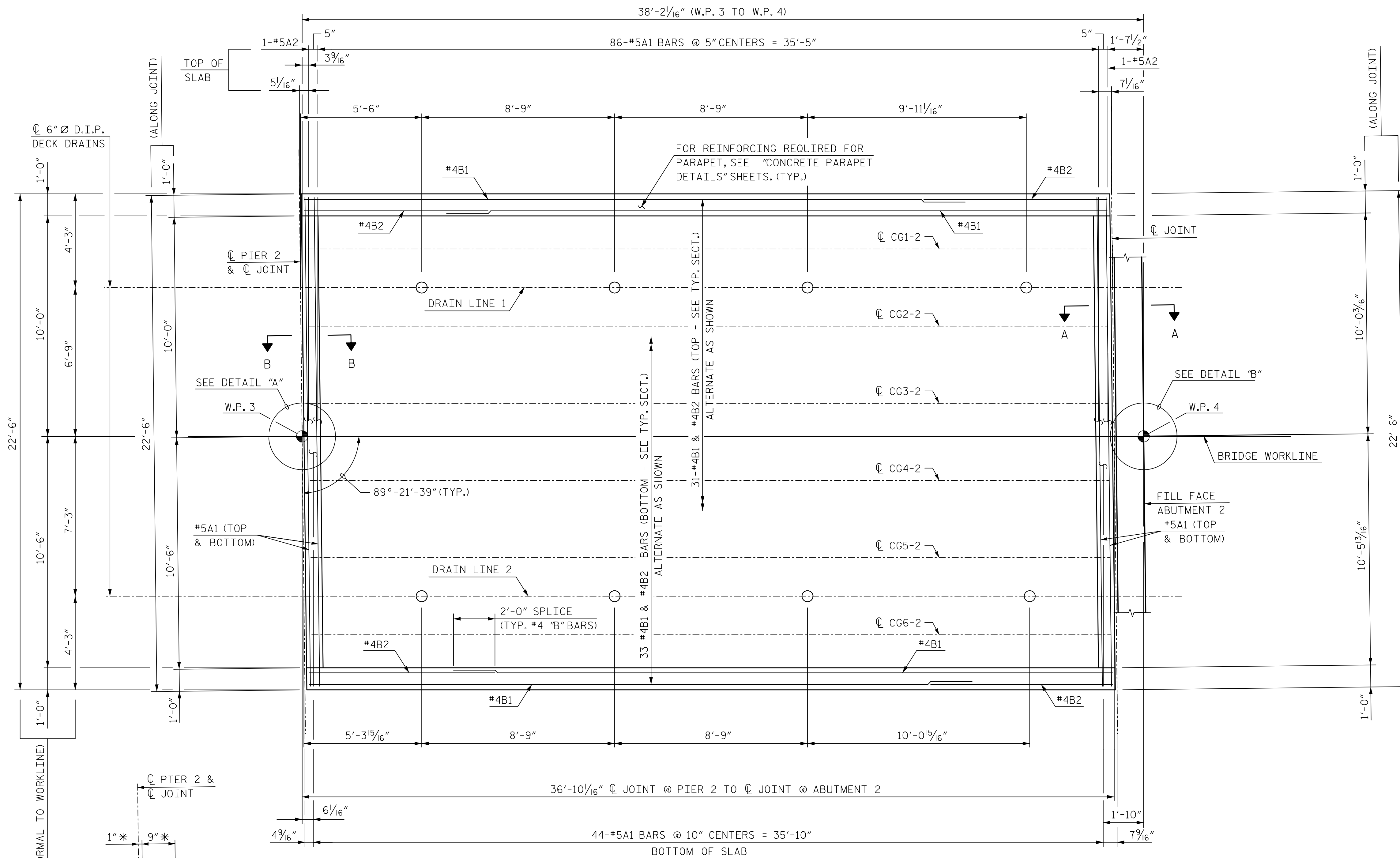


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN B

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S3-9 TOTAL SHEETS 42		
	NO.	BY	DATE	NO.		BY	DATE
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DRAWN BY: C. GERDING CHECKED BY: S. TIPPETT	DATE: 9/17 DATE: 9/17	DWG. NO. 9	2	4			

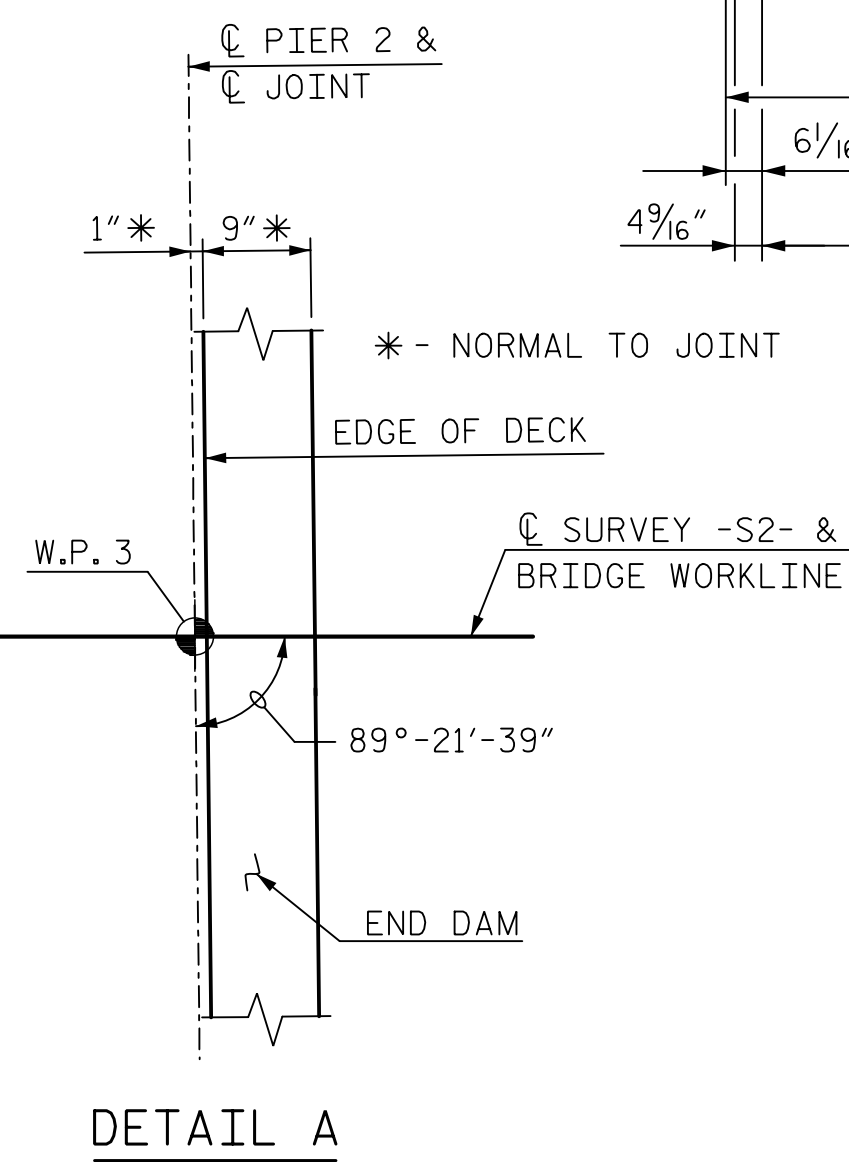
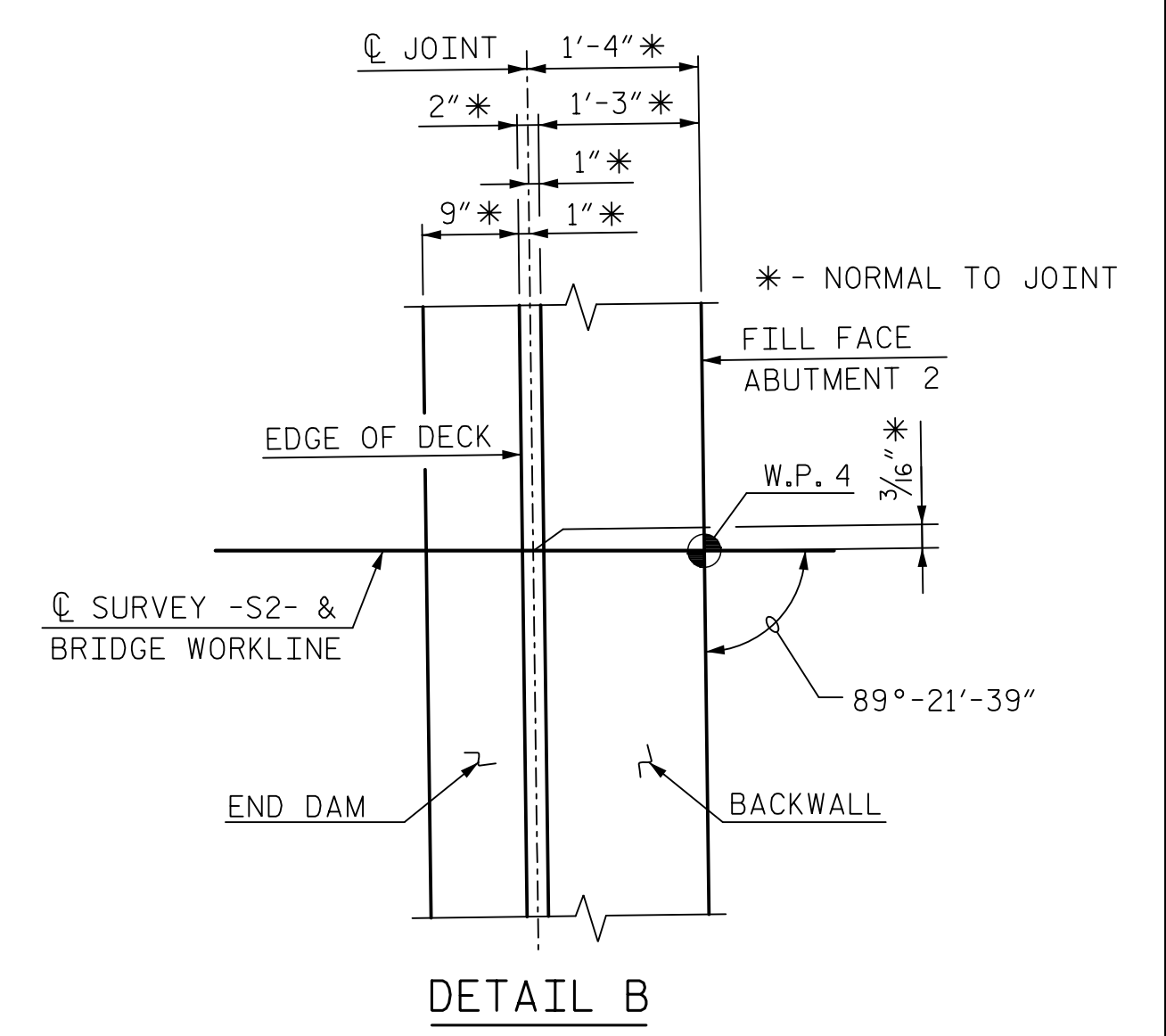


