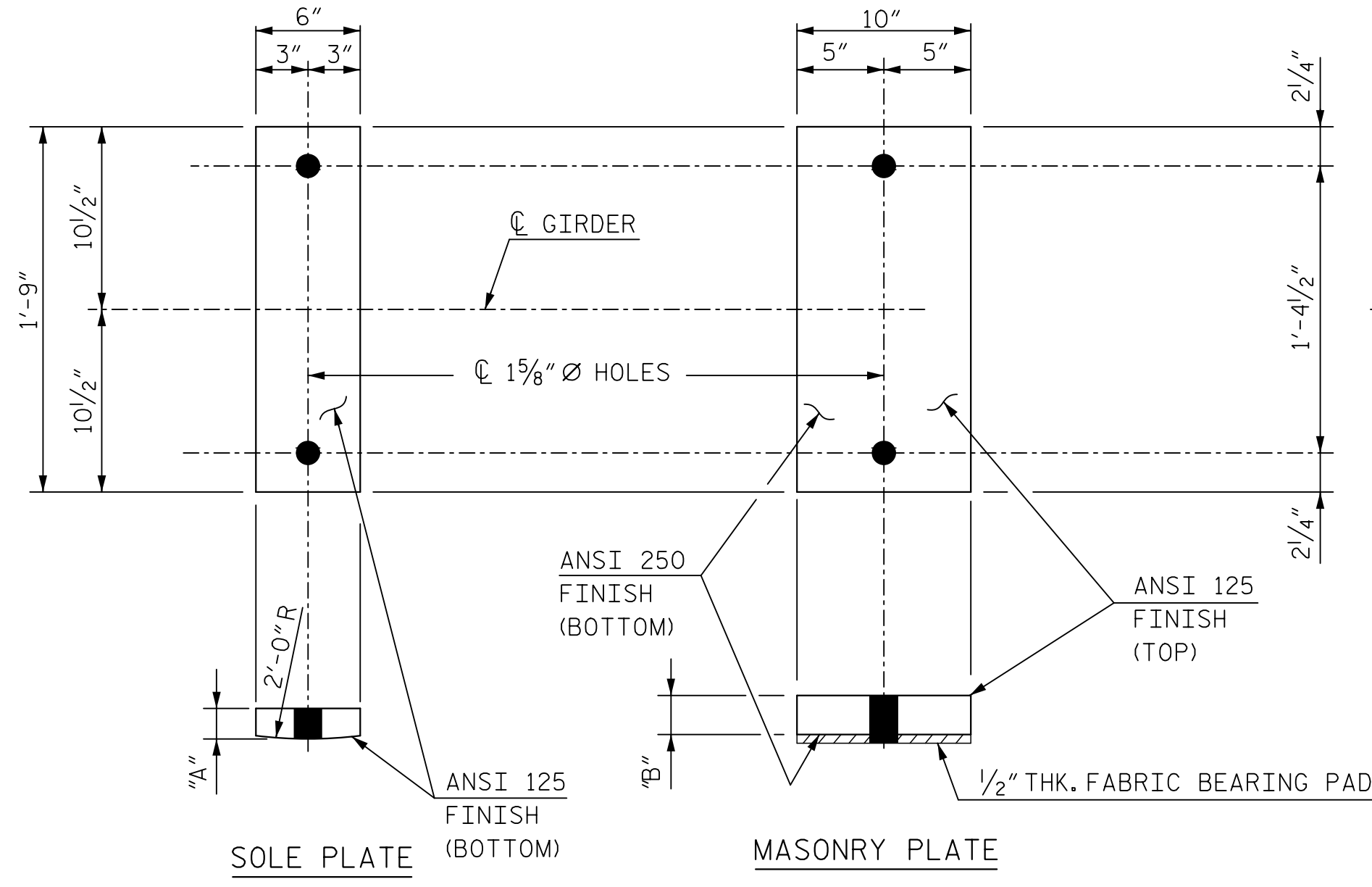


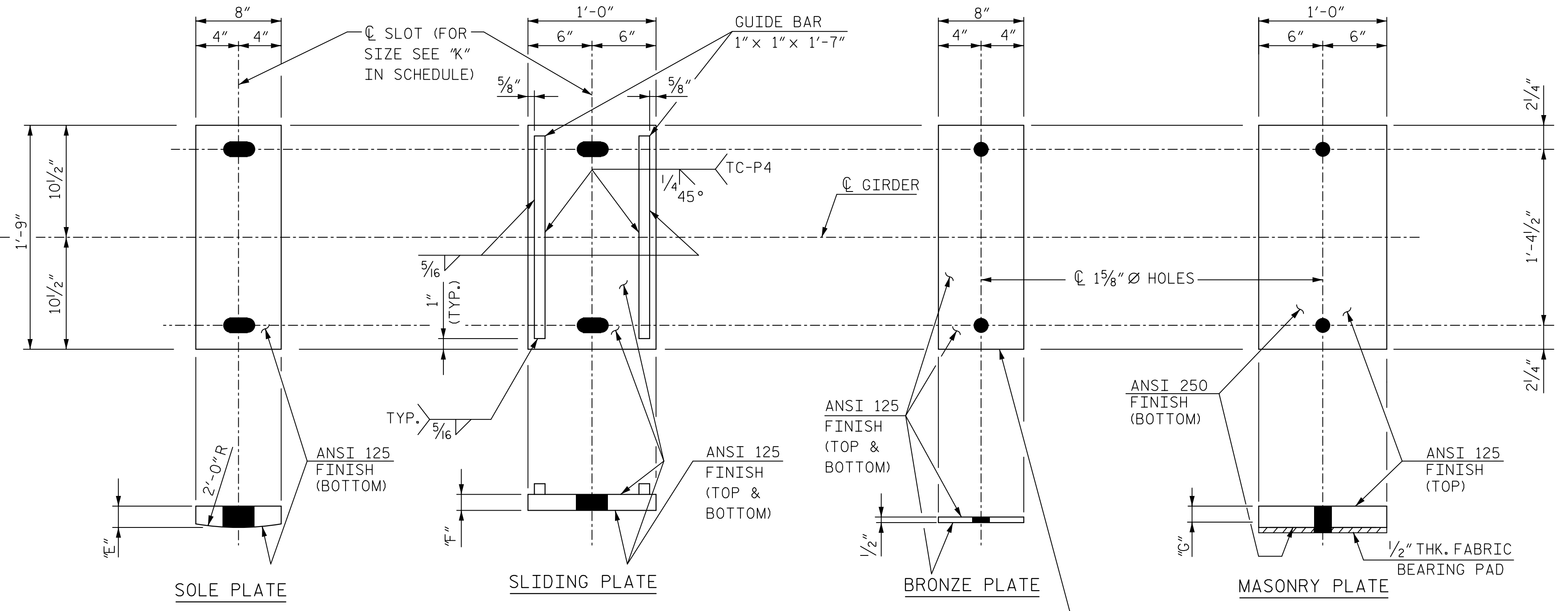
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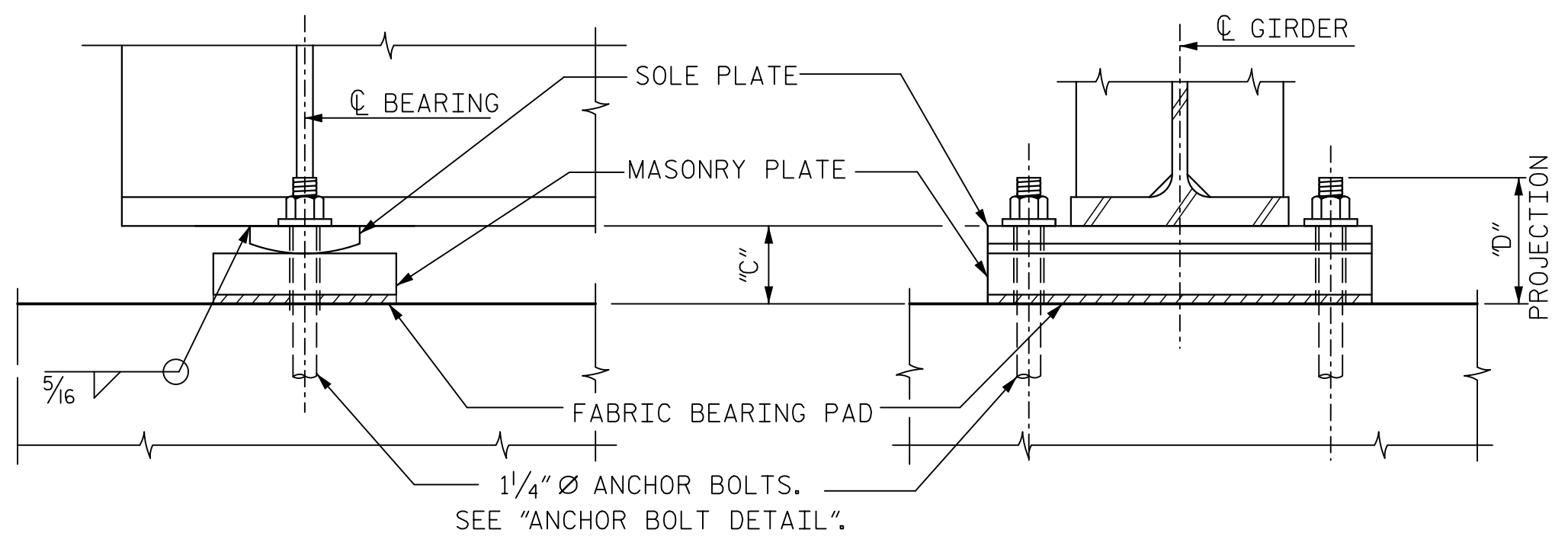


FIXED BEARINGS

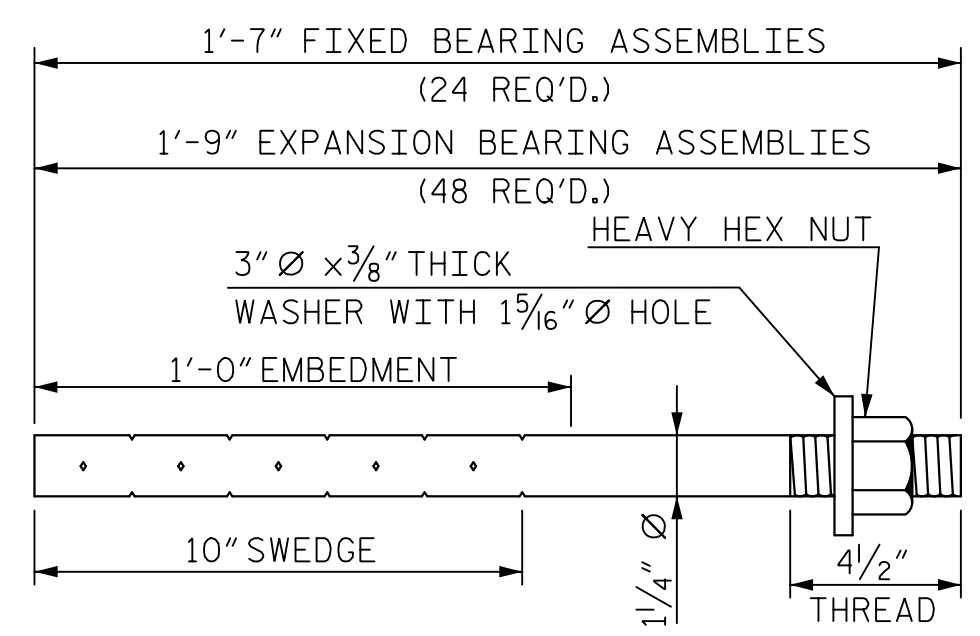


EXPANSION BEARINGS

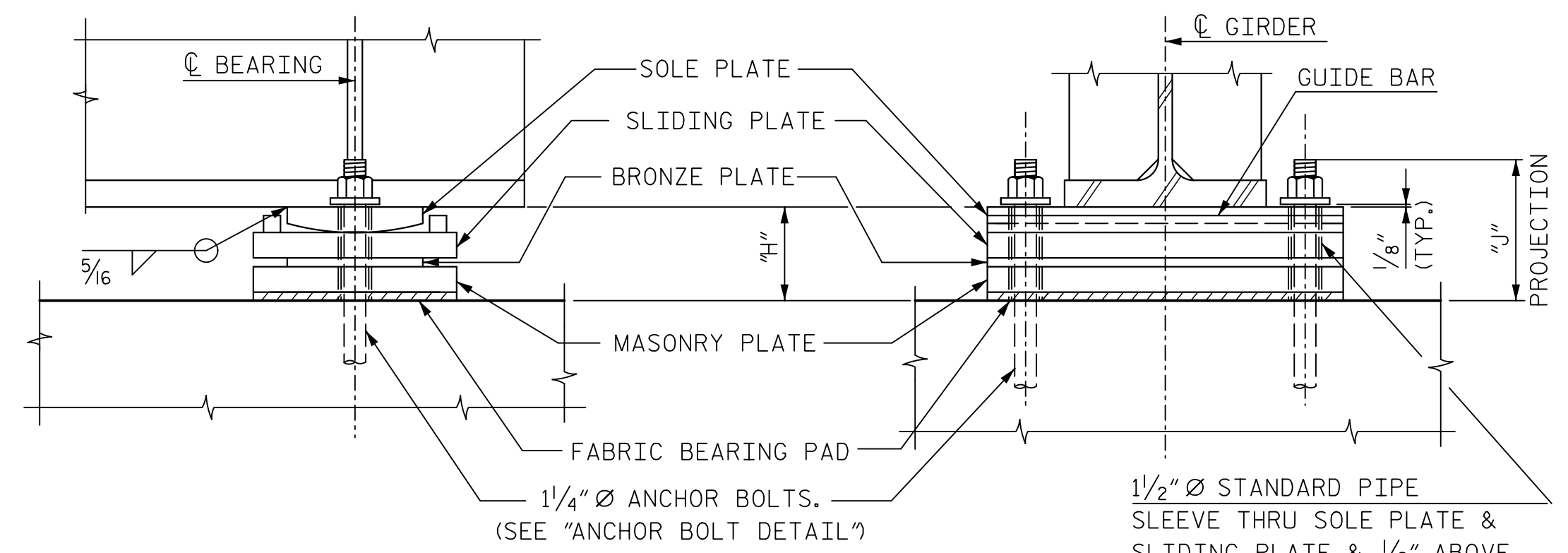
BRONZE PLATE TO BE ASTM B22 - COPPER ALLOY 911 OR ASTM B100 - COPPER ALLOY 510. TOP SURFACE TO BE SELF LUBRICATING.



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.

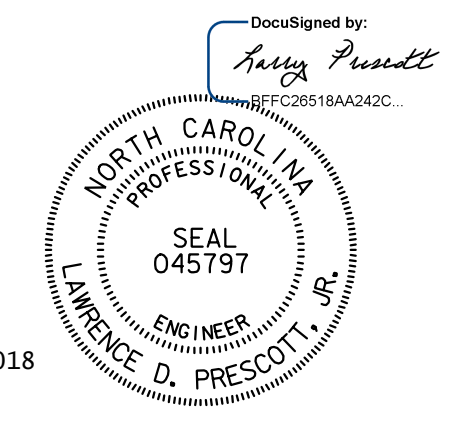
(B) THE MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL NOT BE PAINTED.

(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.



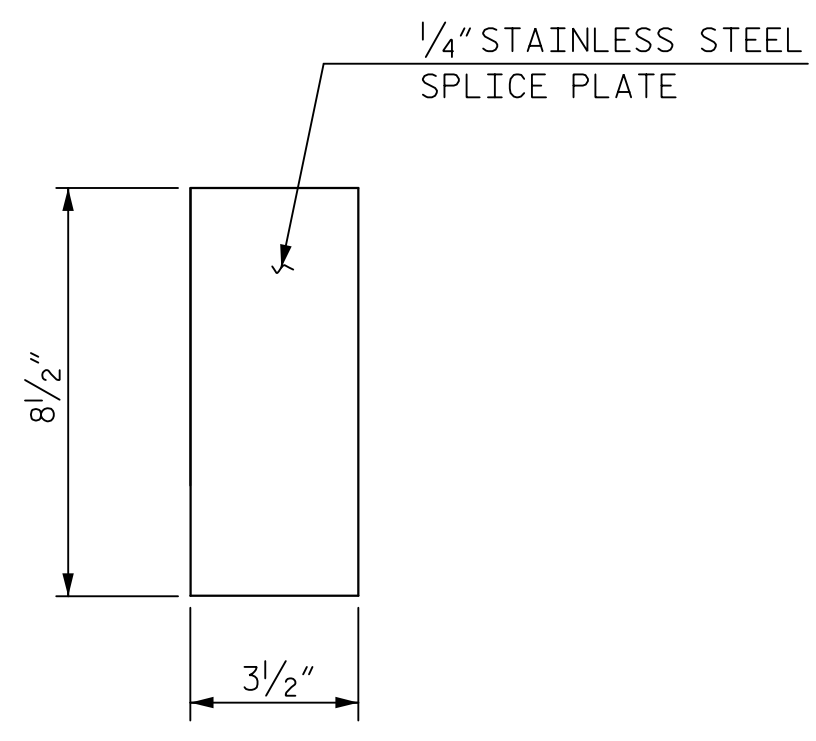
2/22/2018

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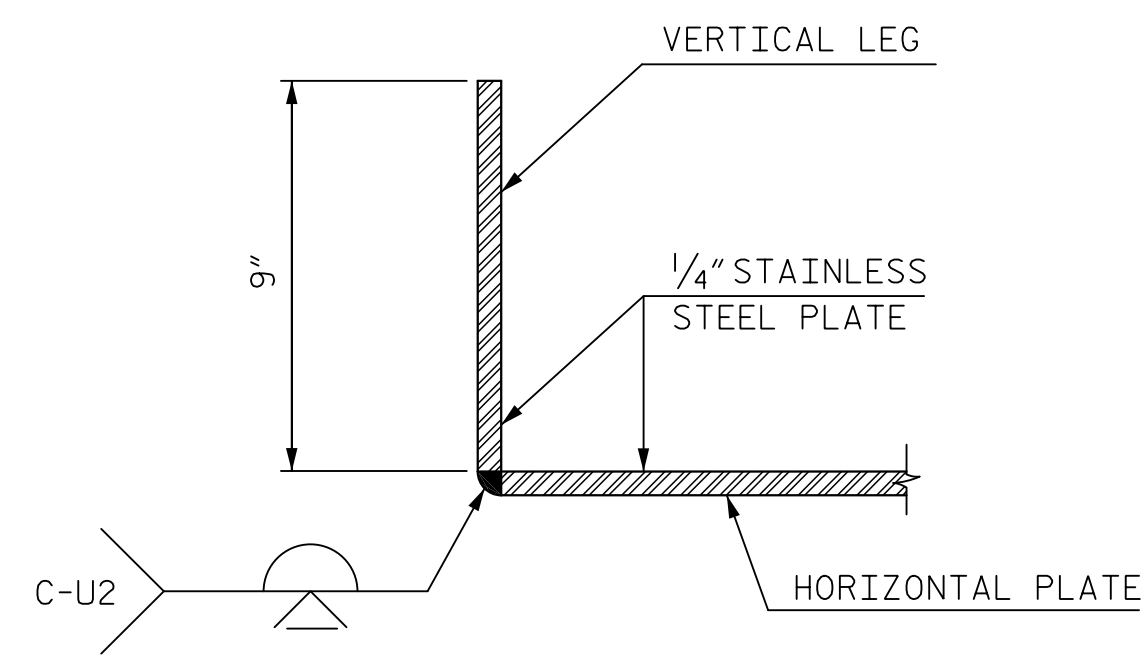
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-

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

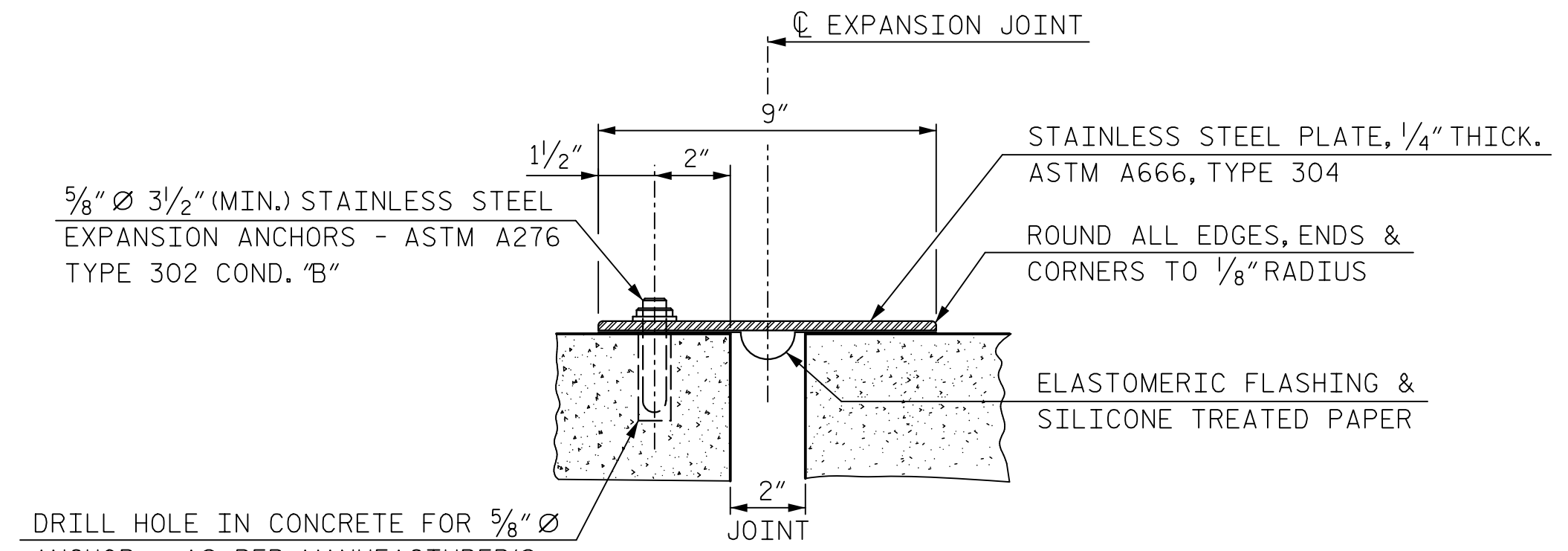
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	NO.	BY	DATE	NO.	BY		DATE
	1		9/17	3			
DRAWN BY: C. GERDING CHECKED BY: J. VELOUTCH DATE: 9/17 DATE: 9/17 DWG. NO. 14						TOTAL SHEETS 42	



DETAIL A



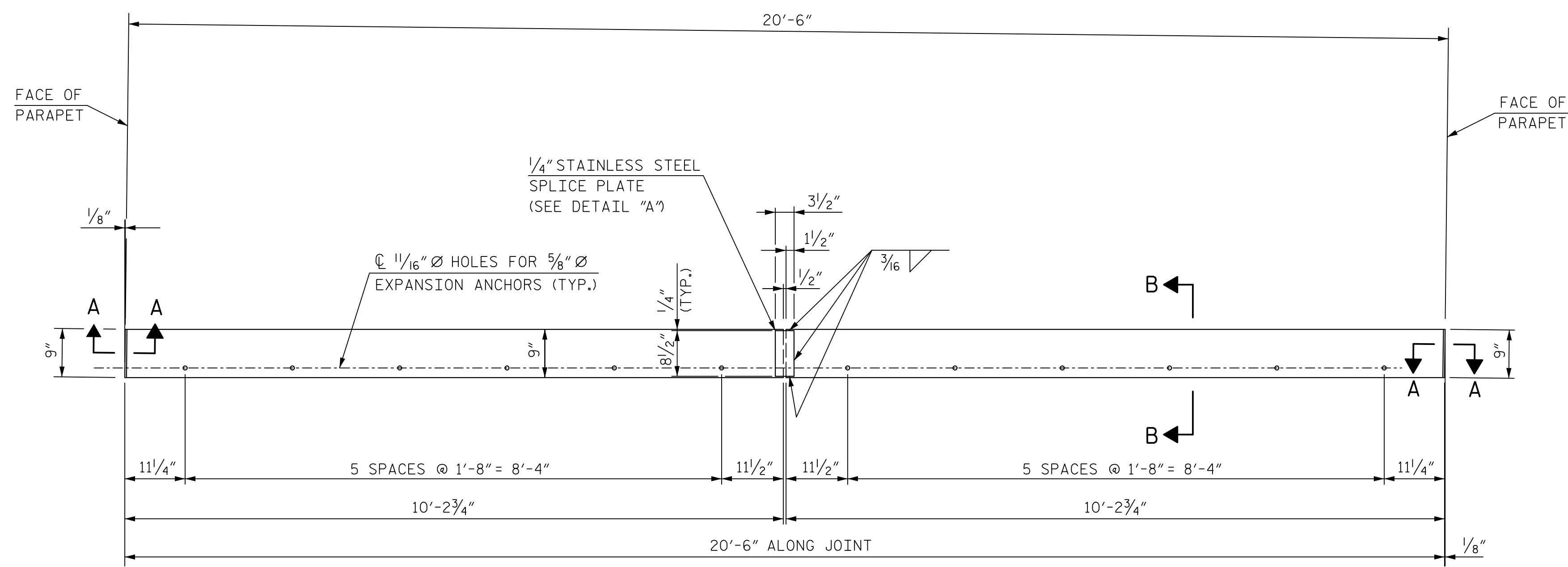
SECTION A-A



SECTION B-B

(DETAIL OF EXPANSION ANCHOR AND PLATE)

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

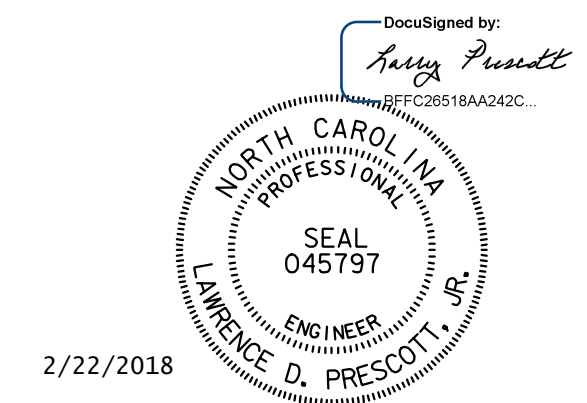


PLAN - EXPANSION PLATE
(4 REQUIRED)

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.

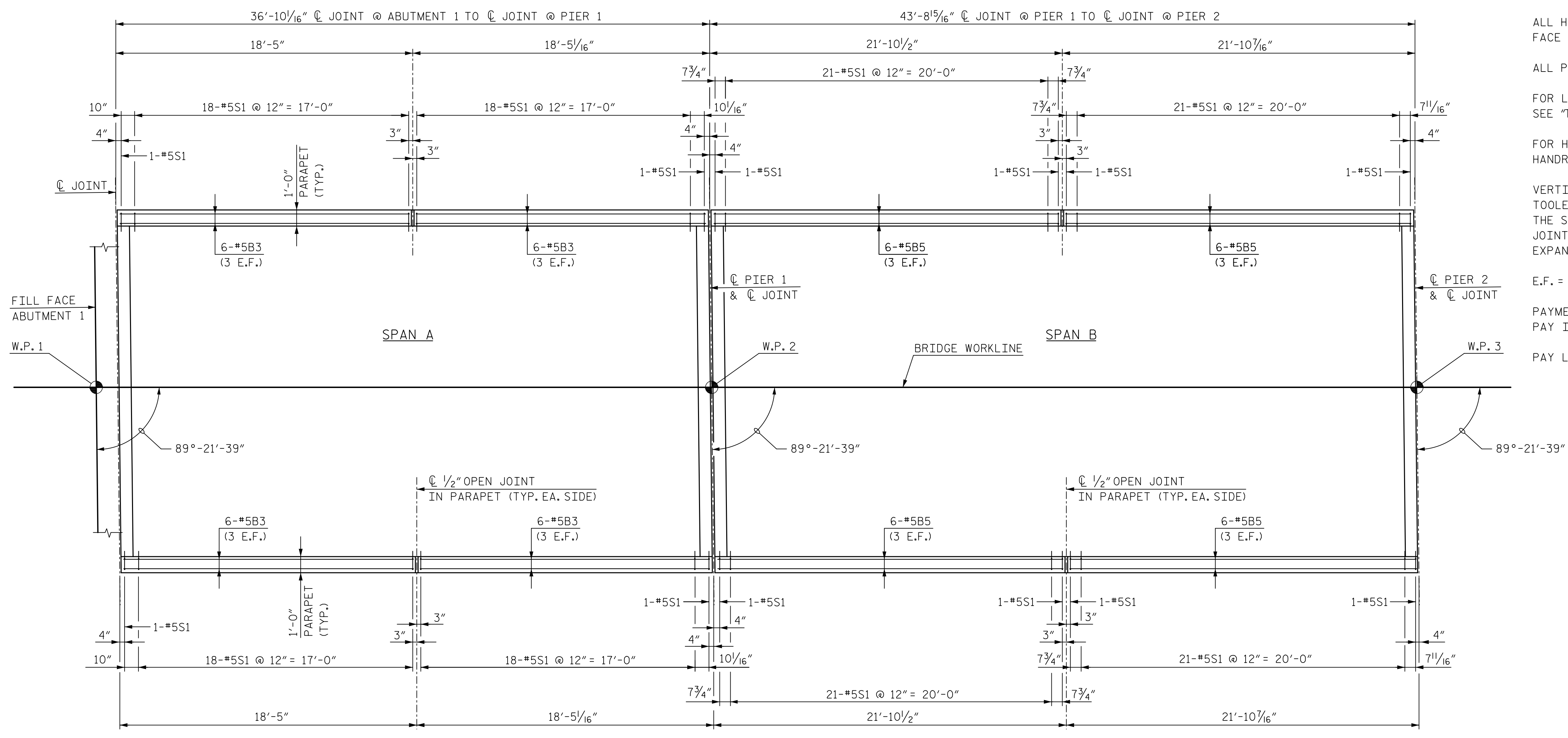
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 18+79.37 -S2-



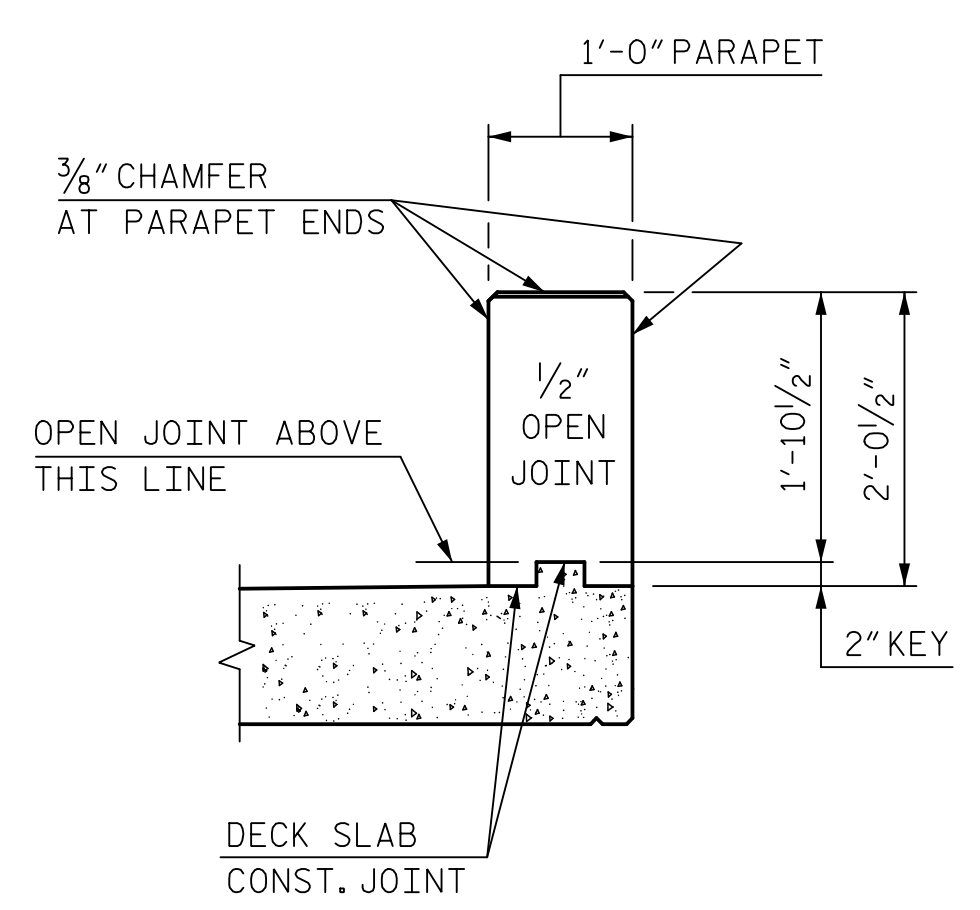
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
EXPANSION PLATE DETAILS

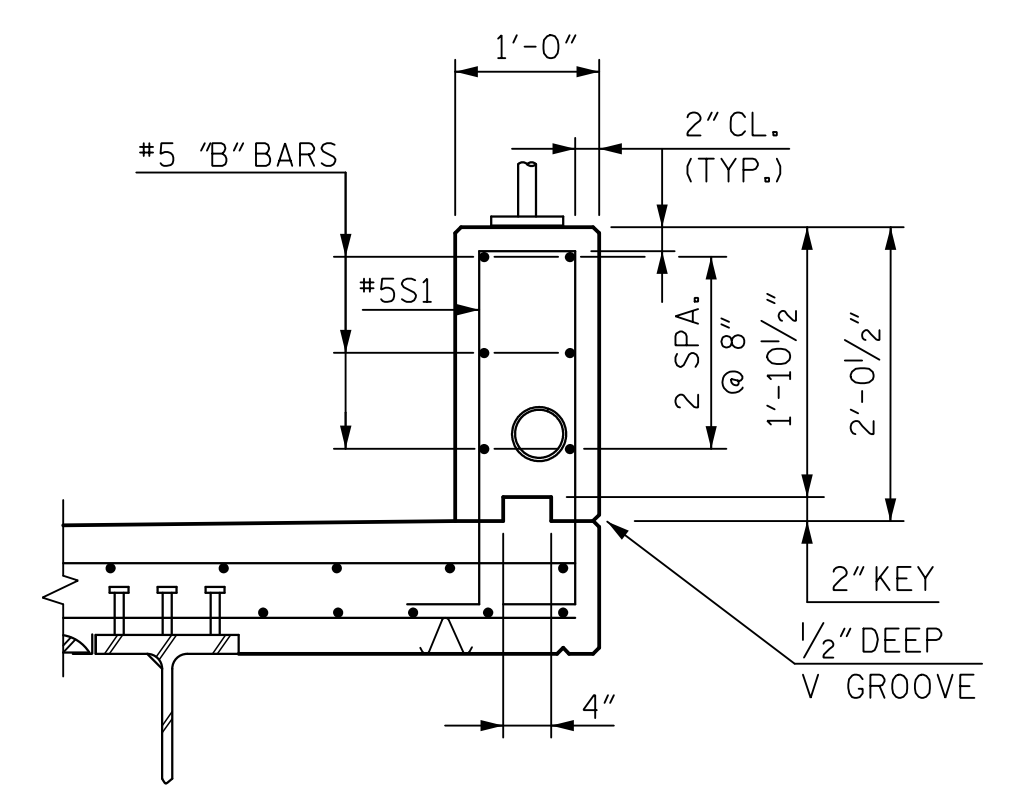
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DRAWN BY: C. GERDING CHECKED BY: J. VECLITCH	DATE: 9/17 DATE: 9/17	DWG. NO. 15	2 4	TOTAL SHEETS 42			



PLAN - SPAN A & SPAN B PARAPETS



SECTION THRU OPEN JOINT IN PARAPET

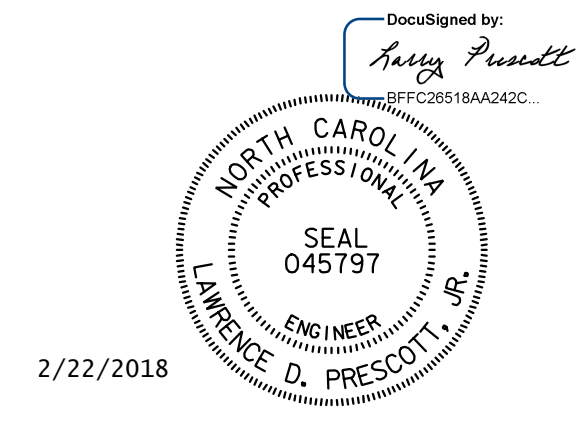


SECTION THRU PARAPET

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.
 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 = 234.9'

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 MECKLENBURG COUNTY
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SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET DETAILS



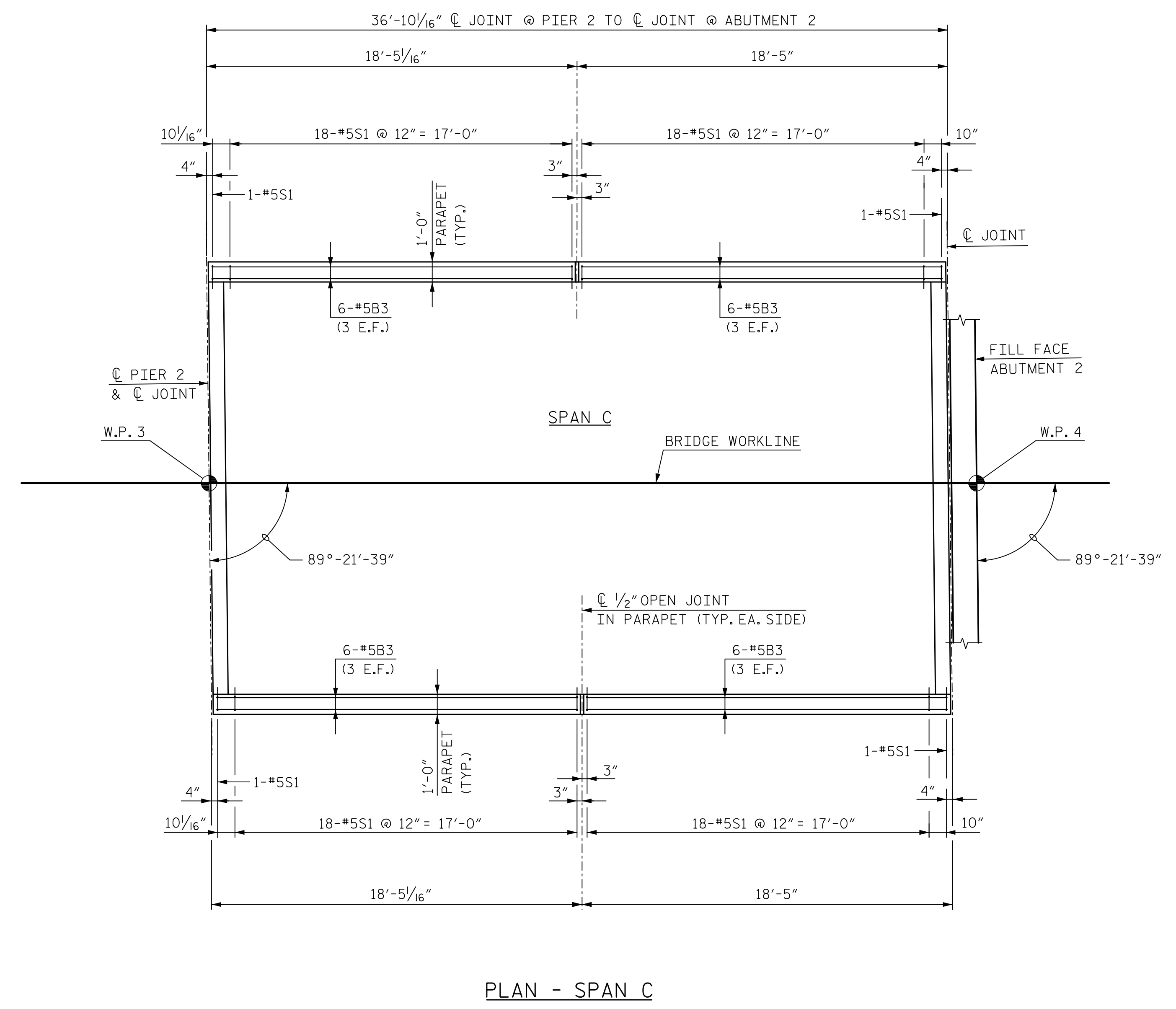
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 DRAWN BY: C. GERDING DATE: 9/17
 CHECKED BY: J. VELOTOCH DATE: 9/17
 DWG. NO. 16

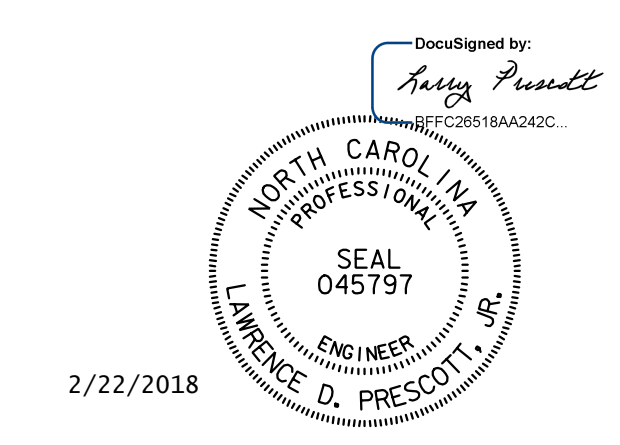
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-16
1			3			TOTAL SHEETS
2			4			42

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



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

SHEET 2 OF 2

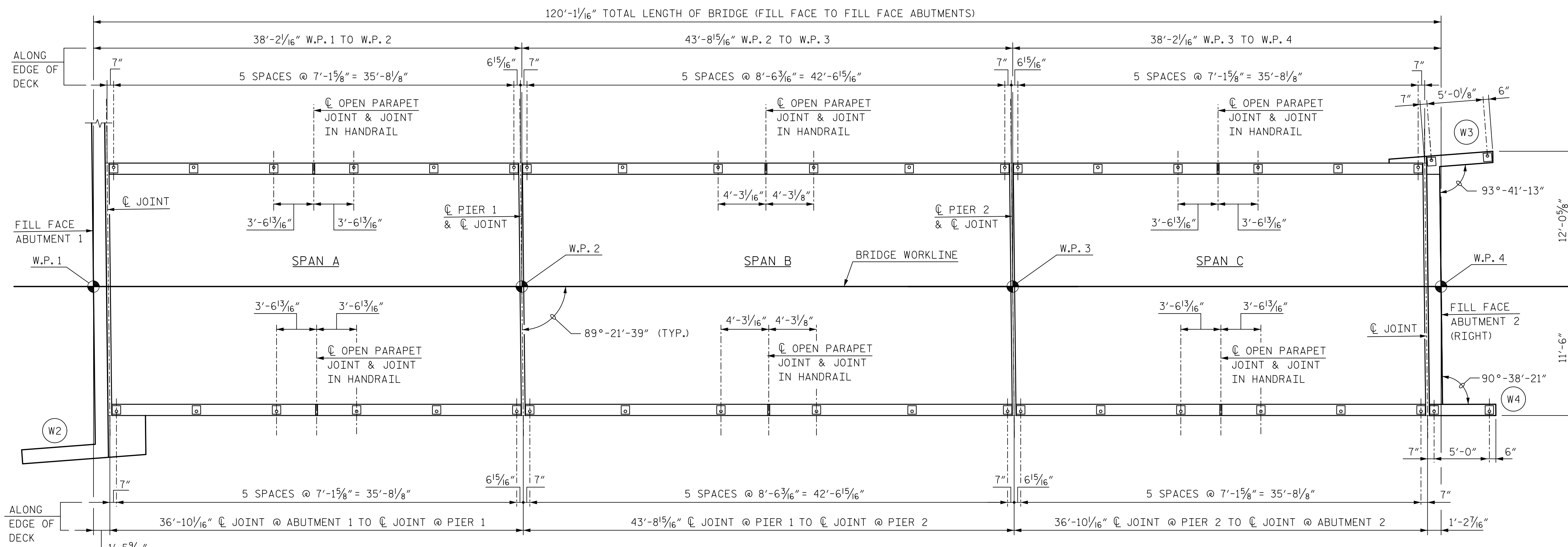


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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET DETAILS

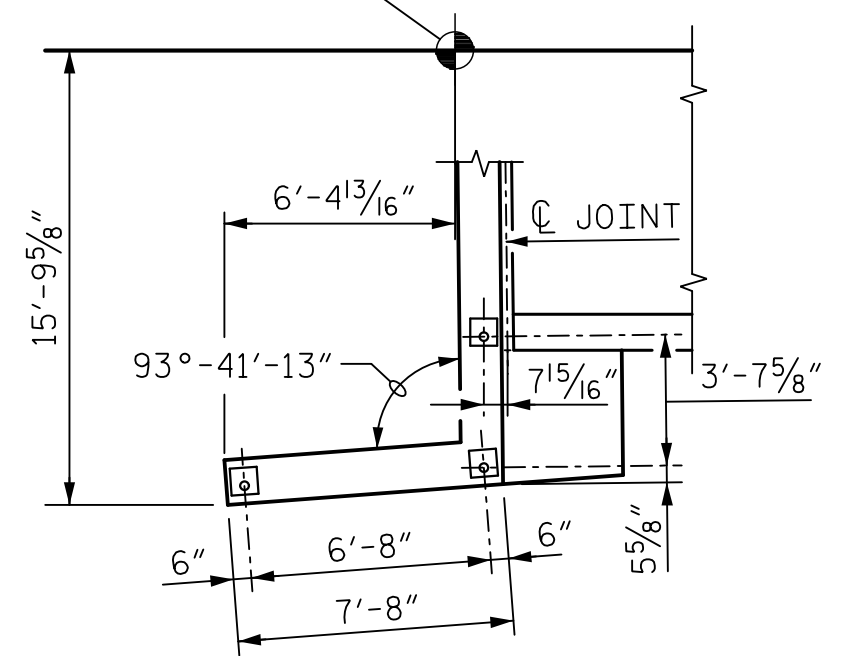
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DRAWN BY <u>C. GERDING</u> DATE <u>9/17</u> CHECKED BY <u>J. VECLITCH</u> DATE <u>9/17</u>	DWG. NO. 17		2	4		42	

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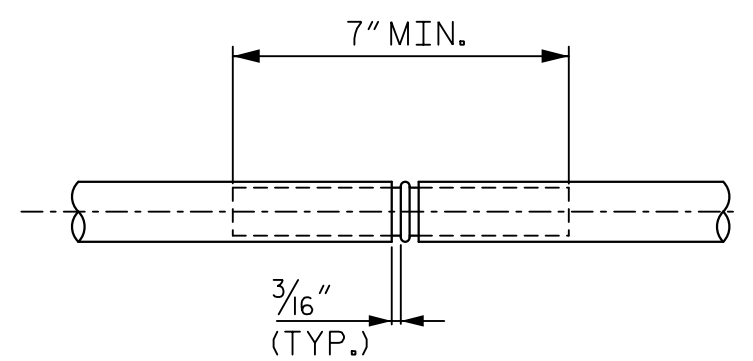


FENCE AND HANDRAIL POST SPACING - BRIDGE AND WINGWALLS

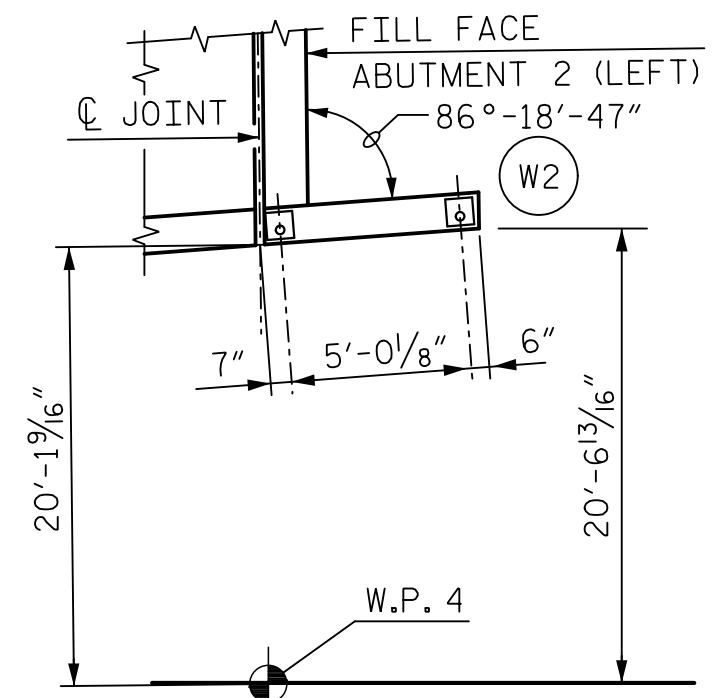
NOTES:
 FENCE FRAMEWORK INCLUDING BASE PLATES TO HAVE A FUSION BONDED BLACK VINYL COATING IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM F-1043.
 FENCE POSTS AND RAIL SHALL BE SCHEDULE 40 STEEL PIPE IN ACCORDANCE WITH ASTM F-1043.
 PROVISIONS SHALL BE MADE FOR THE DRAINAGE OF WATER FROM INSIDE THE FENCE 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 "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (2 OF 3)" SHEET FOR FENCE AND STEEL HANDRAIL DETAILS AND NOTES.
 SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (3 OF 3)" FOR ALUMINUM HANDRAIL DETAILS AND NOTES.
 "SHOP DRAWINGS FOR RAILING/FENCING ARE REQUIRED AND SHALL BE SUBMITTED FOR APPROVAL."



ABUTMENT 1 - WINGWALL W2



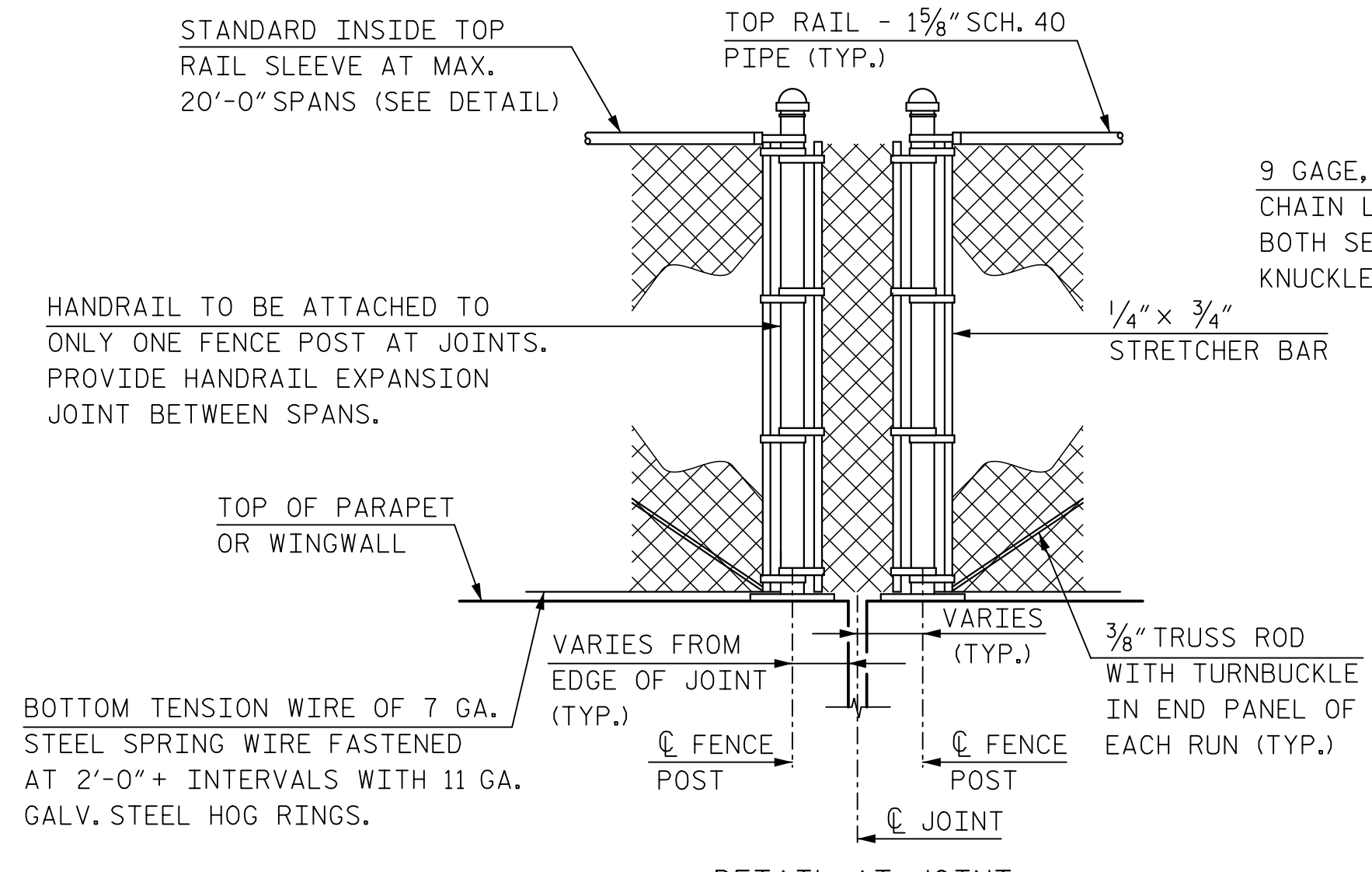
TOP RAIL SLEEVE DETAIL



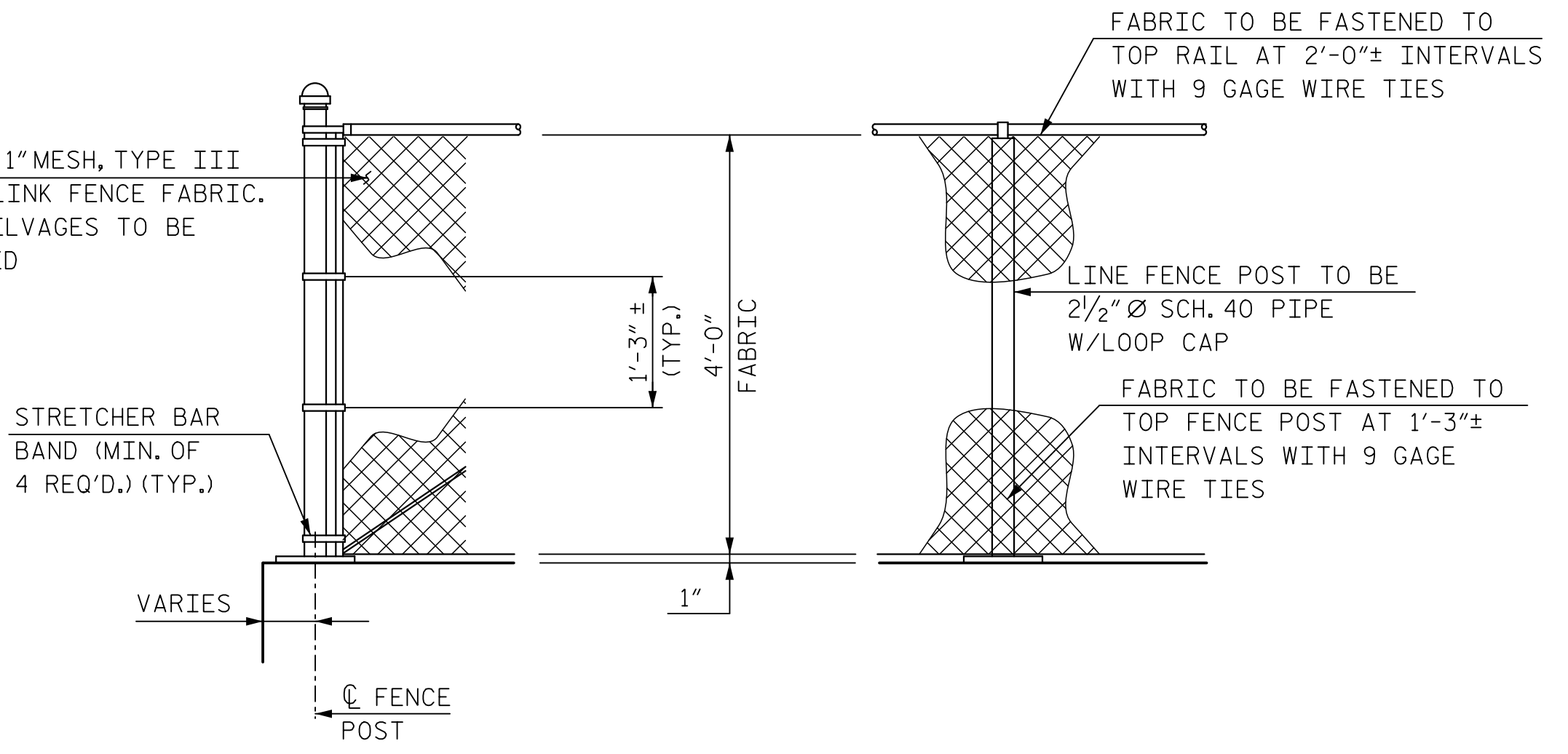
ABUTMENT 2 (LEFT) - WINGWALL W2

NOTE:
 FOR ALUMINUM HANDRAIL POST SPACING AT ABUTMENT 1 BACKWALL AND WINGWALL W1 SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (3 OF 3)".
 FOR ALUMINUM HANDRAIL POST SPACING AT ABUTMENT 2 (LEFT) BACKWALL AND WINGWALL W1 SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (3 OF 3)".

FENCE AND HANDRAIL POST SPACING - WINGWALL



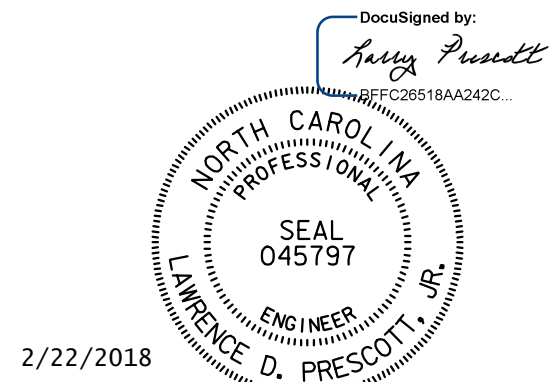
DETAIL AT JOINT



DETAIL AT END

DETAILS FOR CHAIN LINK FENCE

FENCE AND HANDRAIL POST SPACING - WINGWALL



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 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

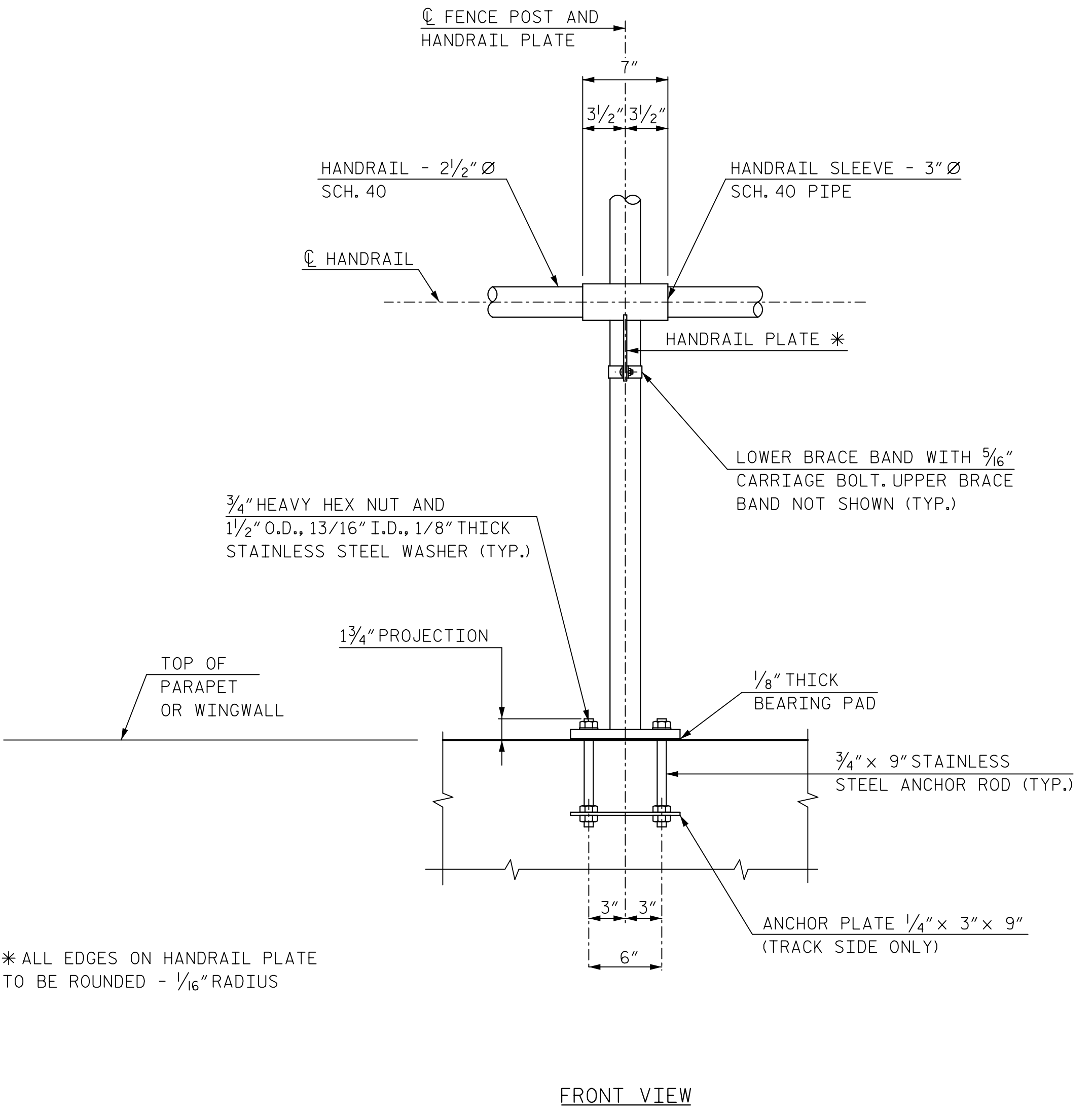
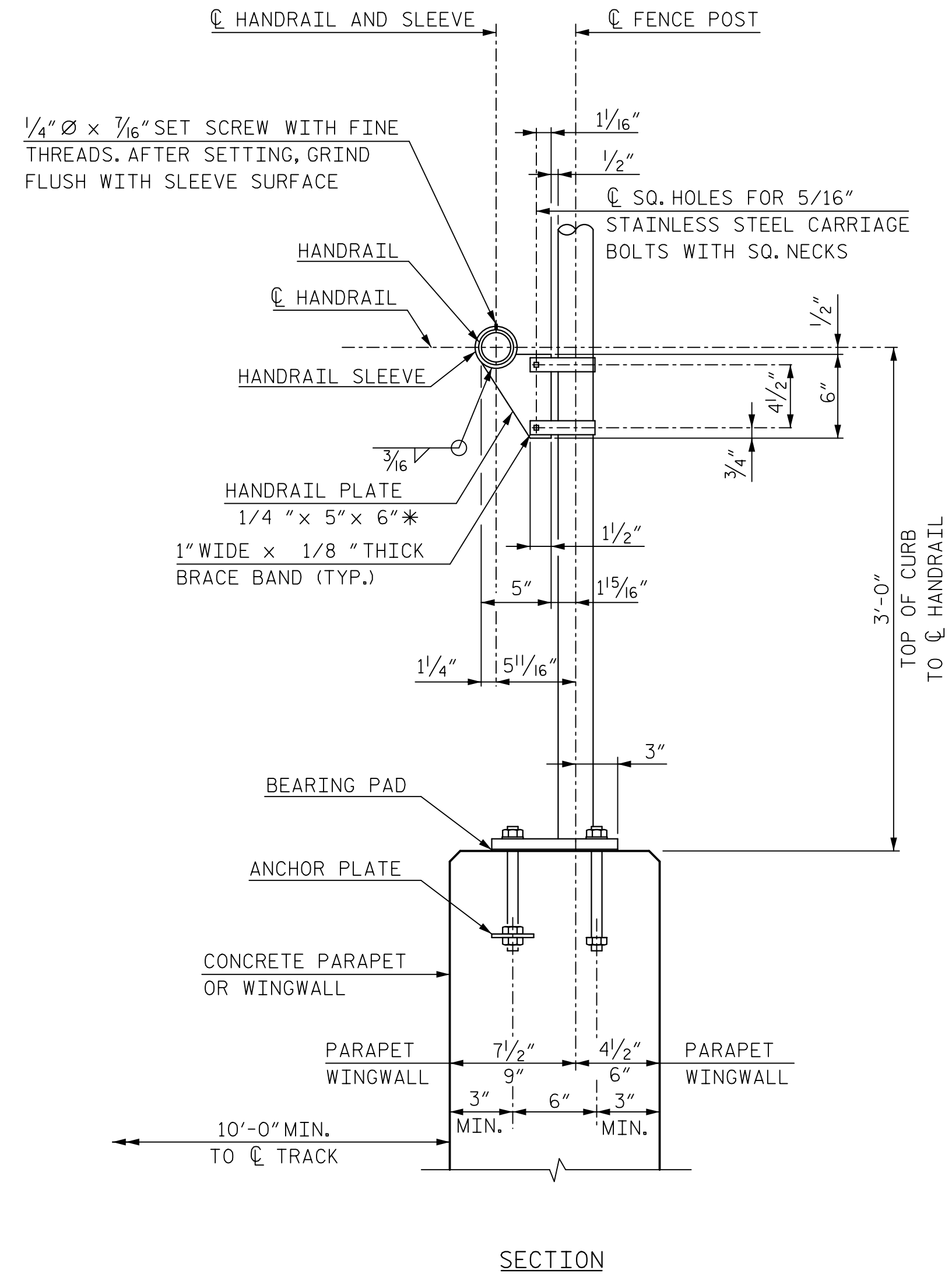
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

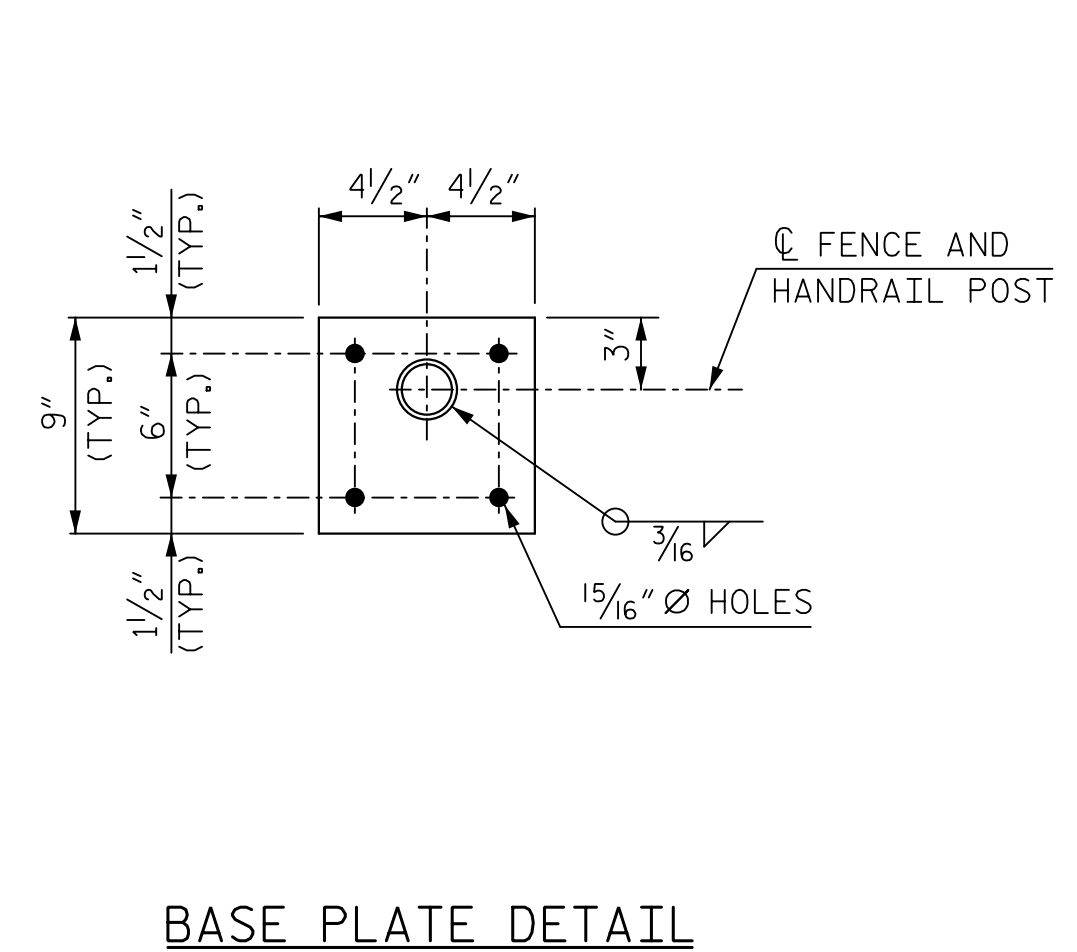
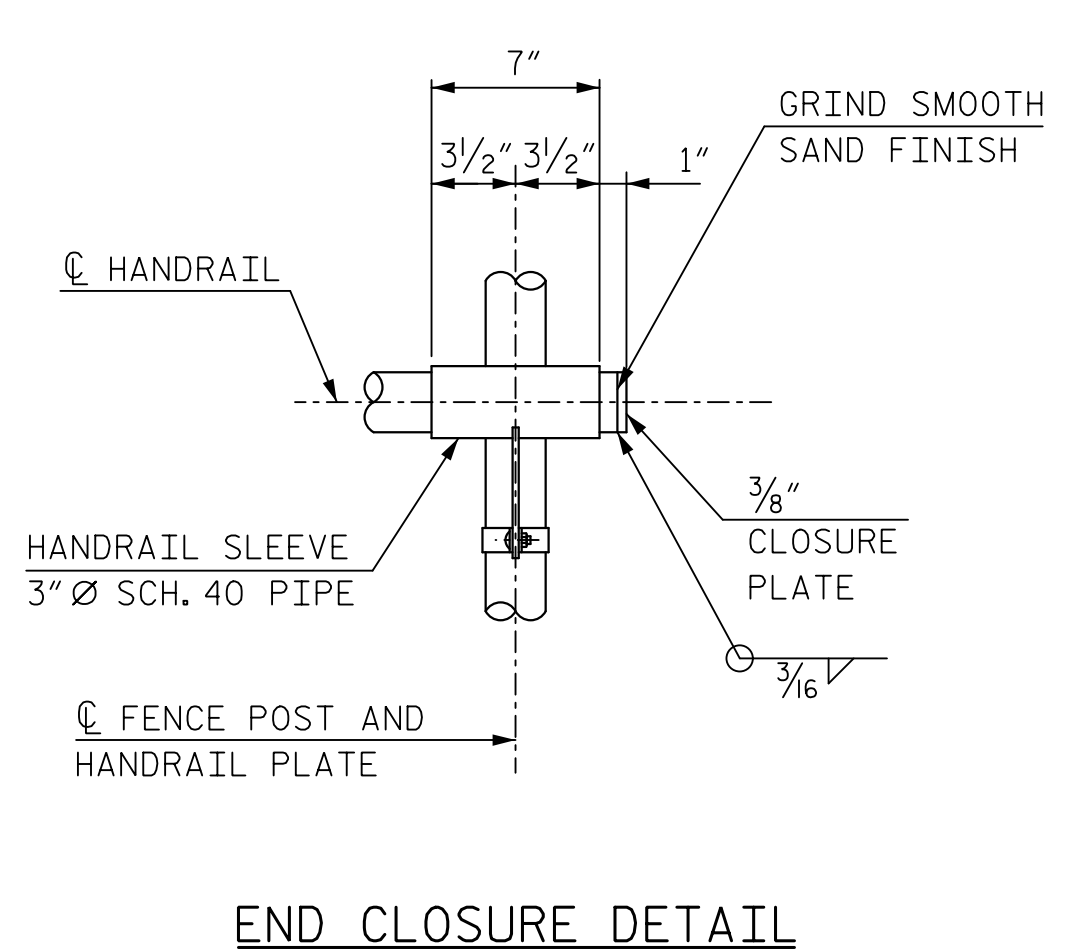
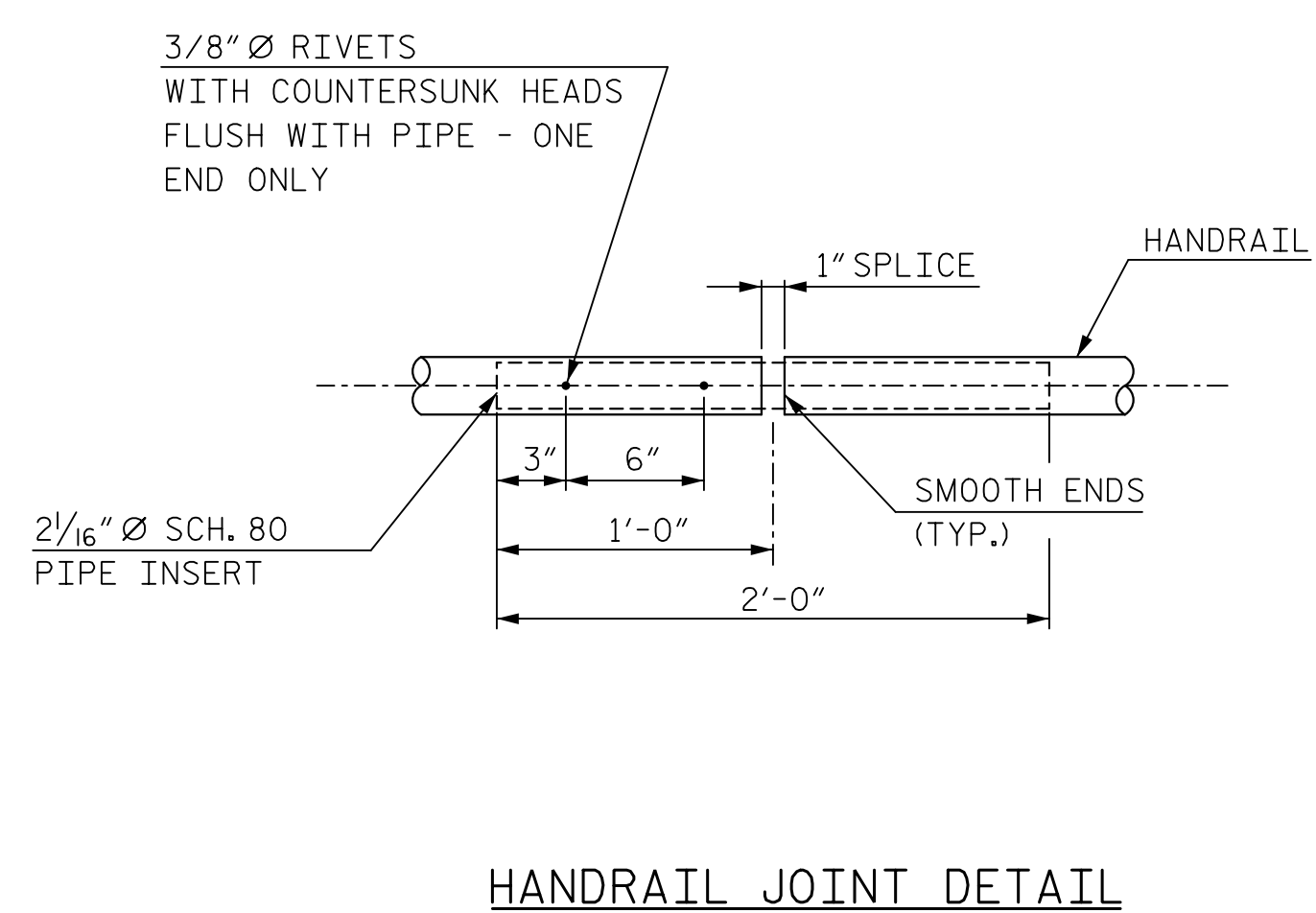
SUPERSTRUCTURE
 BRIDGE MOUNTED FENCE
 AND HANDRAIL DETAILS

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	NO.	BY	DATE	NO.		BY	DATE
	1			3			
DRAWN BY: <u>C. GERDING</u> DATE: <u>9/17</u> CHECKED BY: <u>J. VELOUTCH</u> DATE: <u>9/17</u> DWG. NO. 18							

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DETAILS FOR PIPE RAILING



NOTES:

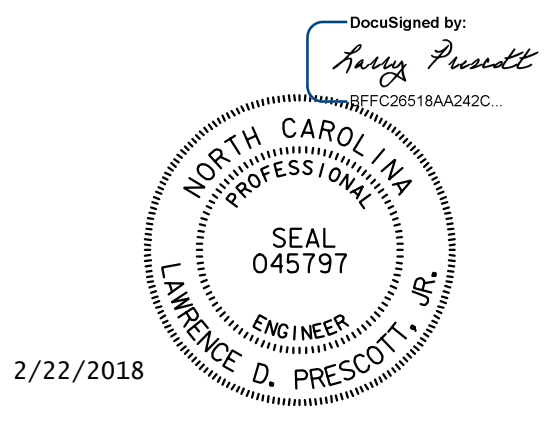
- SEE "BRIDGE MOUNTED FENCE AND HANDRAIL DETAILS (1 OF 3)" FOR JOINT IN HANDBRAIL SPACING.
- ALL HANDBRAIL PIPE, SLEEVES, AND EXPANSION JOINTS TO BE SMOOTH AND FREE OF SHARP EDGES.
- HANDBRAIL PIPE SHALL BE SCHEDULE 40 STEEL PIPE IN ACCORDANCE WITH ASTM F-1043.
- STAINLESS STEEL BOLTS, NUTS, AND ANCHOR 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 HANDBRAIL 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.
- HANDBRAIL, HANDBRAIL 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+79.37 -S2-

SHEET 2 OF 3

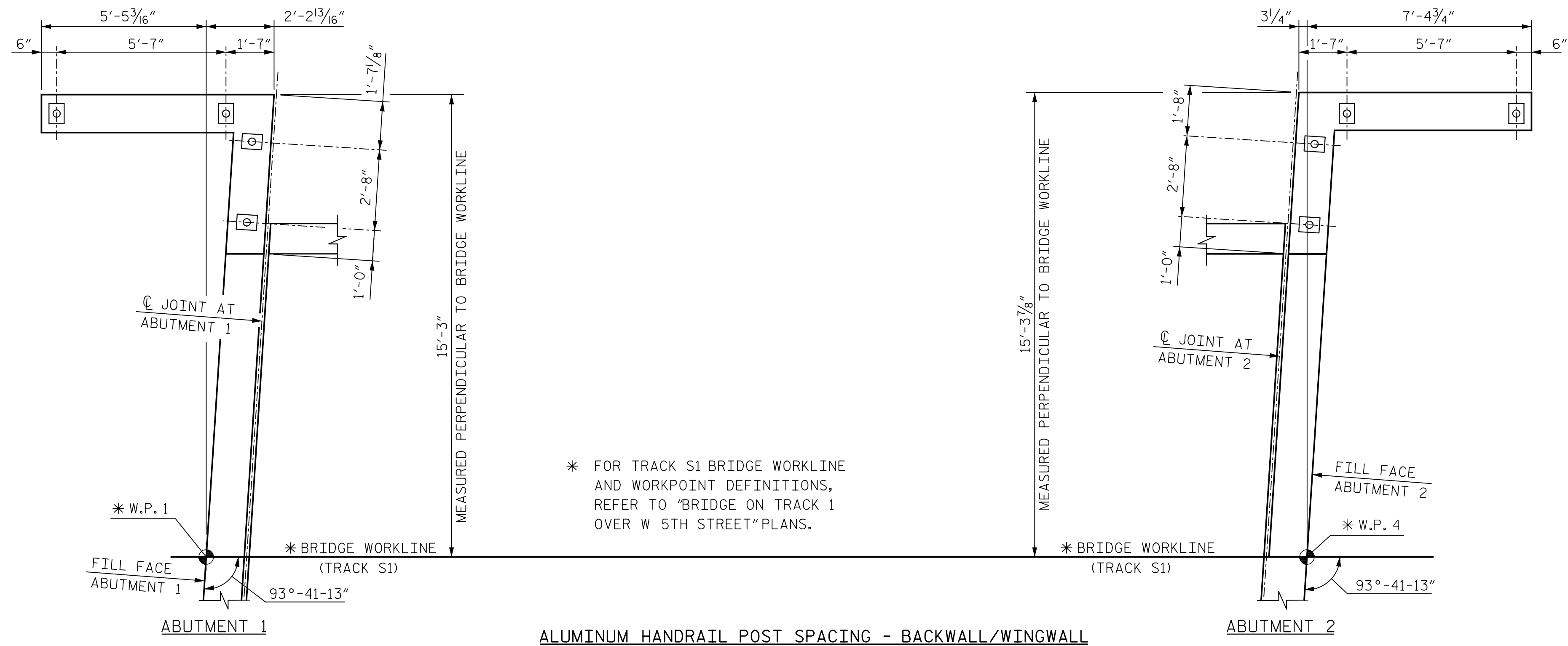
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 BRIDGE MOUNTED FENCE
 AND HANDRAIL DETAILS



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	NO.	BY	DATE	NO.		BY	DATE
	1	J. BAYNE	9/17	3			
DRAWN BY: J. BAYNE		DATE: 9/17		DWG. NO. 19		TOTAL SHEETS: 42	
CHECKED BY: J. VELOCH		DATE: 9/17					



ALUMINUM HANDRAIL POST SPACING - BACKWALL/WINGWALL

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.

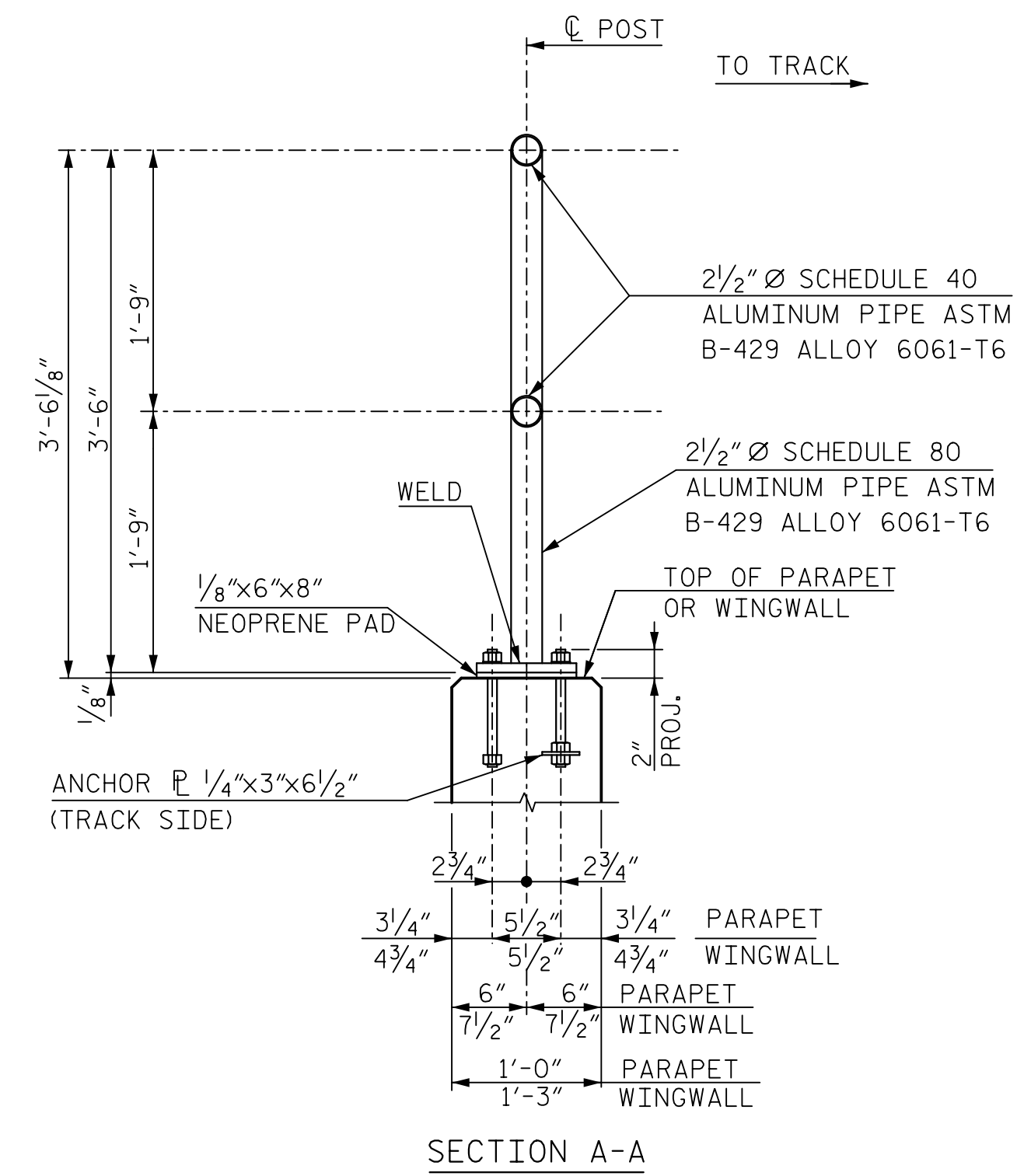
THE CENTERLINE OF ANY SPLICE AND/OR EXPANSION JOINT IS TO BE LOCATED AT LEAST 2'-0" AWAY FROM CENTERLINE OF POST. EXPANSION AND/OR SPLICE JOINTS FOR EACH RAIL OF TWO RAILINGS ARE TO BE PLACED IN THE SAME LOCATION AND IN THE SAME PANEL.

WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS STRUCTURAL WELDING CODE - ALUMINUM.

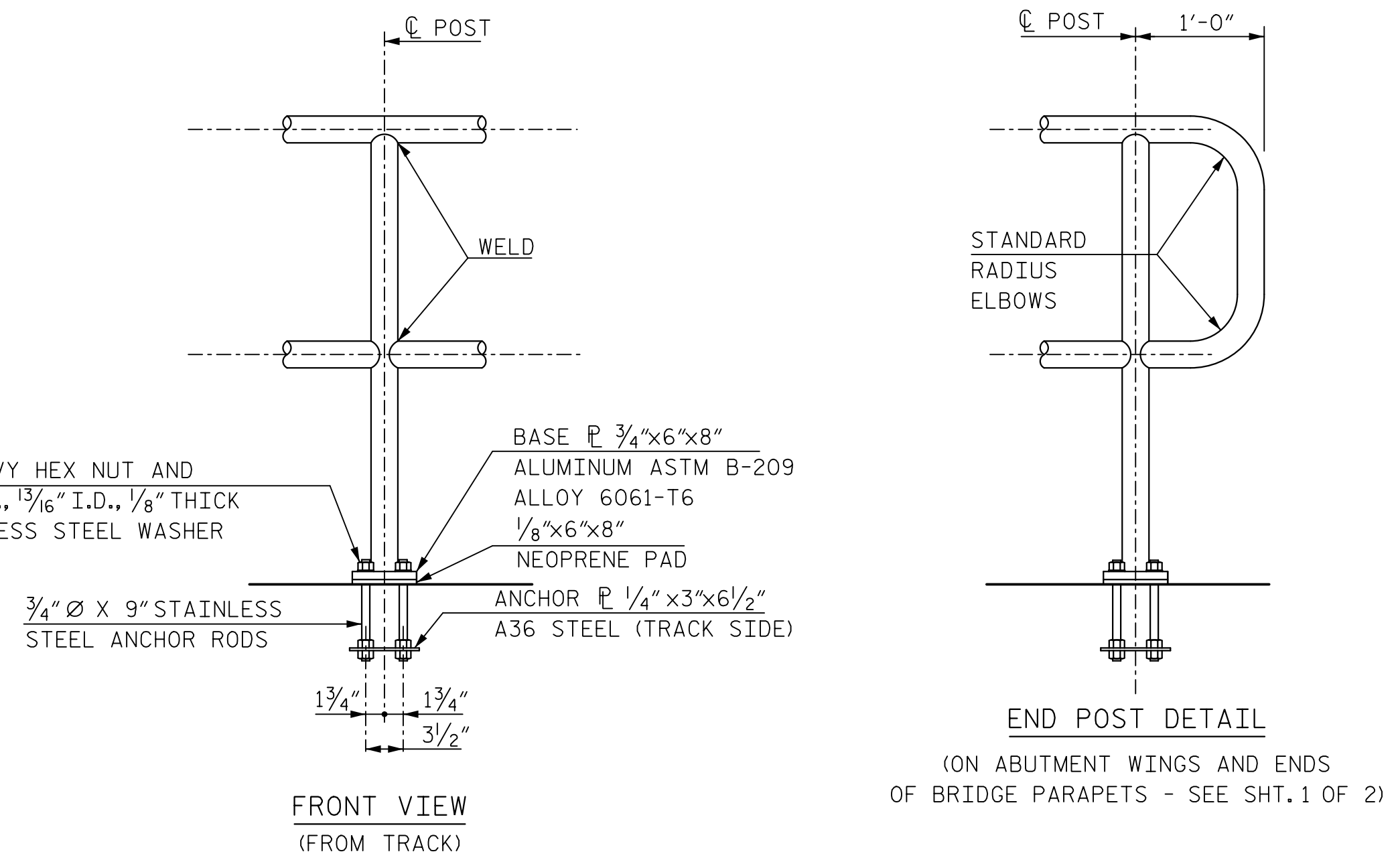
THE LENGTH OF METAL RAIL TO BE PAID FOR SHALL BE THE CONTINUOUS LENGTH MEASURED FROM END TO END OF RAIL, ALONG THE TOP RAIL.

SHOP DRAWINGS FOR RAILINGS ARE REQUIRED AND SHALL BE SUBMITTED FOR APPROVAL.

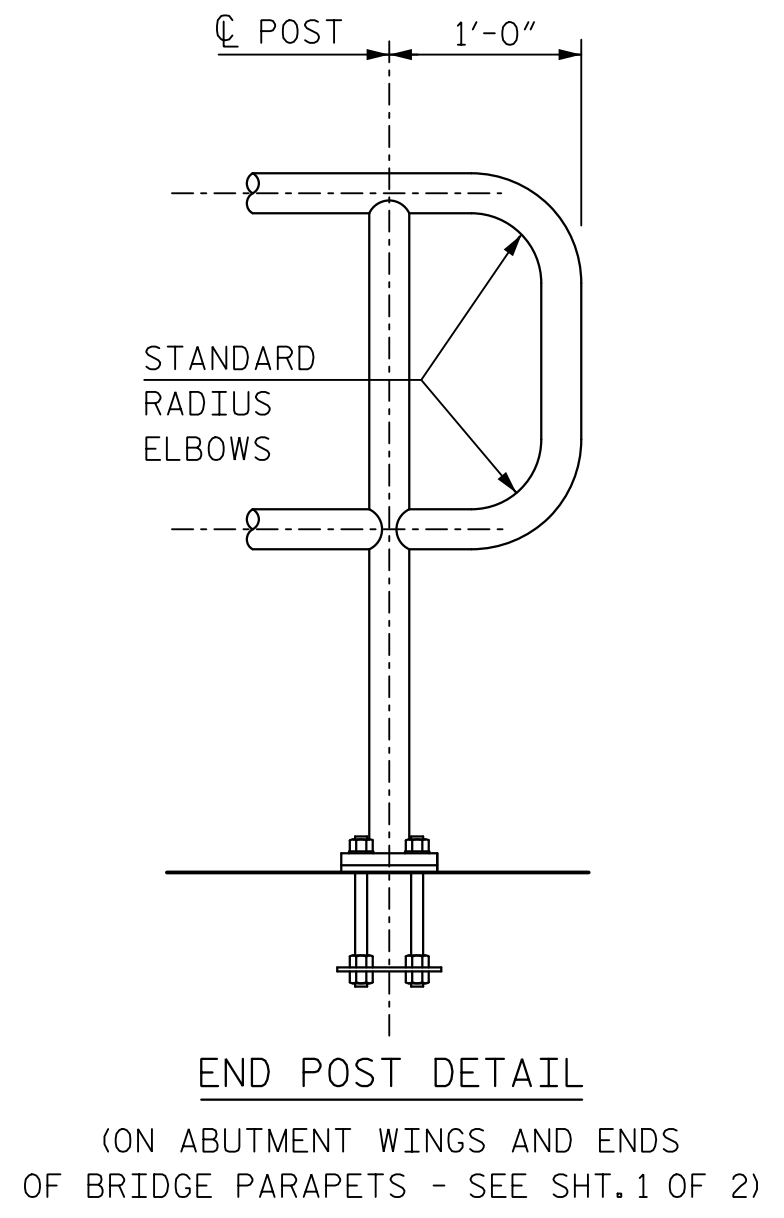
FOR METAL RAIL (ALUMINUM), SEE SPECIAL PROVISIONS.



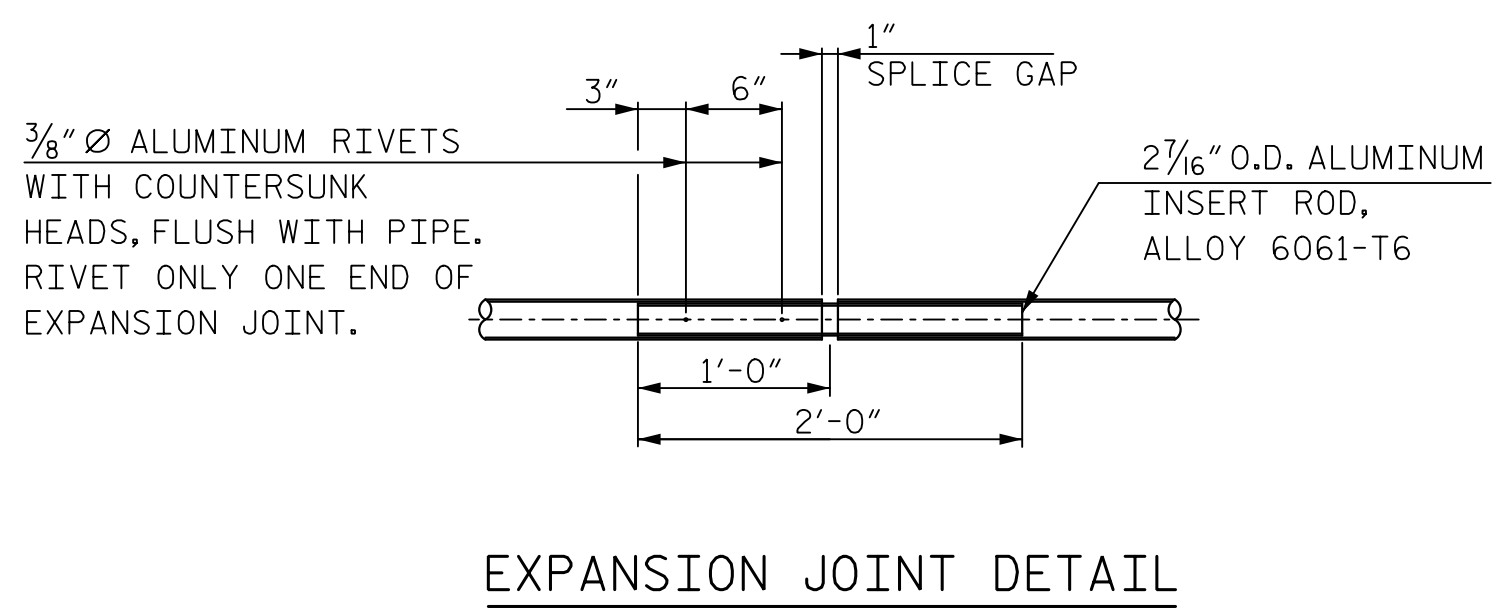
ALUMINUM HANDRAIL AND POST



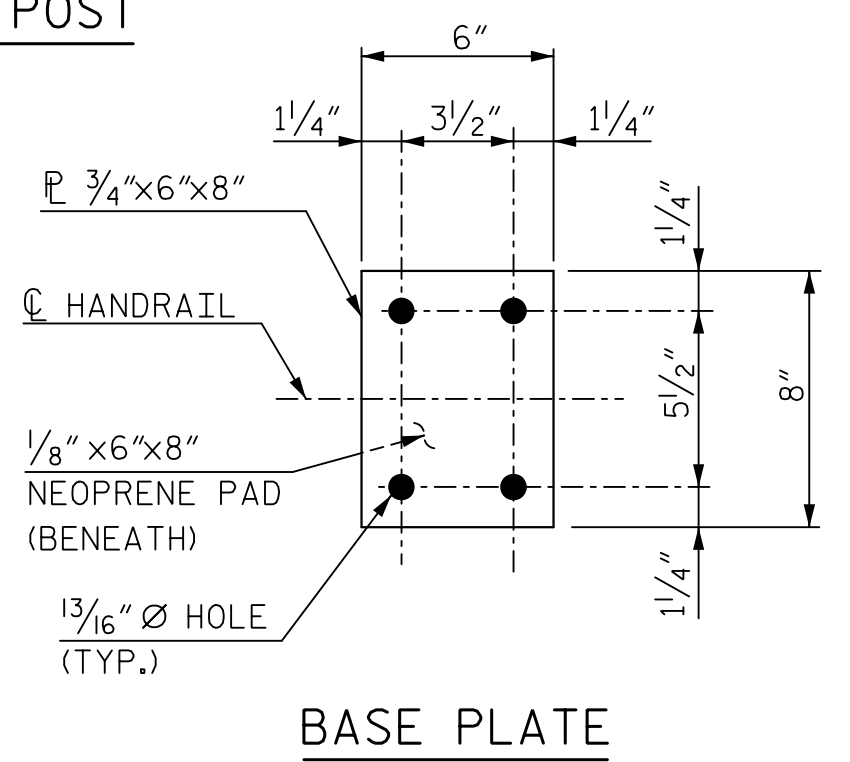
ALUMINUM HANDRAIL AND POST



END POST DETAIL
(ON ABUTMENT WINGS AND ENDS OF BRIDGE PARAPETS - SEE SHT. 1 OF 2)



EXPANSION JOINT DETAIL



BASE PLATE

DocuSigned by:

 2/22/2018
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

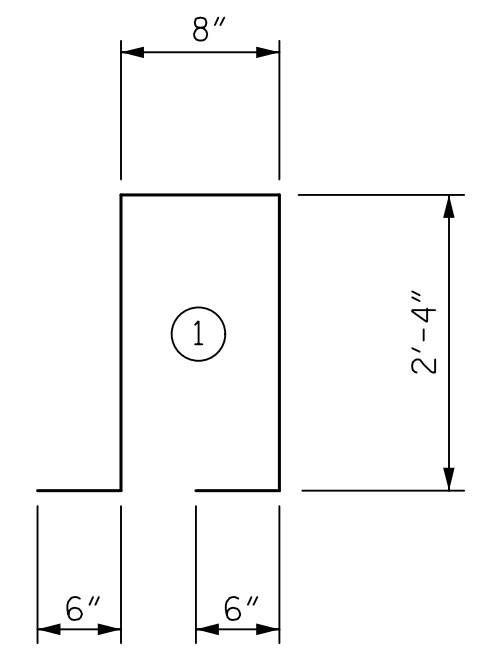
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 3 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BRIDGE MOUNTED FENCE
 AND HANDRAIL DETAILS

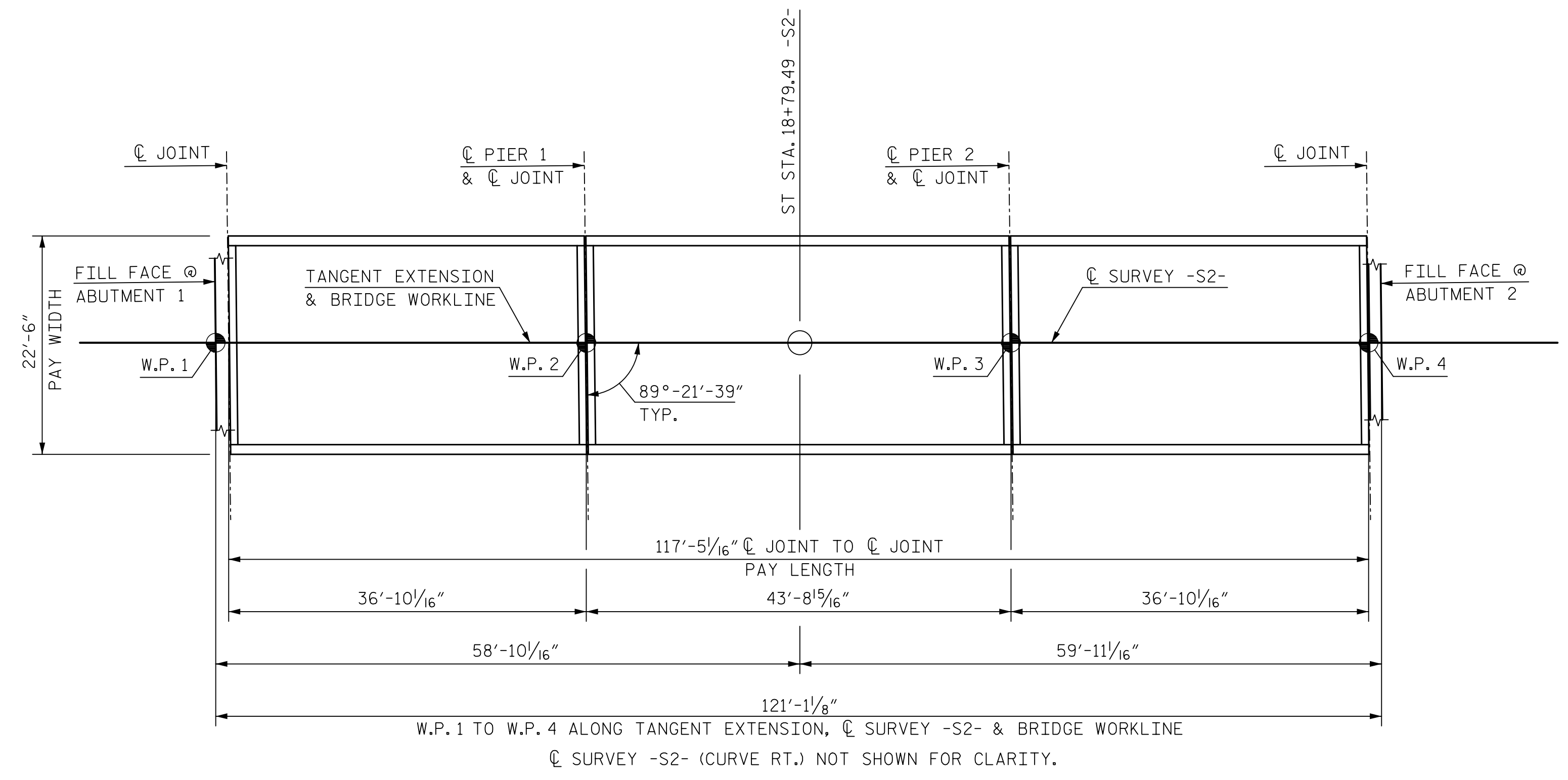
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609 DWG. NO. 20	REVISIONS				SHEET NO. S3-20 TOTAL SHEETS 42		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
2			4				

0012DEL_P28

EPOXY-COATED REINFORCING STEEL																	
SPAN A						SPAN B						SPAN C					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	138	5	STR.	22'-2"	3,191	A1	163	5	STR.	22'-2"	3,769	A1	138	5	STR.	22'-2"	3,191
A2	2	5	STR.	15'-1"	31	A3	2	5	STR.	7'-2"	15	A2	2	5	STR.	15'-1"	31
B1	64	4	STR.	30'-0"	1,283	B1	64	4	STR.	30'-0"	1,283	B1	64	4	STR.	30'-0"	1,283
B2	64	4	STR.	8'-5"	360	B2	64	4	STR.	8'-5"	360	B2	64	4	STR.	8'-5"	360
B3	24	5	STR.	18'-0"	451	B3	24	5	STR.	18'-0"	451	B3	24	5	STR.	18'-0"	451
B4	64	4	STR.	15'-4"	656	B4	64	4	STR.	15'-4"	656	B4	64	4	STR.	15'-4"	656
B5	24	5	STR.	21'-5"	540	B5	24	5	STR.	21'-5"	540	B5	24	5	STR.	21'-5"	540
S1	76	5	1	6'-4"	502	S1	92	5	1	6'-4"	608	S1	76	5	1	6'-4"	502
TOTAL					5,818	TOTAL					6,871	TOTAL					5,818



ALL BAR DIMENSIONS ARE OUT TO OUT

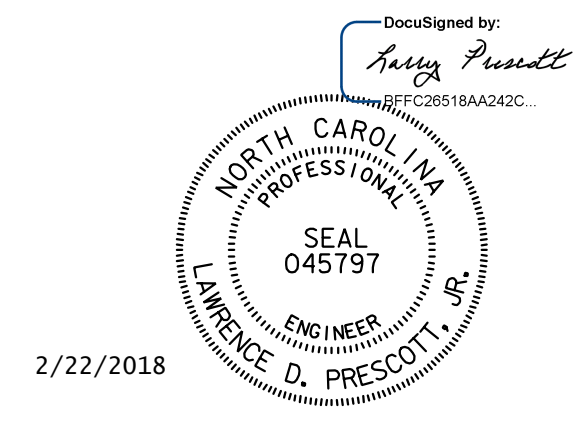


LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FEET = 2,630.7)

	EPOXY COATED REINFORCING STEEL (LBS.)	CLASS AA CONCRETE (CU. YDS.)	
		DECK SLAB	PARAPETS
SPAN "A"	5,818	28.2	5.6
SPAN "B"	6,871	33.5	6.6
SPAN "C"	5,818	28.2	5.6
TOTALS	18,507	89.9	17.8

	REINFORCED CONCRETE DECK SLAB	EPOXY COATED REINFORCING STEEL	CLASS AA CONCRETE
	SQ. FT.	LBS.	CU. YDS.
DECK SLAB	2,630.7	15,457	89.9
PARAPET	—	3,050	17.8
TOTALS	2,630.7	18,337	107.7

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



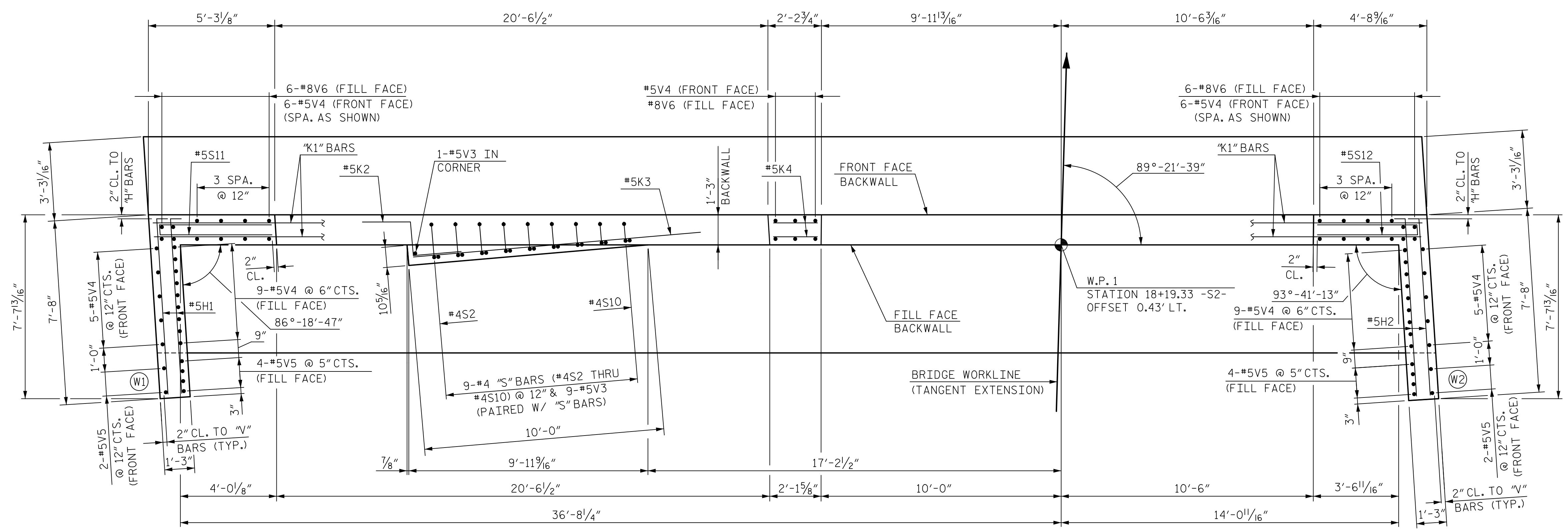
2/22/2018

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

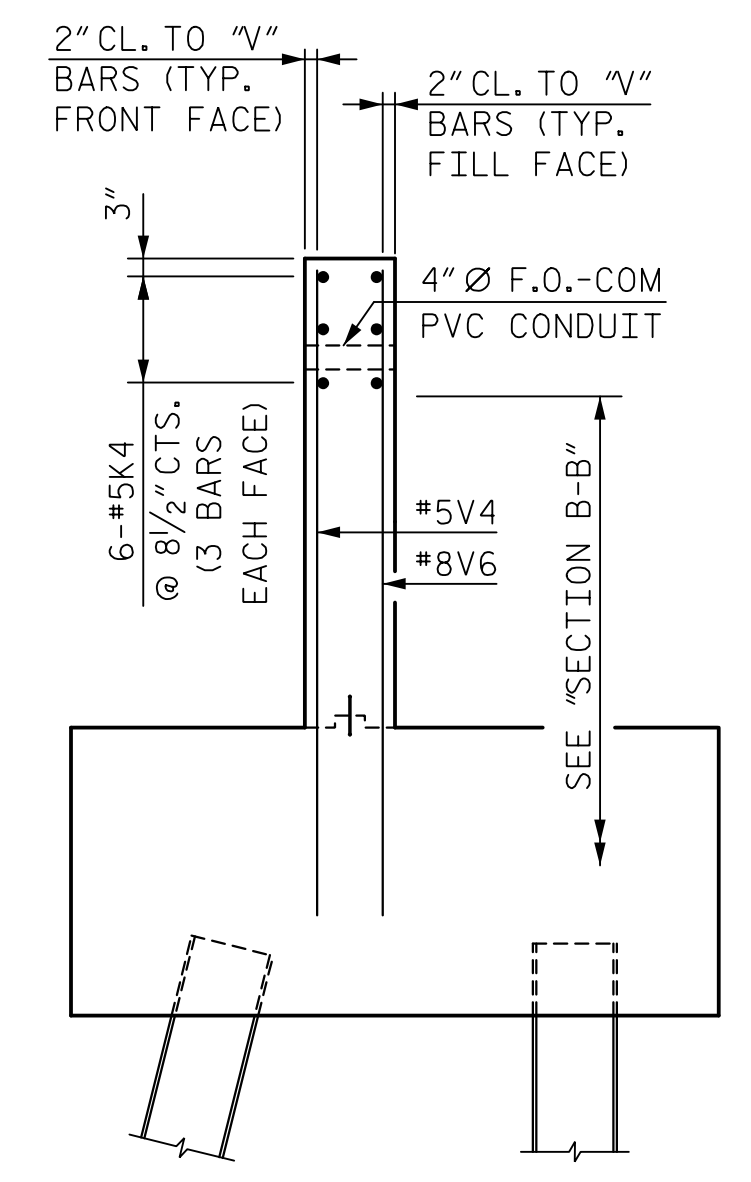
HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY: C. GERDING	DATE: 9/17
CHECKED BY: J. VECLITCH	DATE: 9/17
DWG. NO. 21	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-21
1			3			TOTAL SHEETS
2			4			42

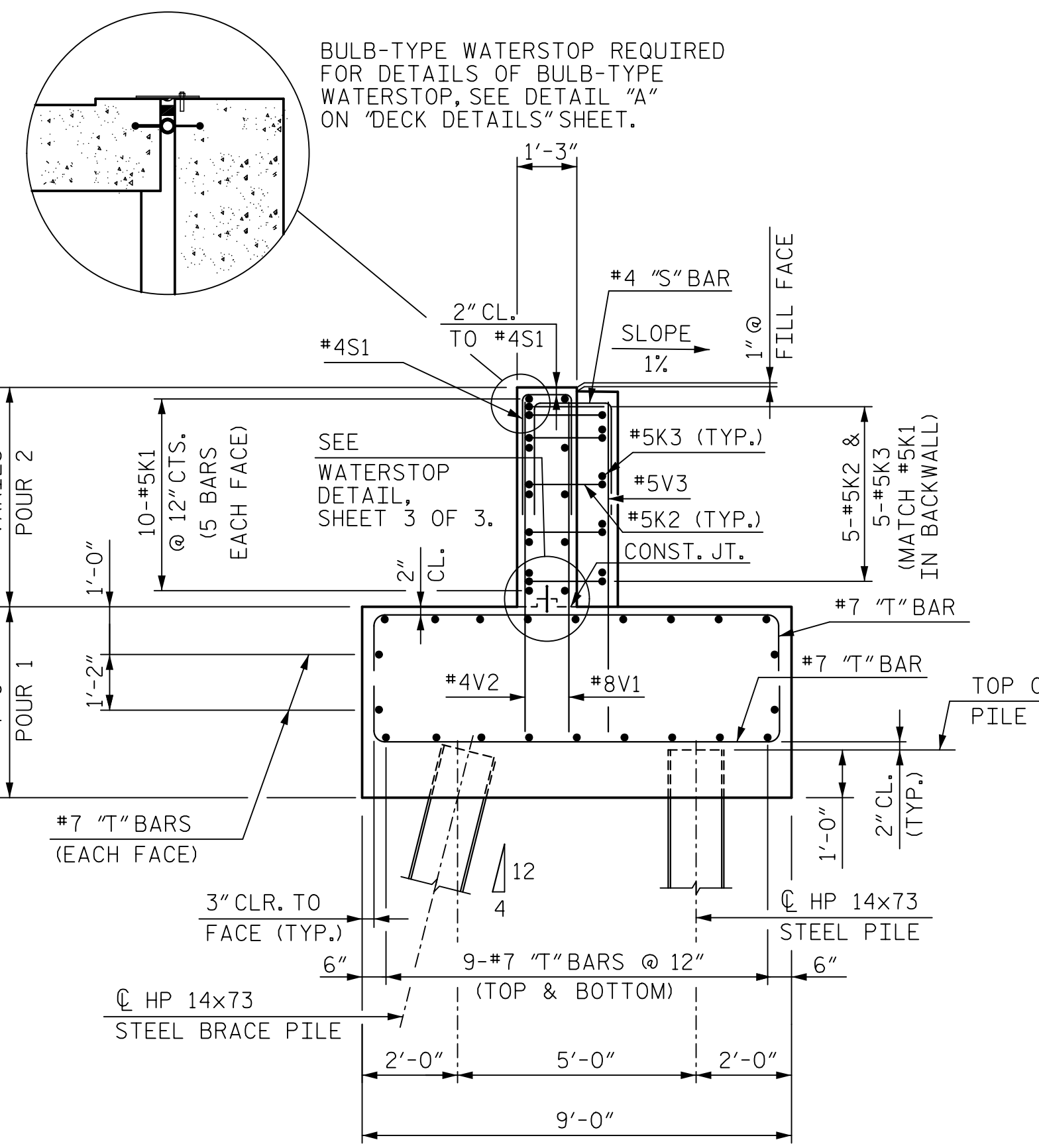


SECTION A-A

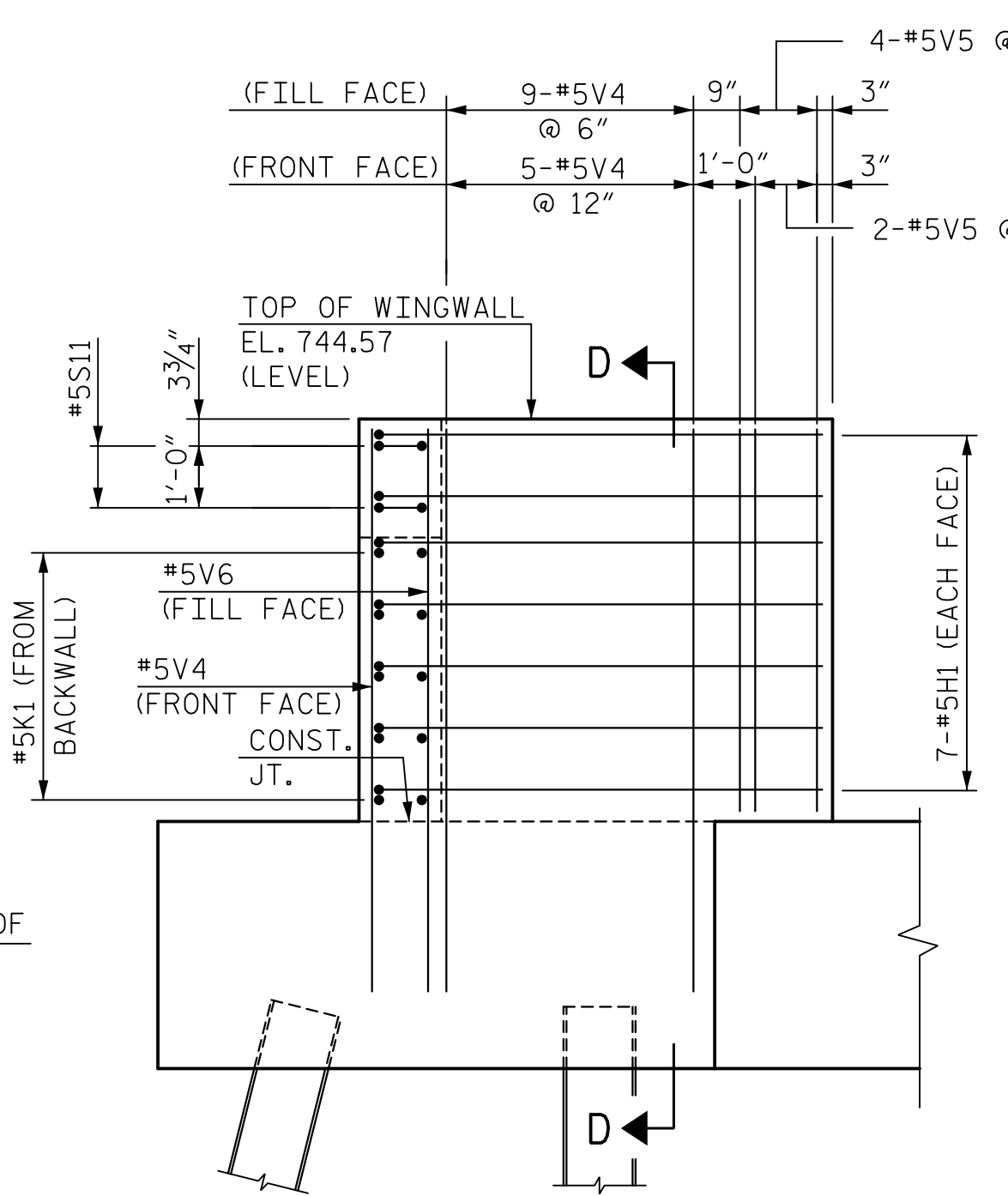
NOTES:
 FOR ABUTMENT AND WINGWALL DIMENSIONS AND ELEVATIONS, SEE SHEET 1 OF 3.
 FOR LOCATIONS OF HANDRAIL ANCHORAGES IN TOP OF WINGWALLS, SEE ARCHITECTURAL PLAN SHEETS.
 FOR LOCATIONS OF FENCE POST ANCHORAGES IN TOP OF WINGWALLS, SEE "FENCE DETAILS" SHEETS.



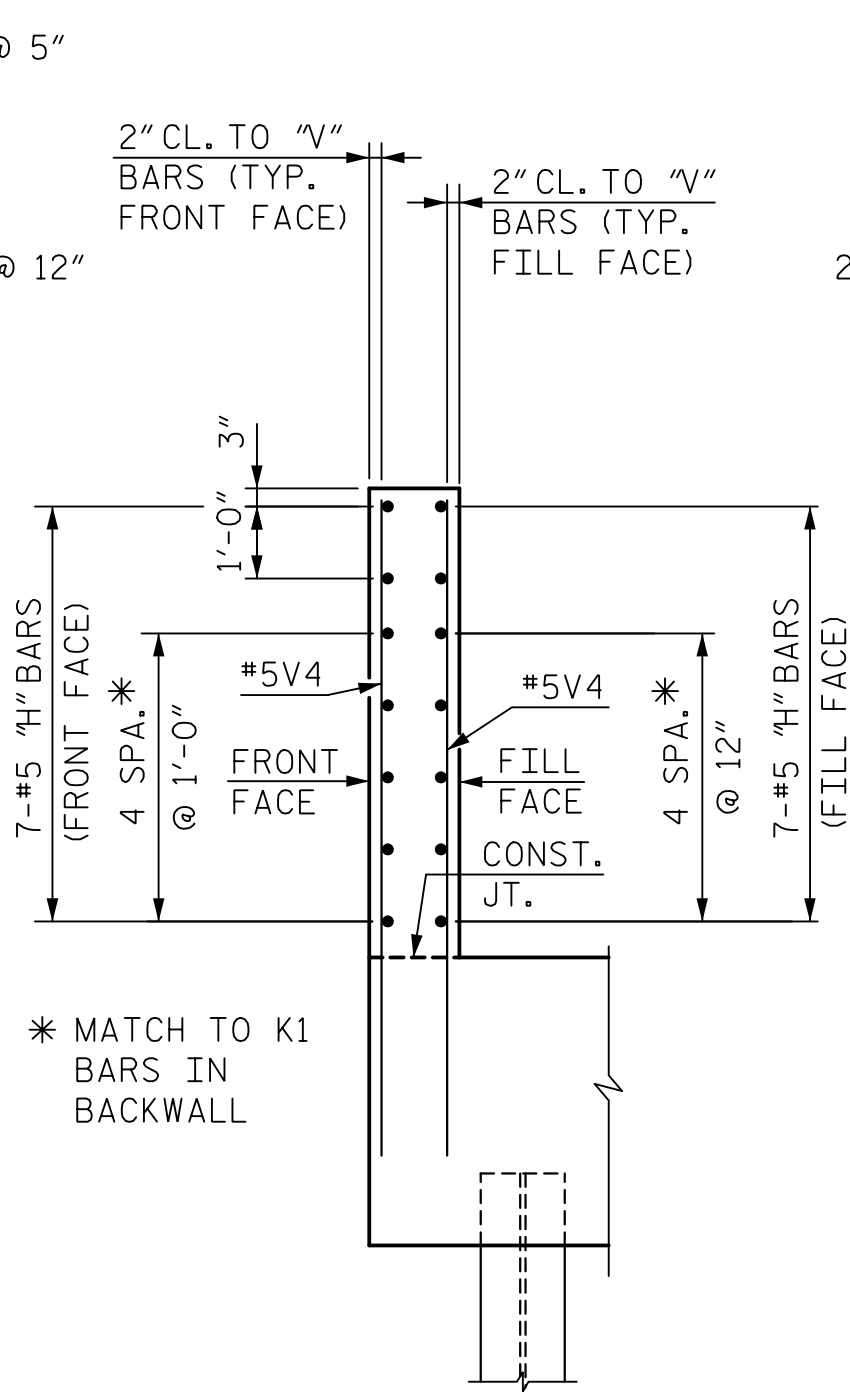
SECTION C-C



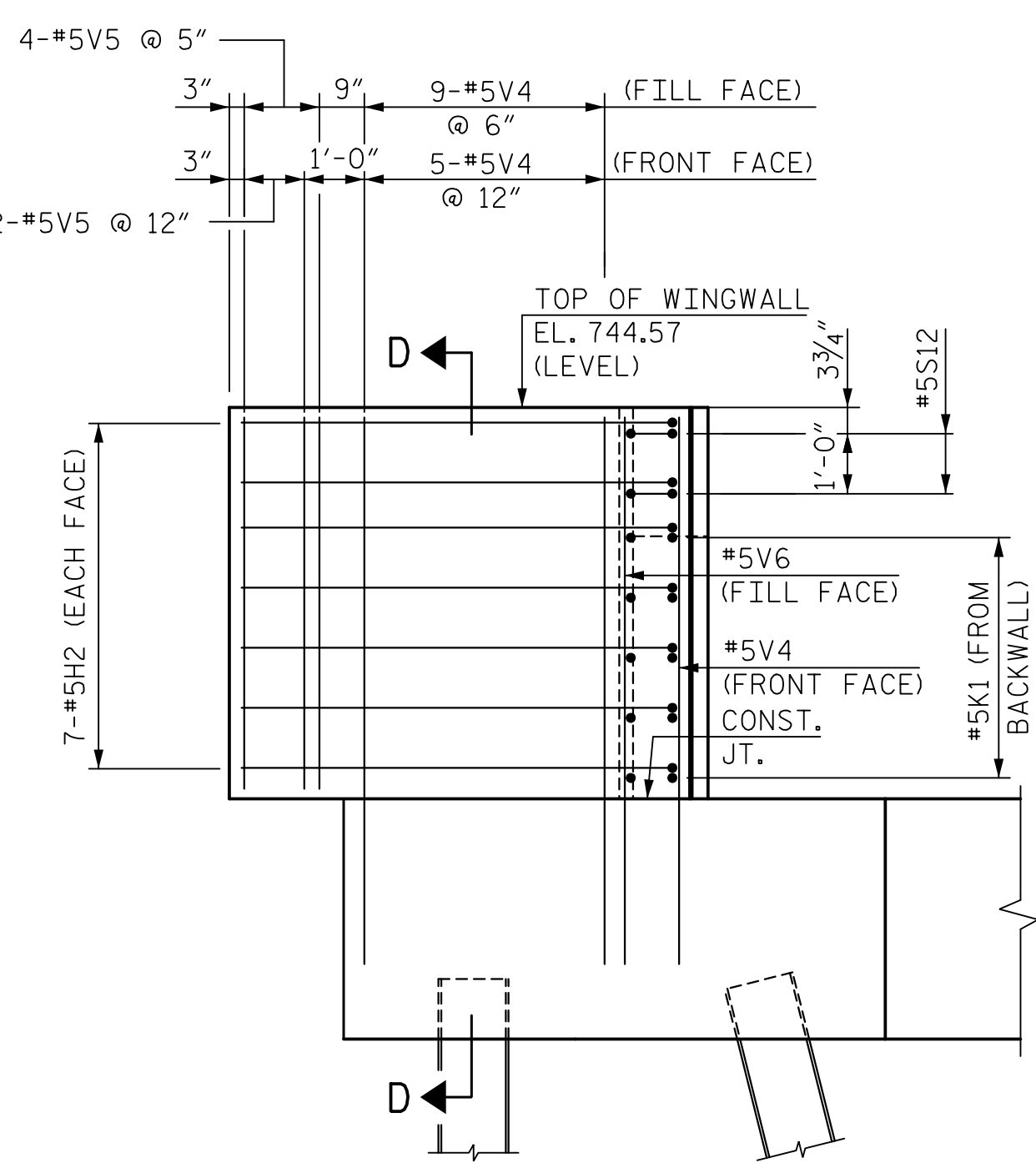
SECTION B-B



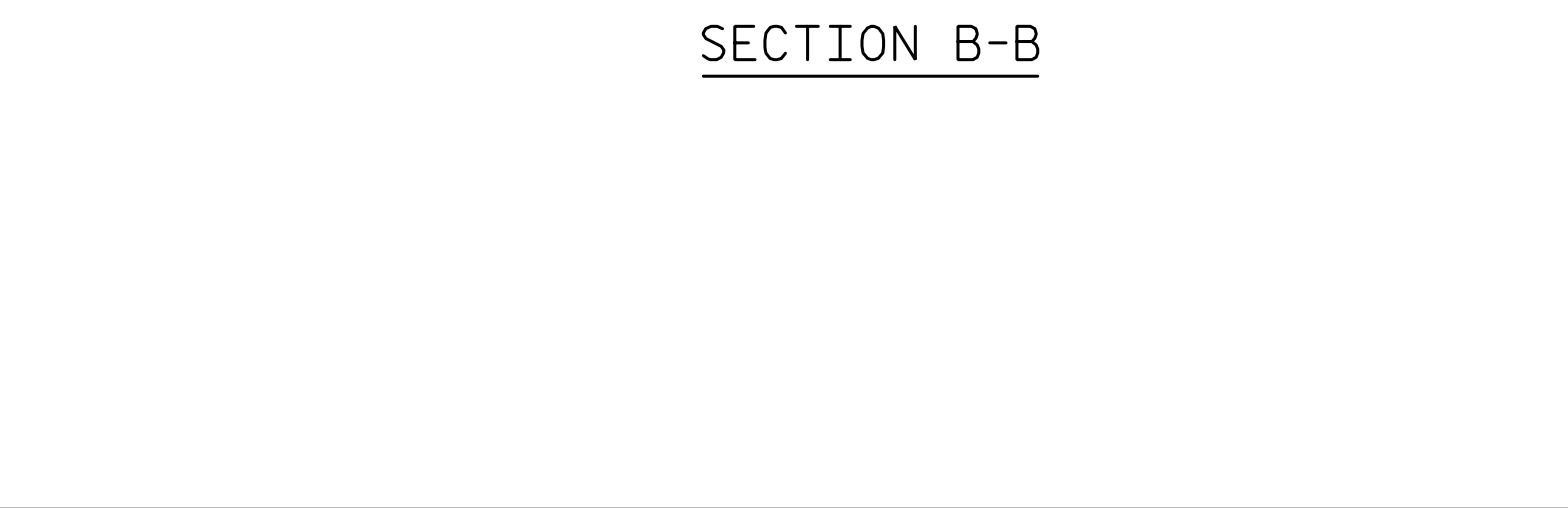
ELEVATION OF WING (W1)



SECTION D-D



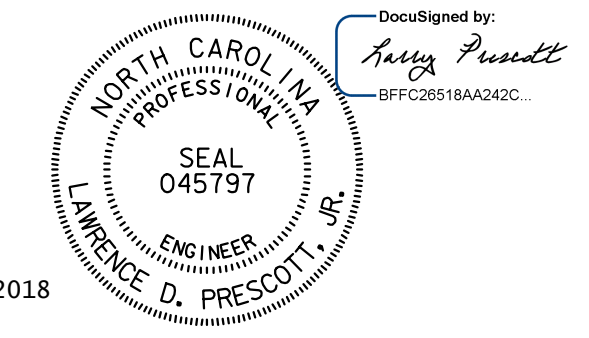
ELEVATION OF WING (W2)



SECTION B-B

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

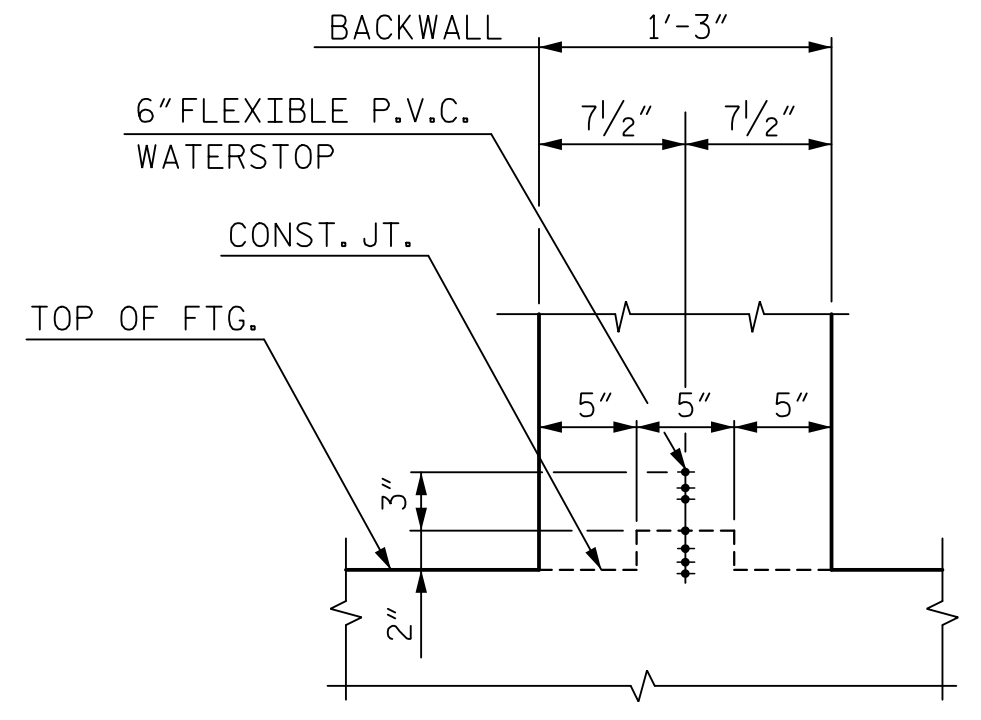
SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 ABUTMENT 1



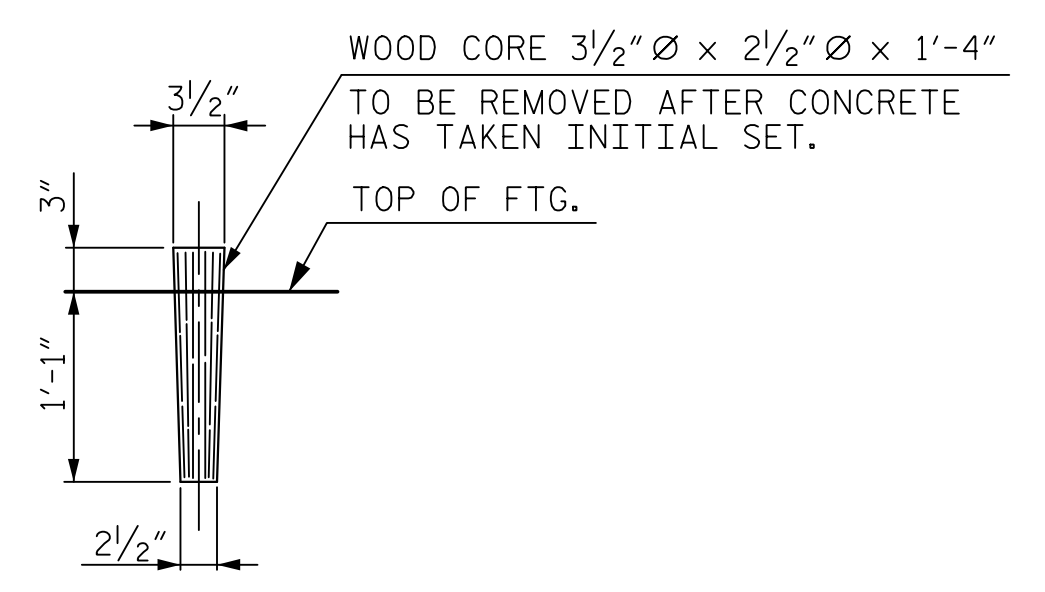
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY: C. GERDING	DATE: 10/17	DWG. NO. 23	
CHECKED BY: J. VECLITCH	DATE: 10/17		
REVISIONS		NO.	BY
1		3	
2		4	
SHEET NO. S3-23		TOTAL SHEETS 42	

0012DEL_P28

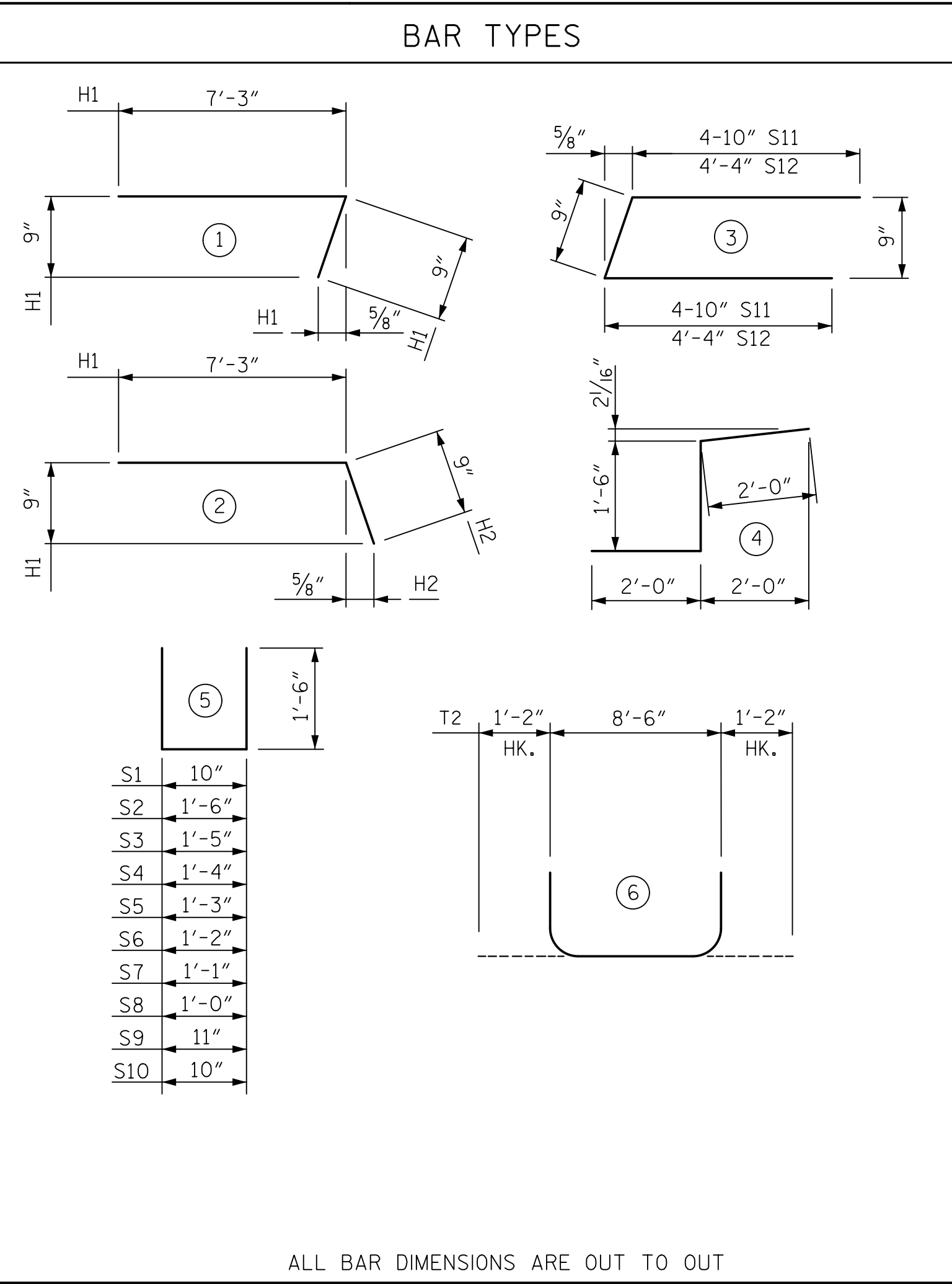


WATERSTOP DETAIL



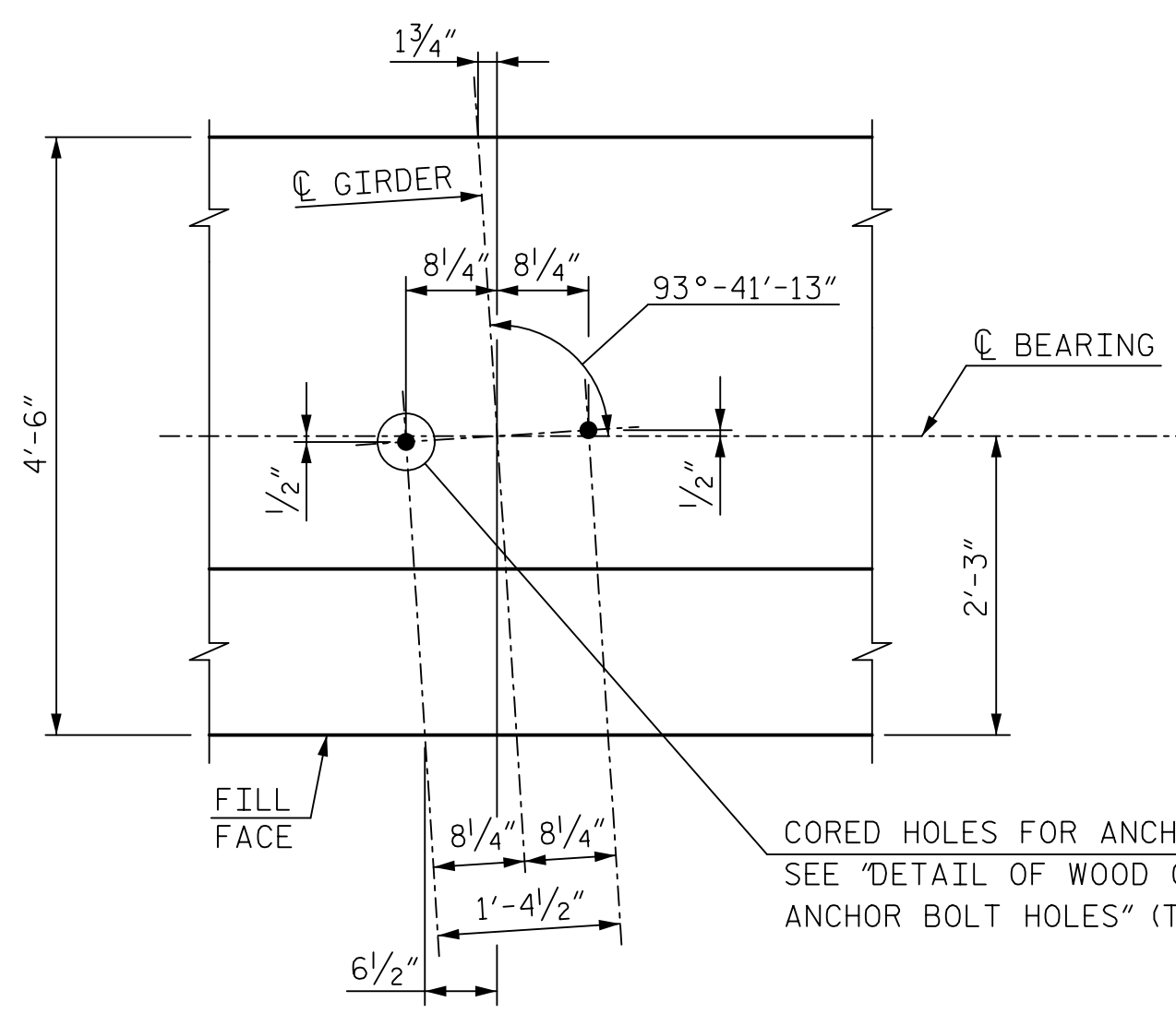
DETAIL OF WOOD CORE FOR ANCHOR BOLT HOLES

QUANTITIES		
ITEM		TOTAL
REINFORCING STEEL	LBS.	7,696
CLASS AA CONCRETE BREAKDOWN:		
POUR 1 FOOTING	CU. YDS	71.0
POUR 2 BACKWALL & WINGS	CU. YDS	17.0
TOTAL	CU. YDS	88.0
HP 14 X 73 STEEL PILES	NO.	18
	L.F.	1,192

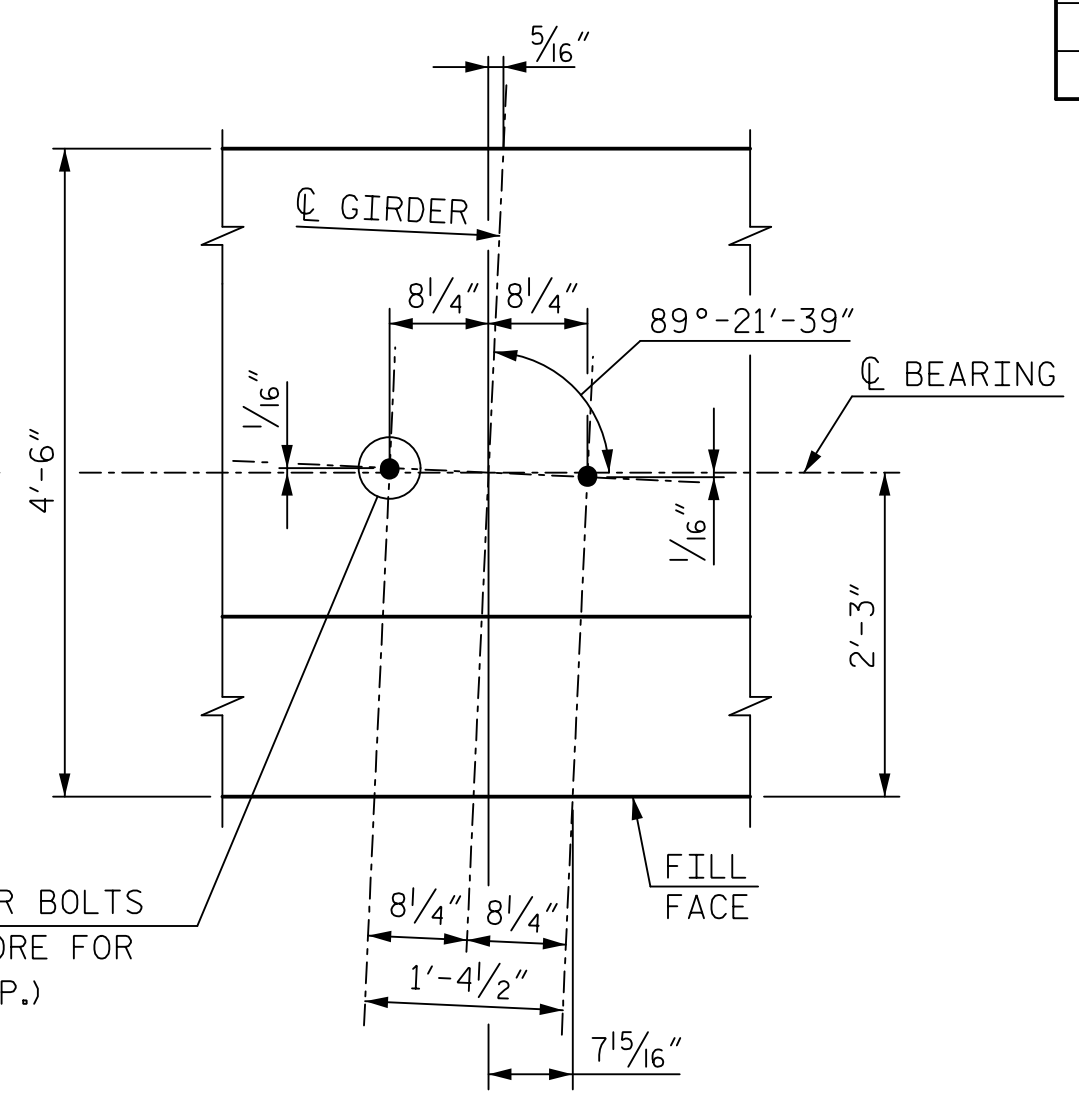


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF REINFORCING					
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
ABUTMENT 1					
H1	14	5	1	8'-0"	117
H2	14	5	2	8'-0"	117
K1	10	5	STR	52'-9"	550
K2	5	5	4	5'-6"	29
K3	4	5	STR	12'-0"	50
K4	6	5	STR	1'-10"	11
S1	42	4	5	3'-10"	108
S2	1	4	5	4'-6"	3
S3	1	4	5	4'-5"	3
S4	1	4	5	4'-4"	3
S5	1	4	5	4'-3"	3
S6	1	4	5	4'-2"	3
S7	1	4	5	4'-1"	3
S8	1	4	5	4'-0"	3
S9	1	4	5	3'-11"	3
S10	1	4	5	3'-10"	3
S11	2	5	3	10'-5"	22
S12	2	5	3	9'-5"	20
T1	22	7	STR	52'-9"	2,372
T2	106	7	6	10'-10"	2,347
V1	42	8	STR	7'-2"	804
V2	42	4	STR	7'-2"	201
V3	10	5	STR	7'-1"	74
V4	43	5	STR	9'-1"	407
V5	12	5	STR	6'-1"	76
V6	15	8	STR	7'-1"	364

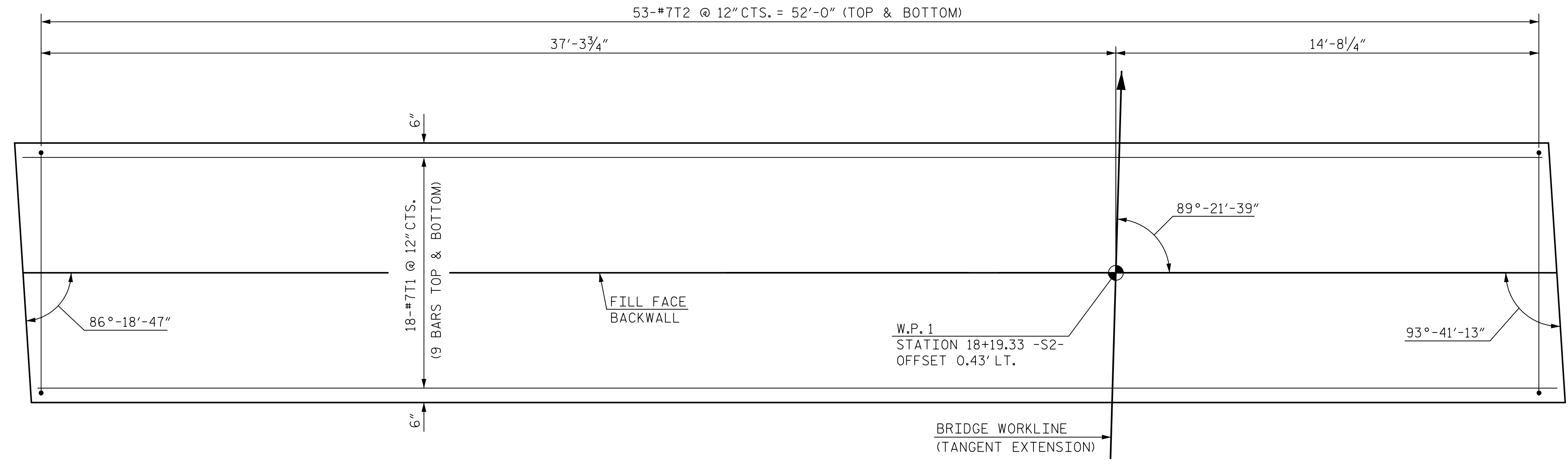


DETAIL A ANCHOR BOLT LAYOUT GIRDERS AG1-1 THRU AG6-1

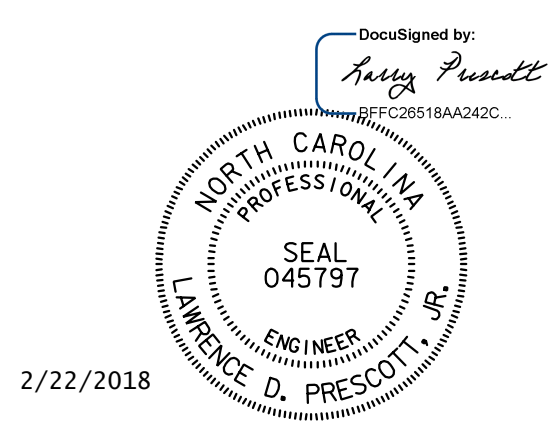


DETAIL B ANCHOR BOLT LAYOUT GIRDERS AG1-2 THRU AG6-2

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



FOOTING REINFORCING PLAN



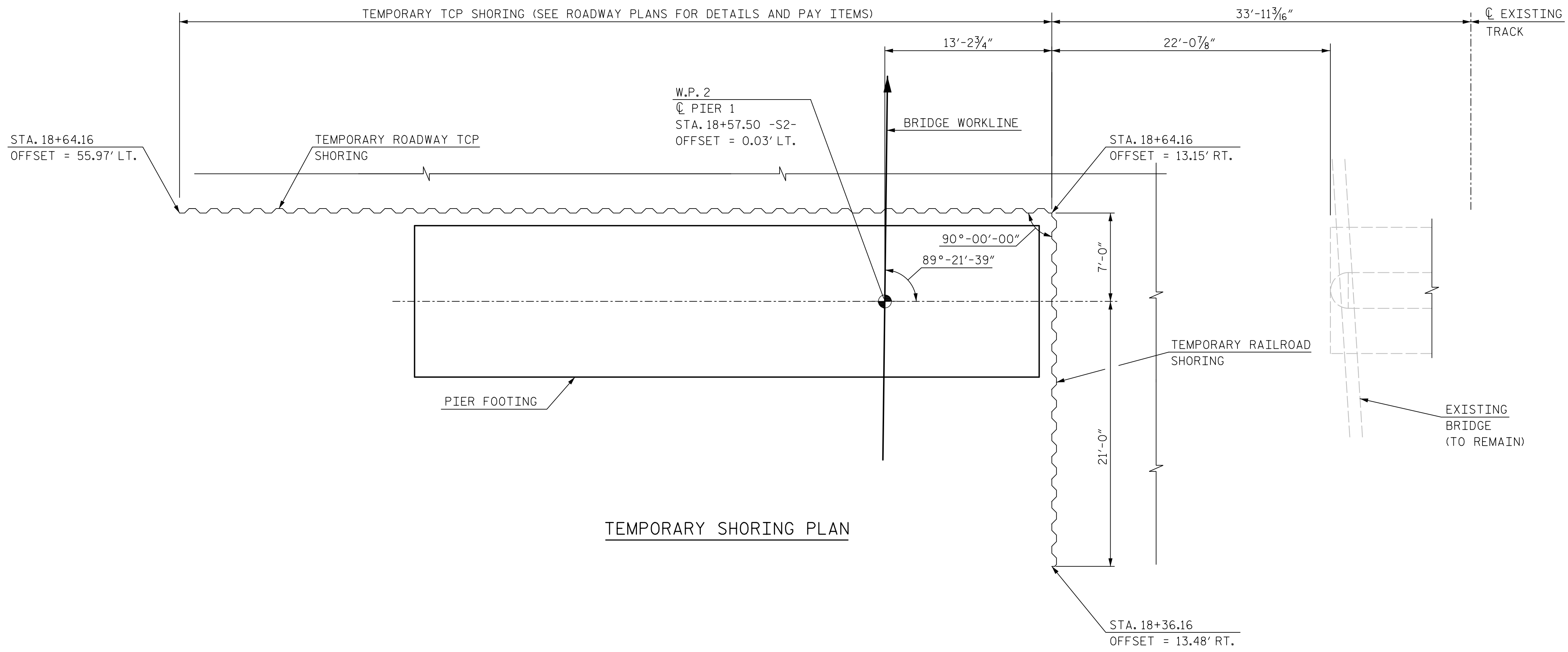
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

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 CHECKED BY: J. VECLITCH	DATE: 10/17 DATE: 10/17
DWG. NO. 24	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-24
1			3			TOTAL SHEETS
2			4			42



NOTES:

SHORING HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF AREMA'S MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES.

MAXIMUM WALL DEFLECTION LIMITED TO 1 1/2".

ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.

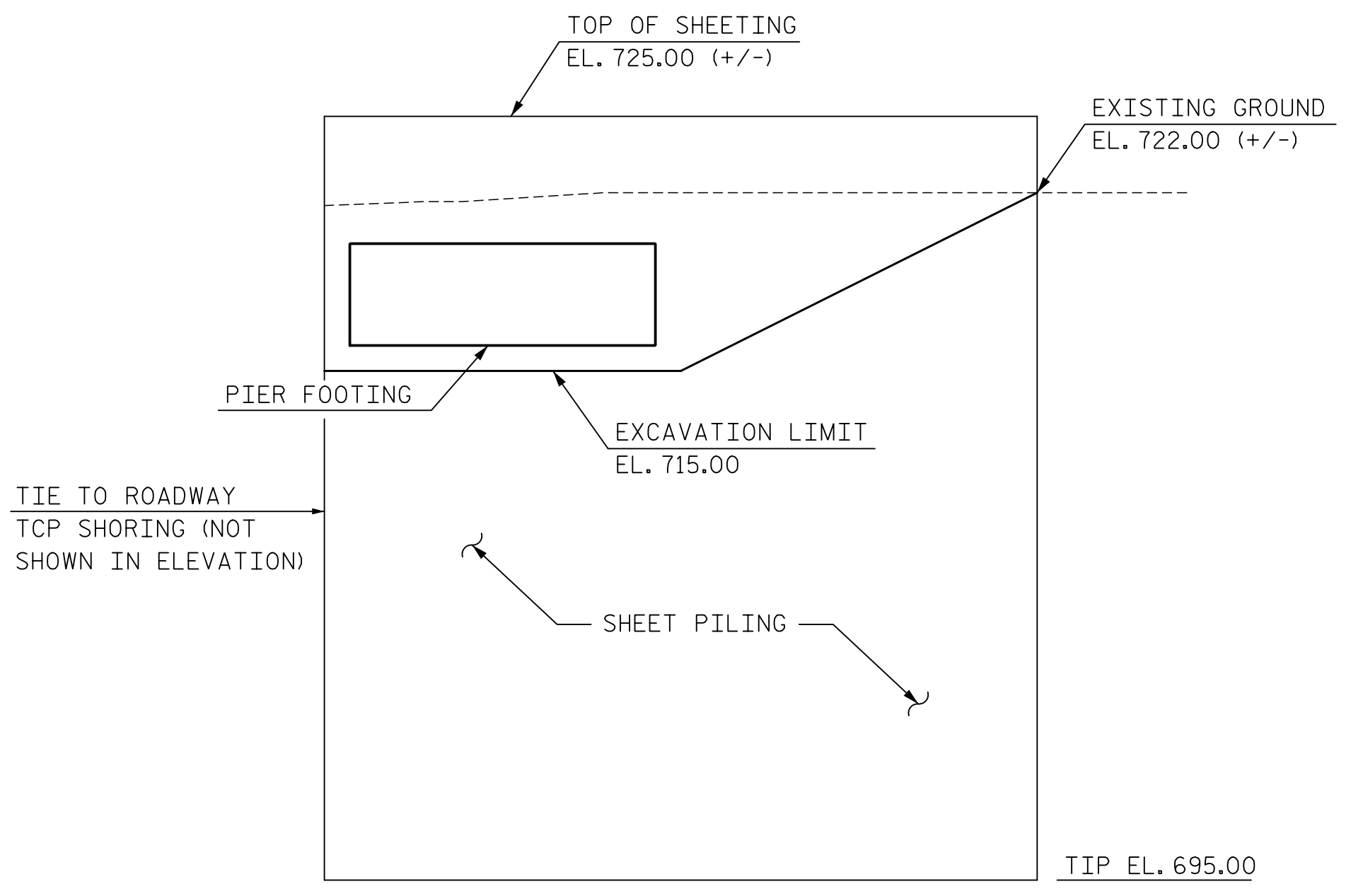
SHEET PILING SHALL BE ASTM A572 GRADE 50 STEEL (HOT ROLLED) AND SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

MOMENT OF INERTIA/FT. 184.0 in⁴
 SECTION MODULUS/FT. 30.2 in³

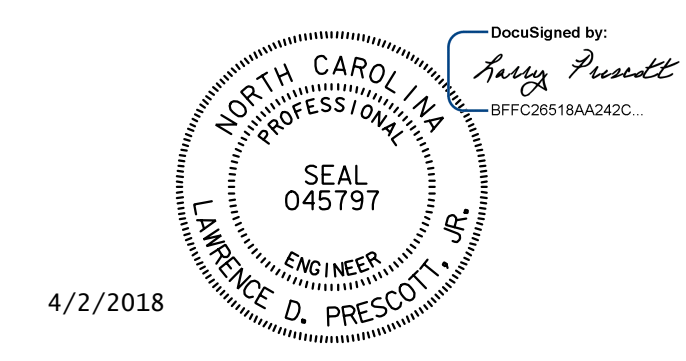
ASSUMED SOIL PARAMETERS
 COARSE GRAINED SOILS:
 SOIL FRICTION ANGLE - 30 DEGREES
 UNDRAINED SHEAR STRENGTH - 0 PSF

CONSTRUCTION SEQUENCE:

1. INSTALL SHORING TO REQUIRED TIP ELEVATION.
2. EXCAVATE TO EXCAVATION LIMIT SHOWN.
3. CONSTRUCT PROPOSED PIER.
4. BACKFILL PROPOSED PIER.
5. REMOVE SHORING.



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



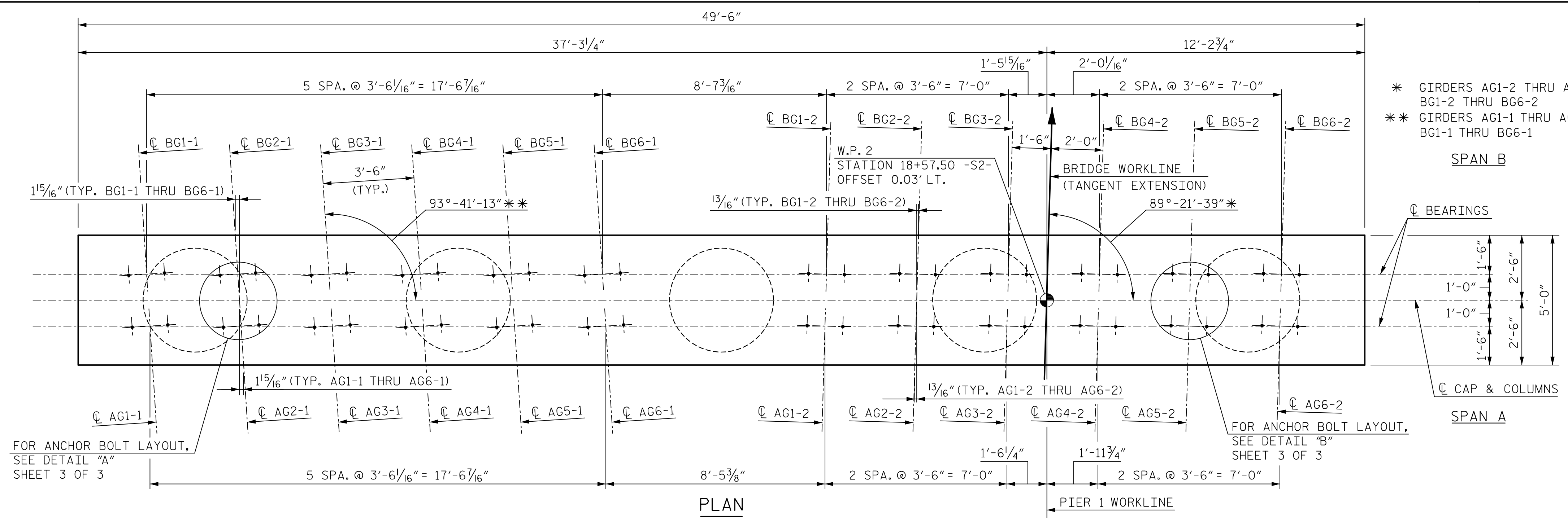
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

PIER 1
 SHORING

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	C. GERDING	DATE	11/17	NO.	BY	DATE	S3-25	
CHECKED BY	S. TIPPETT	DATE	11/17	1			TOTAL SHEETS	
				2			42	
				3				
				4				



NOTES:

ALL DIMENSIONS SHOWN ARE PARALLEL OR NORMAL TO CL PIER UNLESS NOTED.

