

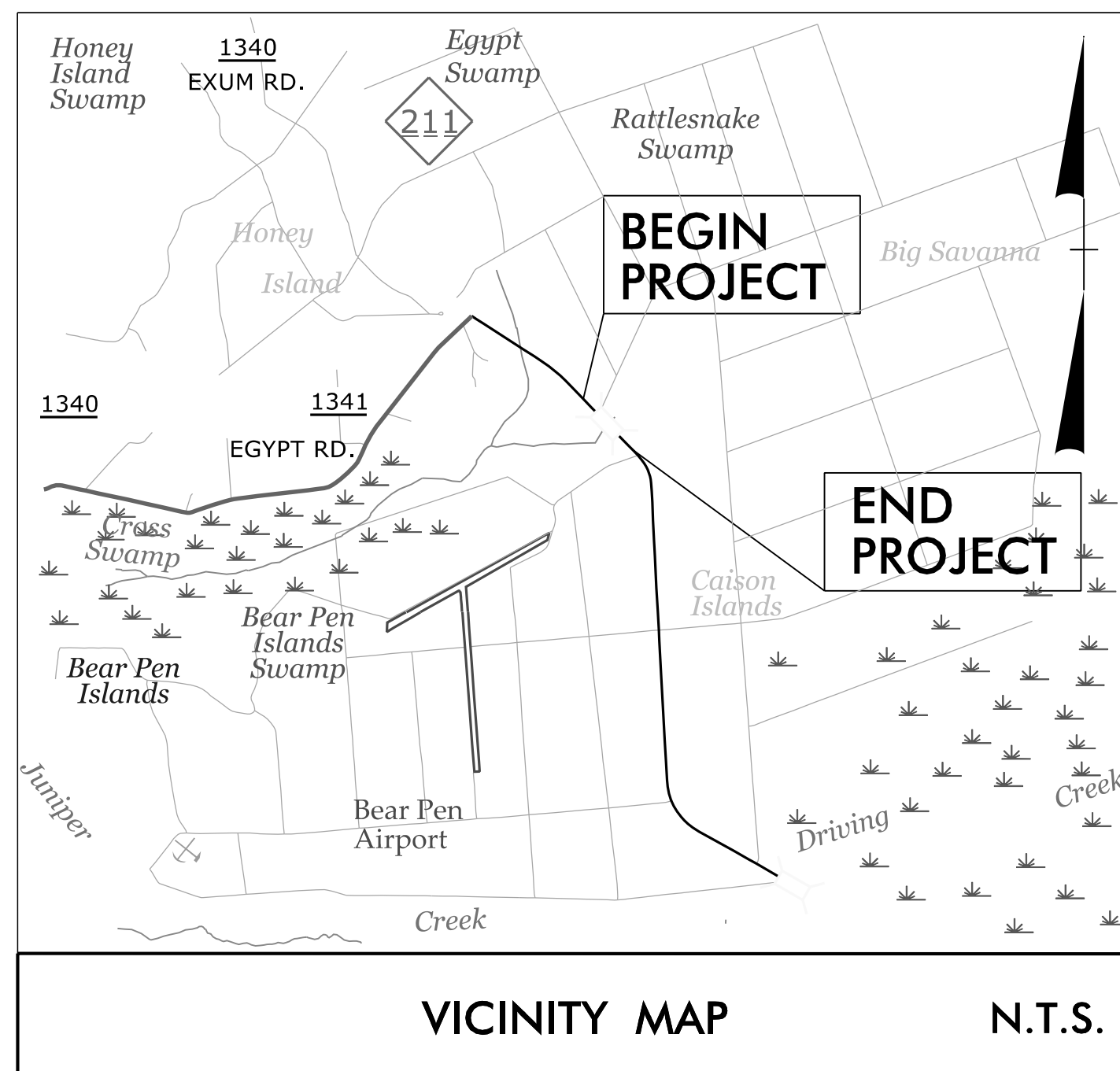
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TIP PROJECT: B-4438

CONTRACT: C204151



VICINITY MAP

N.T.S.

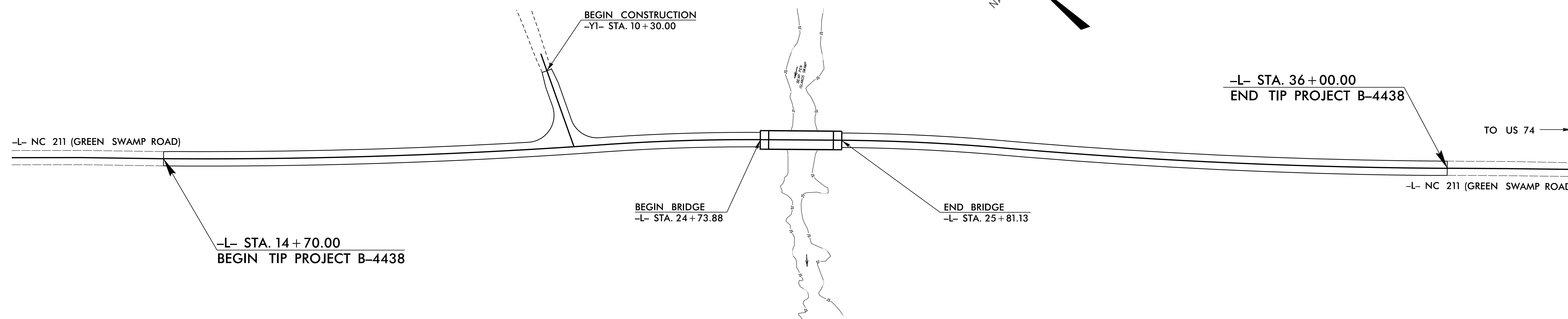
STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

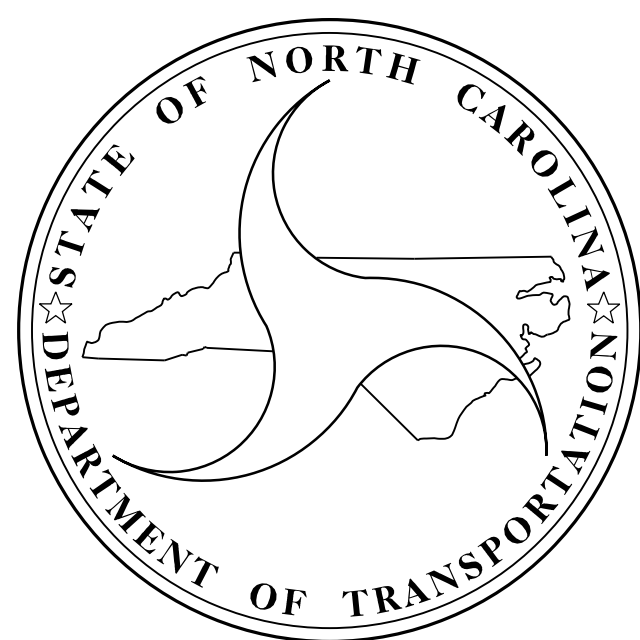
BRUNSWICK COUNTY

LOCATION: BRIDGE NO. 47 OVER BEAR PEN ISLANDS SWAMP
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4438	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38365.1.2		P.E.	
38365.2.1		RW, UTIL.	
38365.3.1		CONST.	



STRUCTURES



DESIGN DATA

ADT (2019) = 1,908
 ADT (2039) = 2,948
 K = 9 %
 D = 55 %
 T = 15 % **
 * V = 60 MPH
 ** (TTST 9 %, DUAL 6 %)
 FUNC CLASS = MAJOR COLLECTOR
 REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4438 = 0.383 MILES
 LENGTH STRUCTURE TIP PROJECT B-4438 = 0.020 MILES
 TOTAL LENGTH TIP PROJECT B-4438 = 0.403 MILES

Prepared in the Office of:

moffatt & nichol
 4700 FALLS OF NEUSE ROAD, SUITE 300
 RALEIGH, NORTH CAROLINA 27609
 (919) 781-4626 VOICE (919) 781-4869 FAX (F-0105)

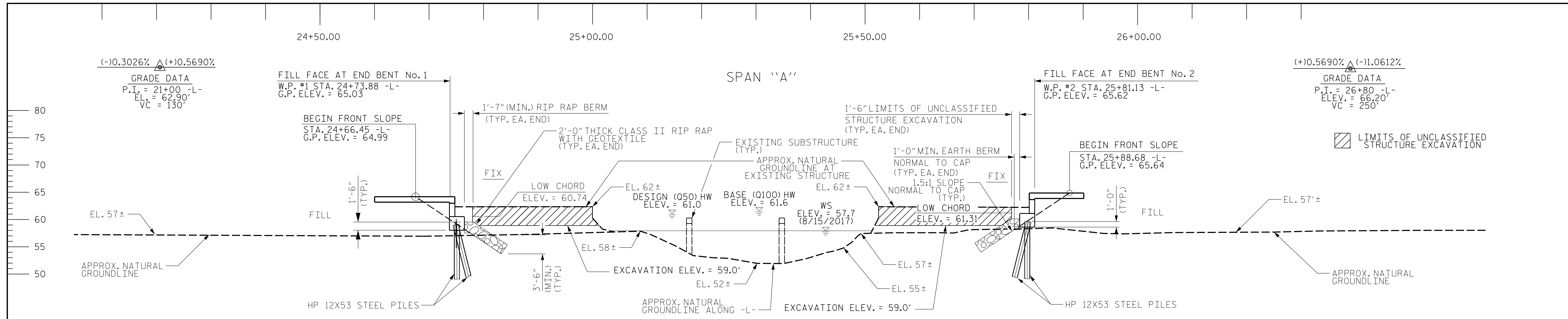
2018 STANDARD SPECIFICATIONS

LETTING DATE :

JUNE 18, 2019

PAUL L. JACOB, P.E.
 PROJECT ENGINEER

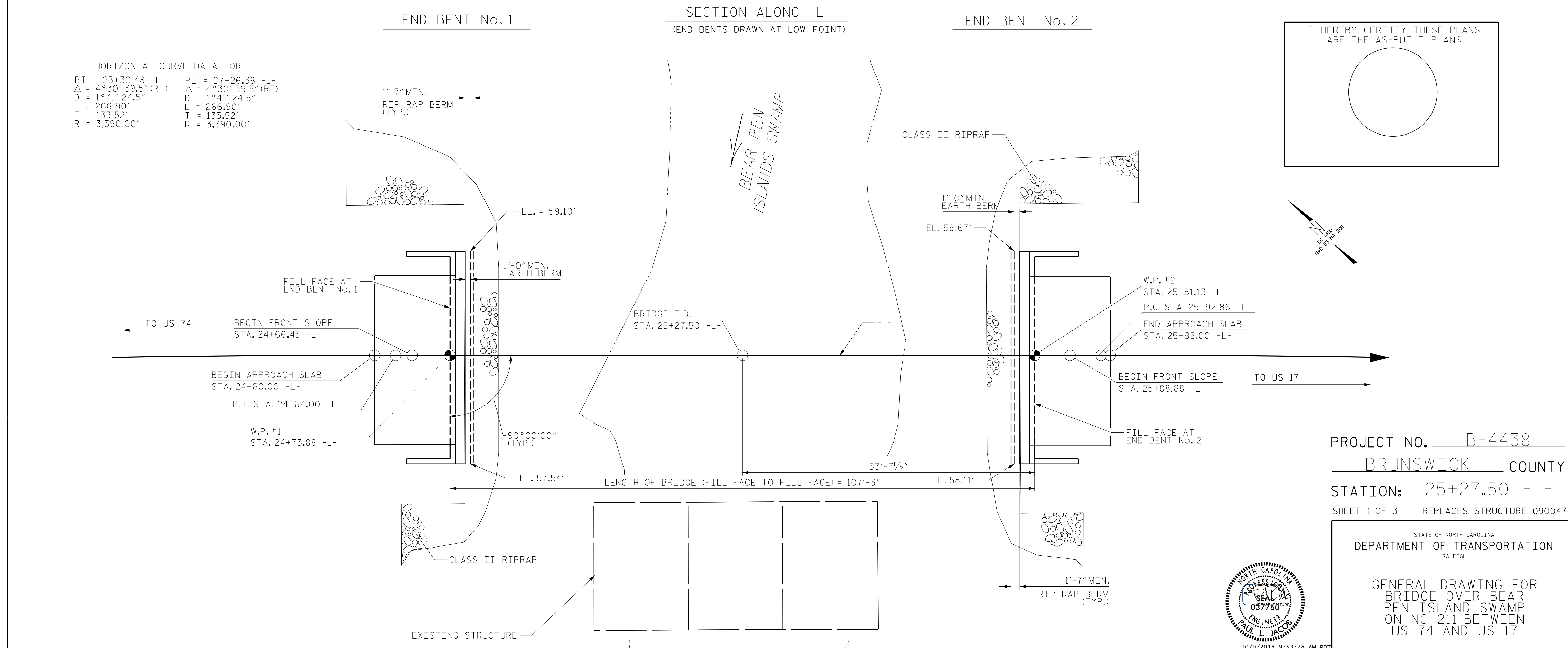
DAVID STUTTS, P.E.
 NCDOT CONTACT



HORIZONTAL CURVE DATA FOR -L-

PI = 23+30.48 -L-	PI = 27+26.38 -L-
$\Delta = 4^{\circ}30'39.5''$ (RT)	$\Delta = 4^{\circ}30'39.5''$ (RT)
D = 1'41'24.5"	D = 1'41'24.5"
L = 266.90'	L = 266.90'
T = 133.52'	T = 133.52'
R = 3,390.00'	R = 3,390.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



DRAWN BY : J. SWYERS DATE : 08/2018
 CHECKED BY : P. JACOB DATE : 08/2018
 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

PLAN
 (PILES NOT SHOWN FOR CLARITY)

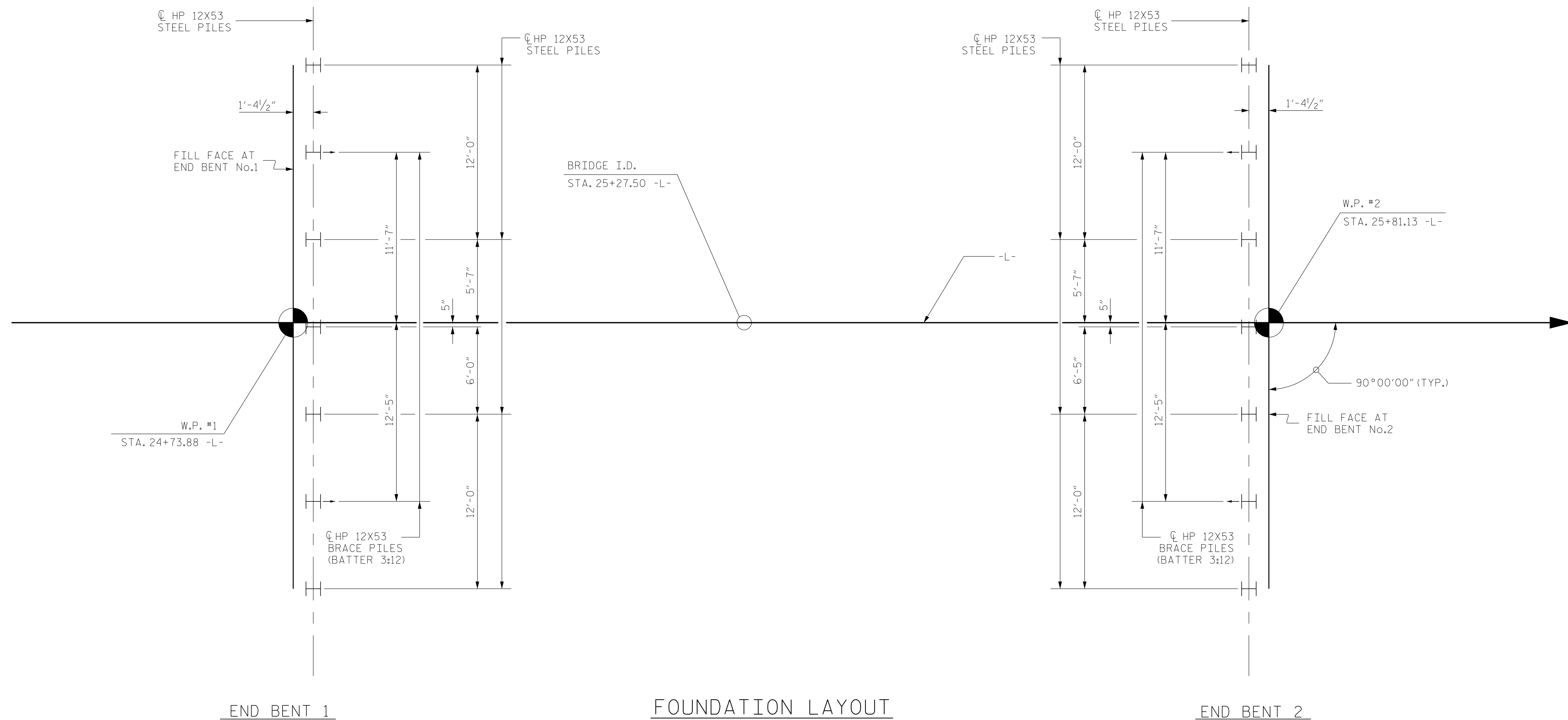
moffatt & nichol
 4700 FALLS OF NEUSE ROAD, SUITE 300
 RALEIGH, NORTH CAROLINA 27609
 (919) 781-4626 VOICE (919) 781-4869 FAX
 NC License No.: F-0105

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-
 SHEET 1 OF 3 REPLACES STRUCTURE 090047

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING FOR BRIDGE OVER BEAR PEN ISLAND SWAMP ON NC 211 BETWEEN US 74 AND US 17					
10/9/2018 9:53:28 AM PDT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-1					TOTAL SHEETS 18

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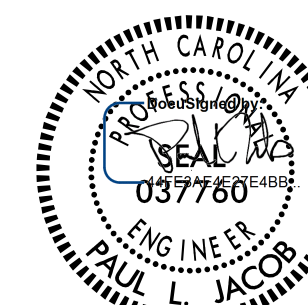


FOUNDATION NOTES:

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. PILES AT END BENTS NO.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.
3. DRIVE PILES AT END BENTS NO.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
4. TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-

SHEET 2 OF 3



10/9/2018 9:53:28 AM PDT

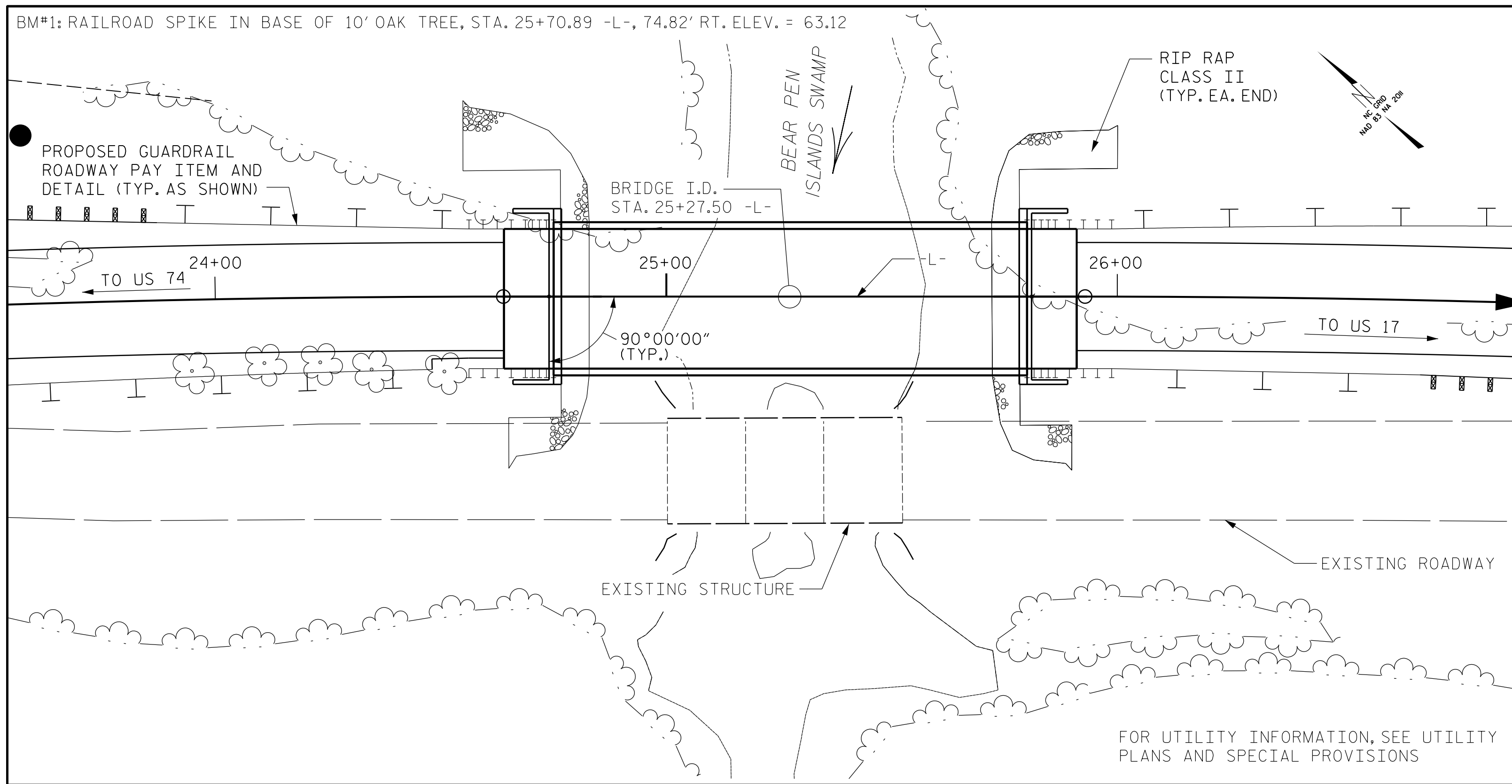
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
FOUNDATION LAYOUT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-2					TOTAL SHEETS 18