PLAN - SPAN C

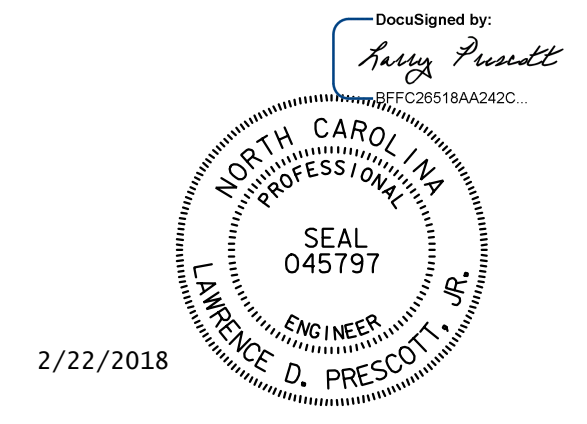
DIMENSIONS ARE FROM THE INTERSECTION OF CL SURVEY -S2- & BRIDGE WORKLINE AND FILL FACE OF ABUTMENTS OR CL PIER UNLESS SHOWN OTHERWISE.

NOTES:

- ALL DECK REINFORCING SHALL BE EPOXY COATED.
- FOR SECTION "A-A" & "B-B" SEE "DECK DETAILS" SHEET.
- FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "DRAINAGE DETAILS", SHEET 2 OF 4.
- FOR CONCRETE PARAPET DETAILS, SEE "CONCRETE PARAPET DETAILS" SHEETS.



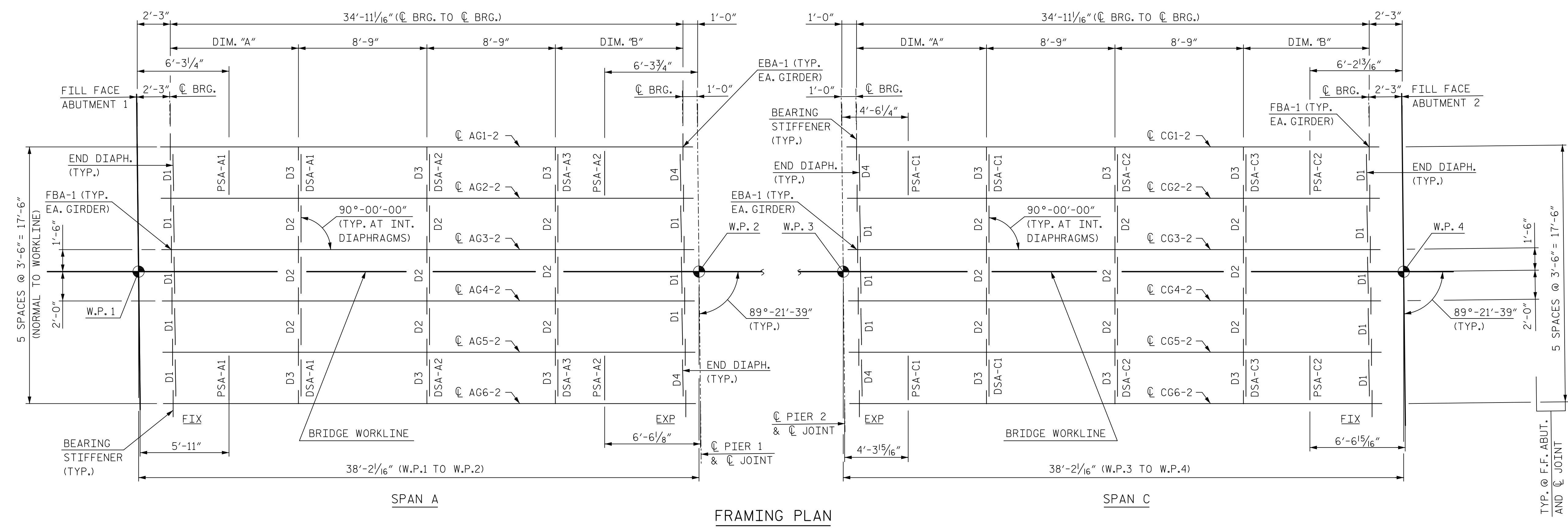
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN C

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		DATE: 9/17		NO.	BY	DATE	TOTAL SHEETS 42	
				1			3	
				2			4	



NOTES:

ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.

ALL ABUTMENT FILL FACES, CL PIERS AND CL BEARINGS ARE PARALLEL.

NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.

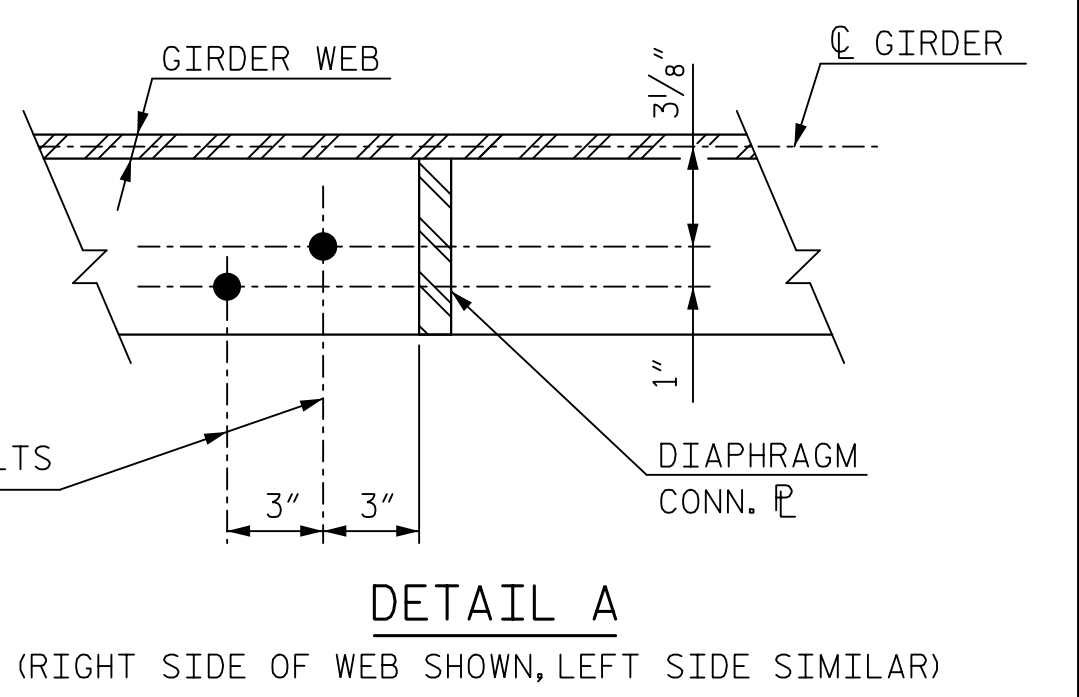
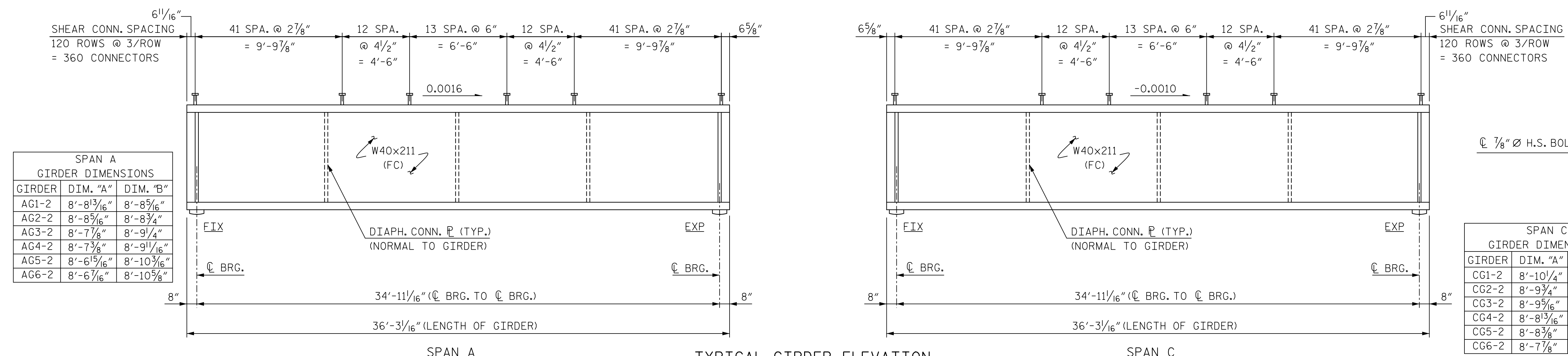
REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:

- STRUCTURAL STEEL NOTES
- DIAPHRAGM DETAILS
- STIFFENER AND CONNECTOR P DETAILS
- SHEAR CONNECTOR DETAILS

FOR BEARINGS, SEE "BEARING DETAILS SPANS A, B & C" SHEET.

FOR DRAIN PIPE SUPPORT DETAILS, SEE "DRAINAGE DETAILS" SHEET 2 OF 4.

FC = "FRACTURE CRITICAL"

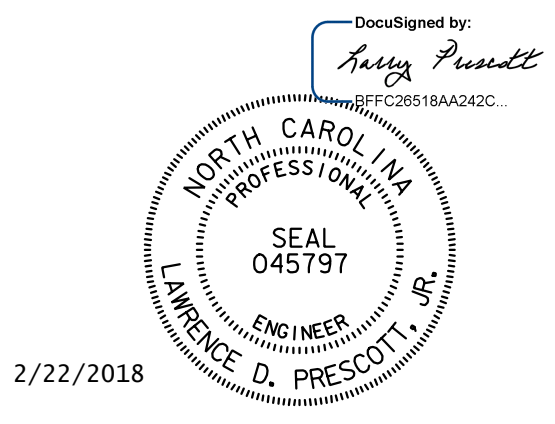
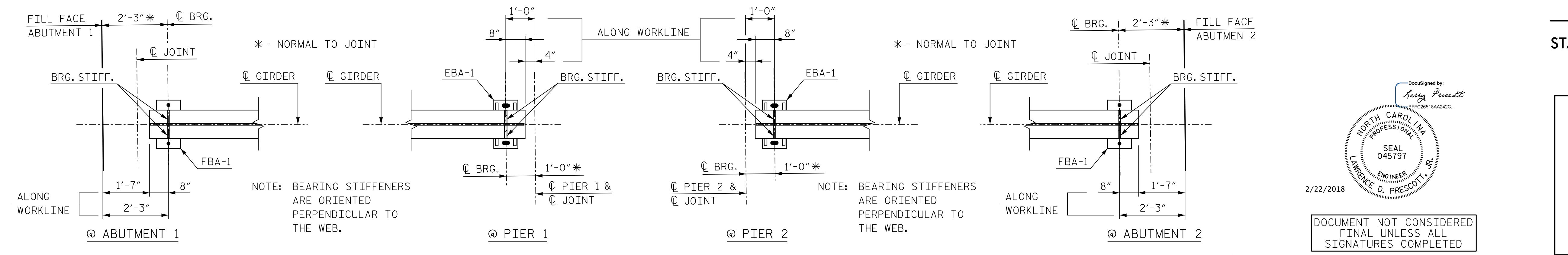


SPAN A GIRDER DIMENSIONS

GIRDER	DIM. "A"	DIM. "B"
AG1-2	8'-8 13/16"	8'-8 5/16"
AG2-2	8'-8 5/16"	8'-8 3/4"
AG3-2	8'-7 7/8"	8'-9 1/4"
AG4-2	8'-7 3/8"	8'-9 11/16"
AG5-2	8'-6 15/16"	8'-10 3/16"
AG6-2	8'-6 7/16"	8'-10 9/16"

SPAN C GIRDER DIMENSIONS

GIRDER	DIM. "A"	DIM. "B"
CG1-2	8'-10 1/4"	8'-6 13/16"
CG2-2	8'-9 3/4"	8'-7 5/16"
CG3-2	8'-9 5/16"	8'-7 3/4"
CG4-2	8'-8 13/16"	8'-8 1/4"
CG5-2	8'-8 3/8"	8'-8 11/16"
CG6-2	8'-7 7/8"	8'-9 3/16"