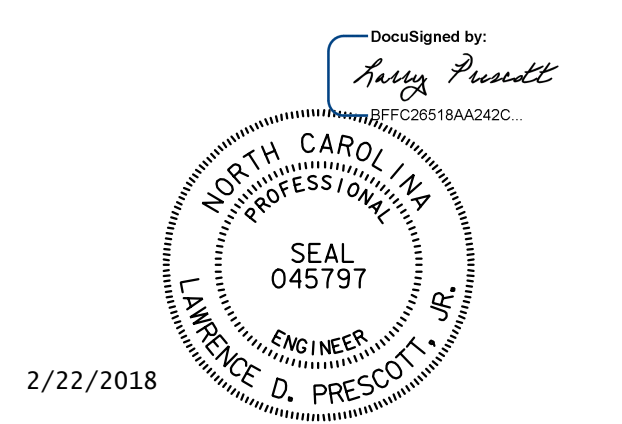
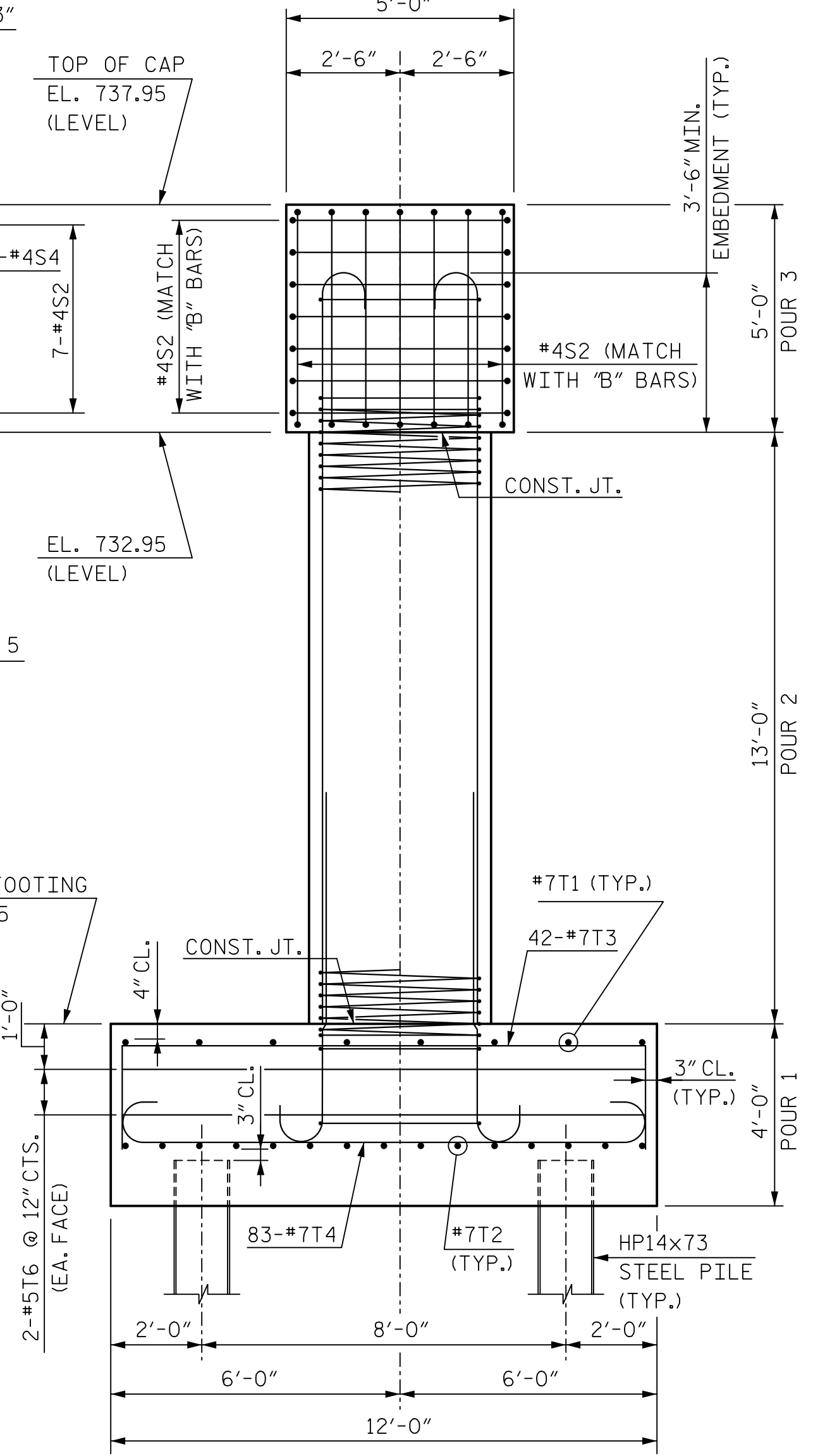
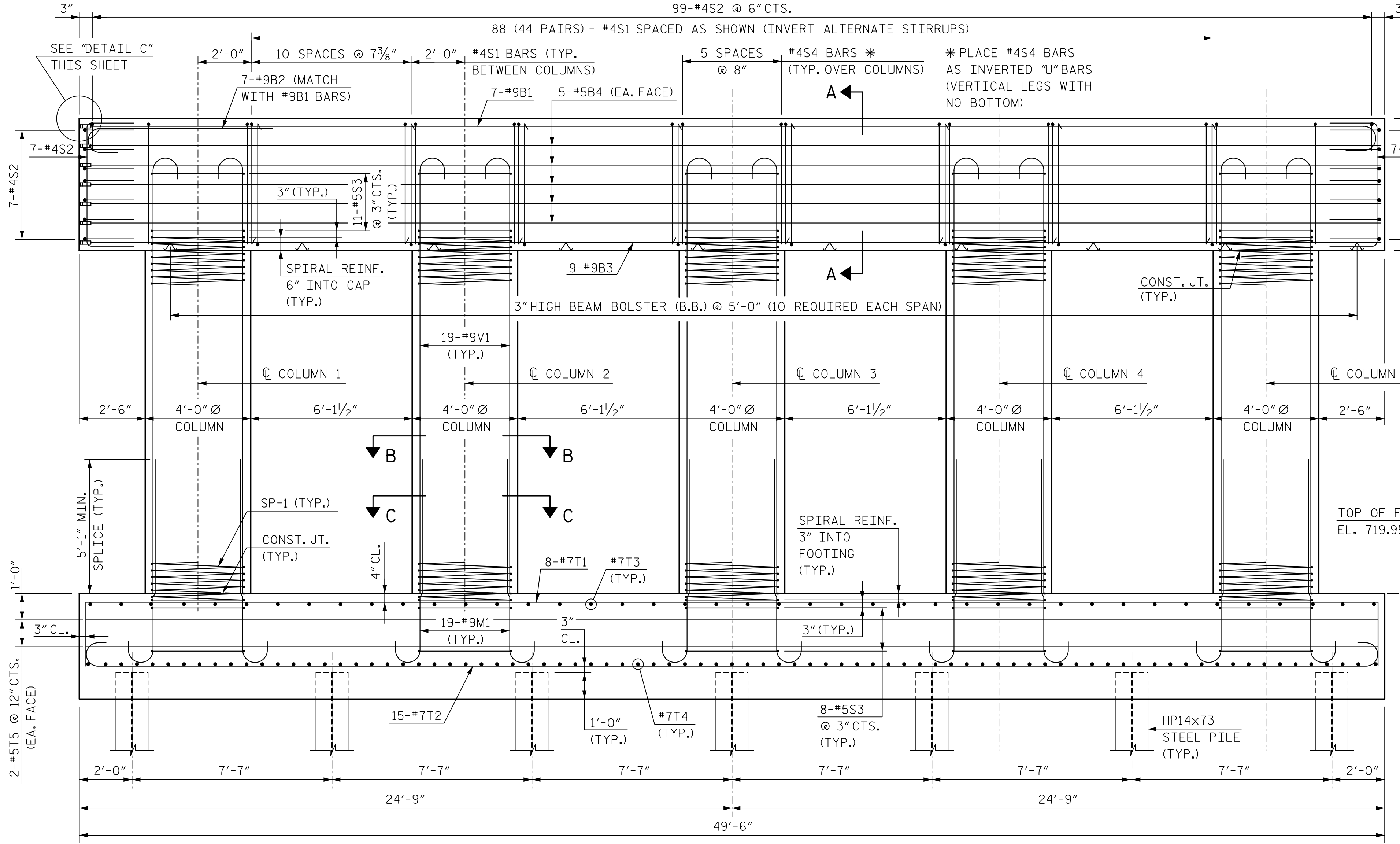
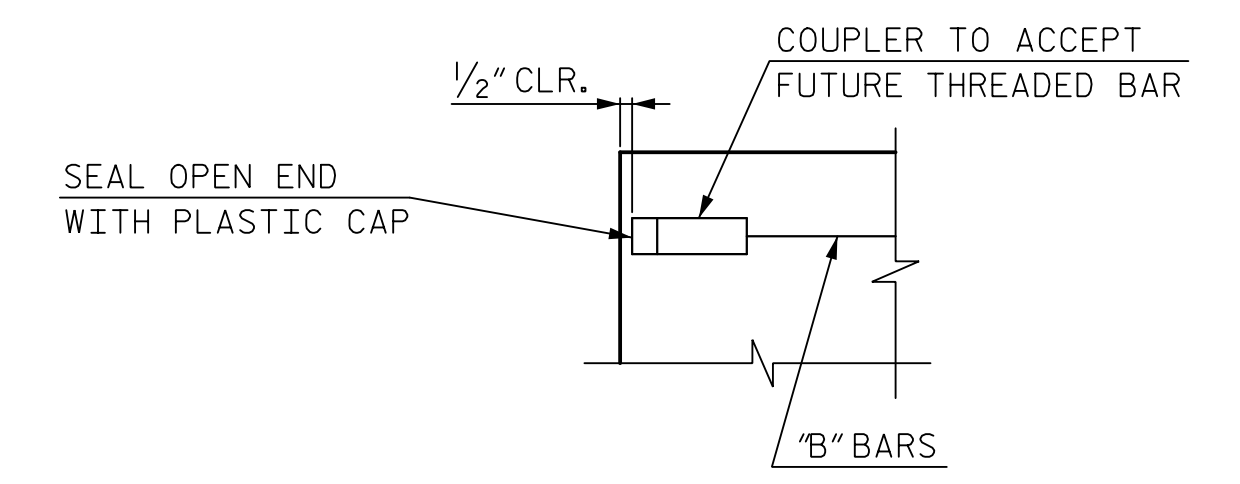
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

TOP MAT OF FOOTING LONGITUDINAL AND TRANSVERSE REINFORCEMENT MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN REINFORCEMENT. DO NOT EXCEED 12" BETWEEN BARS.

FOR SECTIONS "A-A", "B-B" & "C-C" SEE SHEET 2 OF 3.

FOR "FOOTING PLAN" SEE SHEET 2 OF 3.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. P-5705BA

MECKLENBURG COUNTY

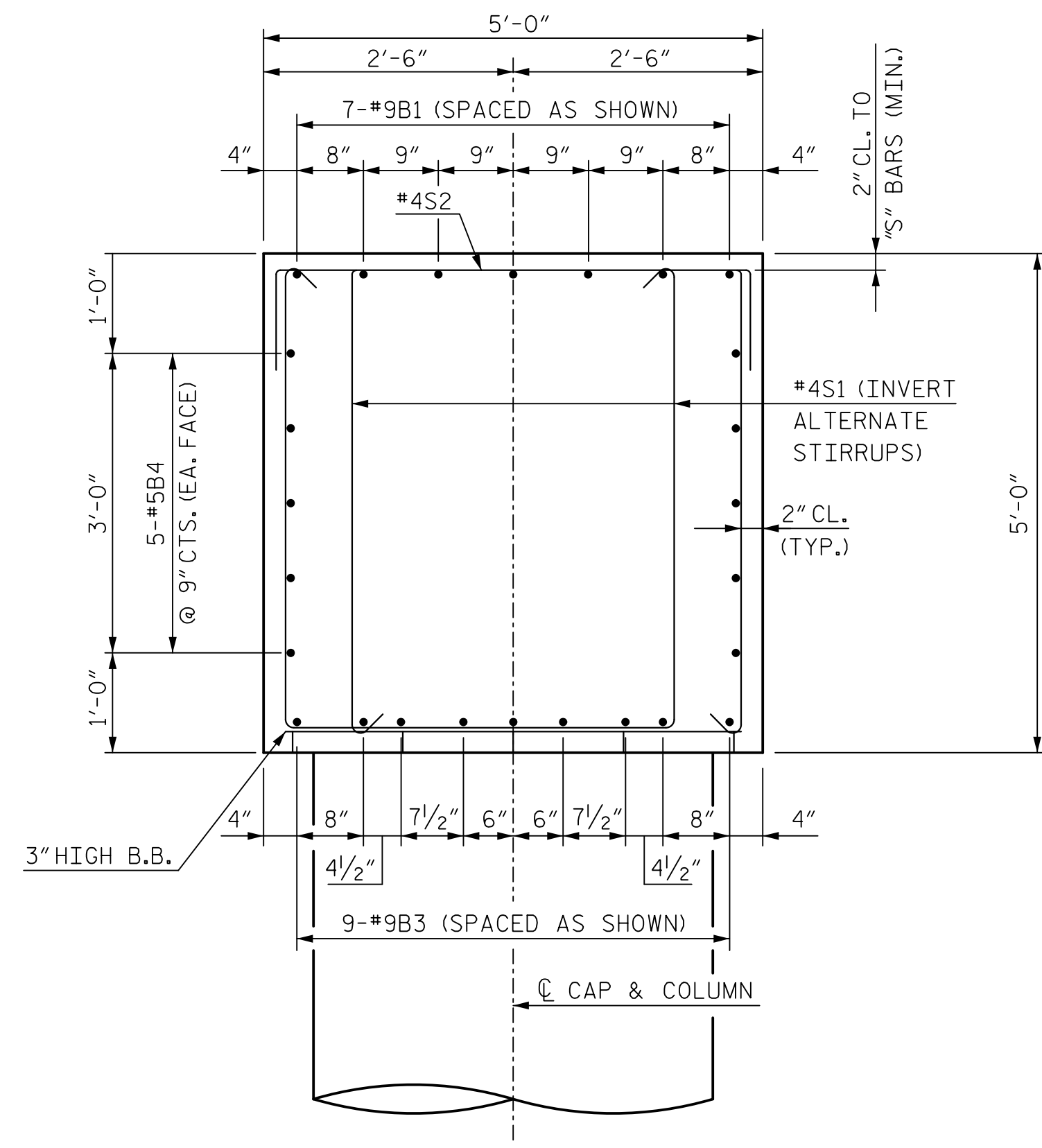
STATION: POT STA. 18+79.37 -S2-

SHEET 1 OF 3

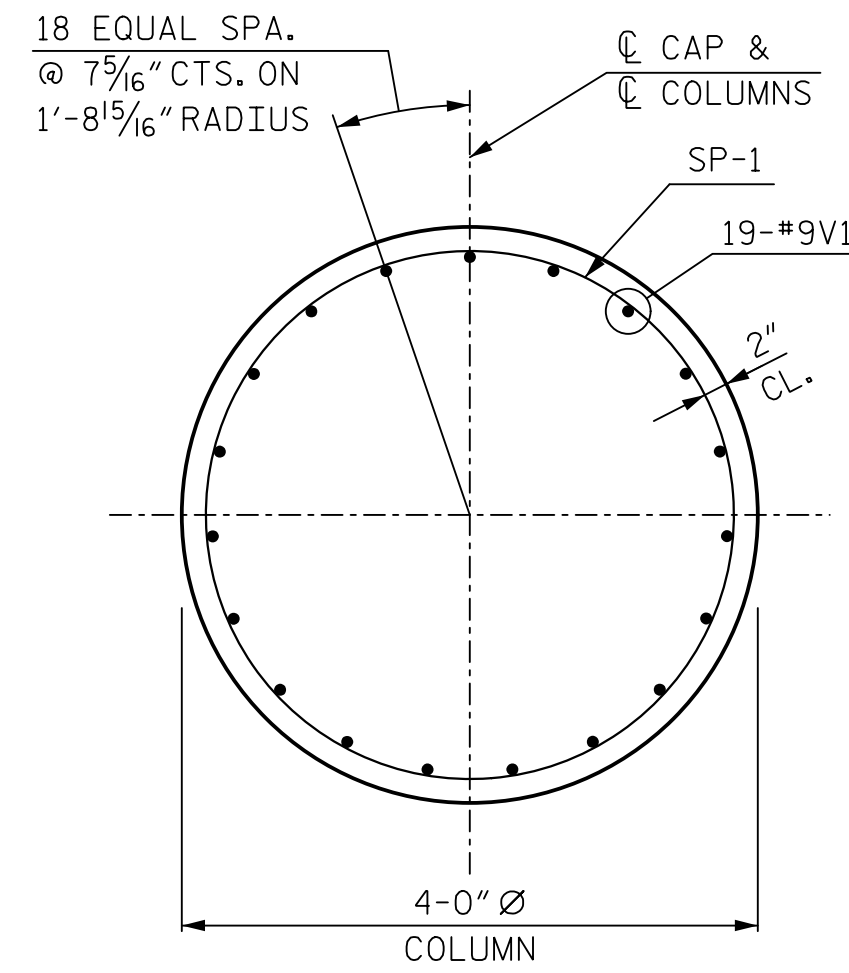
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
PIER 1

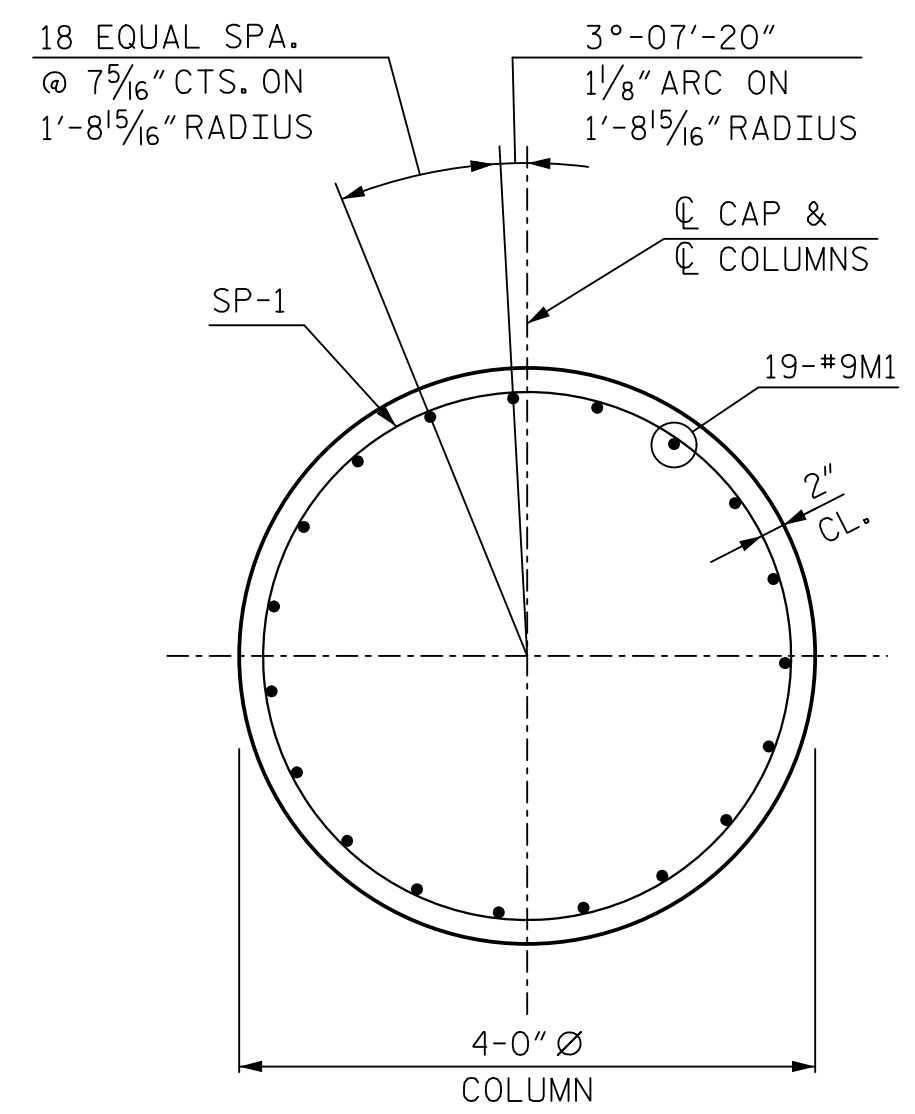
<p>HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609</p> <p>DRAWN BY: C. GERDING DATE: 10/17 CHECKED BY: J. VELOTOCH DATE: 10/17</p>	REVISIONS					<p>SHEET NO. S3-26</p> <p>TOTAL SHEETS 42</p>	
	NO.	BY	DATE	NO.	BY		DATE
	1			3			
			2				



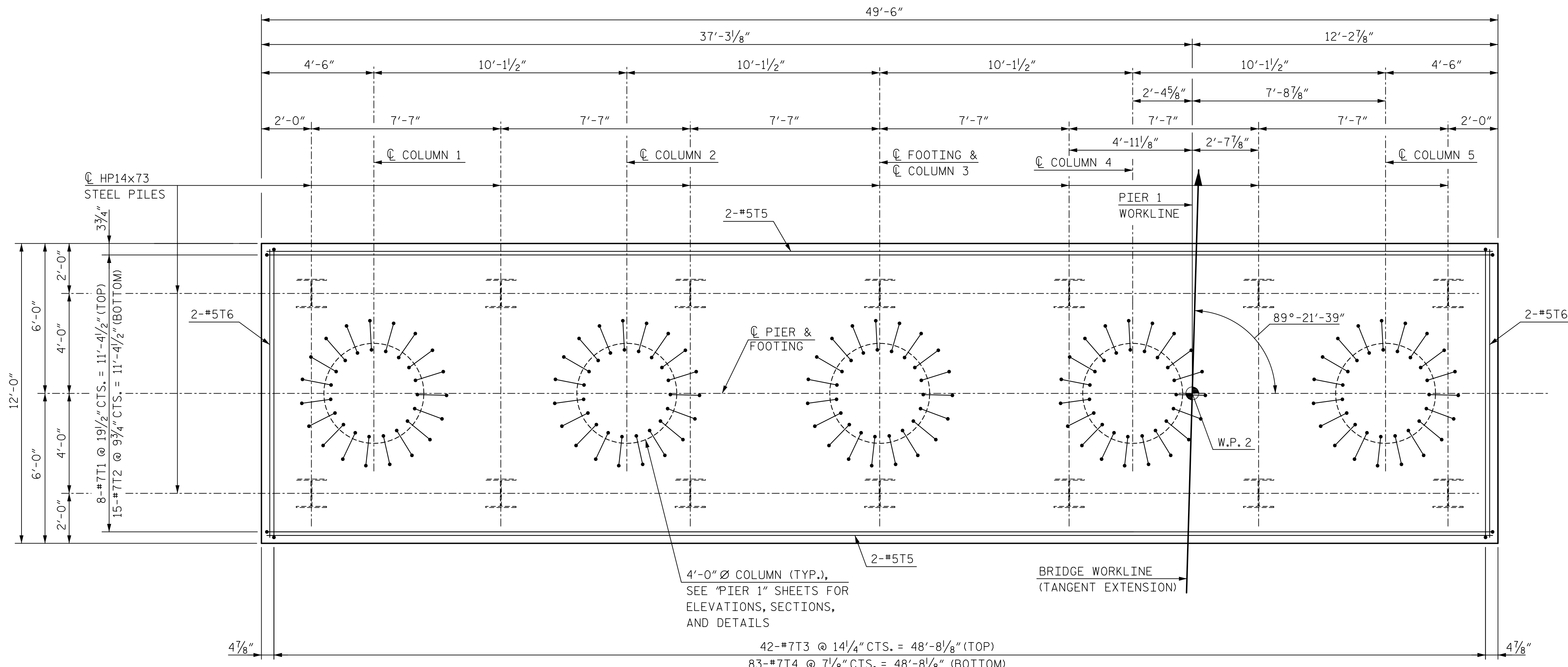
SECTION A-A
(COLUMN REINFORCING NOT SHOWN FOR CLARITY)



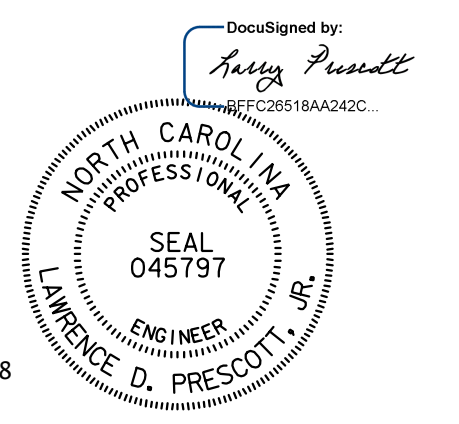
SECTION B-B



SECTION C-C
(V1 BARS NOT SHOWN FOR CLARITY)



FOOTING PLAN



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

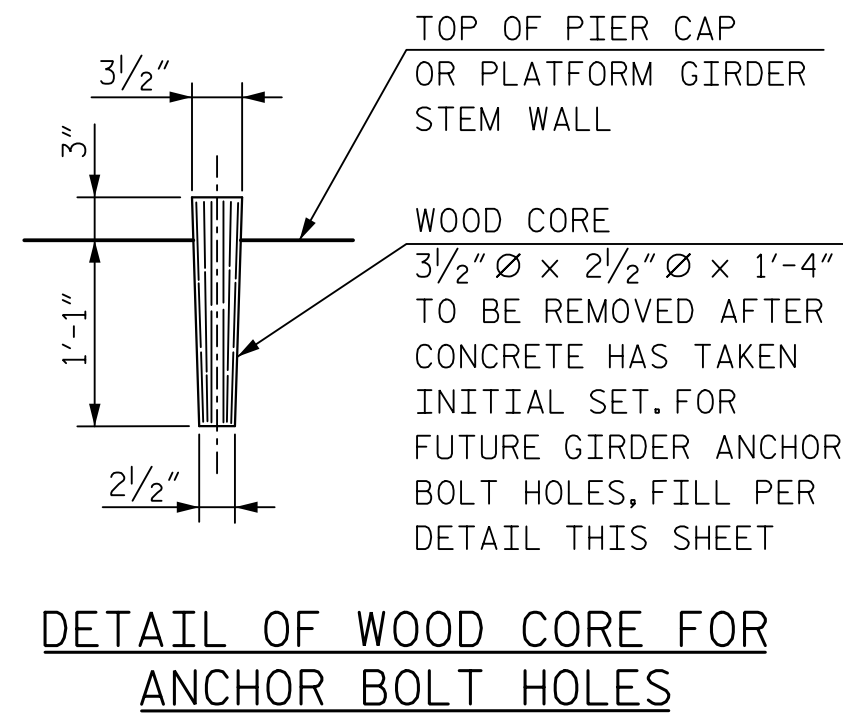
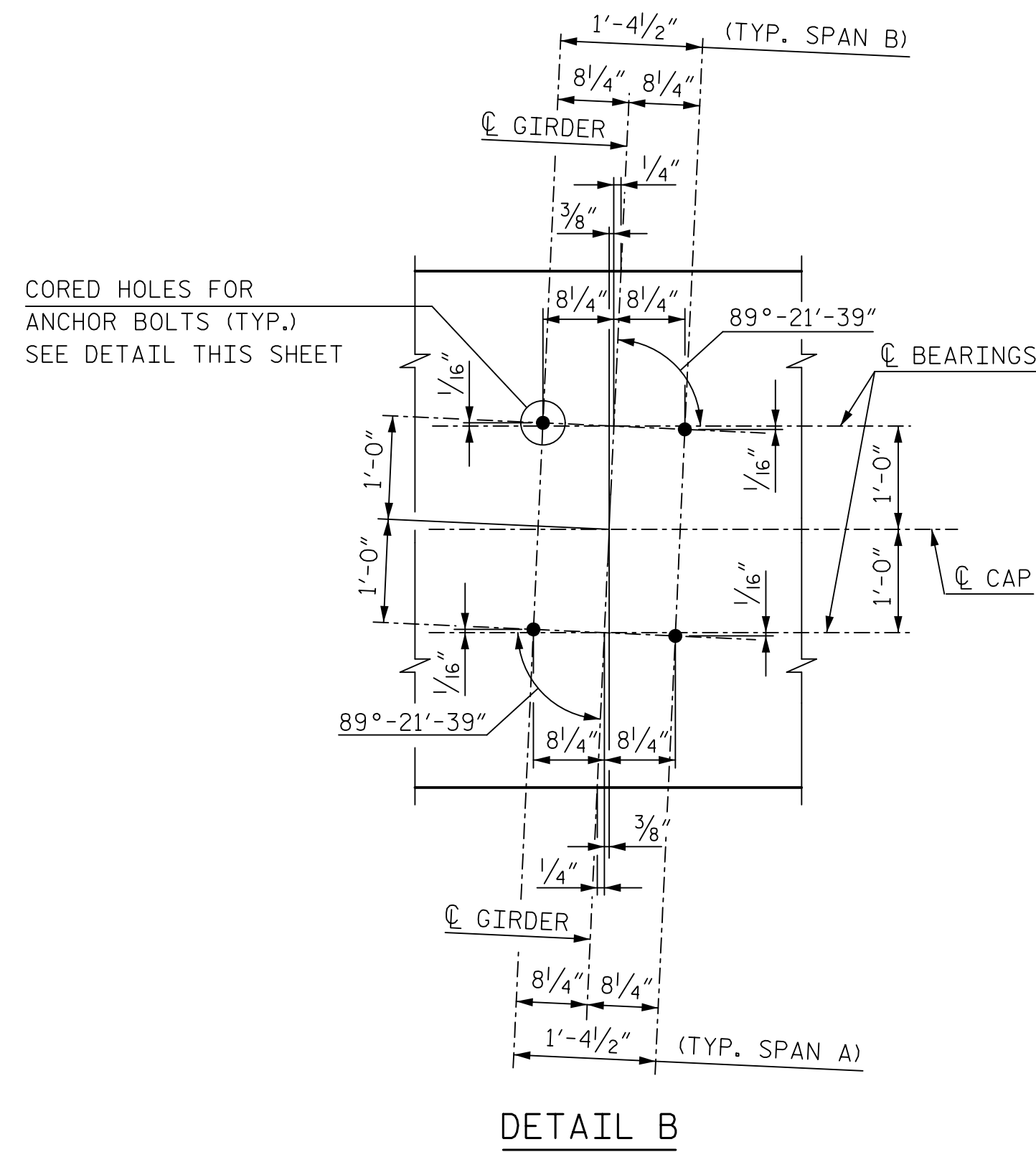
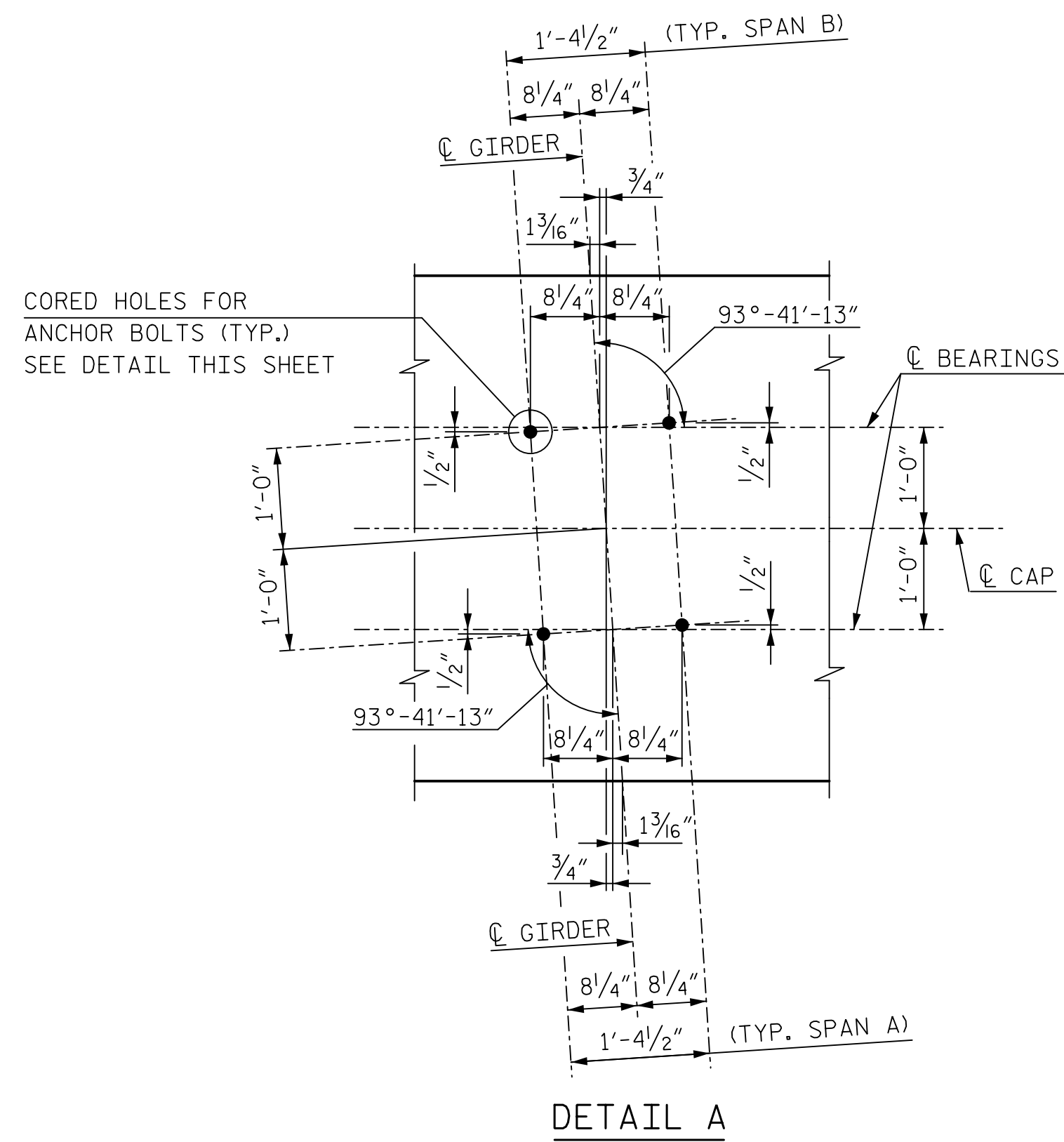
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

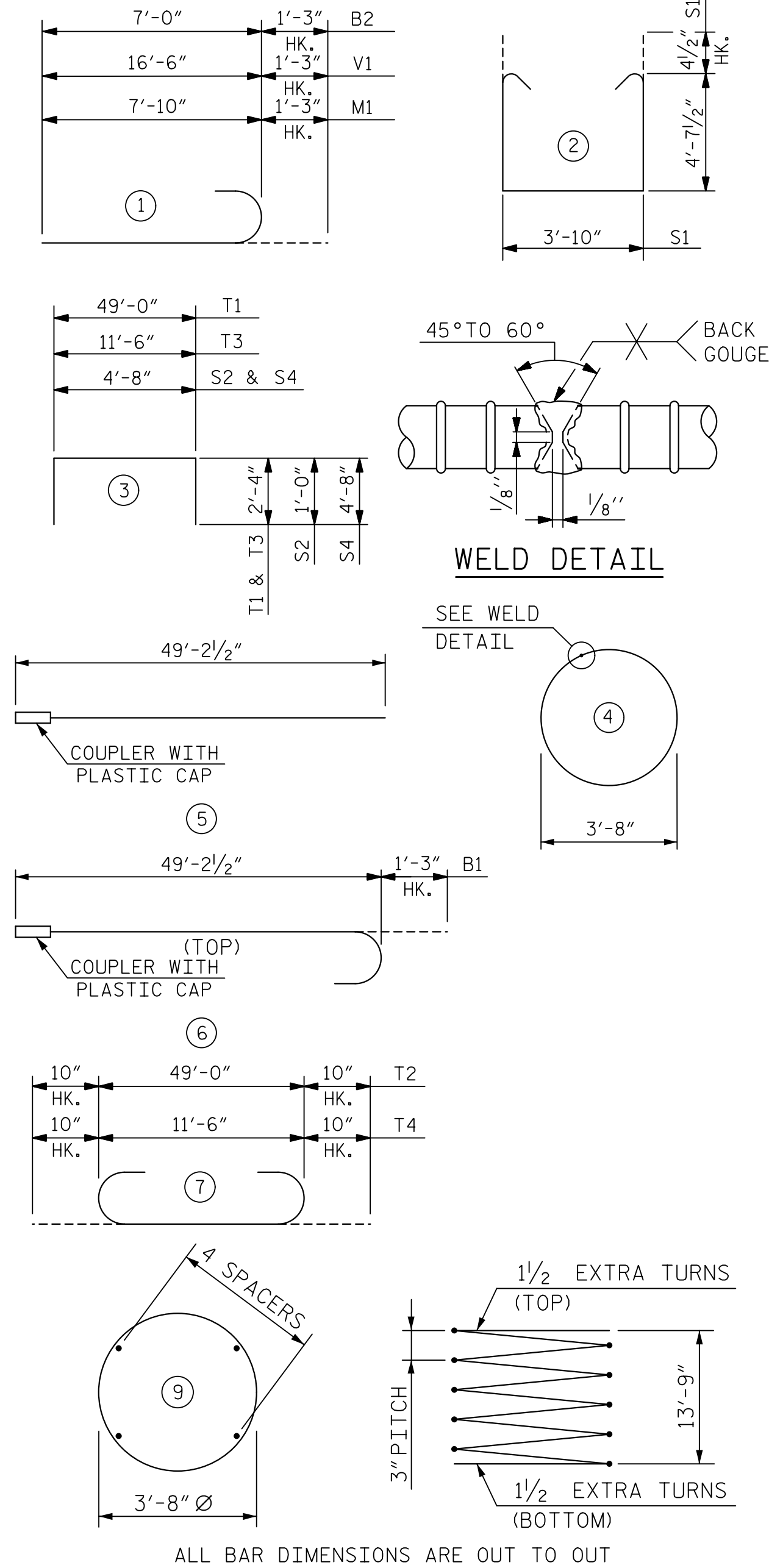
SUBSTRUCTURE
 PIER 1

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. 27	
CHECKED BY: J. VECLITCH	DATE: 10/17		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-27
1			3			TOTAL SHEETS
2			4			42



BAR TYPES



BILL OF REINFORCING

PIER 1					
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	9	6	50'-5 1/2"	1,201
B2	7	9	1	8'-3"	196
B3	9	9	5	49'-2 1/2"	1,506
B4	10	5	5	49'-2 1/2"	513
S1	88	4	2	13'-10"	813
S2	127	4	3	6'-8"	566
* S3	95	5	4	11'-7"	1,148
S4	30	4	3	14'-0"	281
M1	95	9	1	9'-1"	2,934
T1	8	7	3	53'-8"	878
T2	15	7	7	50'-8"	1,553
T3	42	7	3	16'-2"	1,388
T4	83	7	7	13'-2"	2,234
T5	4	5	STR.	49'-0"	204
T6	4	5	STR.	11'-6"	48
V1	95	9	1	17'-9"	5,733
SP-1	5	**	9	658'-10"	3,436

QUANTITIES

ITEM	TOTAL
REINFORCING STEEL	LBS 21,196
SPIRAL COLUMN REINFORCING STEEL	LBS 3,436
CLASS AA CONCRETE:	
POUR 1	C.Y. 88.0
POUR 2	C.Y. 30.3
POUR 3	C.Y. 45.8
TOTAL	C.Y. 164.1
HP 14 X 73 STEEL PILES	NO. 14
TOTAL	L.F. 807.0

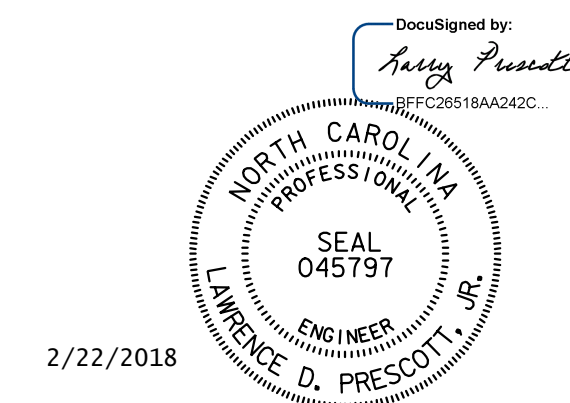
- * #5S3 CIRCULAR TIES SHALL BE ASTM DESIGNATION A706, GRADE 60. FABRICATION TO BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE", A.C.I. 315.80.
- ** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

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

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 PIER 1

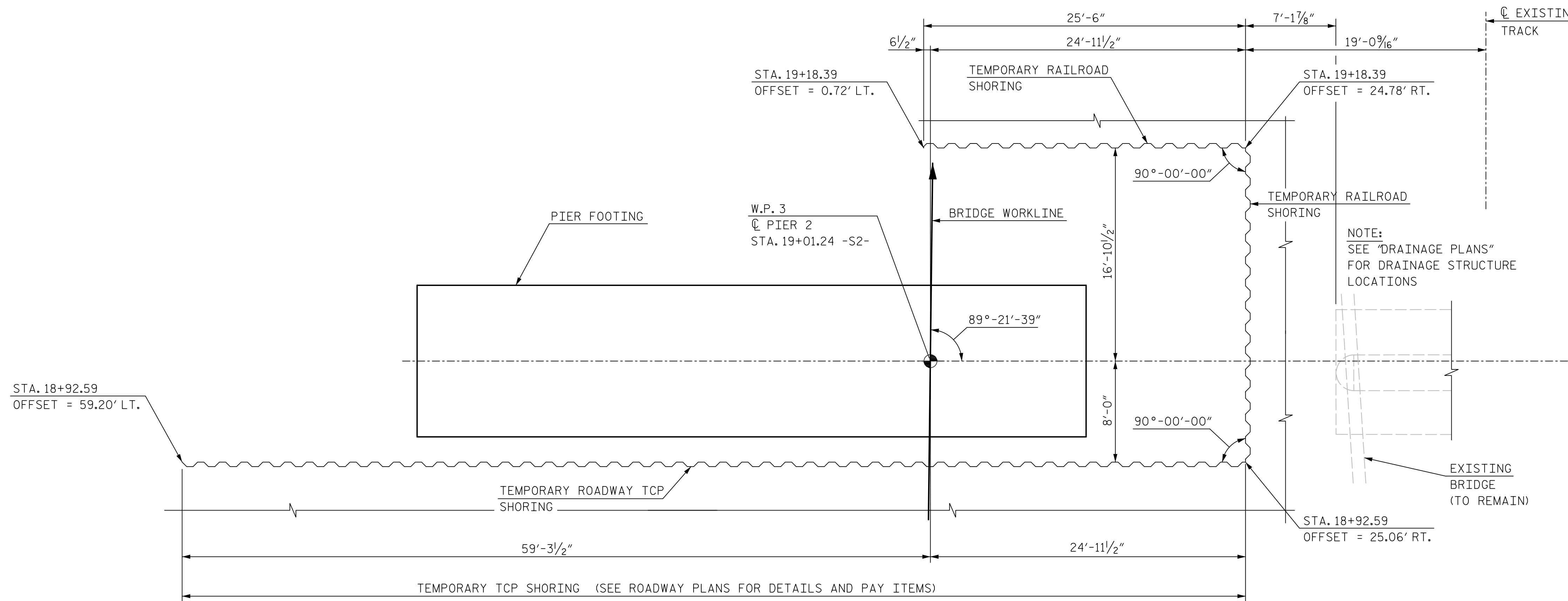


2/22/2018

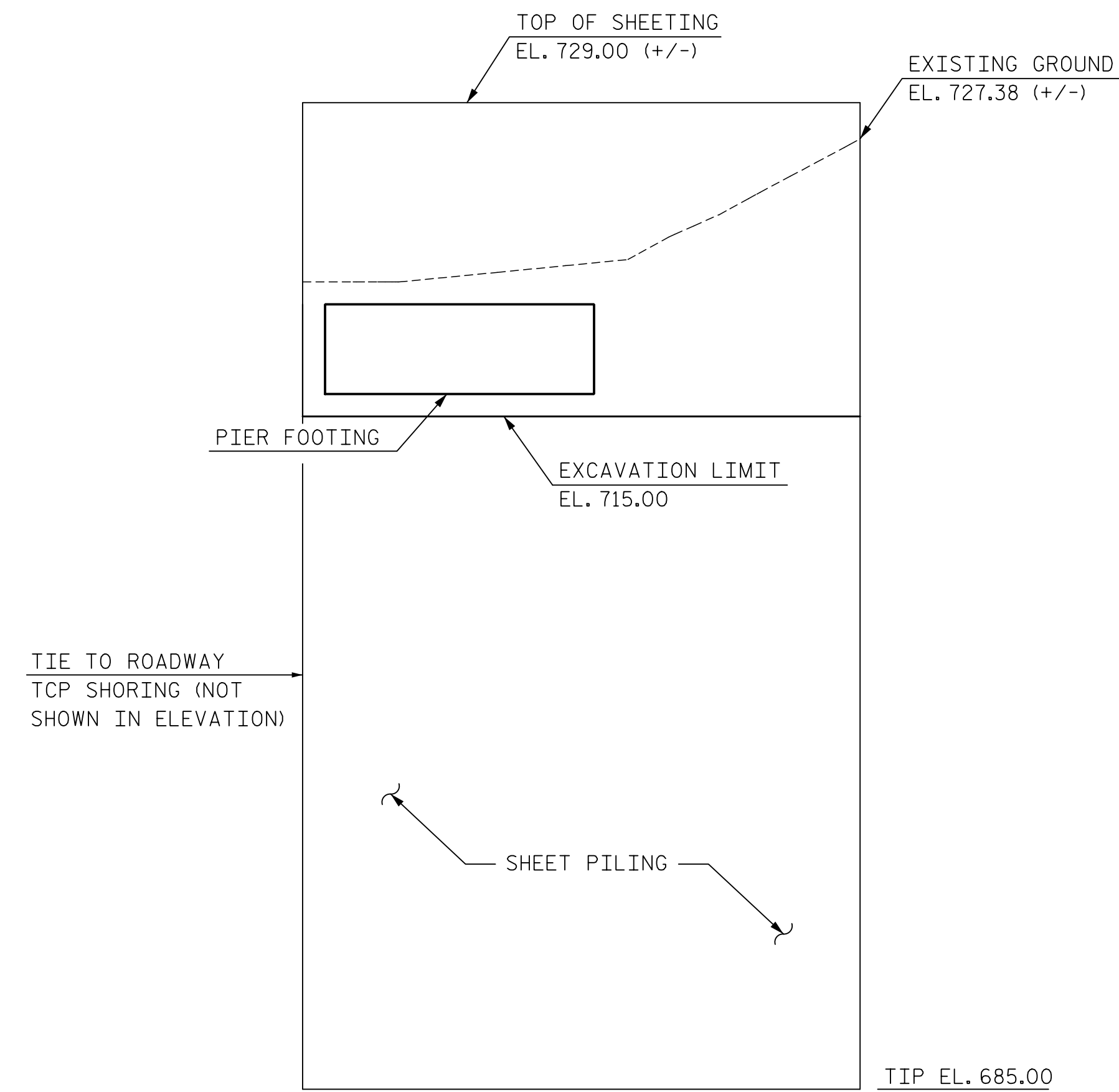
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY: C.GERDING	DATE: 10/17
CHECKED BY: J. VECLITCH	DATE: 10/17
DWG. NO. 28	

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-28
1			3			TOTAL SHEETS
2			4			42



TEMPORARY SHORING PLAN



TEMPORARY SHORING ELEVATION

NOTES:

SHORING HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF AREMA'S MANUAL FOR RAILWAY ENGINEERING, VOL. 2, STRUCTURES.

MAXIMUM WALL DEFLECTION LIMITED TO 1 1/2".

ALL SHORING MATERIAL SHALL BE IN "LIKE NEW" CONDITION.

SHEET PILING SHALL BE ASTM A572 GRADE 50 STEEL (HOT ROLLED) AND SHALL HAVE THE FOLLOWING MINIMUM PROPERTIES:

RAILROAD SHORING:
 MOMENT OF INERTIA/FT. 490.0 in⁴
 SECTION MODULUS/FT. 60.7 in³

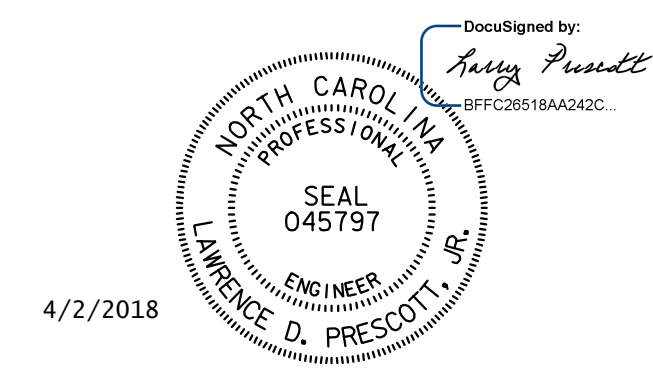
ROADWAY SHORING:
 MOMENT OF INERTIA/FT. 184.0 in⁴
 SECTION MODULUS/FT. 30.2 in³

ASSUMED SOIL PARAMETERS
 COARSE GRAINED SOILS:
 SOIL FRICTION ANGLE - 30 DEGREES
 UNDRAINED SHEAR STRENGTH - 0 PSF

CONSTRUCTION SEQUENCE:

1. CONTRACTOR TO LOCATE EXISTING 24"RCP PIPE WITHIN LIMITS OF SHORING AND PROTECT IN PLACE DURING SHORING INSTALLATION.
2. INSTALL SHORING TO REQUIRED TIP ELEVATION.
3. EXCAVATE TO EXCAVATION LIMIT SHOWN.
4. CONSTRUCT DRAINAGE STRUCTURES PER DRAINAGE PLANS.
5. CONSTRUCT PROPOSED PIER.
6. BACKFILL PROPOSED PIER AND DRAINAGE STRUCTURES.
7. REMOVE SHORING.

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



4/2/2018

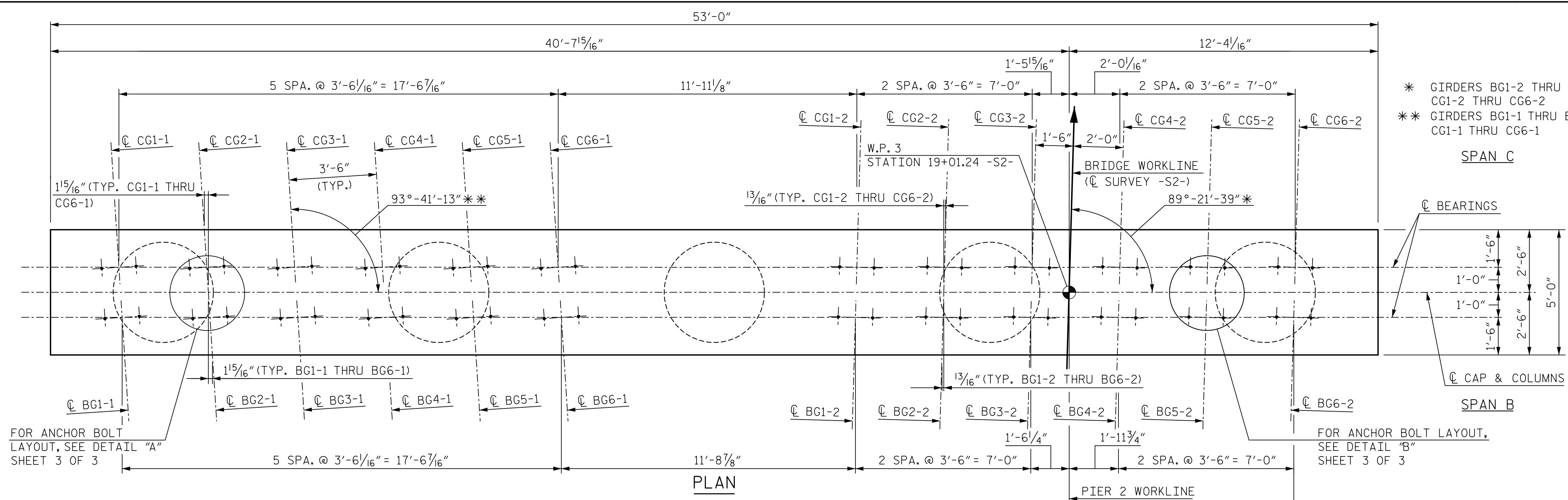
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 PIER 2
 SHORING

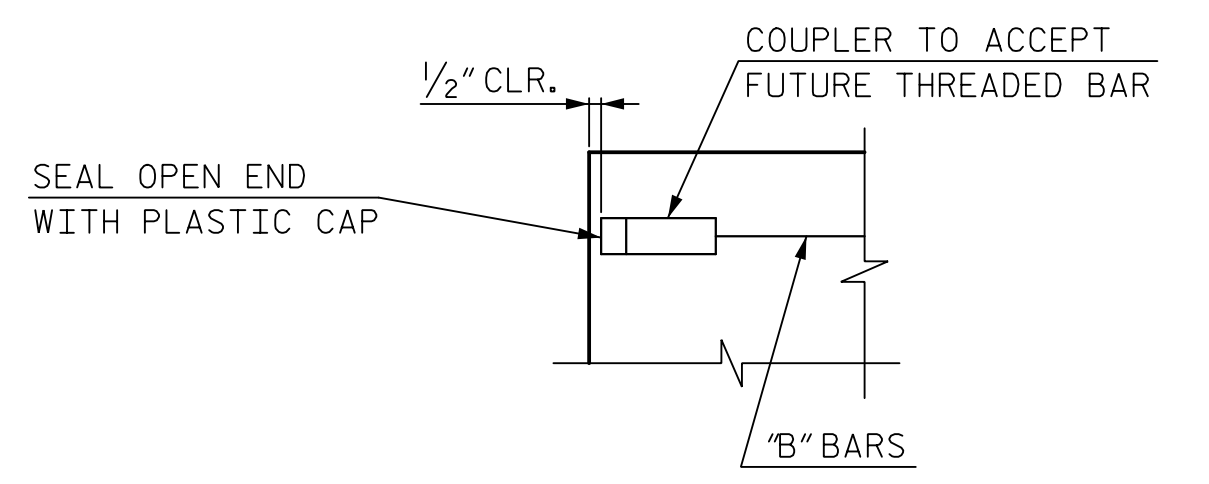
HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609		REVISIONS				SHEET NO.
DRAWN BY	C. GERDING	DATE	11/17	NO.	BY	DATE	S3-29	
CHECKED BY	S. TIPPETT	DATE	11/17	1			TOTAL SHEETS	
				2			42	

0012DEL_P28

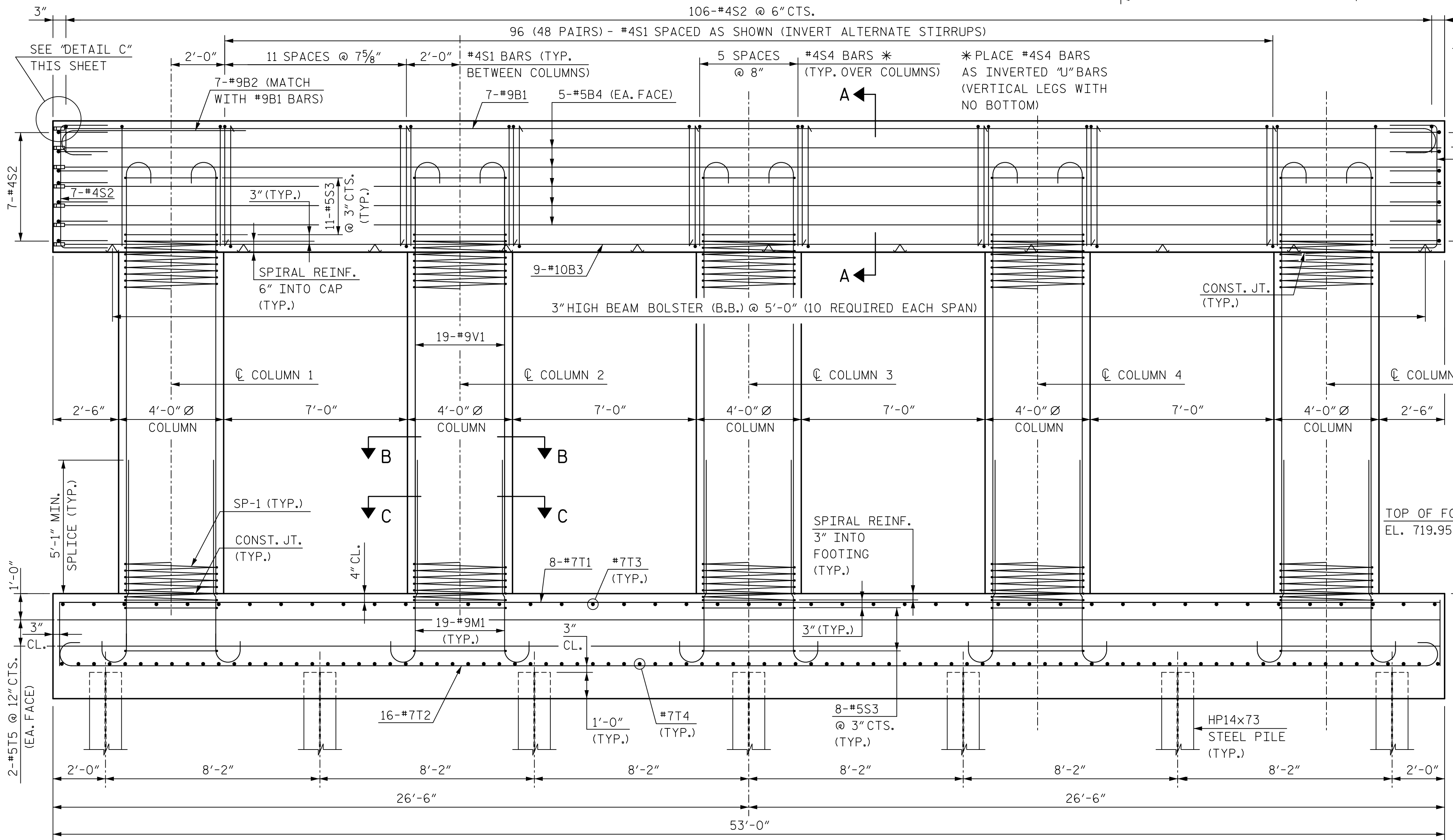


PLAN

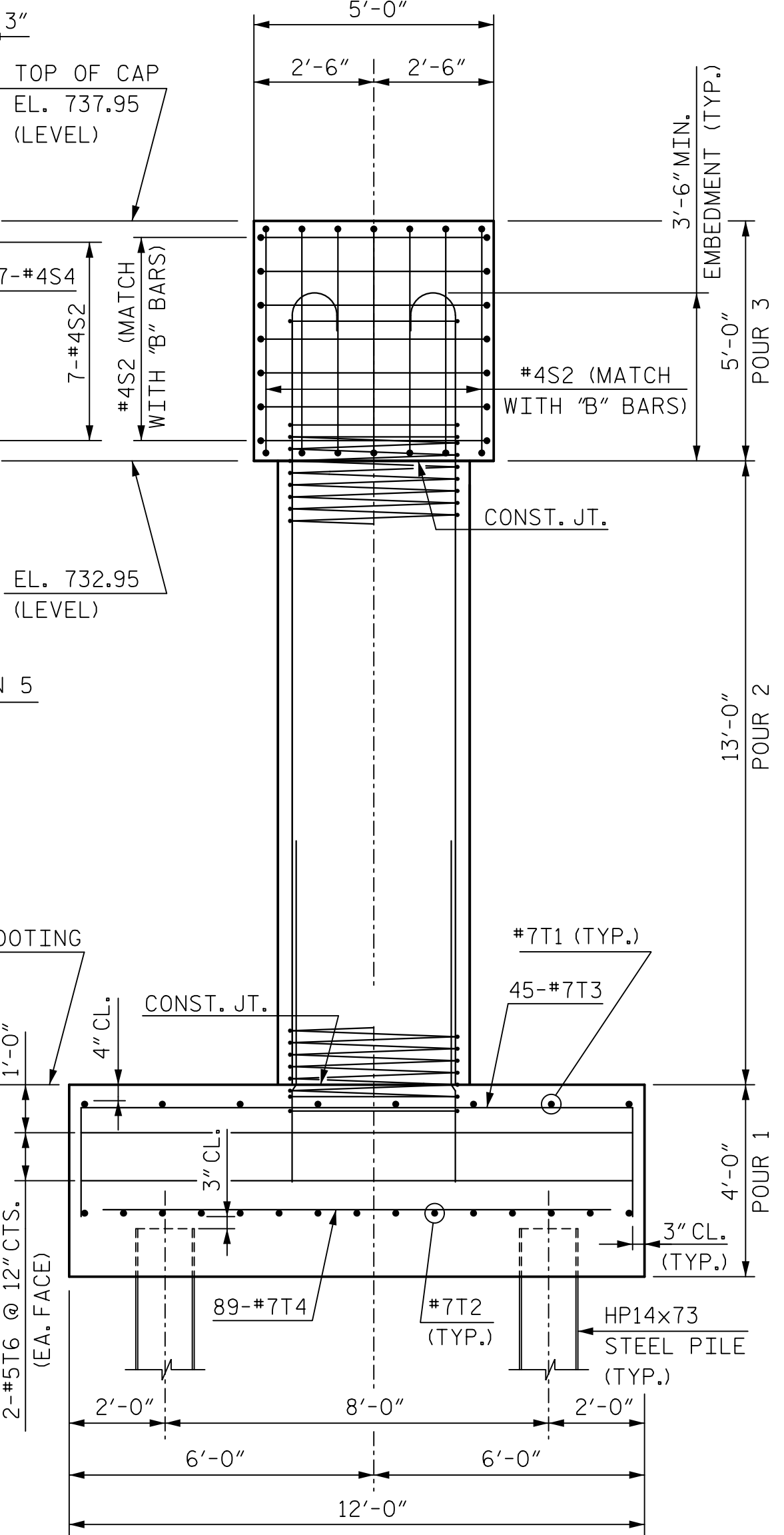
NOTES:
 ALL DIMENSIONS SHOWN ARE PARALLEL OR NORMAL TO ϕ PIER UNLESS NOTED.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 TOP MAT OF FOOTING LONGITUDINAL AND TRANSVERSE REINFORCEMENT MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN REINFORCEMENT. DO NOT EXCEED 12" BETWEEN BARS.
 FOR SECTIONS "A-A", "B-B" & "C-C" SEE SHEET 2 OF 3.
 FOR "FOOTING PLAN" SEE SHEET 2 OF 3.



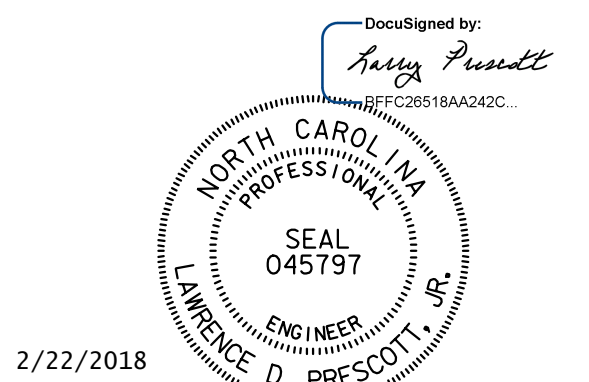
DETAIL C



ELEVATION



END ELEVATION



2/22/2018

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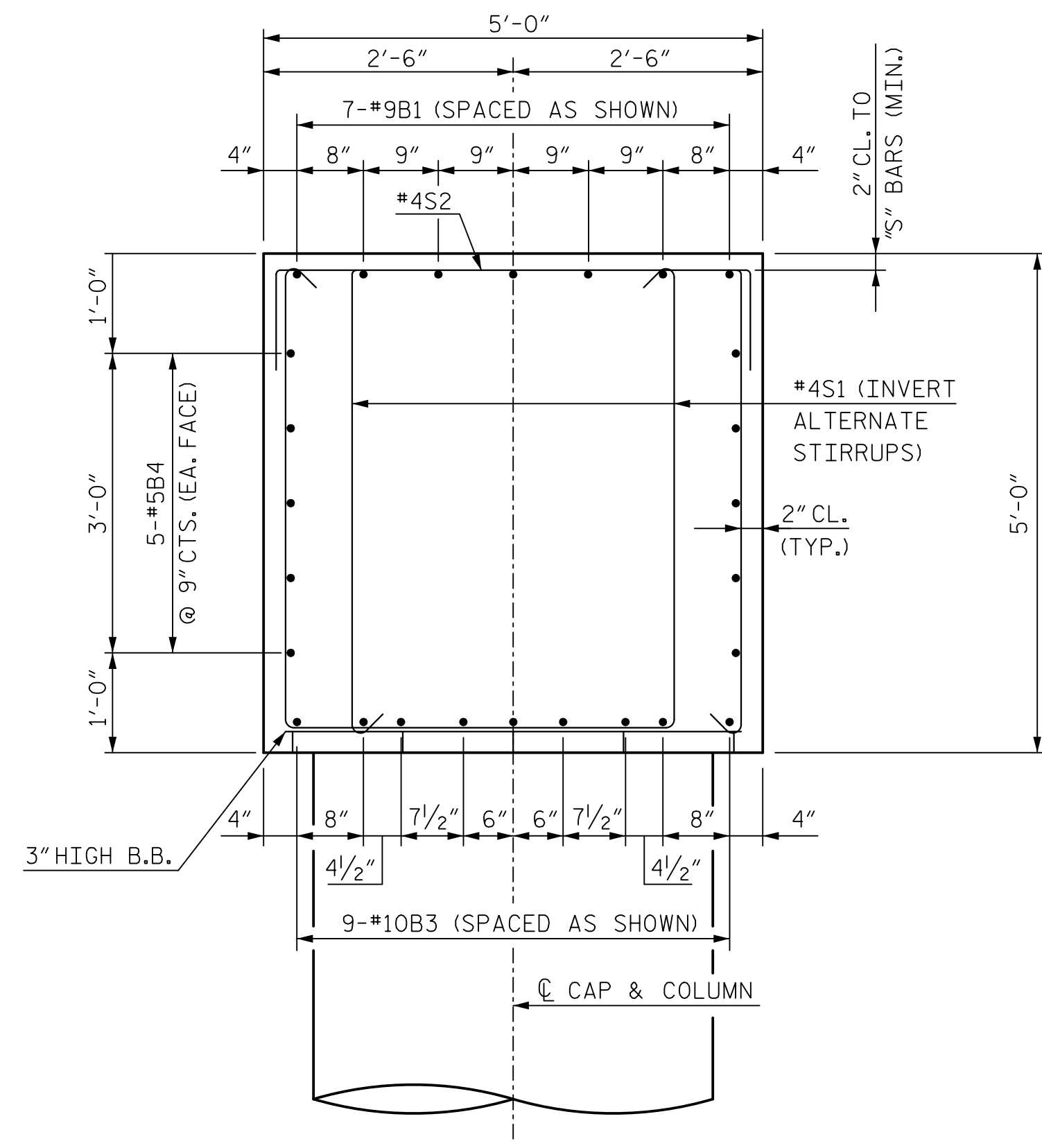
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 1 OF 3

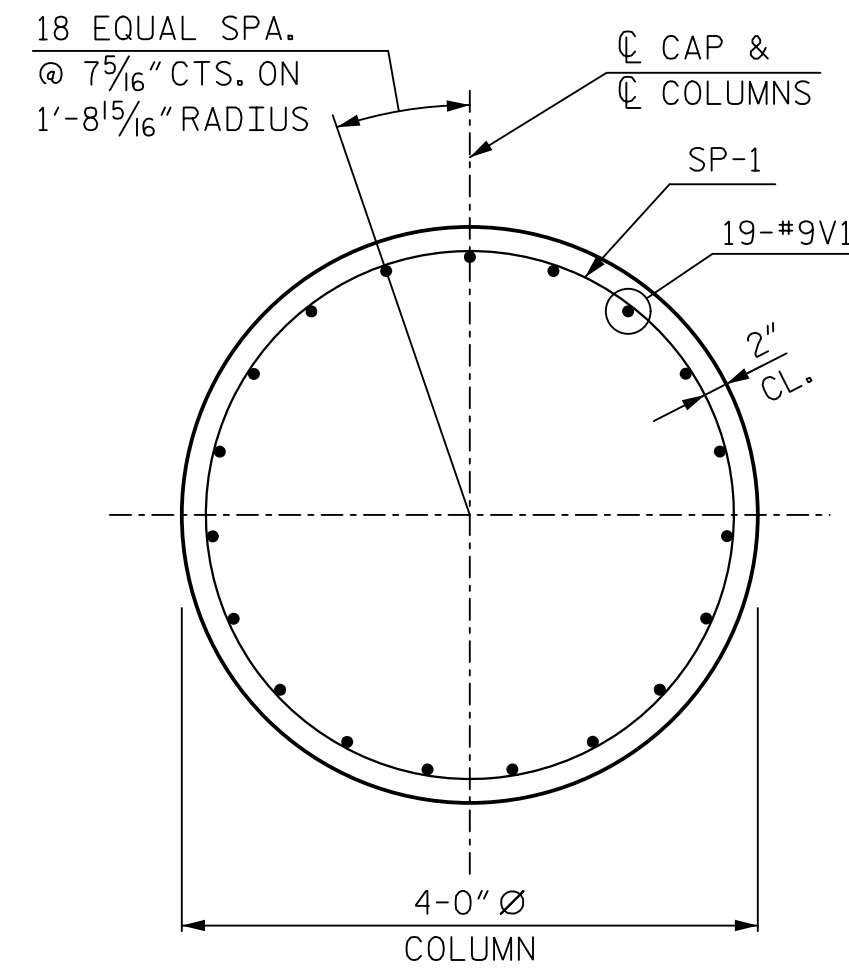
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
PIER 2

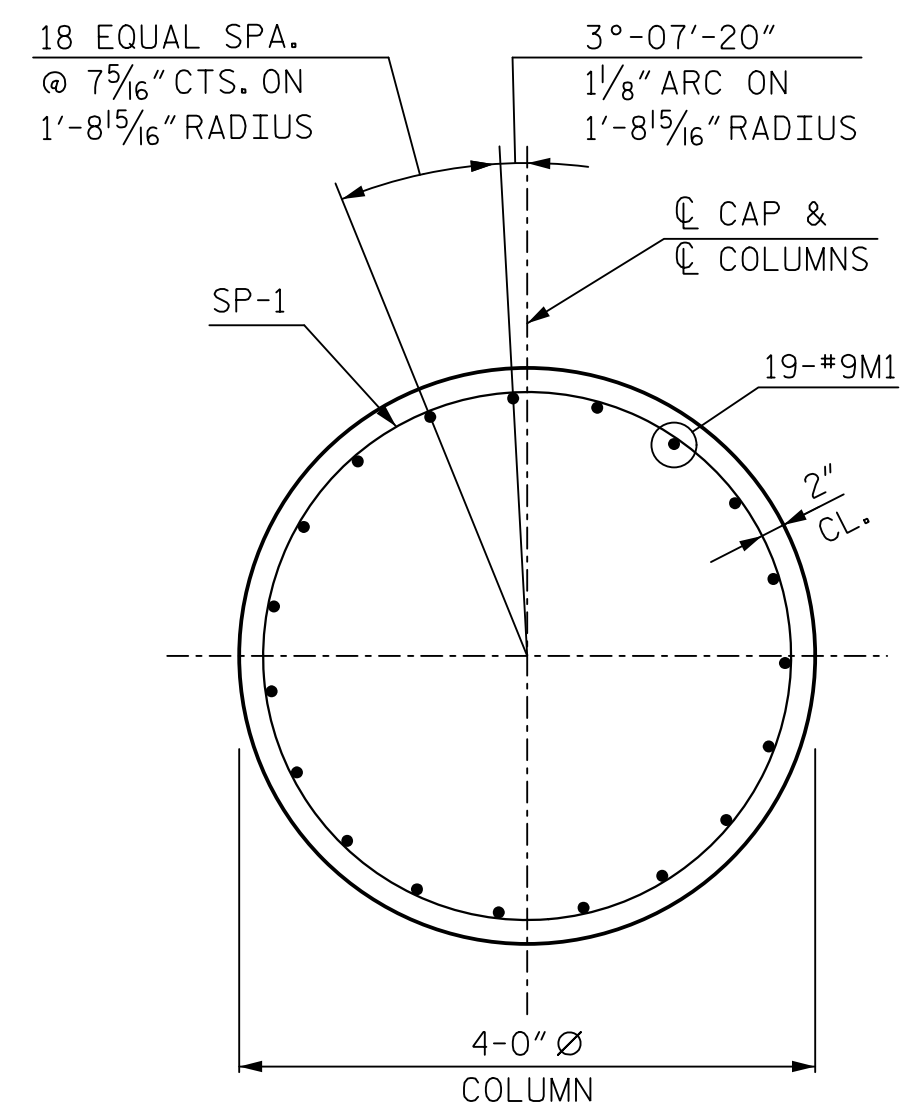
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S3-30 TOTAL SHEETS 42	
	DRAWN BY: C. GERDING CHECKED BY: J. VELOCH	DATE: 10/17 DATE: 10/17	NO.: 3 NO.: 4	BY:		DATE:
	DWG. NO. 30					



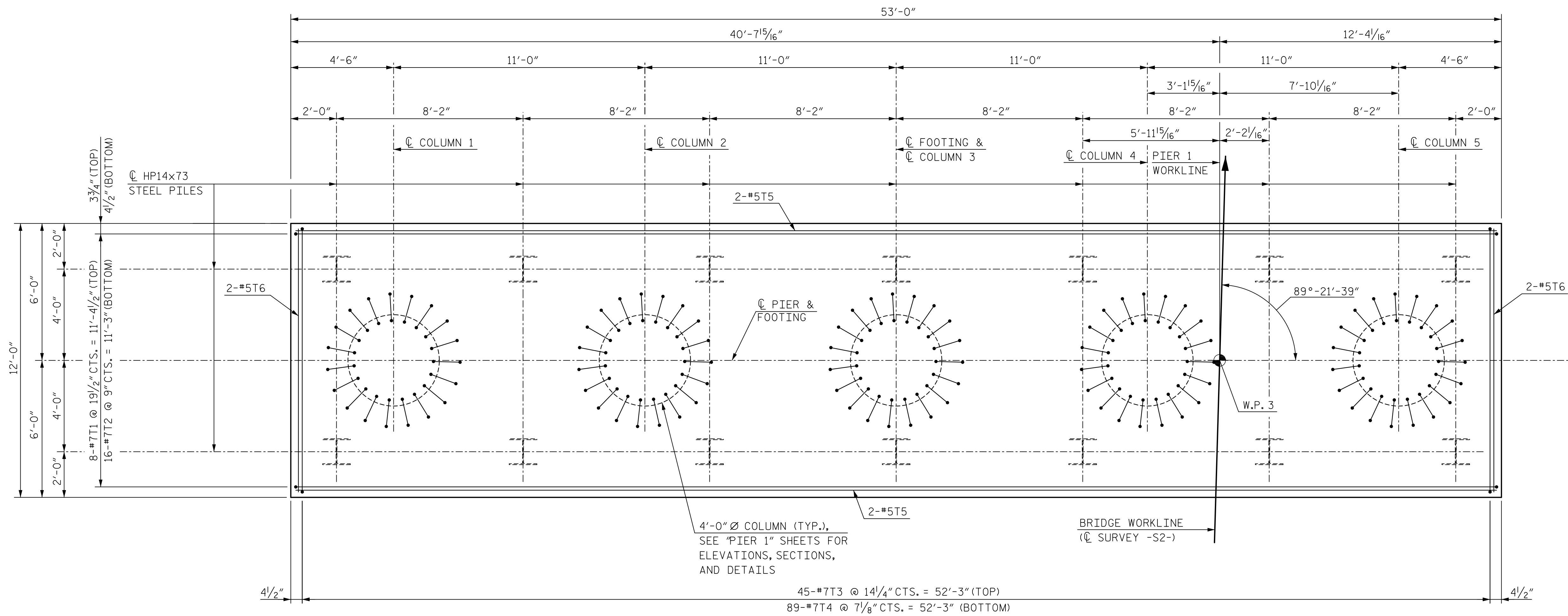
SECTION A-A
(COLUMN REINFORCING NOT SHOWN FOR CLARITY)



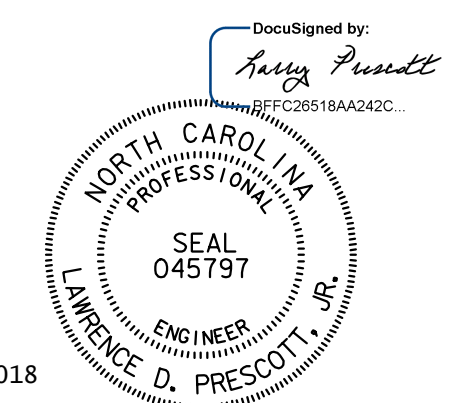
SECTION B-B



SECTION C-C
(V1 BARS NOT SHOWN FOR CLARITY)



FOOTING PLAN



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

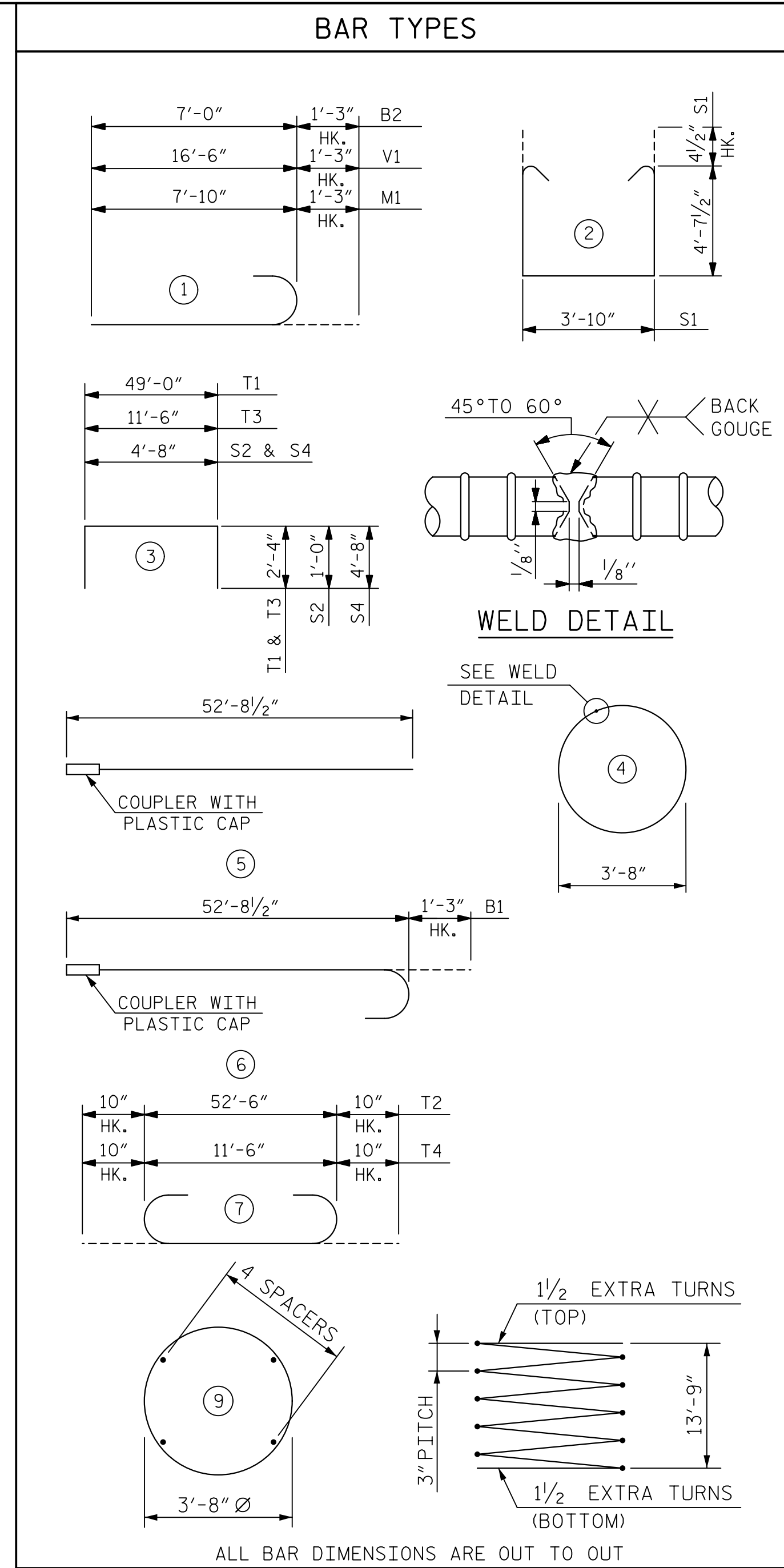
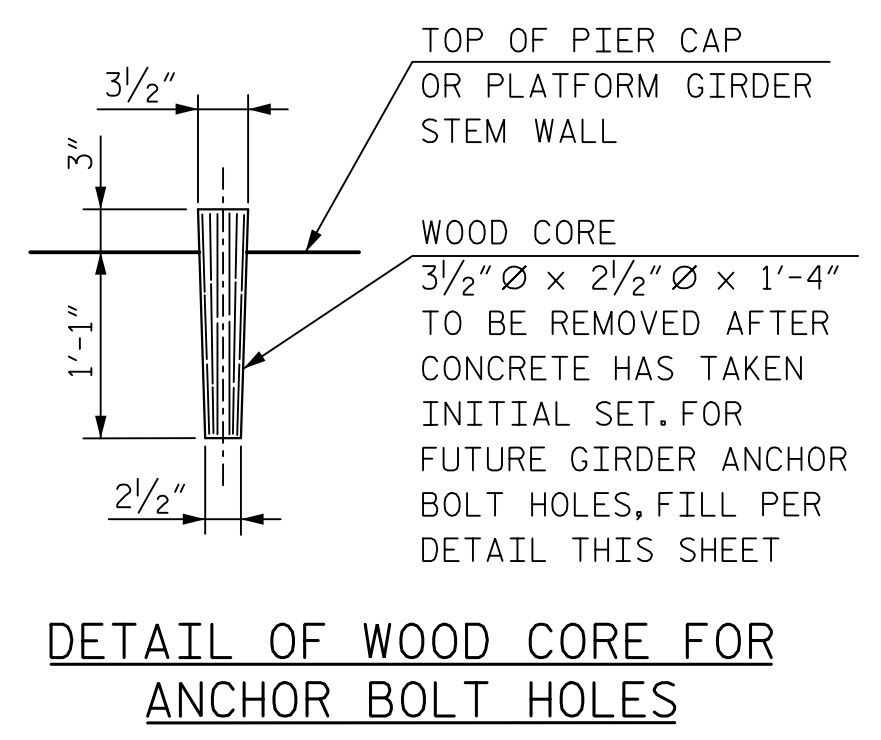
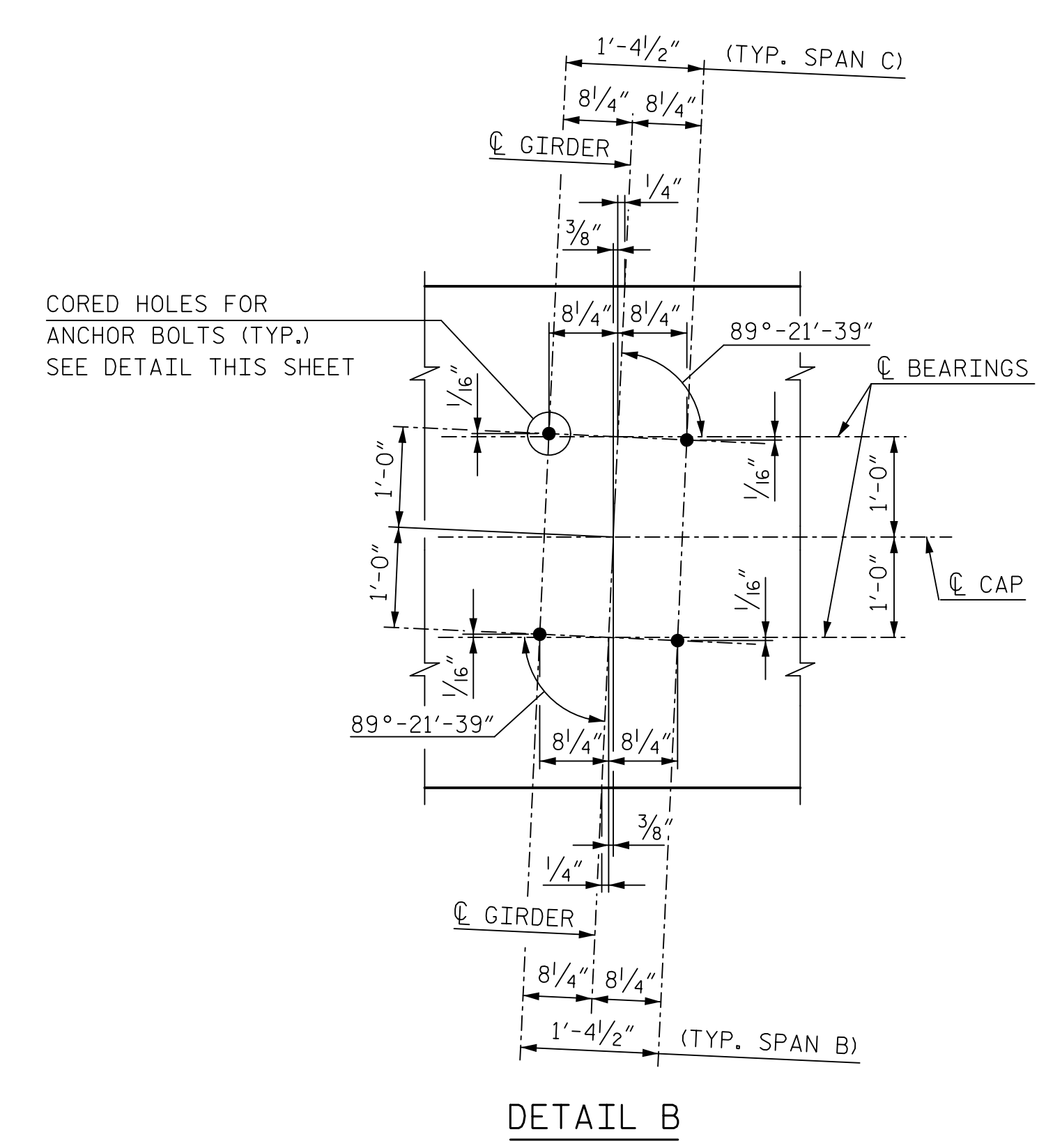
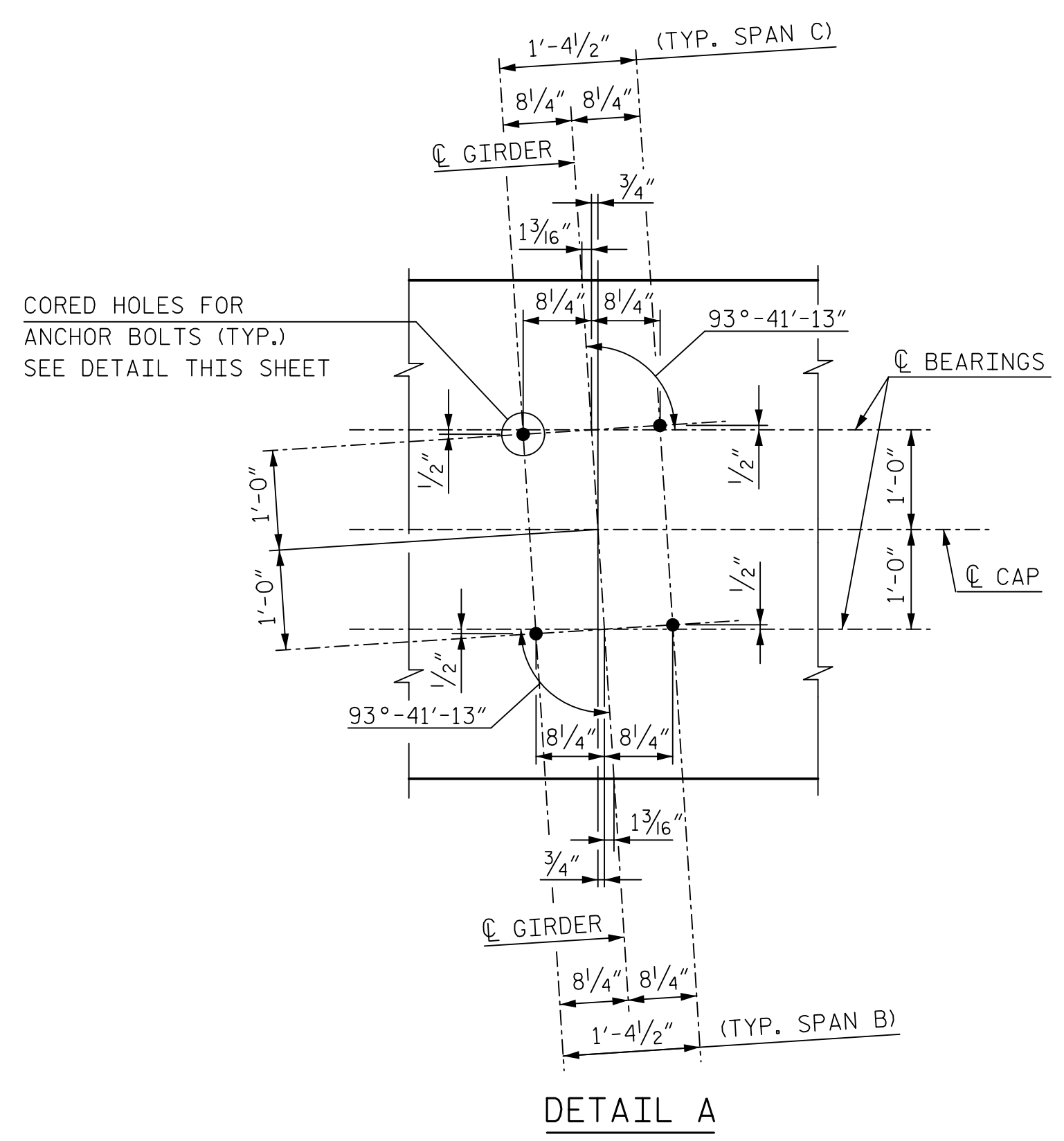
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 PIER 2