DRAWN BY : J. SWYERS DATE : 08/2018
 CHECKED BY : P. JACOB DATE : 08/2018
 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

moffatt & nichol
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LOCATION SKETCH

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE 3400 CFS
 FREQUENCY OF OVERTOPPING FLOOD 500+ YR.
 OVERTOPPING FLOOD ELEV. * 62.5
 * OT OCCURS APPROX. 5000' FROM BRIDGE @ ELEV = 62.5

HYDRAULIC DATA

DESIGN DISCHARGE 1400 CFS
 FREQUENCY OF DESIGN FLOOD 50 YR.
 DESIGN HIGHWATER ELEV. 61.0
 DRAINAGE AREA 12.7 SQ. MI.
 BASE DRAINAGE (Q100) 1720 CFS
 BASE HIGHWATER ELEV. 61.6

NOTES:

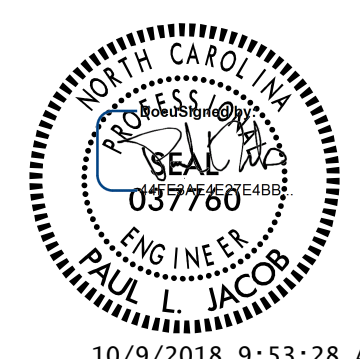
1. ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
2. THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
3. THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
4. THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
5. THE EXISTING STRUCTURE CONSISTING OF 17.75'-17.0'-17.75' SPANS ON TIMBER BEAMS; 23.25' CLEAR ROADWAY WIDTH AND CONCRETE DECK ON CONCRETE CAPS AND TIMBER PILES AND LOCATED 39' DOWNSTREAM OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
6. THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS OF THE PROJECT SITE.
7. REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
8. FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
9. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.
10. FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
11. FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
12. FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
13. FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
14. FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
15. FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION & RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
16. THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 23 FT EACH SIDE OF CENTERLINE OF ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE. FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 25+27.50 -L-	ASBESTOS ASSESSMENT	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 25+27.50 -L-	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOOR	CLASS A CONCRETE	BRIDGE APPROACH SLABS STA. 25+27.50 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNITS		
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	EACH	NO.	LIN.FT.	EACH	LIN.FT.	TONS	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE					3238	3701		LUMP SUM						210			LUMP SUM	11	1155
END BENT NO. 1							20.2		3,288	7	7	490	4		70	80			
END BENT NO. 2							20.2		3,288	7	7	490	4		65	70			
	LUMP SUM	LUMP SUM	1	LUMP SUM	3238	3701	40.4	LUMP SUM	6,576	14	14	980	8	210	135	150	LUMP SUM	11	1155

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-

SHEET 3 OF 3



10/9/2018 9:53:28 AM PDT

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING FOR BRIDGE
 OVER BEAR PEN ISLAND SWAMP
 ON NC 211 BETWEEN
 US 74 AND US 17

DRAWN BY : J. SWYERS DATE : 08/2018
 CHECKED BY : P. JACOB DATE : 08/2018
 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

moffatt & nichol
 4700 FALLS OF NEUSE ROAD, SUITE 300
 RALEIGH, NORTH CAROLINA 27609
 (919) 781-4626 VOICE (919) 781-4869 FAX
 NC License No.: F-0105

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.035	--	1.75	0.272	1.26	A	EL	49.25	0.489	1.34	A	EL	4.925	0.80	0.272	1.04	A	EL	49.25		
	HL-93(Opr)	N/A	--	1.633	--	1.35	0.272	1.63	A	EL	49.25	0.489	1.73	A	EL	4.925	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.44	51.84	1.75	0.272	1.75	A	EL	49.25	0.489	1.81	A	EL	4.925	0.80	0.272	1.44	A	EL	49.25		
	HS-20(Opr)	36.000	--	2.271	81.756	1.35	0.272	2.27	A	EL	49.25	0.489	2.35	A	EL	4.925	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.413	46.079	1.4	0.272	5.19	A	EL	49.25	0.489	5.59	A	EL	4.925	0.80	0.272	3.41	A	EL	49.25	
		SNGARBS2	20.000	--	2.473	49.452	1.4	0.272	3.76	A	EL	49.25	0.489	3.91	A	EL	4.925	0.80	0.272	2.47	A	EL	49.25	
		SNAGRIS2	22.000	--	2.313	50.885	1.4	0.272	3.52	A	EL	49.25	0.489	3.6	A	EL	4.925	0.80	0.272	2.31	A	EL	49.25	
		SNCOTTS3	27.250	--	1.696	46.228	1.4	0.272	2.58	A	EL	49.25	0.489	2.78	A	EL	4.925	0.80	0.272	1.70	A	EL	49.25	
		SNAGGRS4	34.925	--	1.39	48.556	1.4	0.272	2.11	A	EL	49.25	0.489	2.26	A	EL	4.925	0.80	0.272	1.39	A	EL	49.25	
		SNS5A	35.550	--	1.361	48.398	1.4	0.272	2.07	A	EL	49.25	0.489	2.27	A	EL	4.925	0.80	0.272	1.36	A	EL	49.25	
		SNS6A	39.950	--	1.238	49.456	1.4	0.272	1.88	A	EL	49.25	0.489	2.05	A	EL	4.925	0.80	0.272	1.24	A	EL	49.25	
	SNS7B	42.000	--	1.178	49.496	1.4	0.272	1.79	A	EL	49.25	0.489	2	A	EL	4.925	0.80	0.272	1.18	A	EL	49.25		
	TTST	TNAGRIT3	33.000	--	1.506	49.709	1.4	0.272	2.29	A	EL	49.25	0.489	2.46	A	EL	4.925	0.80	0.272	1.51	A	EL	49.25	
		TNT4A	33.075	--	1.51	49.942	1.4	0.272	2.3	A	EL	49.25	0.489	2.41	A	EL	4.925	0.80	0.272	1.51	A	EL	49.25	
		TNT6A	41.600	--	1.224	50.926	1.4	0.272	1.86	A	EL	49.25	0.489	2.09	A	EL	4.925	0.80	0.272	1.22	A	EL	49.25	
		TNT7A	42.000	--	1.225	51.442	1.4	0.272	1.86	A	EL	49.25	0.489	2.05	A	EL	4.925	0.80	0.272	1.22	A	EL	49.25	
		TNT7B	42.000	--	1.254	52.657	1.4	0.272	1.91	A	EL	49.25	0.489	1.96	A	EL	4.925	0.80	0.272	1.25	A	EL	49.25	
		TNAGRIT4	43.000	--	1.203	51.711	1.4	0.272	1.83	A	EL	49.25	0.489	1.91	A	EL	4.925	0.80	0.272	1.20	A	EL	49.25	
TNAGT5A		45.000	--	1.139	51.236	1.4	0.272	1.73	A	EL	49.25	0.489	1.87	A	EL	4.925	0.80	0.272	1.14	A	EL	49.25		
TNAGT5B	45.000	3	1.129	50.805	1.4	0.272	1.72	A	EL	49.25	0.489	1.82	A	EL	4.925	0.80	0.272	1.13	A	EL	49.25			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1. ALL RATINGS BASED UPON 0 PSI TENSION IN THE PRE-COMPRESSED TENSILE ZONE.
2. LOSSES WERE CALCULATED USING THE AASHTO REFINED METHOD FOR CALCULATING TIME DEPENDENT LOSSES. LOSSES ARE AS FOLLOWS:
INITIAL LOSSES - 14.42 KSI (7.12%)
TOTAL LOSSES - 32.82 KSI (16.21%)
3. SECTION PROPERTIES ARE BASED UPON NCDOT STRUCTURE DESIGN MANUAL FIGURE 6-88 AND DO NOT INCLUDE TRANSFORMATION OF STEEL WHEN CONSIDERING MEMBER RESISTANCE.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

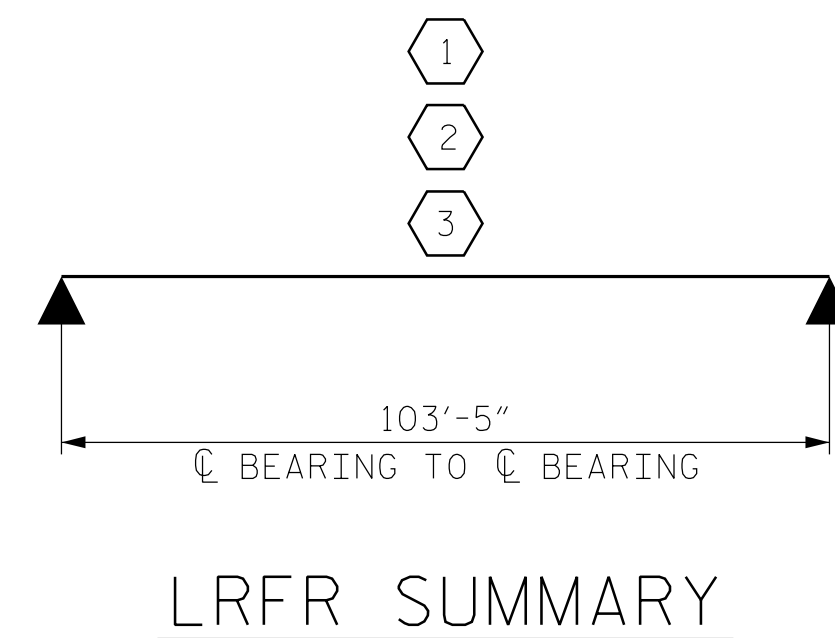
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

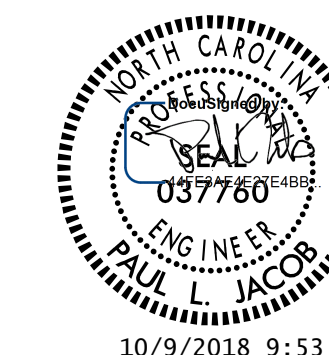
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-

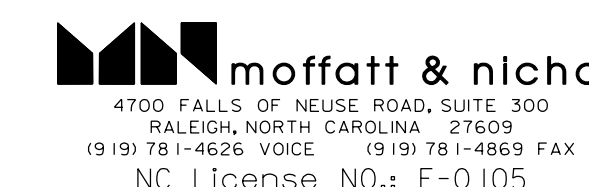


10/9/2018 9:53:28 AM PDT

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
105' BOX BEAM UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

DRAWN BY : J. SWYERS DATE : 08/2018
 CHECKED BY : P. JACOB DATE : 08/2018
 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

NOTES

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

ALL REINFORCING STEEL CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,100 PSI.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS AND CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE CONCRETE RAIL. THE COST OF THE REINFORCING STEEL CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

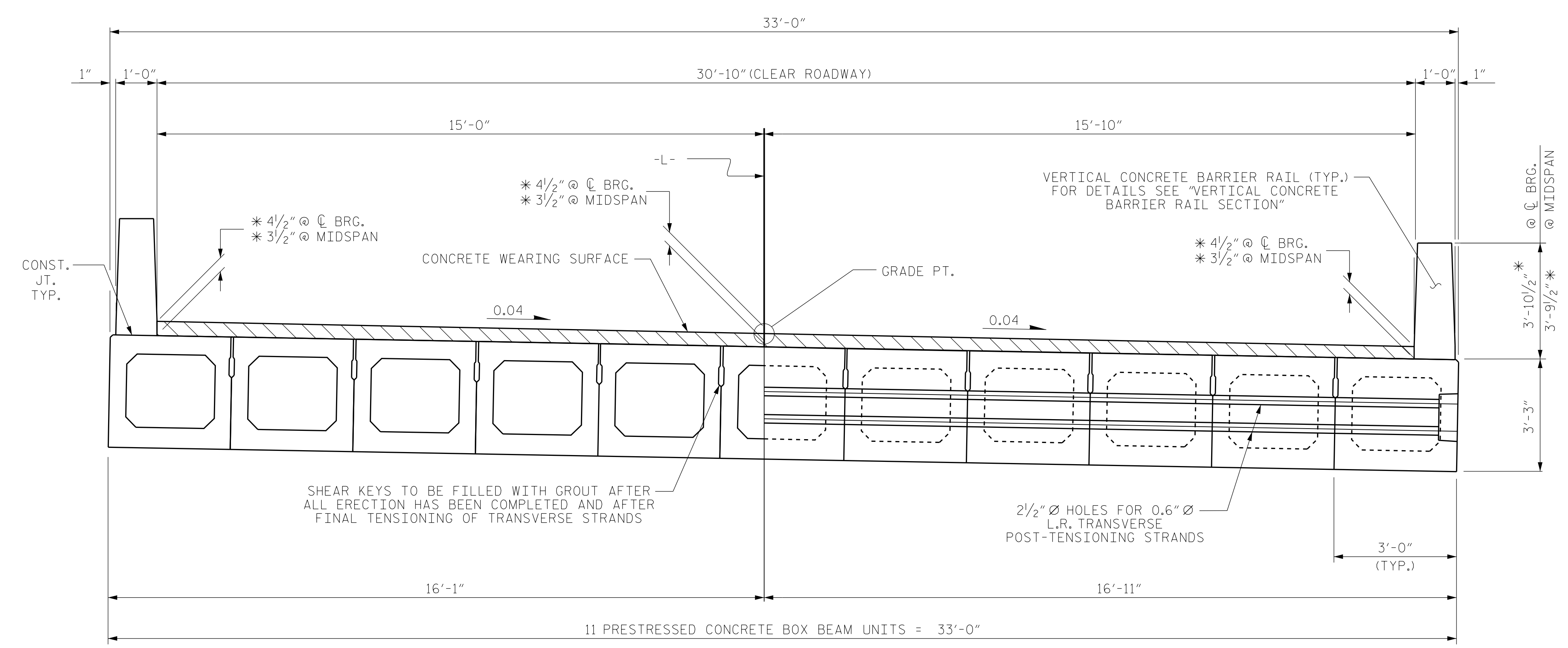
THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

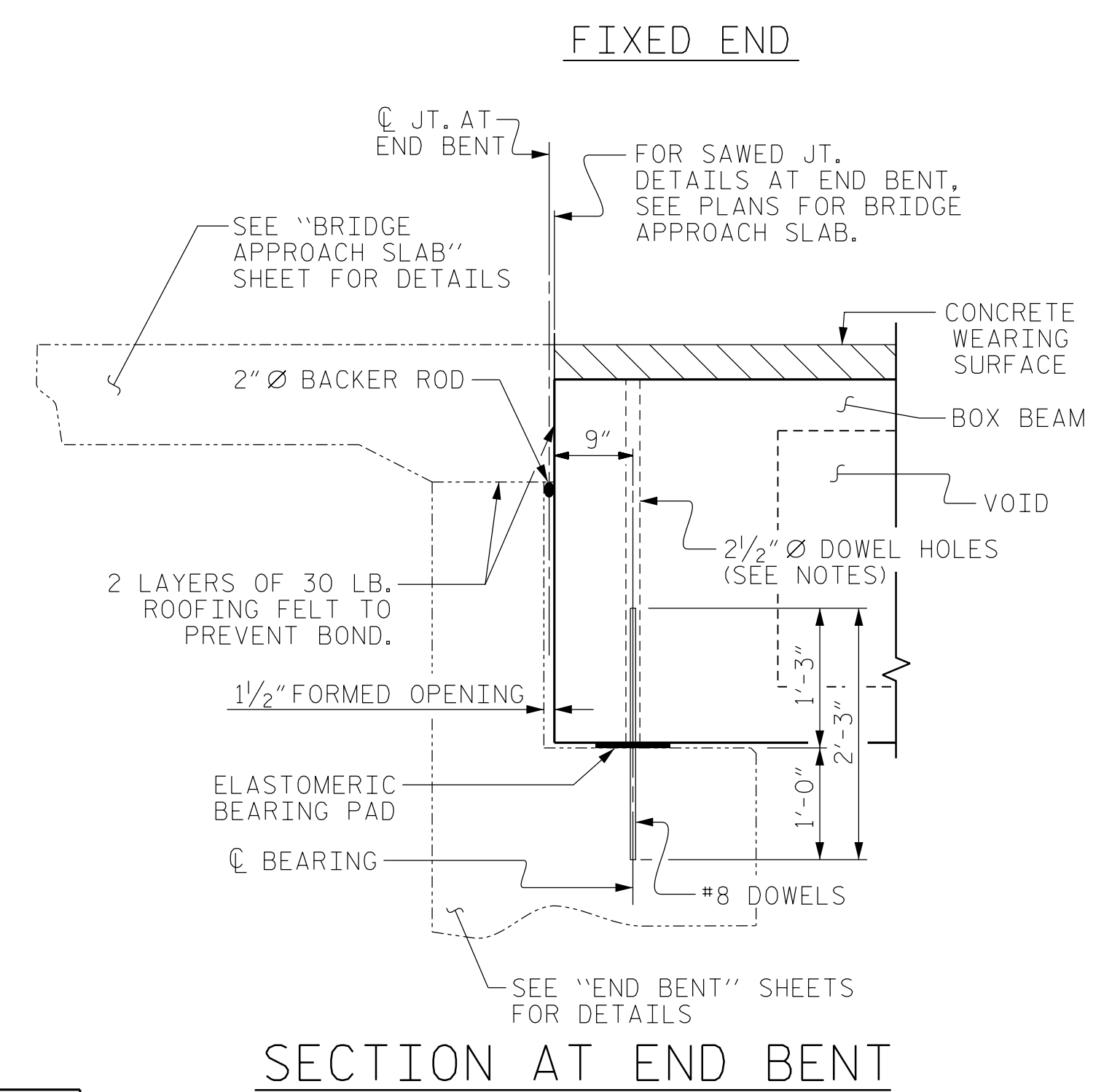
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



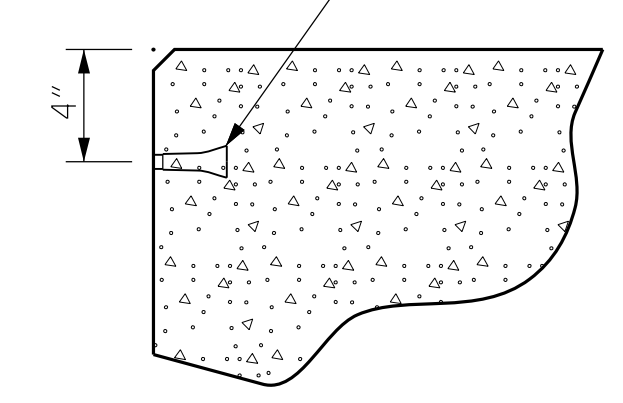
HALF SECTION THROUGH VOIDS | HALF SECTION AT INTERMEDIATE DIAPHRAGMS | TYPICAL SECTION

* THE MINIMUM AND MAXIMUM BARRIER RAIL HEIGHTS AND CONCRETE WEARING SURFACE THICKNESS ARE SHOWN. THE HEIGHT OF THE BARRIER RAIL AND CONCRETE WEARING SURFACE THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTER. THE OVERLAY THICKNESS AT CENTERLINE BEARING IS BASED ON THE PREDICTED DEFLECTION DUE TO CONCRETE OVERLAY.