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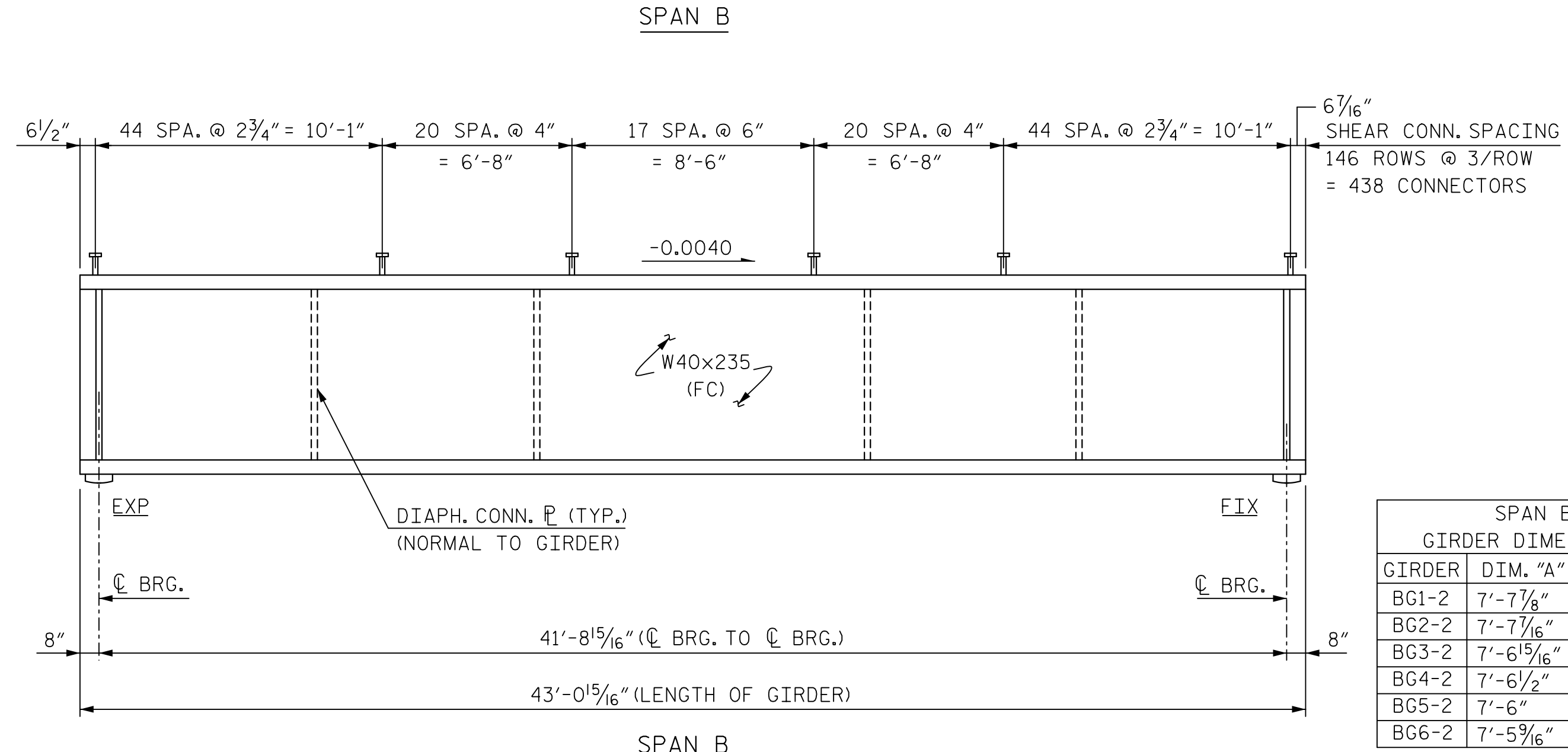
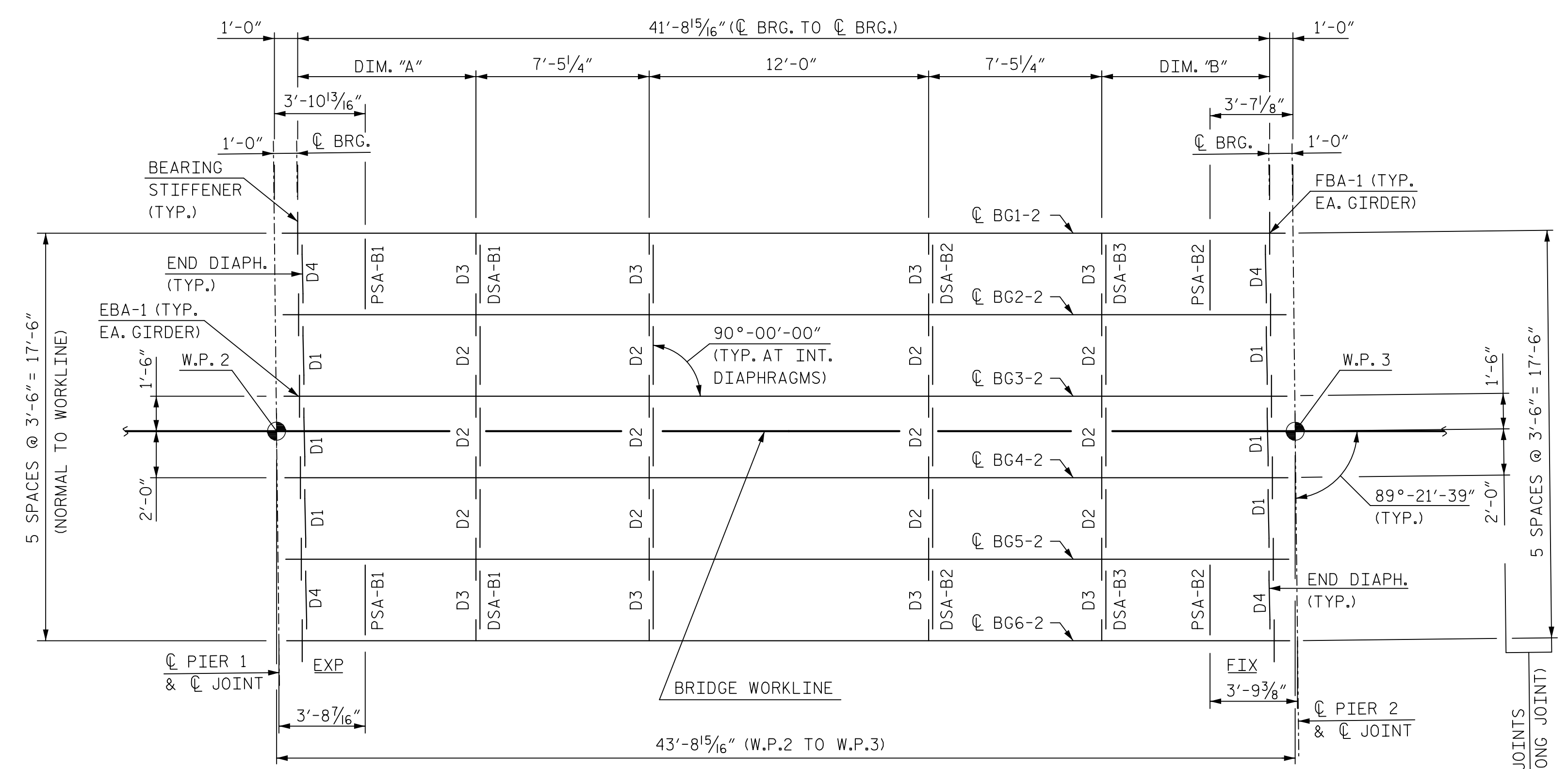
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