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. 31	
CHECKED BY: J.VECLATCH	DATE: 10/17		

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S3-31
1			3			TOTAL SHEETS
2			4			42

0012DEL_P28



BILL OF REINFORCING					
PIER 2					
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	9	6	53'-11 1/2"	1,284
B2	7	9	1	8'-3"	196
B3	9	10	5	52'-8 1/2"	2,041
B4	10	5	5	52'-8 1/2"	550
S1	96	4	2	13'-10"	887
S2	134	4	3	6'-8"	597
* S3	95	5	4	11'-7"	1,148
S4	30	4	3	14'-0"	281
M1	95	9	1	9'-1"	2,934
T1	8	7	3	57'-2"	935
T2	16	7	1	54'-2"	1,771
T3	45	7	3	16'-2"	1,487
T4	89	7	7	13'-2"	2,395
T5	4	5	STR.	52'-6"	219
T6	4	5	STR.	11'-6"	48
V1	95	9	1	17'-9"	5,733
SP-1	5	**	9	658'-10"	3,436

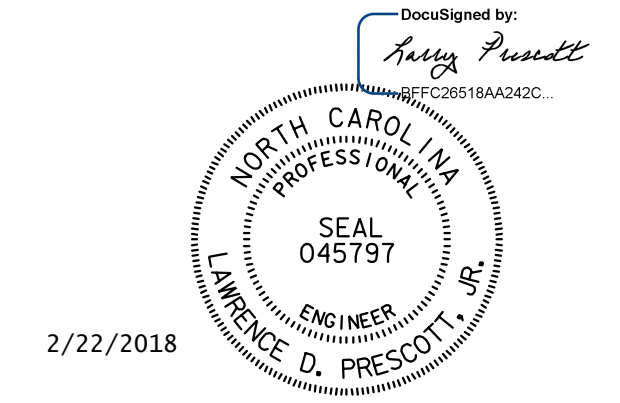
QUANTITIES		
ITEM		TOTAL
REINFORCING STEEL	LBS	22,506
SPIRAL COLUMN REINFORCING STEEL	LBS	3,436
CLASS AA CONCRETE:		
POUR 1	C.Y.	94.3
POUR 2	C.Y.	30.3
POUR 3	C.Y.	49.1
TOTAL	C.Y.	173.7
HP 14 X 73 STEEL PILES	NO.	14
TOTAL	L.F.	478.0

* #5S3 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 W31 OR D31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

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

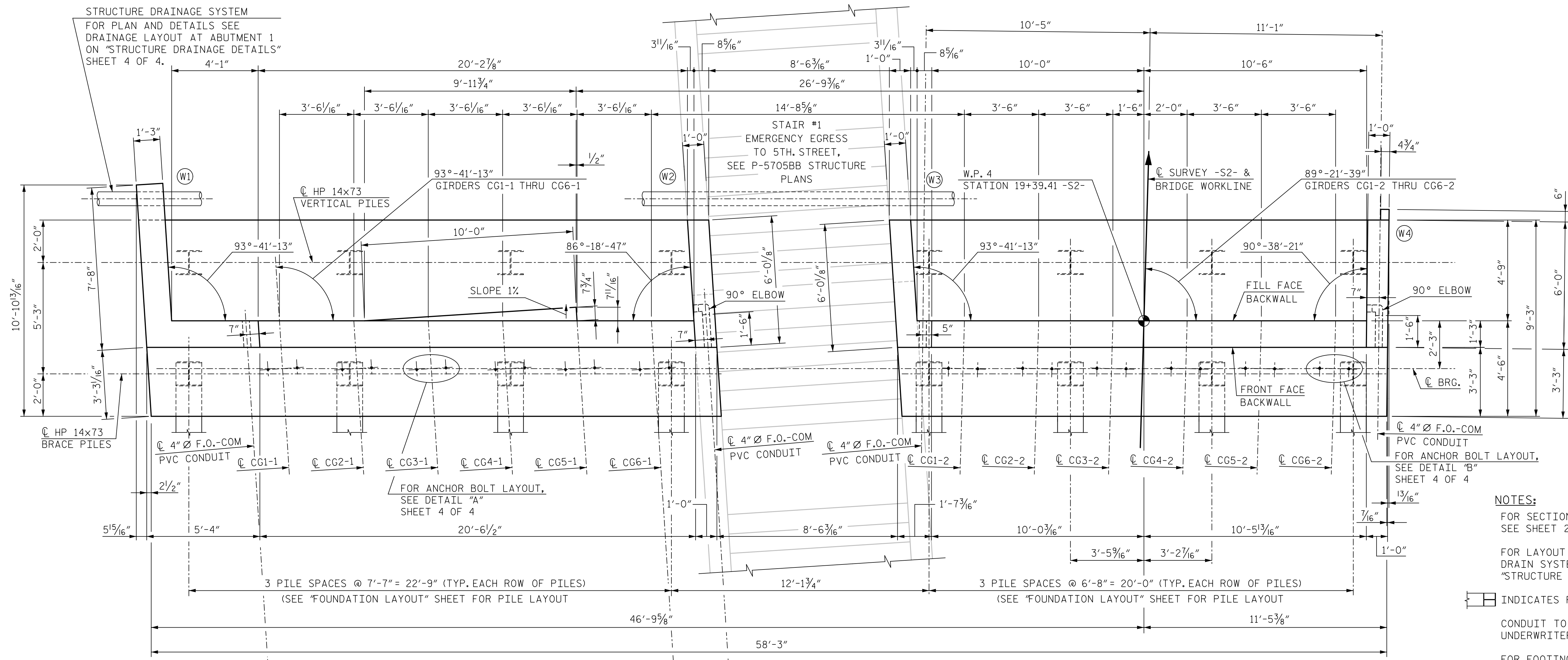
SHEET 3 OF 3



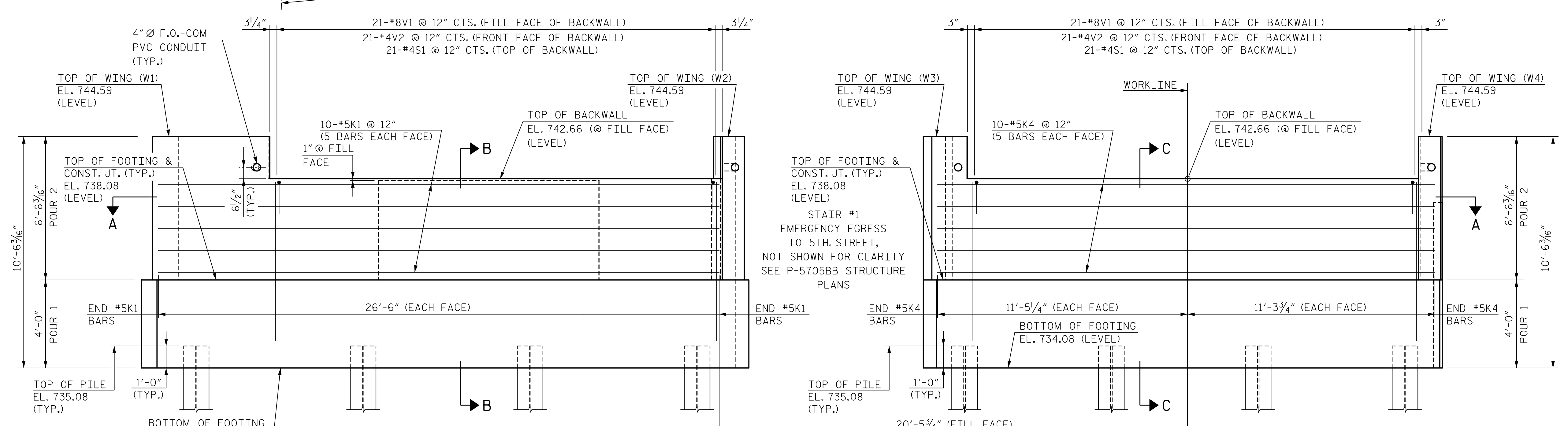
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
DRAWN BY: C. GERDING	DATE: 10/17
CHECKED BY: J. VELOTOCH	DATE: 10/17
DWG. NO. 32	

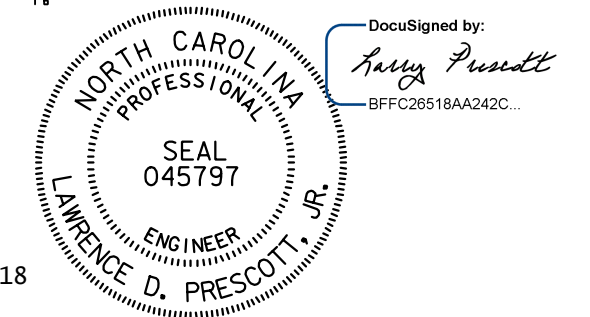
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE PIER 2					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. S3-32
					TOTAL SHEETS 42



PLAN



ELEVATION



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE ABUTMENT 2					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1		10/17	3		
2		10/17	4		

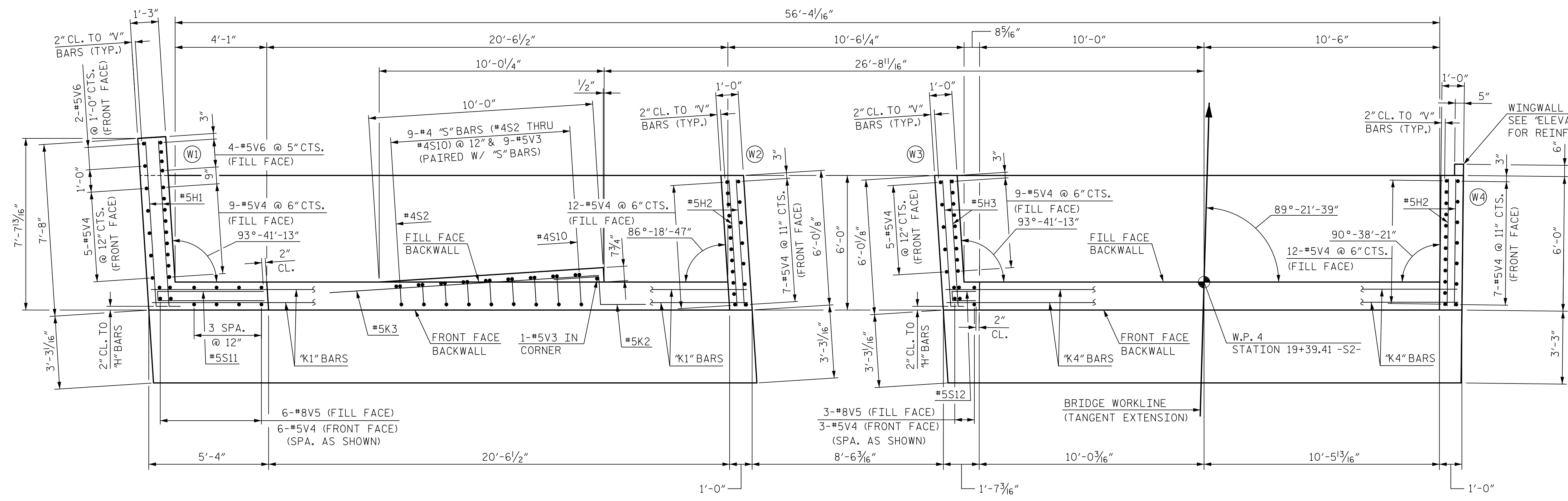
SHEET NO. S3-33	
TOTAL SHEETS 42	

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

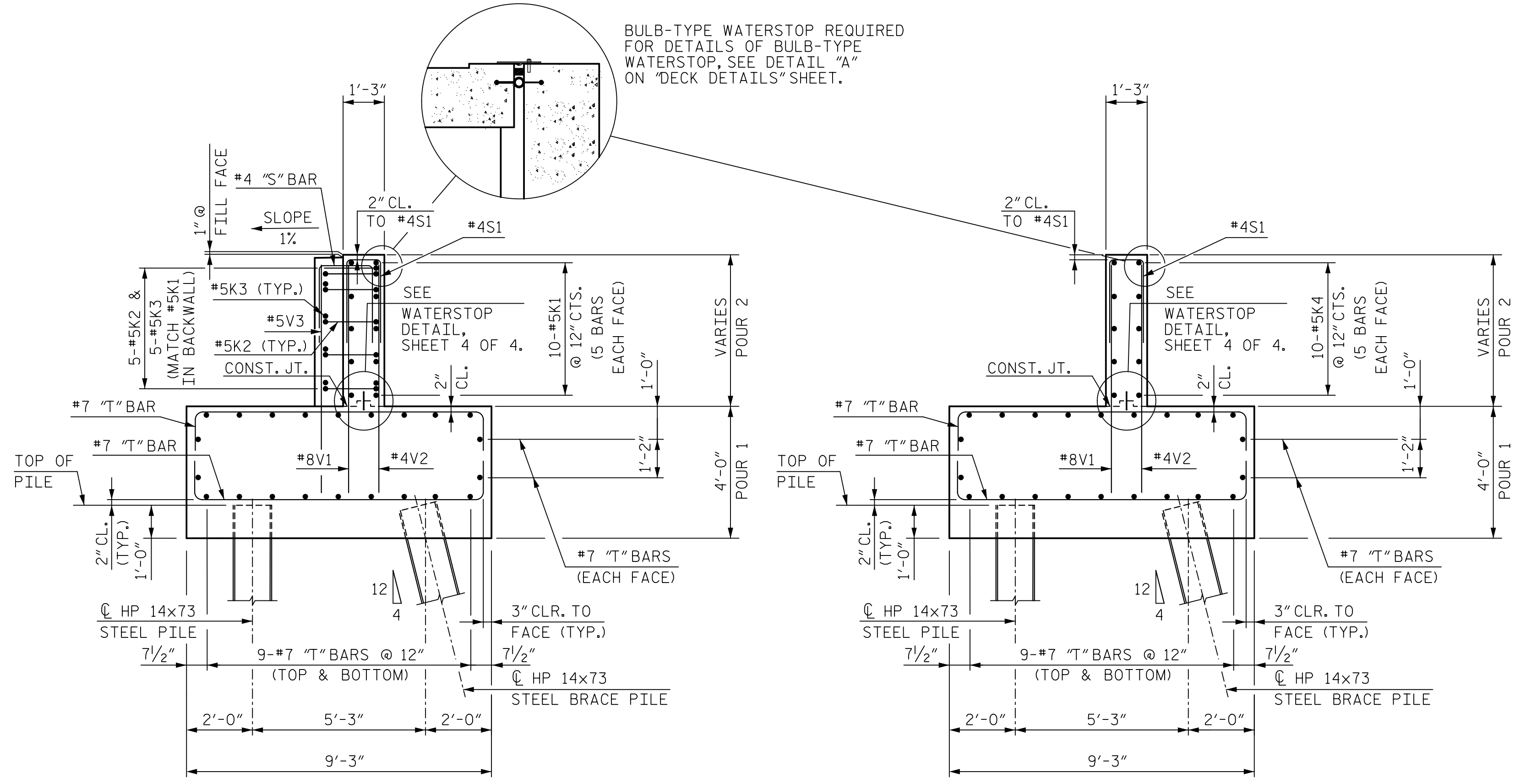
DRAWN BY: C. GERDING DATE: 10/17
CHECKED BY: J. VELOTOCH DATE: 10/17

DWG. NO. 33

NOTES:
FOR ABUTMENT AND WINGWALL DIMENSIONS AND ELEVATIONS, SEE SHEET 1 OF 4.

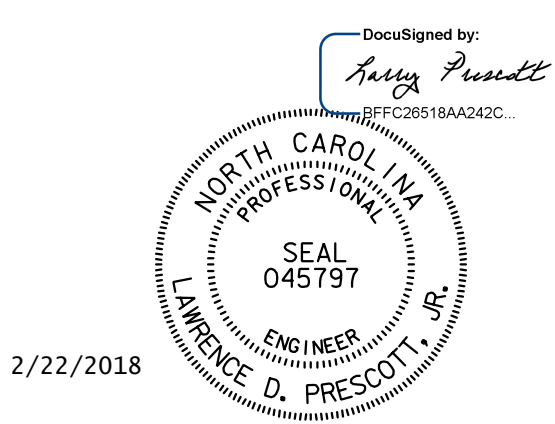


SECTION A-A



SECTION B-B

SECTION C-C



2/22/2018

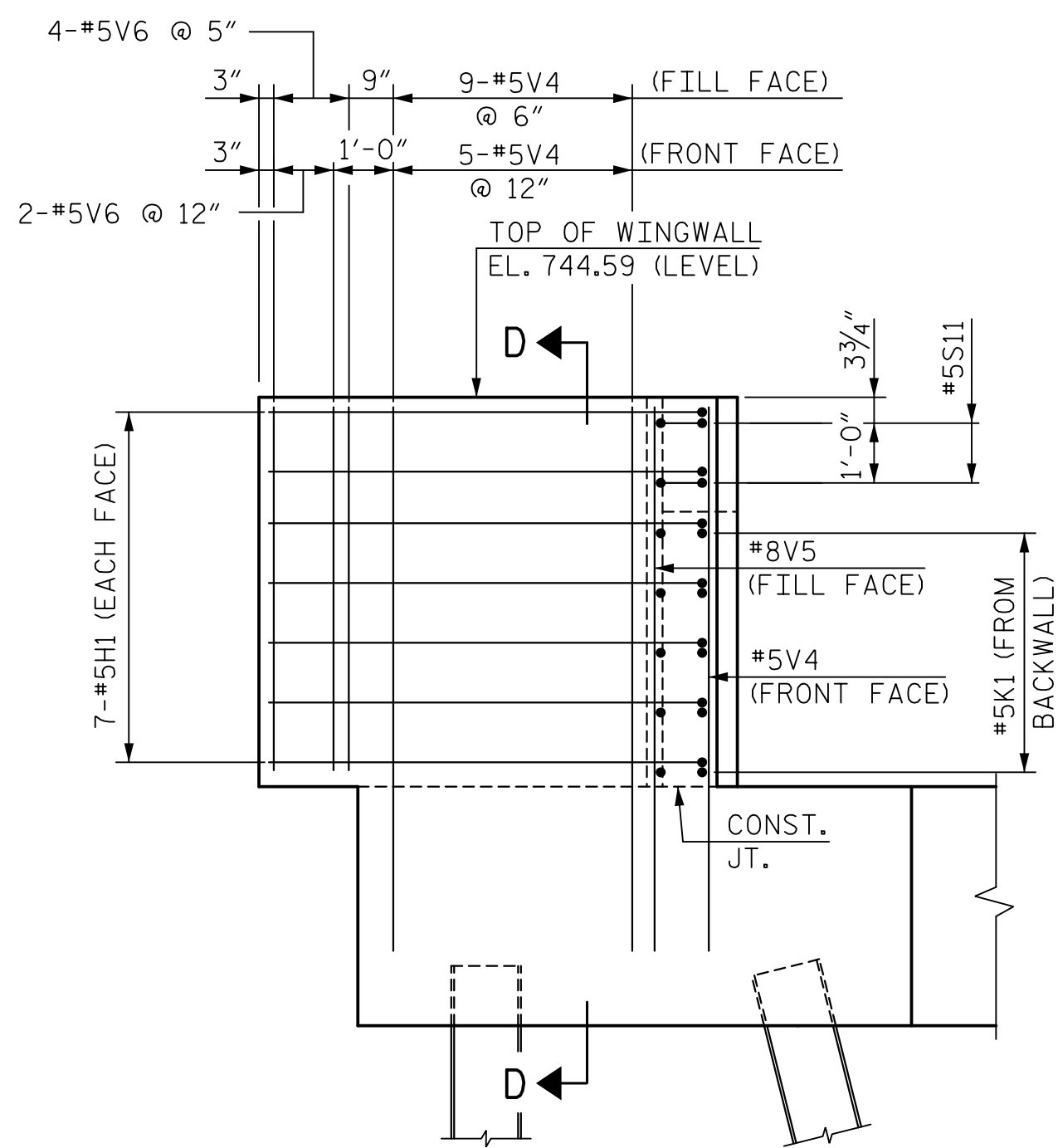
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

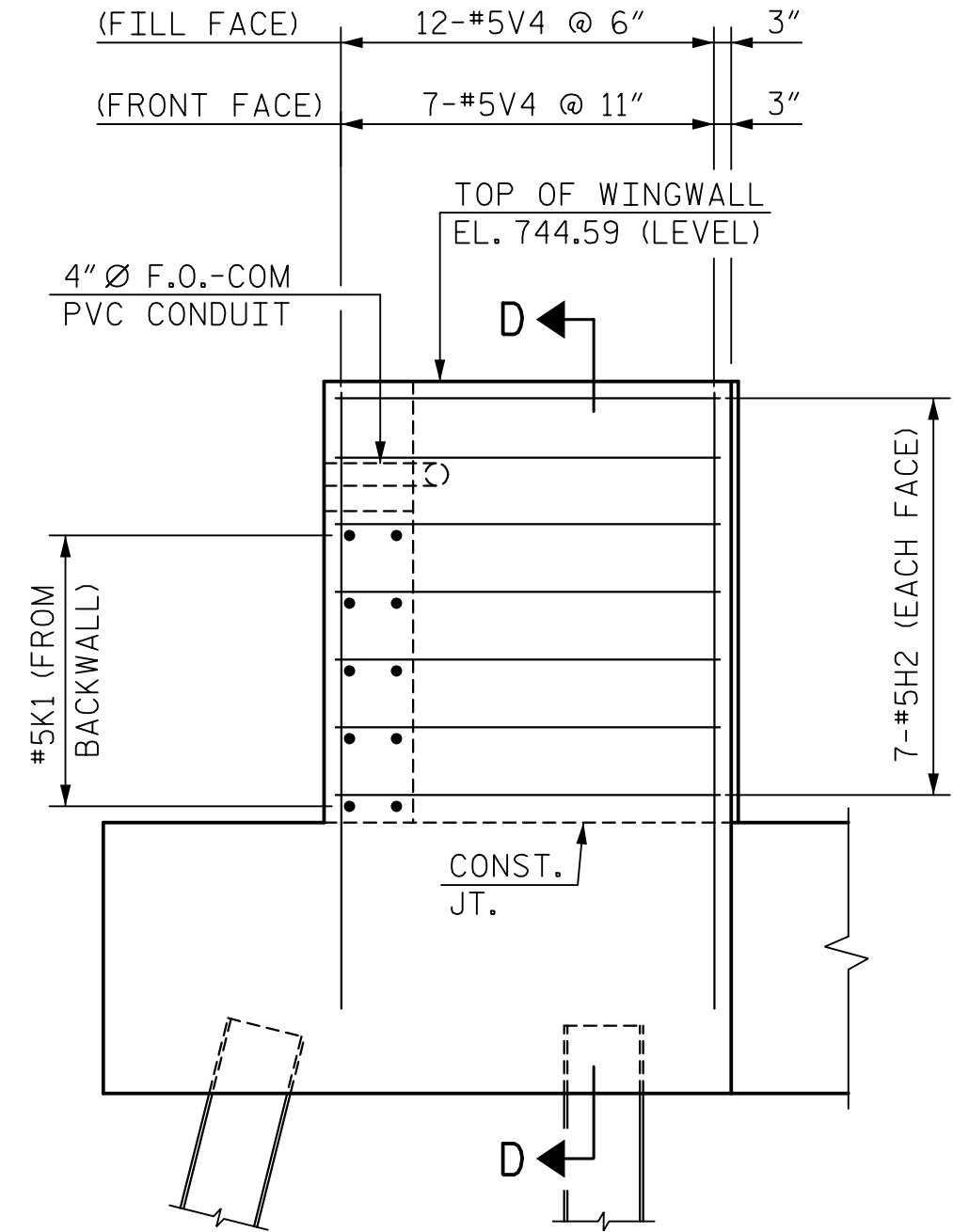
SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 ABUTMENT 2

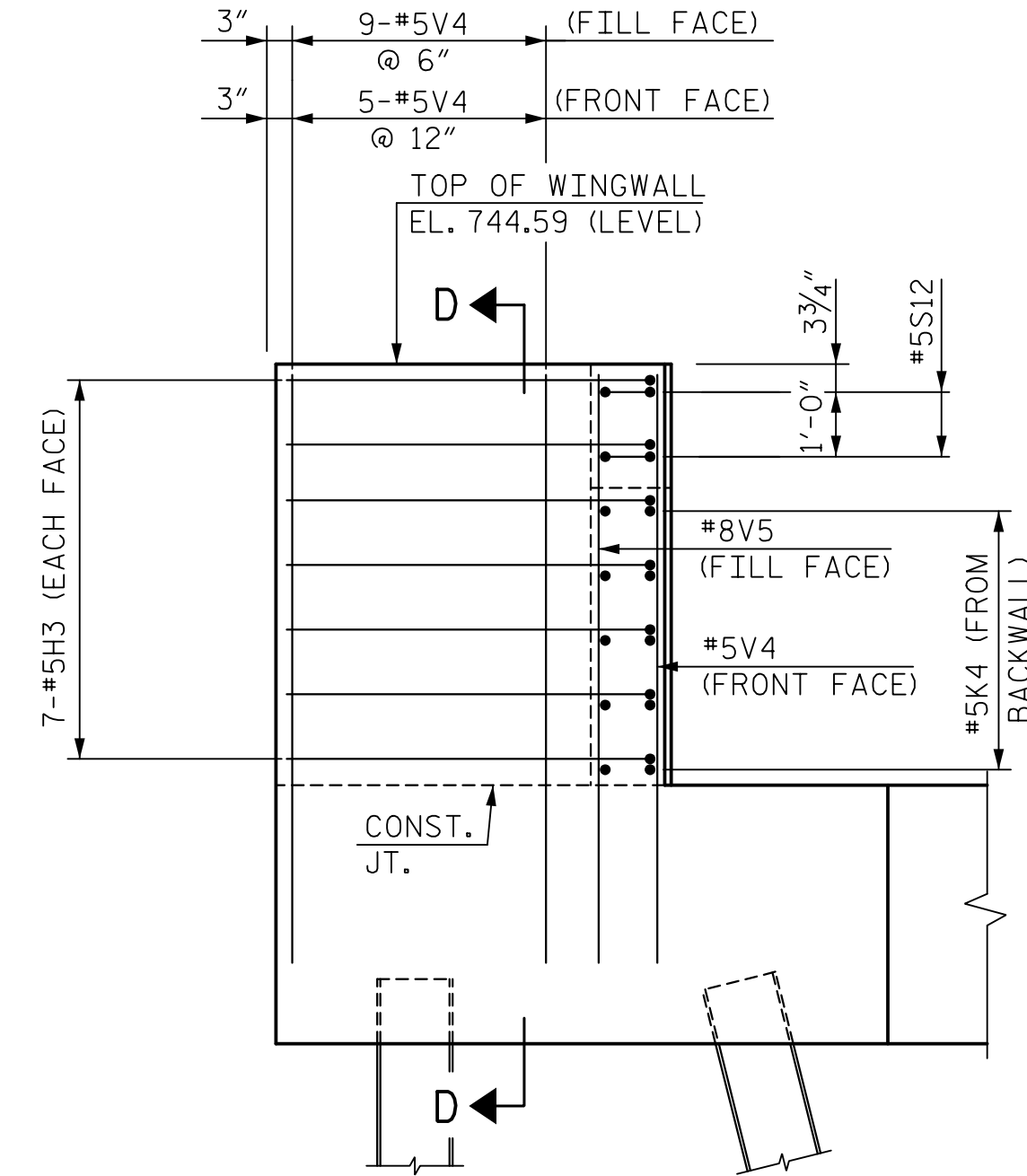
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609		REVISIONS				SHEET NO. S3-34
		NO.	BY	DATE	NO.	
DRAWN BY: C. GERDING		DATE: 10/17				
CHECKED BY: J. VELOCH		DATE: 10/17	DWG. NO. 34			
				TOTAL SHEETS		42



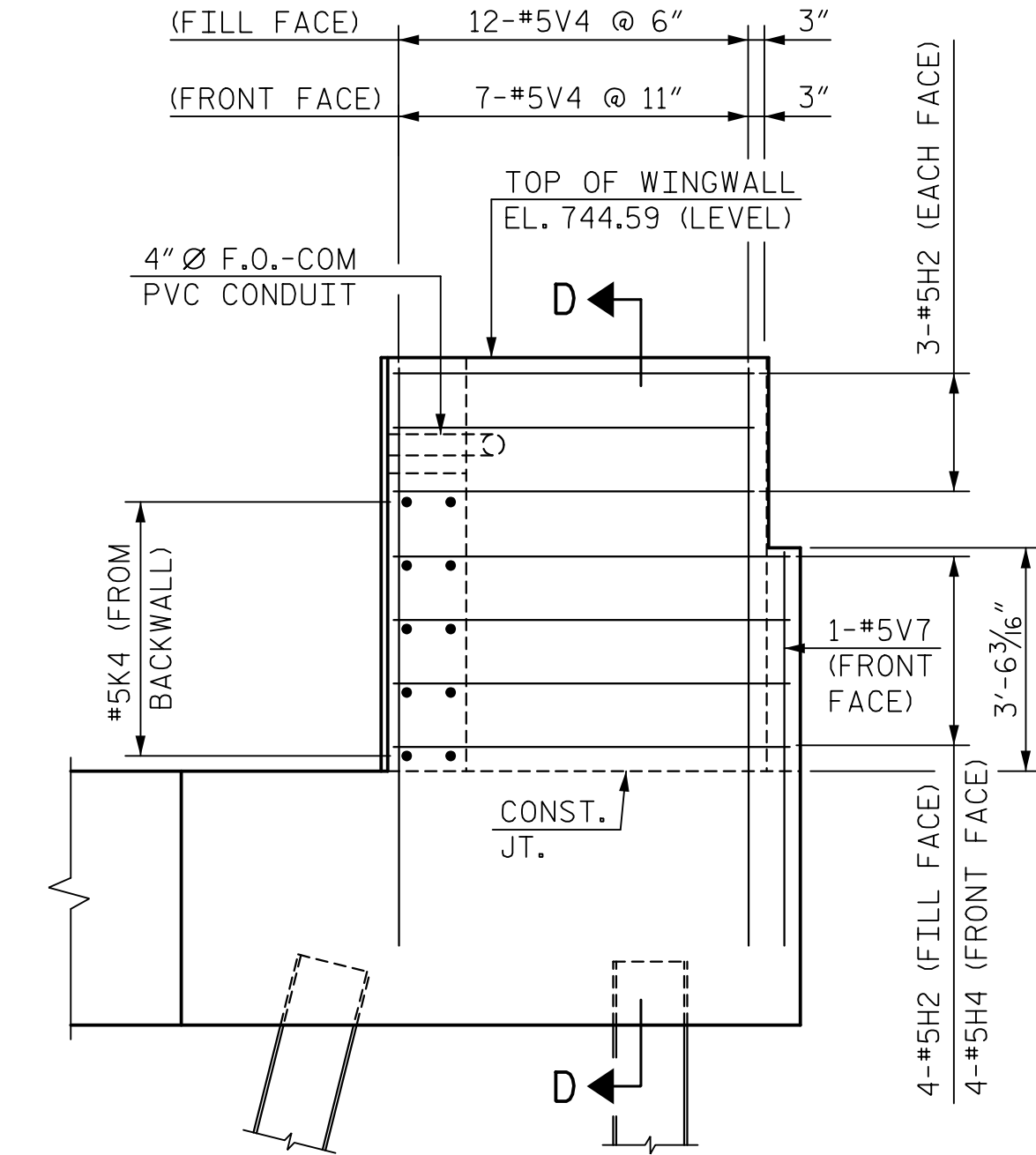
ELEVATION OF WING (W1)



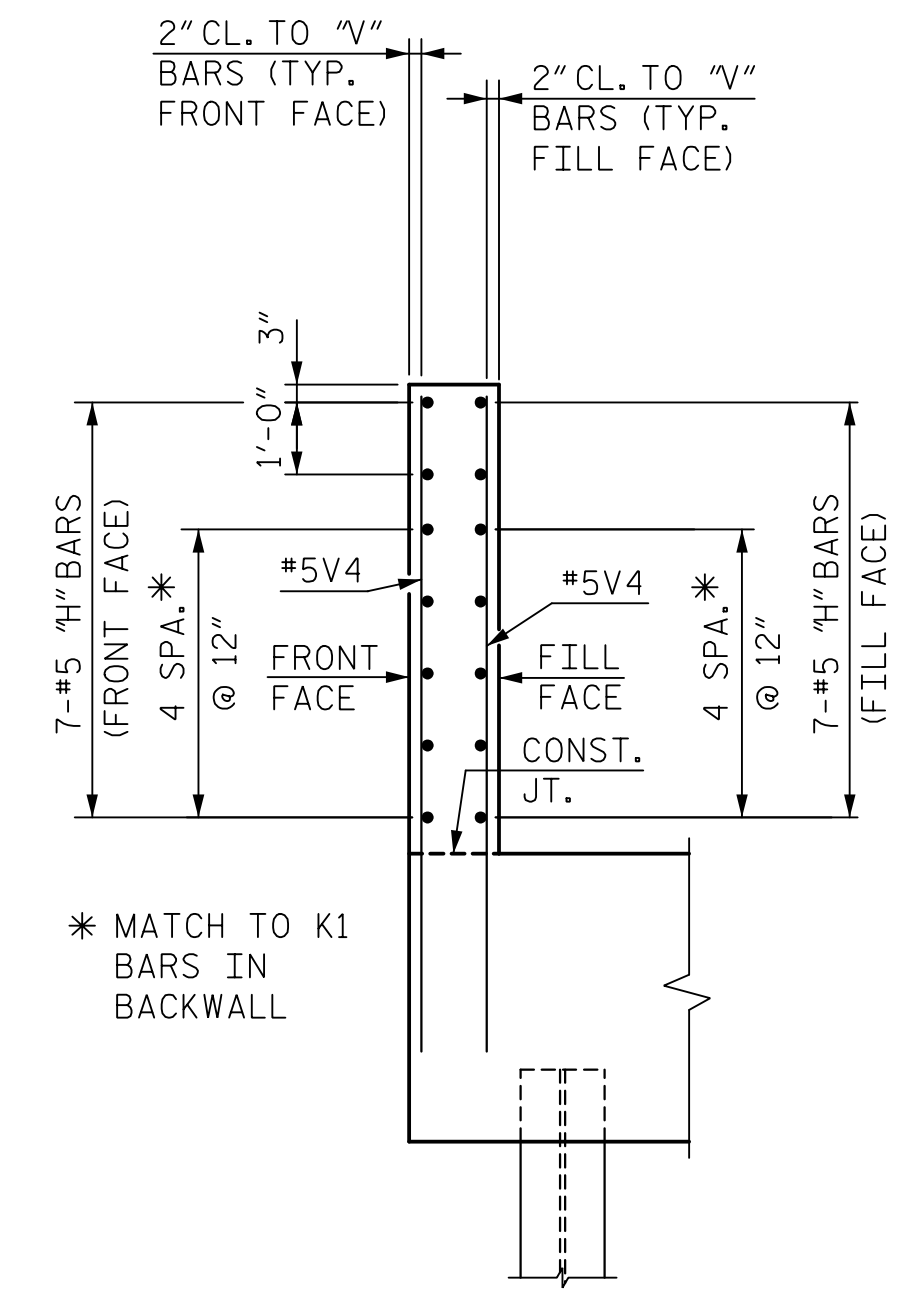
ELEVATION OF WING (W2)



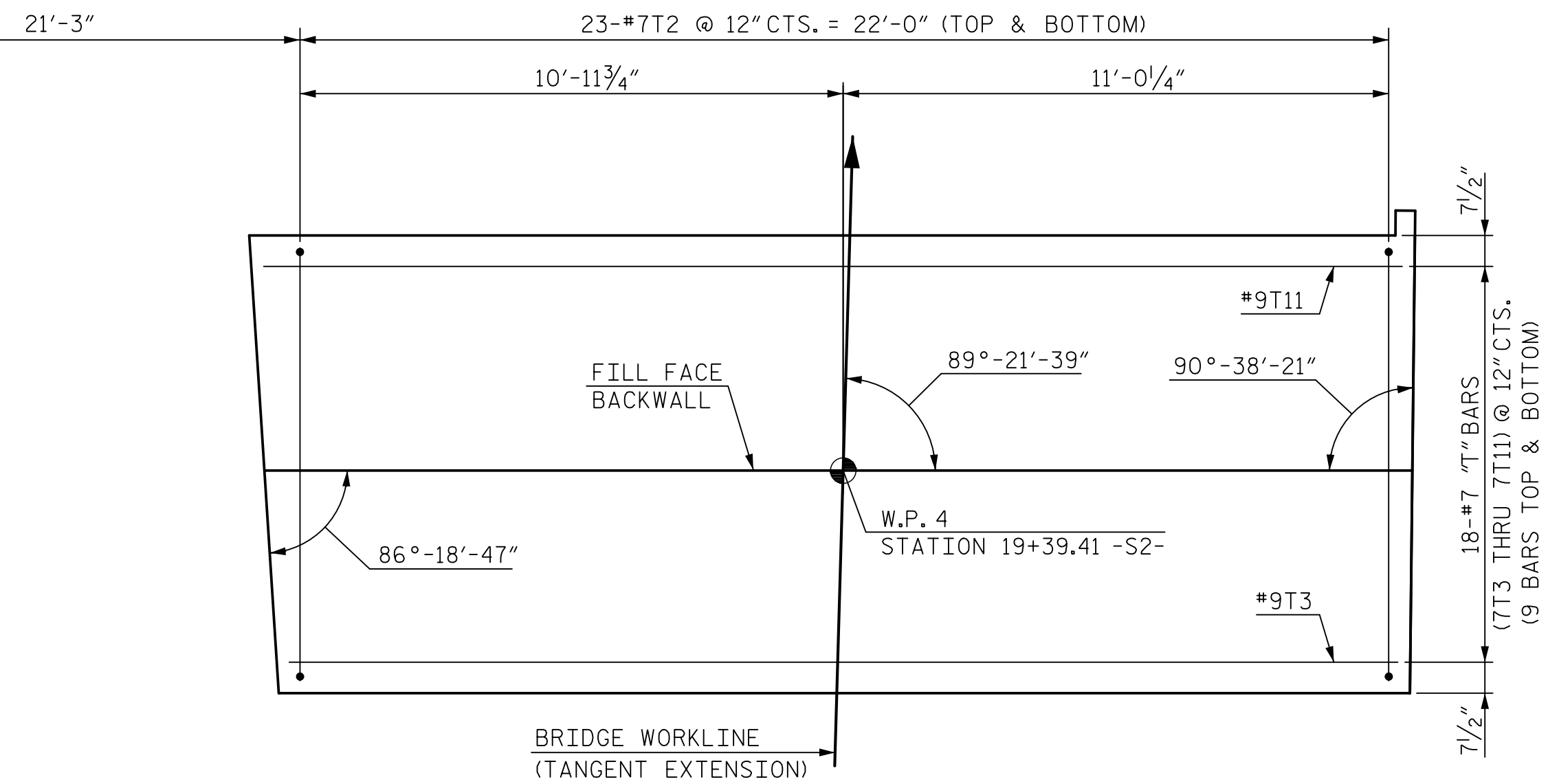
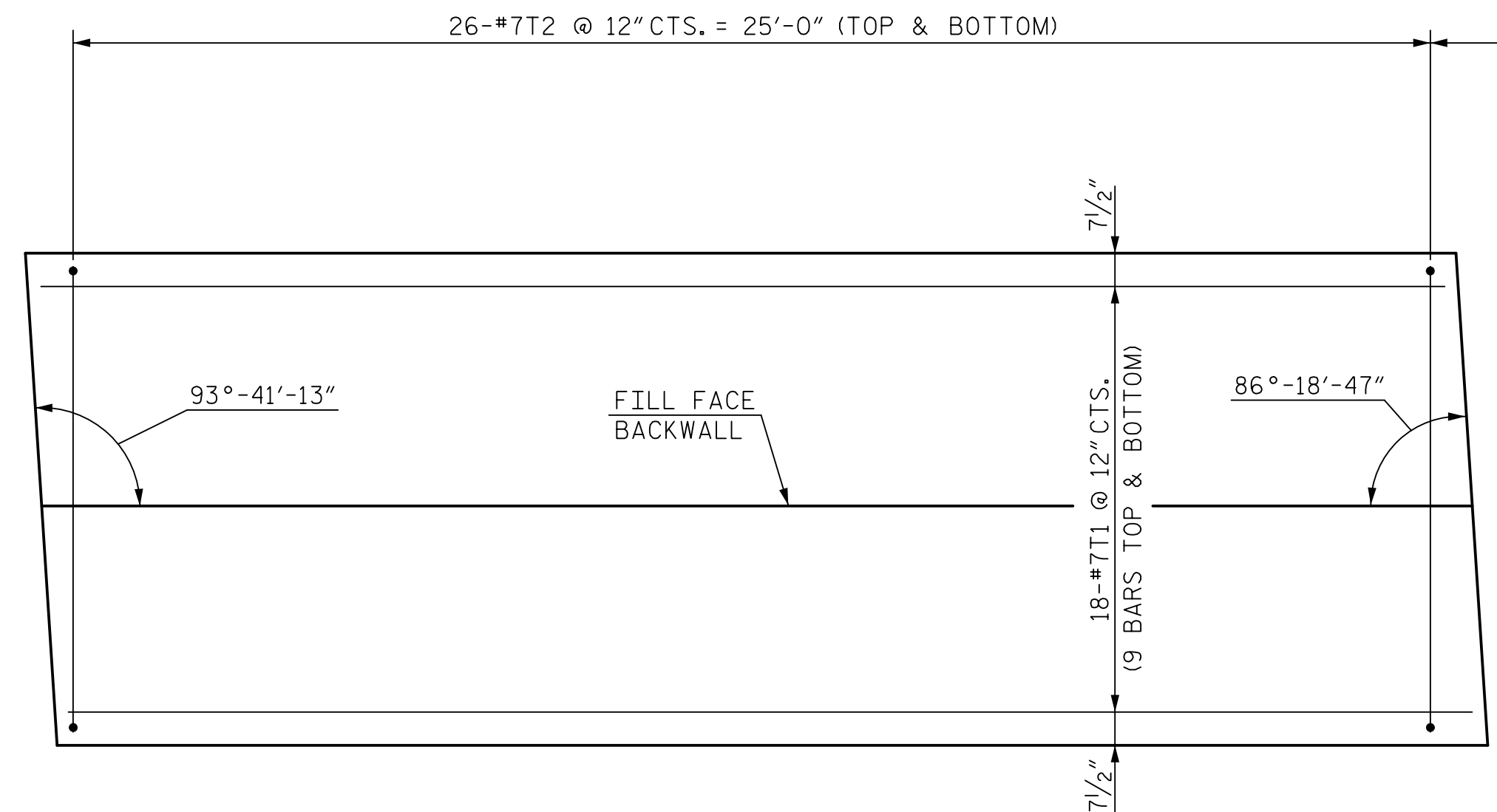
ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



SECTION D-D



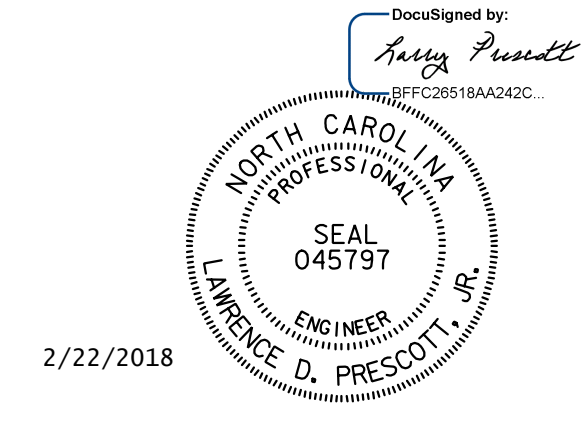
FOOTING REINFORCING PLAN

- NOTES:**
- FOR ABUTMENT AND WINGWALL DIMENSIONS AND ELEVATIONS, SEE SHEET 1 OF 4.
 - FOR LOCATIONS OF HANDRAIL ANCHORAGES IN TOP OF WINGWALLS, SEE ARCHITECTURAL PLAN SHEETS.
 - FOR LOCATIONS OF FENCE POST ANCHORAGES IN TOP OF WINGWALLS, SEE 'FENCE DETAILS' SHEETS.
 - 'T' BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR ANCHOR BOLTS.
 - FOR FOOTING LAYOUT AND DIMENSIONS, SEE SHEET 1 OF 4.

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

SHEET 3 OF 4

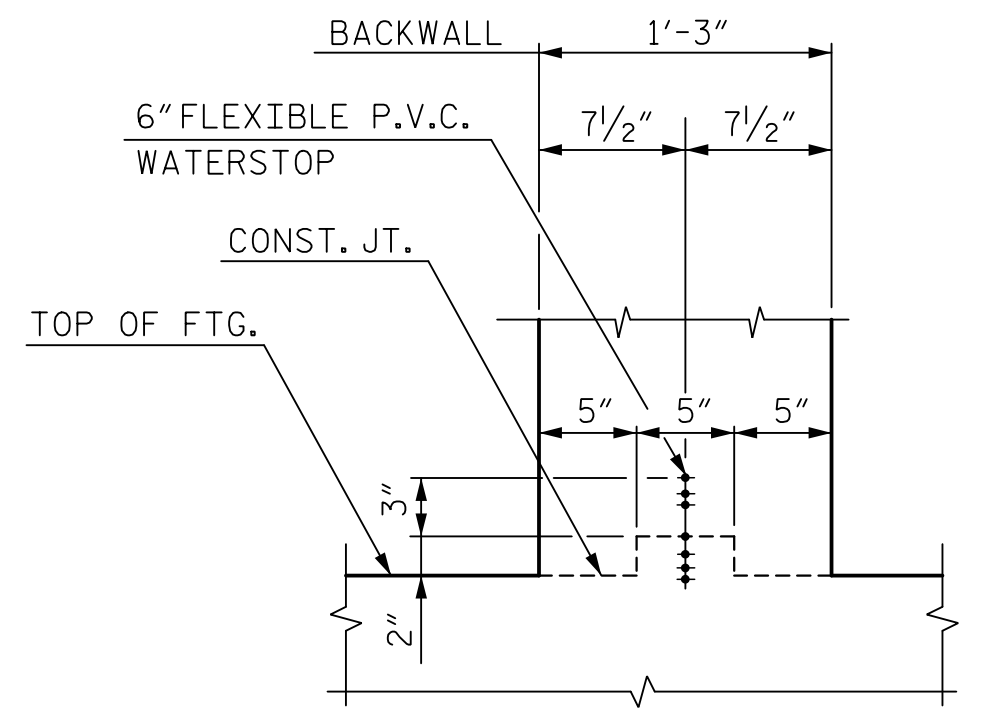
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 ABUTMENT 2



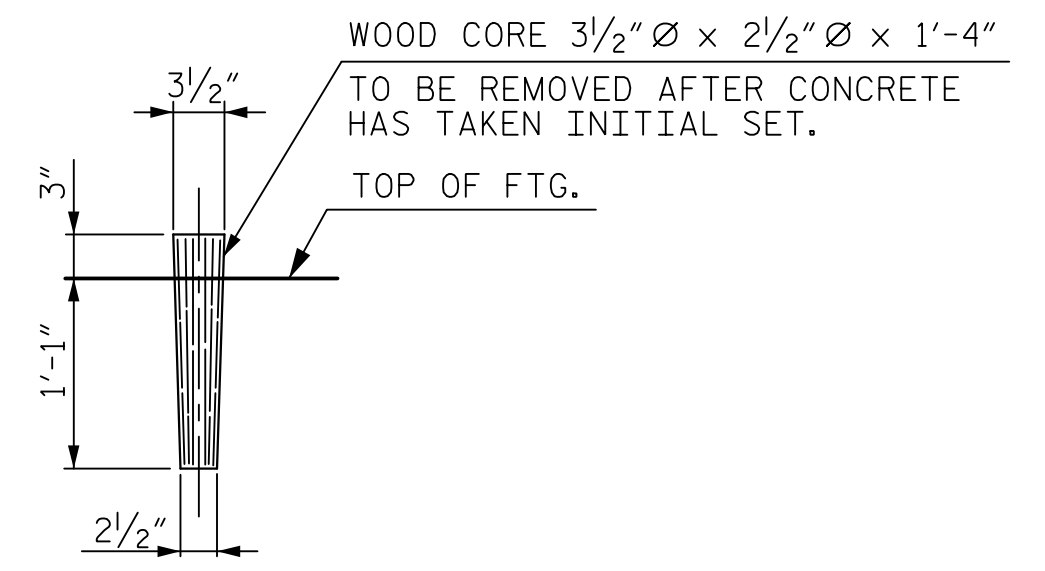
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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. S3-35		
	NO.	BY	DATE	NO.		BY	DATE
	1		10/17	3			
DRAWN BY: C. GERDING CHECKED BY: J. VECLITCH	DATE: 10/17 DATE: 10/17	DWG. NO. 35	TOTAL SHEETS 42				

0012DEL_P28

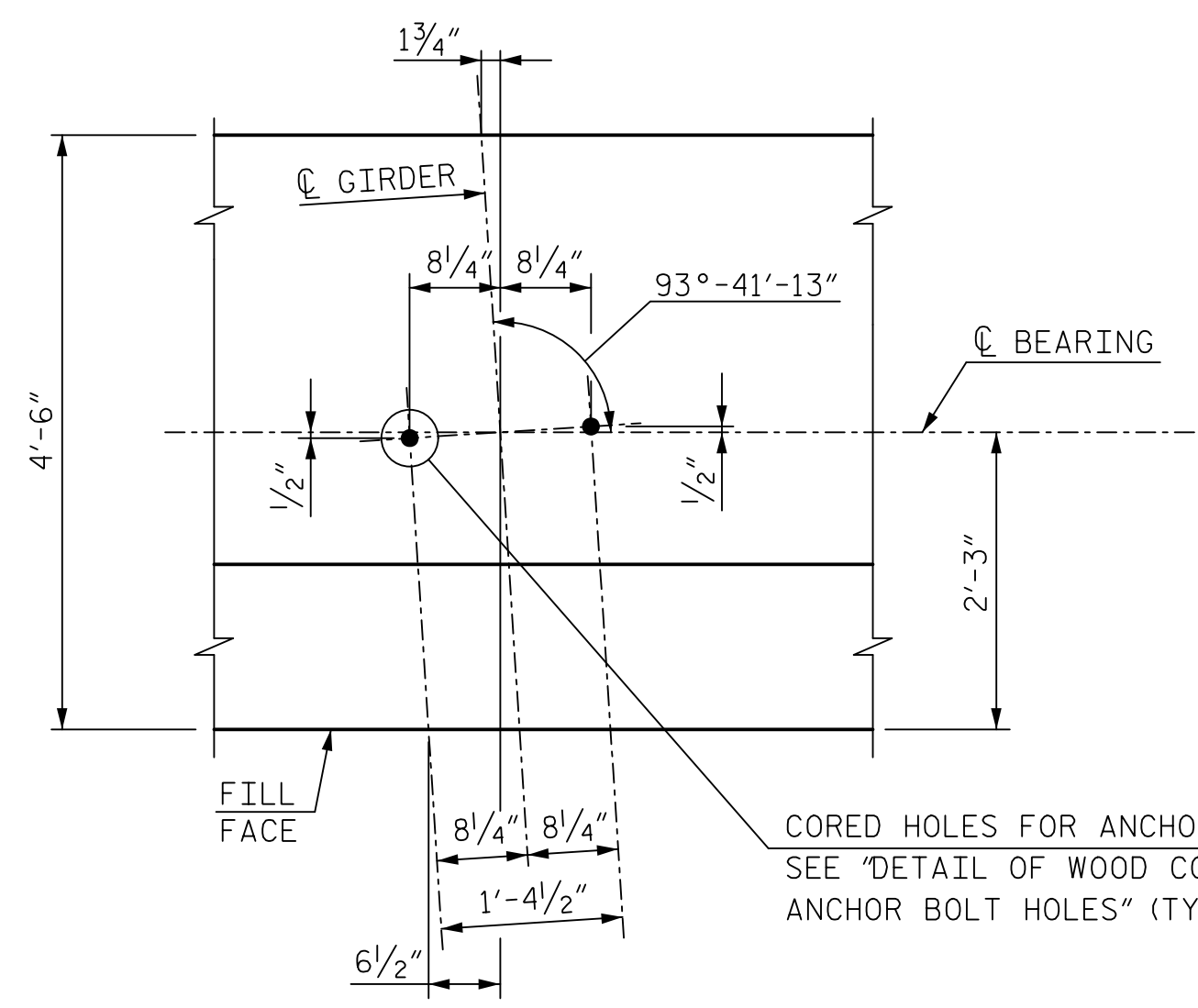


WATERSTOP DETAIL

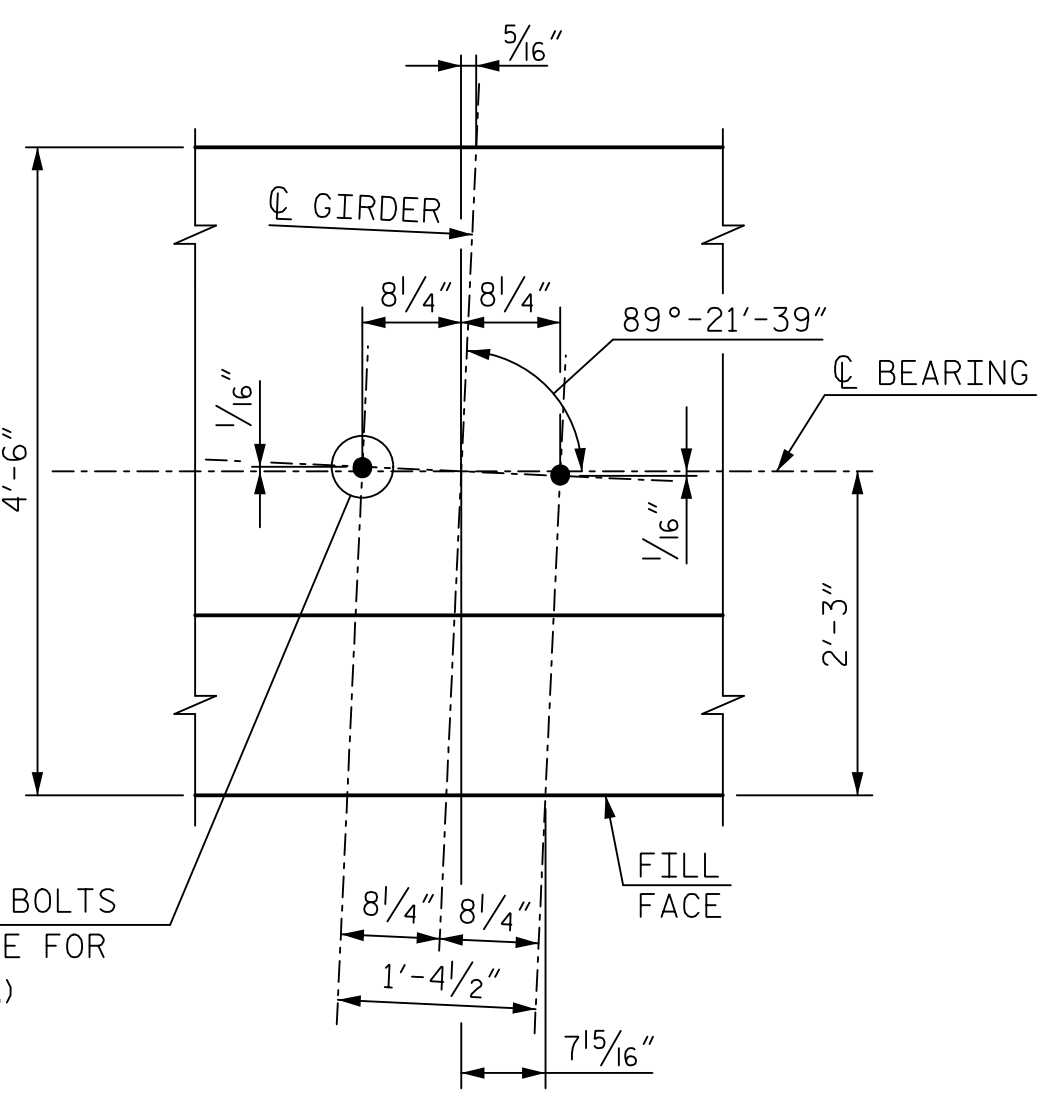


DETAIL OF WOOD CORE FOR ANCHOR BOLT HOLES

QUANTITIES		
ITEM		TOTAL
REINFORCING STEEL	LBS.	7,622
CLASS AA CONCRETE BREAKDOWN:		
POUR 1 FOOTING	CU. YDS	68.6
POUR 2 BACKWALL & WINGS	CU. YDS	17.4
TOTAL	CU. YDS	86.0
HP 14 X 73 STEEL PILES	NO.	16
	L.F.	862.0

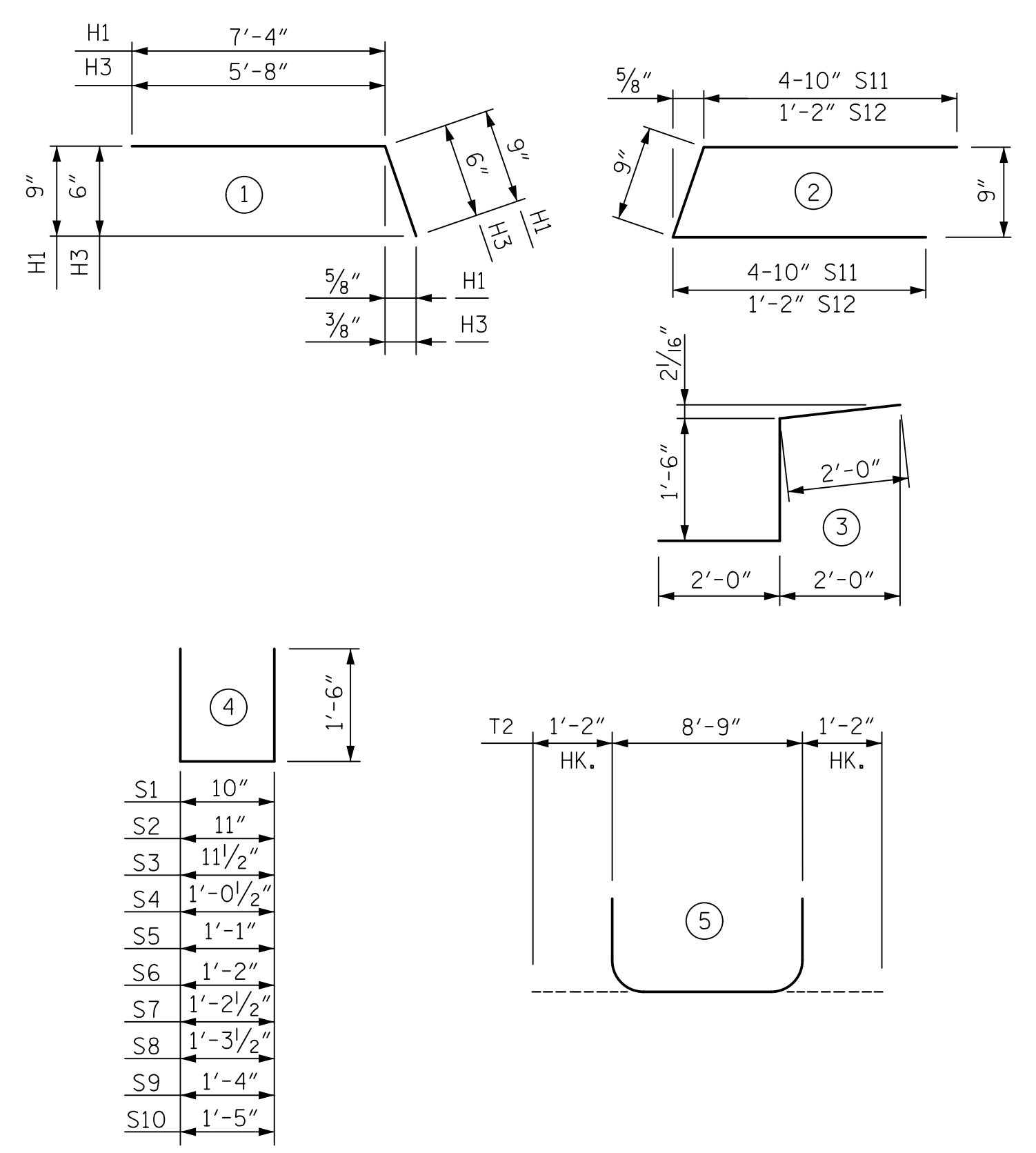


DETAIL A
ANCHOR BOLT LAYOUT
GIRDERS CG1-1 THRU CG6-1



DETAIL B
ANCHOR BOLT LAYOUT
GIRDERS CG1-2 THRU CG6-2

BAR TYPES



- S1 10"
- S2 11"
- S3 11 1/2"
- S4 1'-0 1/2"
- S5 1'-1"
- S6 1'-2"
- S7 1'-2 1/2"
- S8 1'-3 1/2"
- S9 1'-4"
- S10 1'-5"

ALL BAR DIMENSIONS ARE OUT TO OUT

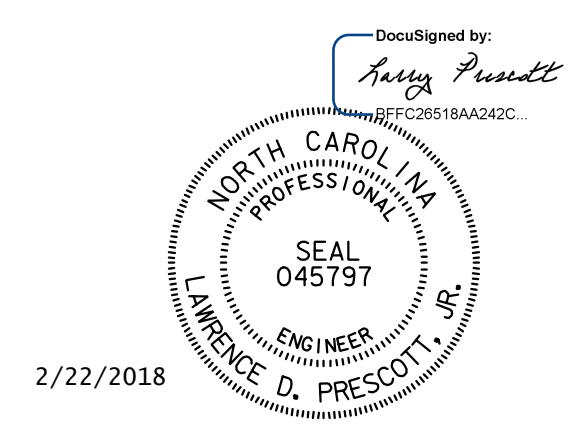
BILL OF REINFORCING					
MARK	NO.	SIZE	TYPE	LENGTH	WEIGHT
ABUTMENT 2					
H1	14	5	1	8'-1"	118
H2	24	5	STR	5'-8"	142
H3	14	5	1	6'-2"	90
H4	4	5	STR	6'-2"	26
K1	10	5	STR	26'-6"	276
K2	5	5	3	5'-6"	29
K3	5	5	STR	12'-0"	63
K4	10	5	STR	22'-9"	237
S1	42	4	4	3'-10"	108
S2	1	4	4	3'-11"	3
S3	1	4	4	3'-11 1/2"	3
S4	1	4	4	4'-0 1/2"	3
S5	1	4	4	4'-1"	3
S6	1	4	4	4'-2"	3
S7	1	4	4	4'-2 1/2"	3
S8	1	4	4	4'-3 1/2"	3
S9	1	4	4	4'-4"	3
S10	1	4	4	4'-5"	3
S11	2	5	2	10'-5"	22
S12	2	5	2	3'-1"	6
T1	22	7	STR	26'-4"	1,184
T2	98	7	5	11'-1"	2,220
T3	4	7	STR	22'-4 1/2"	183
T4	2	7	STR	22'-5 1/2"	92
T5	2	7	STR	22'-6 1/2"	92
T6	2	7	STR	22'-7 1/2"	93
T7	2	7	STR	22'-8"	93
T8	2	7	STR	22'-9"	93
T9	2	7	STR	22'-10 1/2"	94
T10	2	7	STR	22'-11"	94
T11	4	7	STR	23'-0"	188
V1	42	8	STR	7'-2"	804
V2	42	4	STR	7'-2"	201
V3	10	5	STR	7'-1"	74
V4	75	5	STR	9'-1"	711
V5	9	8	STR	6'-1"	218
V6	6	5	STR	6'-2"	38
V7	1	5	STR	6'-0"	6

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

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

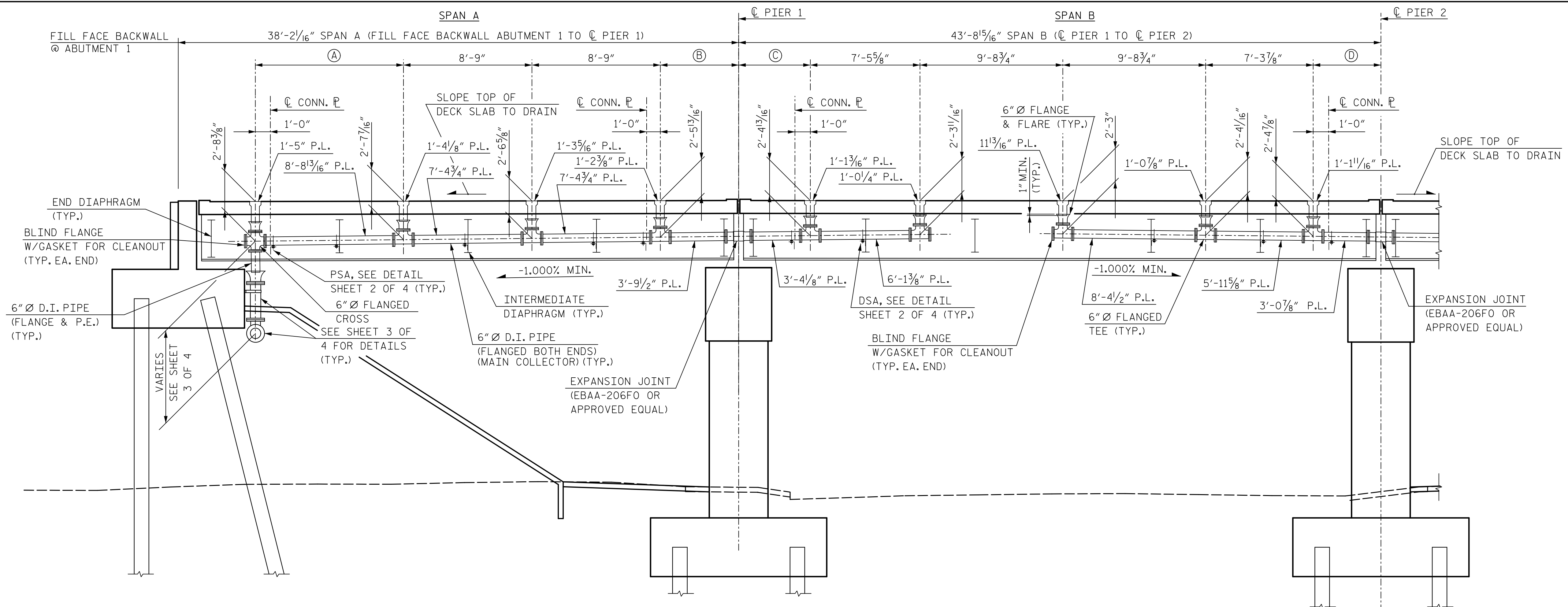
SUBSTRUCTURE
 ABUTMENT 2



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

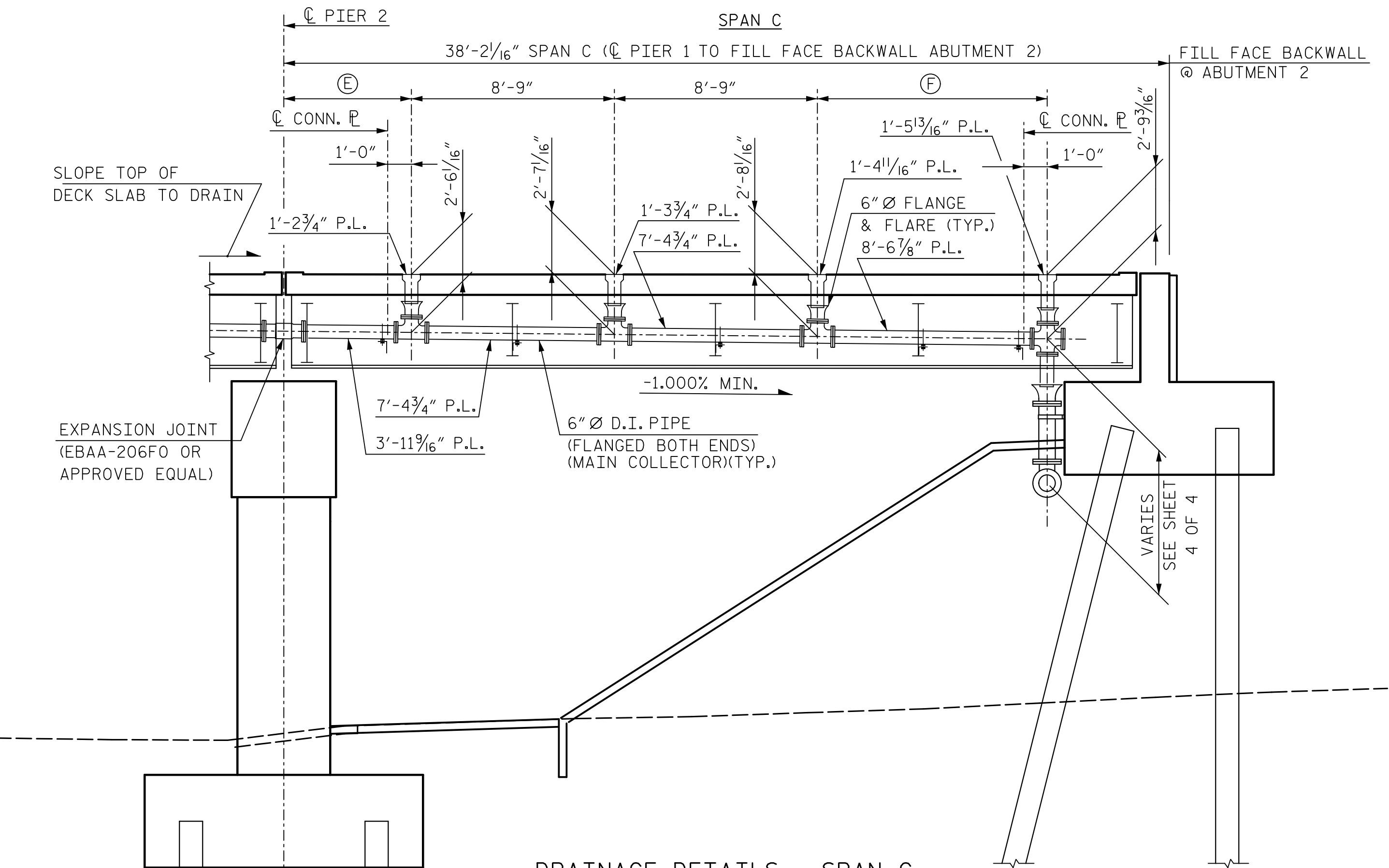
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO.		
	NO.	BY	DATE	NO.	BY	DATE	S3-36
	1			3			TOTAL SHEETS
DRAWN BY: C. GERDING CHECKED BY: J. VECLITCH	DATE: 10/17 DATE: 10/17	DWG. NO. 36	2	4	42		

0012DEL_P28



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

DRAIN LINE DIMENSIONS		
LOCATION	LINE 1	LINE 2
(A)	10'-1 1/16"	9'-11 3/16"
(B)	5'-4"	5'-5 7/8"
(C)	4'-10 9/16"	4'-8 11/16"
(D)	4'-7 3/8"	4'-9 1/4"
(E)	5'-6"	5'-3 5/16"
(F)	9'-11 1/16"	10'-0 15/16"

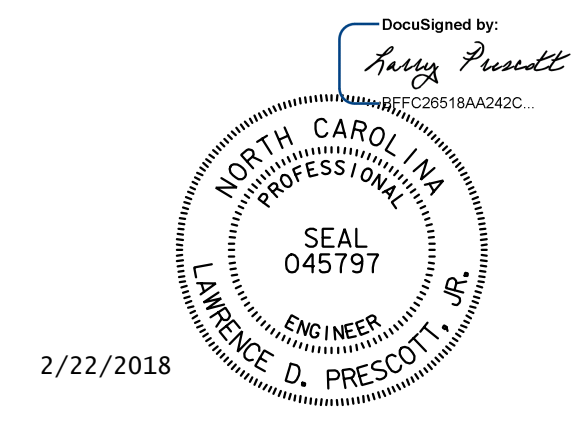


DRAINAGE DETAILS - SPAN C
(ONE DRAINAGE LINE SHOWN - 2 ARE REQUIRED)

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+79.37 -S2-

SHEET 1 OF 4

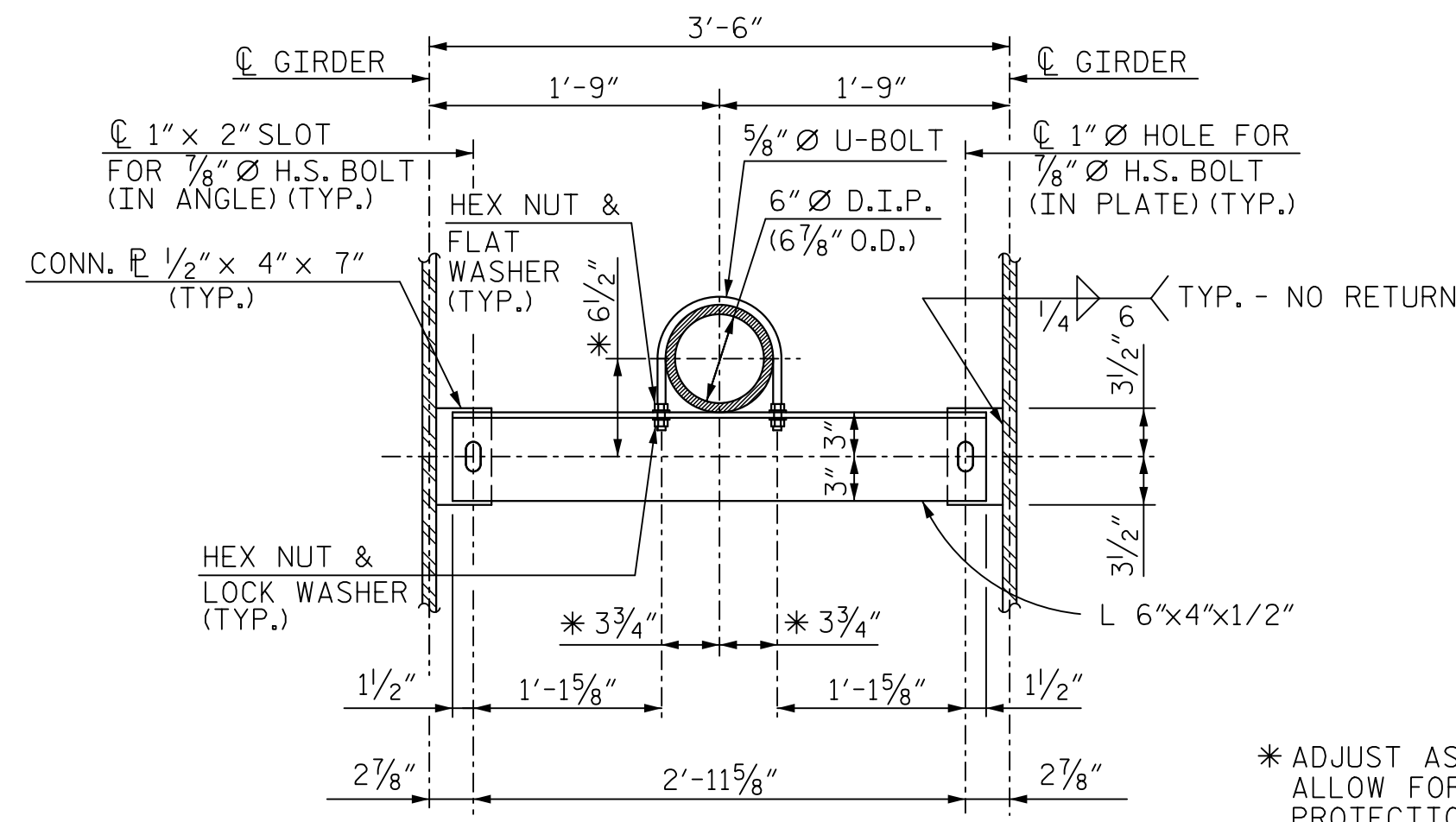


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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DRAINAGE DETAILS

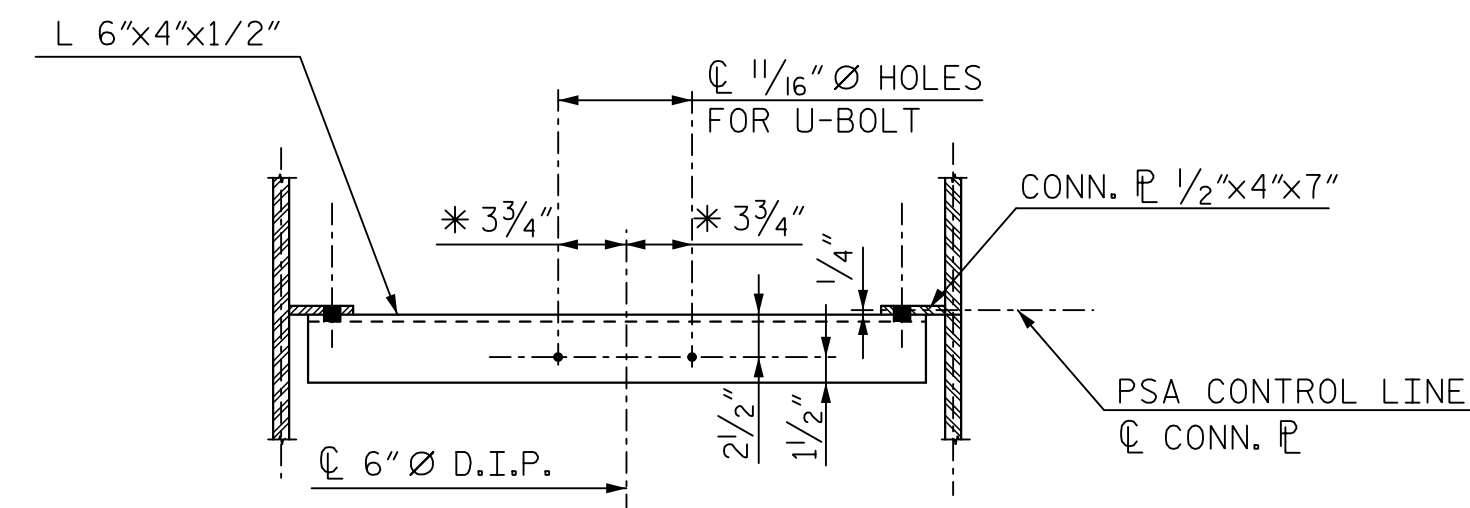
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. S3-37 TOTAL SHEETS 42		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
2			4				

DRAWN BY: C. GERDING DATE: 9/17
CHECKED BY: J. VECLITCH DATE: 9/17
DWG. NO. 37

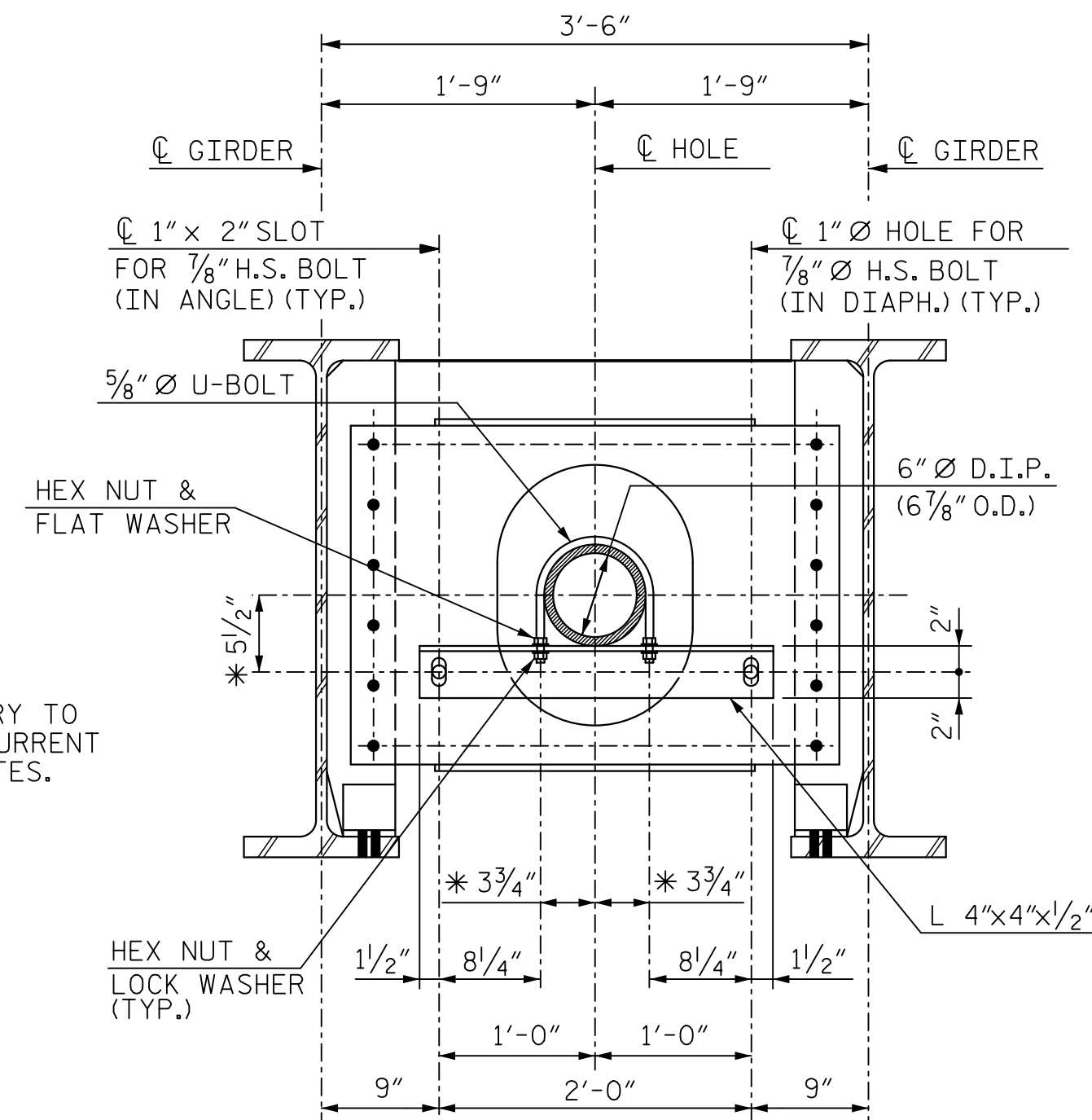


ELEVATION

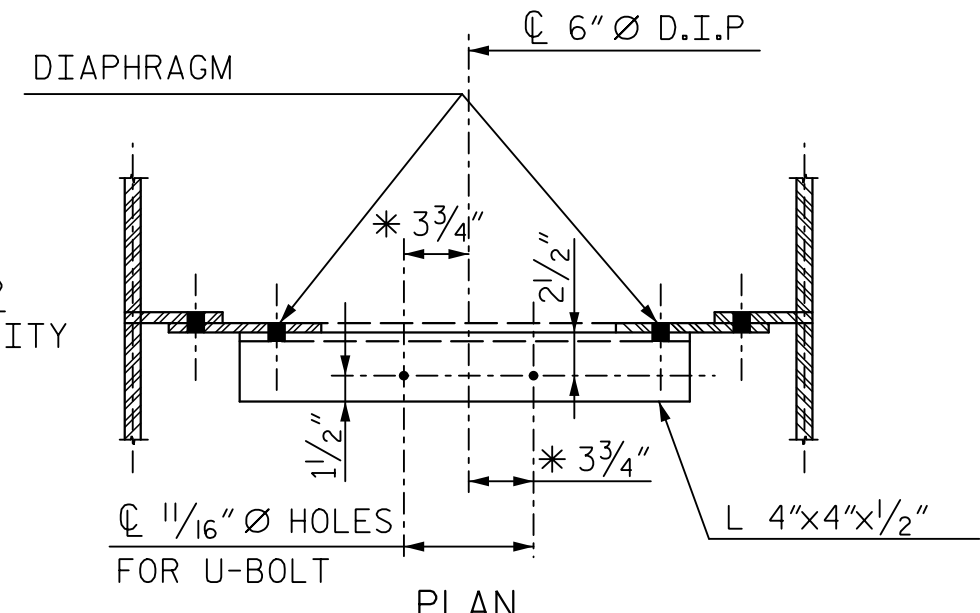
* ADJUST AS NECESSARY TO ALLOW FOR STRAY CURRENT PROTECTION. SEE NOTES.