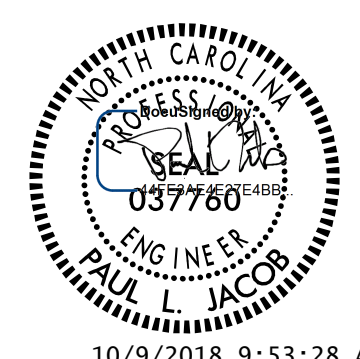
SECTION AT END BENT

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. B-4438
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 STATION: 25+27.50 -L-
 SHEET 1 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

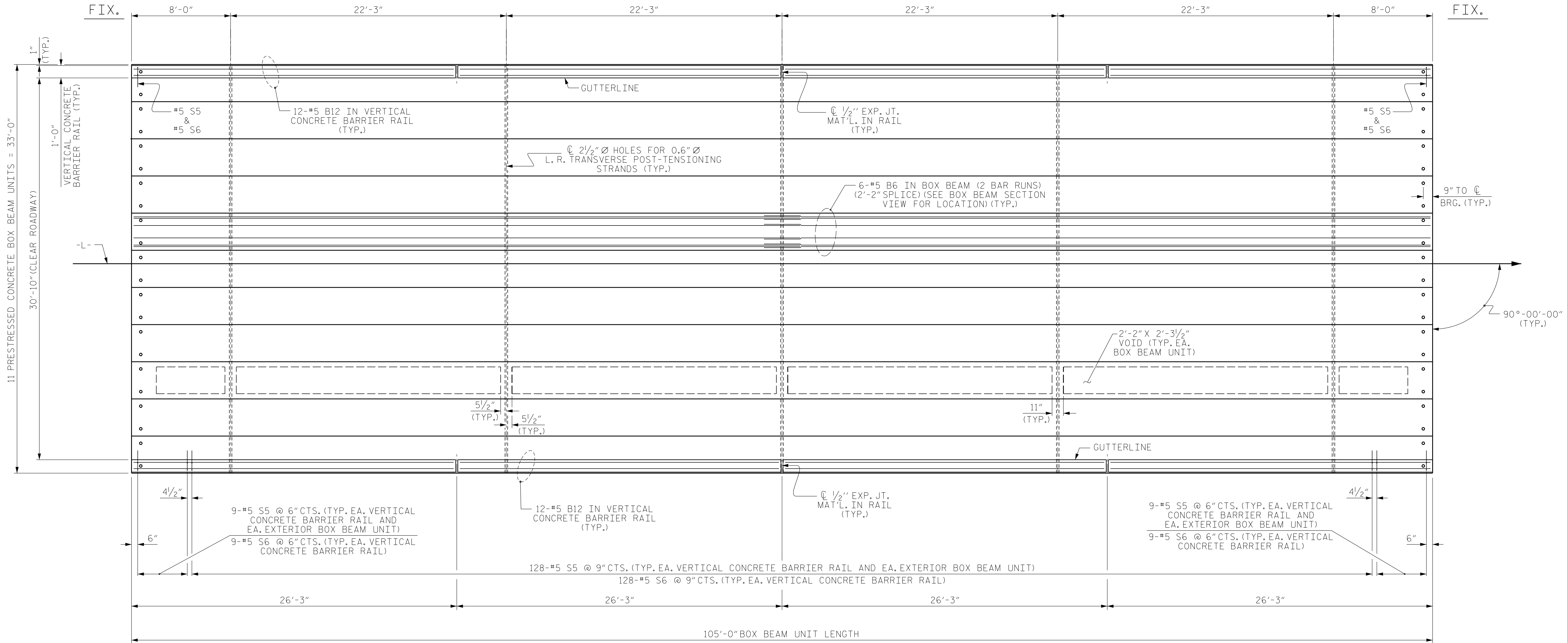
DRAWN BY : J. SWYERS DATE : 08/2018
 CHECKED BY : P. JACOB DATE : 08/2018
 DESIGN ENGINEER OF RECORD : P. JACOB DATE : 08/2018

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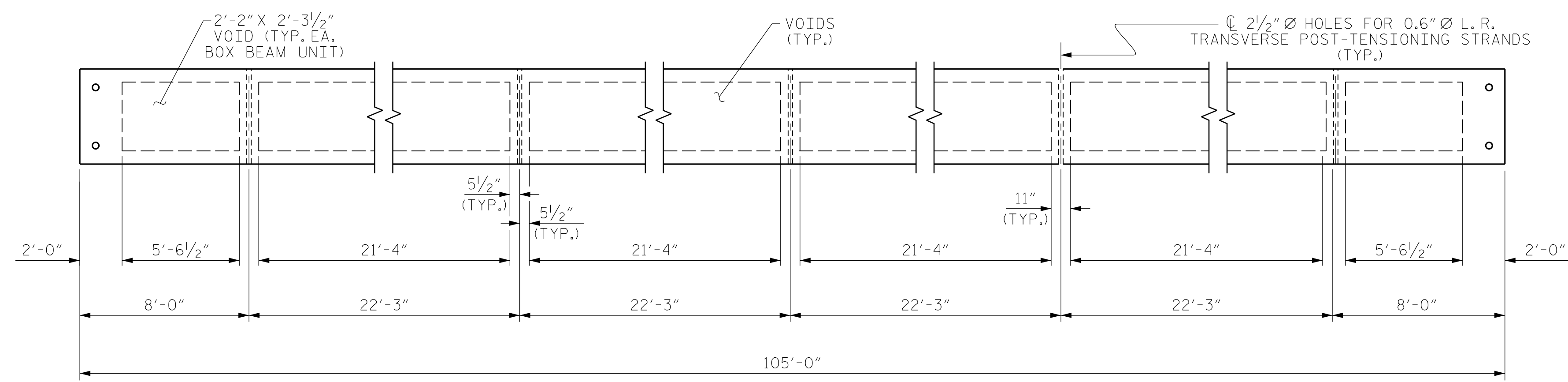
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PLAN OF UNIT

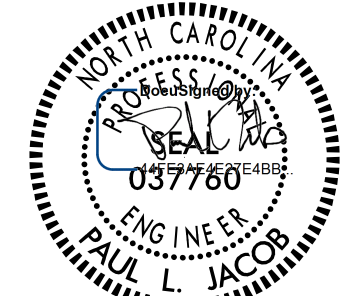


DIAPHRAGM AND VOID LAYOUT

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-
 SHEET 2 OF 6

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PLAN OF 105' UNIT
 30'-10" CLEAR ROADWAY
 90° SKEW



10/9/2018 9:53:28 AM PDT

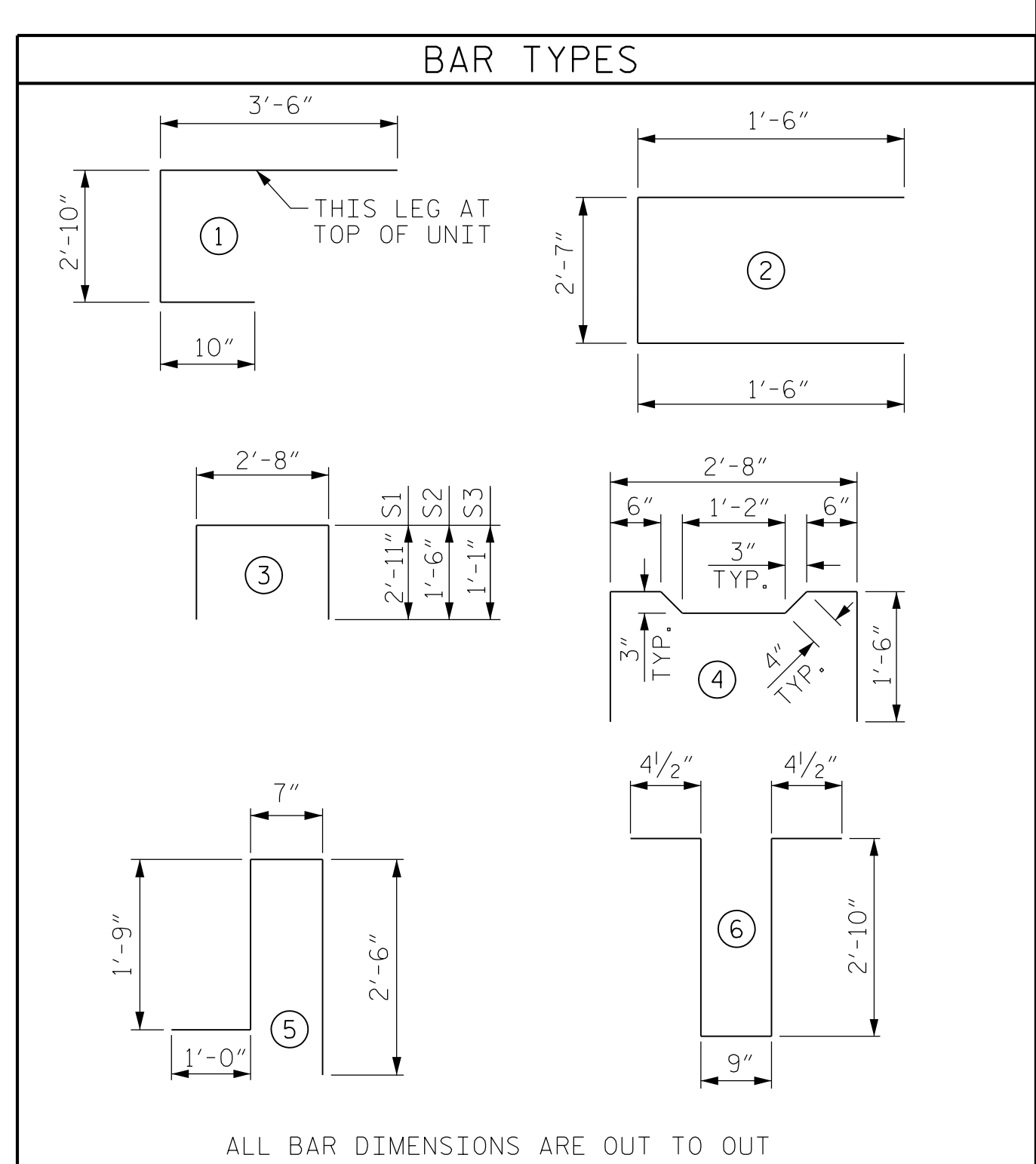
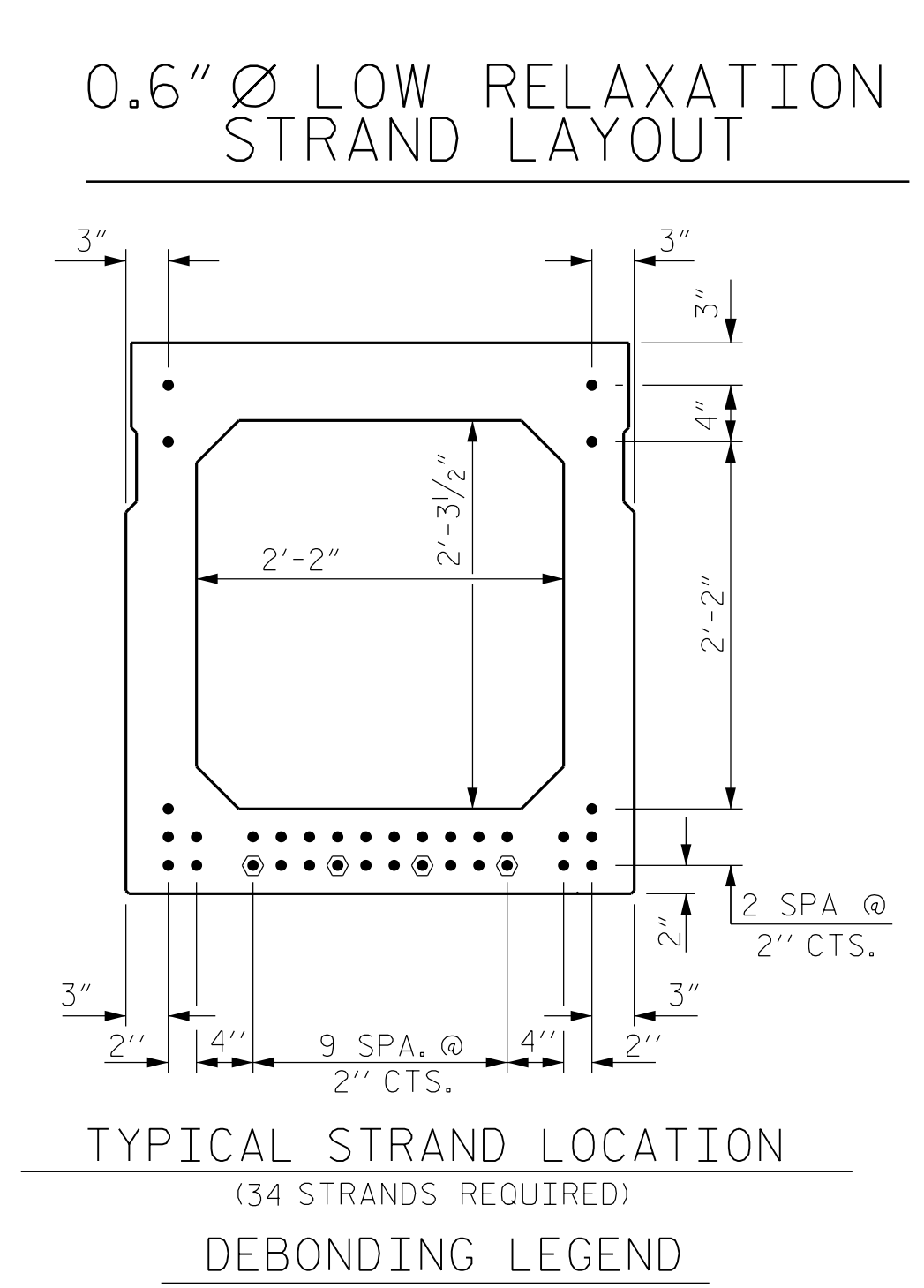
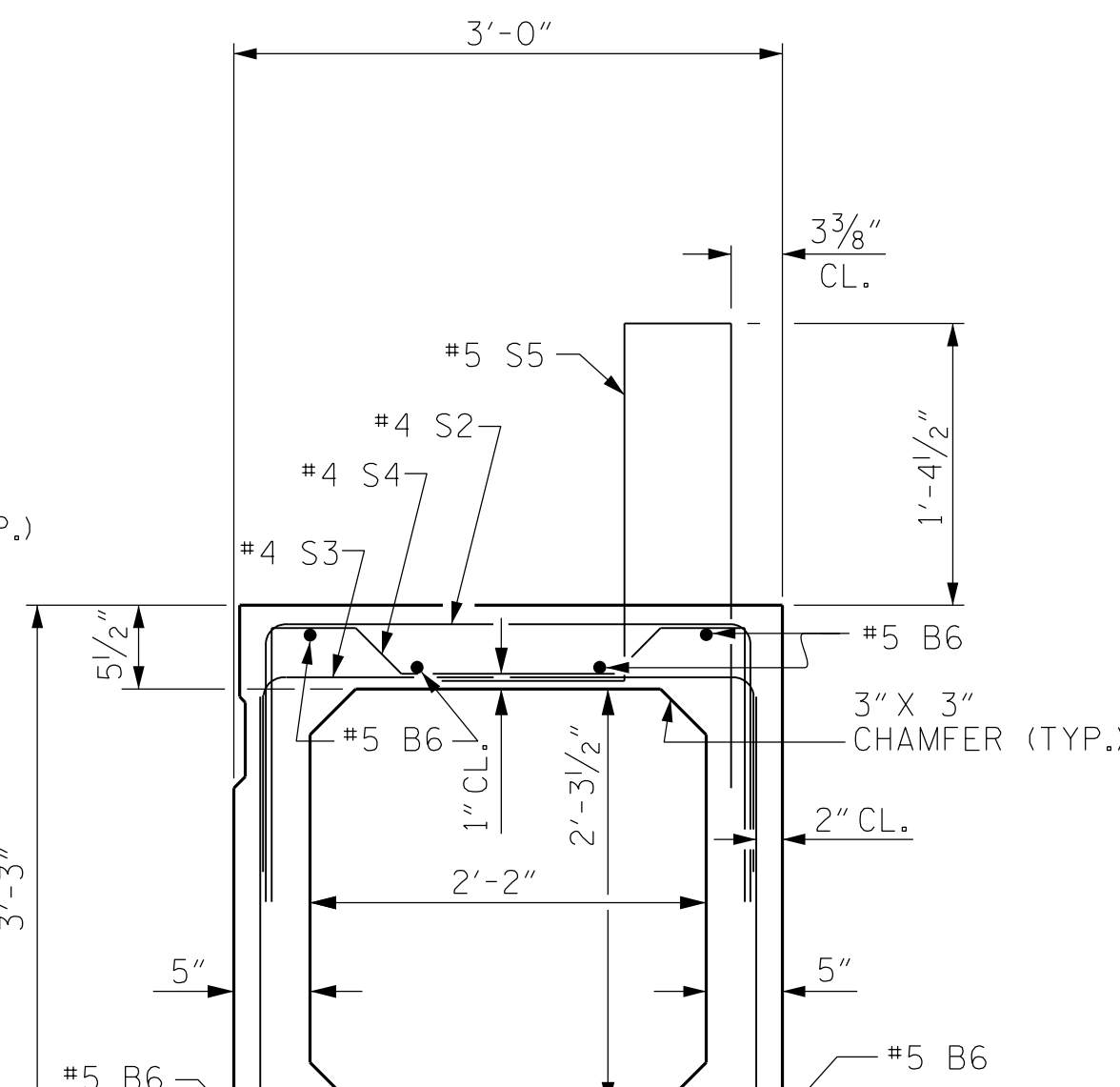
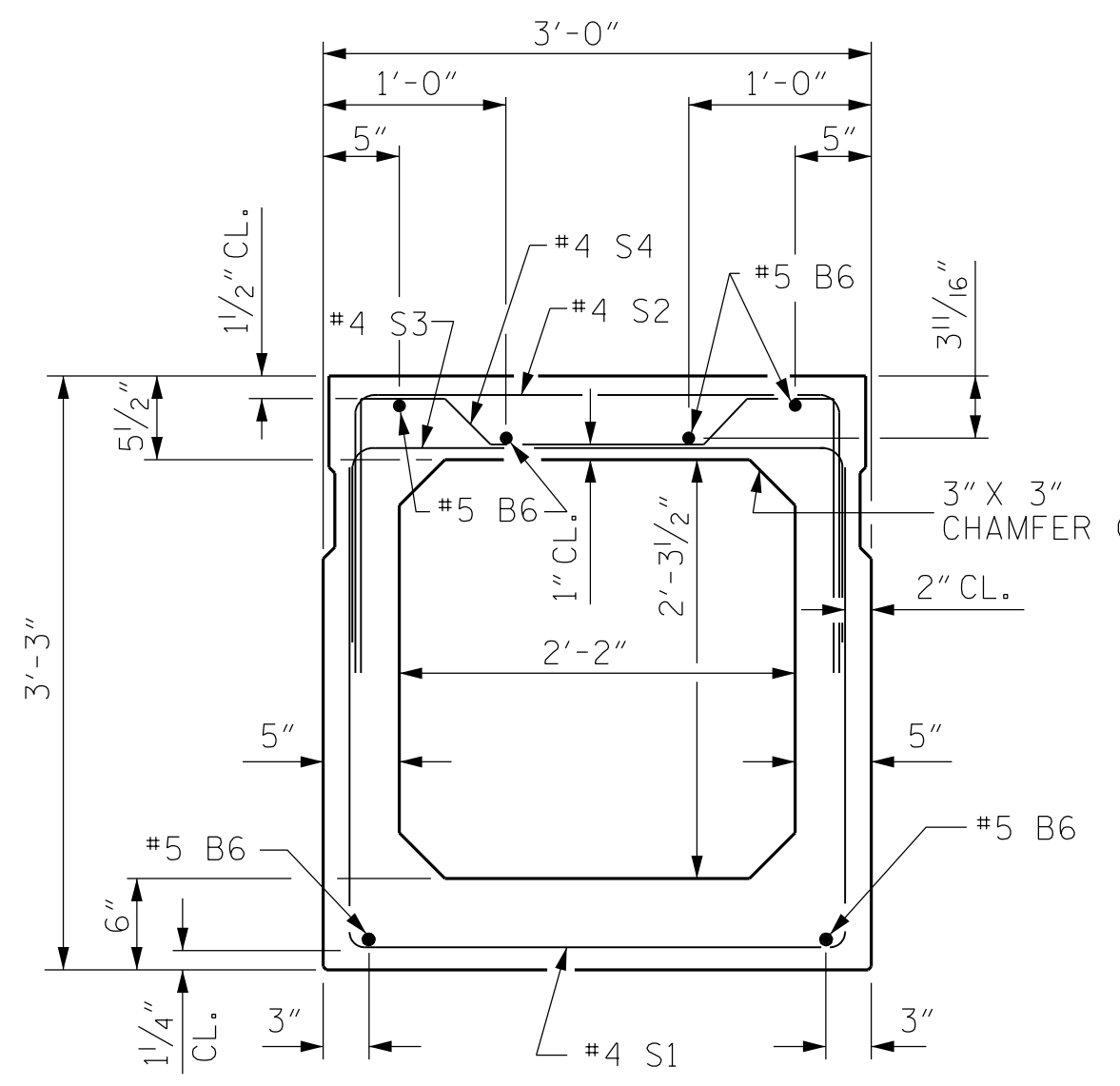
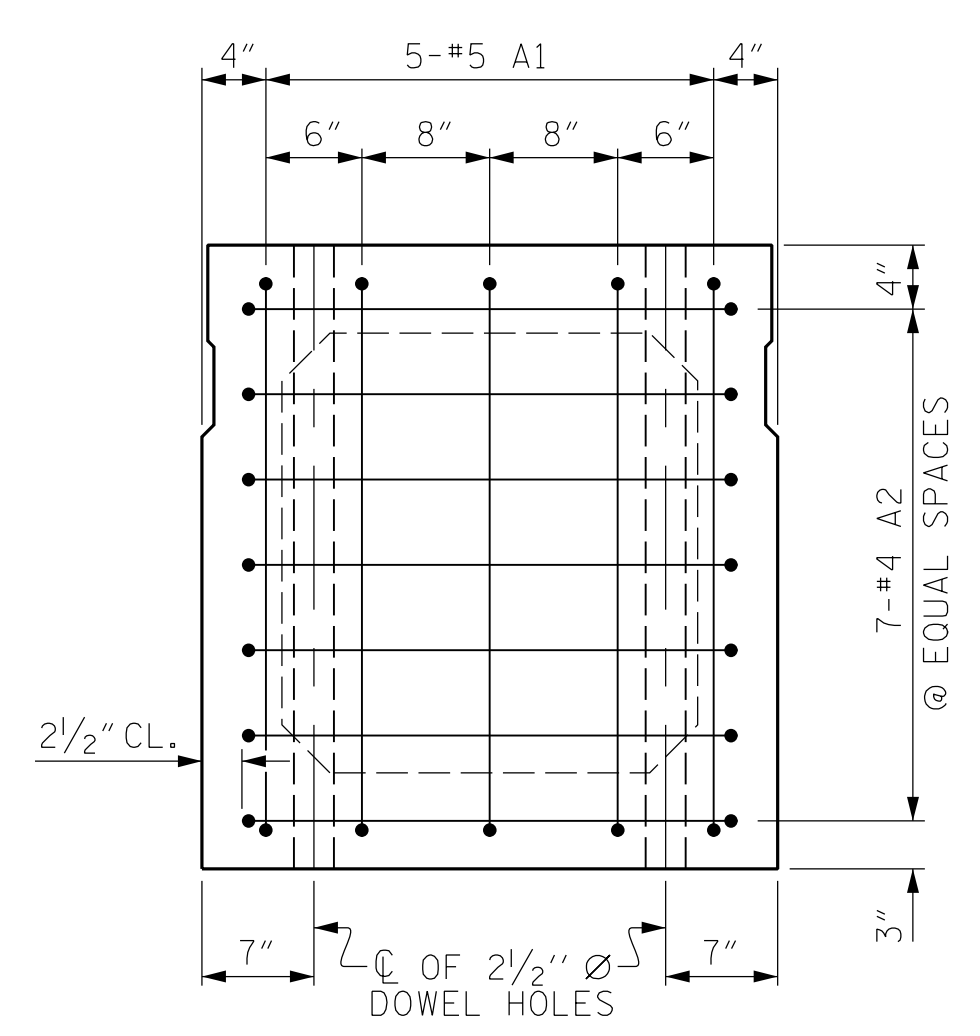
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 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