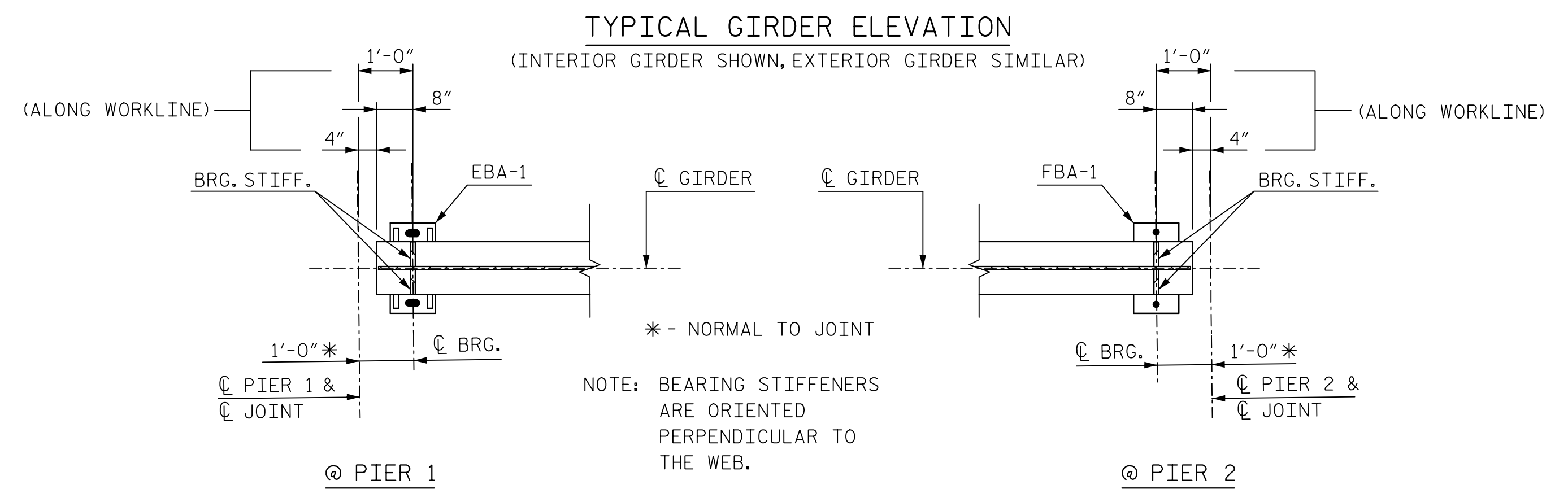
SUPERSTRUCTURE FRAMING PLAN AND GIRDER DETAILS SPANS A & C

HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S3-11 TOTAL SHEETS 42		
	NO.	BY	DATE	NO.		BY	DATE
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2			4				

DRAWN BY: C. GERDING DATE: 9/17
CHECKED BY: S. TIPPETT DATE: 9/17
DWG. NO. 11

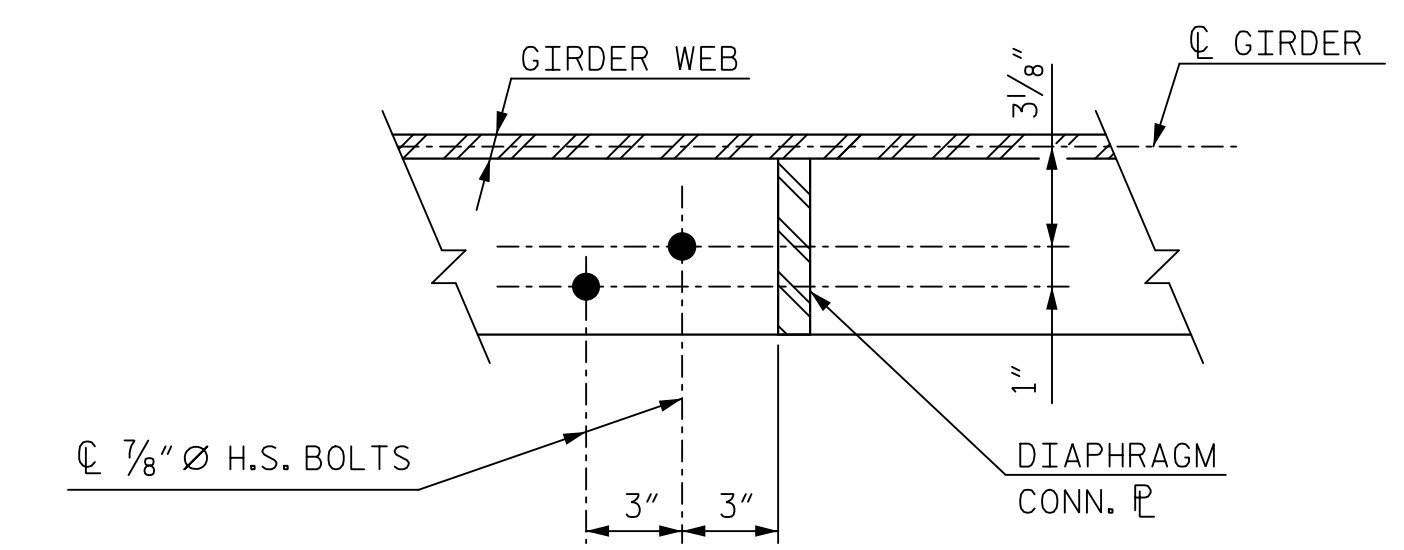


SPAN B GIRDER DIMENSIONS		
GIRDER	DIM. "A"	DIM. "B"
BG1-2	7'-7 7/8"	7'-2 9/16"
BG2-2	7'-7 7/16"	7'-3"
BG3-2	7'-6 15/16"	7'-3 1/2"
BG4-2	7'-6 1/2"	7'-3 15/16"
BG5-2	7'-6"	7'-4 1/16"
BG6-2	7'-5 9/16"	7'-4 7/8"



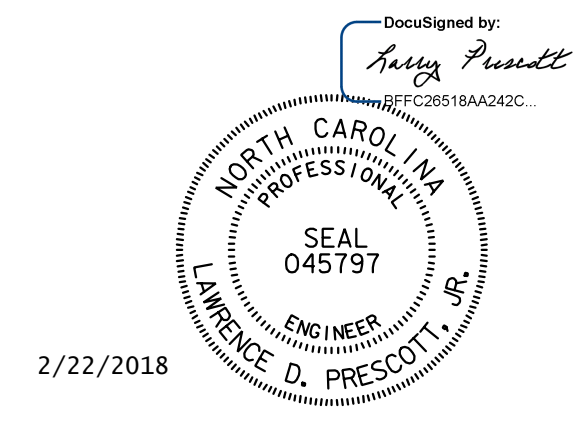
BOTTOM FLANGE GIRDER END DETAILS - SPAN C

NOTES:
 ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.
 ALL ABUTMENT FILL FACES, CL PIERS AND CL BEARINGS ARE PARALLEL.
 NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.
 REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:
 • STRUCTURAL STEEL NOTES
 • DIAPHRAGM DETAILS
 • STIFFENER AND CONNECTOR P DETAILS
 • SHEAR CONNECTOR DETAILS
 FOR BEARINGS, SEE "BEARING DETAILS SPANS A, B & C" SHEET.
 FOR DRAIN PIPE SUPPORT DETAILS, SEE "DRAINAGE DETAILS" SHEET 2 OF 4.
 FC = "FRACTURE CRITICAL"



DETAIL A (RIGHT SIDE OF WEB SHOWN, LEFT SIDE SIMILAR)

PROJECT NO. P-5705BA
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 STATION: POT STA. 18+79.37 -S2-