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

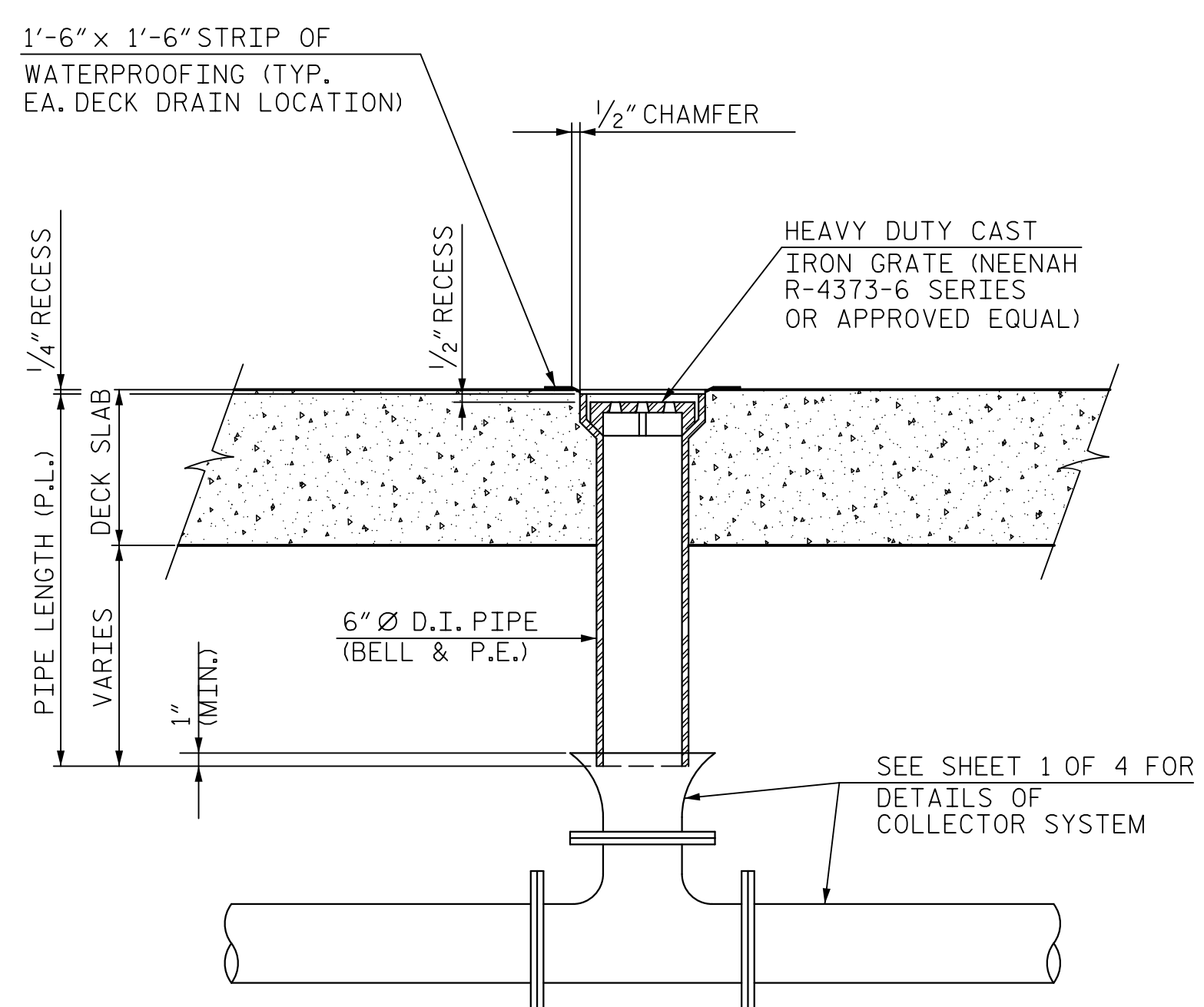


ELEVATION

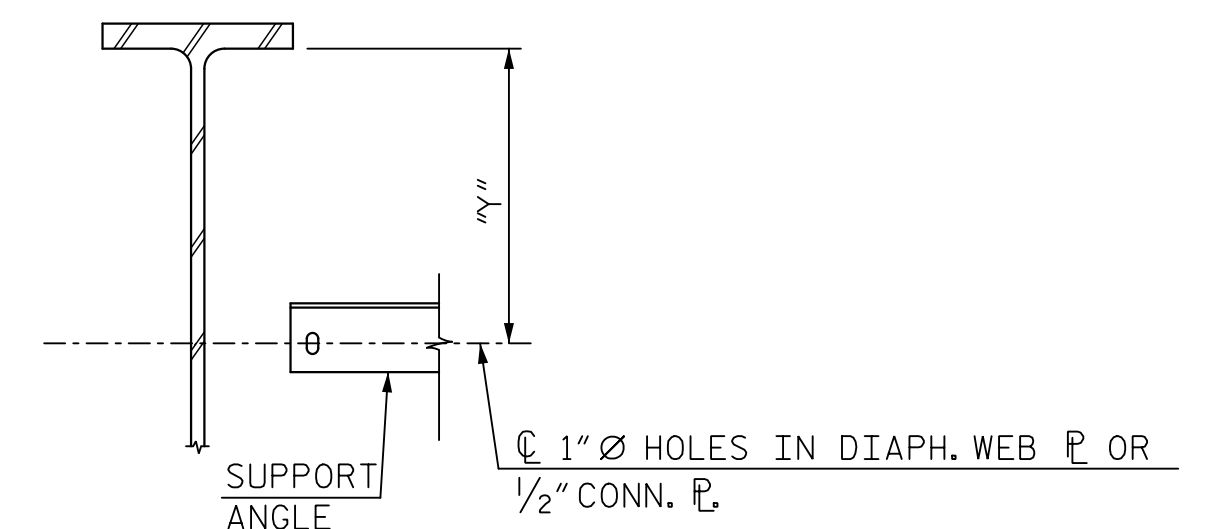


PLAN
DIAPHRAGM SUPPORT ANGLE (DSA)
(20 REQ'D.)

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



DETAIL B



DETAIL A

DSA	"Y"	DSA	"Y"	DSA	"Y"	PSA	"Y"
A1	2'-2 7/8"	B1	1'-11 1/8"	C1	2'-1 9/16"	A1	2'-4 1/4"
A2	2'-2 1/16"	B2	1'-10 3/4"	C2	2'-2 3/16"	A2	2'-1 13/16"
A3	2'-1 13/16"	B3	1'-11 3/16"	C3	2'-3 1/2"	B1	2'-0 1/16"
						B2	2'-1 1/16"
						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:

- 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
- o 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.

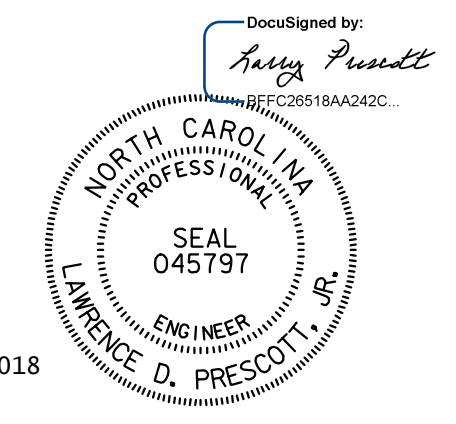
FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

SUPERSTRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGED BOTH ENDS)	FEET	163.0
6" I.D. DUCTILE IRON PIPE, CLASS 53 (BELL & P.E.)	FEET	32.1
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.

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

SHEET 2 OF 4



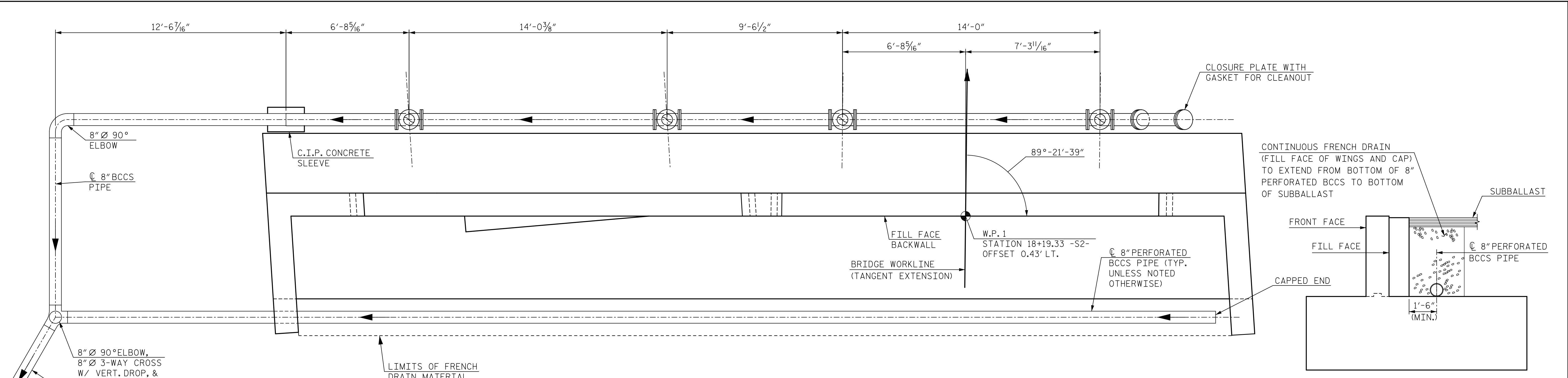
2/22/2018

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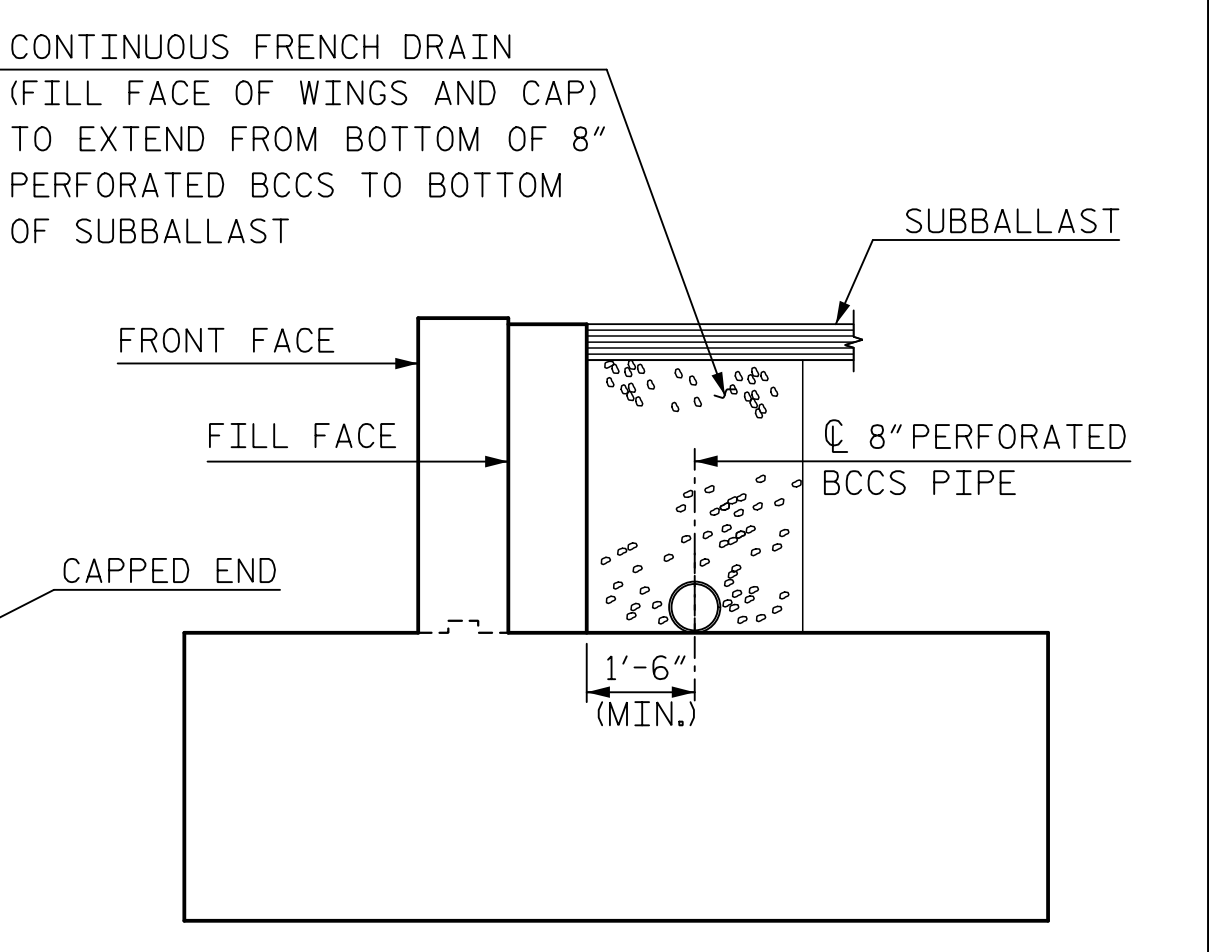
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DRAINAGE DETAILS

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. S3-38		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
DRAWN BY: C. GERDING CHECKED BY: J. VECLITCH	DATE: 9/17 DATE: 9/17	DWG. NO. 38	2	4	TOTAL SHEETS 42		

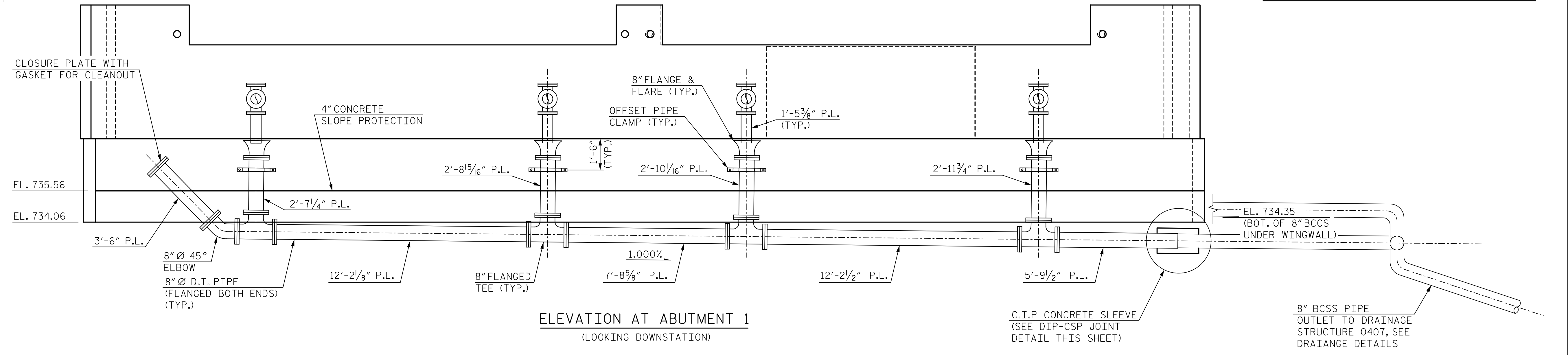
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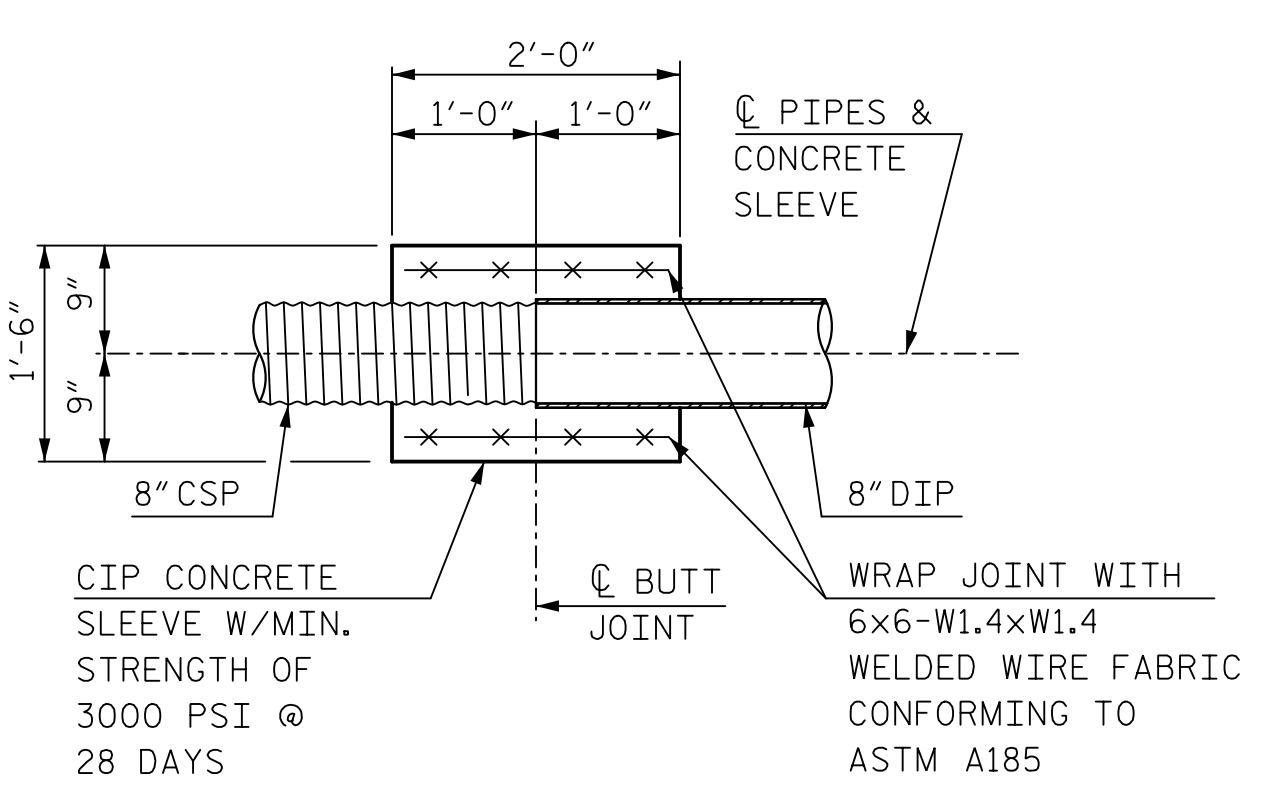
DRAINAGE LAYOUT AT ABUTMENT 1
(LOOKING UPSTATION)



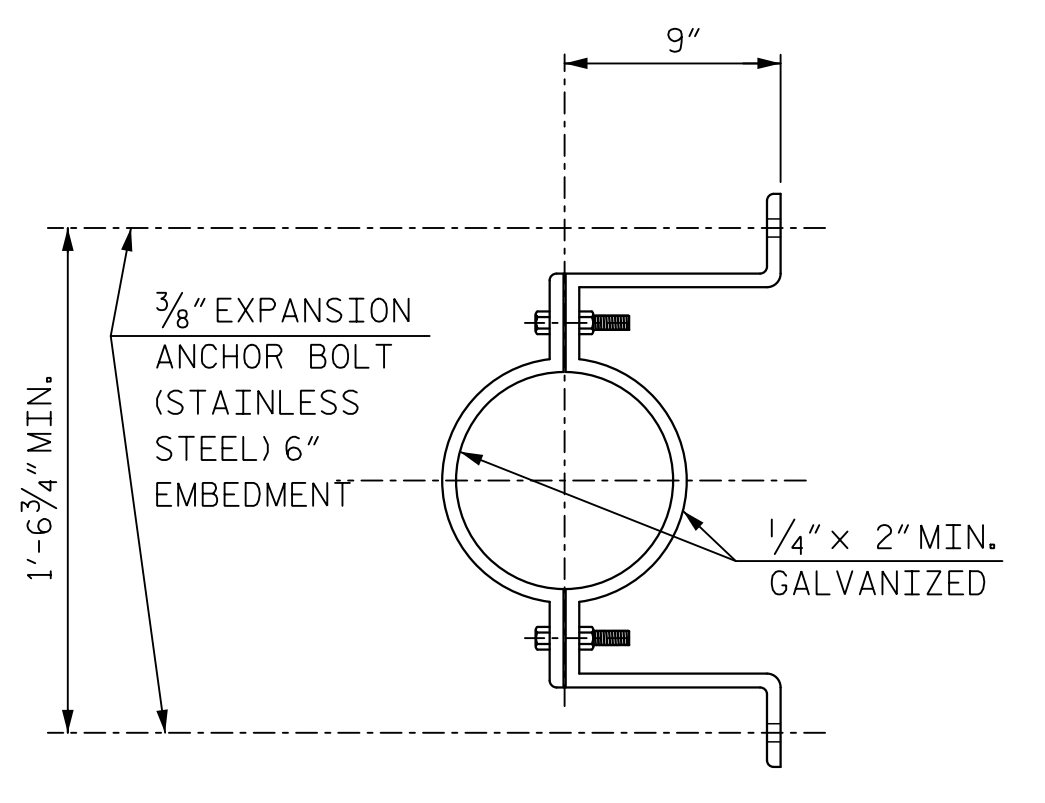
CONTINUOUS FRENCH DRAIN DETAIL



ELEVATION AT ABUTMENT 1
(LOOKING DOWNSTATION)



DIP-CSP JOINT DETAIL



OFFSET PIPE CLAMP DETAIL

SUBSTRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
8" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGED BOTH ENDS)	FEET	87
8" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGE & P.E.)	FEET	15
8" I.D. BCCS PIPE	FEET	157
8" I.D. DUCTILE IRON PIPE FLANGED FITTINGS, 250 psi P.R.	LBS	2,800
8" I.D. DUCTILE IRON BLIND FLANGES	LBS	135
8" I.D. OFFSET PIPE CLAMPS	EA.	8
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGE & P.E.)	FEET	12

DocuSigned by:
Angie Prescott
NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
045797
LAWRENCE D. PRESCOTT, JR.
2/22/2018

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SIGNATURES COMPLETED

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

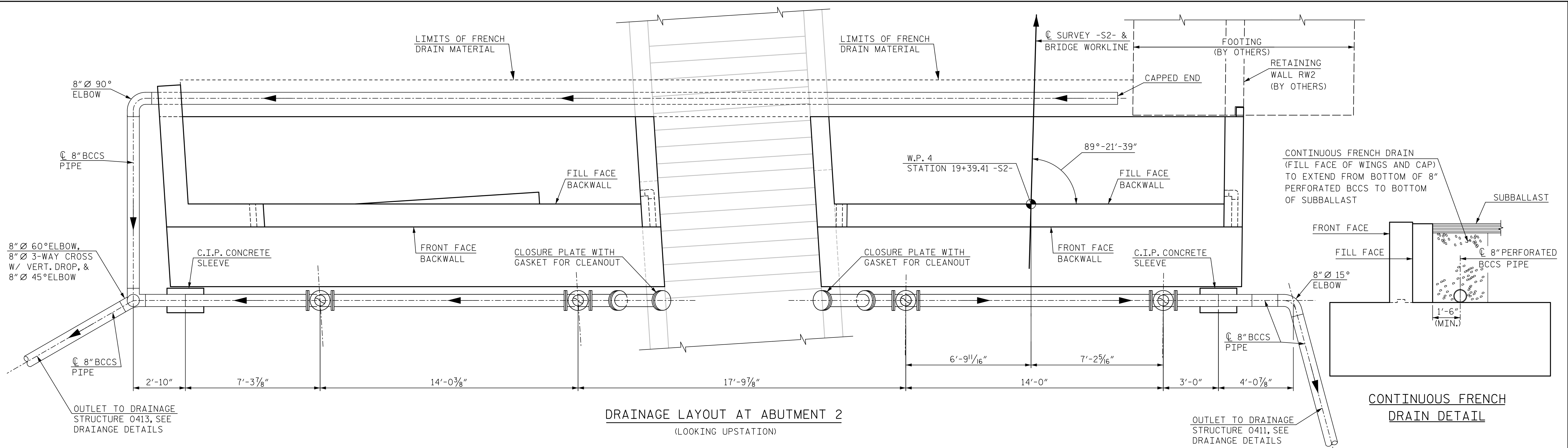
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRUCTURE
DRAINAGE DETAILS

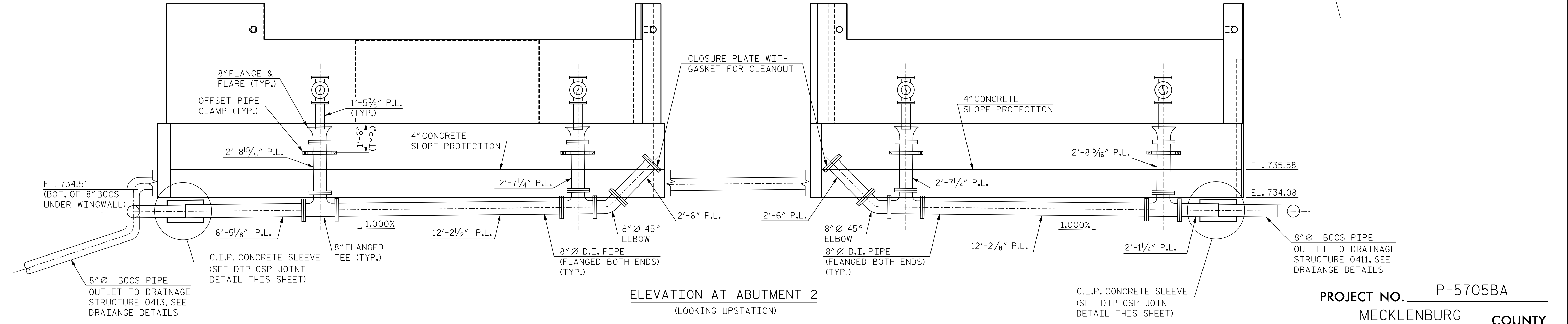
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609 DRAWN BY: C. GERDING DATE: 11/17 CHECKED BY: J. VECLITCH DATE: 11/17 DWG. NO. 39	REVISIONS				SHEET NO. S3-39 TOTAL SHEETS 42		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
2			4				

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DRAINAGE LAYOUT AT ABUTMENT 2 (LOOKING UPSTATION)

CONTINUOUS FRENCH DRAIN DETAIL

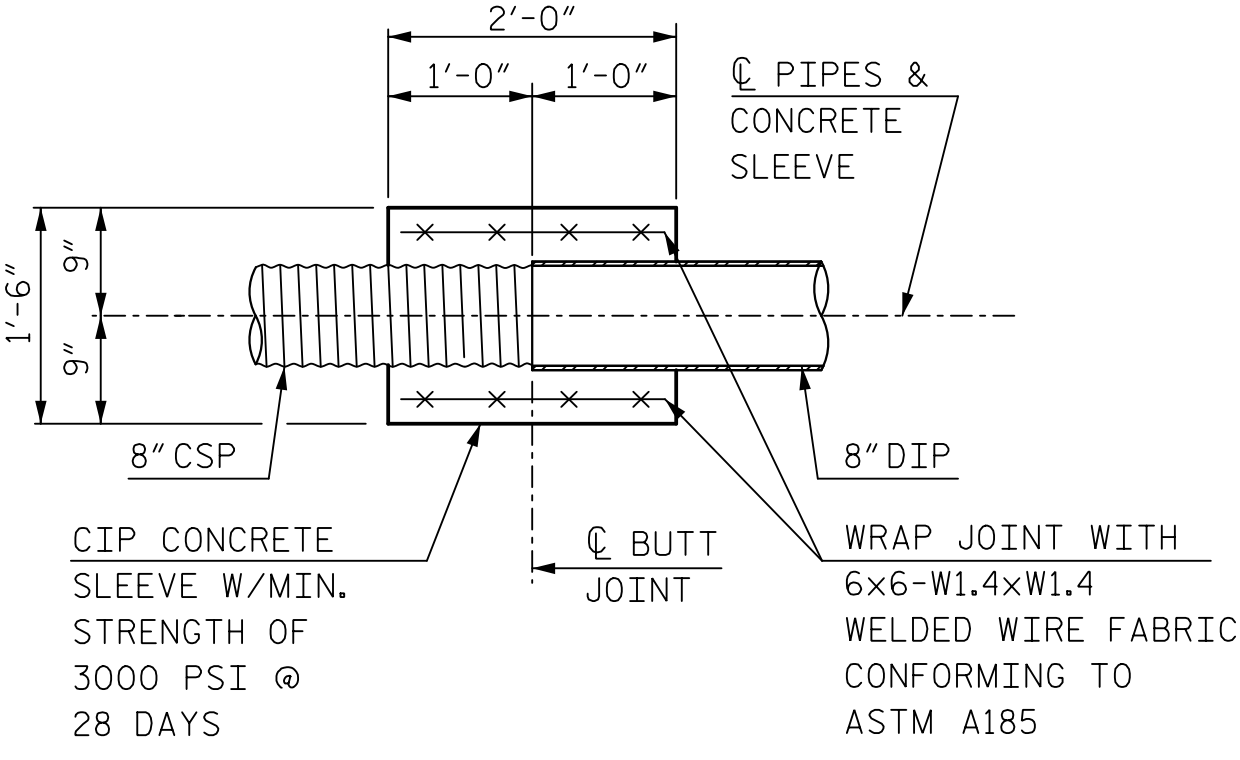


ELEVATION AT ABUTMENT 2 (LOOKING UPSTATION)

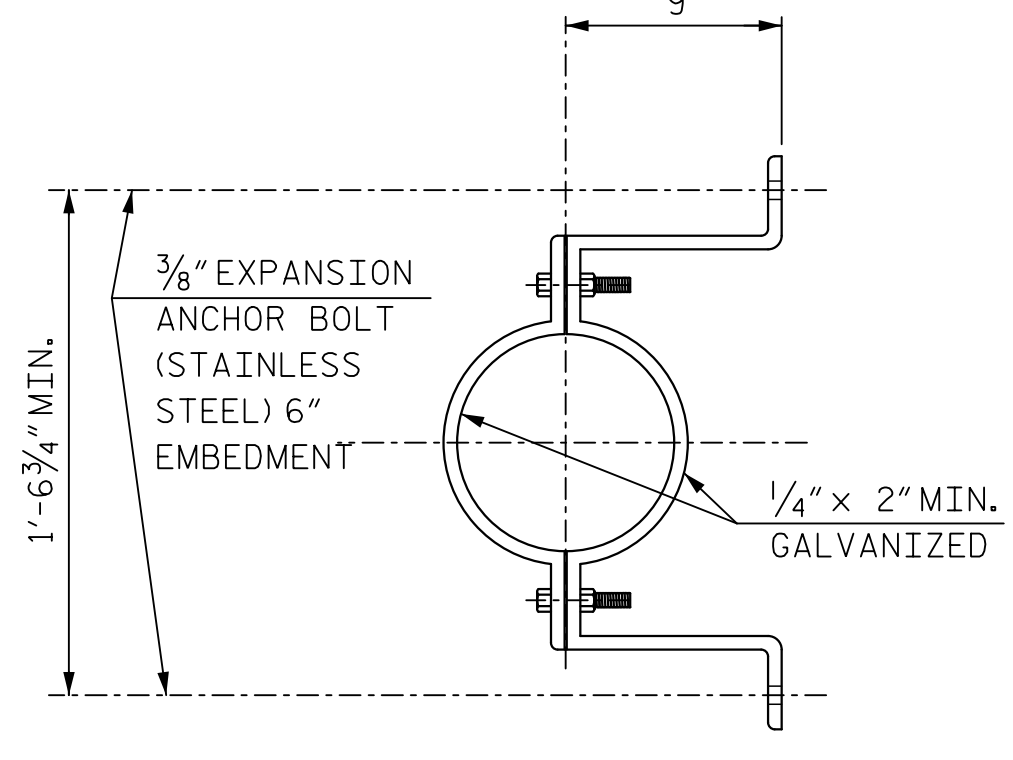
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 18+79.37 -S2-

SHEET 4 OF 4

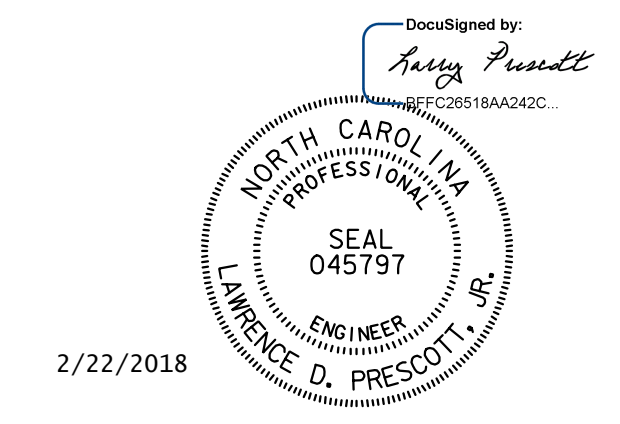
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STRUCTURE
 DRAINAGE DETAILS



DIP-CSP JOINT DETAIL



OFFSET PIPE CLAMP DETAIL



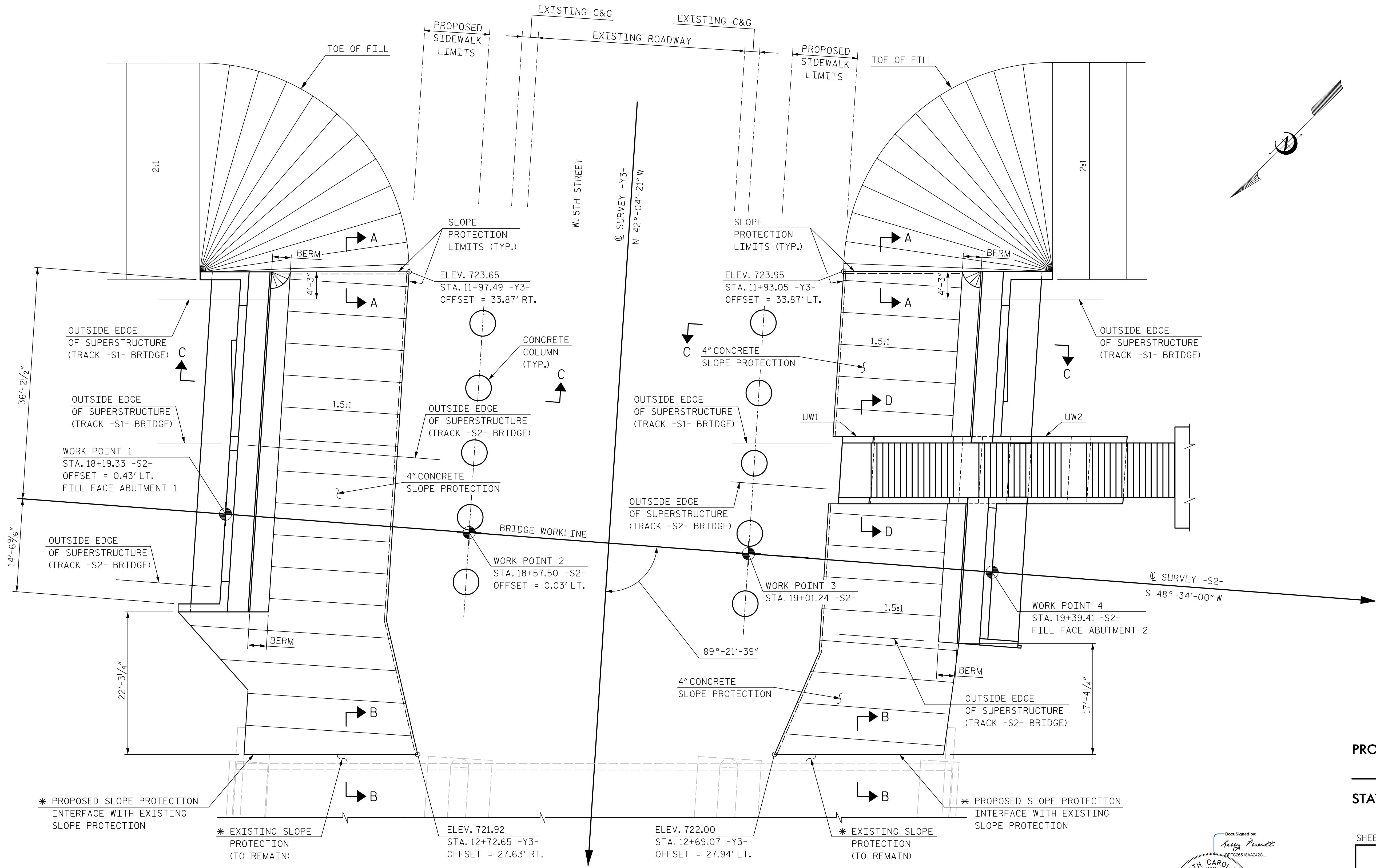
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DRAWN BY: C. GERDING DATE: 10/17
 CHECKED BY: J. VELOUTCH DATE: 10/17 DWG. NO. 40

REVISIONS						SHEET NO. S3-40
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 42
2			4			



PLAN

NOTE: FOR BERM WIDTHS, ELEVATIONS AND HORIZONTAL DIMENSIONS SEE GENERAL DRAWING.
FOR SECTIONS "A-A", "B-B", "C-C" & "D-D" SEE SHEET 2 OF 2.

* PROPOSED SLOPE PROTECTION INTERFACE WITH EXISTING SLOPE PROTECTION
* EXISTING SLOPE PROTECTION (TO REMAIN)
* PROPOSED SLOPE PROTECTION INTERFACE WITH EXISTING SLOPE PROTECTION
* EXISTING SLOPE PROTECTION (TO REMAIN)

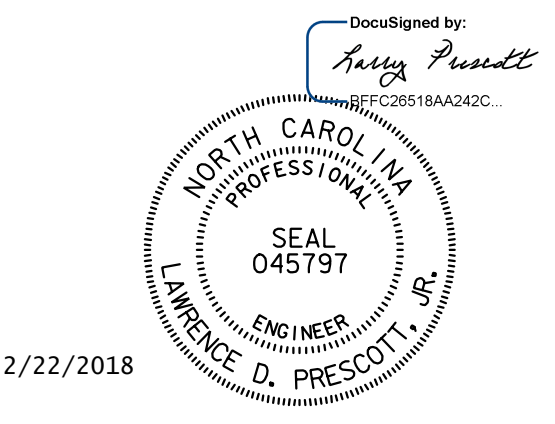
* THE PROPOSED LIMITS OF SLOPE PROTECTION ADJACENT TO THE EXISTING SLOPE PROTECTION ARE BASED ON AN APPROXIMATE LOCATION OF THE CURRENT EDGE OF THE EXISTING SLOPE PROTECTION. THE CONTRACTOR SHALL ADJUST THE PROPOSED SLOPE PROTECTION LIMITS BASED ON THE ACTUAL LOCATION OF THE EXISTING SLOPE PAVEMENT. IF THE EXISTING SLOPE PAVEMENT IS DAMAGED OR PARTIALLY REMOVED DURING THE ABUTMENT OR PIER CONSTRUCTION OPERATIONS FOR THE PROPOSED BRIDGE, THAT EXISTING SLOPE PAVEMENT SHALL BE REMOVED BACK TO THE NEAREST VERTICAL CONSTRUCTION JOINT FROM THE TOP OF THE EXISTING BERM TO THE TOE OF THE EXISTING SLOPE. THE LIMITS OF THE PROPOSED SLOPE PAVEMENT WILL THEN BE EXTENDED TO MATCH AGAINST THE ADJUSTED EDGE OF EXISTING SLOPE PROTECTION.

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

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS



2/22/2018

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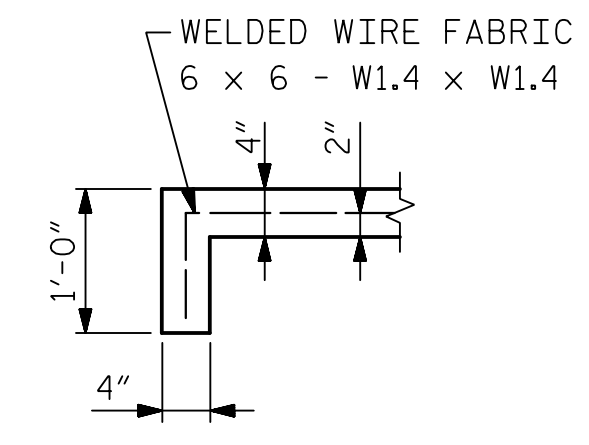
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NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: C. GERDING DATE: 11/17
CHECKED BY: J. VECLITCH DATE: 11/17

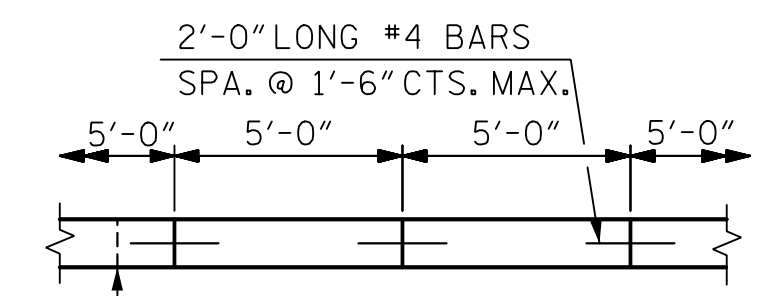
DWG. NO. 41

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-41
1			3			TOTAL SHEETS
2			4			42

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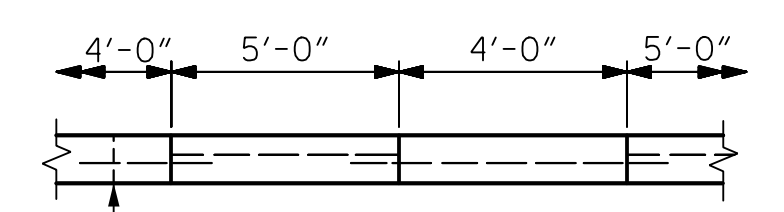


SECTION A-A



CONST. JT. TO BE NORMAL TO END BENT CAP OR HORIZONTAL
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



CONST. JT. TO BE NORMAL TO END BENT CAP OR HORIZONTAL
POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

GENERAL NOTES:

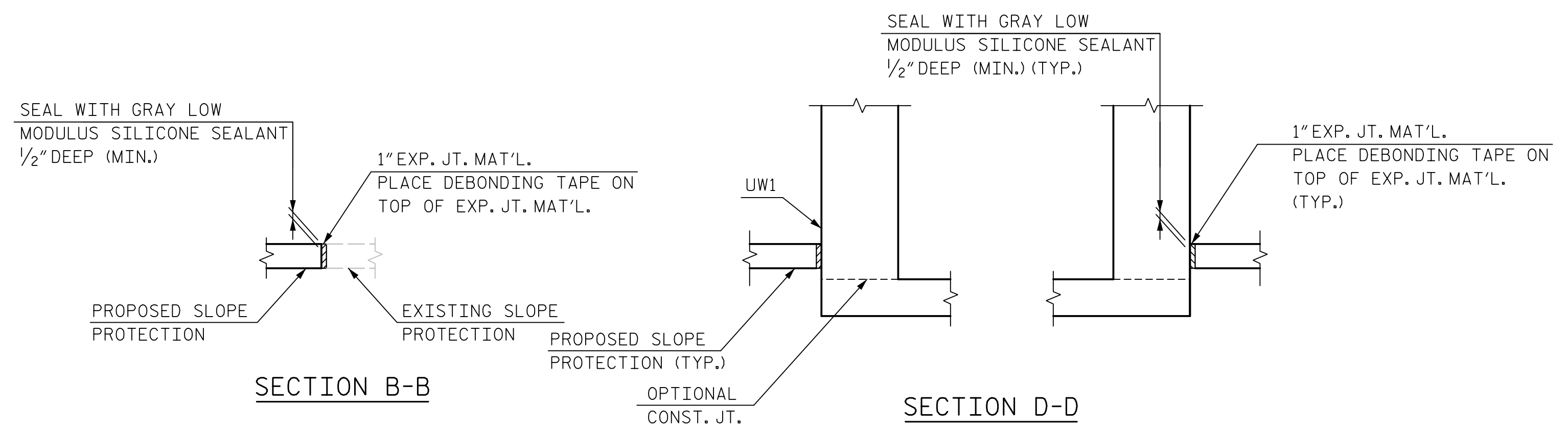
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE 'POURING DETAIL' WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE 'OPTIONAL POURING DETAIL' WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

ADDITIONAL SLOPE PROTECTION REQUIRED TO PROPERLY MATCH UP TO EXISTING SLOPE PROTECTION, AS DESCRIBED ON SHEET 1 OF 2, SHALL BE INCIDENTAL TO THE CONTRACT BID PRICE FOR THE PROVIDED QUANTITY.

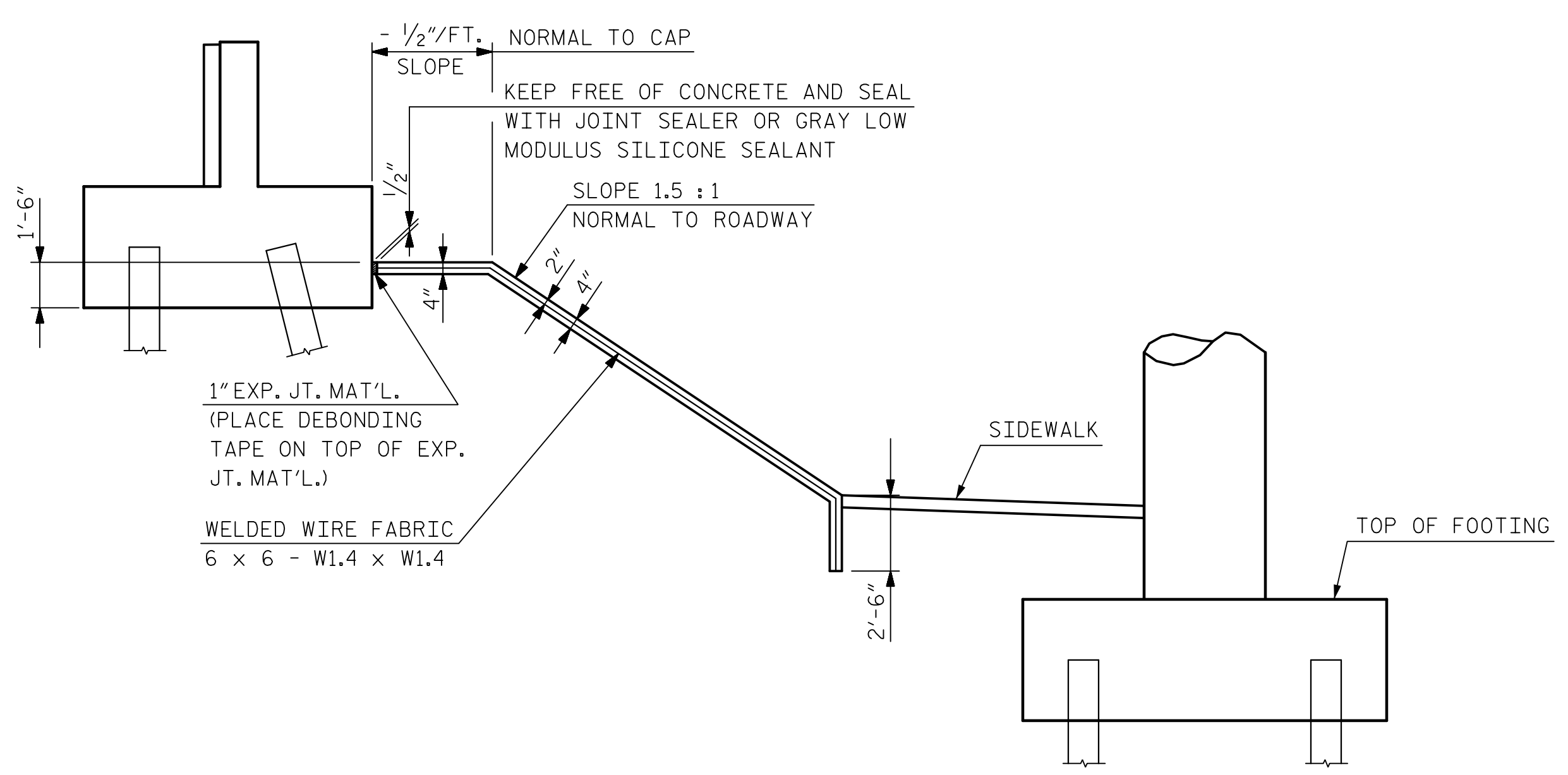
BRIDGE @ STA. 18+79.49 -S2-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
ABUTMENT 1	251	500
ABUTMENT 2	201	441

* QUANTITY SHOWN IS BASED ON 5'-0" POURS PER THE 'POURING DETAIL'.

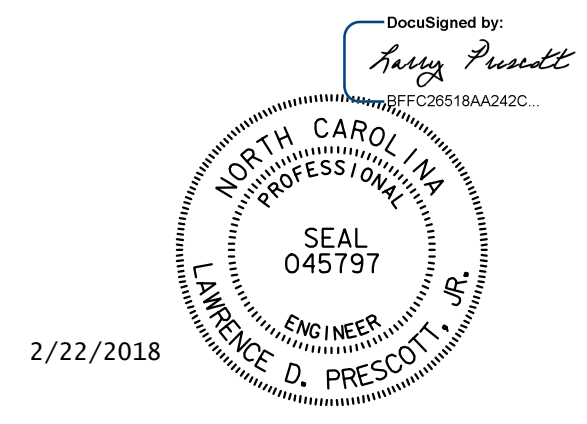


SECTION B-B

SECTION D-D



SECTION C-C



2/22/2018

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

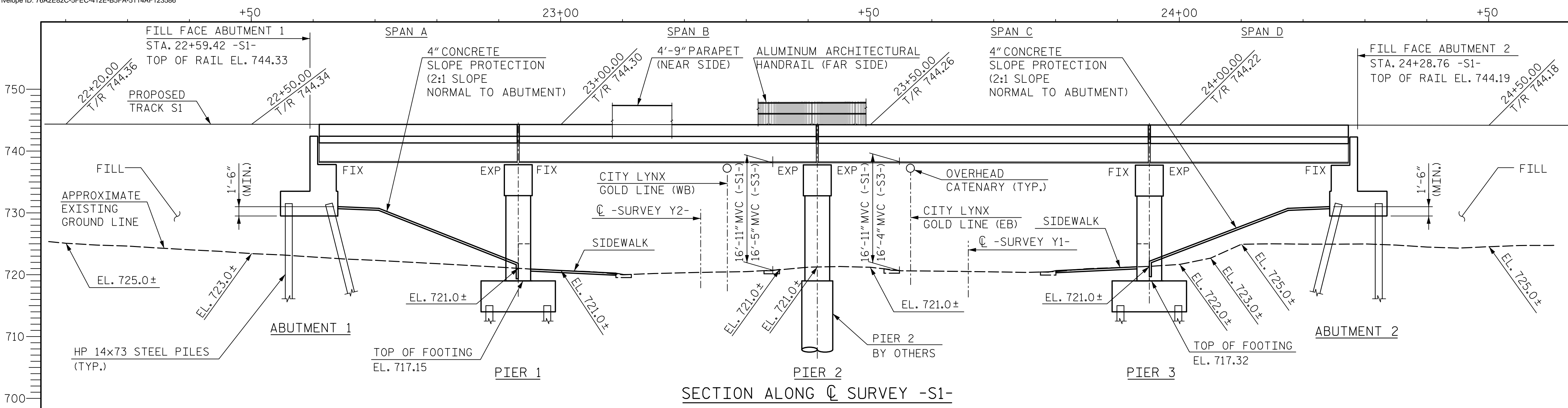
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION
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. S-42
	DRAWN BY: C. GERDING CHECKED BY: J. VECLITCH	DATE: 10/12 DATE: 10/12	NO. 1 NO. 2	BY 3 BY 4	

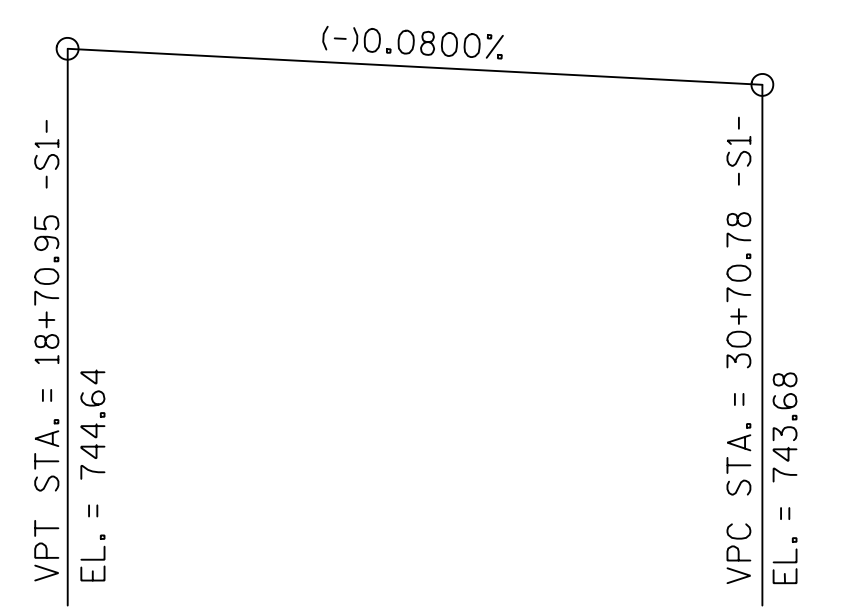
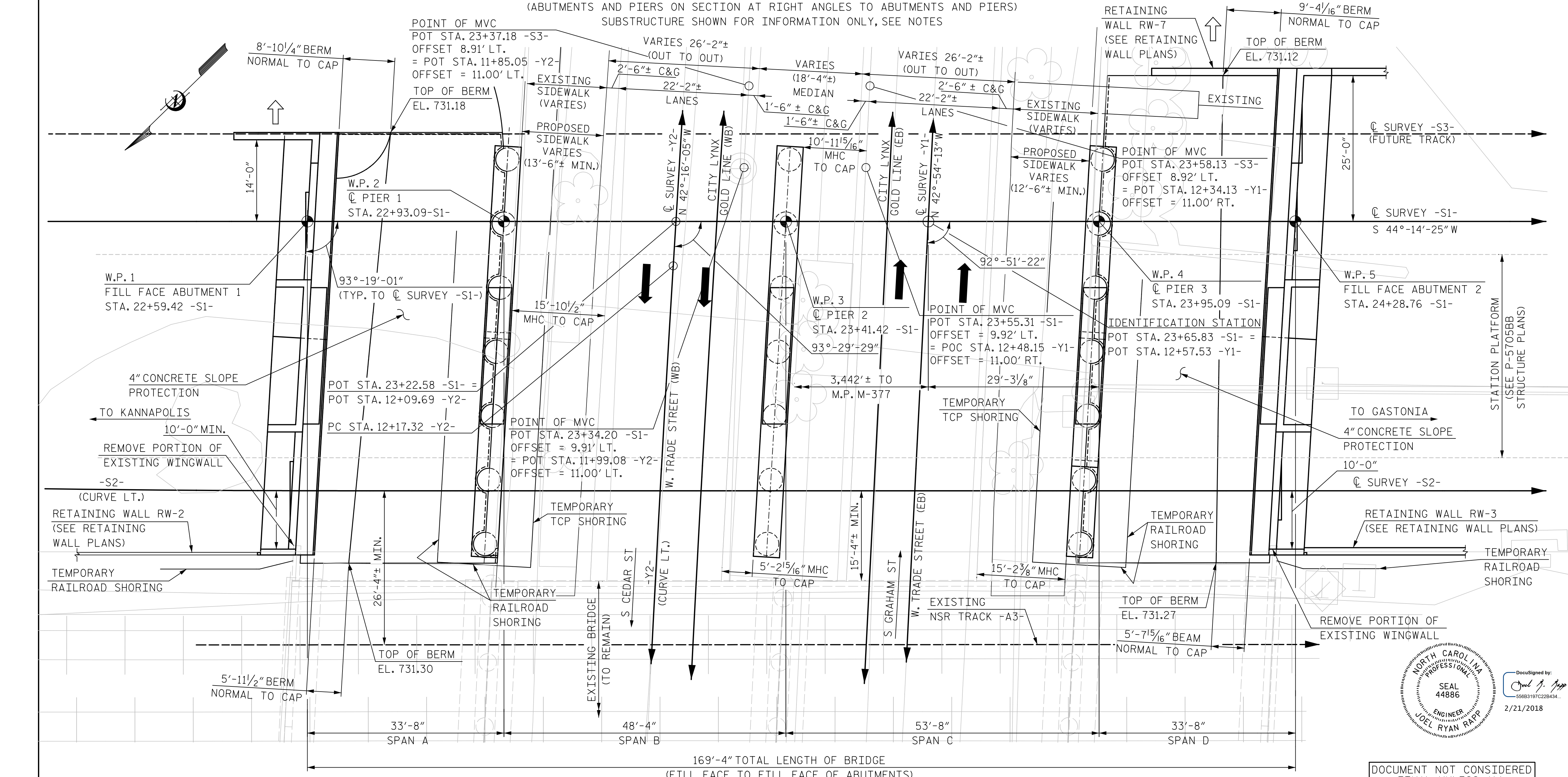
0012DEL_P28



NOTES:
 SEE "GENERAL DRAWING: GENERAL NOTES (SHEET 3 OF 3)" FOR GENERAL NOTES.
 FOR SUBSTRUCTURE SHEETS, REFER TO "BRIDGE ON STATION TRACK 2 OVER W TRADE STREET" PLANS.
 MVC = MINIMUM VERTICAL CLEARANCE
 MHC = MINIMUM HORIZONTAL CLEARANCE
 ← STRUCTURE DRAINAGE OUTLET LOCATION AND DIRECTION.
 FOR BRIDGE GROUNDING AND BONDING, AS WELL AS SHIELDING, REFER TO ELECTRIC TRACTION PLANS.

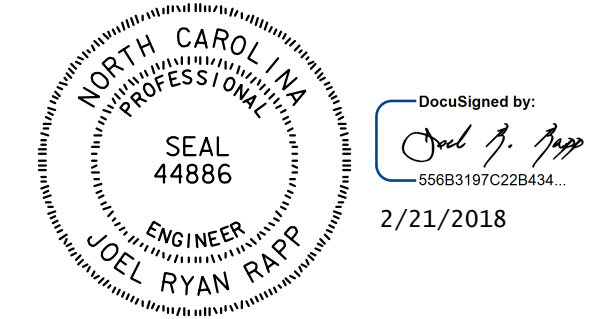
-Y2- ROADWAY CURVE DATA
 SEE ROADWAY PLANS.

SEE ROADWAY PLANS FOR EXISTING PAVEMENT ELEVATIONS.
GRADE DATA -Y1- & -Y2-



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

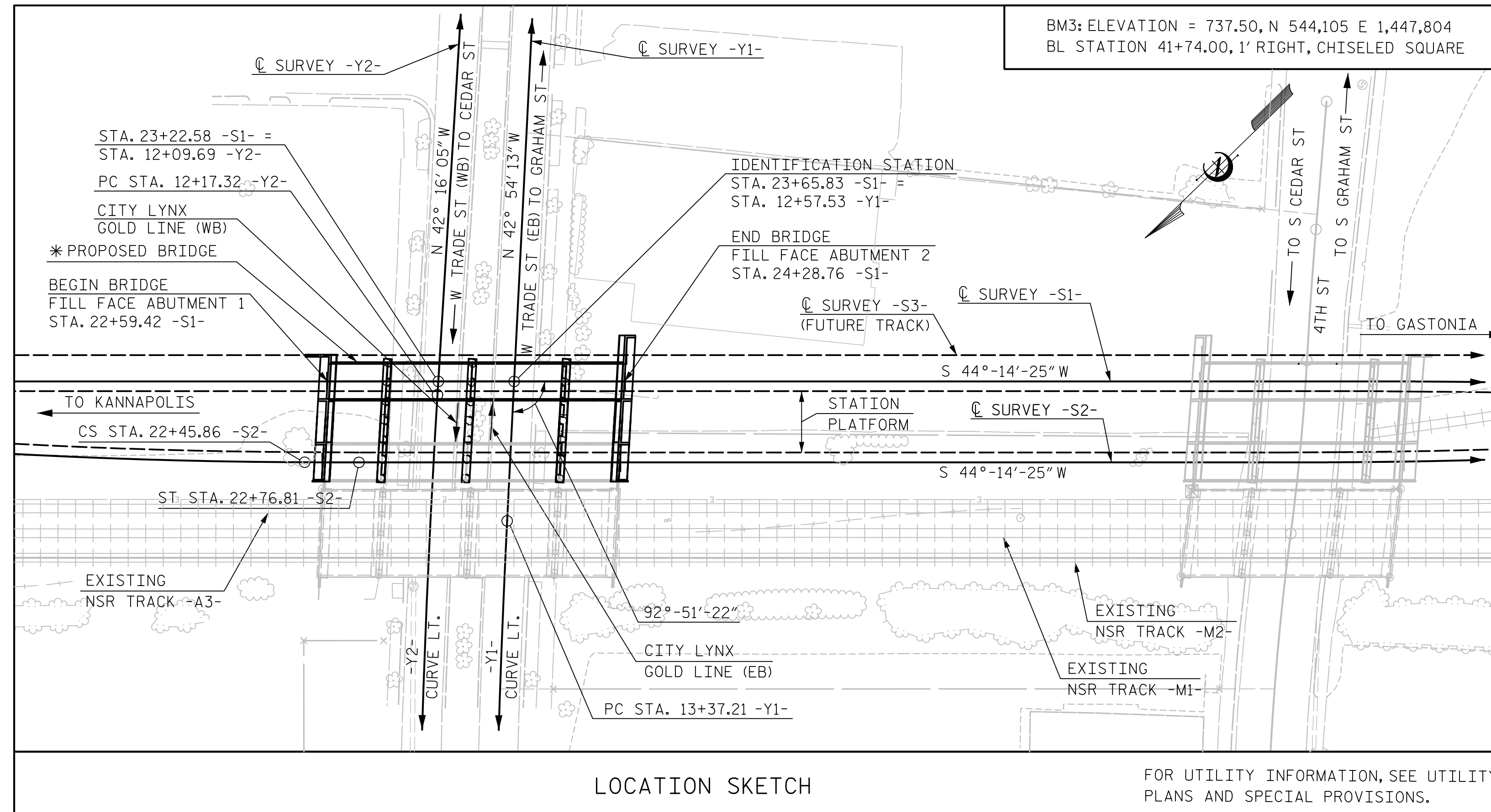
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 23+65.83 -S1- = POT STA. 12+57.53 -Y1-
 MILE POST: NS 377.64
 SHEET 1 OF 4 BRIDGE NO.

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

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. S4-1 TOTAL SHEETS 21		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
DRAWN BY: B. VAUGHN CHECKED BY: R. RAPP	DATE: 8/17	DATE: 9/17	DWG. NO. 1				



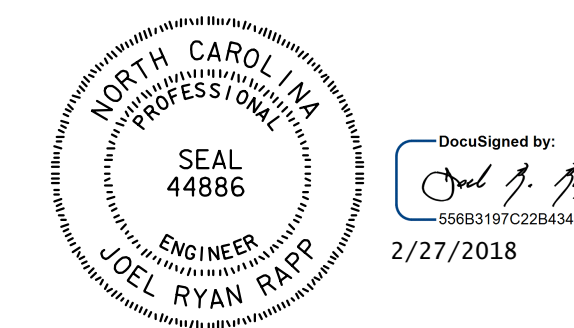
NOTE:
 FOR SUBSTRUCTURE BILL OF MATERIAL,
 REFER TO "BRIDGE ON STATION TRACK 2
 OVER W TRADE STREET" PLANS.

* SUBSTRUCTURE SHOWN FOR INFORMATION ONLY.
 FOR SUBSTRUCTURE SHEETS, REFER TO "BRIDGE
 ON STATION TRACK 2 OVER W TRADE STREET" PLANS.

TOTAL BILL OF MATERIAL								
	REINFORCED CONCRETE DECK SLAB	APPROX. 338,035 LBS. STRUCTURAL STEEL	PAINTING OF STRUCTURAL STEEL	WATERPROOFING	CONCRETE PARAPET	SELF- LUBRICATING EXPANSION BEARING ASSEMBLIES	STRUCTURE DRAINAGE SYSTEM AT STA. 23+65.83 -S1-	APPLICATION OF BRIDGE COATING
	SQ. FEET	LUMP SUM	LUMP SUM	SQ. YARDS	L.F.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	3,666.6	LUMP SUM	LUMP SUM	379.8	331.7	LUMP SUM	LUMP SUM	LUMP SUM
TOTAL	3,666.6	LUMP SUM	LUMP SUM	379.8	331.7	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-

SHEET 2 OF 3



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 SIGNATURES COMPLETED

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.
	NO.	BY	DATE	NO.	BY	DATE	S4-2
	1			3			TOTAL SHEETS
DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u> CHECKED BY <u>R. RAPP</u> DATE <u>9/17</u> DWG. NO. <u>2</u>	2			4			21

GENERAL NOTES:

ASSUMED LIVE LOAD = AREMA E80 OR ALTERNATE LIVE LOAD

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

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 GUIDELINES FOR DESIGN OF GRADE SEPARATION STRUCTURES, UNDERPASS GRADE SEPARATION DESIGN CRITERIA".

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2016 EDITION OF AREMA'S "MANUAL FOR RAILWAY ENGINEERING VOL. 2, CHP. 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: 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.

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 LOCATION:
1. BRIDGE DECK AND INSIDE OF CONCRETE PARAPET AS SHOWN ON "TYPICAL SECTION" SHEET.

WATERPROOFING SHALL BE 24" WIDE AND SHALL BE CENTERED OVER JOINTS OR CRACKS.

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 THE 2016 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 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.

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

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 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.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

FOR EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

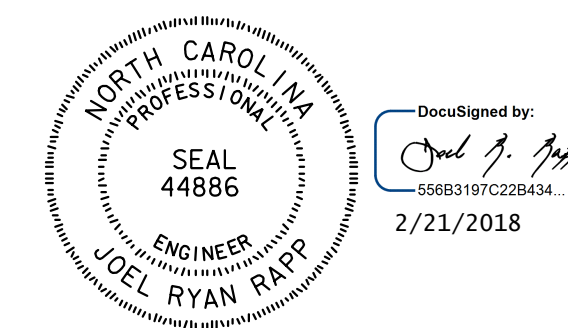
INDEX OF DRAWINGS

- 1 GENERAL DRAWING: GENERAL PLAN AND ELEVATION (SHEET 1 OF 3)
- 2 GENERAL DRAWING: LOCATION SKETCH AND TOTAL BILL OF MATERIAL (SHEET 2 OF 3)
- 3 GENERAL DRAWING: GENERAL NOTES (SHEET 3 OF 3)
- 4 SUPERSTRUCTURE: TYPICAL SECTION
- 5 SUPERSTRUCTURE: DECK DETAILS
- 6 SUPERSTRUCTURE: PLAN OF DECK - SPAN A
- 7 SUPERSTRUCTURE: PLAN OF DECK - SPAN B
- 8 SUPERSTRUCTURE: PLAN OF DECK - SPAN C
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- 10 SUPERSTRUCTURE: FRAMING PLAN AND GIRDER DETAILS - SPAN A AND SPAN D
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- 14 SUPERSTRUCTURE: BEARING DETAILS - SPAN A AND SPAN D
- 15 SUPERSTRUCTURE: BEARING DETAILS - SPAN B AND SPAN C
- 16 SUPERSTRUCTURE: EXPANSION PLATE DETAILS
- 17 SUPERSTRUCTURE: PARAPET DETAILS (SHEET 1 OF 2)
- 18 SUPERSTRUCTURE: PARAPET DETAILS (SHEET 2 OF 2)
- 19 SUPERSTRUCTURE: BILL OF MATERIAL
- 20 STRUCTURE: DRAINAGE DETAILS (SHEET 1 OF 2)
- 21 STRUCTURE: DRAINAGE DETAILS (SHEET 2 OF 2)

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

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 23+65.83 -S1-

SHEET 3 OF 3



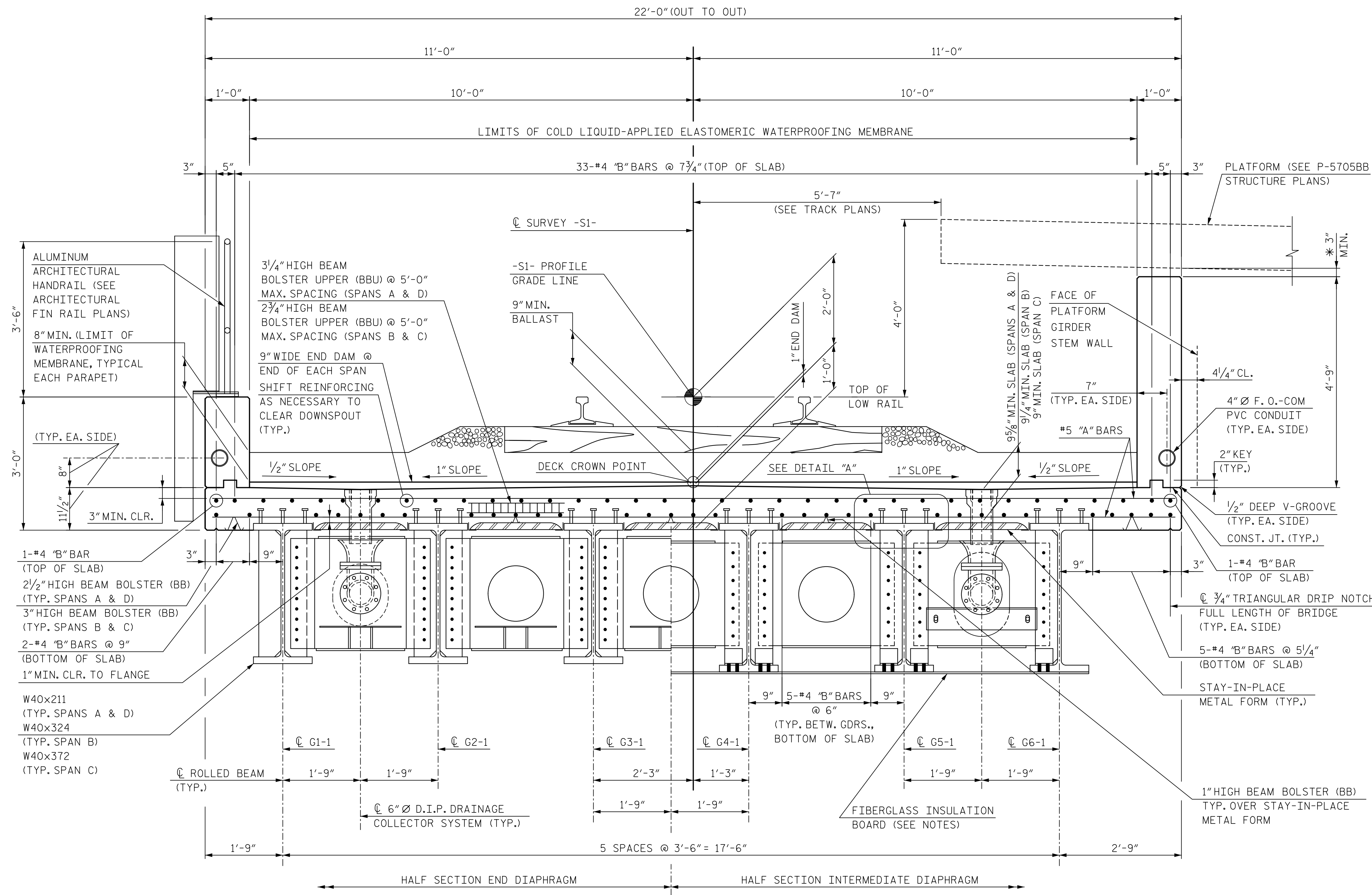
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

GENERAL NOTES

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	NO.	BY	DATE	NO.	BY		DATE
	1		8/17	3			
DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u> CHECKED BY <u>R. RAPP</u> DATE <u>9/17</u>	DWG. NO. 3		2		4		



TYPICAL SECTION
(ALL SPANS SIMILAR)

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 & 3 (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.

NOTES:

ALL REINFORCING STEEL IN THE DECK AND PARAPETS SHALL BE EPOXY COATED. CLEAR COVER TO ALL REINFORCING IS 2" MINIMUM UNLESS NOTED OTHERWISE.

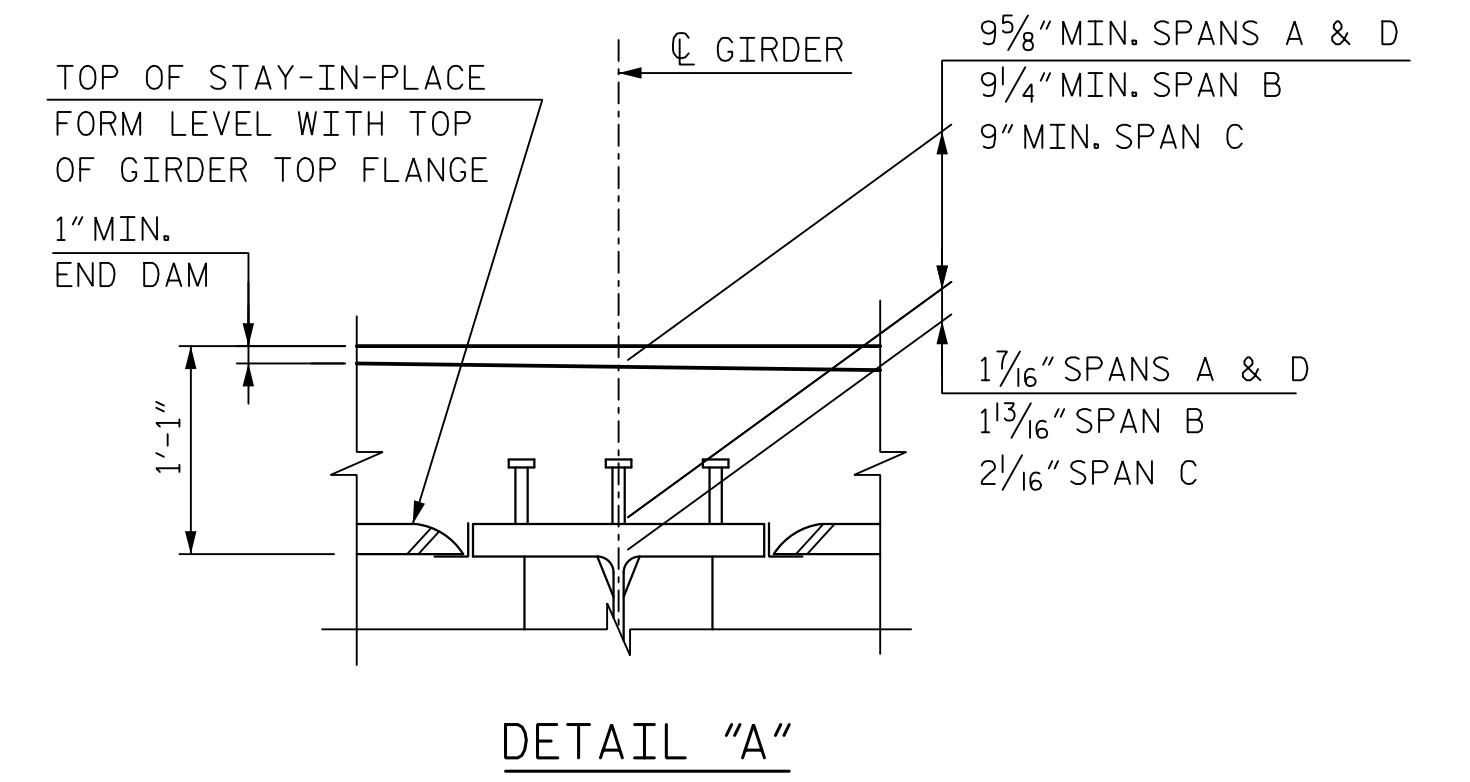
FOR ALUMINUM ARCHITECTURAL HANDRAIL DETAILS, SEE ARCHITECTURAL FIN RAIL PLANS.

FOR PARAPET DETAILS, SEE "PARAPET DETAILS" SHEETS.

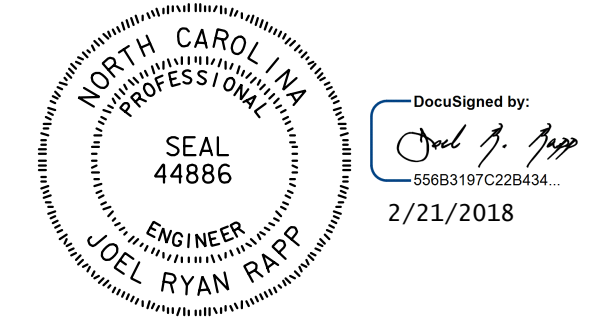
DESIGN INCLUDES WEIGHT OF 6" ADDITIONAL BALLAST TO ACCOUNT FOR FUTURE RESURFACING OF TRACK.

FOR FIBERGLASS INSULATION BOARD DETAILS, INCLUDING CONNECTIONS TO GIRDERS, REFER TO ELECTRIC TRACTION PLANS. SHOP DRAWINGS FOR THE BRIDGE SHIELDING SYSTEM ARE REQUIRED AND SHALL BE SUBMITTED FOR APPROVAL.

* MINIMUM GAP REMAINING AFTER CONSIDERING ALL PLATFORM DEFLECTIONS.