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END ELEVATION
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION, STRAND LAYOUT NOT SHOWN.)

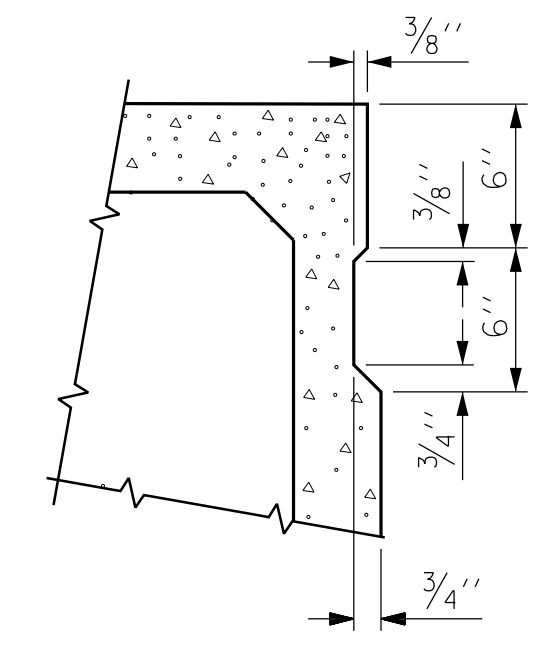
INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)

TYPICAL STRAND LOCATION
(34 STRANDS REQUIRED)
DEBONDING LEGEND

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

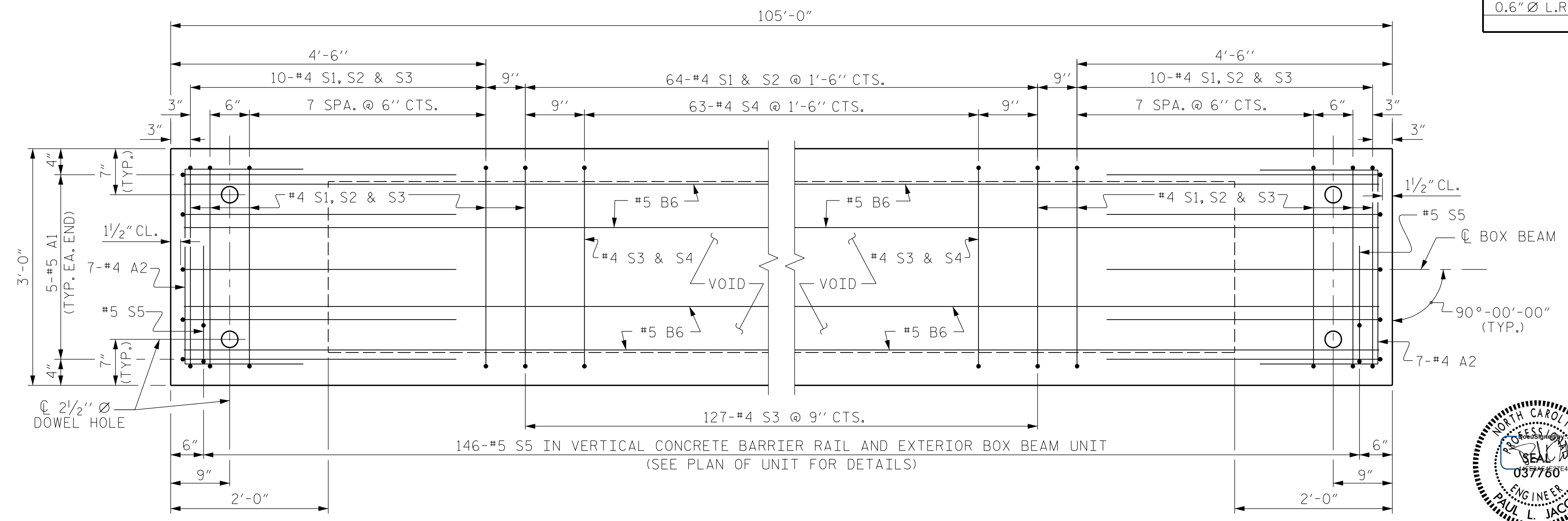
BAR NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT		
			LENGTH	WEIGHT	LENGTH	WEIGHT	
A1	10	#5	1	75	75	75	
A2	44	#4	2	164	164	164	
B6	12	#5	STR	53'-6"	670	53'-6"	670
K1	15	#4	6	72	72	72	
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	84	#4	3	477	477	477	
S2	84	#4	3	318	318	318	
S3	147	#4	3	475	475	475	
S4	63	#4	4	245	245	245	
* S5	146	#5	5	888	--	--	
REINFORCING STEEL				2513	LBS.	2513	LBS.
* EPOXY COATED REINFORCING STEEL				888	LBS.		
8000 P.S.I. CONCRETE				20.5	CU. YDS.	20.3	CU. YDS.
0.6" Ø L.R. STRANDS				No. 34		No. 34	



NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

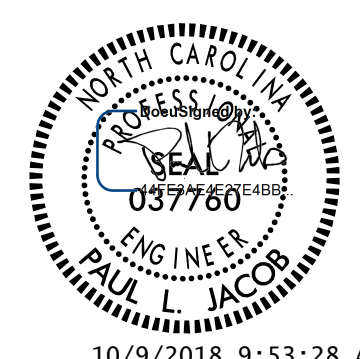
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

- FULLY BONDED STRANDS
 - ⊙ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT". FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".



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BRUNSWICK COUNTY
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SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

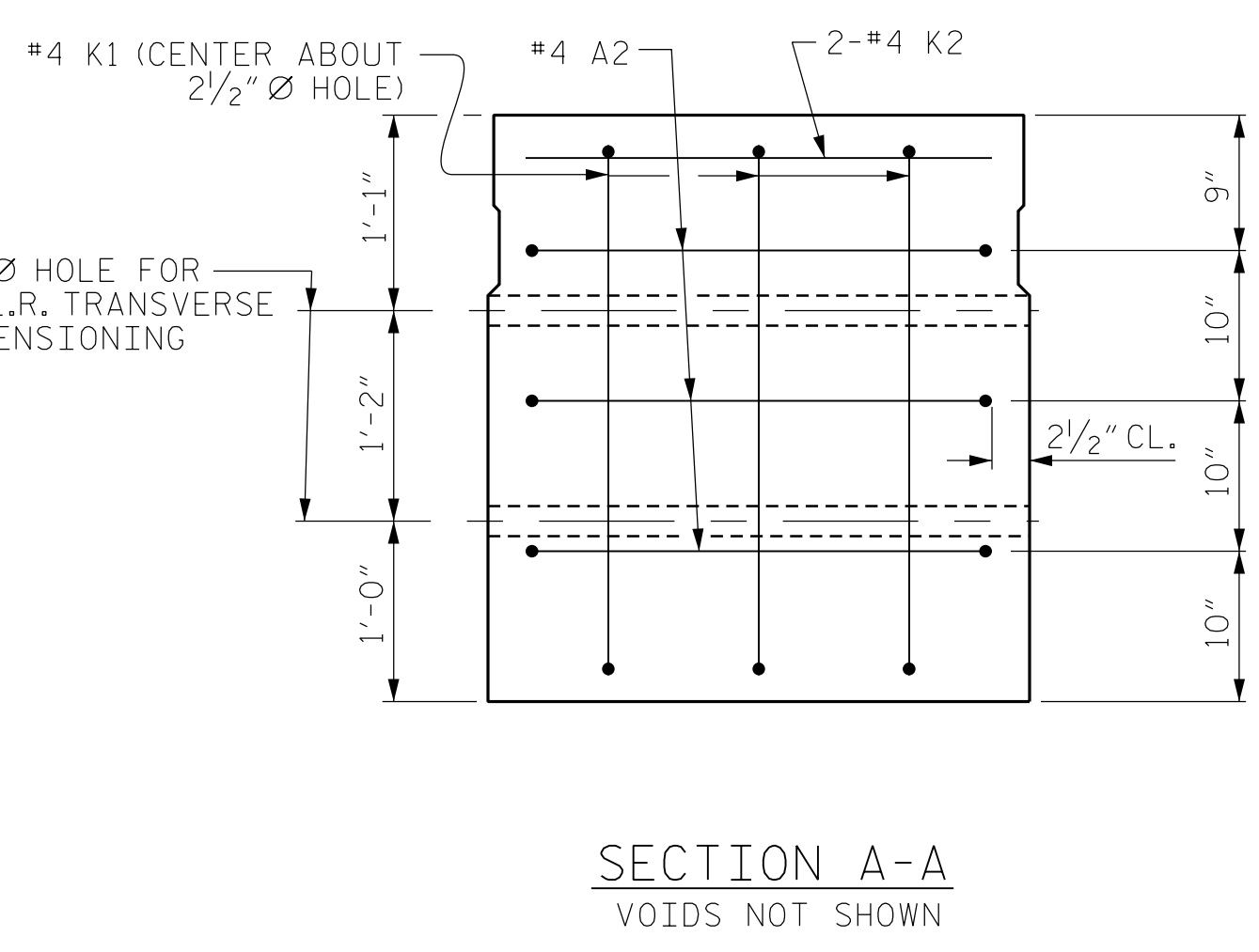
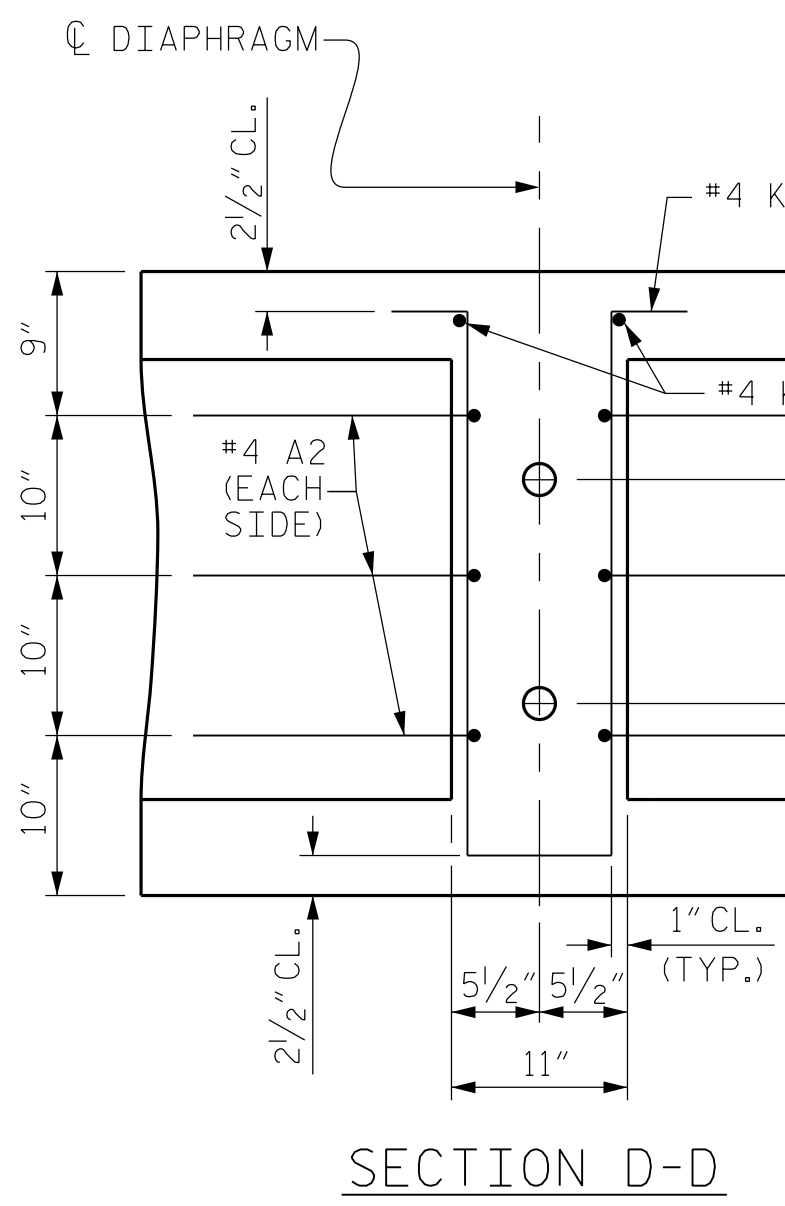
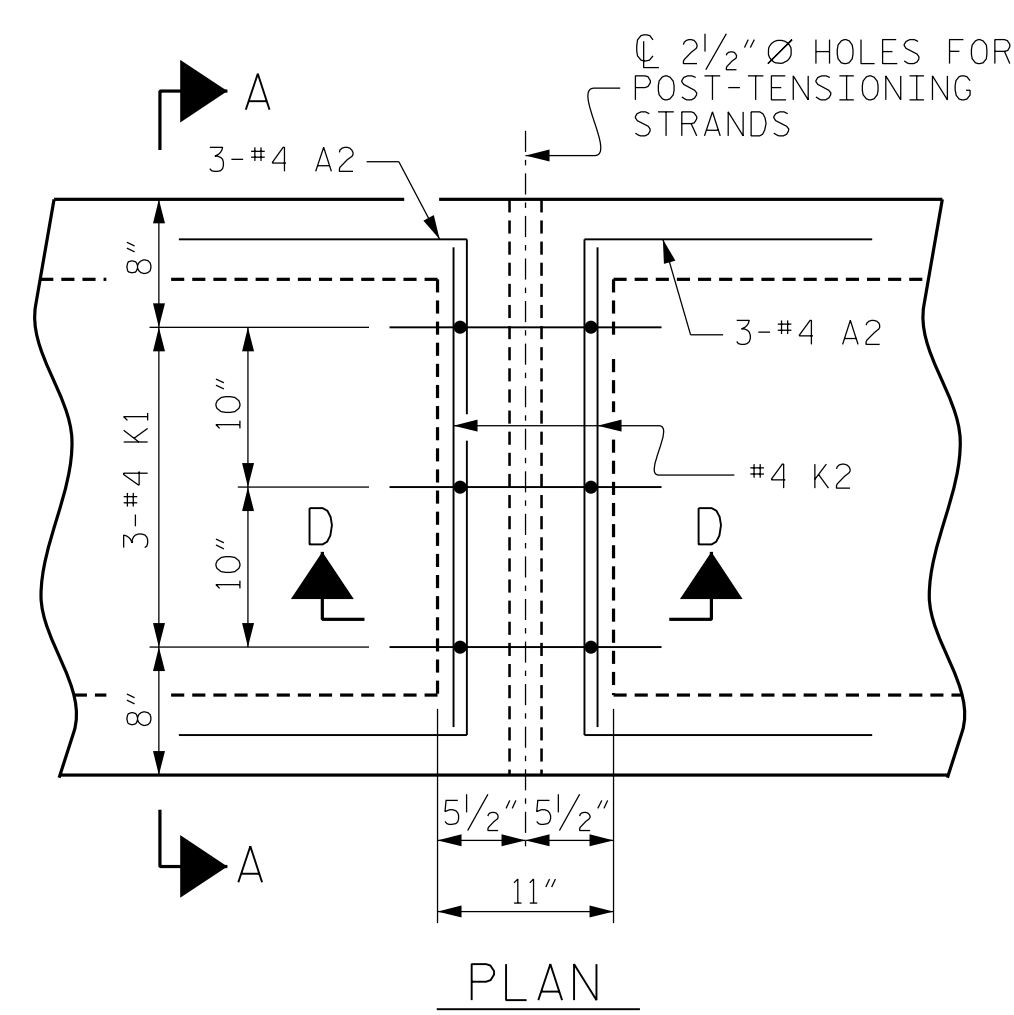
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

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DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