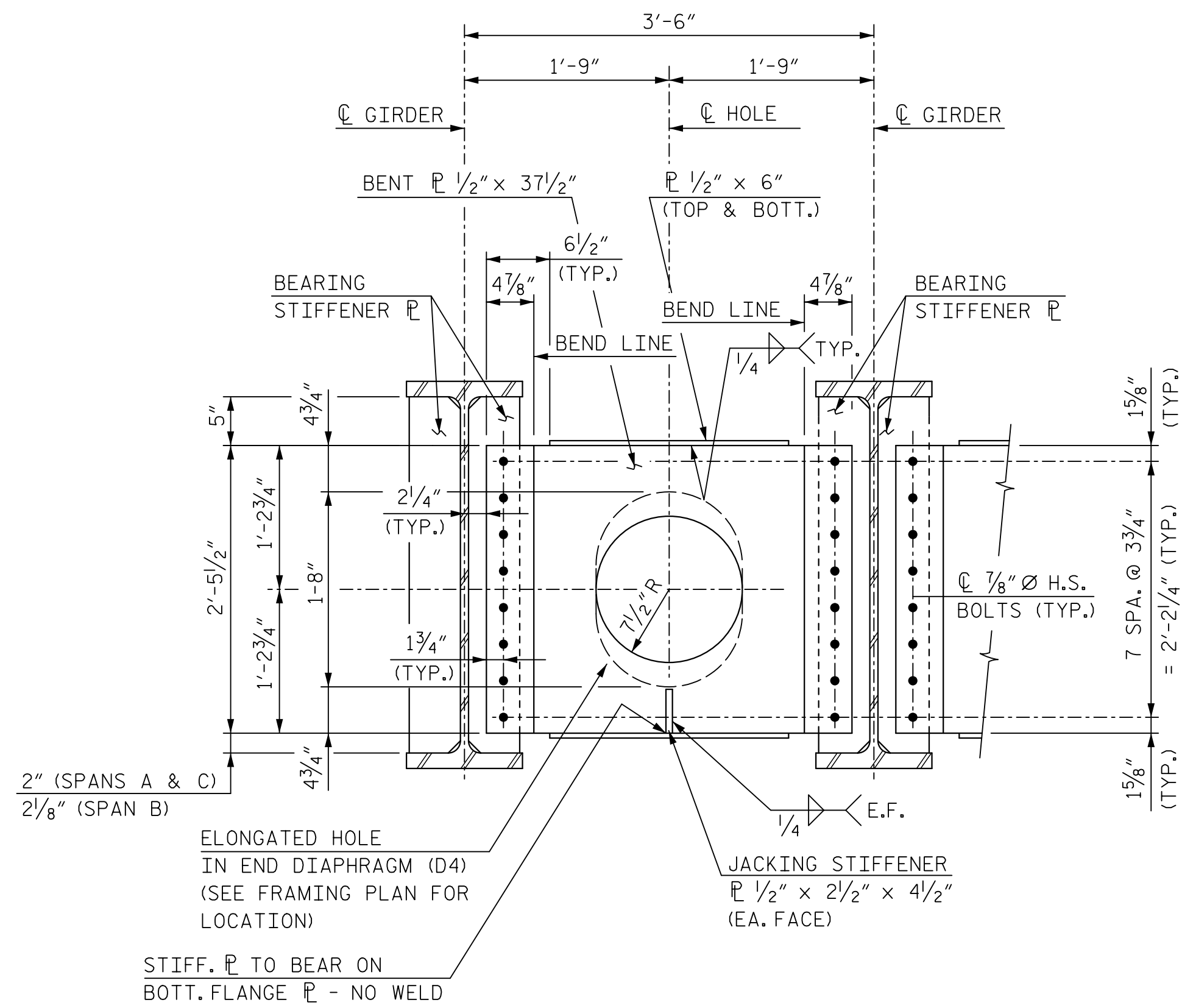


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

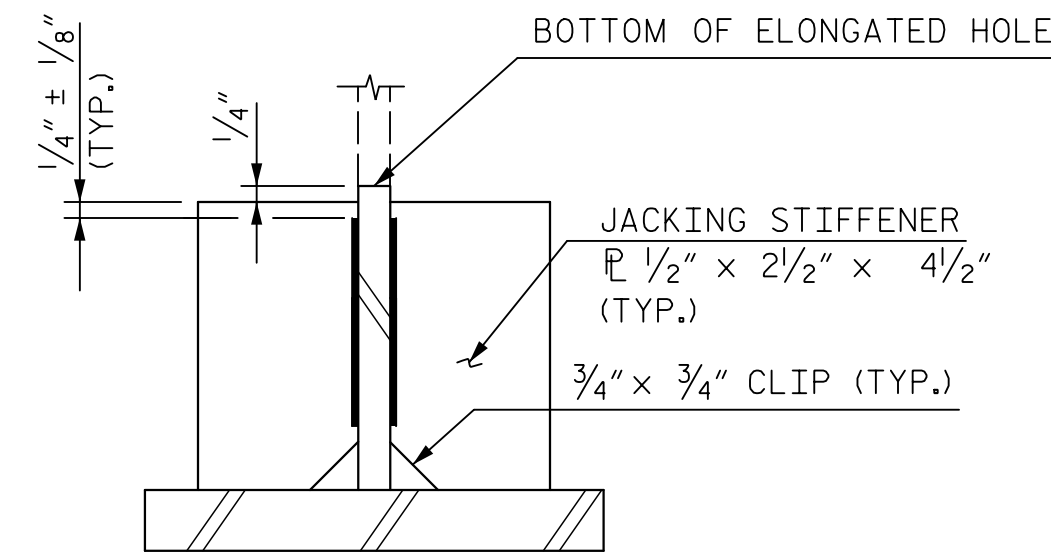
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN
 AND GIRDER DETAILS
 SPAN B