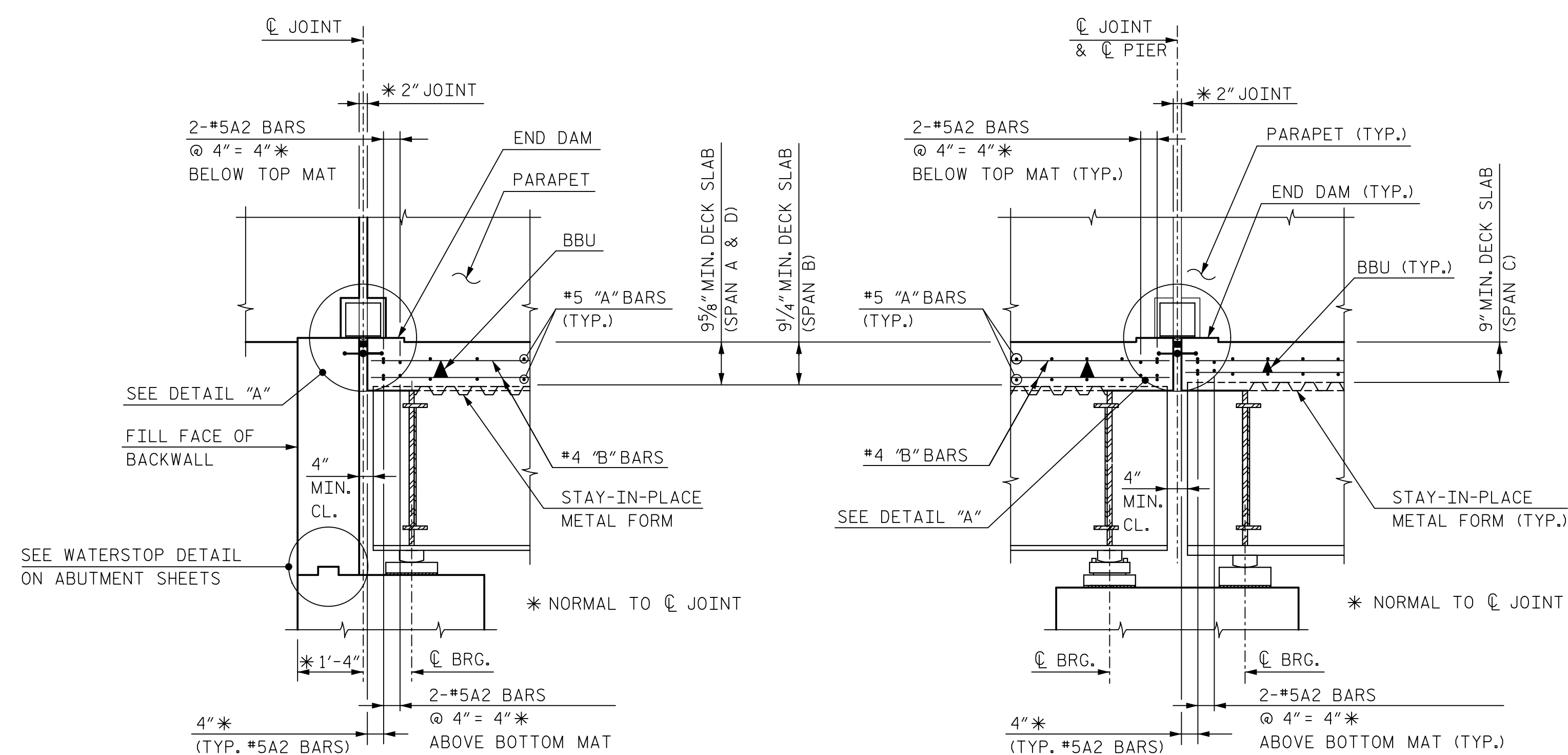
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
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 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

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	NO.	BY	DATE	NO.		BY	DATE
	1		8/17	3			
DRAWN BY: J. JEFFERS CHECKED BY: R. RAPP	DATE: 8/17 DATE: 9/17	DWG. NO. 4	NO. 4	DATE: 9/17	DATE:		

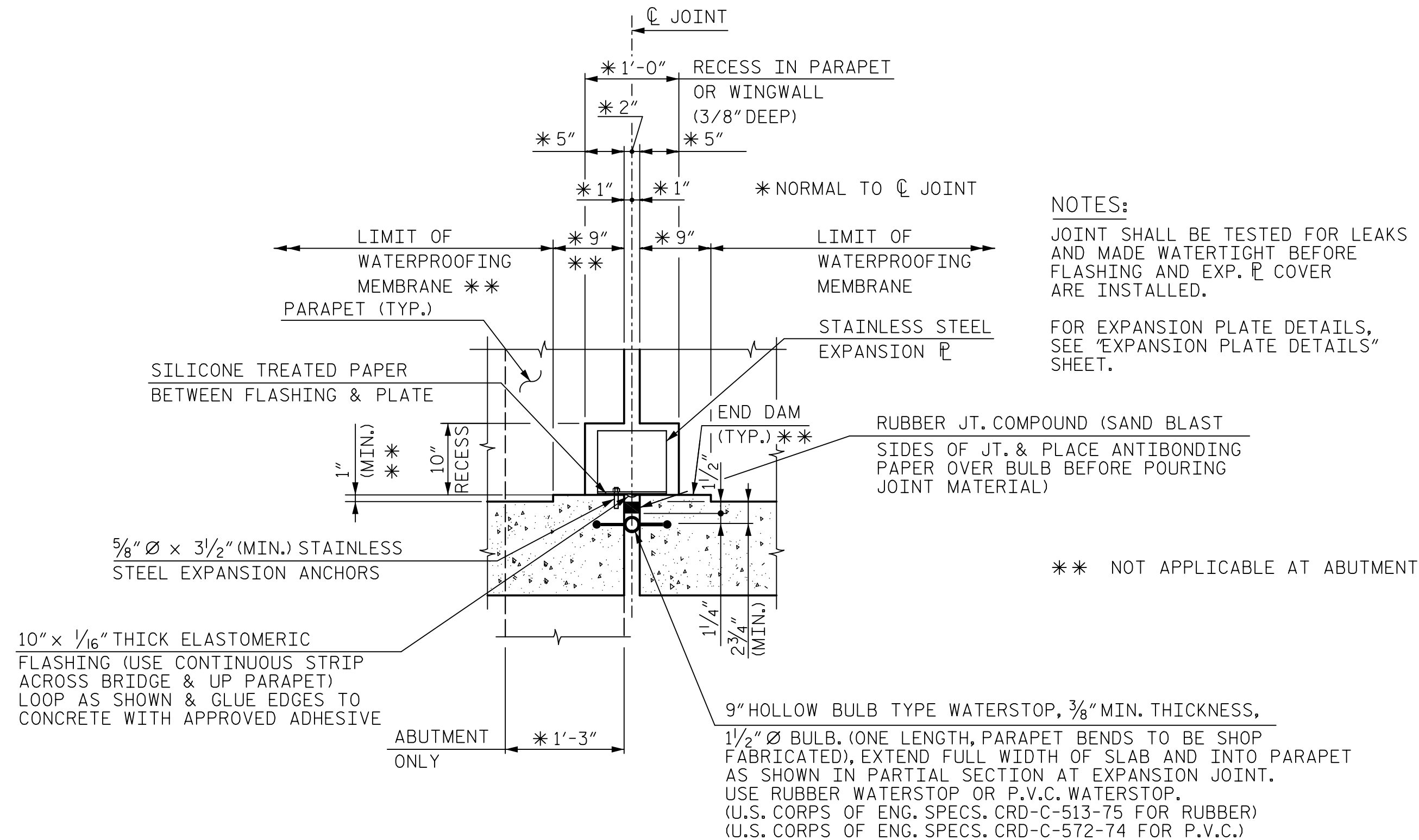


SECTION A-A

(ABUT. 1 SHOWN, ABUT. 2 SIMILAR)

SECTION B-B

(PIERS 1, 2, & 3)
(PIER 1 SHOWN, PIERS 2 & 3 SIMILAR)



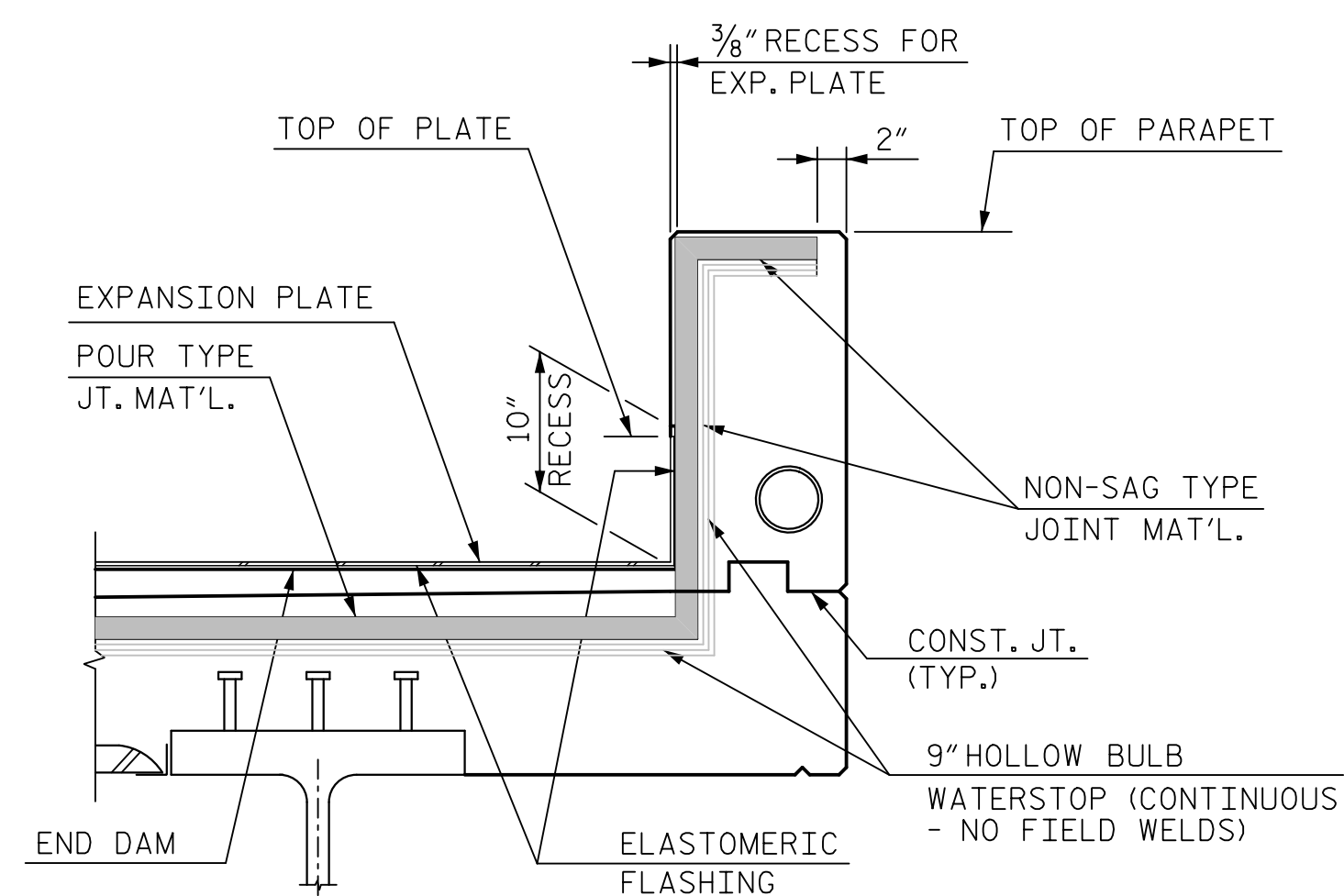
DETAIL "A"

(DECK REBAR NOT SHOWN FOR CLARITY)

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

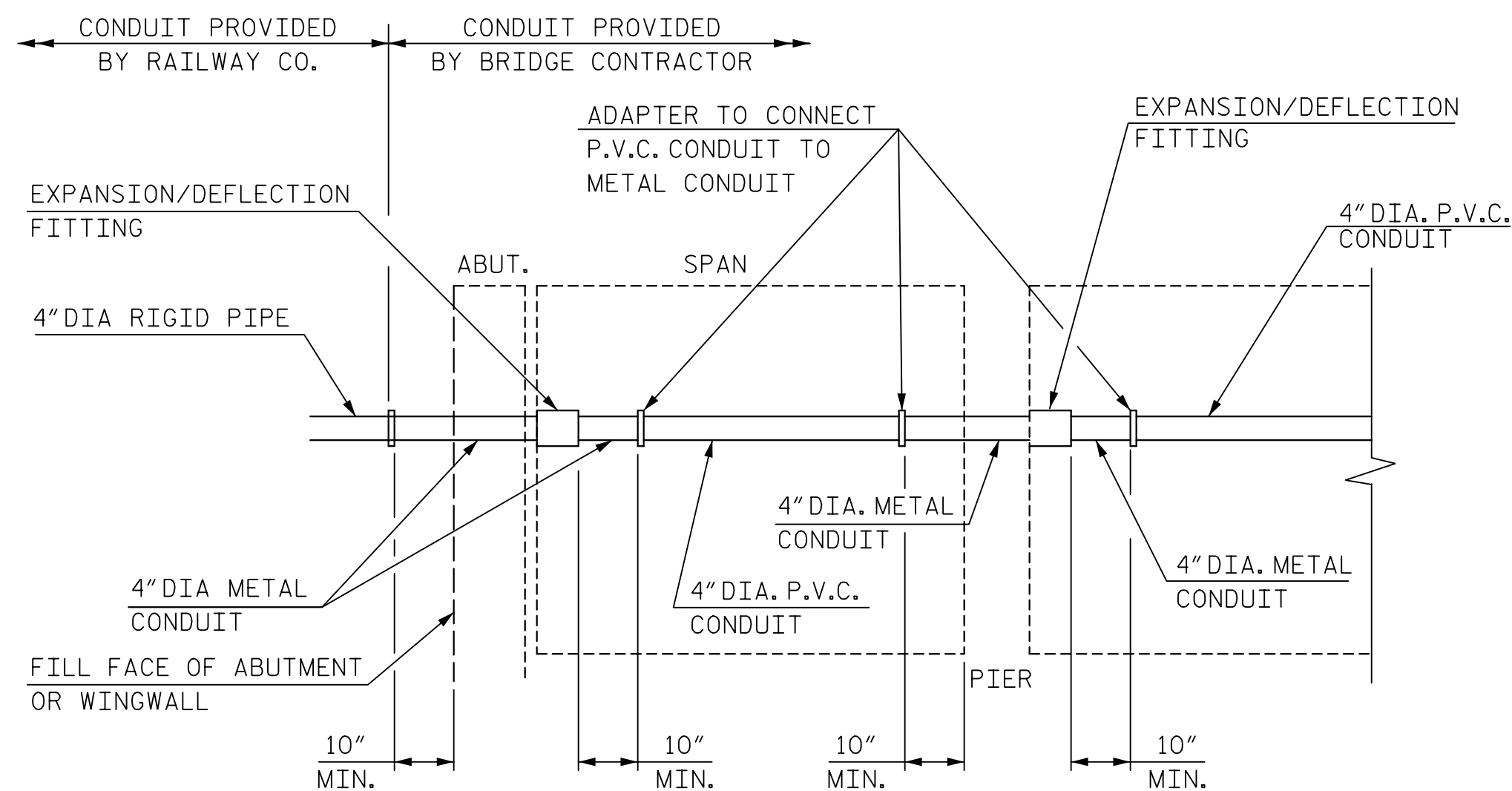
FOR EXPANSION PLATE DETAILS, SEE "EXPANSION PLATE DETAILS" SHEET.

** NOT APPLICABLE AT ABUTMENT



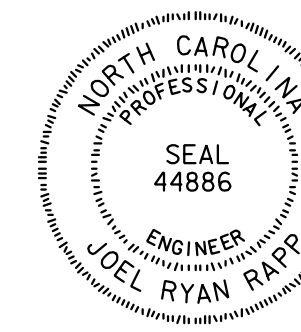
PART SECTION AT EXPANSION JOINT

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



CONDUIT LAYOUT

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 23+65.83 -S1-



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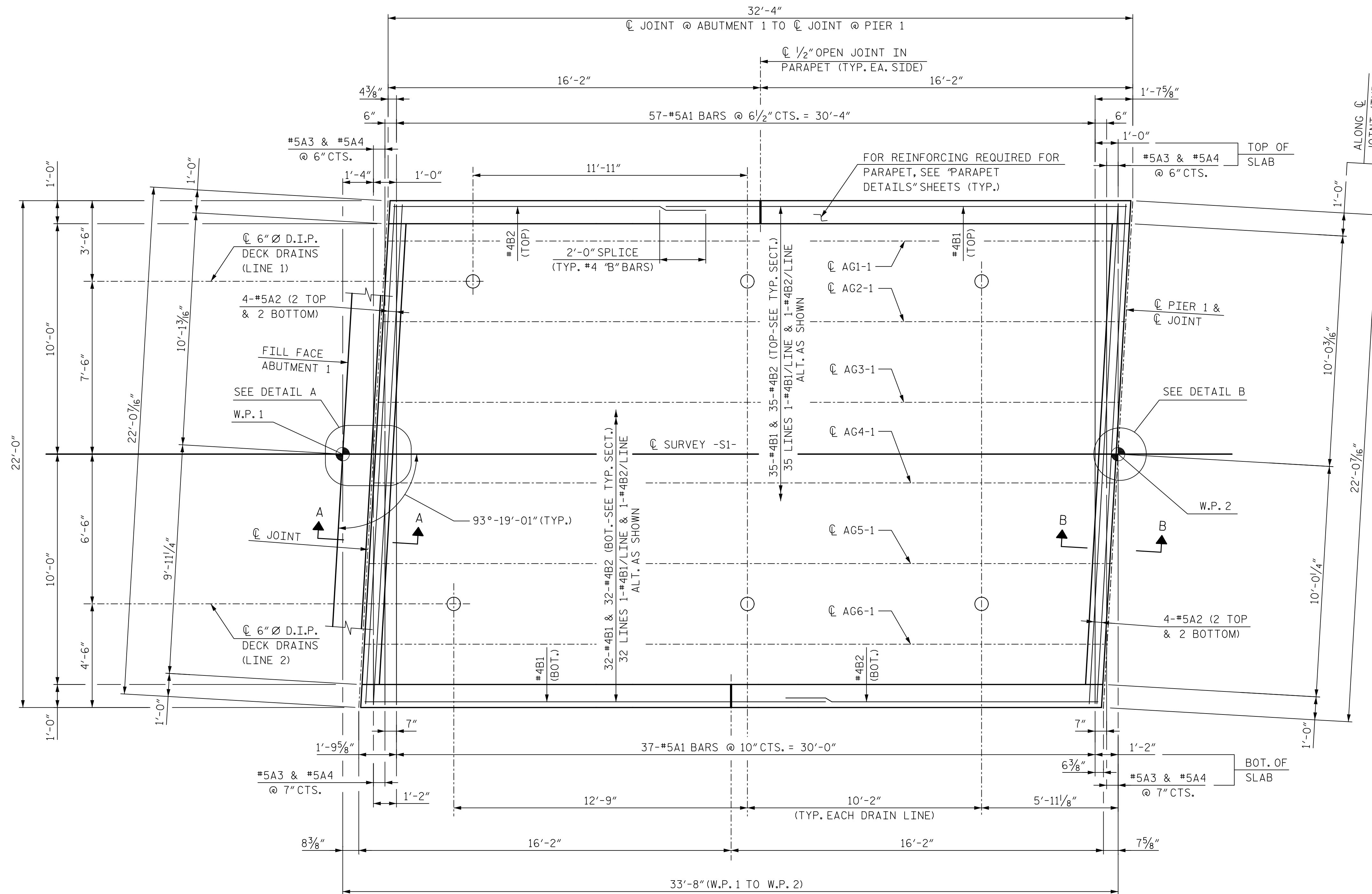
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RALEIGH

SUPERSTRUCTURE

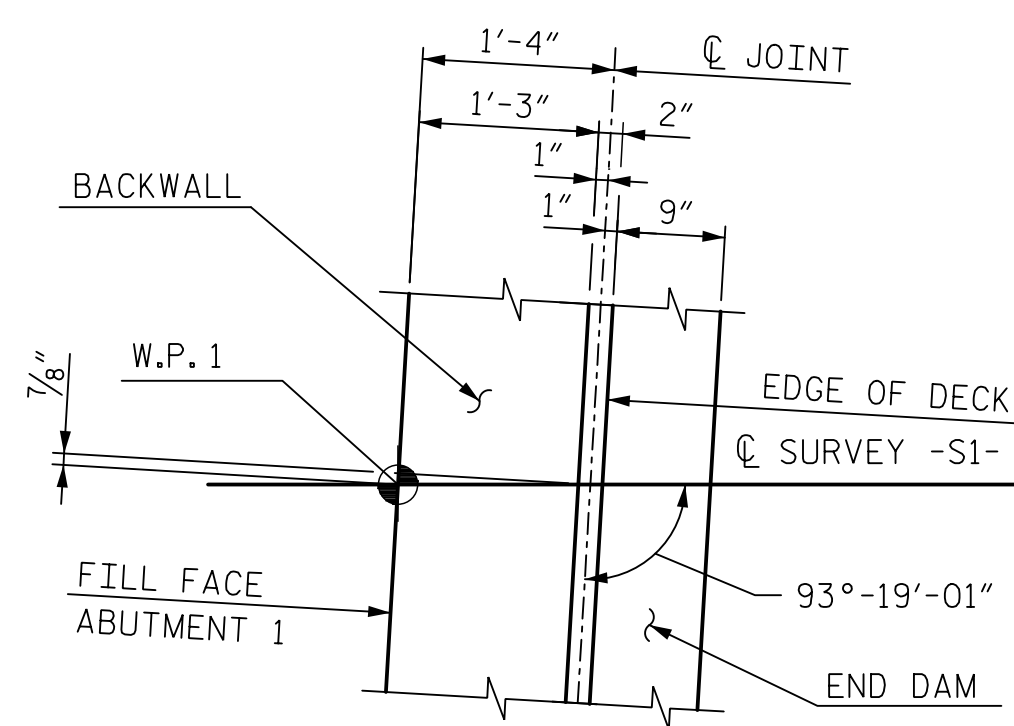
DECK DETAILS

HNTB		HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	
DRAWN BY <u>B. VAUGHN</u>	DATE <u>8/17</u>	DWG. NO. <u>5</u>	
CHECKED BY <u>R. RAPP</u>	DATE <u>9/17</u>		

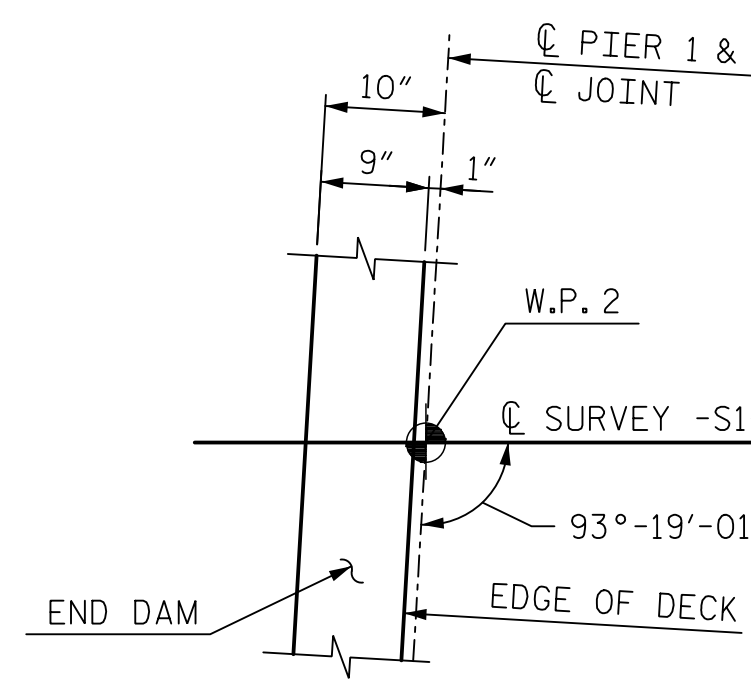
REVISIONS						SHEET NO. S4-5
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
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PLAN - SPAN A



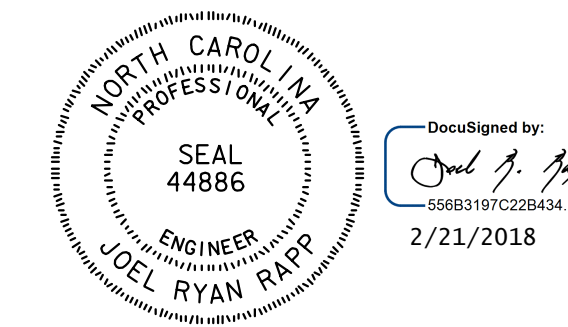
DETAIL A



DETAIL B

NOTES:
 ALL REINFORCING SHALL BE EPOXY COATED.
 FOR SECTIONS A-A & B-B SEE "DECK DETAILS" SHEET.
 FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "STRUCTURE: DRAINAGE DETAILS", SHEET 2 OF 2.
 FOR PARAPET DETAILS, SEE "PARAPET DETAILS" SHEETS.
 SLAB BARS MAY BE ADJUSTED TO AVOID DECK DRAIN LOCATIONS.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-

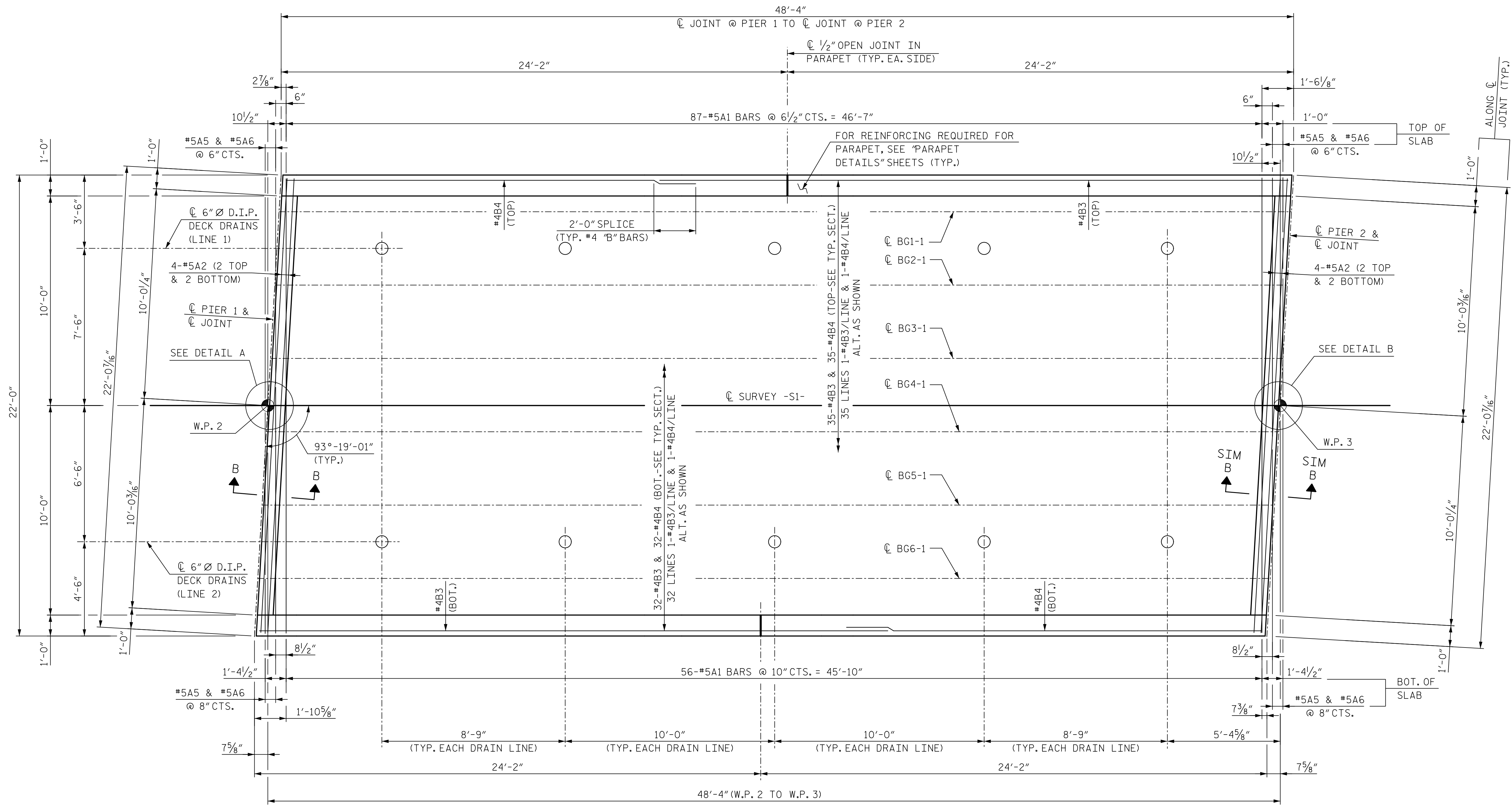


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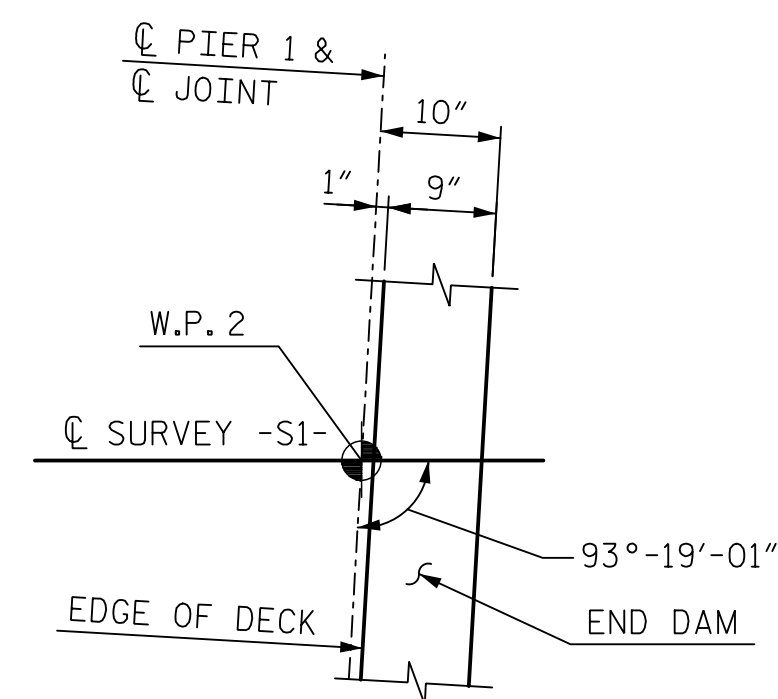
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF DECK - SPAN A

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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609
 DRAWN BY B. VAUGHN DATE 8/17
 CHECKED BY K. ERVIN DATE 9/17 DWG. NO. 6

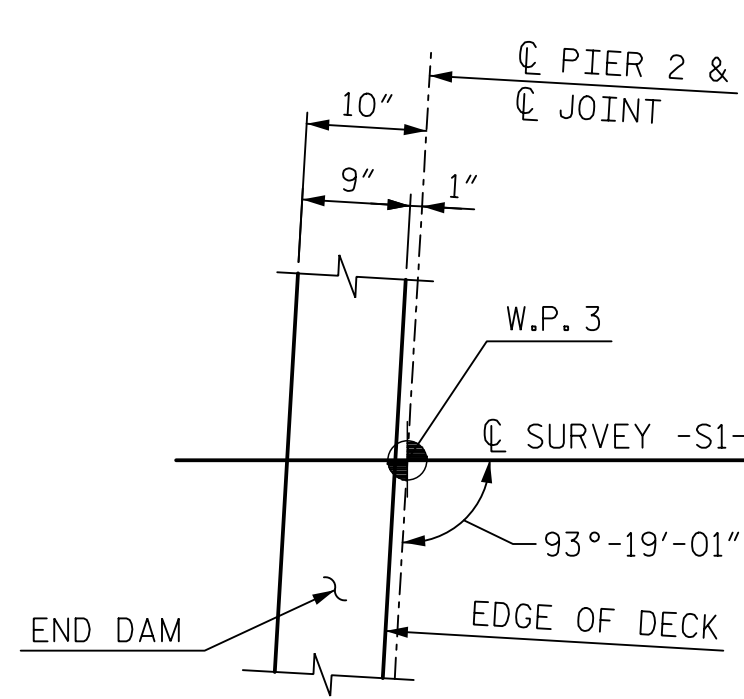
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PLAN - SPAN B



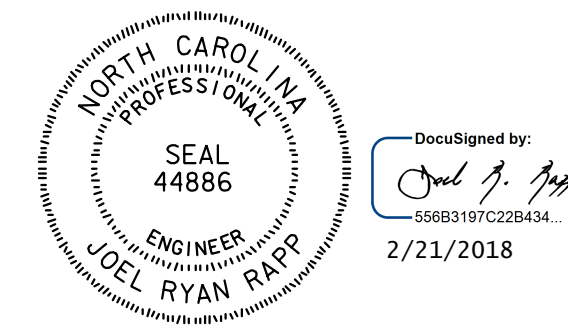
DETAIL A



DETAIL B

NOTES:

- ALL REINFORCING SHALL BE EPOXY COATED.
- FOR SECTION B-B SEE "DECK DETAILS" SHEET.
- FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "STRUCTURE: DRAINAGE DETAILS", SHEET 2 OF 2.
- FOR PARAPET DETAILS, SEE "PARAPET DETAILS" SHEETS.
- SLAB BARS MAY BE ADJUSTED TO AVOID DECK DRAIN LOCATIONS.

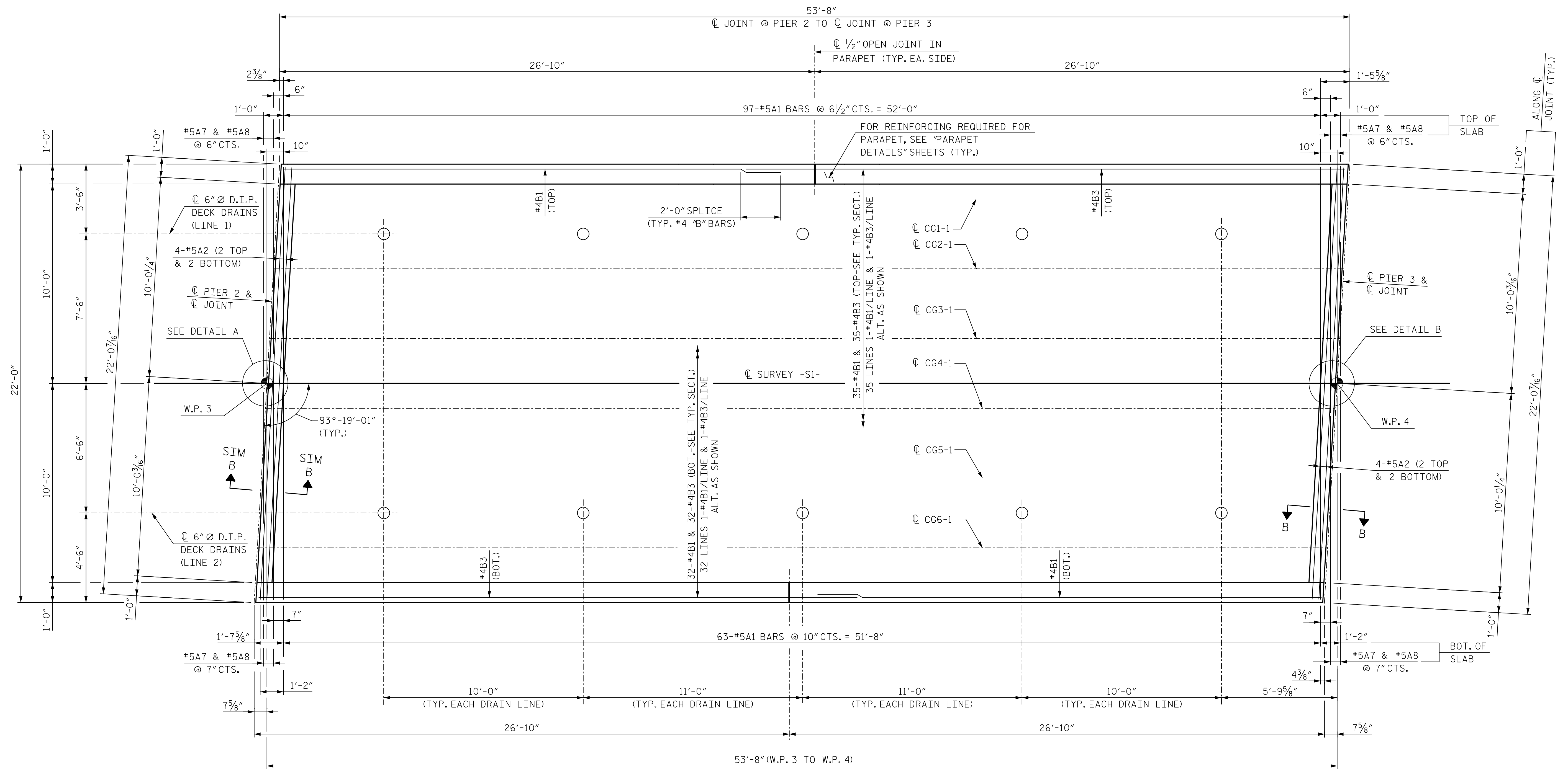


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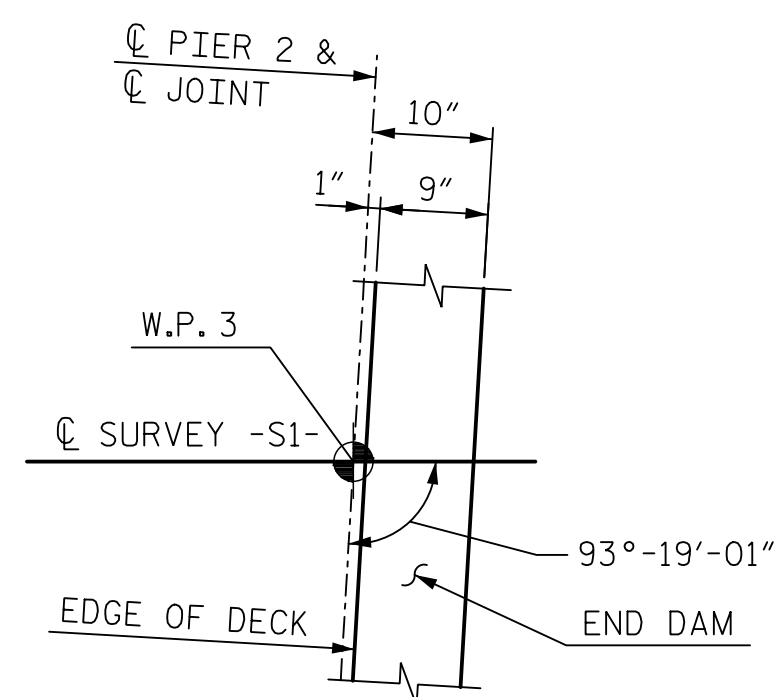
PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-

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

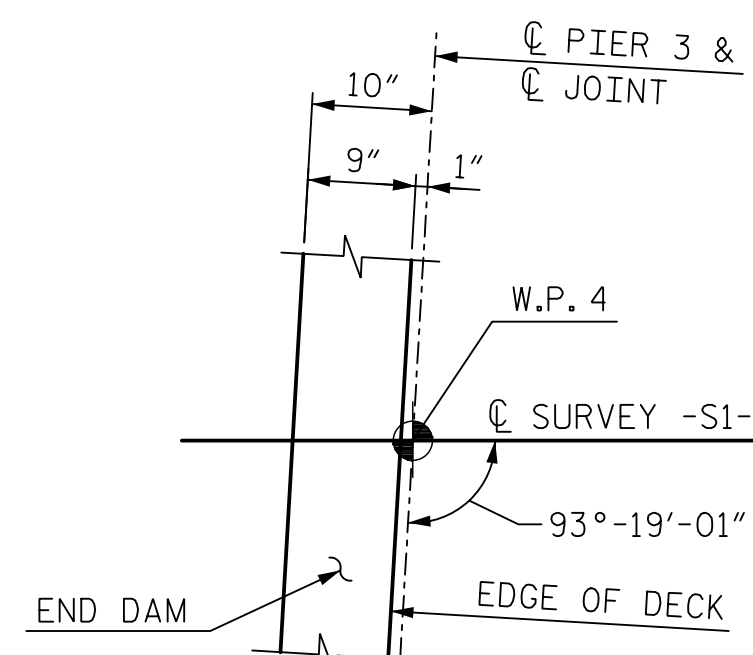
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	1			3			TOTAL SHEETS
DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u> CHECKED BY <u>K. ERVIN</u> DATE <u>9/17</u> DWG. NO. <u>7</u>	2			4			21



PLAN - SPAN C



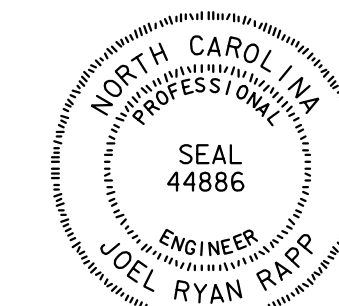
DETAIL A



DETAIL B

NOTES:

- ALL REINFORCING SHALL BE EPOXY COATED.
- FOR SECTION B-B SEE "DECK DETAILS" SHEET.
- FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "STRUCTURE: DRAINAGE DETAILS", SHEET 2 OF 2.
- FOR PARAPET DETAILS, SEE "PARAPET DETAILS" SHEETS.
- SLAB BARS MAY BE ADJUSTED TO AVOID DECK DRAIN LOCATIONS.



DocuSigned by:
Joel R. Rapp
59683197228434
2/21/2018

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PROJECT NO. P-5705BA
MECKLENBURG COUNTY
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 DEPARTMENT OF TRANSPORTATION
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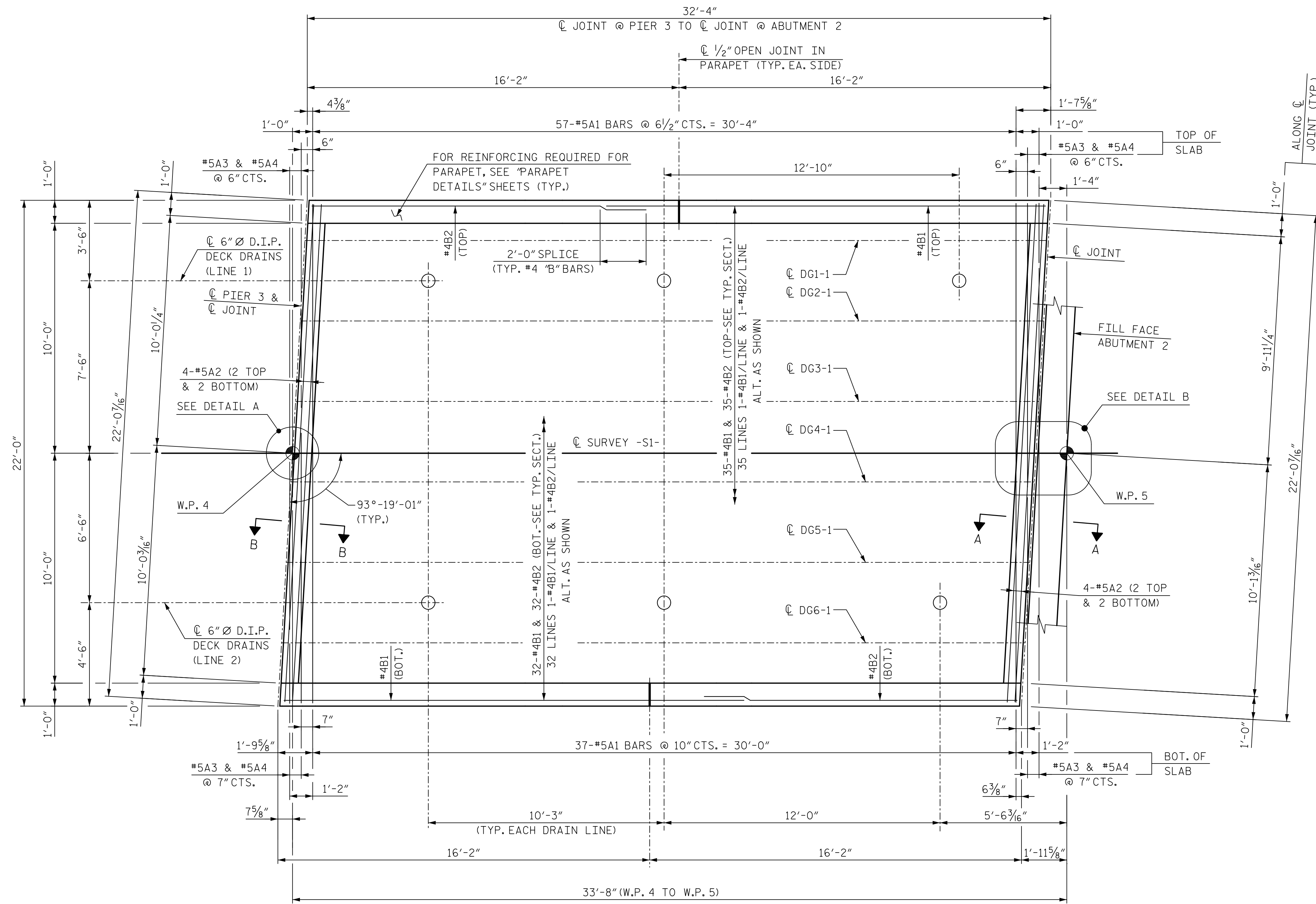
SUPERSTRUCTURE

PLAN OF DECK - SPAN C

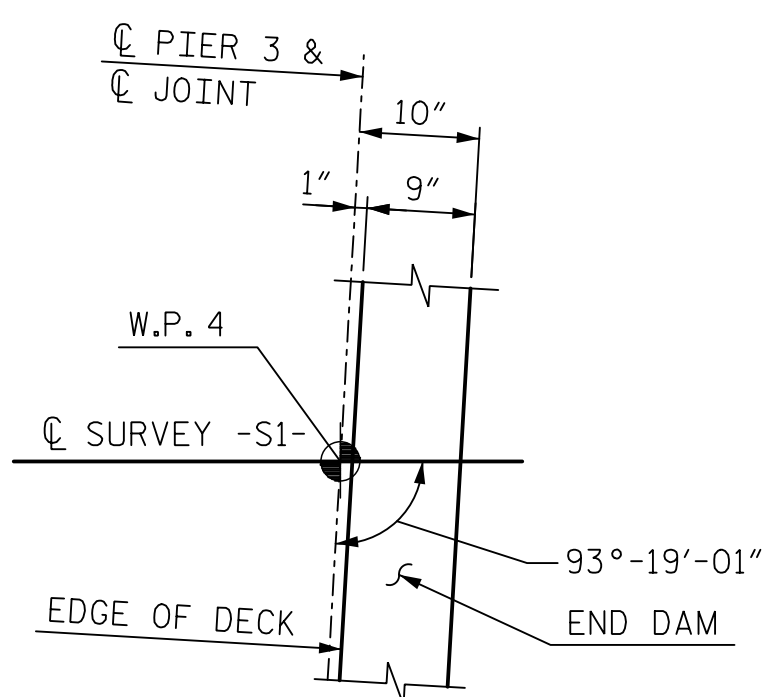
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 CHECKED BY K. ERVIN DATE 9/17 DWG. NO. 8

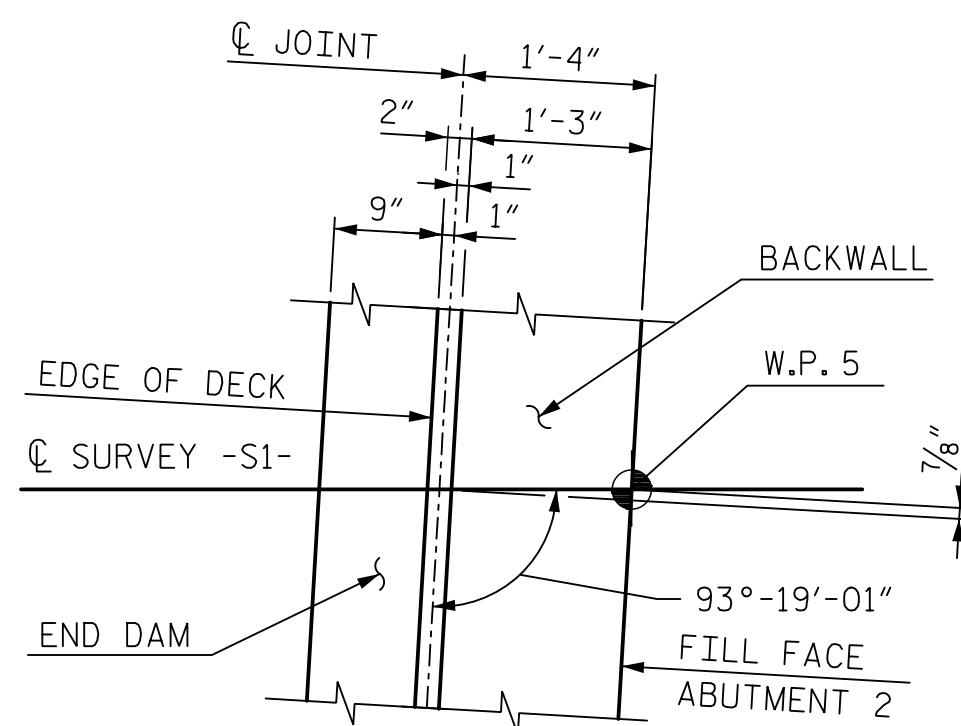
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NO.	BY	DATE	NO.	BY	DATE	S4-8
1			3			TOTAL SHEETS
2			4			21



PLAN - SPAN D



DETAIL A

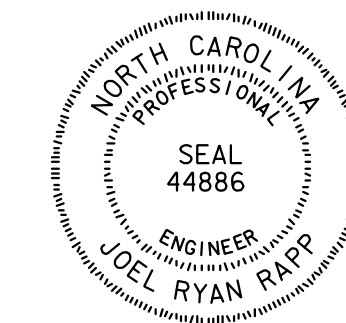


DETAIL B

NOTES:

- ALL REINFORCING SHALL BE EPOXY COATED.
- FOR SECTIONS A-A & B-B SEE "DECK DETAILS" SHEET.
- FOR DECK DRAIN DETAIL SEE DETAIL "B" ON "STRUCTURE: DRAINAGE DETAILS", SHEET 2 OF 2.
- FOR PARAPET DETAILS, SEE "PARAPET DETAILS" SHEETS.
- SLAB BARS MAY BE ADJUSTED TO AVOID DECK DRAIN LOCATIONS.

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-



DocuSigned by:
 [Signature]
 55653197C228434
 2/21/2018

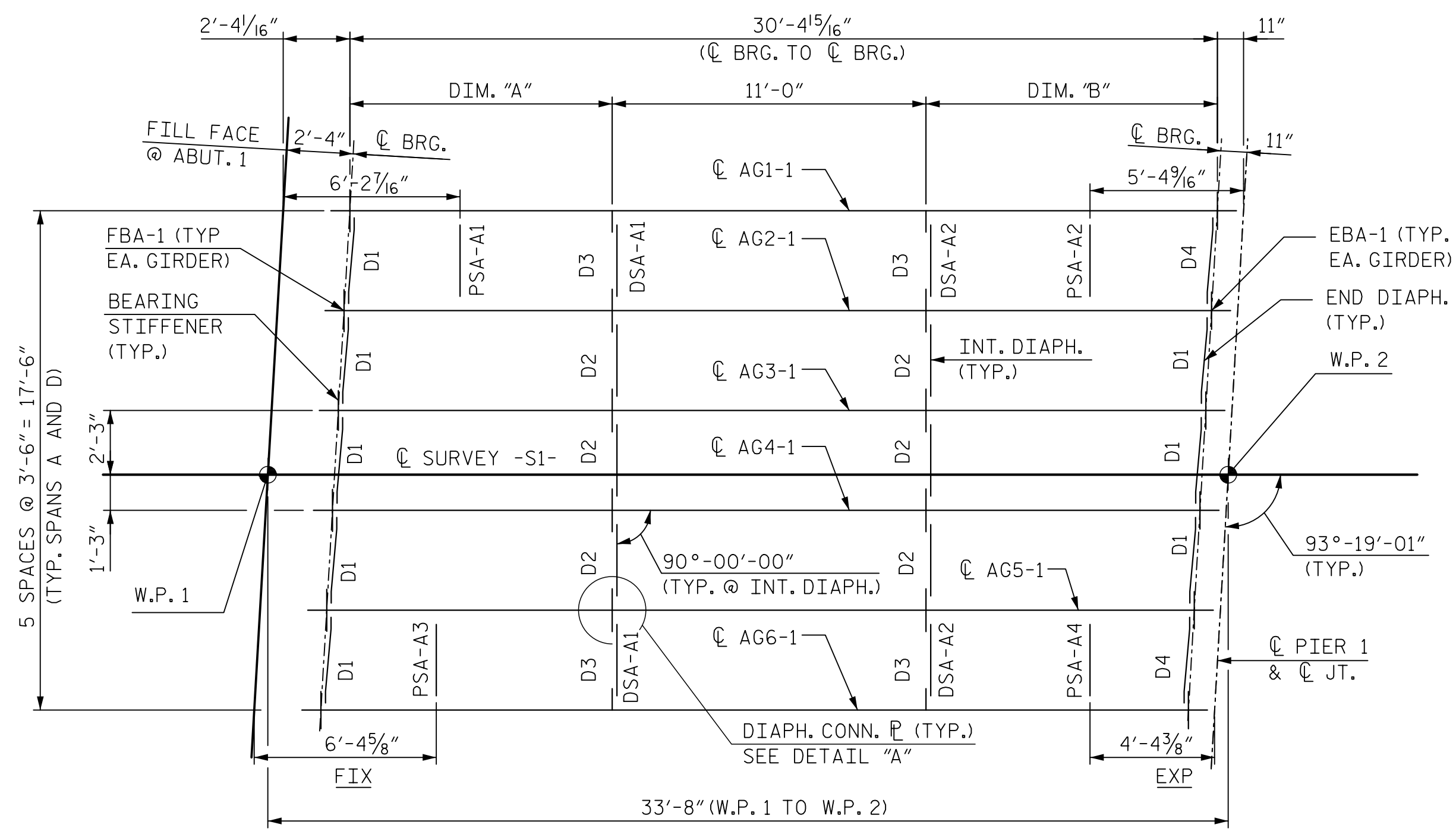
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 PLAN OF DECK - SPAN D

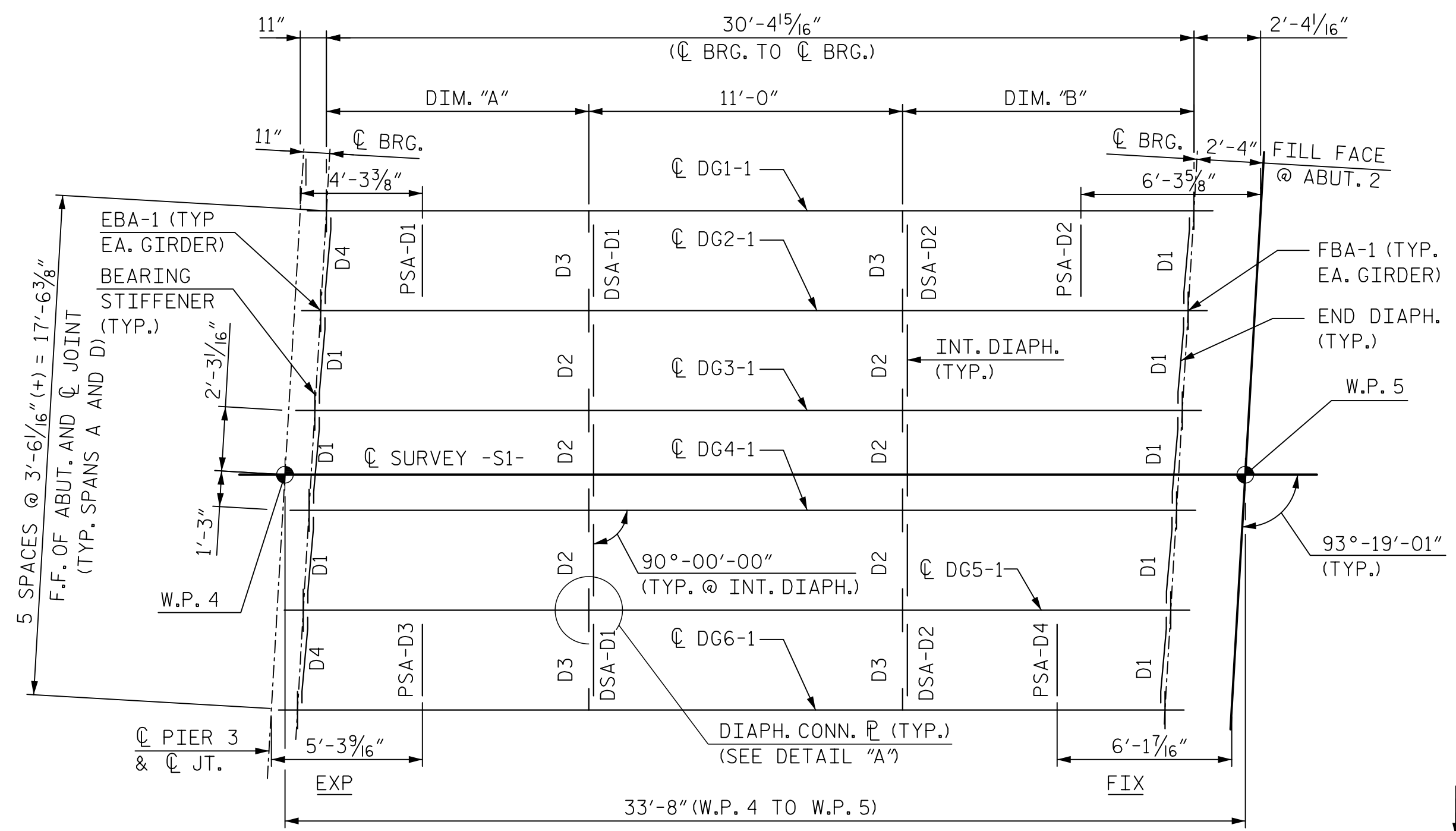
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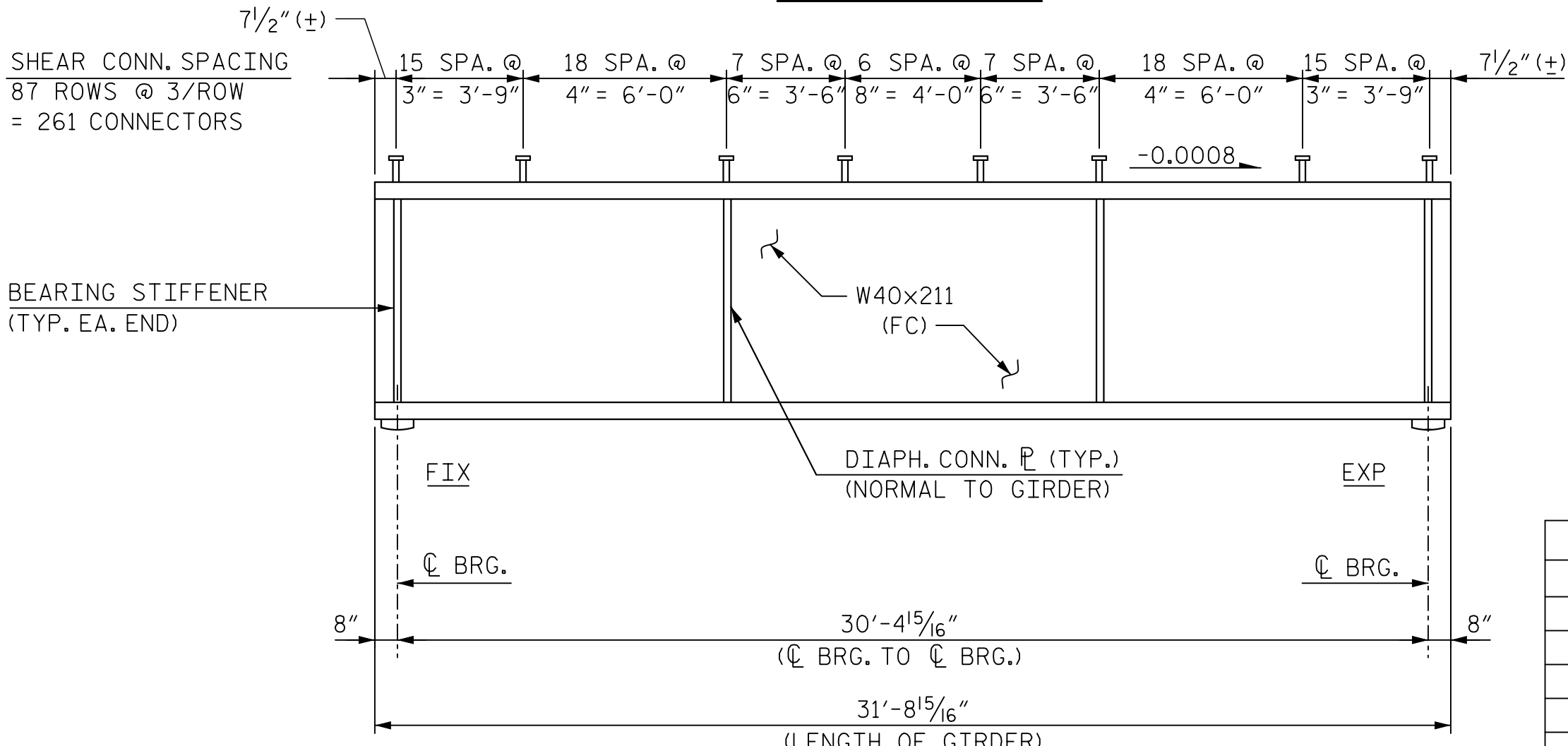
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NO.	BY	DATE	NO.	BY	DATE	S4-9
1			3			TOTAL SHEETS
2			4			21



SPAN A
FRAMING PLAN

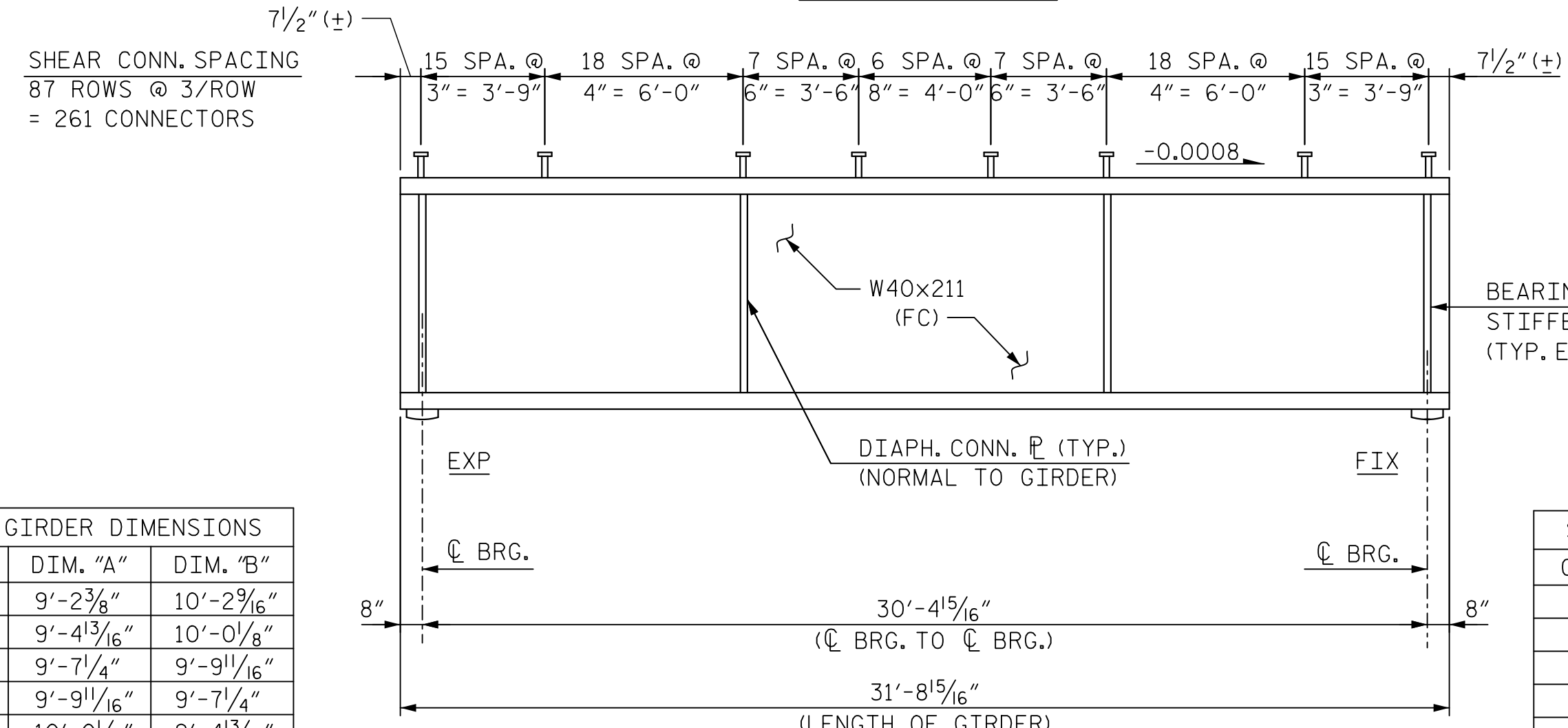


SPAN D
FRAMING PLAN



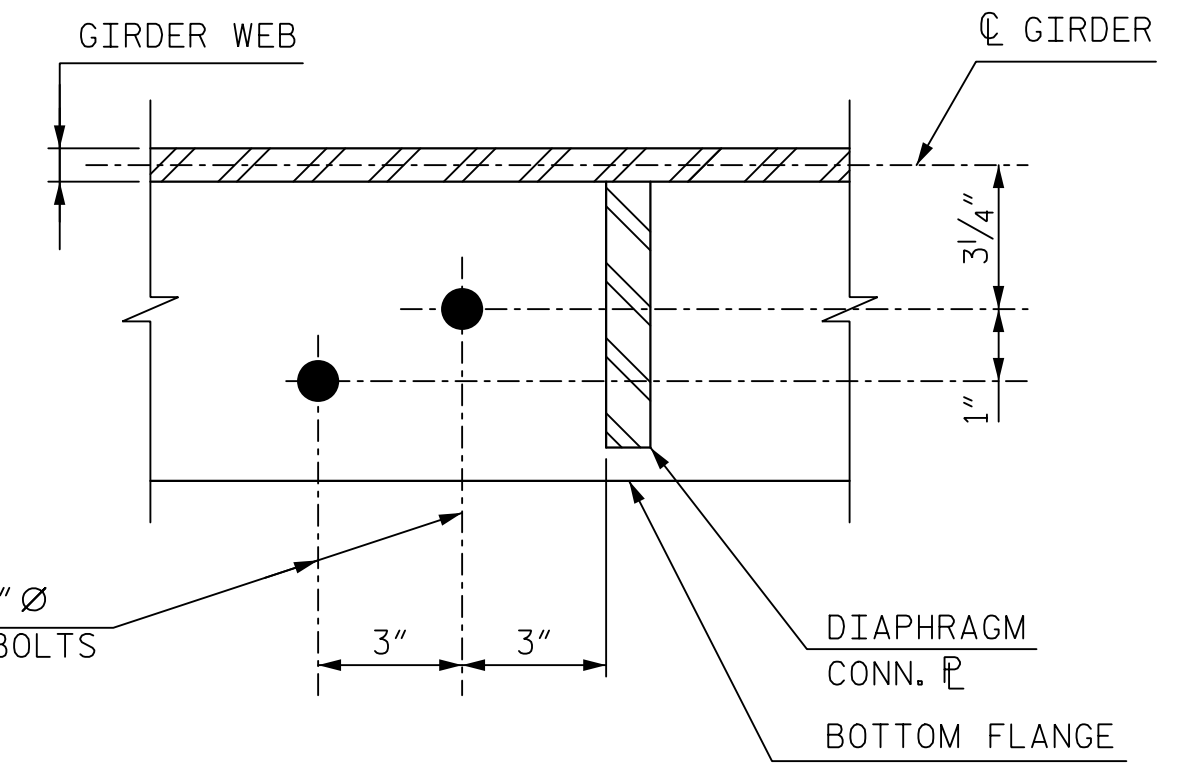
TYPICAL GIRDER ELEVATION
(INTERIOR GIRDER SHOWN, EXTERIOR GIRDER SIMILAR)

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



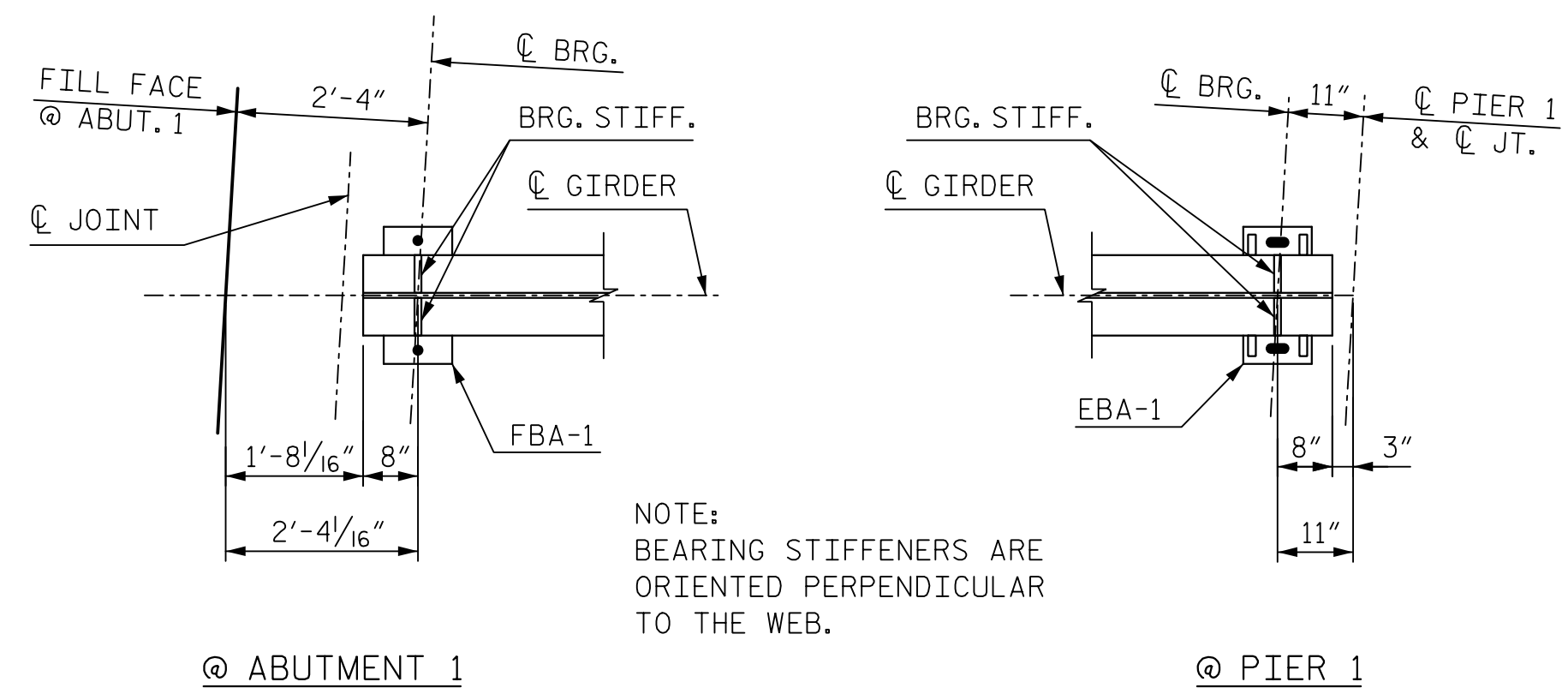
TYPICAL GIRDER ELEVATION
(INTERIOR GIRDER SHOWN, EXTERIOR GIRDER SIMILAR)

SPAN D GIRDER DIMENSIONS		
GIRDER	DIM. "A"	DIM. "B"
DG1-1	9'-2 3/8"	10'-2 3/8"
DG2-1	9'-4 3/8"	10'-0 1/8"
DG3-1	9'-7 1/4"	9'-9 1/16"
DG4-1	9'-9 1/16"	9'-7 1/4"
DG5-1	10'-0 1/8"	9'-4 3/8"
DG6-1	10'-2 3/8"	9'-2 3/8"

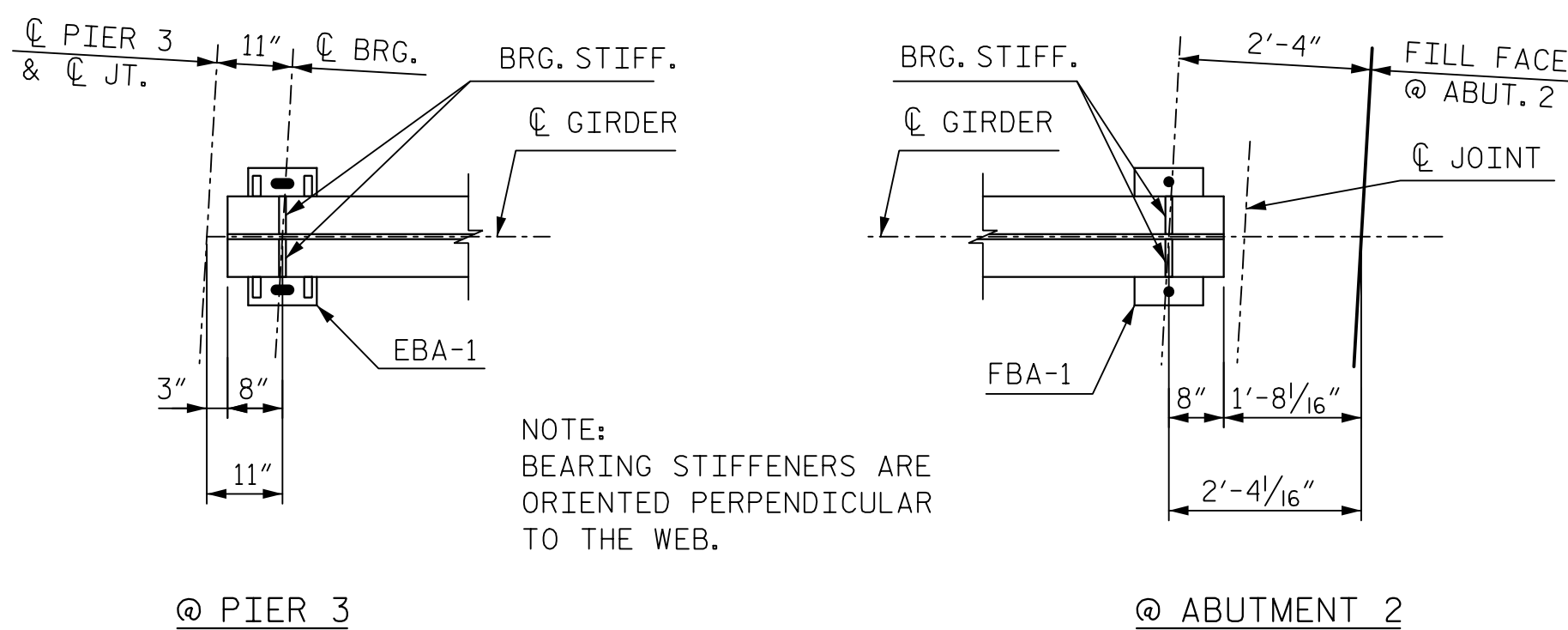


DETAIL "A"
(RIGHT SIDE OF WEB SHOWN, LEFT SIDE SIMILAR)

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 SPAN A AND SPAN D" SHEET.
 FOR DRAIN PIPE SUPPORT DETAILS, SEE "STRUCTURE DRAINAGE DETAILS" SHEETS.
 FC = "FRACTURE CRITICAL"



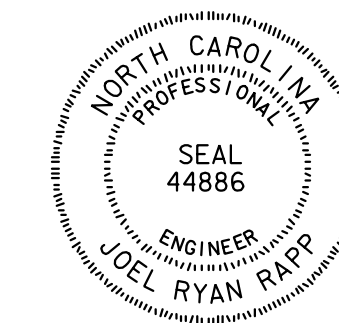
@ ABUTMENT 1
@ PIER 1
BOTTOM FLANGE GIRDER END DETAILS - SPAN A



@ PIER 3
@ ABUTMENT 2
BOTTOM FLANGE GIRDER END DETAILS - SPAN D

NOTE:
BEARING STIFFENERS ARE ORIENTED PERPENDICULAR TO THE WEB.

NOTE:
BEARING STIFFENERS ARE ORIENTED PERPENDICULAR TO THE WEB.



DocuSigned by:
Joel R. Rapp
5963197C228434...
2/21/2018

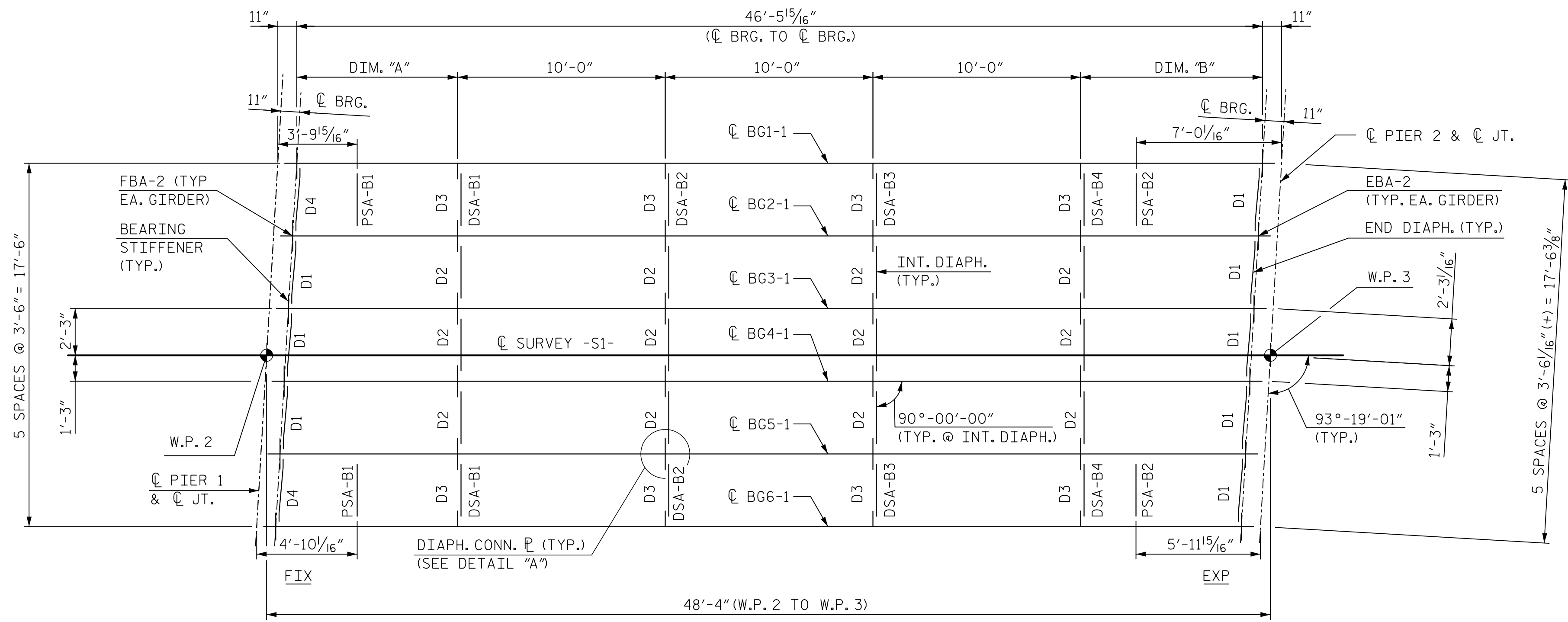
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 STATION: POT STA. 23+65.83 -S1-

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

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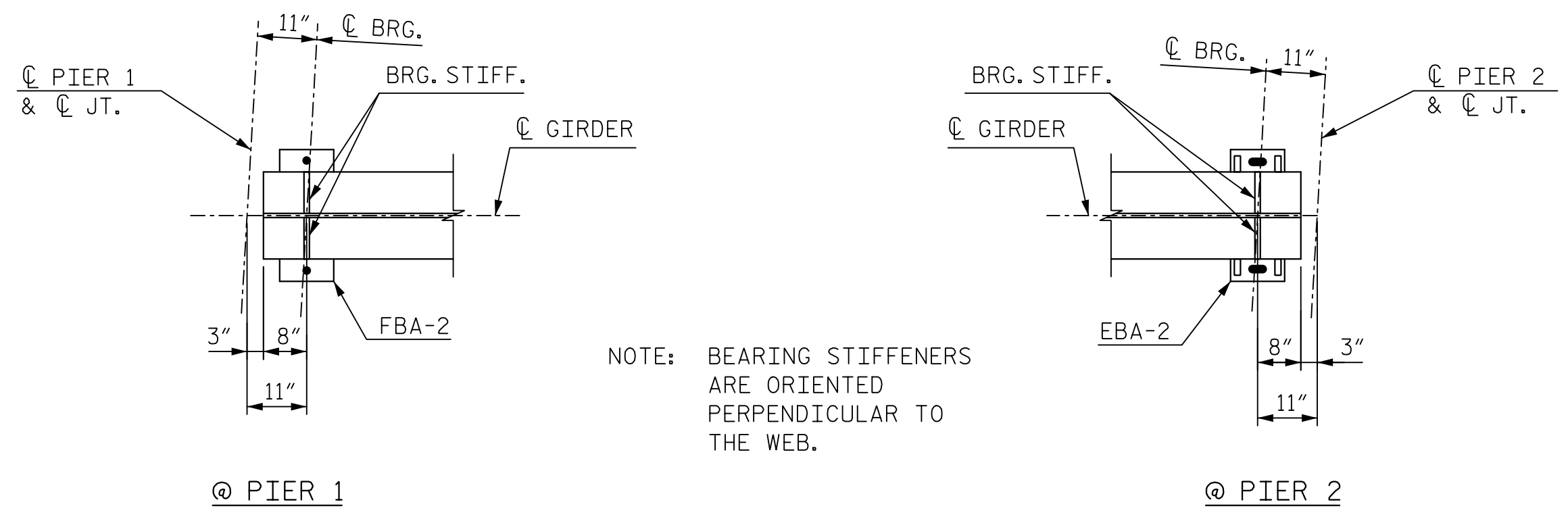
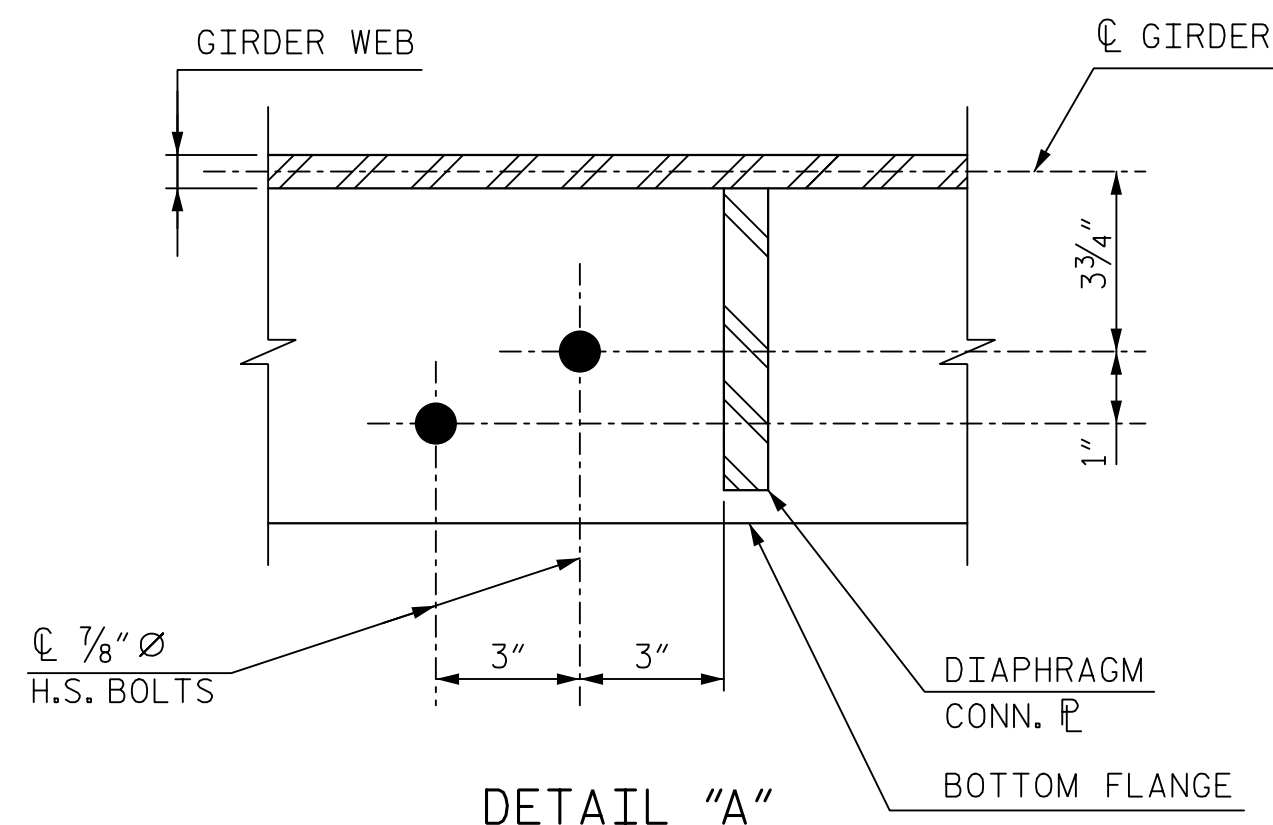
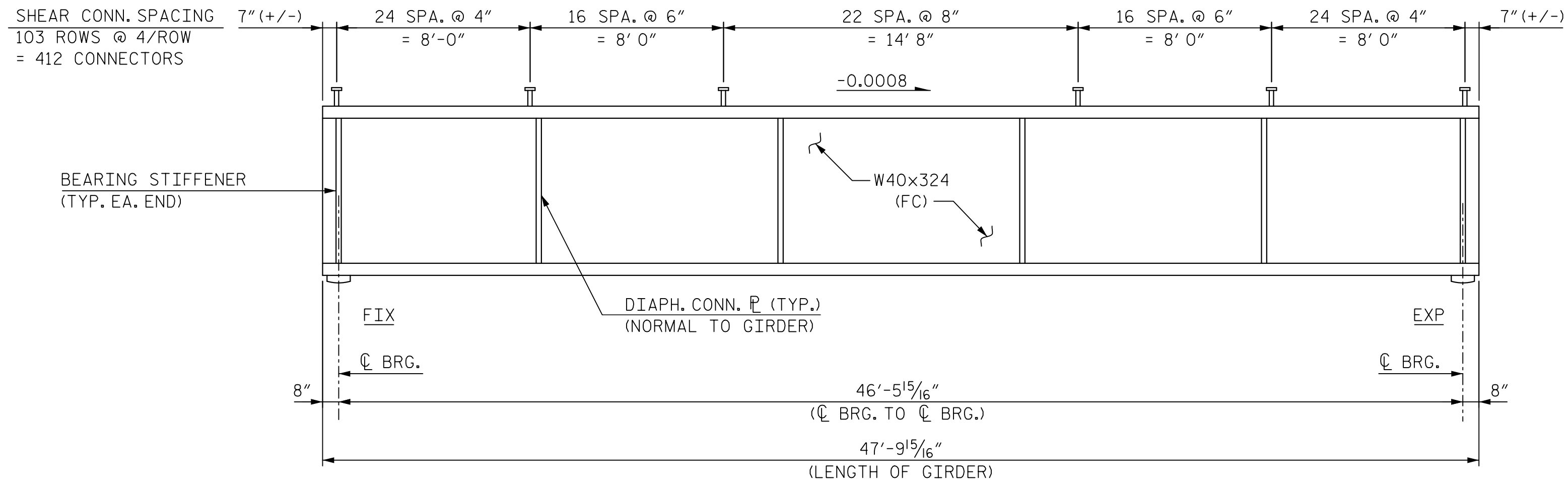


SPAN B
FRAMING PLAN

NOTES:

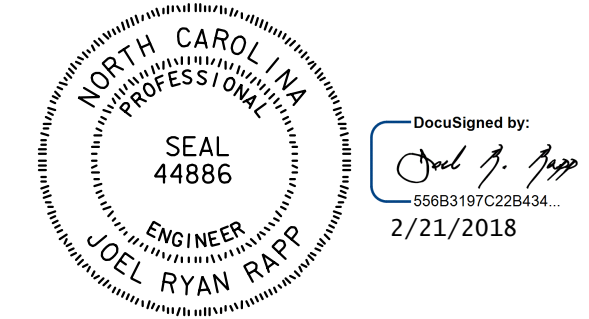
- ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.
- ALL C PIER AND C BEARINGS ARE PARALLEL.
- NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.
- REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:
 - STRUCTURAL STEEL NOTES
 - DIAPHRAGM DETAILS
 - STIFFENER AND CONNECTOR P DETAILS
 - SHEAR CONNECTOR DETAILS
- FOR BEARINGS, SEE "BEARING DETAILS SPAN B AND SPAN C" SHEET.
- FOR DRAIN PIPE SUPPORT DETAILS, SEE "STRUCTURE DRAINAGE DETAILS" SHEETS.
- FC = "FRACTURE CRITICAL"

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



BOTTOM FLANGE GIRDER END DETAILS - SPAN B

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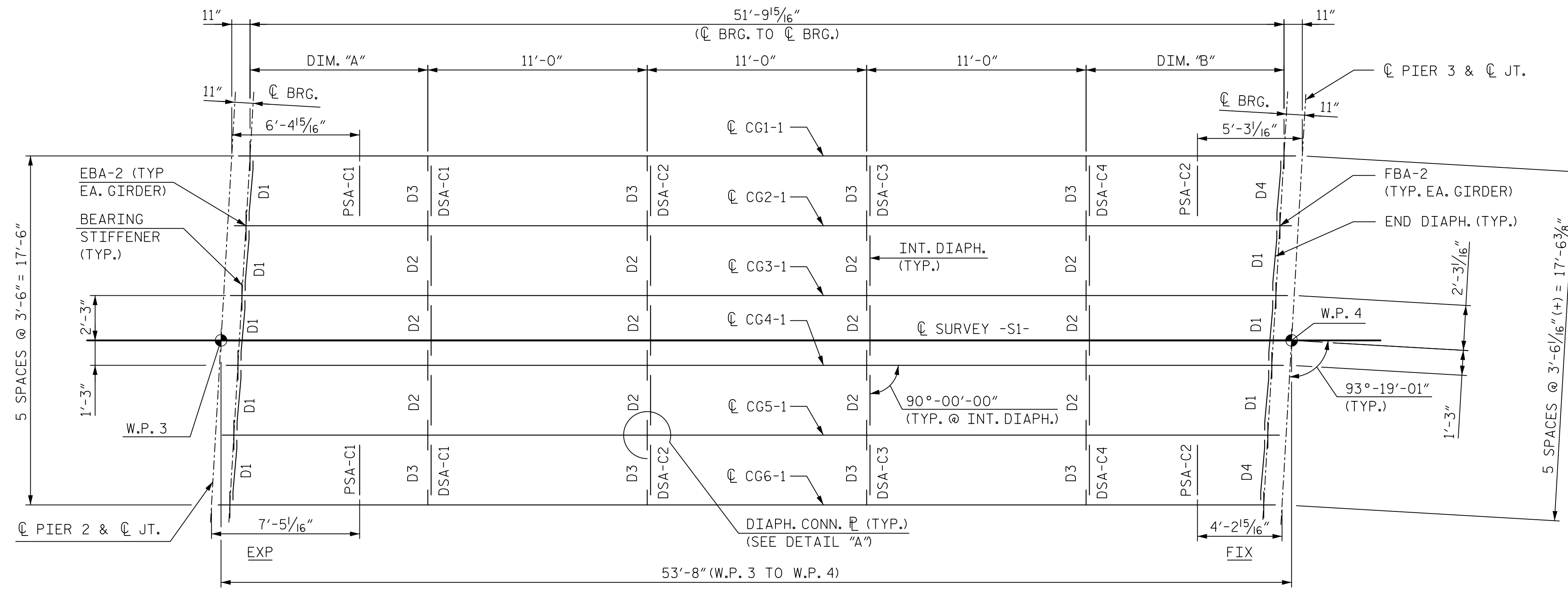


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2			4			21



SPAN C FRAMING PLAN

NOTES:
 ALL DIMENSIONS ON THIS DRAWING ARE HORIZONTAL.
 ALL CL PIERS AND CL BEARINGS ARE PARALLEL.
 NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.

REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR:

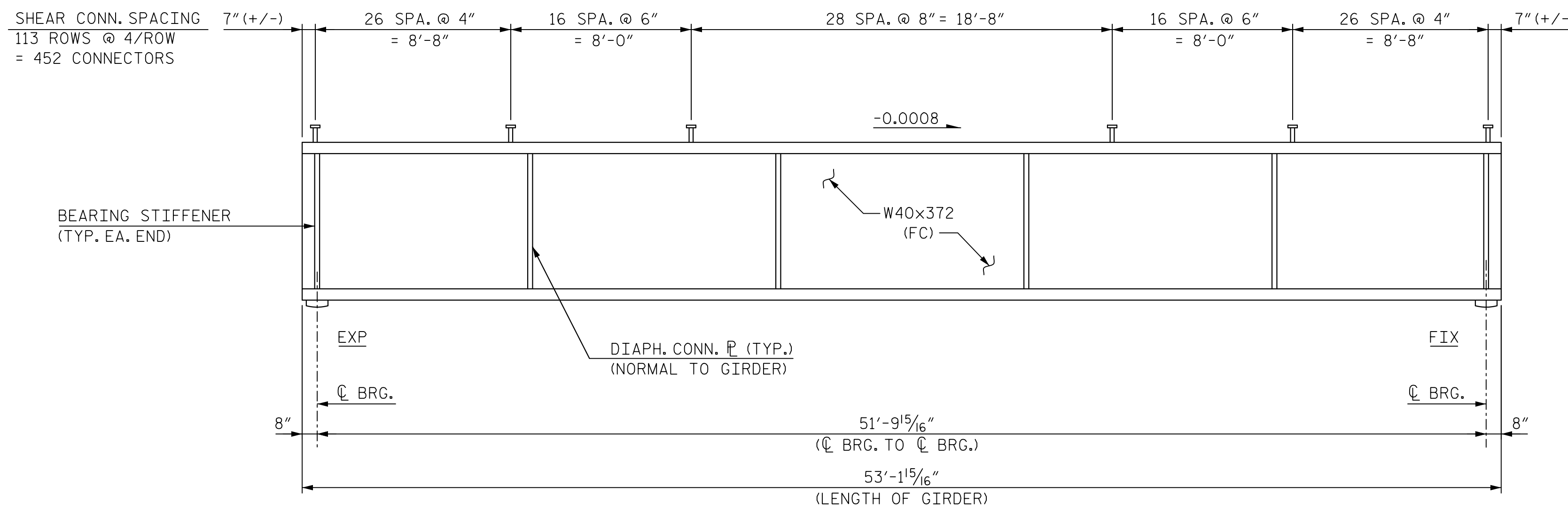
- STRUCTURAL STEEL NOTES
- DIAPHRAGM DETAILS
- STIFFENER AND CONNECTOR P DETAILS
- SHEAR CONNECTOR DETAILS

FOR BEARINGS, SEE "BEARING DETAILS SPAN B AND SPAN C" SHEET.

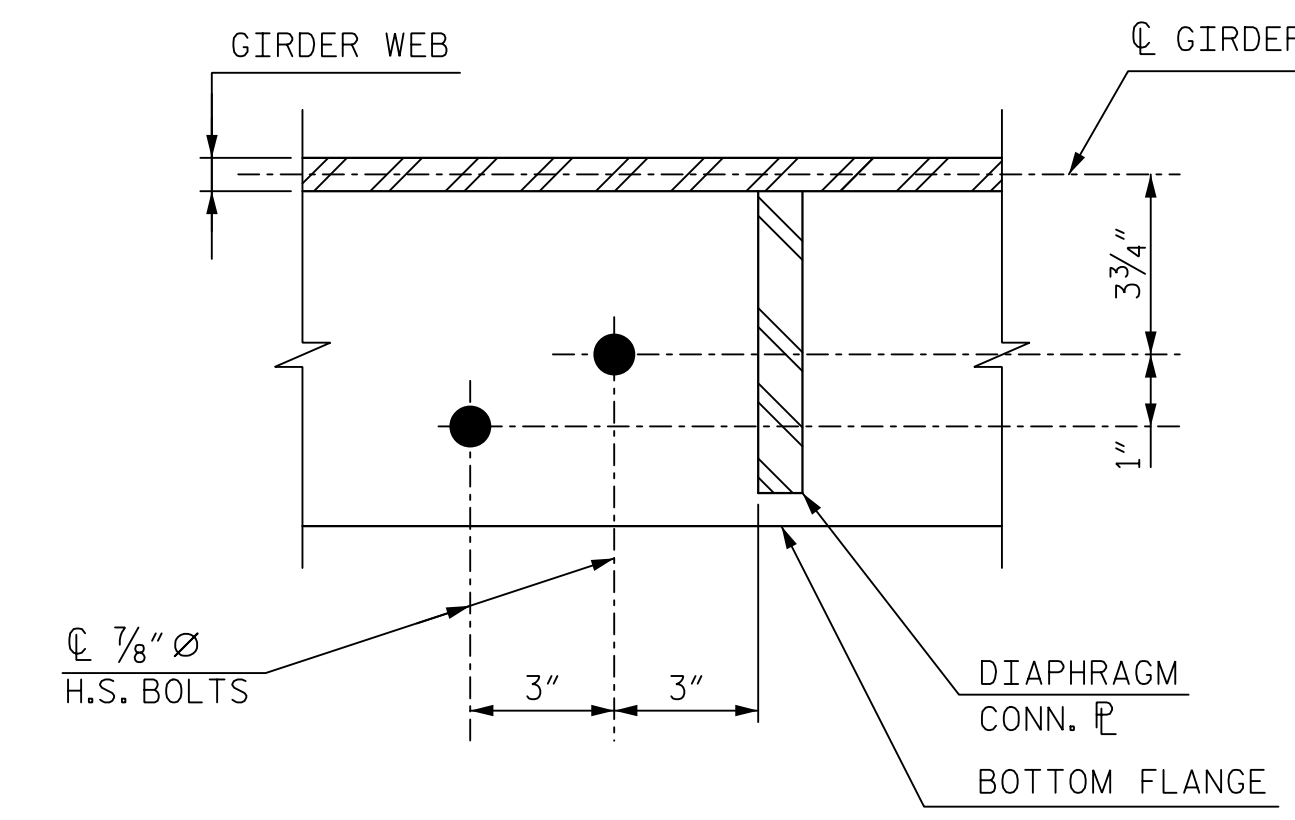
FOR DRAIN PIPE SUPPORT DETAILS, SEE "STRUCTURE DRAINAGE DETAILS" SHEETS.

FC = "FRACTURE CRITICAL"

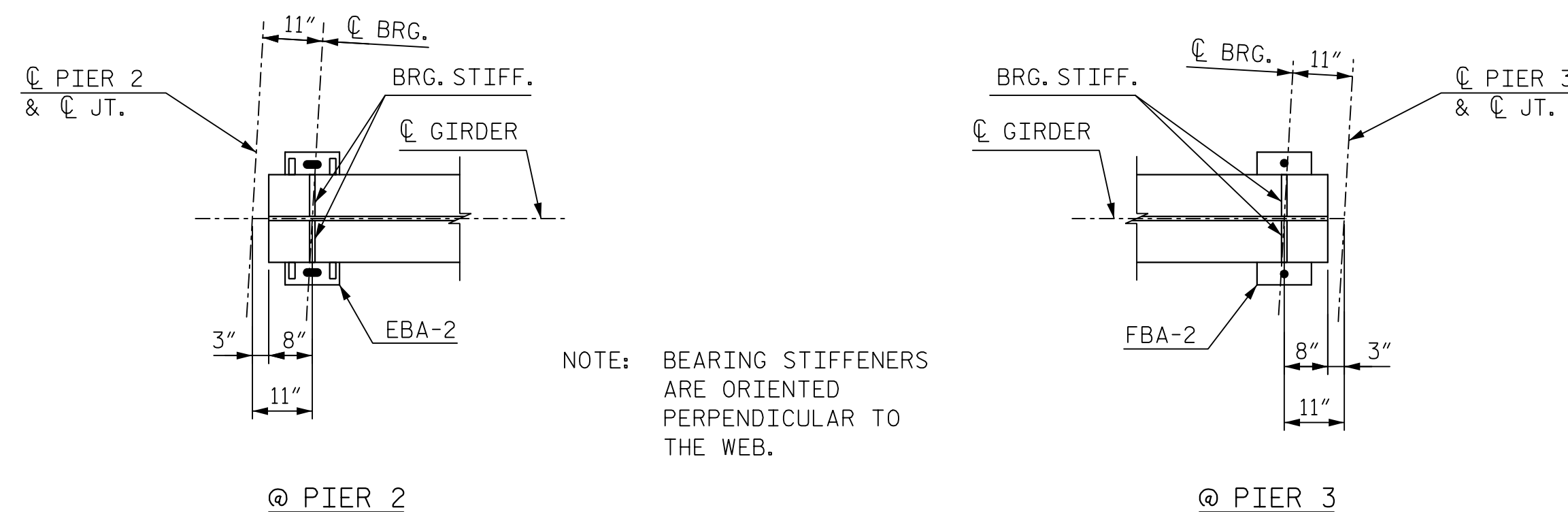
SPAN C GIRDER DIMENSIONS		
GIRDER	DIM. "A"	DIM. "B"
CG1-1	8'-10 ⁷ / ₈ "	9'-11 ¹ / ₁₆ "
CG2-1	9'-1 ⁵ / ₁₆ "	9'-8 ⁵ / ₈ "
CG3-1	9'-3 ³ / ₄ "	9'-6 ³ / ₁₆ "
CG4-1	9'-6 ³ / ₁₆ "	9'-3 ³ / ₄ "
CG5-1	9'-8 ⁵ / ₈ "	9'-1 ⁵ / ₁₆ "
CG6-1	9'-11 ¹ / ₁₆ "	8'-10 ⁷ / ₈ "



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

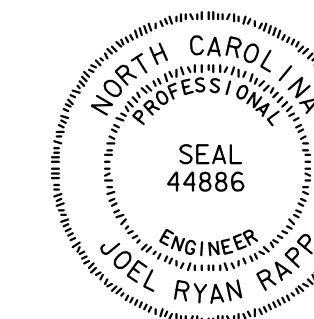


DETAIL "A" (RIGHT SIDE OF WEB SHOWN, LEFT SIDE SIMILAR)



BOTTOM FLANGE GIRDER END DETAILS - SPAN C

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 MECKLENBURG COUNTY
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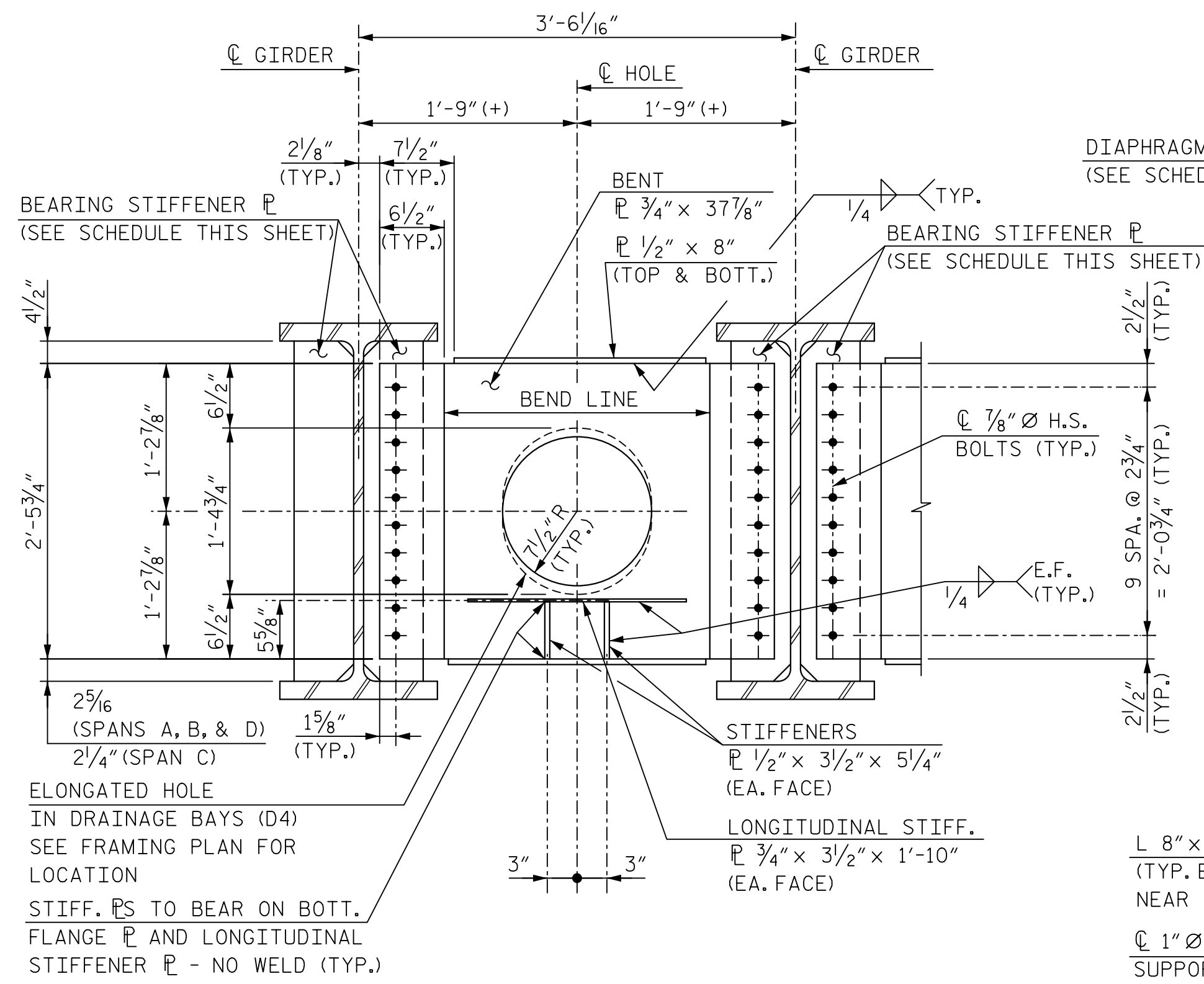
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN
 AND GIRDER DETAILS
 SPAN C

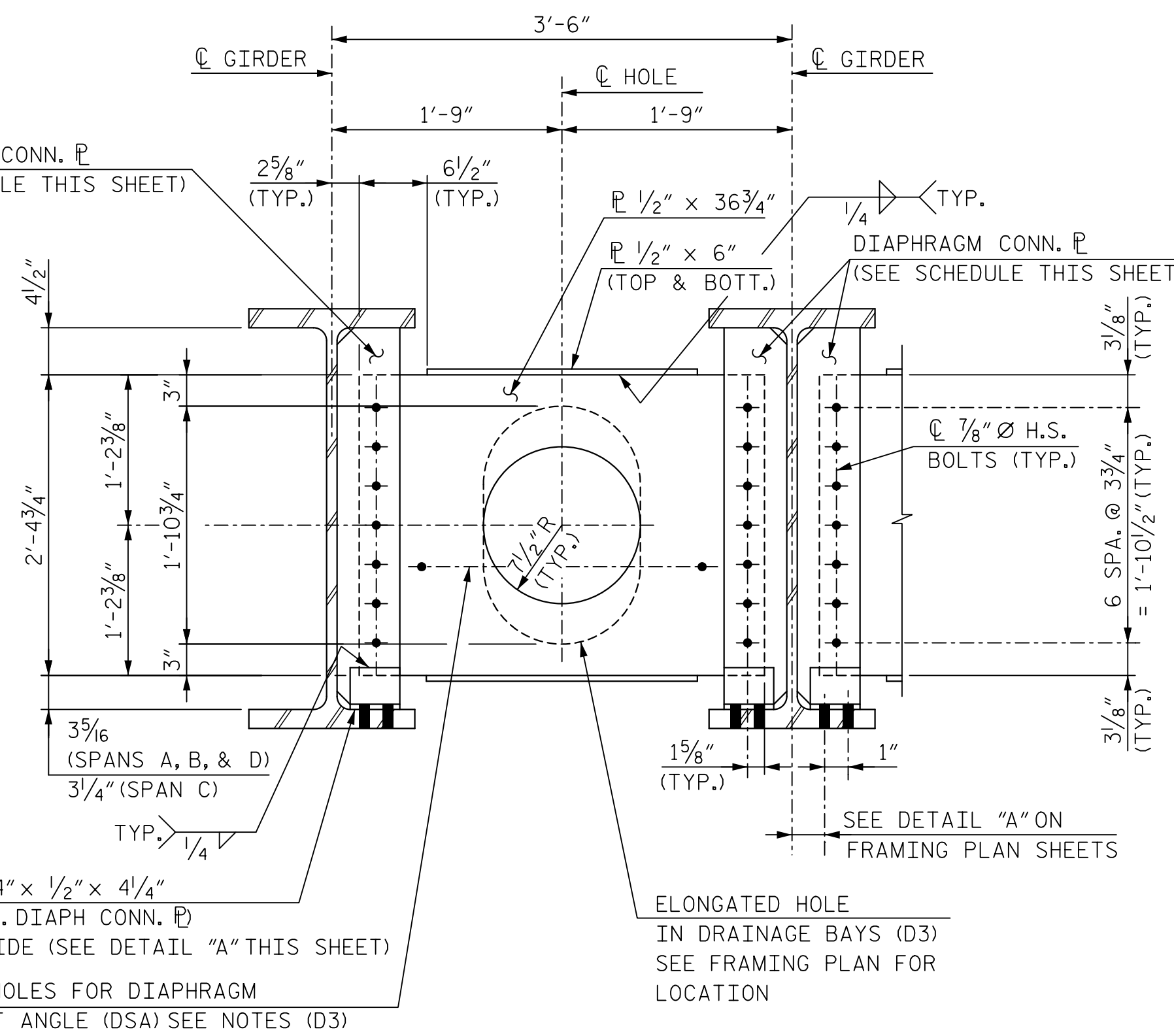
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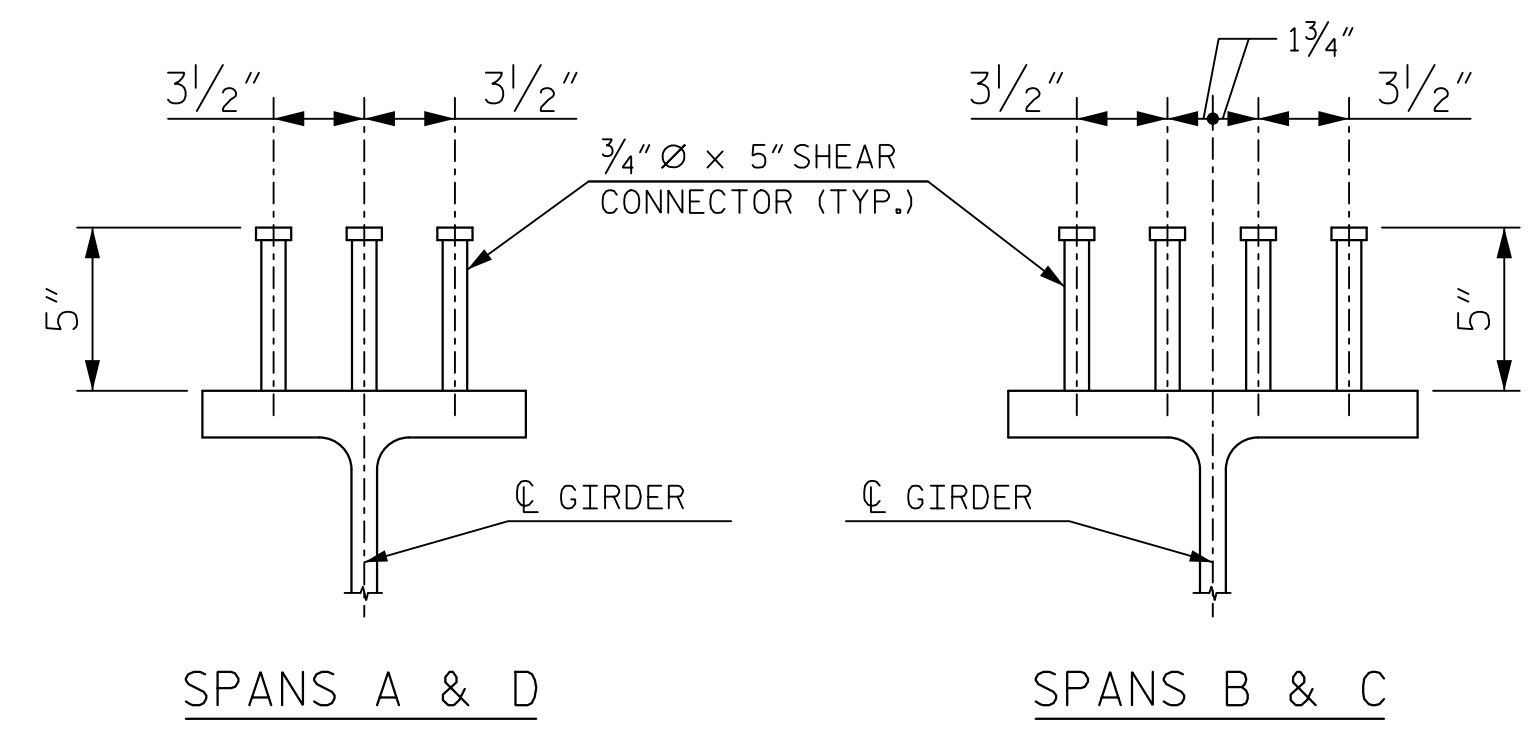
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NO.	BY	DATE	NO.	BY	DATE	S4-12
1			3			TOTAL SHEETS
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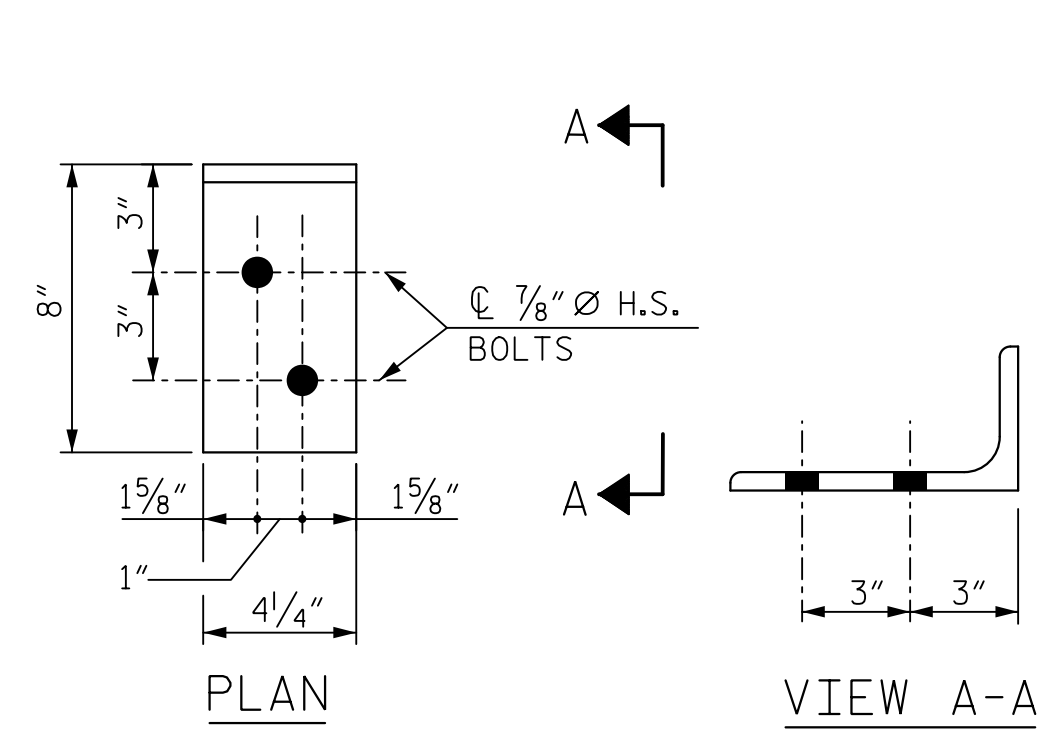
SECTION AT END DIAPHRAGM (D1 & D4)



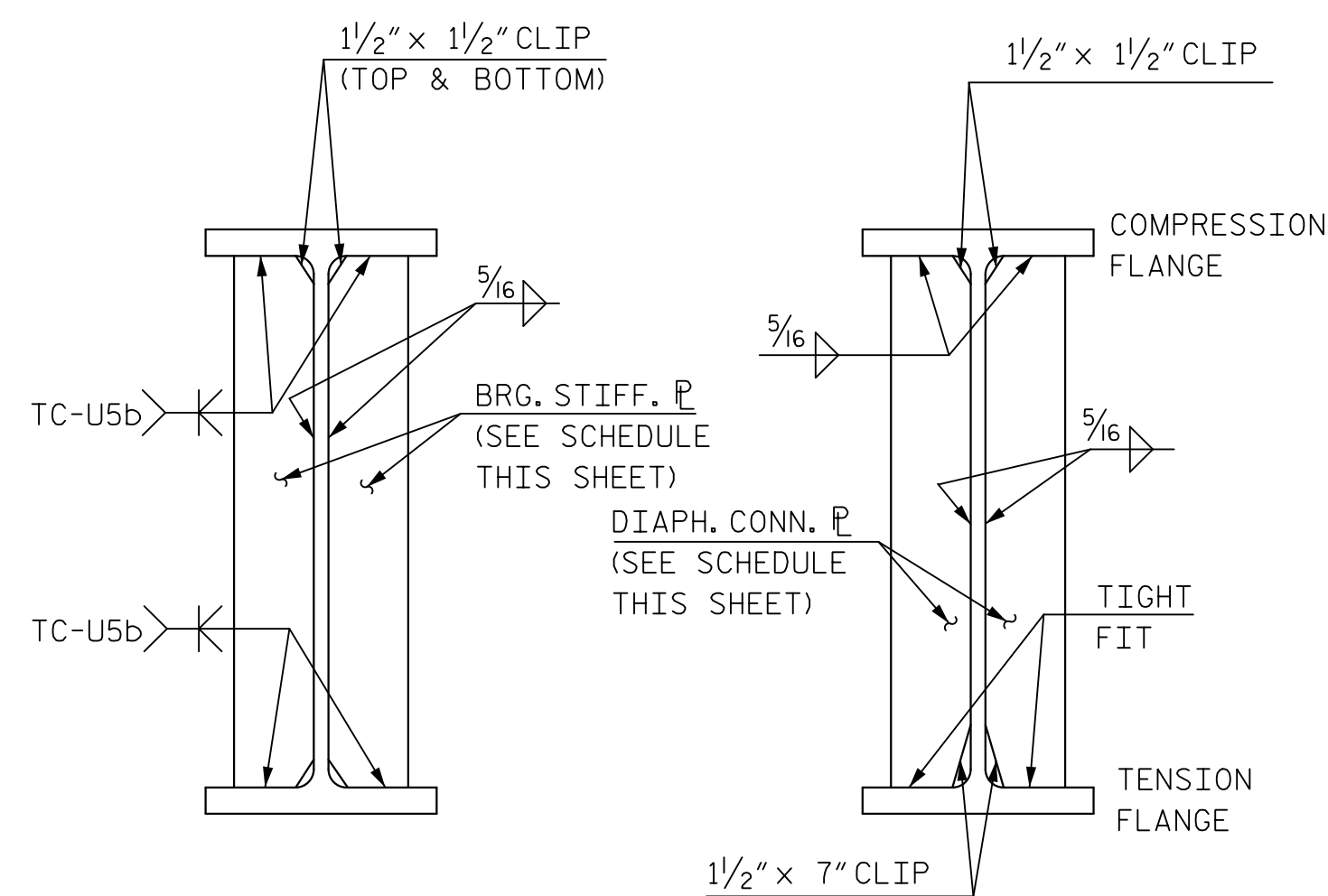
SECTION AT INTERMEDIATE DIAPHRAGM (D2 & D3)



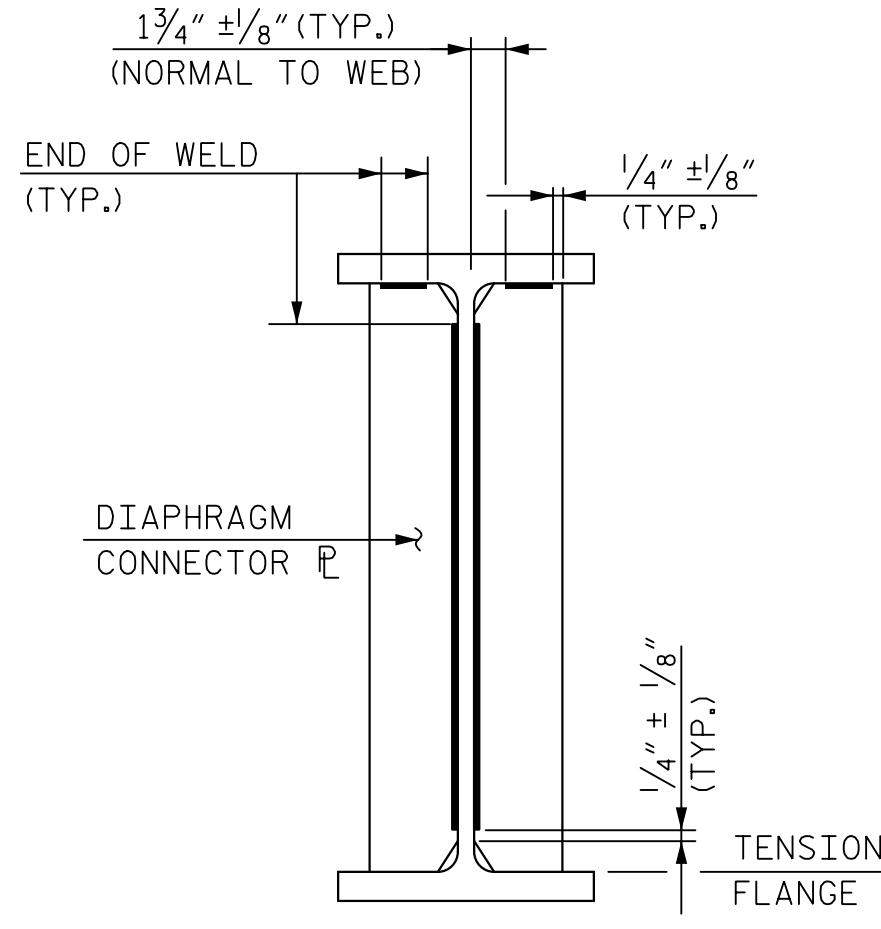
SHEAR CONNECTOR DETAILS



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



STIFFENER/CONN. PLATE DETAILS



WELD TERMINATION DETAIL
(FILLET WELDS ONLY)

STRUCTURAL STEEL NOTES

STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS:

- W40x372, W40x324, AND W40x211 MAIN GIRDERS: A709, GRADE 50
- 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 1.14. NOTCH TOUGHNESS REQUIREMENTS AND TESTING SHALL BE BASED ON ZONE 2 REQUIREMENTS.

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

NC DOT RAILS DIVISION 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 BY NORFOLK SOUTHERN CORPORATION OR ITS AUTHORIZED AGENT. SEE STRUCTURAL STEEL SPECIAL PROVISIONS 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, GA. SHOP DRAWINGS SHALL BE LABELED "NORFOLK SOUTHERN MP 377.64".

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.

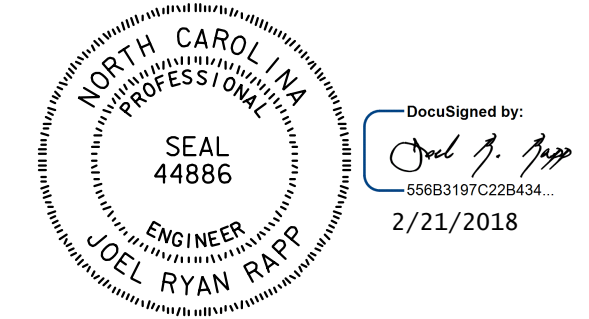
ALL WELDING CONNECTIONS SHALL BE MADE WITH SERIES E70 WELDING ELECTRODES.

FOR DIAPHRAGM LOCATIONS, SEE FRAMING PLANS.

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

STIFFENER/CONN. PLATE SCHEDULE		
TYPE	SPANS A & D	SPANS B & C
BRG. STIFF.	PL 1/2" x 5"	PL 3/4" x 7"
DIAPH. CONN. PL	PL 1/2" x 5 1/2"	PL 1/2" x 6 1/2"

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

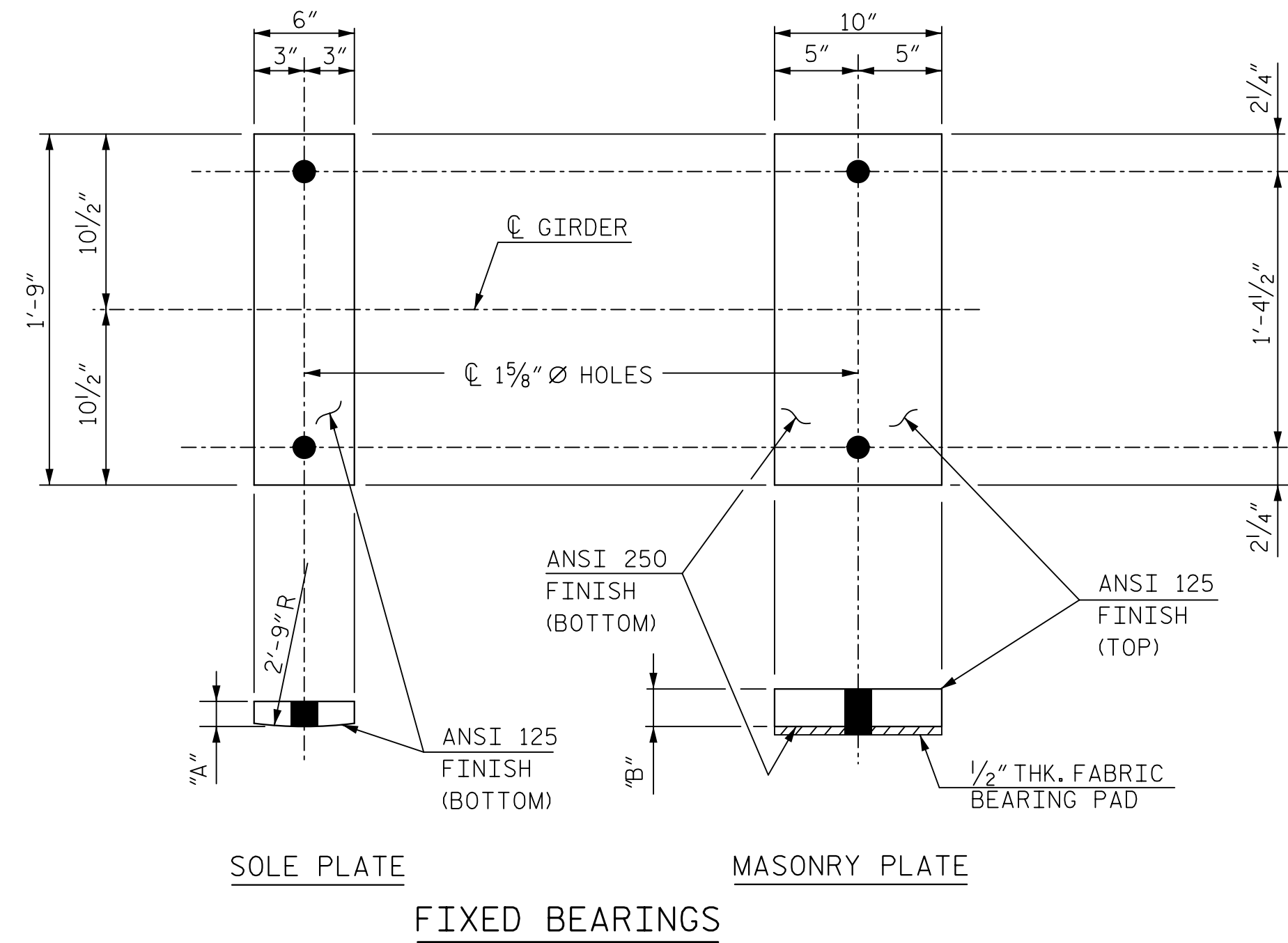


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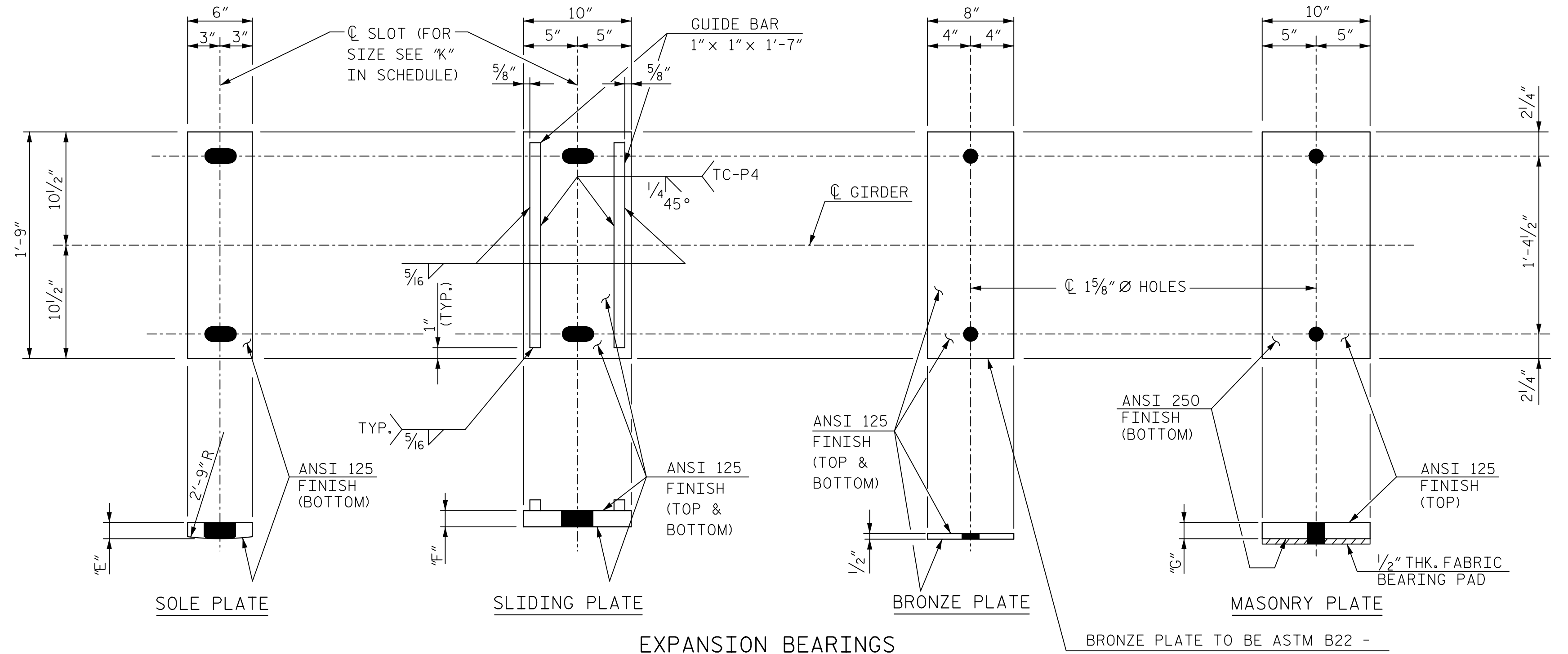
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
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STATE OF NORTH CAROLINA
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 STRUCTURAL STEEL DETAILS

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	NO.	BY	DATE	NO.		BY	DATE
	1		8/17	3			
DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u> CHECKED BY <u>K. ERVIN</u> DATE <u>9/17</u> DWG. NO. 13	2		4			TOTAL SHEETS 21	

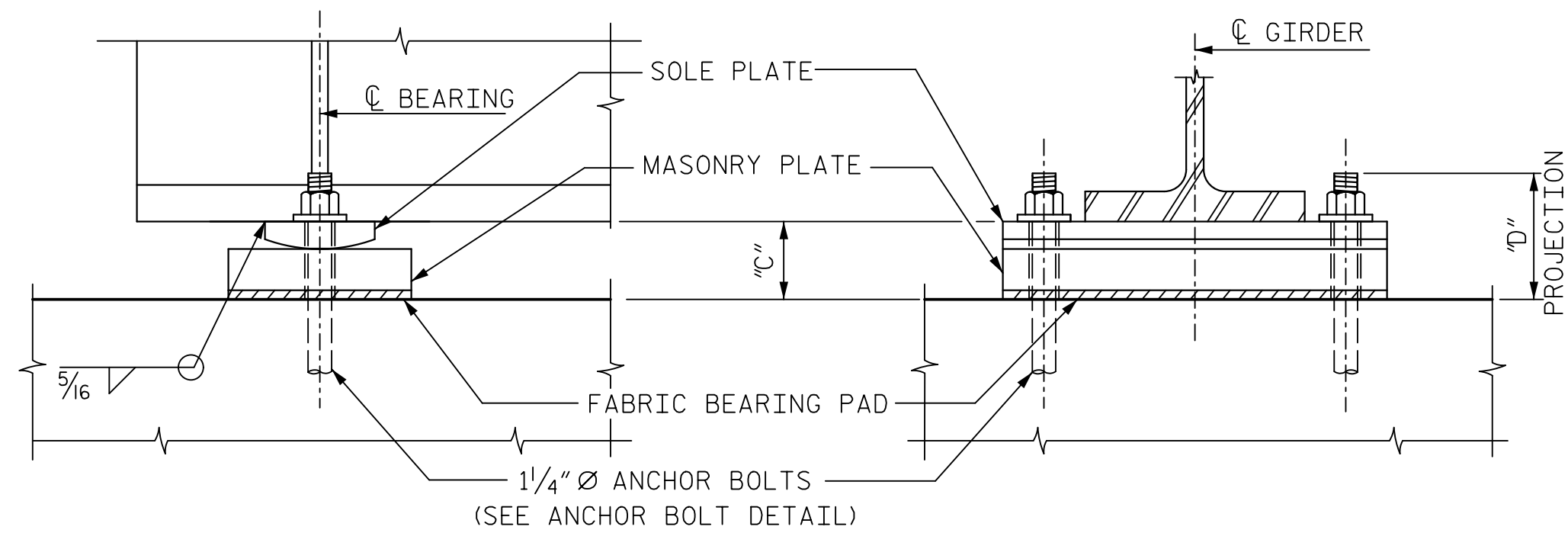


FIXED BEARINGS

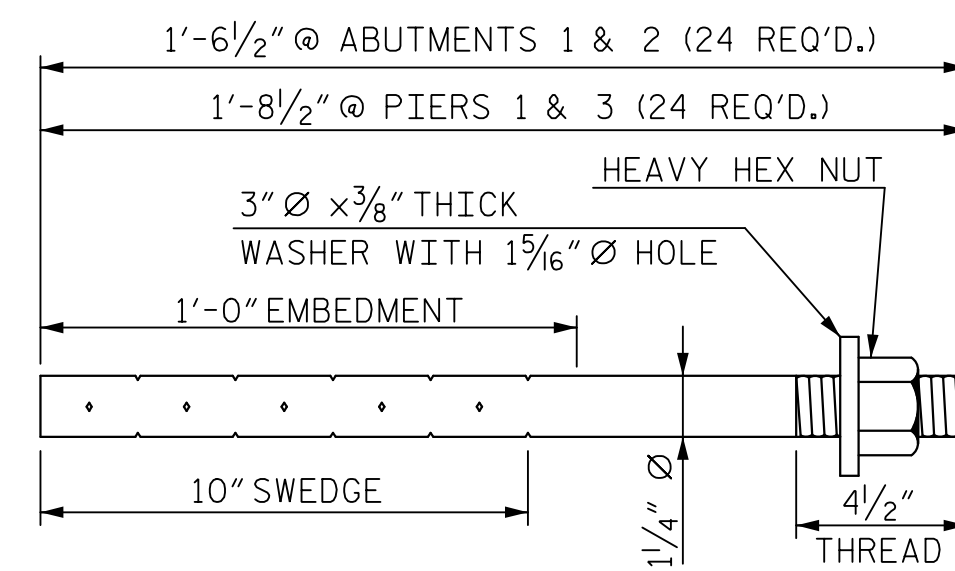


EXPANSION BEARINGS

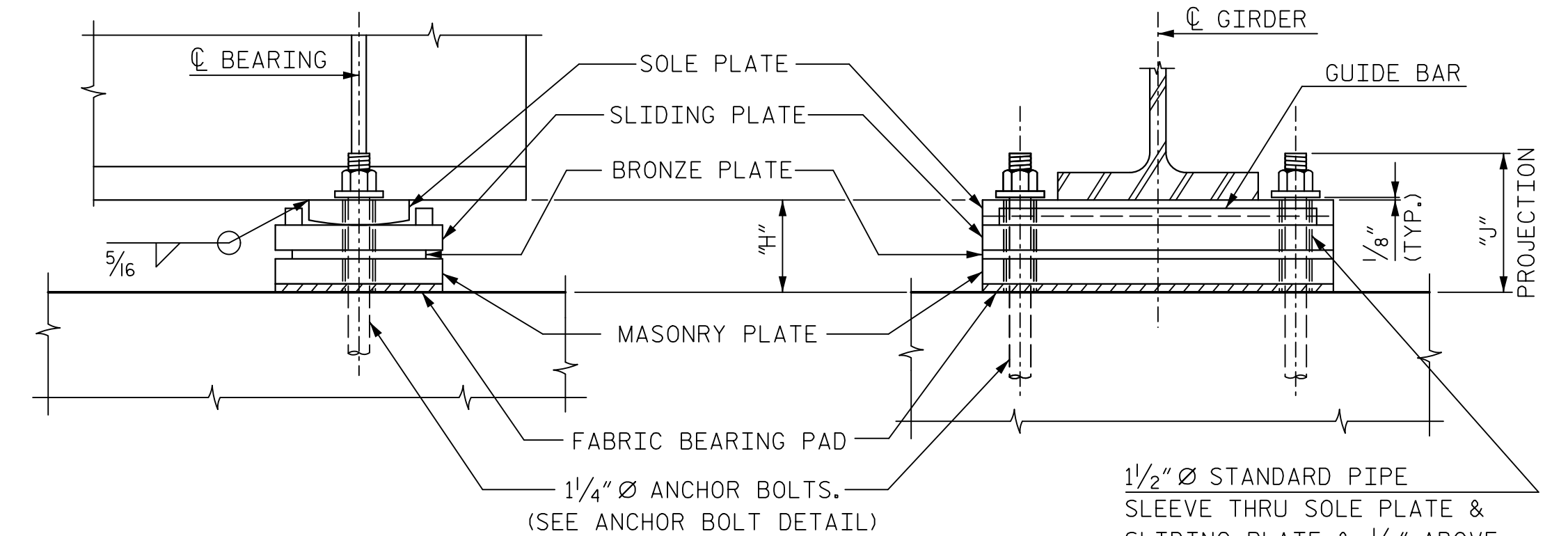
BRONZE PLATE TO BE ASTM B22 - COPPER ALLOY 911 OR ASTM B100 - COPPER ALLOY 510. TOP SURFACE TO BE SELF LUBRICATING.



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



ANCHOR BOLT DETAIL



EXPANSION BEARING ASSEMBLY (EBA-1)
(12 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.

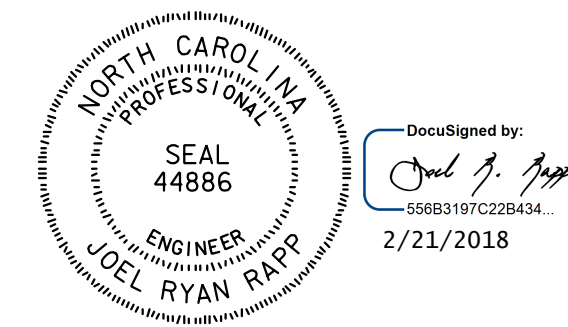
(D) THE TOP SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED IN THE VICINITY OF THE WELD BETWEEN THE SOLE PLATE AND THE BOTTOM FLANGE.

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

FOR SELF LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR ADDITIONAL NOTES.

BEARING PLATE SCHEDULE										
GIRDER	DIMENSIONS									
	FIXED BEARING (FBA-1)					EXPANSION BEARING (EBA-1)				
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"
AG1-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
AG2-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
AG3-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
AG4-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
AG5-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
AG6-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
DG1-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
DG2-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
DG3-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
DG4-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
DG5-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"
DG6-1	1 1/2"	2"	4"	6 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3"



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CHECKED BY R. RAPP DATE 9/17 DWG. NO. 14

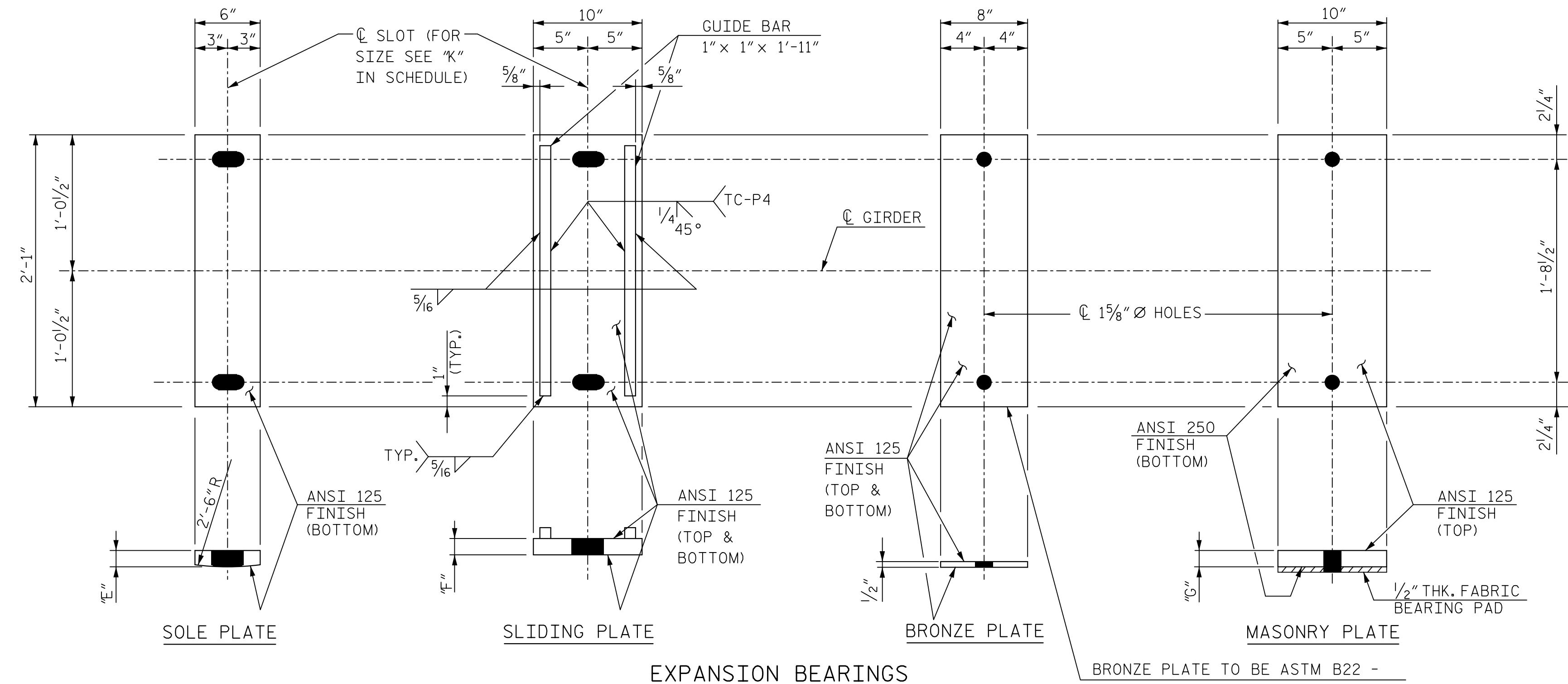
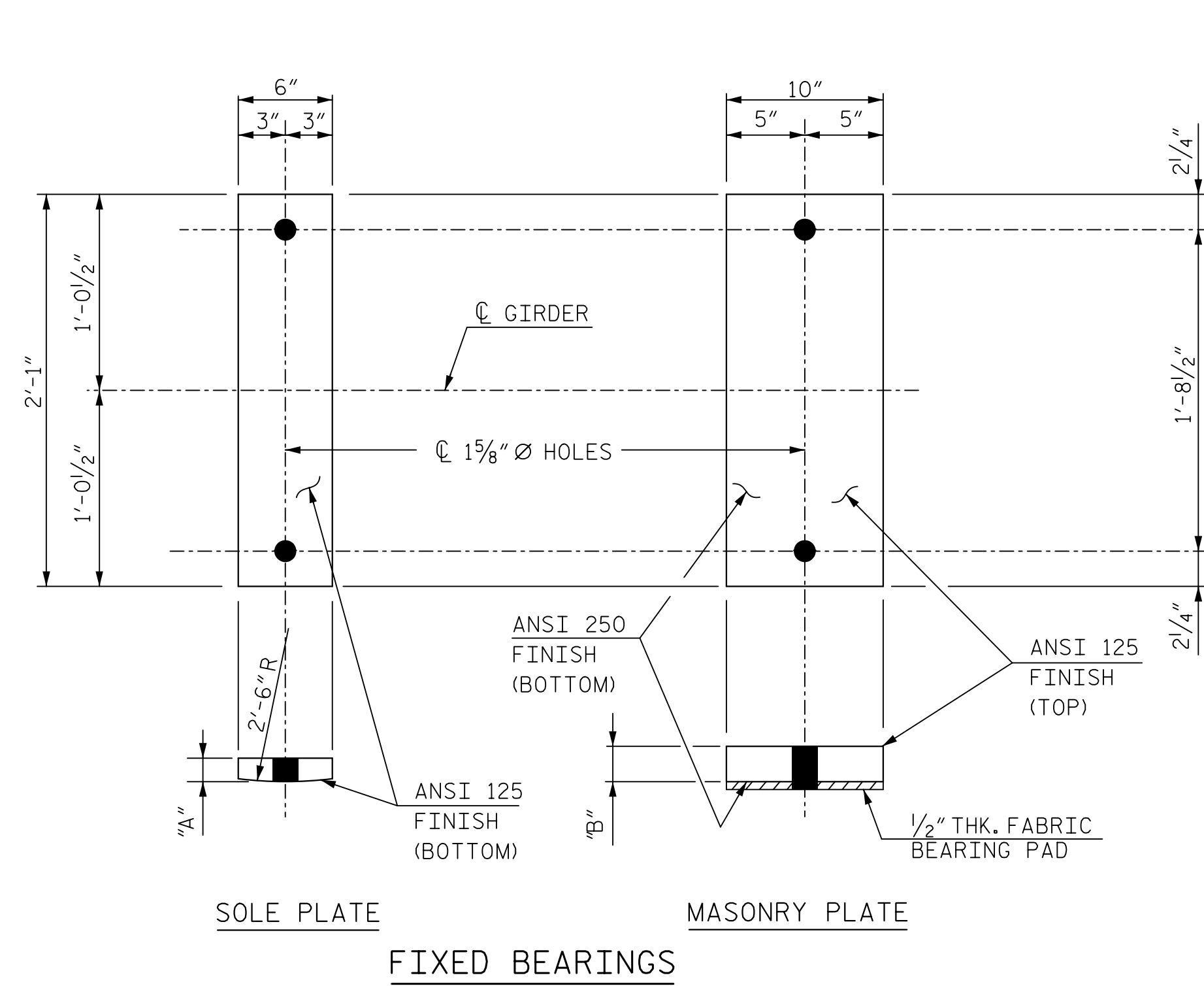
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 23+65.83 -S1-

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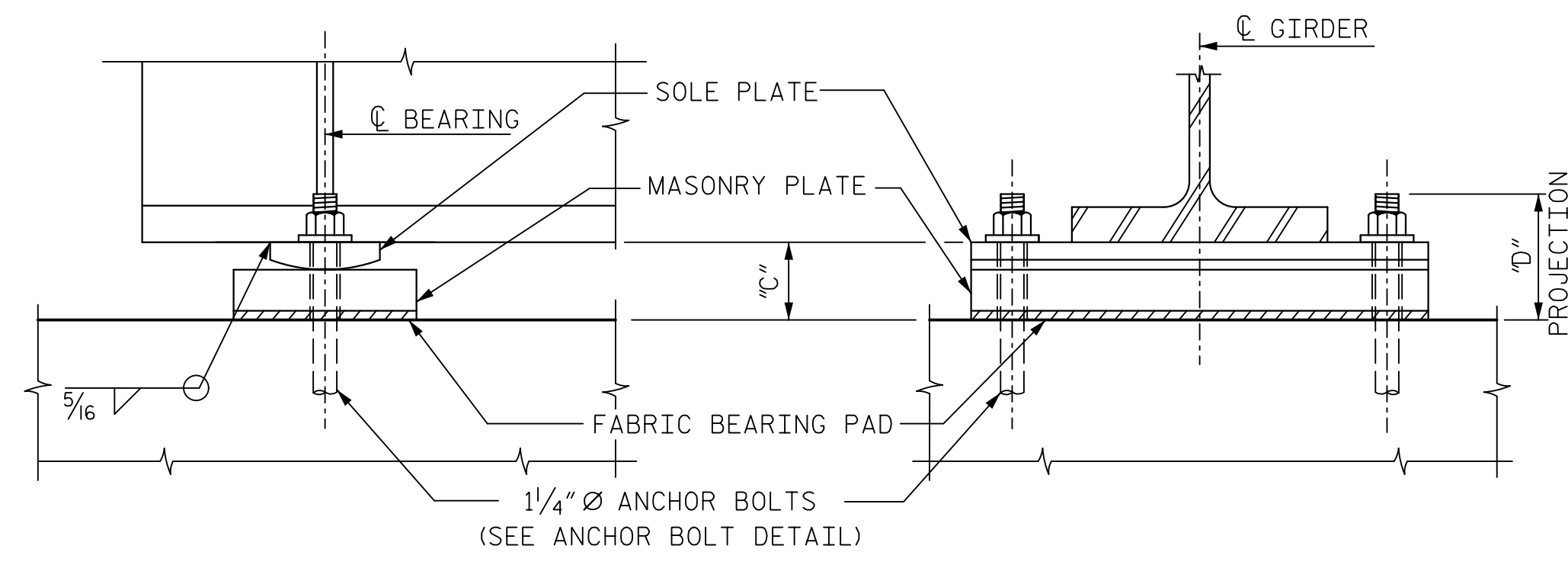
SUPERSTRUCTURE

BEARING DETAILS
SPAN A AND SPAN D

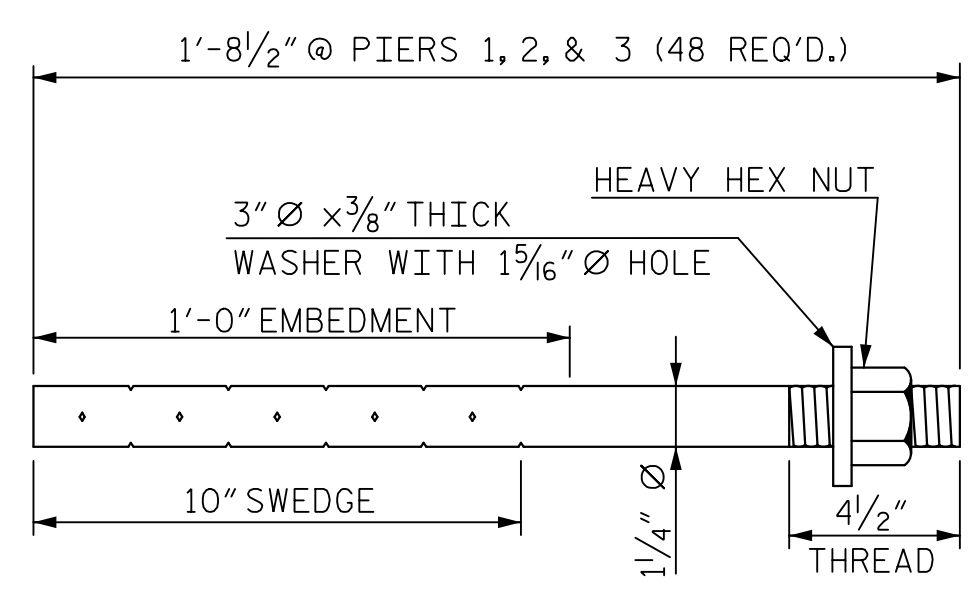
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NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 21
2			4			



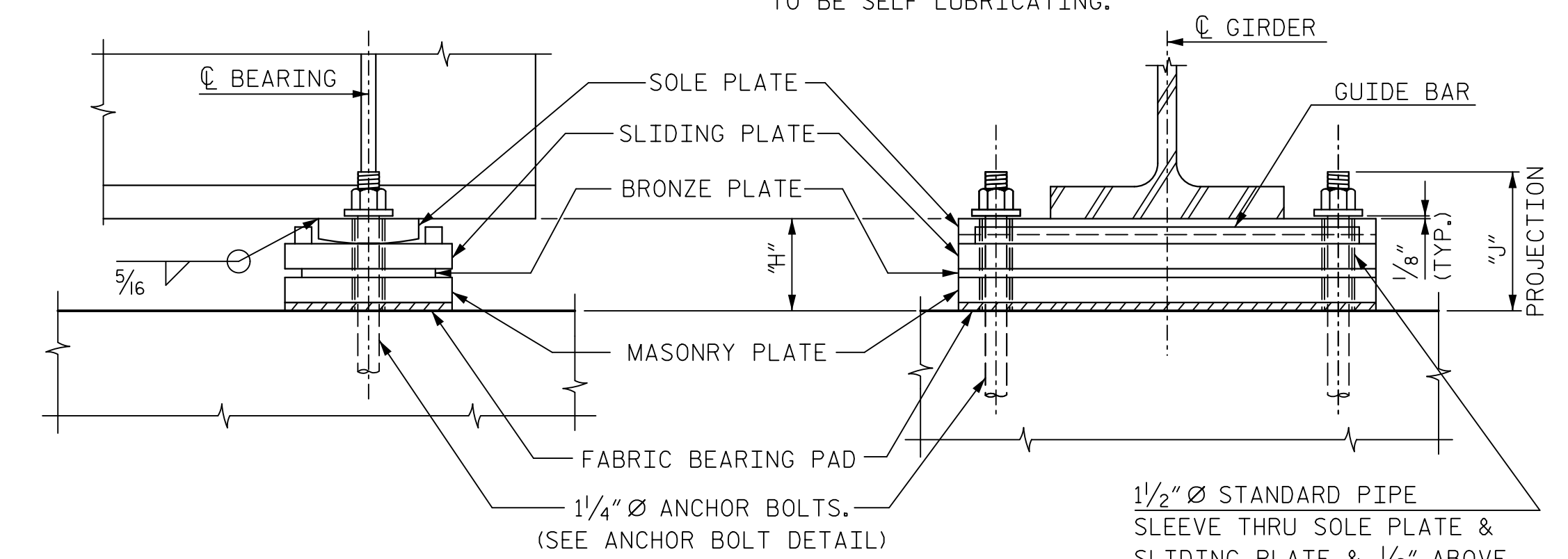
BRONZE PLATE TO BE ASTM B22 - COPPER ALLOY 911 OR ASTM B100 - COPPER ALLOY 510. TOP SURFACE TO BE SELF LUBRICATING.



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



ANCHOR BOLT DETAIL



EXPANSION BEARING ASSEMBLY (EBA-2)
(12 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.

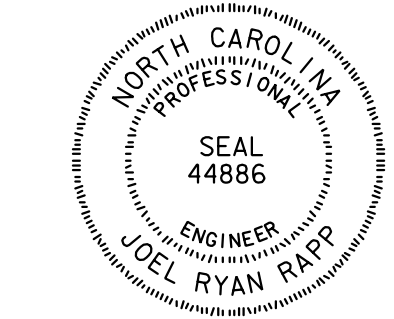
- (A) THE SLIDING PLATE (EXPANSION BEARING) SHALL NOT BE PAINTED BUT SHALL RECEIVE A COAT OF LUBRICATION.
- (B) THE MASONRY PLATE (FIXED AND EXPANSION BEARINGS) SHALL NOT BE PAINTED.
- (C) THE BOTTOM SURFACE OF THE SOLE PLATE SHALL NOT BE PAINTED BUT SHALL RECEIVE A SINGLE COAT OF PRIMER APPLIED IN THE 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 ACRYLIC PAINT SYSTEM FOR STRUCTURAL STEEL, SEE SPECIAL PROVISIONS.

FOR SELF LUBRICATING EXPANSION BEARING ASSEMBLIES, SEE SPECIAL PROVISIONS.

REFER TO "STRUCTURAL STEEL DETAILS" SHEET FOR ADDITIONAL NOTES.

BEARING PLATE SCHEDULE										
GIRDER	DIMENSIONS									
	FIXED BEARING (FBA-2)					EXPANSION BEARING (EBA-2)				
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"J"	"K"
BG1-1	1 1/2"	3/4"	5/4"	8 1/2"	1 1/2"	1 1/2"	1 7/8"	5 7/8"	8 1/2"	2" x 3 1/2"
BG2-1	1 1/2"	3/4"	5/4"	8 1/2"	1 1/2"	1 1/2"	1 7/8"	5 7/8"	8 1/2"	2" x 3 1/2"
BG3-1	1 1/2"	3/4"	5/4"	8 1/2"	1 1/2"	1 1/2"	1 7/8"	5 7/8"	8 1/2"	2" x 3 1/2"
BG4-1	1 1/2"	3/4"	5/4"	8 1/2"	1 1/2"	1 1/2"	1 7/8"	5 7/8"	8 1/2"	2" x 3 1/2"
BG5-1	1 1/2"	3/4"	5/4"	8 1/2"	1 1/2"	1 1/2"	1 7/8"	5 7/8"	8 1/2"	2" x 3 1/2"
BG6-1	1 1/2"	3/4"	5/4"	8 1/2"	1 1/2"	1 1/2"	1 7/8"	5 7/8"	8 1/2"	2" x 3 1/2"
CG1-1	1 1/2"	3/8"	5/8"	8 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3 1/2"
CG2-1	1 1/2"	3/8"	5/8"	8 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3 1/2"
CG3-1	1 1/2"	3/8"	5/8"	8 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3 1/2"
CG4-1	1 1/2"	3/8"	5/8"	8 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3 1/2"
CG5-1	1 1/2"	3/8"	5/8"	8 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3 1/2"
CG6-1	1 1/2"	3/8"	5/8"	8 1/2"	1 1/2"	1 1/2"	1 3/4"	5 3/4"	8 1/2"	2" x 3 1/2"



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2/21/2018

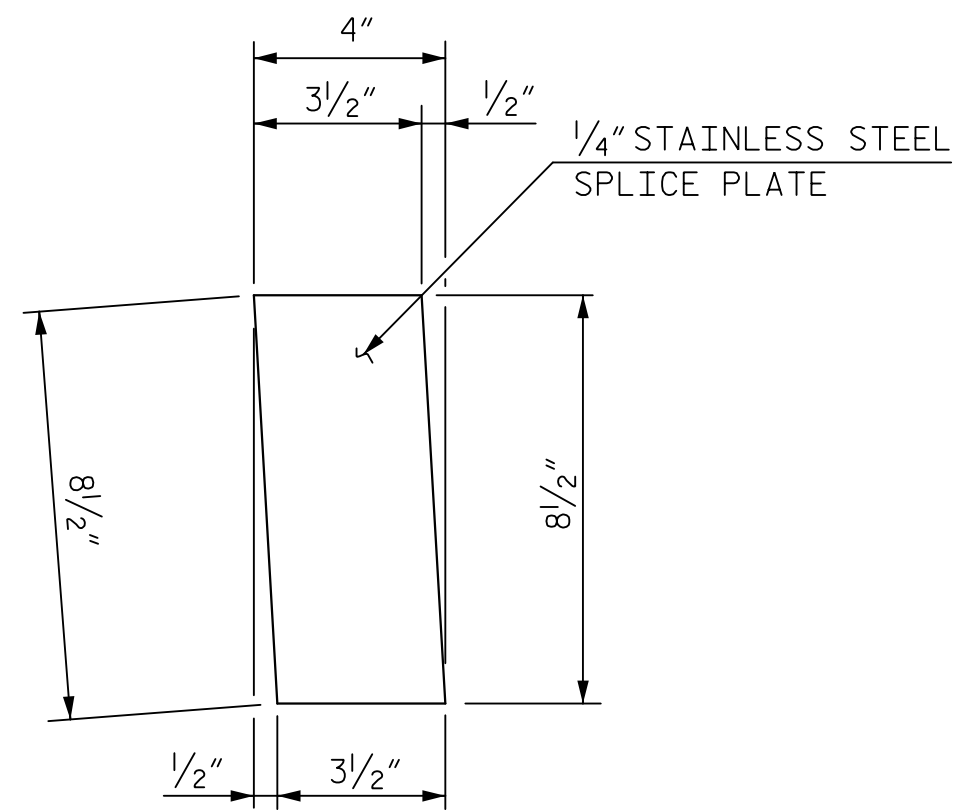
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PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 23+65.83 -S1-

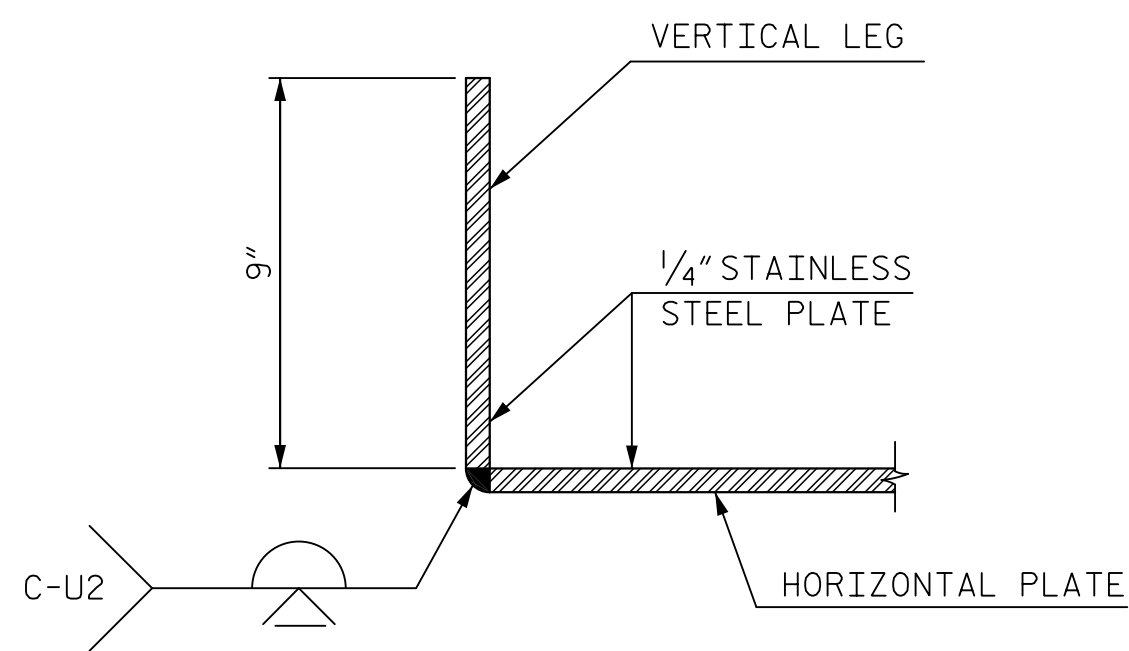
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BEARING DETAILS
SPAN B AND SPAN C

HNTB	HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	DATE 8/17 DATE 9/17	DWG. NO. 15
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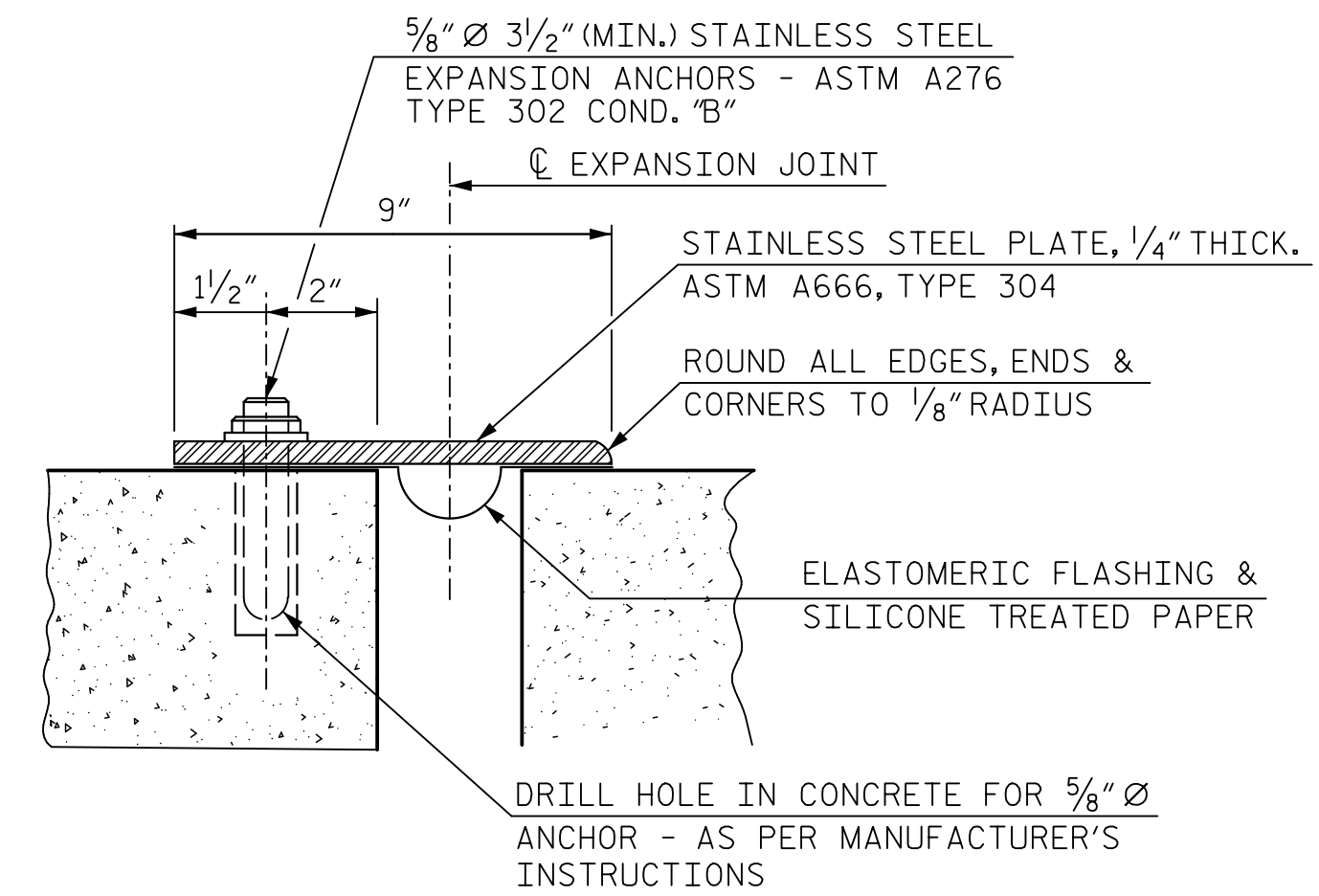
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NO.	BY	DATE	NO.	BY	DATE	S4-15
1			3			TOTAL SHEETS
2			4			21



DETAIL A



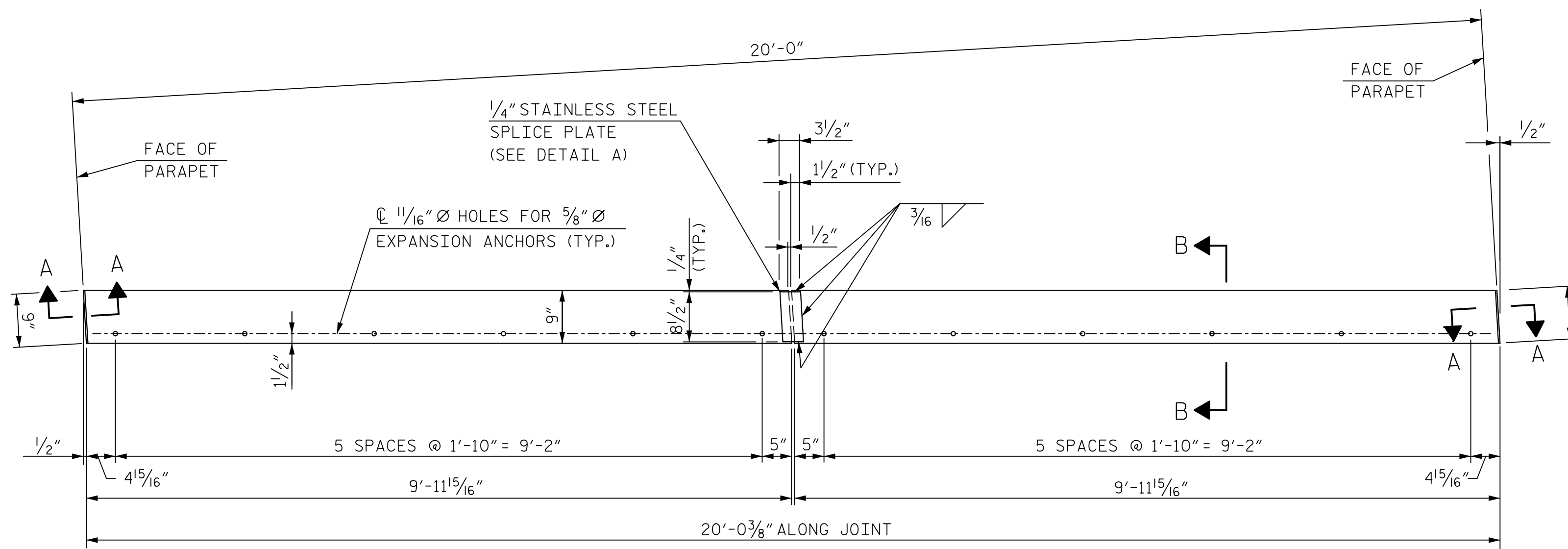
SECTION A-A



SECTION B-B

DETAIL OF EXPANSION ANCHOR AND PLATE

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

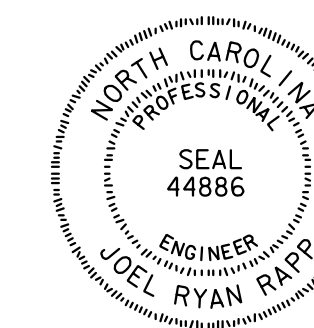


PLAN - EXPANSION PLATE
(5 REQUIRED)

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, SPAN B SIDE OF PIER 2 AND SPAN C SIDE OF PIER 3.