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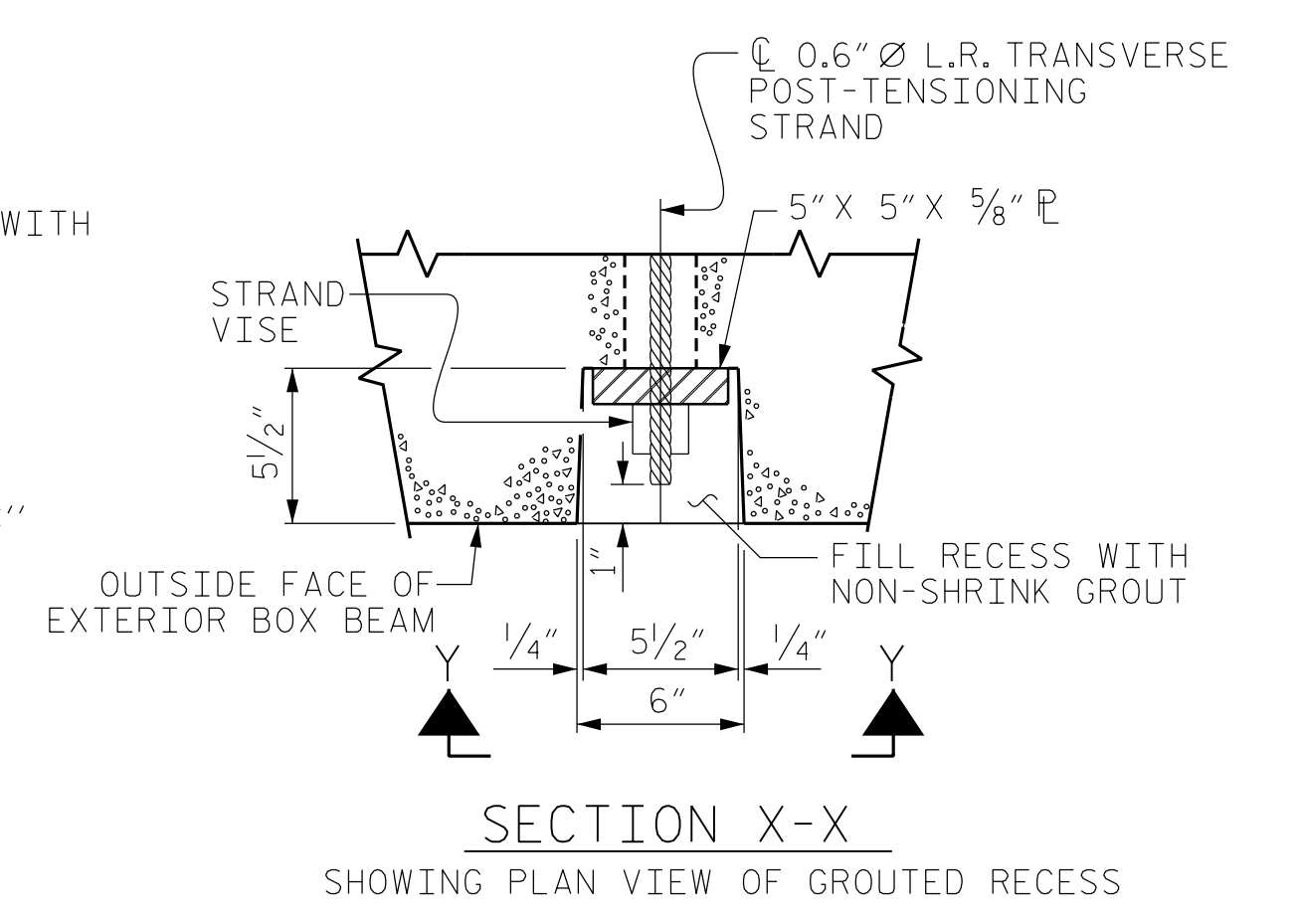
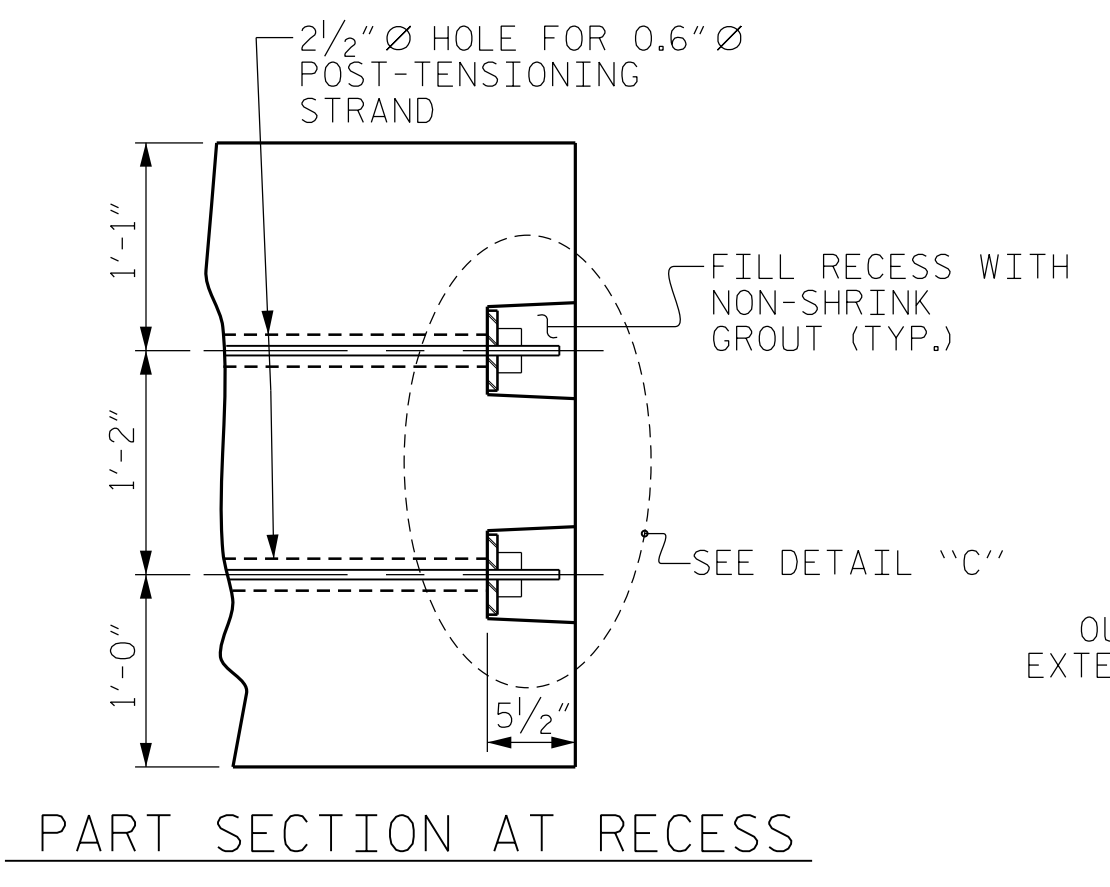
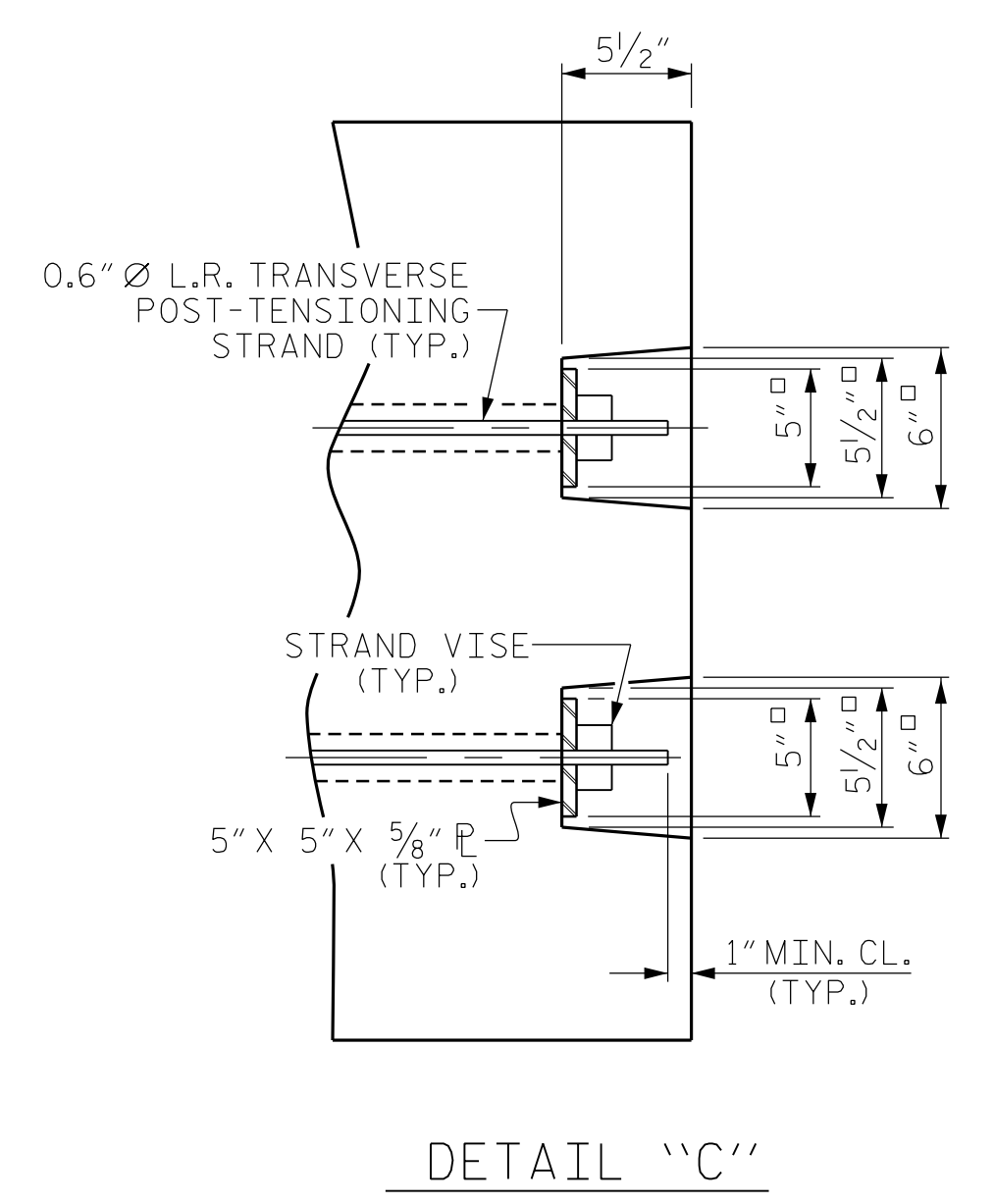
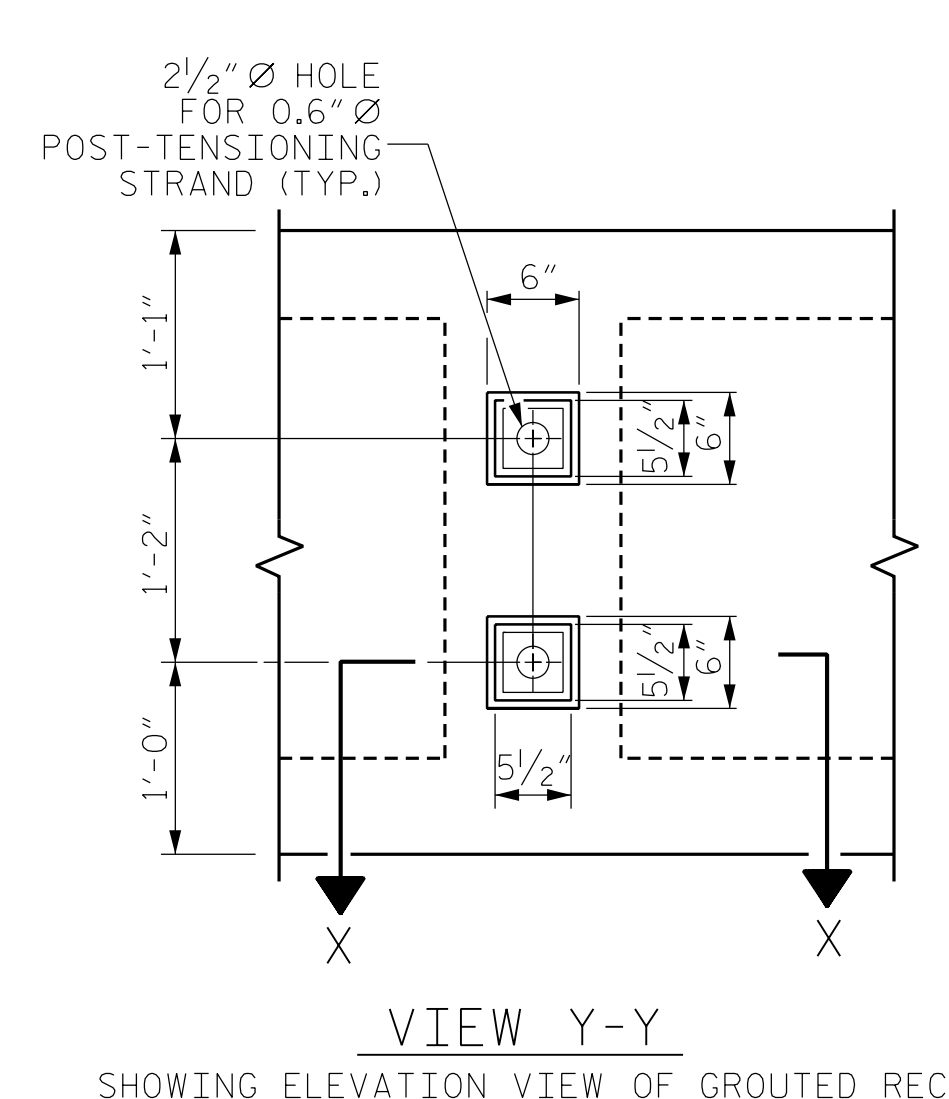
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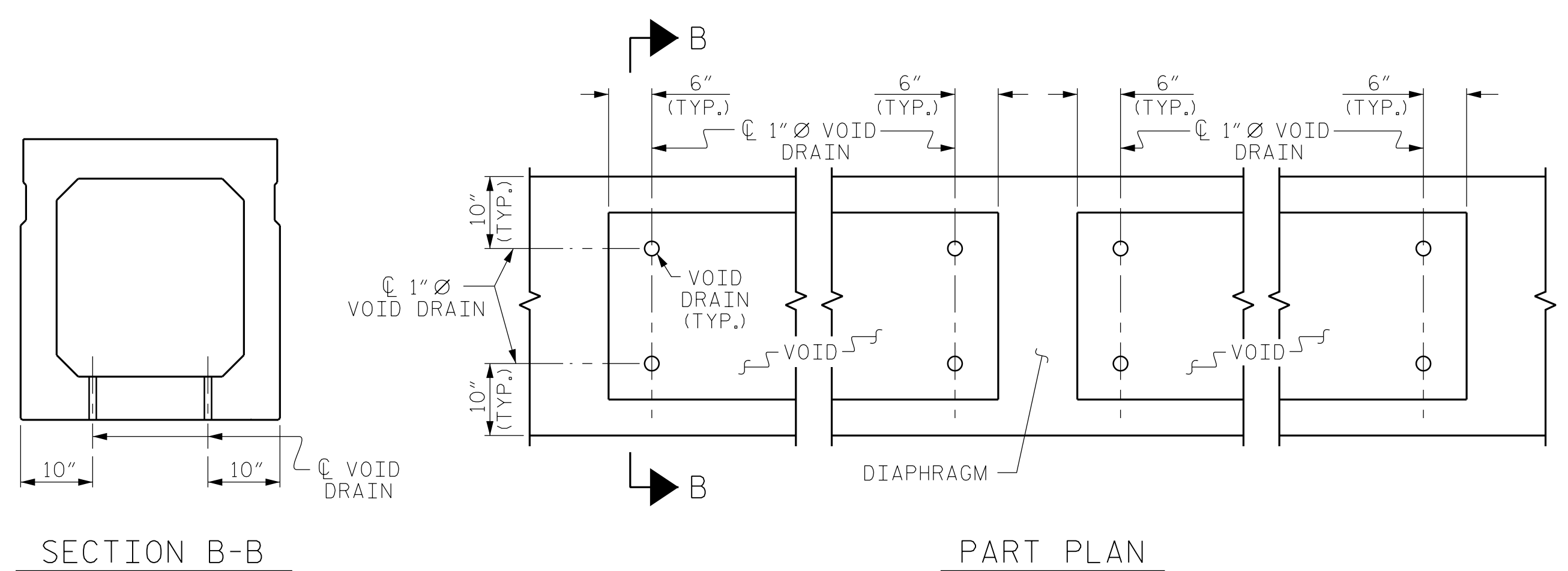


DOUBLE DIAPHRAGM DETAILS

#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.



GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



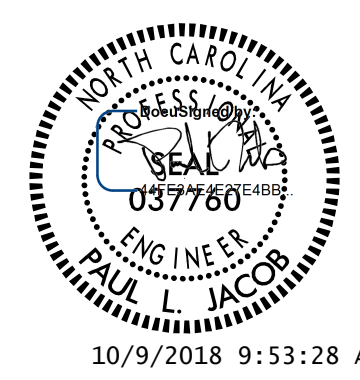
VOID DRAIN DETAILS

(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
	3'-0" x 3'-3"
	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 1/8" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 1/8" ↓
FINAL CAMBER	1" ↑

** INCLUDES FUTURE WEARING SURFACE

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BRUNSWICK COUNTY
 STATION: 25+27.50 -L-
 SHEET 4 OF 6



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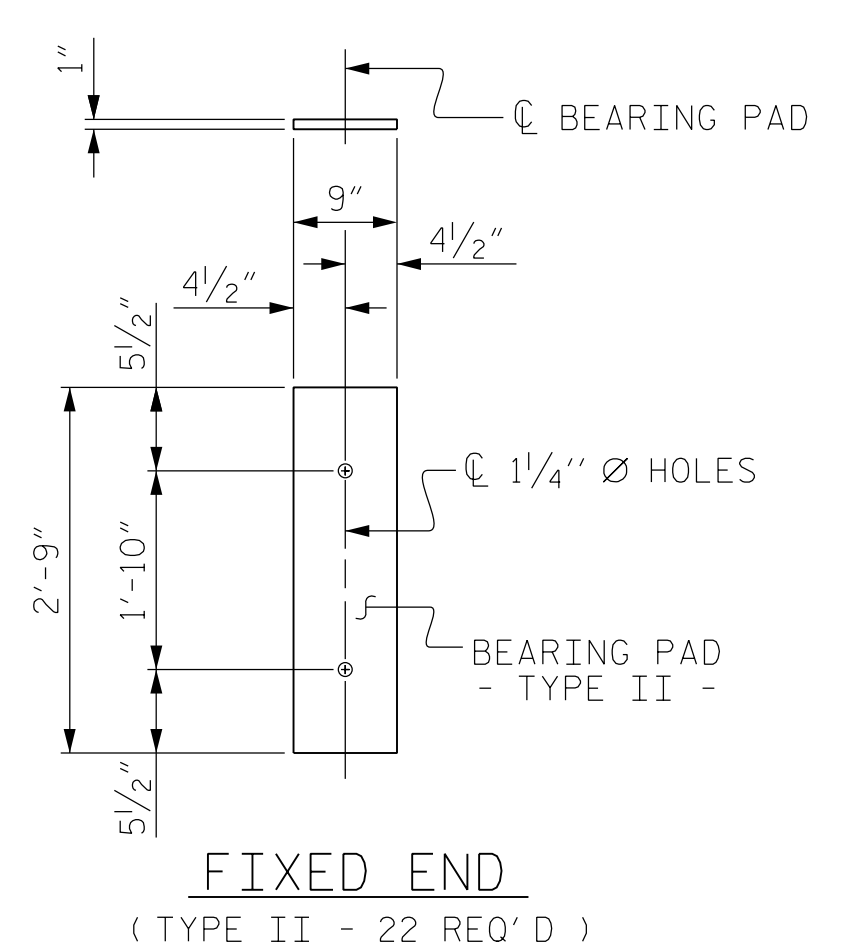
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