NO.	BY	DATE	REVISIONS			SHEET NO.
			NO.	BY	DATE	
1		9/17	3			TOTAL SHEETS
2		9/17	4			42

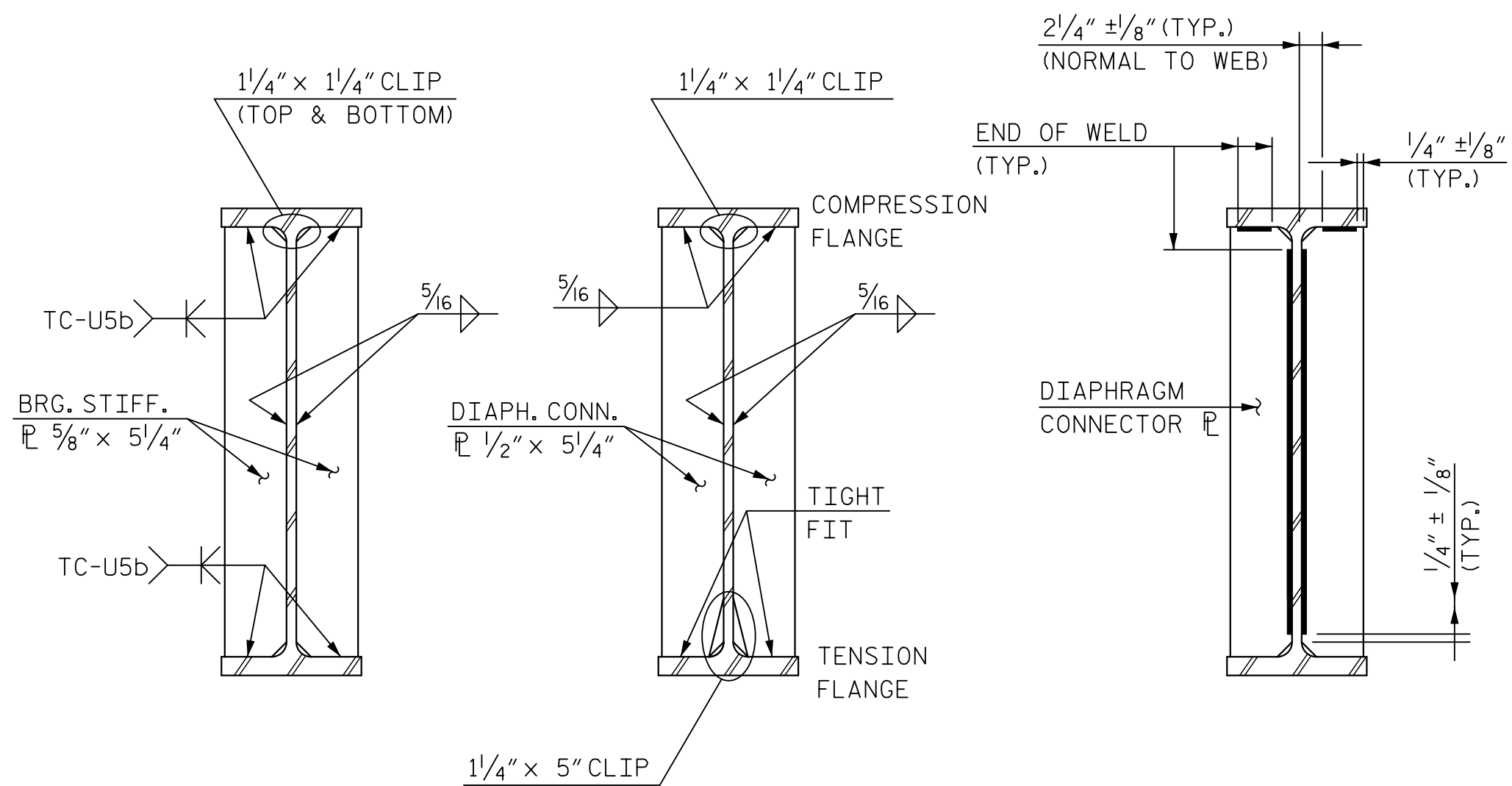
HNTB HNTB NORTH CAROLINA, P.C.
 NC License No. C-1554
 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
 DRAWN BY: C. GERDING DATE: 9/17 DWG. NO. 12
 CHECKED BY: S. TIPPETT DATE: 9/17



SECTION AT END DIAPHRAGM (D1 & D4)
(DIAPHRAGMS ARE FROM BEARING STIFFENER TO BEARING STIFFENER)