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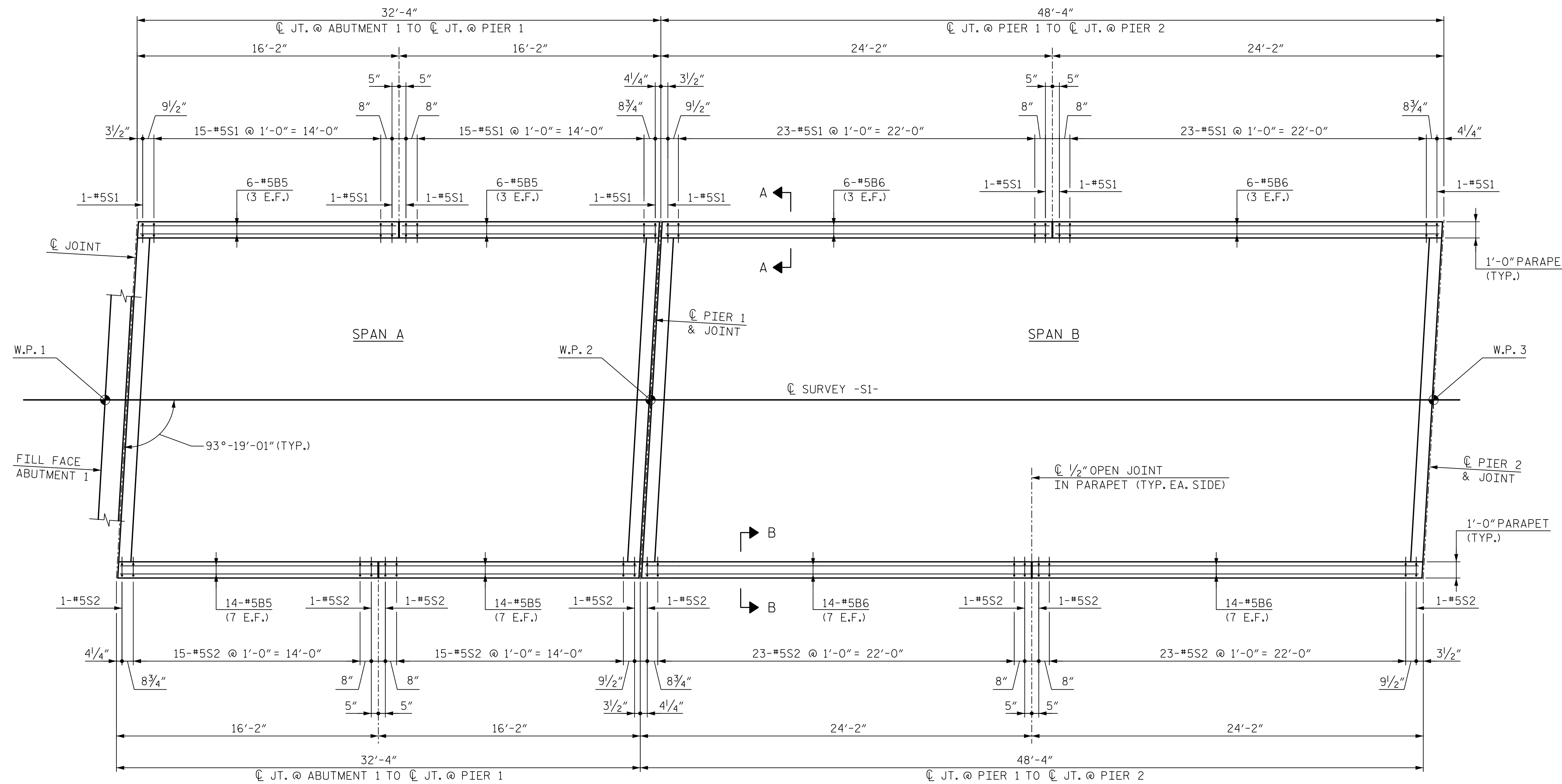
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 [Signature]
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
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 EXPANSION PLATE DETAILS

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 CHECKED BY R. RAPP DATE 9/17 DWG. NO. 16

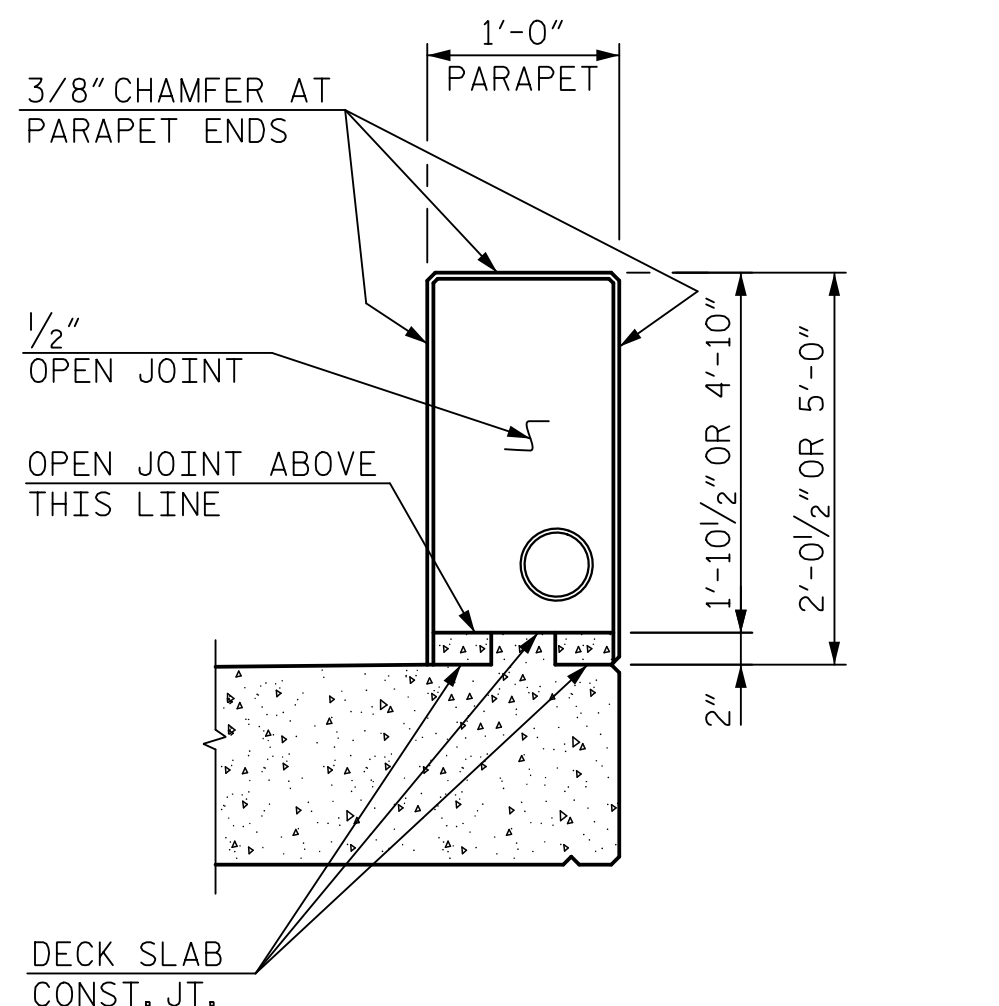
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NO.	BY	DATE	NO.	BY	DATE	S4-16
1			3			TOTAL SHEETS
2			4			21



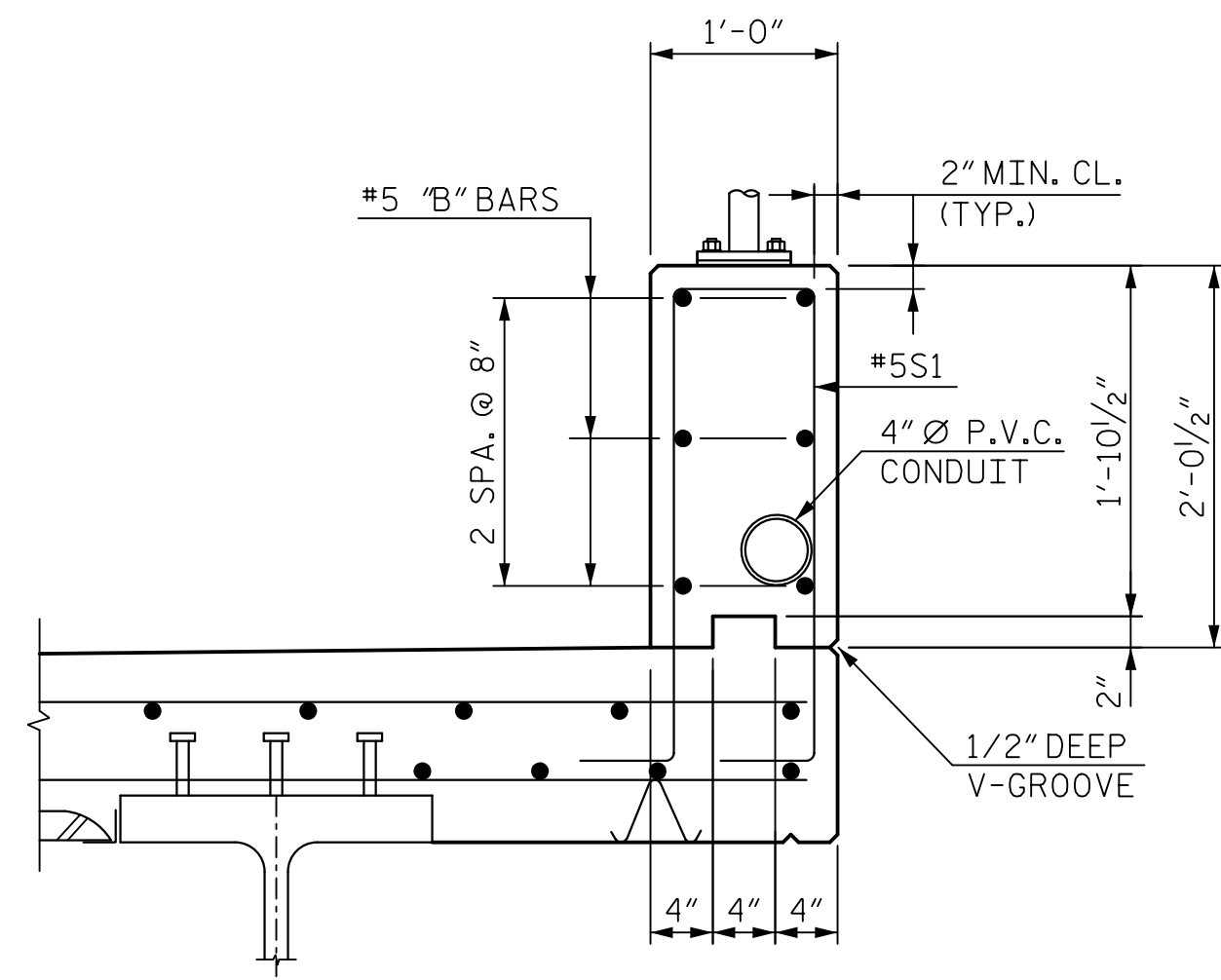
PLAN - SPAN A & SPAN B PARAPETS

NOTES:

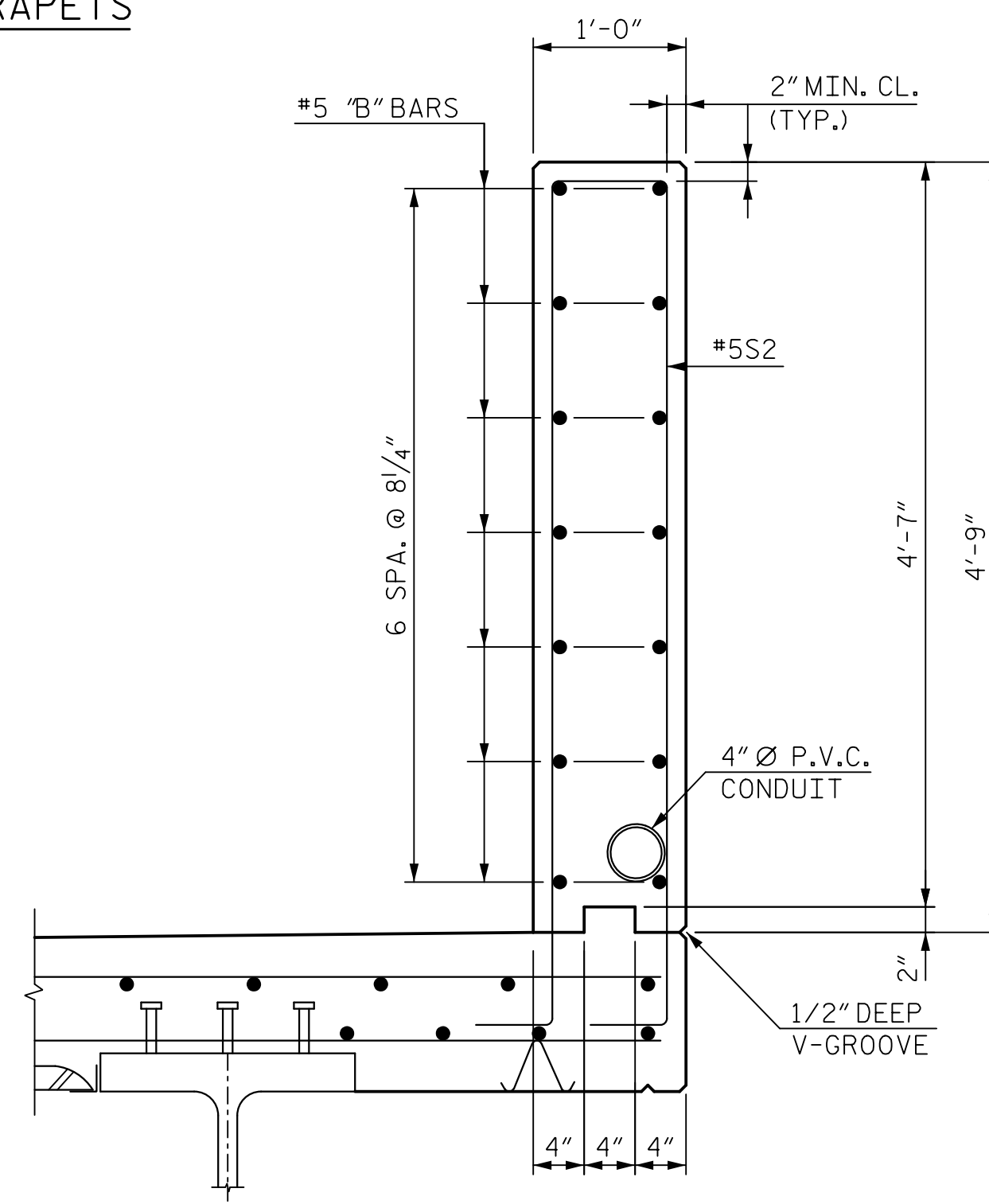
- ALUMINUM ARCHITECTURAL HANDRAIL NOT SHOWN FOR CLARITY.
- ALL HORIZONTAL DIMENSIONS SHOWN ARE MEASURED ALONG EXTERIOR FACE OF PARAPET.
- ALL REINFORCING SHALL BE EPOXY COATED.
- FOR LOCATION AND DETAILS OF SIGNAL CONDUIT IN CONCRETE PARAPET, SEE "TYPICAL SECTION" SHEET.
- FOR ALUMINUM ARCHITECTURAL 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.
- *5S1 AND *5S2 BARS IN PARAPET MAY BE SHIFTED SLIGHTLY TO MAINTAIN PROPER CLEARANCE TO EXPANSION JOINTS IN PARAPET.
- E.F. = EACH FACE
- PAYMENT FOR CONCRETE PARAPET SHALL BE INCLUDED IN THE UNIT COST PAY ITEM FOR CONCRETE PARAPET.
- PAY LENGTH = 331.7'



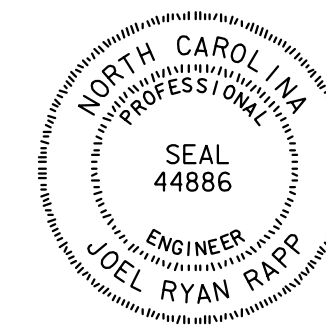
SECTION THRU OPEN JOINT IN PARAPET



SECTION A-A THRU PARAPET



SECTION B-B THRU PARAPET



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SHEET 1 OF 2

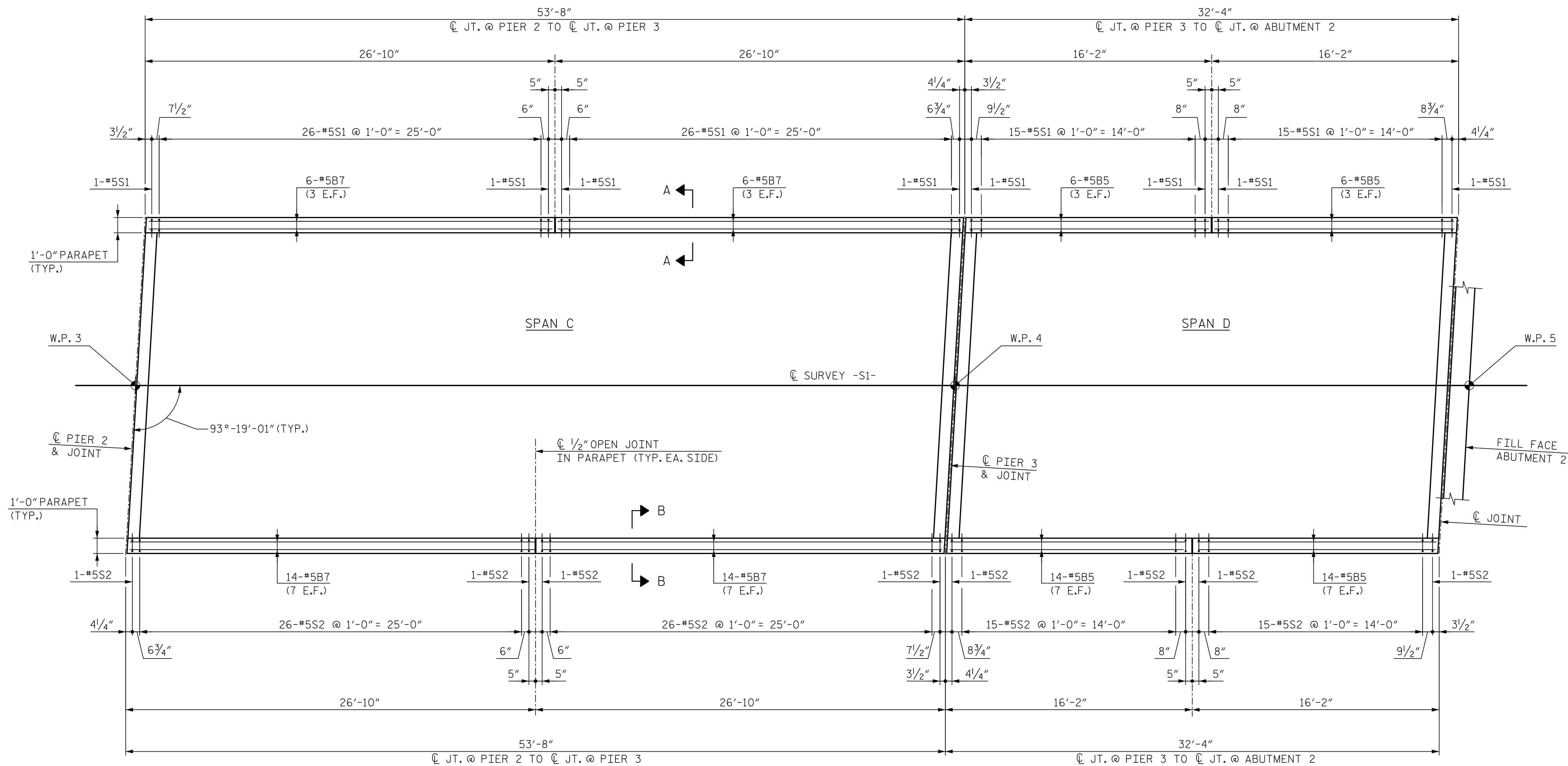
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RALEIGH

SUPERSTRUCTURE
PARAPET DETAILS

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NOTE:
SEE SHEET 1 OF 2 FOR NOTES AND SECTIONS.

PLAN - SPAN C & SPAN D PARAPETS

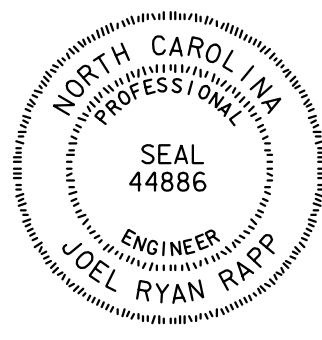
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MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-

SHEET 2 OF 2

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SUPERSTRUCTURE

PARAPET DETAILS



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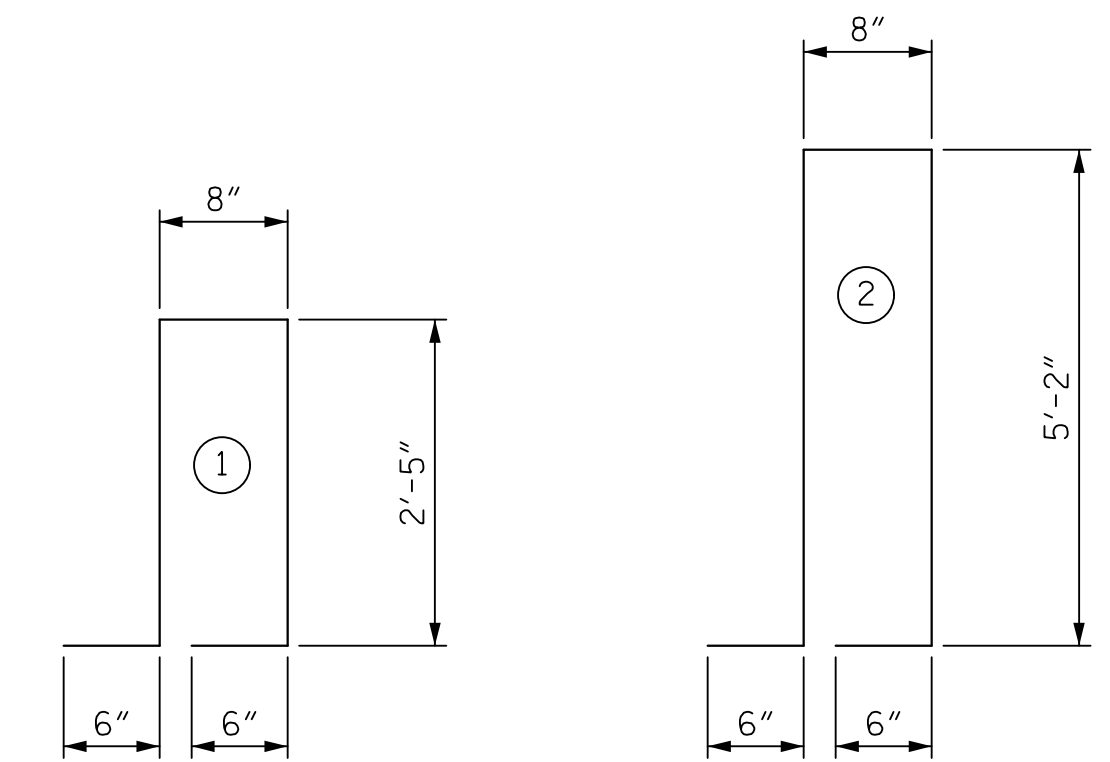
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2			4		

SHEET NO.
 S4-18
 TOTAL SHEETS
 21

EPOXY-COATED REINFORCING STEEL

SPAN A						SPAN B						SPAN C						SPAN D					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	94	5	STR.	21'-8"	2,125	A1	143	5	STR.	21'-8"	3,232	A1	160	5	STR.	21'-8"	3,616	A1	94	5	STR.	21'-8"	2,125
A2	8	5	STR.	21'-8"	181	A2	8	5	STR.	21'-8"	181	A2	8	5	STR.	21'-8"	181	A2	8	5	STR.	21'-8"	181
A3	4	5	STR.	6'-5"	27	A5	4	5	STR.	4'-4"	19	A7	4	5	STR.	3'-7"	15	A3	4	5	STR.	6'-5"	27
A4	4	5	STR.	15'-1"	63	A6	4	5	STR.	12'-11"	54	A8	4	5	STR.	12'-3"	52	A4	4	5	STR.	15'-1"	63
B1	67	4	STR.	25'-2"	1,127	B3	67	4	STR.	30'-0"	1,343	B1	67	4	STR.	25'-2"	1,127	B1	67	4	STR.	25'-2"	1,127
B2	67	4	STR.	8'-8"	388	B4	67	4	STR.	19'-10"	888	B3	67	4	STR.	30'-0"	1,343	B2	67	4	STR.	8'-8"	388
B5	40	5	STR.	15'-8"	654	B6	40	5	STR.	23'-8"	988	B7	40	5	STR.	26'-4"	1,099	B5	40	5	STR.	15'-8"	654
S1	34	5	1	6'-6"	231	S1	50	5	1	6'-6"	339	S1	56	5	1	6'-6"	380	S1	34	5	1	6'-6"	231
S2	34	5	2	12'-0"	426	S2	50	5	2	12'-0"	626	S2	56	5	2	12'-0"	701	S2	34	5	2	12'-0"	426
				TOTAL	5,222					TOTAL	7,670					TOTAL	8,514					TOTAL	5,222



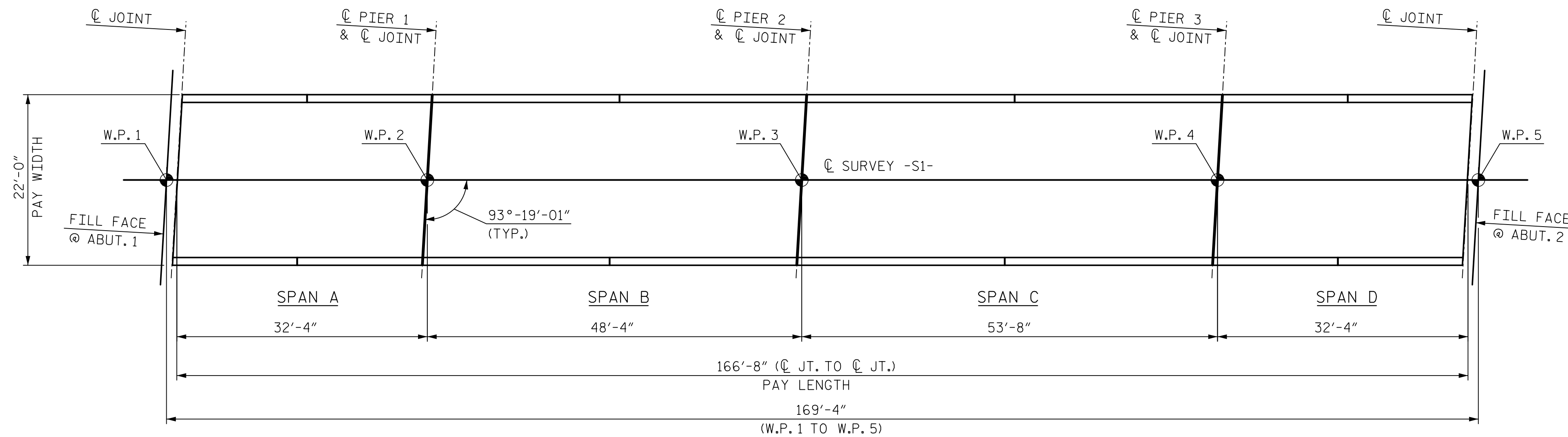
ALL BAR DIMENSIONS ARE OUT TO OUT

QUANTITY BREAKDOWN BY SPAN

	EPOXY COATED REINFORCING STEEL (LBS.)	CLASS AA CONCRETE (CU. YDS.)	
		DECK SLAB	PARAPETS
SPAN "A"	5,222	24.1	8.0
SPAN "B"	7,670	34.3	12.0
SPAN "C"	8,514	37.4	13.5
SPAN "D"	5,222	23.7	8.0
TOTALS	26,628	119.5	41.5

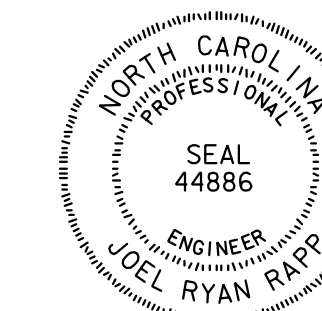
TOTAL SUPERSTRUCTURE QUANTITIES

	REINFORCED CONCRETE DECK SLAB	EPOXY COATED REINFORCING STEEL	CLASS AA CONCRETE
	SQ. FT.	LBS.	CU. YDS.
DECK SLAB	3,666.6	19,873	119.5
PARAPET	—	6,755	41.5
TOTALS	3,666.6	26,628	161.0



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FEET = 3,666.6)

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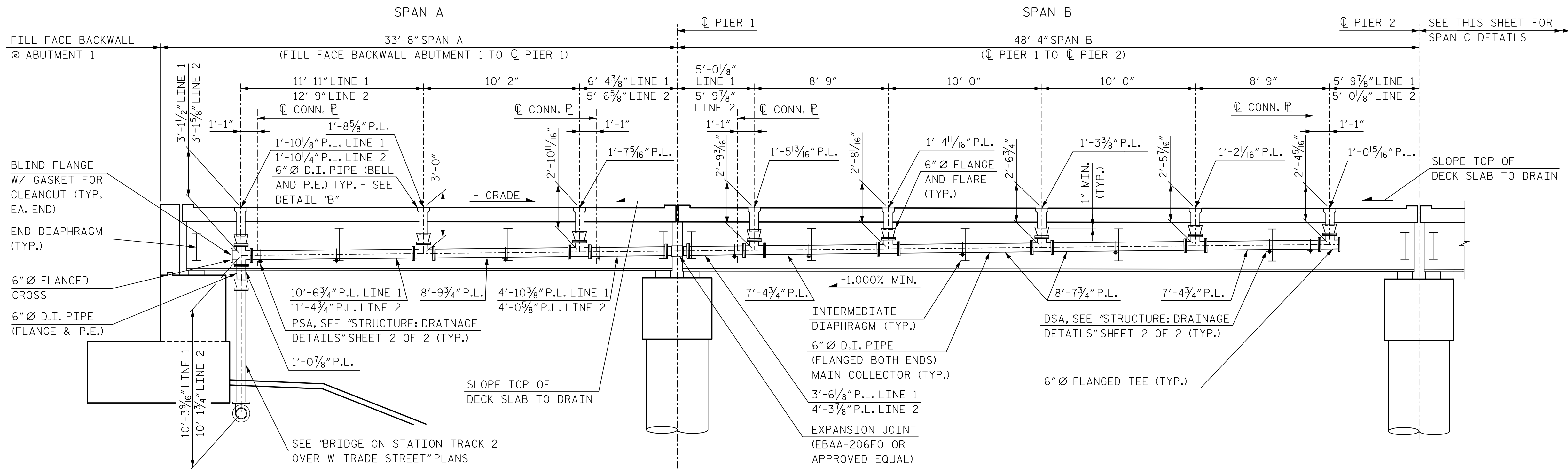
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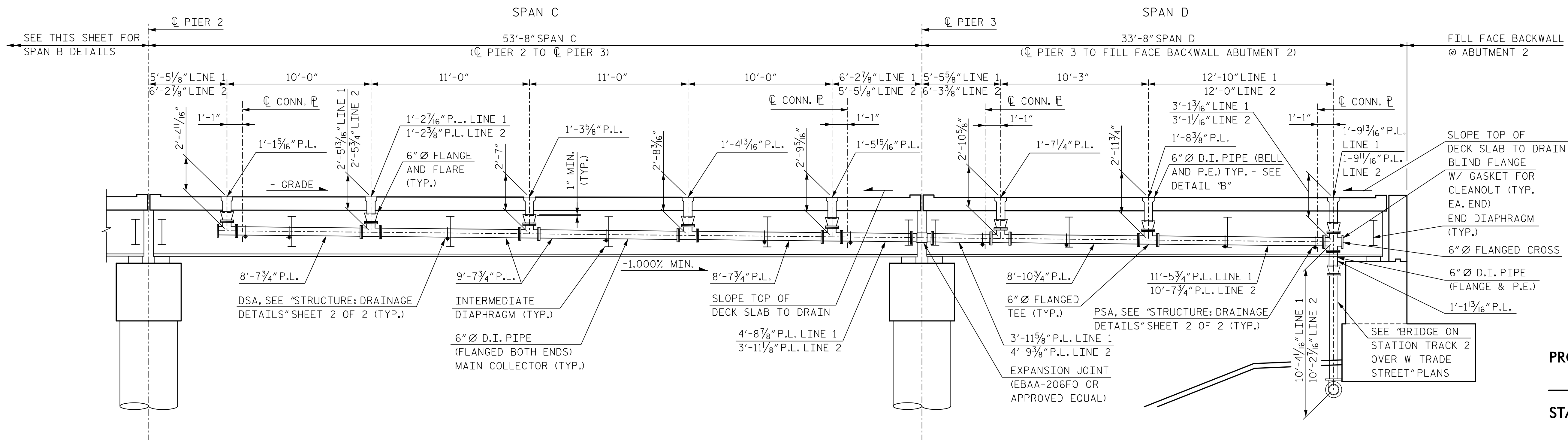
SUPERSTRUCTURE
 BILL OF MATERIAL

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TOTAL SHEETS 21							



DRAINAGE DETAILS - SPAN A AND SPAN B

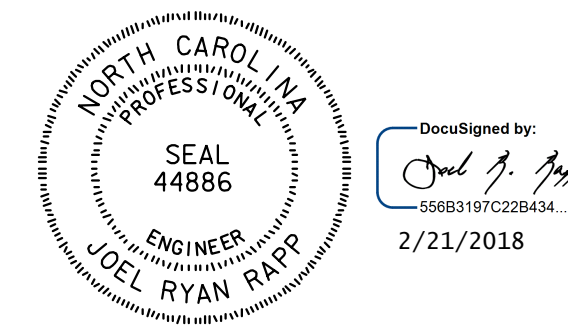
NOTES:
 ALL DIMENSIONS ARE SUBJECT TO ADJUSTMENTS TO FIT MEASUREMENTS TAKEN AFTER DECKS HAVE BEEN POURED.
 D.I. = DUCTILE IRON
 P.L. = PIPE LENGTH
 P.E. = PLAIN END
 DRAINAGE LINE 1 IS LOCATED TO THE LEFT LOOKING AHEAD STATION AND DRAINAGE LINE 2 IS LOCATED TO THE RIGHT LOOKING AHEAD STATION.
 FOR ADDITIONAL NOTES AND DETAILS, SEE "STRUCTURE: DRAINAGE DETAILS" SHEET 2 OF 2.



DRAINAGE DETAILS - SPAN C AND SPAN D

PROJECT NO. P-5705BA
 MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-

SHEET 1 OF 2

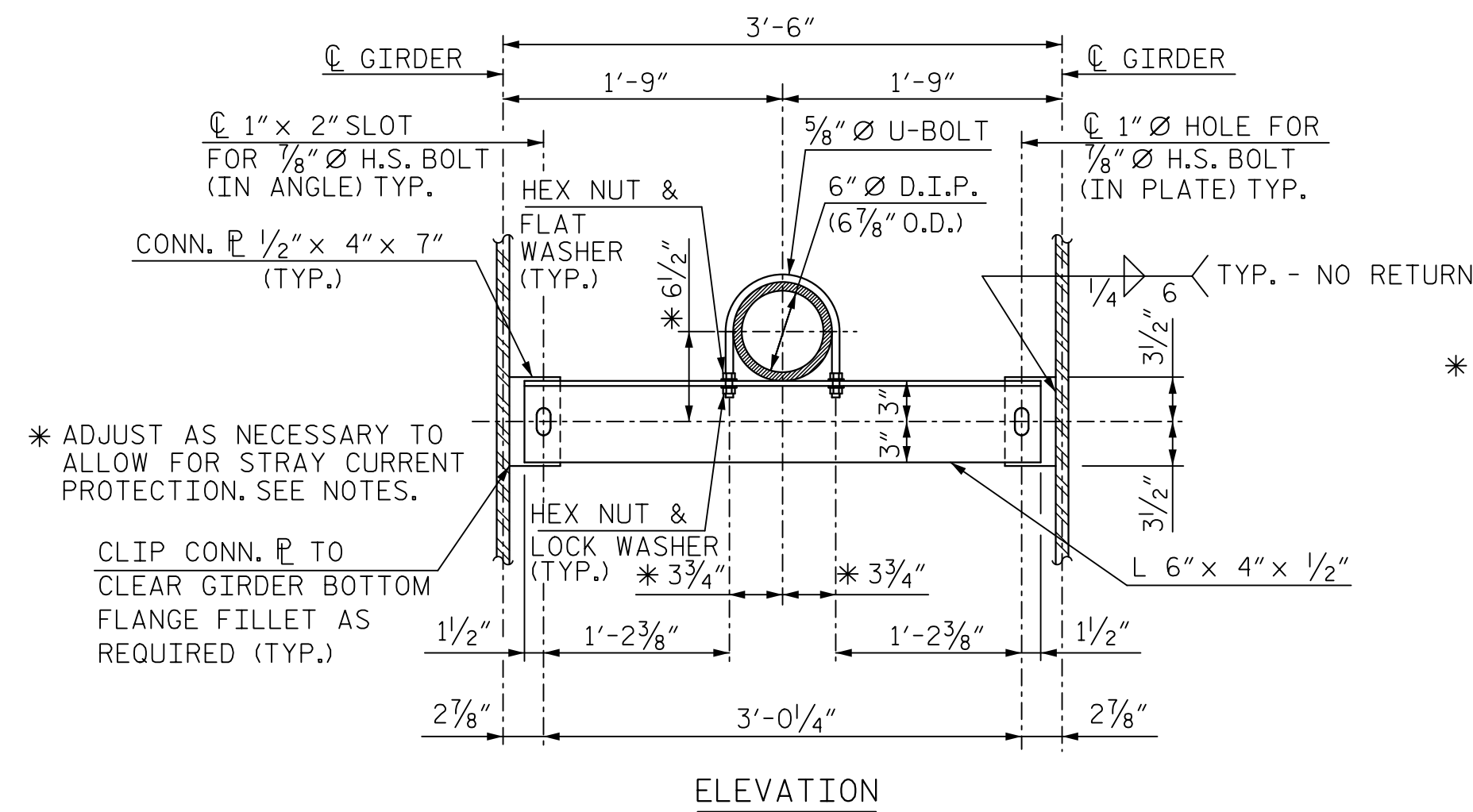


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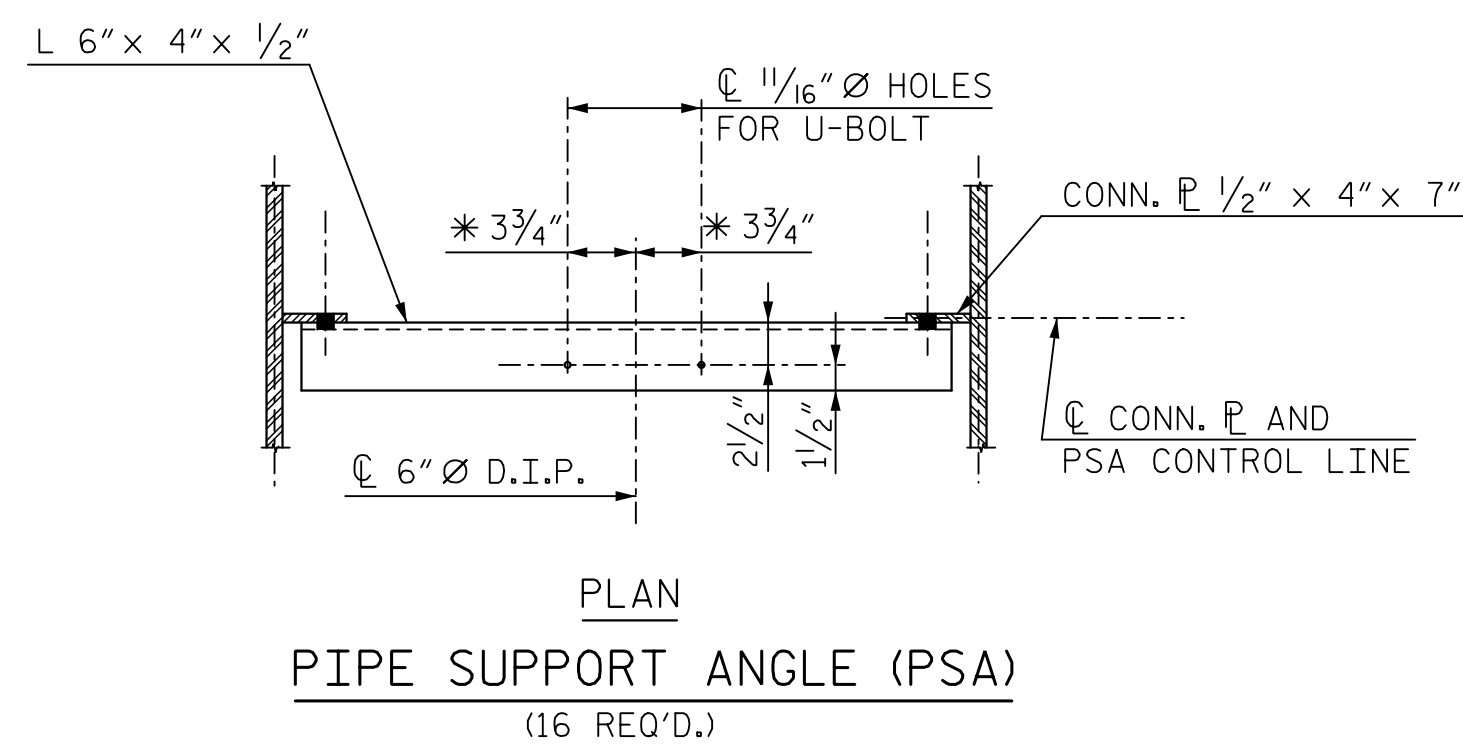
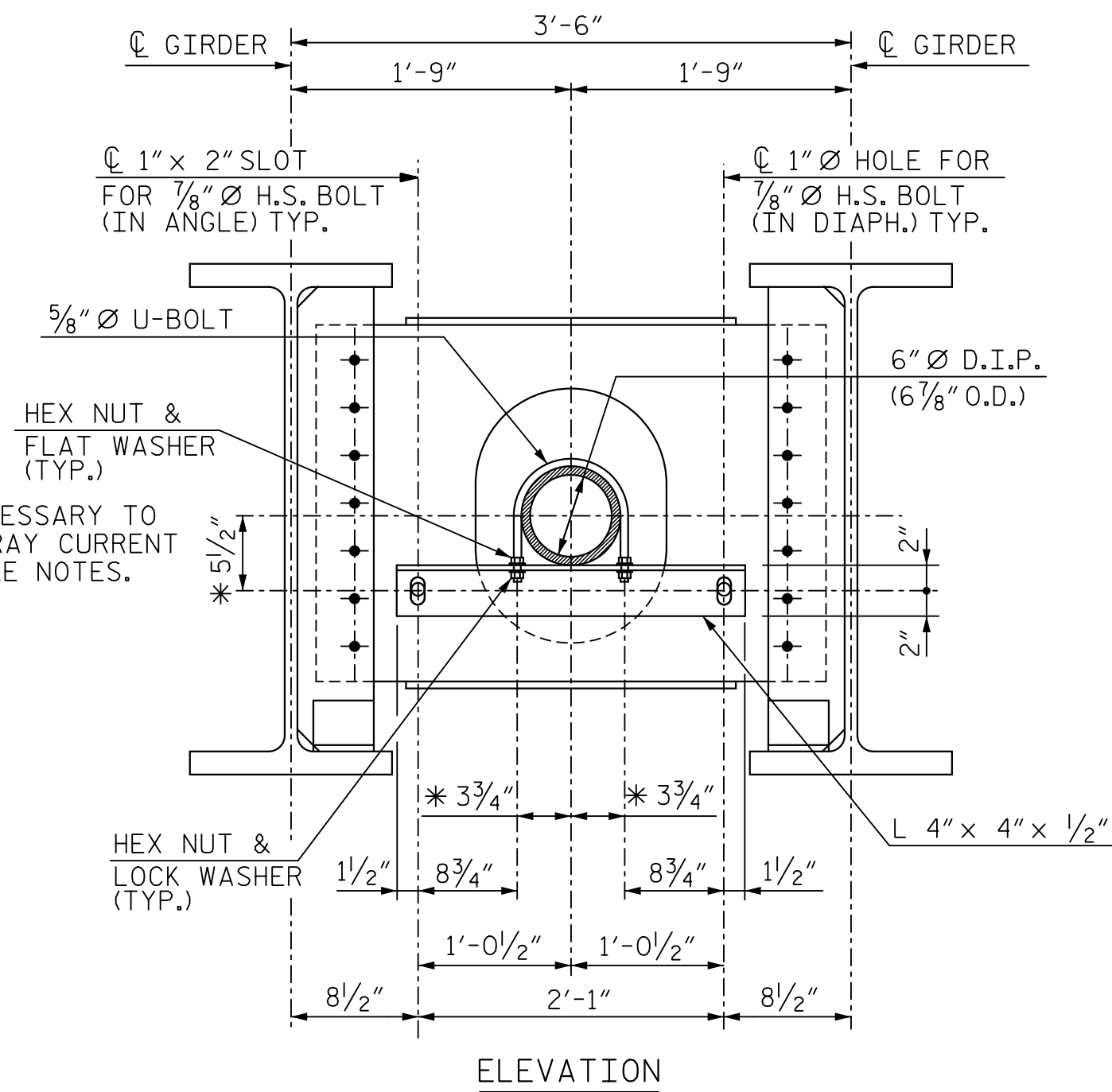
STATE OF NORTH CAROLINA
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STRUCTURE
 DRAINAGE
 DETAILS

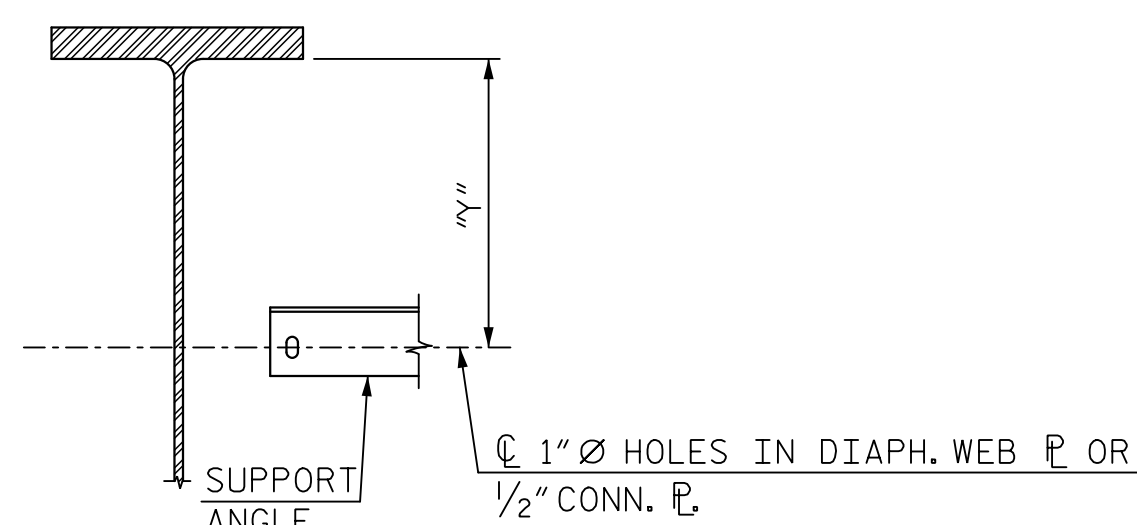
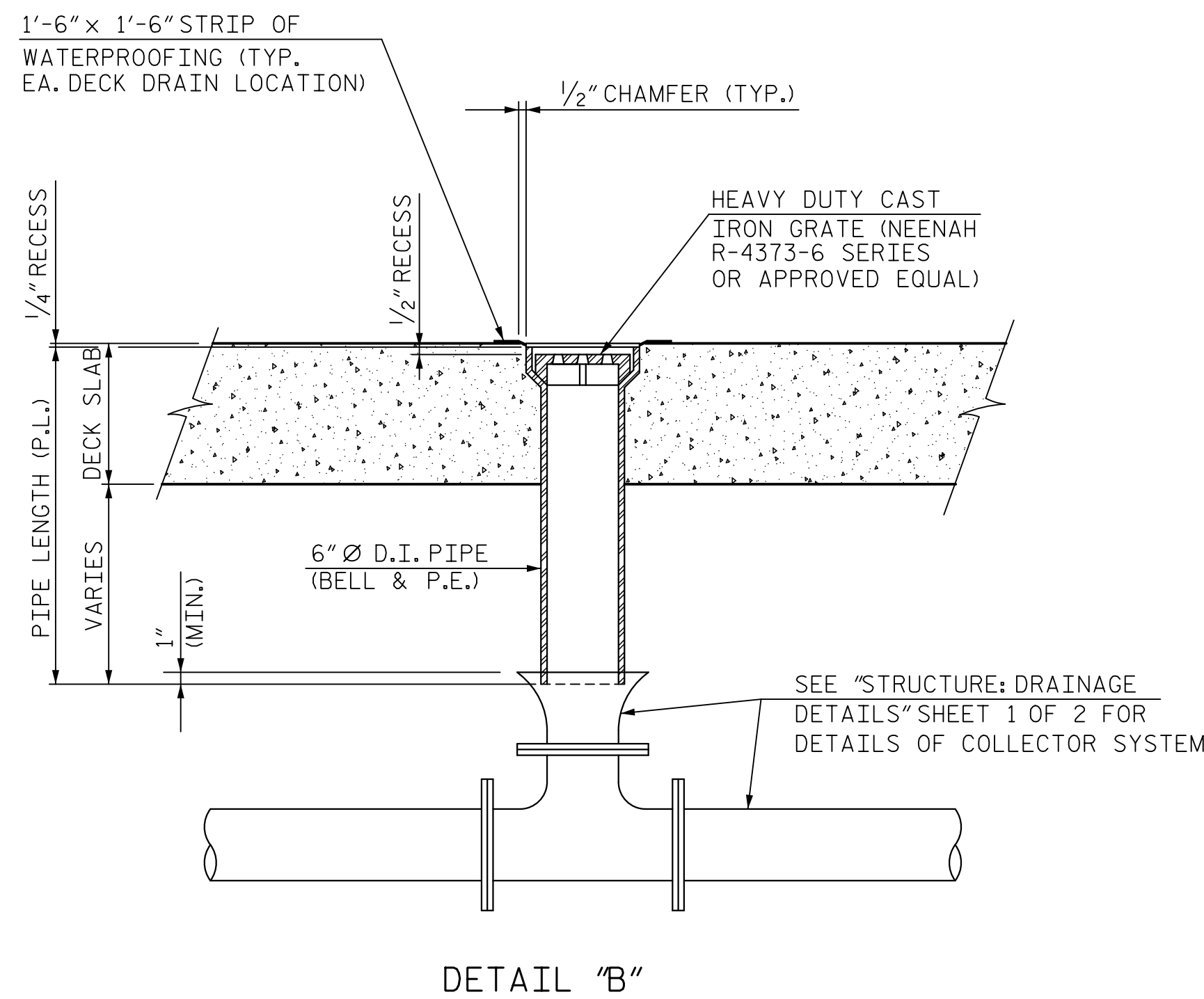
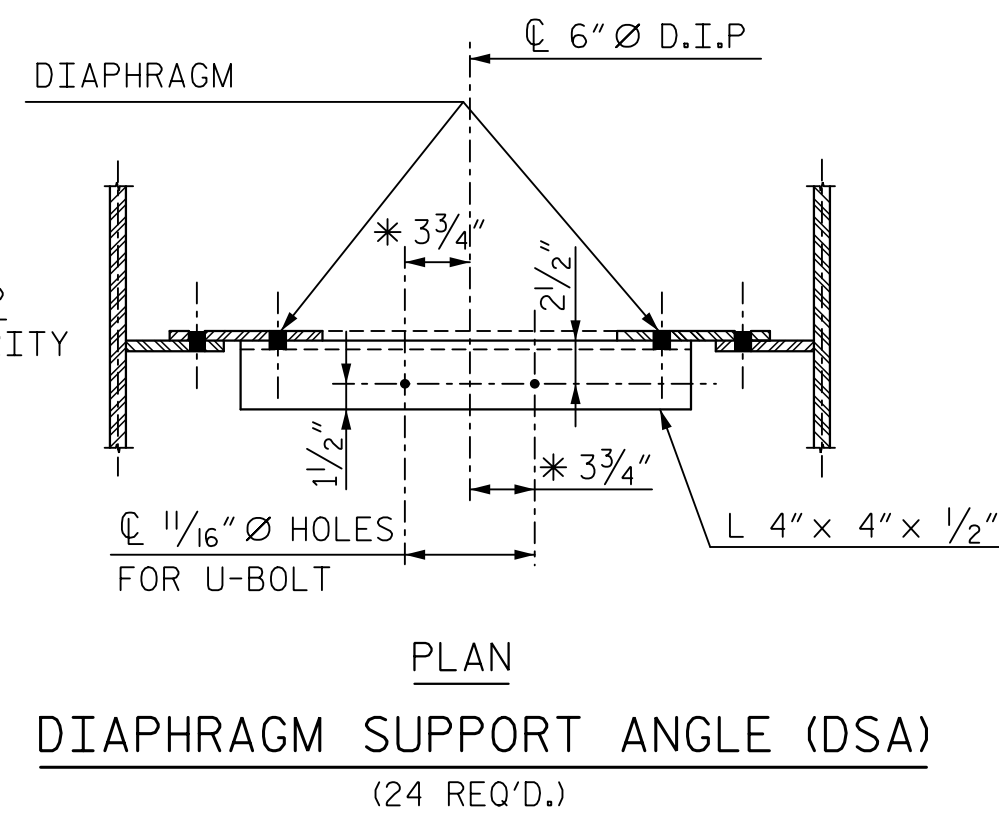
HNTB HNTB NORTH CAROLINA, P.C. NC License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u> CHECKED BY <u>R. RAPP</u> DATE <u>9/17</u> DWG. NO. 20				REVISIONS <table border="1"> <tr> <th>NO.</th> <th>BY</th> <th>DATE</th> <th>NO.</th> <th>BY</th> <th>DATE</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </table>				NO.	BY	DATE	NO.	BY	DATE	1			3			2			4			SHEET NO. S4-20 TOTAL SHEETS 21
	NO.	BY	DATE	NO.	BY	DATE																					
	1			3																							
2			4																								



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



NOTE:
 DIAPHRAGM FLANGE P NOT SHOWN FOR CLARITY



DSA	"γ"	DSA	"γ"	DSA	"γ"	DSA	"γ"	PSA	"γ"
A1	2'-7 1/8"	B1	2'-3 1/8"	C1	1'-11 5/8"	D1	2'-5 9/16"	A1	2'-8 13/16"
A2	2'-5 3/4"	B2	2'-1 7/8"	C2	2'-0 13/16"	D2	2'-6 13/16"	A2	2'-5 5/16"
		B3	2'-0 9/16"	C3	2'-2 1/16"			A3	2'-8 15/16"
		B4	1'-11 1/4"	C4	2'-3 1/4"			A4	2'-6"
								B1	2'-4 13/16"
								B2	1'-11 5/16"
								C1	2'-0 1/4"
								C2	2'-4 7/8"
								D1	2'-5 15/16"
								D2	2'-8 1/2"
								D3	2'-5 15/16"
								D4	2'-8 3/8"

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 SHEETS.
 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.

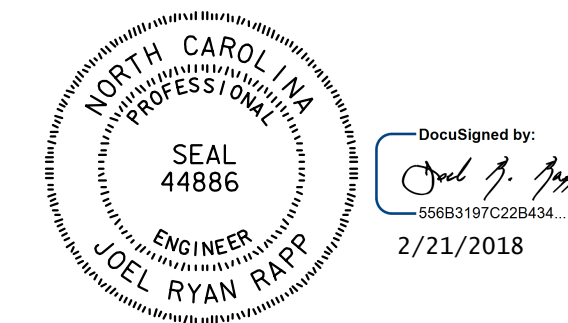
SUPERSTRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGED BOTH ENDS)	FEET	251'-0 1/8"
6" I.D. DUCTILE IRON PIPE, CLASS 53 (FLANGE & P.E.)	FEET	4'-5 1/2"
6" I.D. DUCTILE IRON PIPE, CLASS 53 (BELL & P.E.)	FEET	46'-4 5/16"
6" I.D. DUCTILE IRON PIPE FLANGED FITTINGS, 250 psi P.R.	LBS	4,420
6" I.D. DUCTILE IRON BLIND FLANGES	LBS	200
EXPANSION JOINT	EA.	4
HEAVY DUTY CAST IRON GRATES	EA.	32
PIPE SUPPORT ANGLES (PSA) *	EA.	16
DIAPHRAGM SUPPORT ANGLES (DSA) *	EA.	24

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

FOR SUBSTRUCTURE DRAINAGE SYSTEM ESTIMATED QUANTITIES, SEE "BRIDGE ON STATION TRACK 2 OVER W TRADE STREET" PLANS.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 23+65.83 -S1-

SHEET 2 OF 2



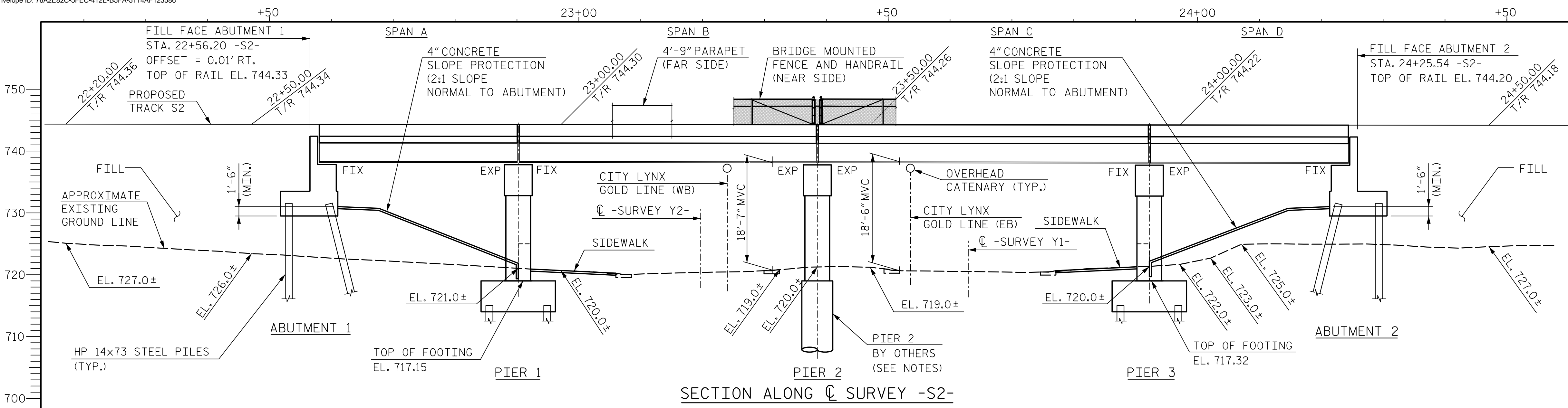
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STRUCTURE
 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. S4-21		
	NO.	BY	DATE	NO.		BY	DATE
	1			3			
			4				
DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u>		CHECKED BY <u>R. RAPP</u> DATE <u>9/17</u>		DWG. NO. 21	TOTAL SHEETS 21		

0012DEL_P28

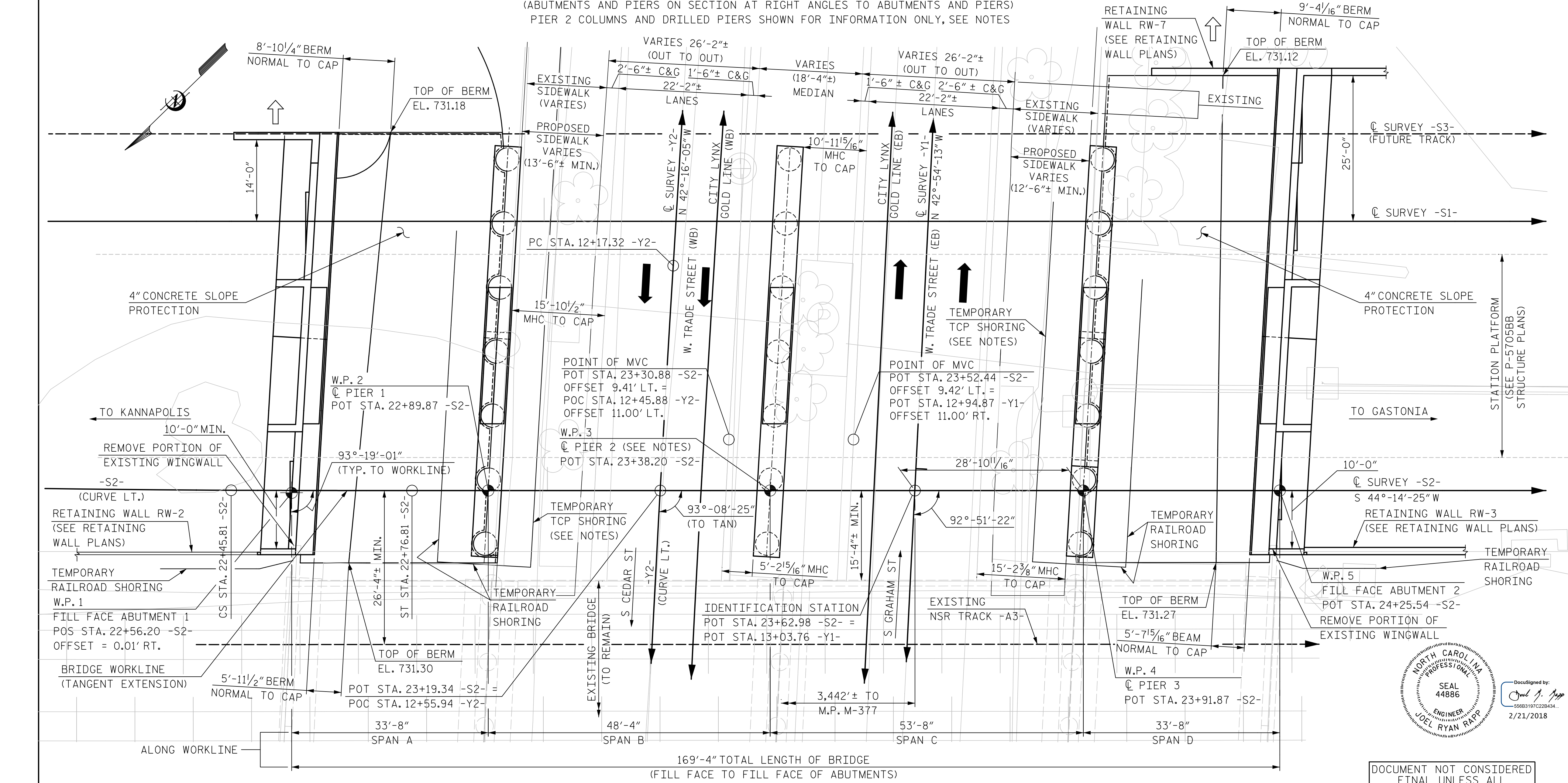
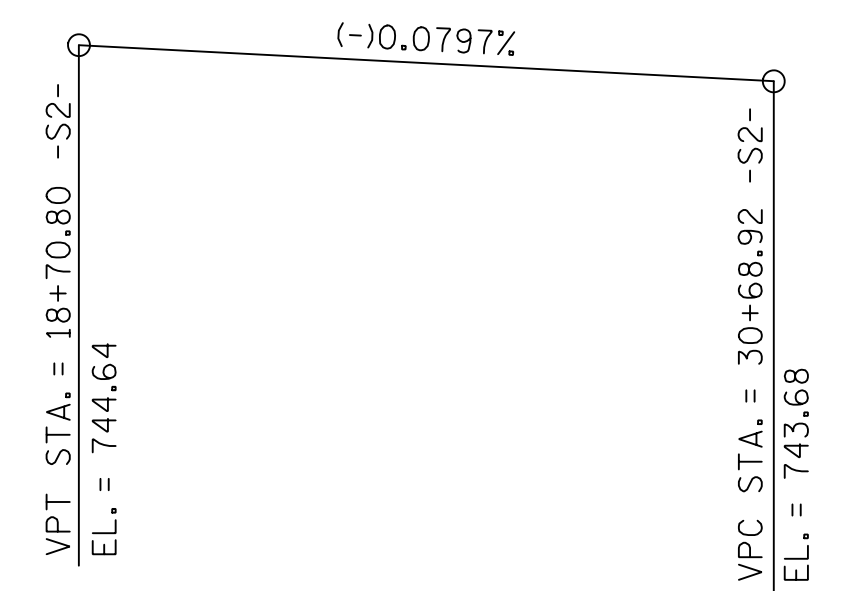


NOTES:
 SEE "GENERAL DRAWING: GENERAL NOTES (SHEET 4 OF 4)" FOR GENERAL NOTES.
 FOR PIER 2 DRILLED PIERS AND COLUMNS, REFER TO P-5705BA (RD-18002) PLANS (BY OTHERS).
 SEE ROADWAY PLANS FOR TEMPORARY TCP SHORING DETAILS AND PAY ITEMS.
 MVC = MINIMUM VERTICAL CLEARANCE
 MHC = MINIMUM HORIZONTAL CLEARANCE
 ← STRUCTURE DRAINAGE OUTLET LOCATION AND DIRECTION.
 FOR BRIDGE GROUNDING AND BONDING, AS WELL AS SHIELDING, REFER TO ELECTRIC TRACTION PLANS.

-Y2- ROADWAY CURVE DATA
 SEE ROADWAY PLANS.

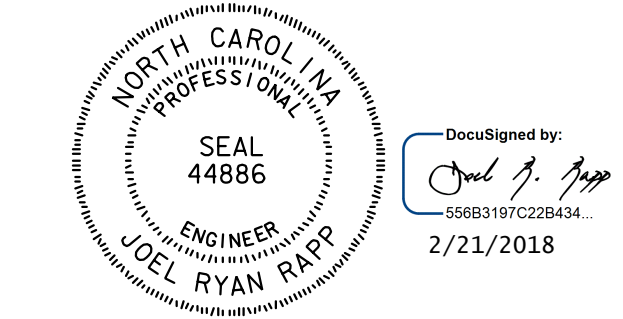
-S2- TRACK CURVE DATA
 PIs STA. 22+56.14
 $\Delta s = 0^\circ 15' 30.0''$ (LT.)
 Ls = 31.00'
 LT = 20.67'
 ST = 10.33'

SEE ROADWAY PLANS FOR EXISTING PAVEMENT ELEVATIONS.
GRADE DATA -Y1- & -Y2-



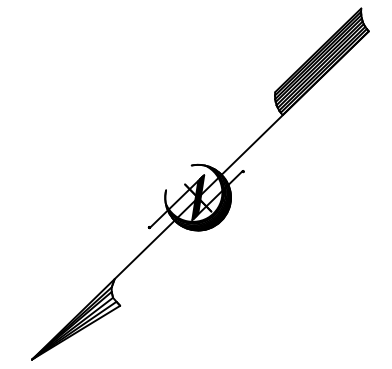
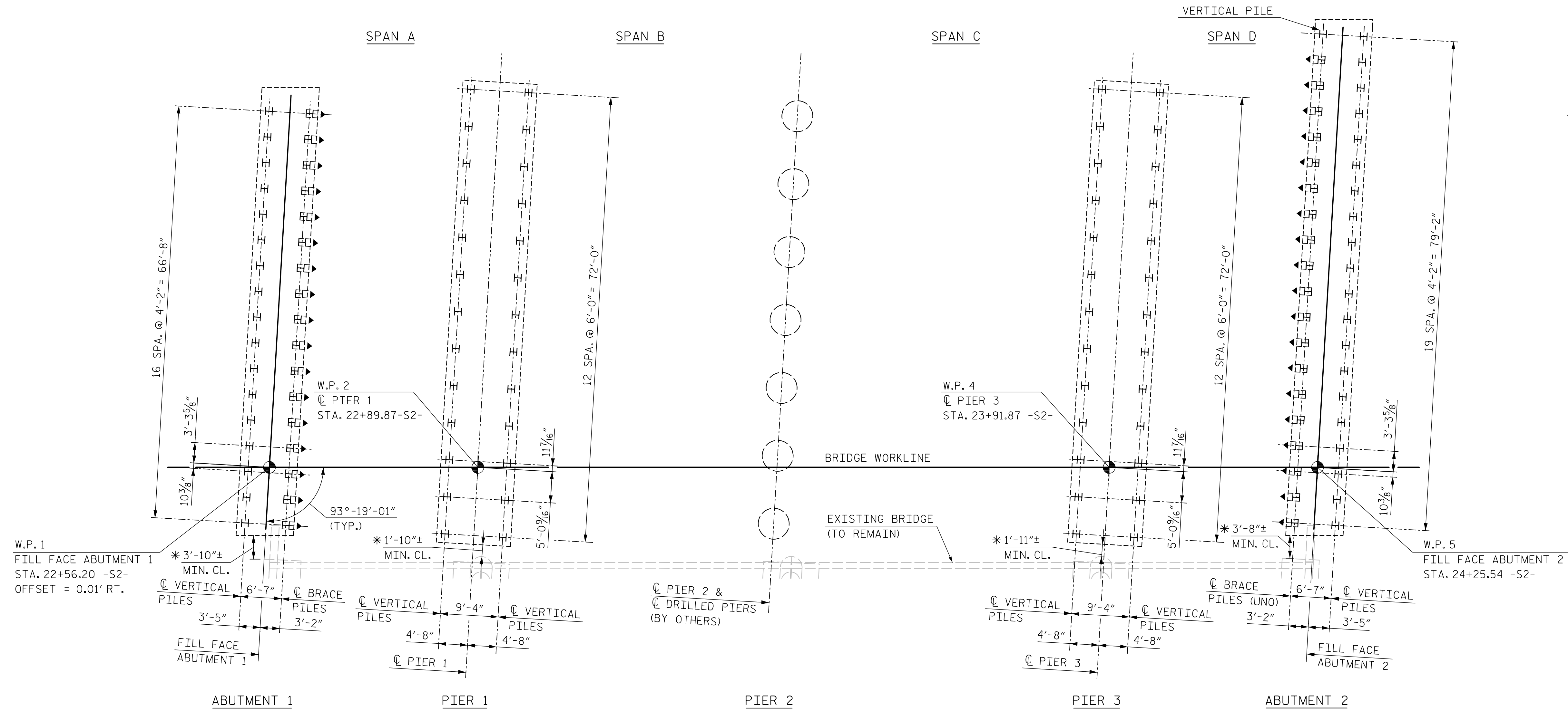
PROJECT NO. P-5705BA
MECKLENBURG COUNTY
STATION: POT STA. 23+62.98 -S2- = POT STA. 13+03.76 -Y1- MILE POST: NS 377.64
 SHEET 1 OF 4 BRIDGE NO.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON STATION TRACK 2 OVER W TRADE STREET BETWEEN W 4TH STREET AND W 5TH STREET



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



FOUNDATION LAYOUT

FOUNDATION NOTES:

INDICATES PILE TO BE BATTERED 3:12 IN DIRECTION OF ARROW.
 FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISION.

PILES AT ABUTMENT NO.1 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 75 TONS PER PILE.

DRIVE PILES AT ABUTMENT NO.1 TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILE.

PILES AT PIER NO.1 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 100 TONS PER PILE.

DRIVE PILES AT PIER NO.1 TO A REQUIRED BEARING CAPACITY OF 200 TONS PER PILE.

PILES AT PIER NO.3 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 100 TONS PER PILE.

DRIVE PILES AT PIER NO.3 TO A REQUIRED BEARING CAPACITY OF 200 TONS PER PILE.

PILES AT ABUTMENT NO.2 ARE DESIGNED FOR AN ALLOWABLE BEARING CAPACITY OF 75 TONS PER PILE.

DRIVE PILES AT ABUTMENT NO.2 TO A REQUIRED BEARING CAPACITY OF 150 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR THE 12 LEFTMOST STEEL H-PILES AT ABUTMENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS. LEFT IS DEFINED LOOKING AHEAD STATION.

TEST THE FIRST PRODUCTION PILE AT ABUTMENT NO.1, PER NO.1, PIER NO.3, AND ABUTMENT NO.2 WITH THE PDA. FOR PDA TESTING, SEE GEOTECHNICAL SPECIAL PROVISION.

ALL DIMENSIONS ARE PARALLEL OR NORMAL TO FILL FACE ABUTMENTS OR @ PIERS.

FOR FOUNDATION ELEVATIONS AND DETAILS, SEE "SUBSTRUCTURE: ABUTMENT" AND "SUBSTRUCTURE: PIER" SHEETS.

ALL PILES ARE STEEL HP 14x73.

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

FOR PIER NO.2 DRILLED PIERS, REFER TO P-5705BA (RD-18002) PLANS (BY OTHERS).

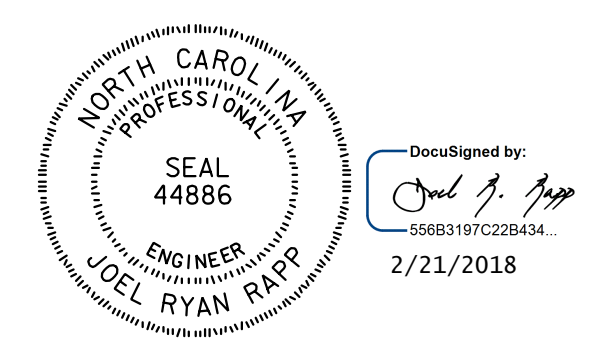
* CLEARANCE DIMENSIONS SHOWN TO THE EXISTING BRIDGE ARE BASED ON THE MINIMUM OF THE CLEARANCE TO THE EXISTING SUPERSTRUCTURE OR CLEARANCE TO THE EXISTING SUBSTRUCTURE.

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 23+62.98 -S2-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOUNDATION LAYOUT
 AND
 FOUNDATION NOTES

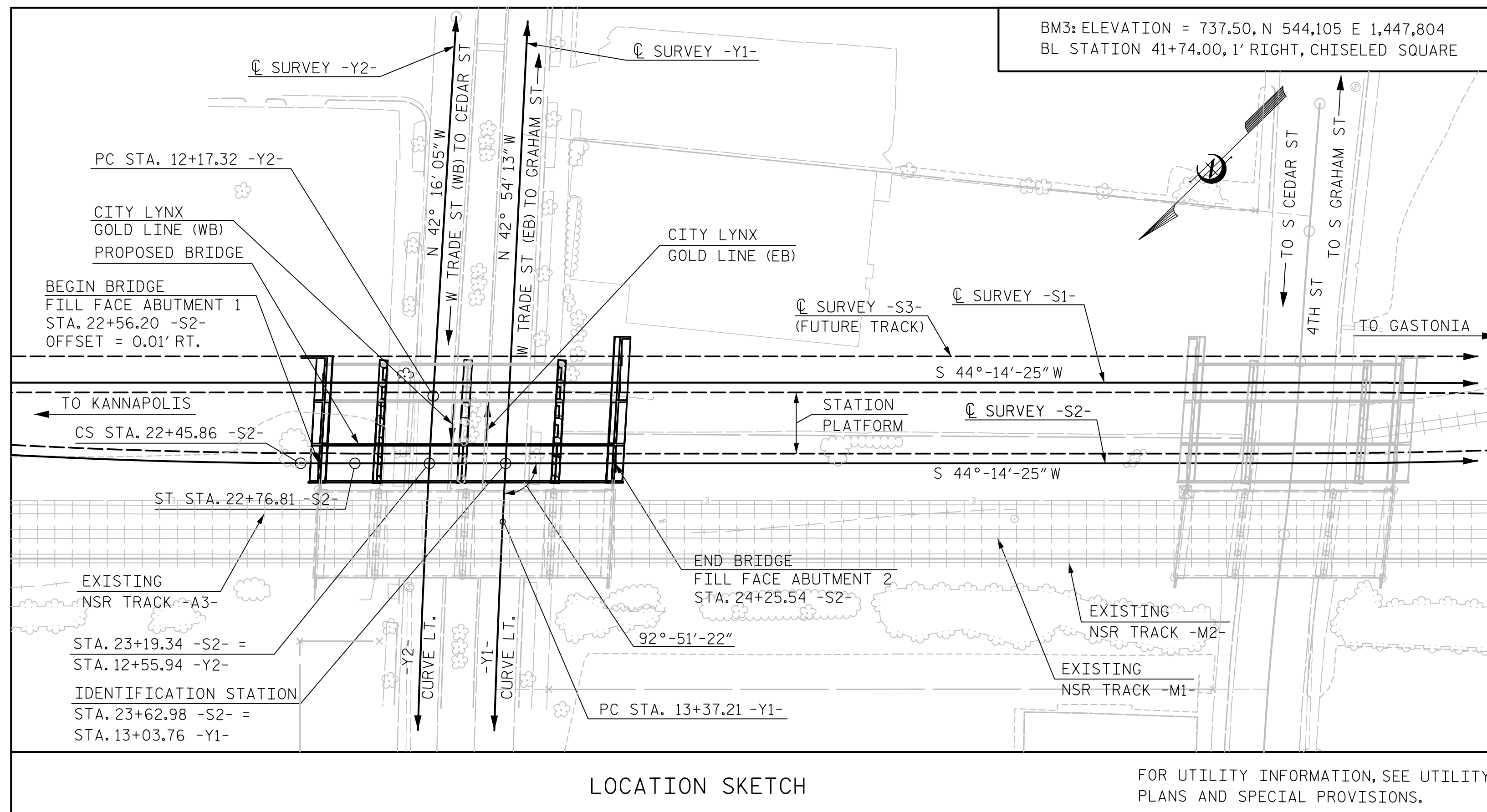


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 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY B. VAUGHN DATE 10/17
 CHECKED BY R. RAPP DATE 10/17 DWG. NO. 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S5-2
1			3			TOTAL SHEETS
2			4			56



NOTES:

FOR TRACK 1 SUPERSTRUCTURE BILL OF MATERIAL, REFER TO 'BRIDGE ON STATION TRACK 1 OVER W TRADE STREET' PLANS.

PIER 2 QUANTITIES ARE FOR CAP AND PLATFORM GIRDER STEM WALL ONLY. FOR COLUMNS AND DRILLED PIERS QUANTITIES, REFER TO P-5705BA (RD-18002) PLANS (BY OTHERS).

TOTAL BILL OF MATERIAL

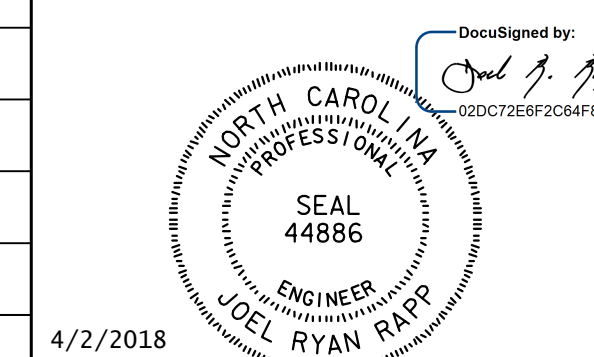
	TEMP. RAILROAD SHORING/ABUT. 1 STA. 23+62.98 -S2-	TEMP. RAILROAD SHORING/PIER 1 STA. 23+62.98 -S2-	TEMP. RAILROAD SHORING/PIER 3 STA. 23+62.98 -S2-	TEMP. RAILROAD SHORING/ABUT. 2 STA. 23+62.98 -S2-	REMOVAL OF EXIST. STRUCT. AT STA. 23+62.98 -S2-	FOUND. EXCAV. FOR PIER 1 AT STA. 23+62.98 -S2-	FOUND. EXCAV. FOR PIER 3 AT STA. 23+62.98 -S2-	STEEL PILE POINTS	PDA TESTING	REINFORCED CONCRETE DECK SLAB	CLASS AA CONCRETE	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. 338,035 LBS. STRUCTURAL STEEL	PAINTING OF STRUCTURAL STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	EACH	EACH	SQ. FEET	CU. YARDS	LBS.	LBS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	---	---	---	---	---	---	---	---	---	3,680.4	---	---	---	LUMP SUM	LUMP SUM
ABUTMENT 1	LUMP SUM	---	---	---	---	---	---	---	1	---	203.0	18,906	---	---	---
PIER 1	---	LUMP SUM	---	---	---	---	LUMP SUM	---	1	---	318.6	65,969	5,551	---	---
*PIER 2	---	---	---	---	---	---	---	---	---	---	82.5	14,669	---	---	---
PIER 3	---	---	LUMP SUM	---	---	---	LUMP SUM	---	1	---	317.8	66,994	5,467	---	---
ABUTMENT 2	---	---	---	LUMP SUM	---	---	---	12	1	---	225.9	20,021	---	---	---
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	12	4	3,680.4	1,147.8	186,559	11,018	LUMP SUM	LUMP SUM

	HP 14 x 73 STEEL PILES		PILE DRIVING EQUIPMENT SETUP FOR HP14x73 STEEL PILES	WATERPROOFING	METHOD B DAMPPROOFING	METAL RAIL (ALUMINUM)	METAL RAIL (STEEL) & FENCE	CONCRETE PARAPET	4" SLOPE PROTECTION	SELF-LUBRICATING EXPANSION BEARING ASSEMBLIES	STRUCTURE DRAINAGE SYSTEM AT STA. 23+62.98 -S2-	APPLICATION OF BRIDGE COATING	ASBESTOS ASSESSMENT
	NO.	L.F.											
SUPERSTRUCTURE	---	---	---	381.3	---	---	166.5	331.7	---	LUMP SUM	LUMP SUM	LUMP SUM	---
ABUTMENT 1	34	1,927	34	61.1	181.0	18.2	5.6	---	282	---	LUMP SUM	LUMP SUM	---
PIER 1	26	1,213	26	50.4	85.4	---	---	---	---	---	---	LUMP SUM	---
*PIER 2	---	---	---	---	---	---	---	---	---	---	---	LUMP SUM	---
PIER 3	26	1,300	26	55.3	81.3	---	---	---	---	---	---	LUMP SUM	---
ABUTMENT 2	40	2,333	40	64.1	194.8	20.5	5.6	---	315	---	LUMP SUM	LUMP SUM	---
TOTAL	126	6,773	126	612.2	542.5	38.7	177.7	331.7	597	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

* SEE NOTES

PROJECT NO. P-5705BA
MECKLENBURG COUNTY
 STATION: POT STA. 23+62.98 -S2-

SHEET 3 OF 4



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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.
	NO.	BY	DATE	NO.	BY	DATE
	1			3		
DRAWN BY <u>B. VAUGHN</u> DATE <u>8/17</u> CHECKED BY <u>R. RAPP</u> DATE <u>9/17</u> DWG. NO. <u>3</u>						TOTAL SHEETS 56