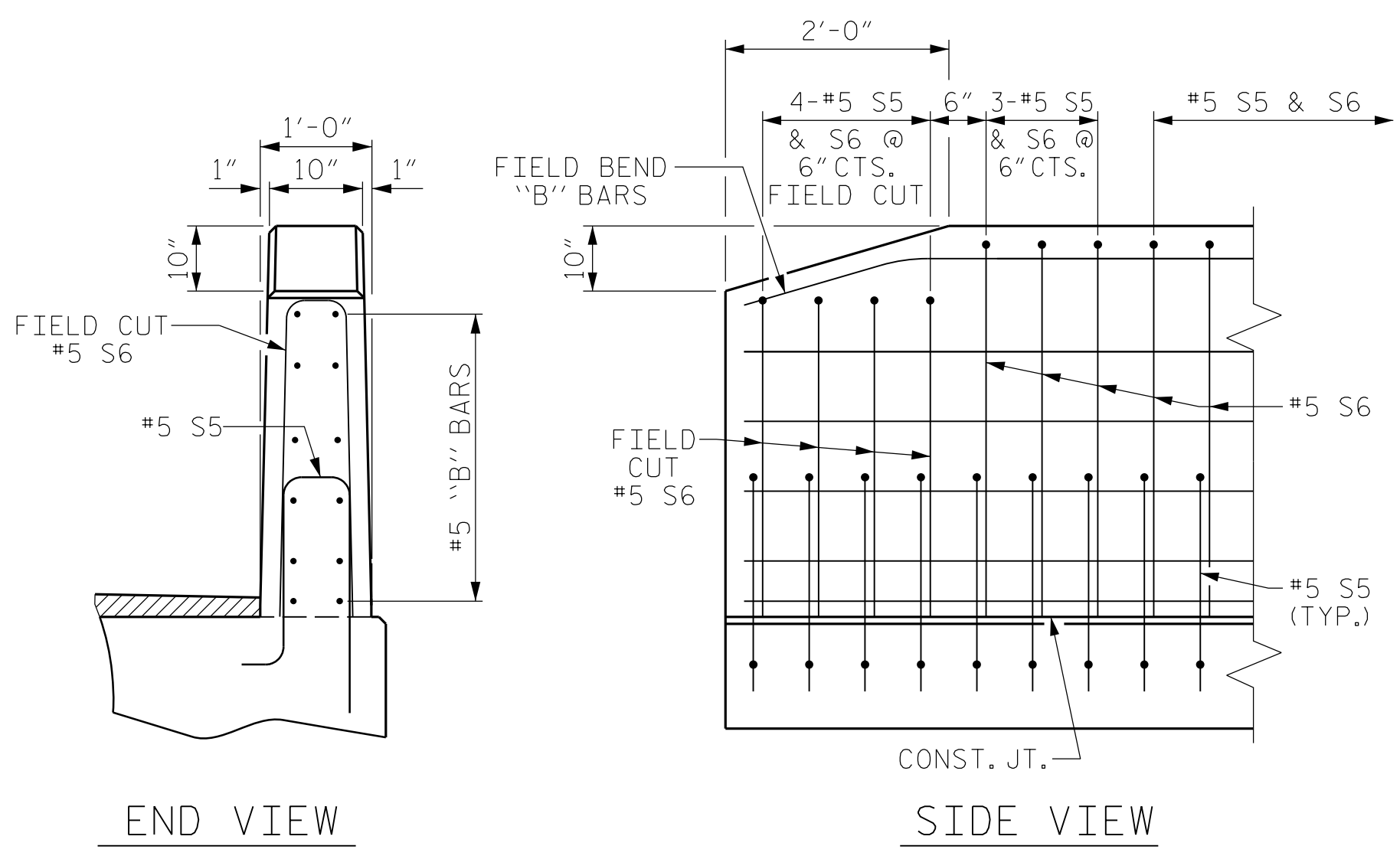
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TOTAL SHEETS 18

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ELASTOMERIC BEARING DETAILS

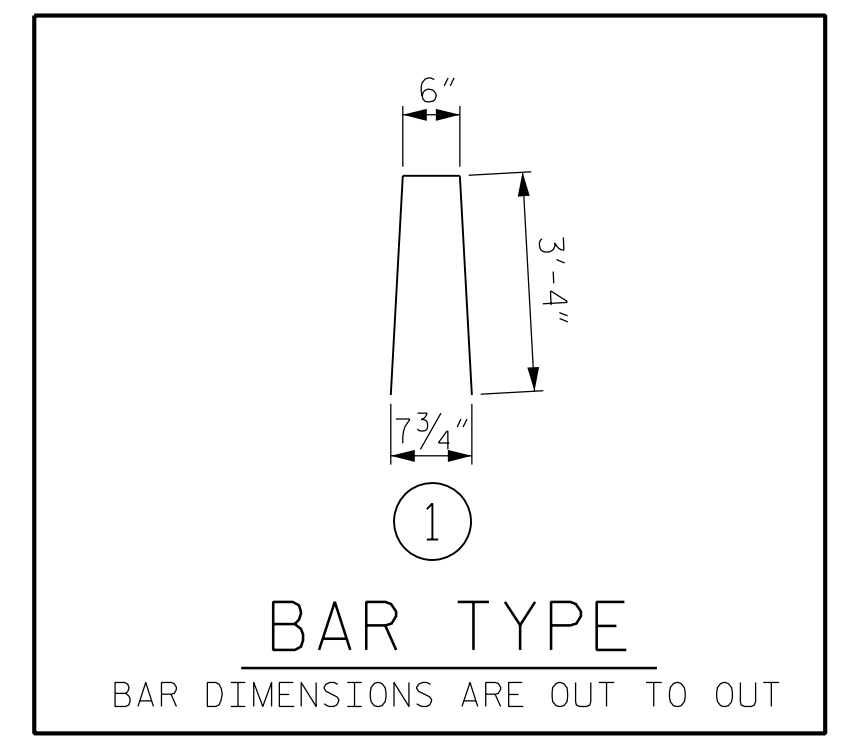
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



END OF RAIL DETAILS

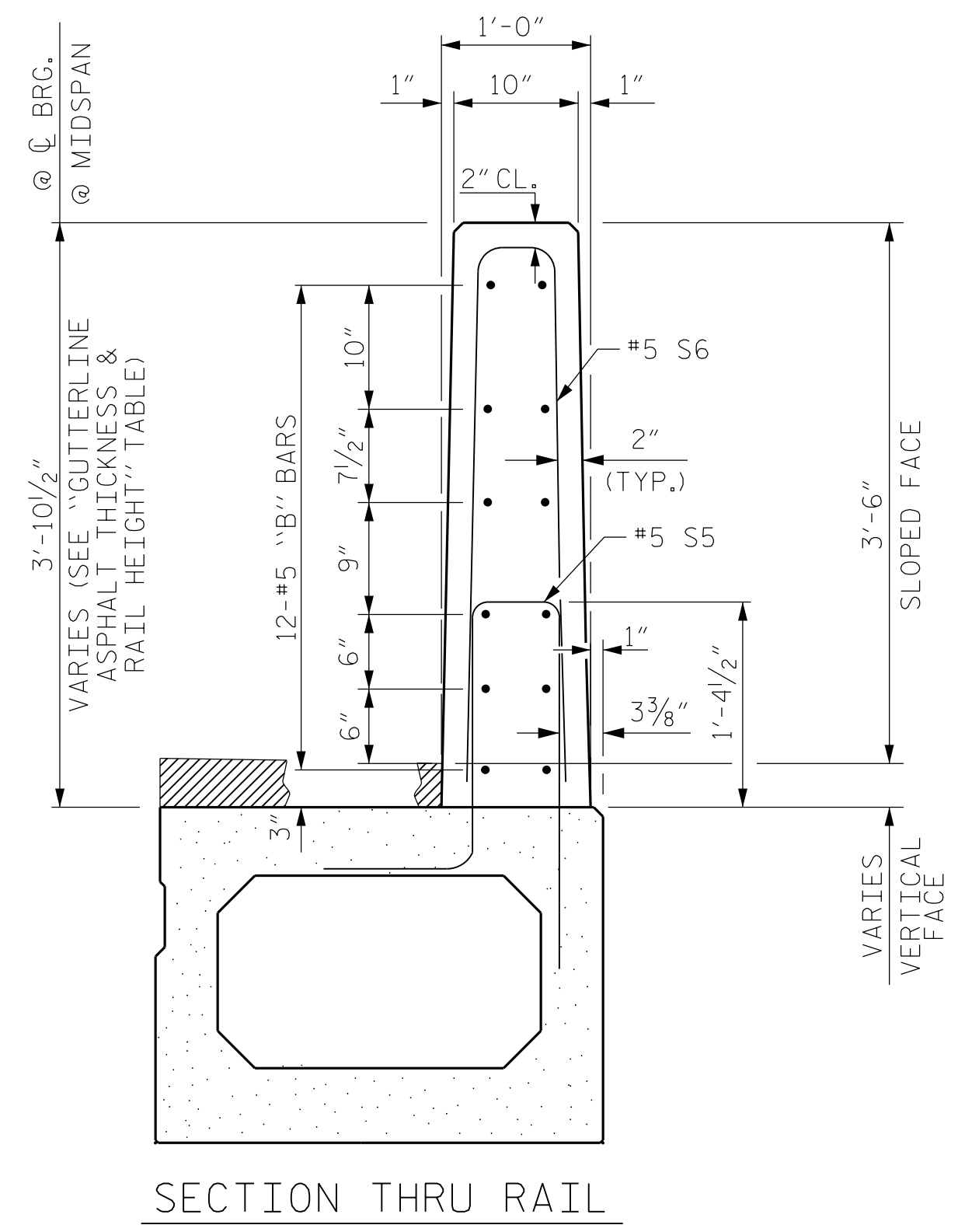
BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	105'-0"	210'-0"
INTERIOR B.B.	9	105'-0"	945'-0"
TOTAL	11		1155'-0"

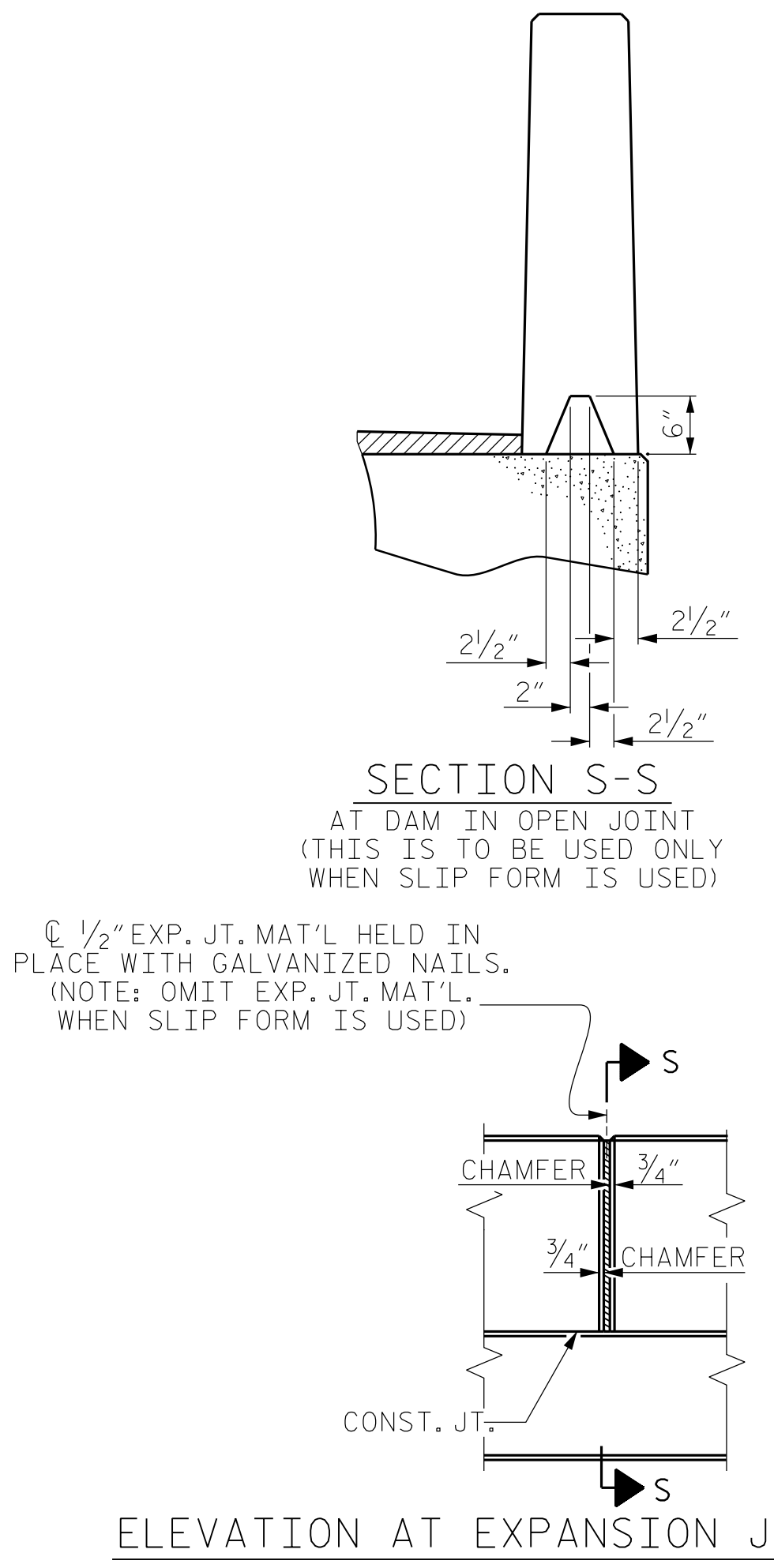


BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
	105' UNIT				
*B12	96	#5	STR	25'-10"	2587
*S6	292	#5	1	7'-2"	2183
*EPOXY COATED REINFORCING STEEL				LBS.	4770
CLASS AA CONCRETE				CU.YDS.	27.6
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	210.0



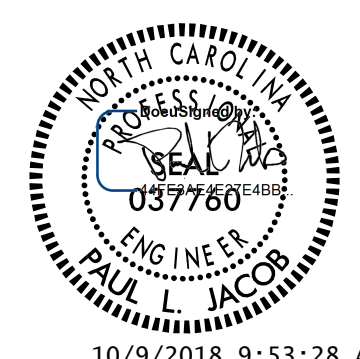
VERTICAL CONCRETE BARRIER RAIL DETAILS



GUTTERLINE CONCRETE THICKNESS & RAIL HEIGHT

	CONCRETE WEARING SURFACE THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
105' UNITS	3/2"	3'-9 1/2"

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STATION: 25+27.50 -L-
SHEET 5 OF 6



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

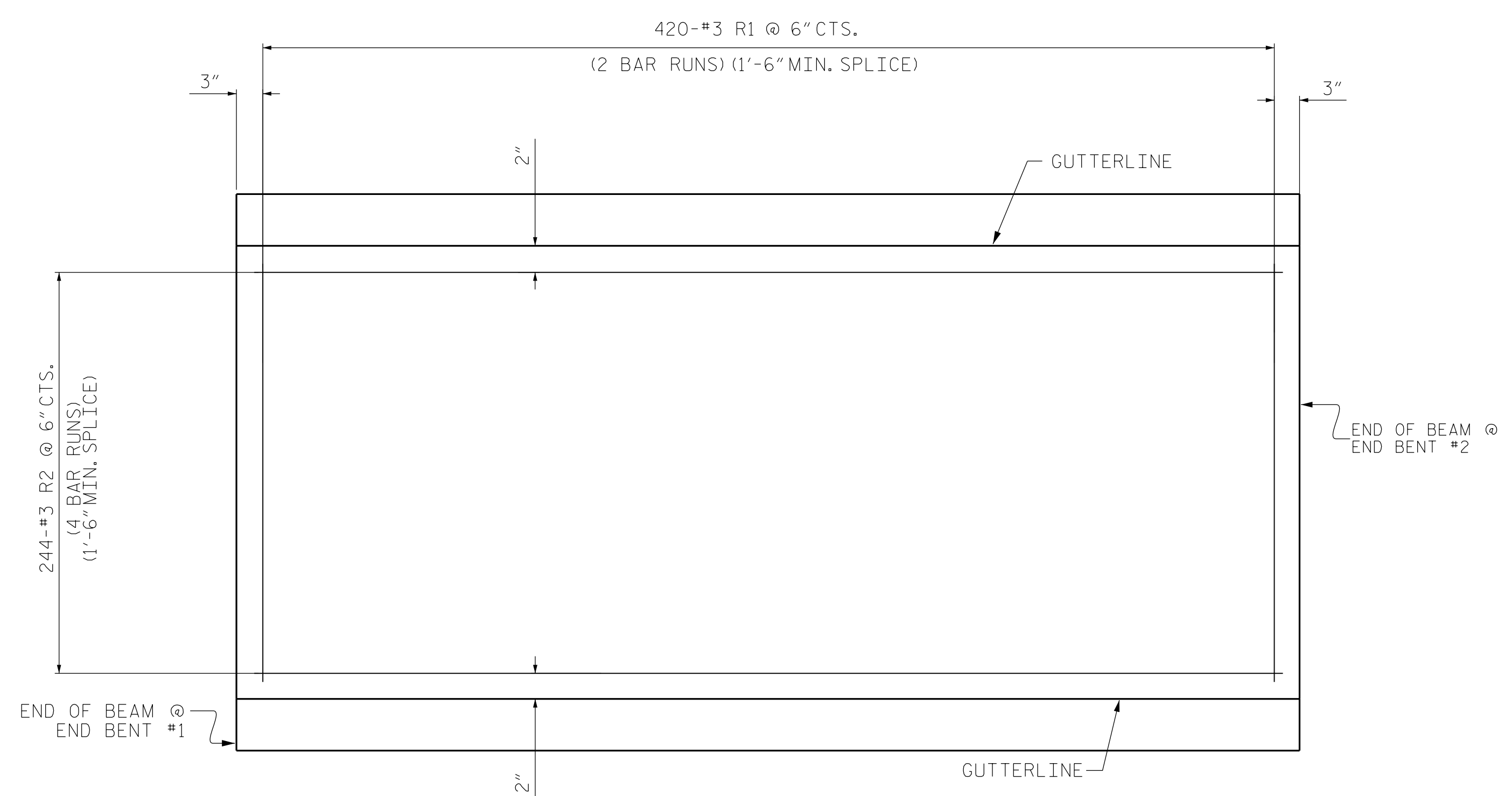
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DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

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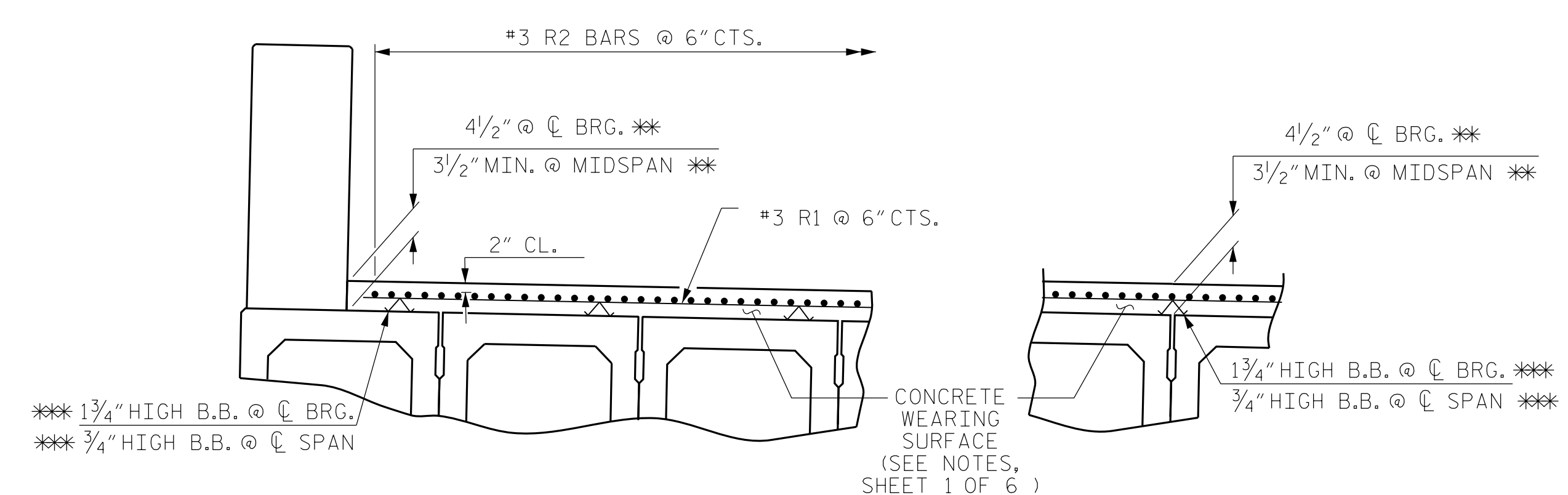


PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	420	#3	STR	16'-0"	2,527
*R2	244	#3	STR	27'-4"	2508
* EPOXY COATED REINFORCING STEEL				LBS.	5035
CONCRETE WEARING SURFACE				SQ. FT.	3,238

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-6"

GROOVING BRIDGE FLOORS	
APPROACH SLABS	788 SQ.FT.
BRIDGE DECK	2,913 SQ.FT.
TOTAL	3,701 SQ.FT.