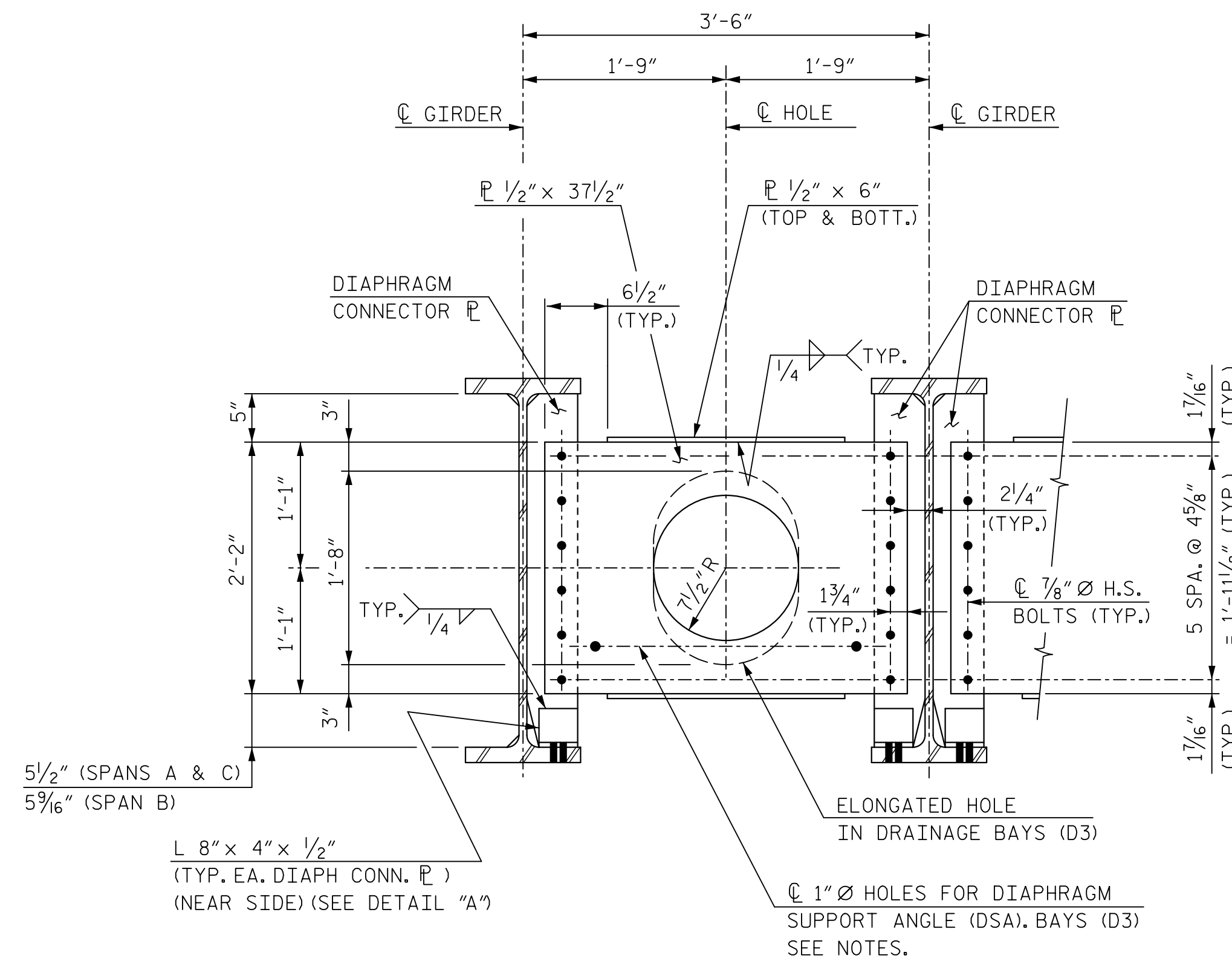


JACKING STIFFENER PLATE DETAILS

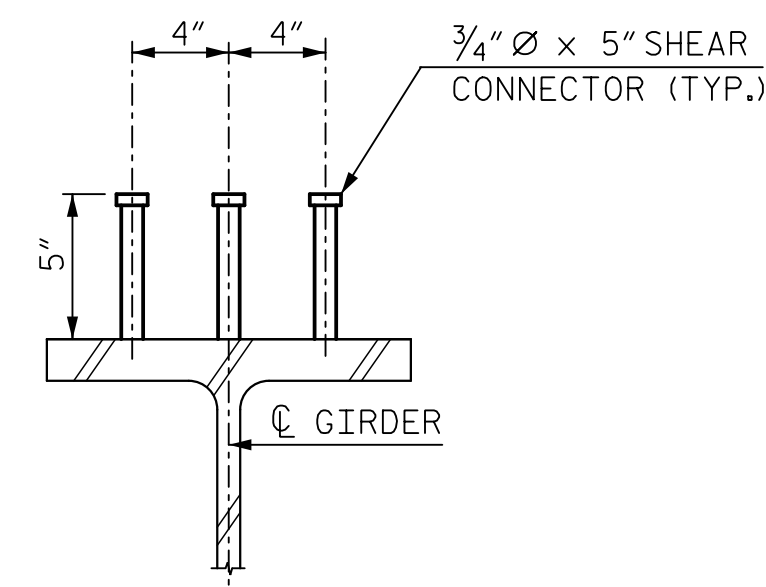


STIFFENER/CONN. PLATE DETAILS

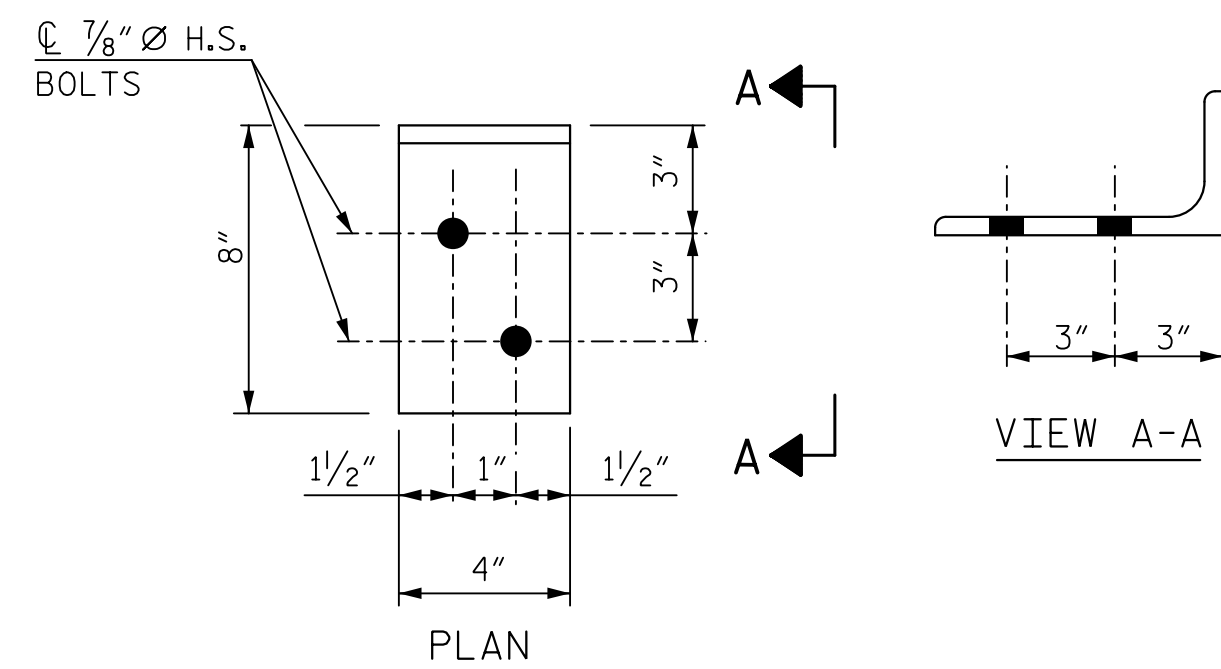
WELD TERMINATION DETAIL



SECTION AT INTERMEDIATE DIAPHRAGM (D2 & D3)
(DIAPHRAGMS ARE NORMAL TO GIRDER LINES)



SHEAR CONNECTOR DETAIL
(TYP. ALL GIRDERS)



DETAIL A
(L 8" x 4" x 1/2")

NOTES:

FOR DIAPHRAGM LOCATIONS, SEE "FRAMING PLAN AND GIRDER DETAILS" SHEETS.

FOR DETAILS OF DIAPHRAGM SUPPORT ANGLES (DSA), SEE "STRUCTURE DRAINAGE DETAILS" SHEET 2 OF 4.

STRUCTURAL STEEL NOTES

STRUCTURAL STEEL: $f_s = 27.5$ KSI. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:

W40x211 (SPANS A & C) AND W40x235 (SPAN B) MAIN GIRDERS: A709, GRADE 50, WITH SUPPLEMENTALS S84-F2, S91 AND S93 APPLYING, AND WITH IMPACT TEST REQUIREMENT OF 25 ft-lb @ 40°F AS GOVERNED BY ASTM A673 FOR TEST FREQUENCY "P".

MISCELLANEOUS MATERIAL: A709, GRADE 50.

ANCHOR BOLTS FOR BEARING DEVICES SHALL CONFORM TO ASTM F1554, GRADE 105. ANCHOR BOLTS, NUTS, AND PLATE WASHERS SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH ASTM F2329.

STRUCTURAL STEEL ELEMENTS DENOTED AS "FC" ARE FRACTURE CRITICAL AND SHALL MEET IMPACT TEST REQUIREMENTS SET FORTH IN THE FRACTURE CONTROL PLAN OF THE AREMA MANUAL, CHAPTER 15, SECTION 1.2. TESTING SHALL BE BASED ON ZONE 2 REQUIREMENTS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

MILL TEST REPORTS: NORFOLK SOUTHERN CORPORATION SHALL BE FURNISHED COPIES OF MILL TEST REPORTS FOR ALL MATERIALS EXCEPT MISCELLANEOUS PLATES AND SHAPES. REPORTS SHALL INDICATE COMPLIANCE WITH ALL SPECIFIED REQUIREMENTS.

INSPECTION: SHOP INSPECTION BY NORFOLK SOUTHERN CORPORATION OR ITS AUTHORIZED AGENT.

PAINTING STRUCTURAL STEEL: FOR ACRYLIC PAINT SYSTEM FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

BOLTED CONNECTIONS SHALL BE MADE WITH 7/8" Ø ASTM A325, TYPE 1 HIGH STRENGTH BOLTS WITH HARDENED WASHERS IN ACCORDANCE WITH A.R.E.M.A. SPECIFICATIONS USING THE TURN OF THE NUT METHOD. DIRECT TENSION INDICATORS SHALL NOT BE USED.

SHOP DRAWINGS: SHOP DRAWINGS SHALL BE APPROVED BY THE CHIEF ENGINEER - BRIDGES AND STRUCTURES, NORFOLK SOUTHERN CORPORATION, ATLANTA, G.A. SHOP DRAWINGS SHALL BE LABELED "NORFOLK SOUTHERN MP 377.55".

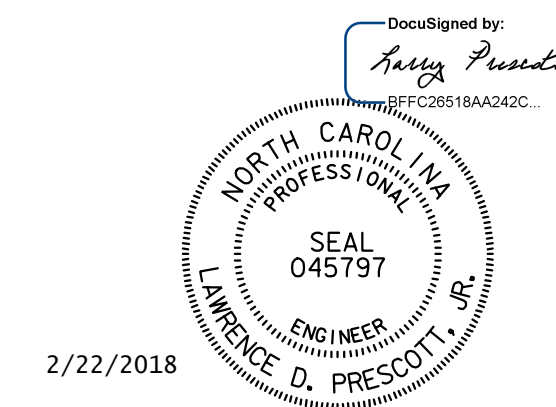
HOLES: OPEN HOLES AS NOTED.

HIGH STRENGTH BOLTS, NUTS & WASHERS: ASTM DESIGNATION A325 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM B695.

BEARING PADS SHALL BE USED WHENEVER STEEL MASONRY PLATE, OR OTHER STEEL BEARING PLATE, BEARS ON CONCRETE. PADS SHALL BE PREFORMED FABRIC BEARING PADS, 1/2" THICK. PREFORMED FABRIC BEARING PADS SHALL BE SHOCK PAD STYLE NO 15175 AS MANUFACTURED BY ALERT MANUFACTURING AND SUPPLY COMPANY, CHICAGO, ILLINOIS, OR FABREEKA PADS AS MANUFACTURED BY FABREEKA PRODUCTS COMPANY, BOSTON, MASSACHUSETTS, OR SORBTEX PADS AS MANUFACTURED BY VOSS ENGINEERING, INC., CHICAGO, ILLINOIS, OR APPROVED EQUAL.

ALL CONNECTIONS SHALL BE MADE WITH SERIES E70 ELECTRODES.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-



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	DRAWN BY: C. GERDING	DATE: 9/17	
CHECKED BY: J. VECLITCH	DATE: 9/17		

REVISIONS					SHEET NO.
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
TOTAL SHEETS					42

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
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STEEL DETAILS