REINFORCING STEEL FOR CONCRETE WEARING SURFACE

** BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

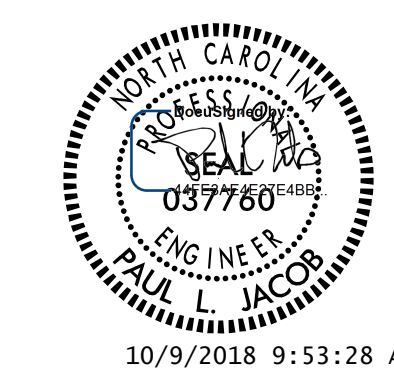
*** BEAM BOLSTERS (B.B.) SHALL BE SPACED AT 2'-0" CENTERS SET 1'-0" FROM GUTTERLINE.

THE MINIMUM AND MAXIMUM CONCRETE WEARING SURFACE THICKNESSES ARE SHOWN. THE HEIGHT OF THE CONCRETE WEARING SURFACE THICKNESS VARIES WHILE IT FOLLOWS THE PROFILE OF THE GUTTERLINE.

PLACEMENT OF THE CONCRETE WEARING SURFACE SHALL OCCUR AFTER CASTING THE VERTICAL CONCRETE BARRIER RAIL. THE COST OF THE #3 BARS CAST WITH THE CONCRETE WEARING SURFACE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CONCRETE WEARING SURFACE. FOR CONCRETE WEARING SURFACE, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL IN THE CONCRETE WEARING SURFACE SHALL BE EPOXY COATED.

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-
 SHEET 6 OF 6



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE WEARING
 SURFACE DETAILS

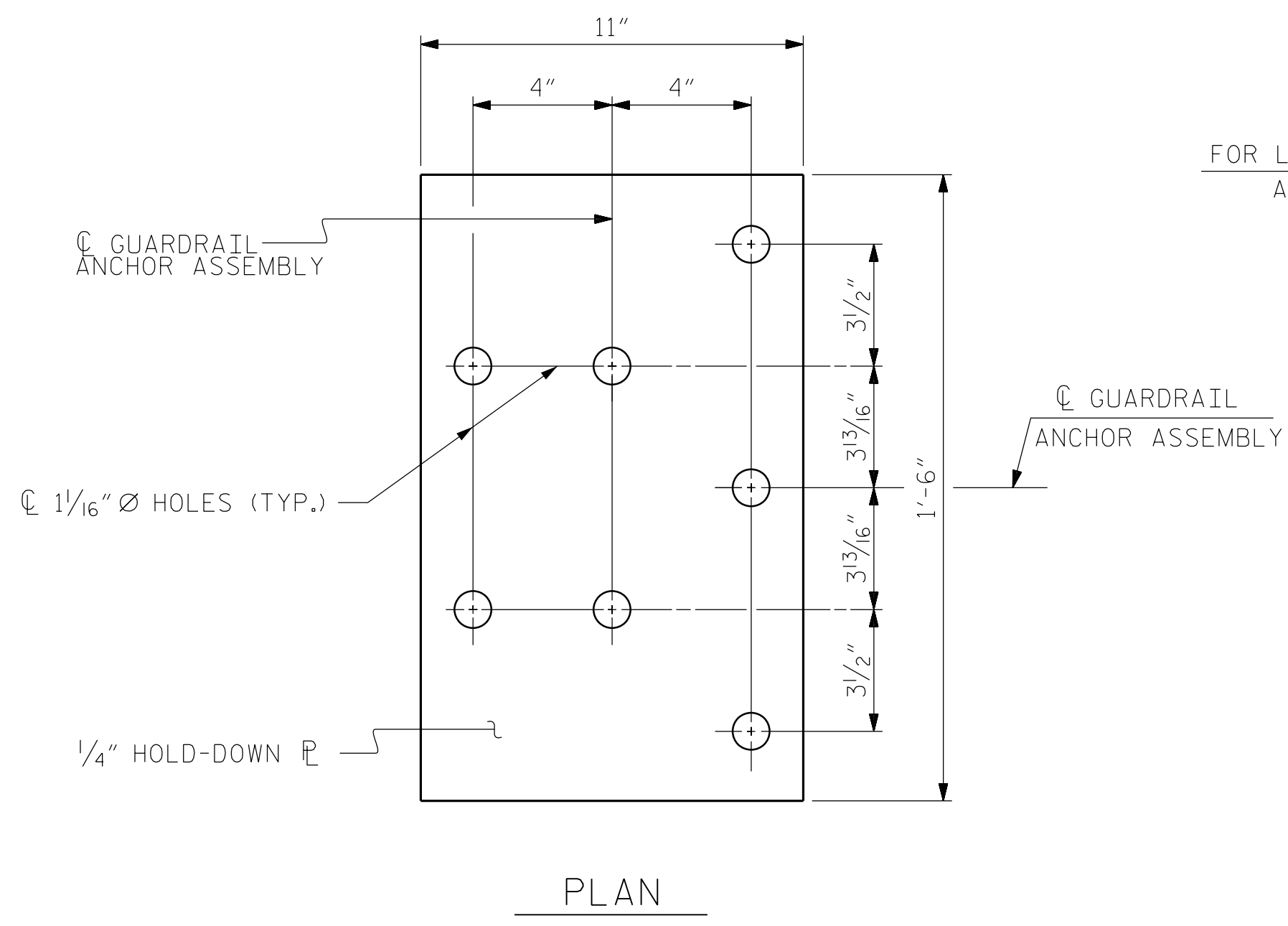
DRAWN BY : J. WEIGER DATE : 08/2018
 CHECKED BY : P. JACOB DATE : 08/2018
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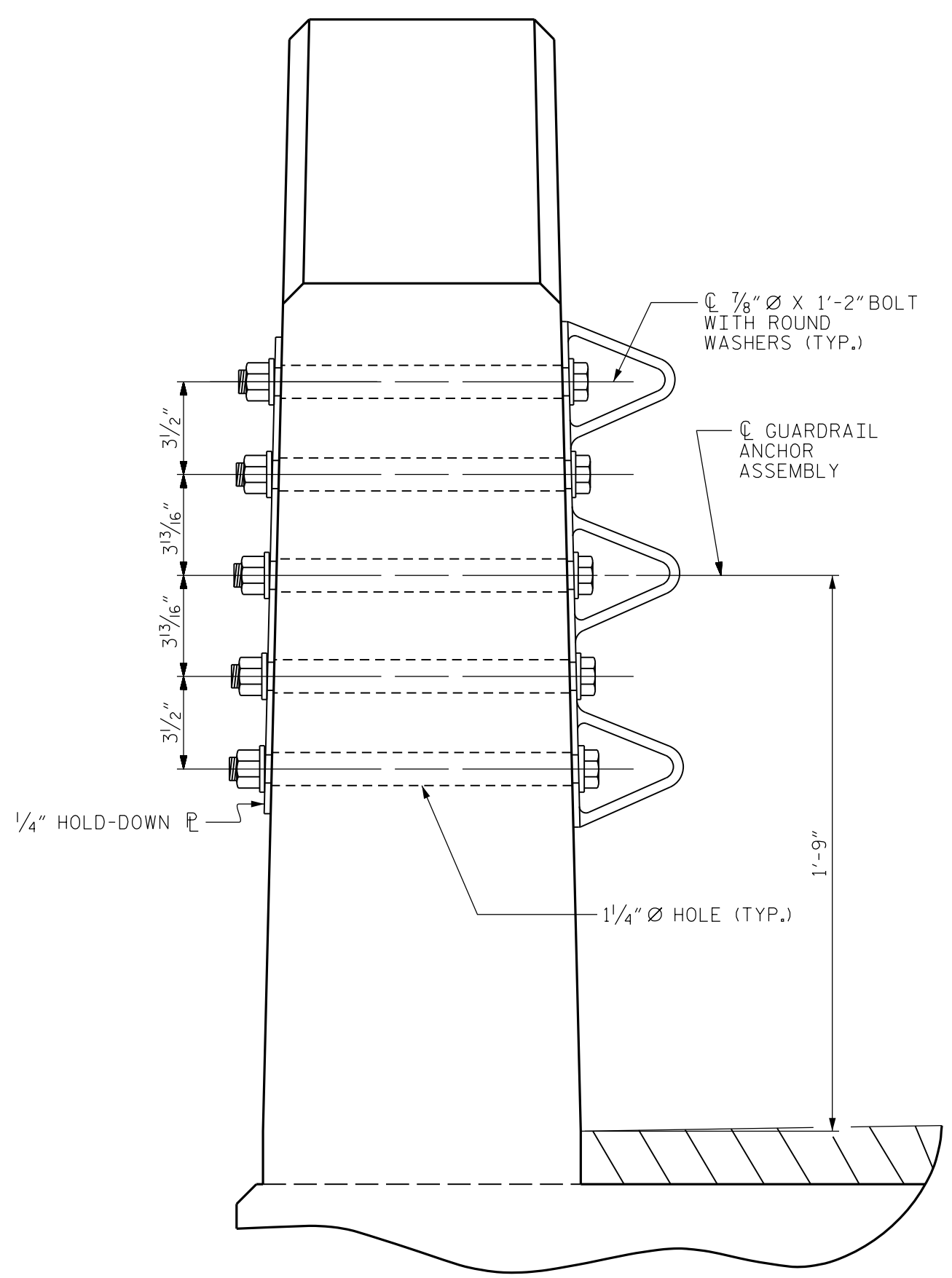
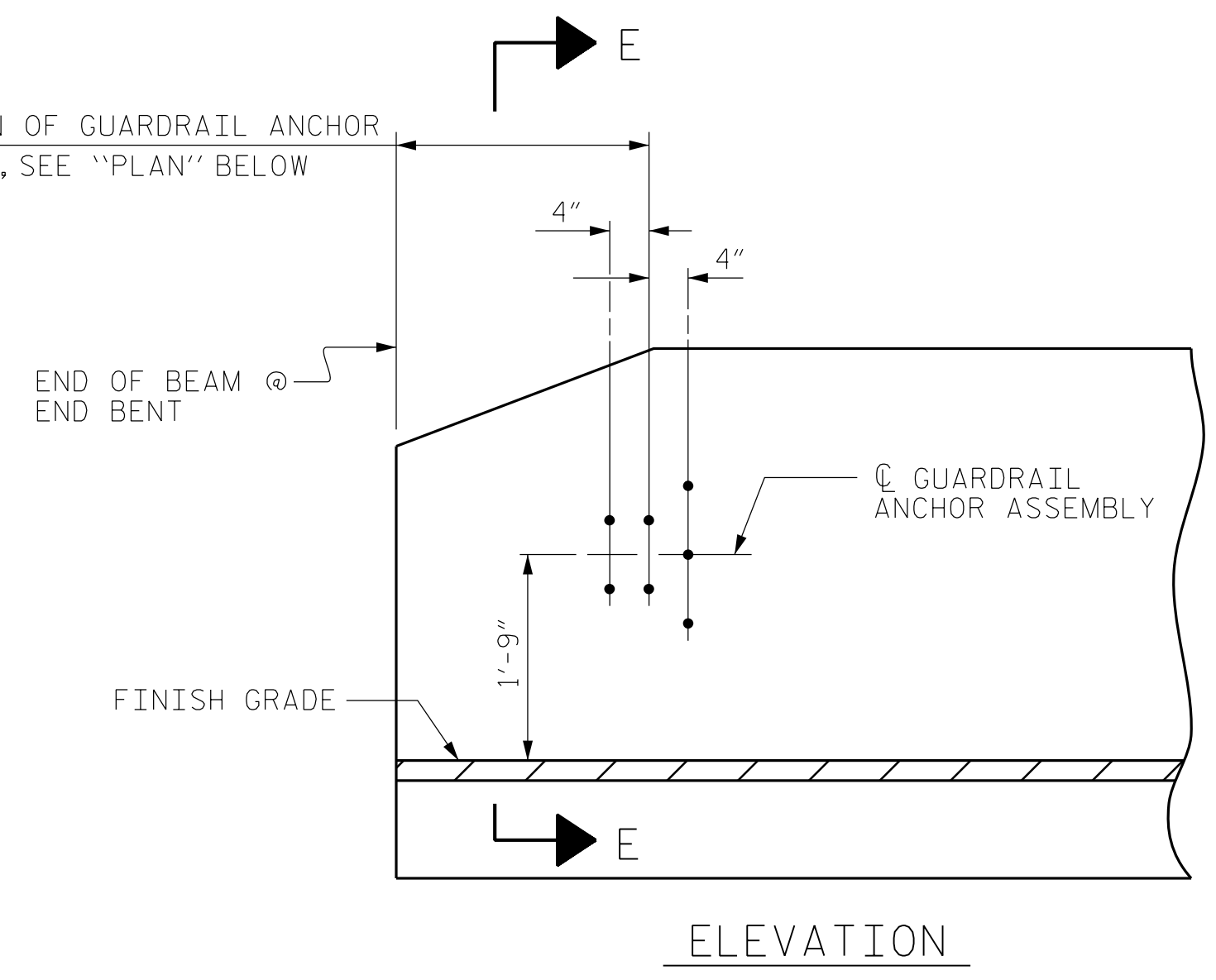
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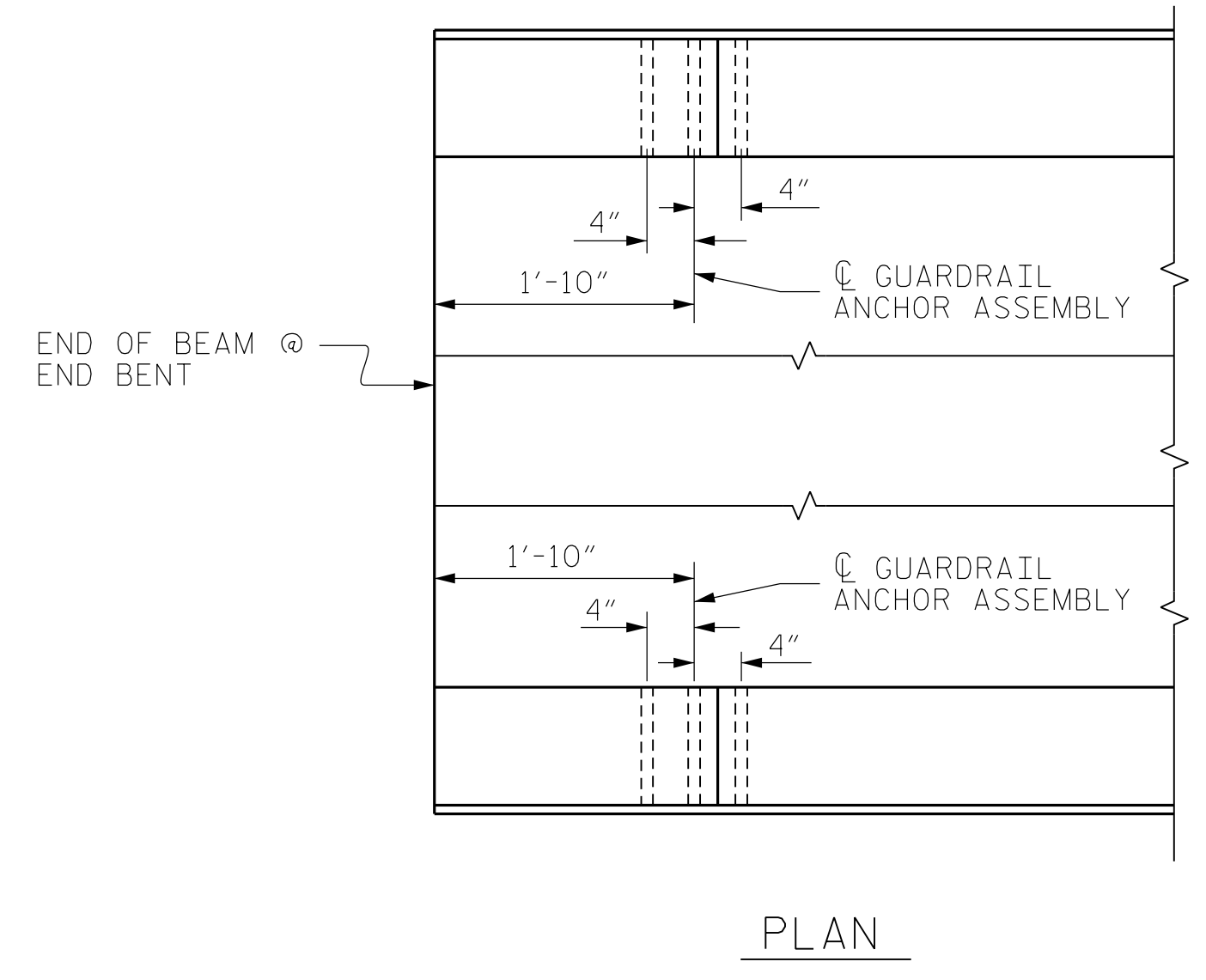
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FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL
END BENT #1 SHOWN, END BENT #2 SIMILAR.

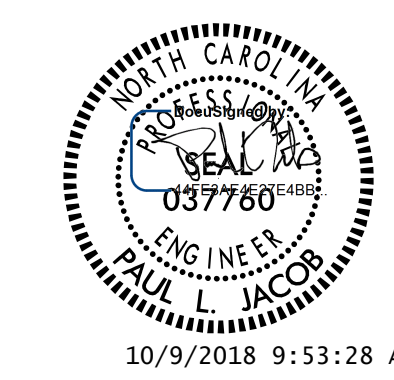


SKETCH SHOWING POINTS OF ATTACHMENT
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

PROJECT NO. B-4438
BRUNSWICK COUNTY
STATION: 25+27.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR VERTICAL CONCRETE
BARRIER RAIL

ASSEMBLED BY :	M. RAY	DATE :	08/2018
CHECKED BY :	P. JACOB	DATE :	08/2018
DRAWN BY :	MAA 5/10	REV. 1/15	MAA/TMG
CHECKED BY :	GM 5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

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2			4			18

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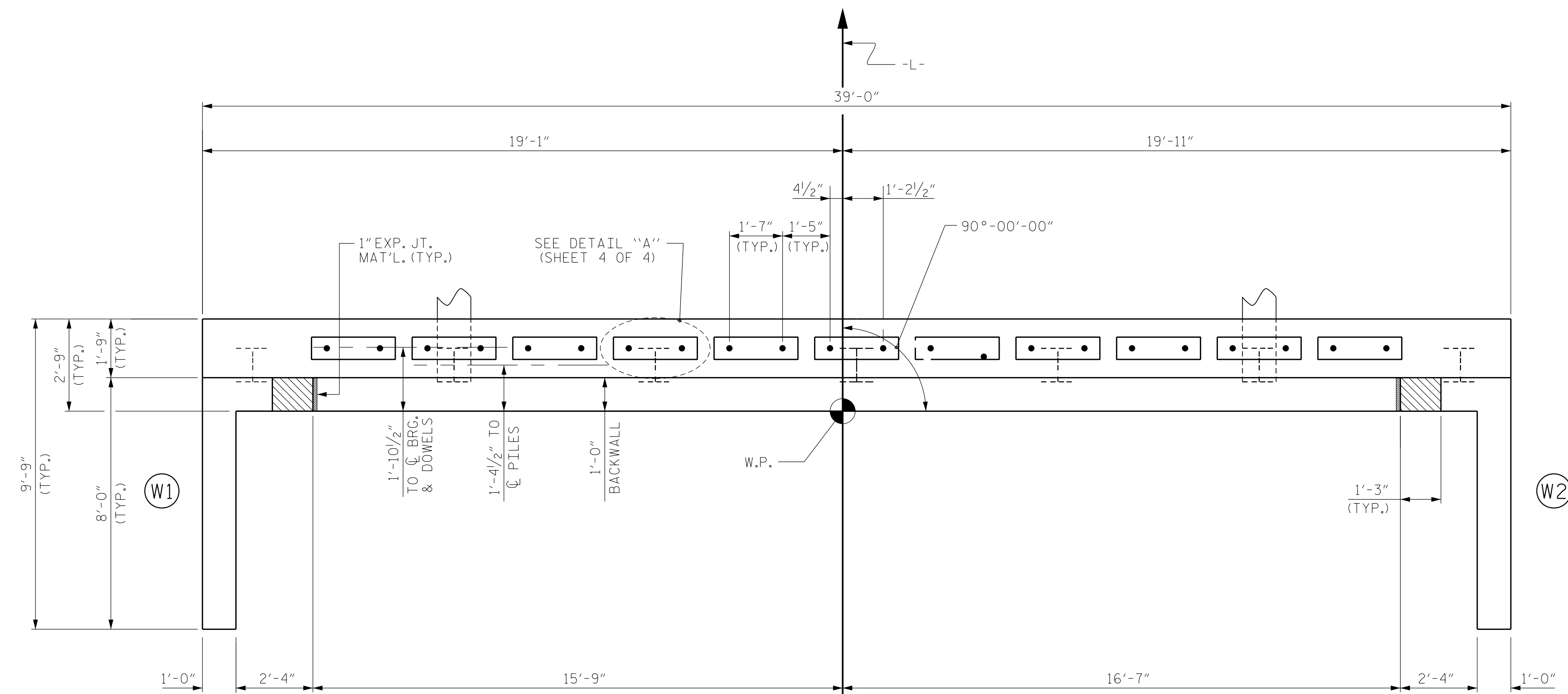
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

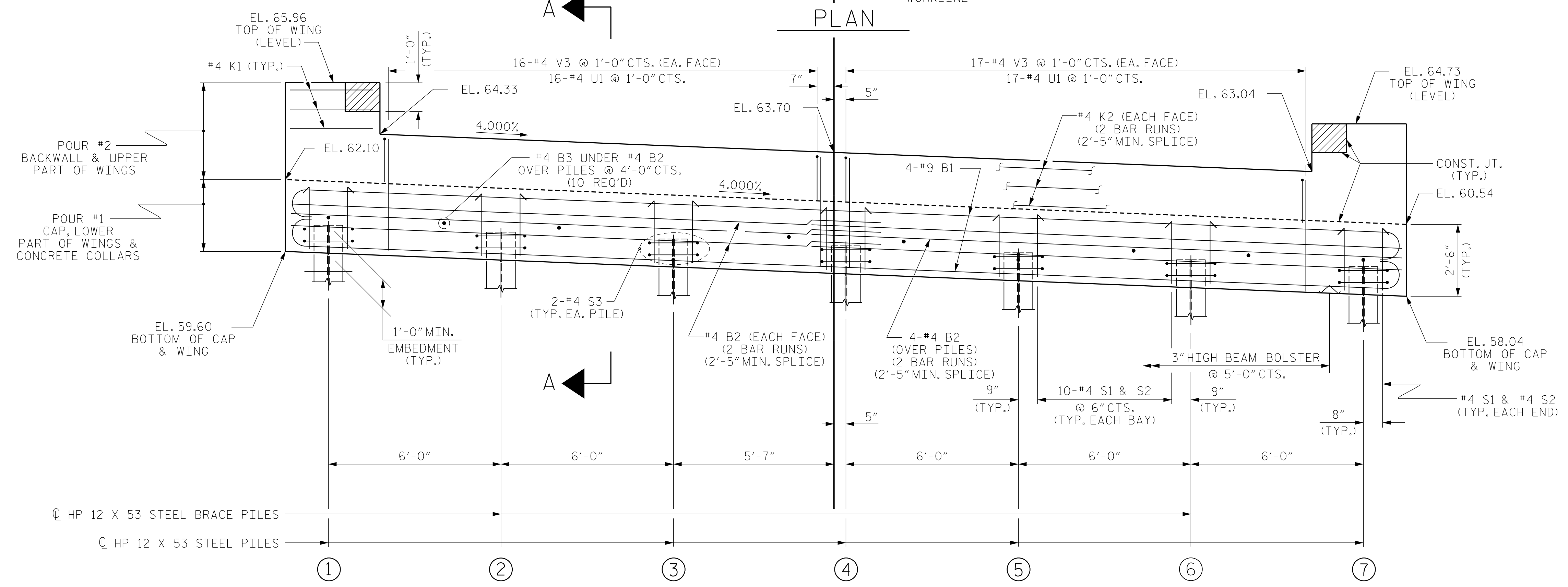
FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN

TOP OF PILE ELEVATIONS	
①	60.56
②	60.32
③	60.08
④	59.84
⑤	59.60
⑥	59.36
⑦	59.12



ELEVATION

PROJECT NO. B-4438

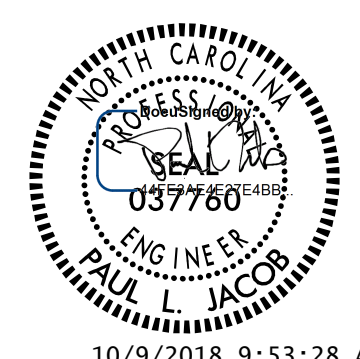
BRUNSWICK COUNTY

STATION: 25+27.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1



10/9/2018 9:53:28 AM PDT

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 CHECKED BY : P. JACOB DATE : 08/2018
 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

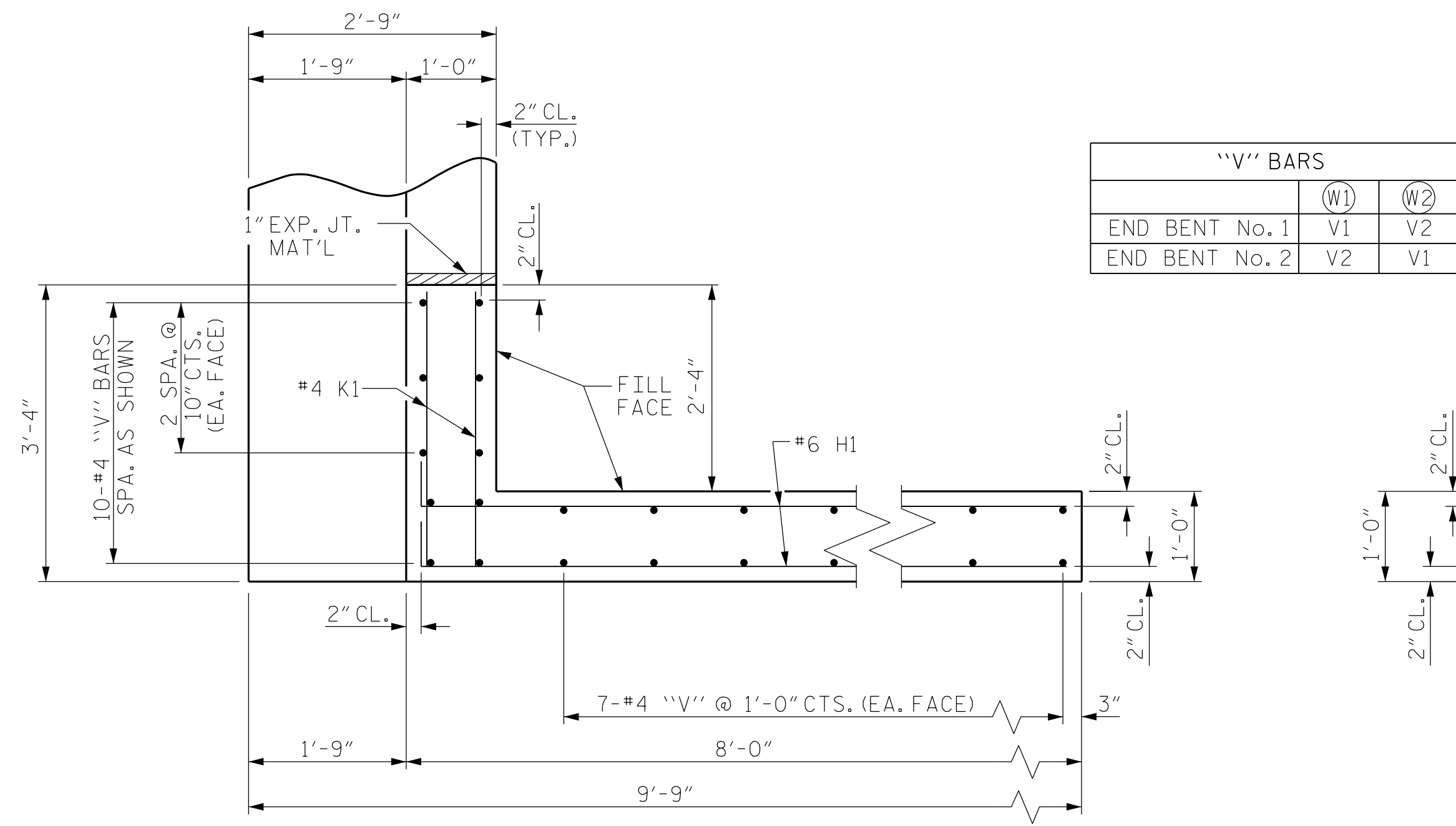
WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

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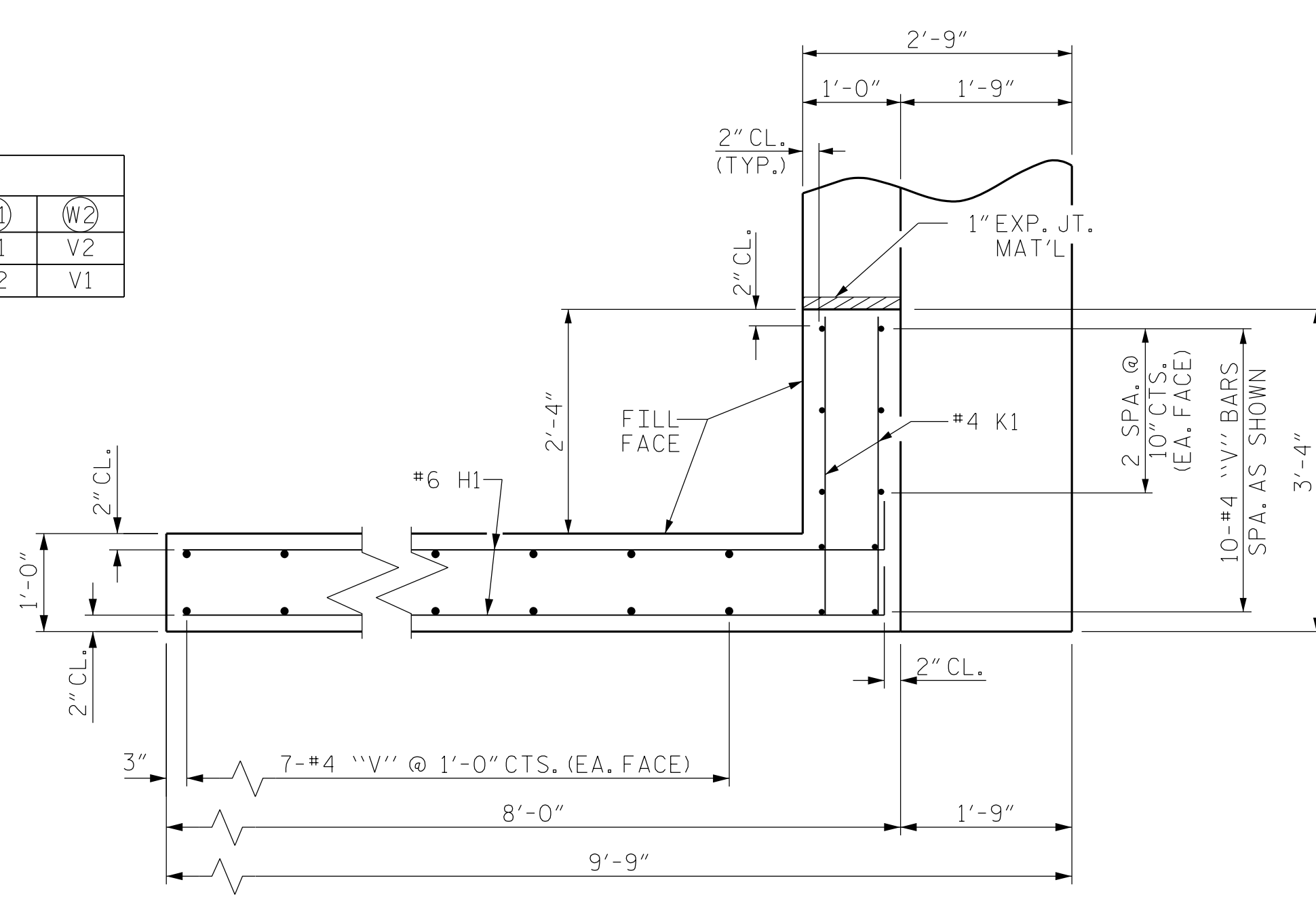
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1			3			TOTAL SHEETS
2			4			18

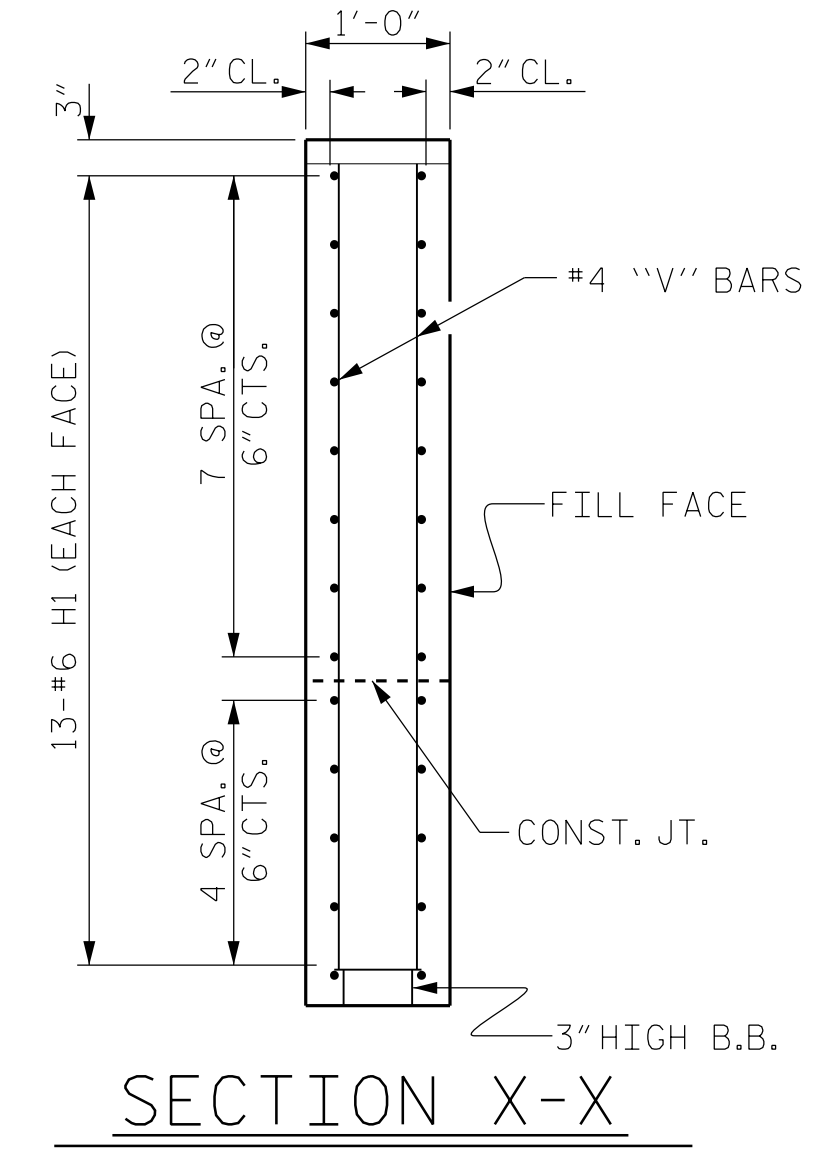
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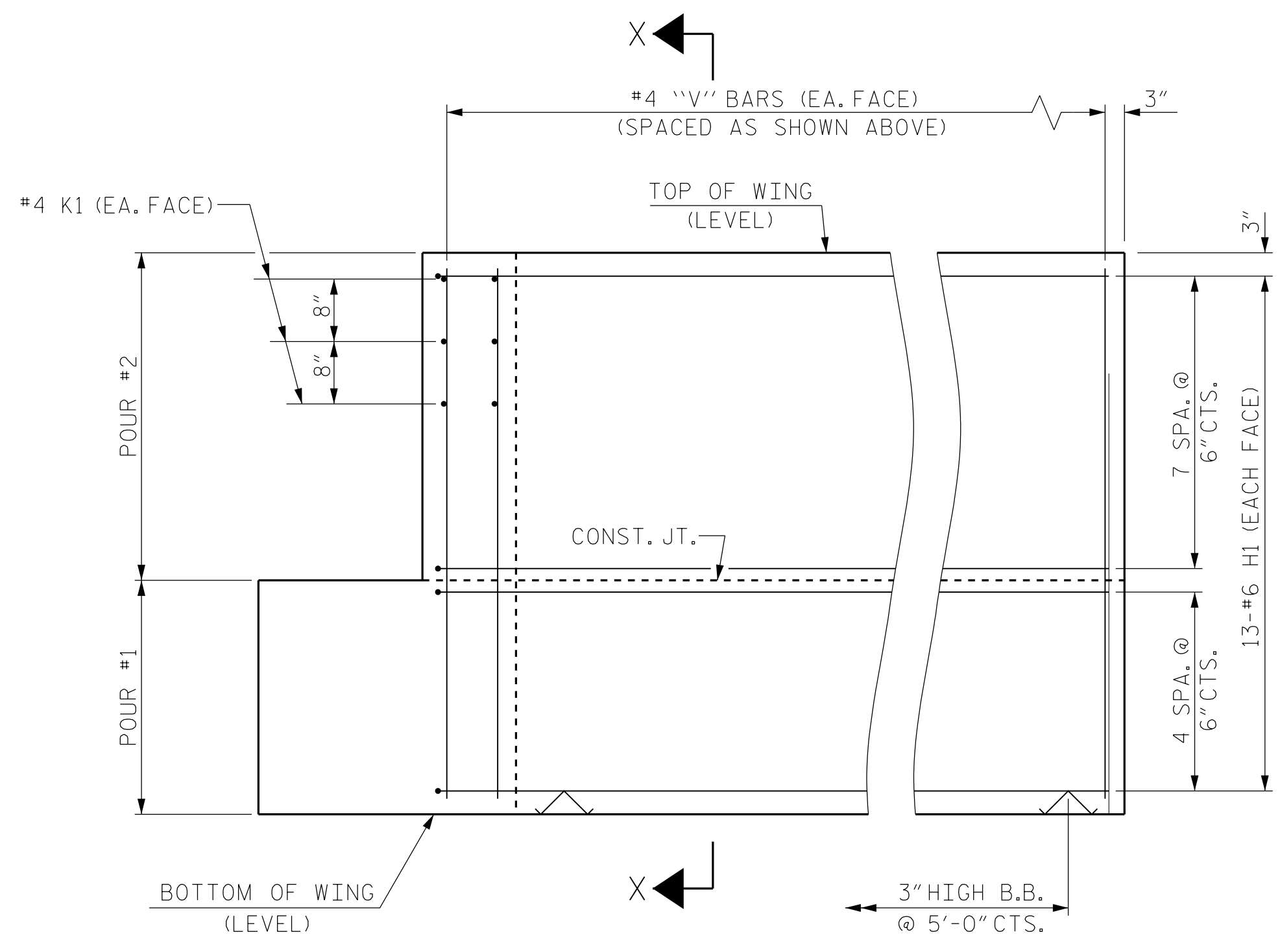
PLAN OF WING (W1)



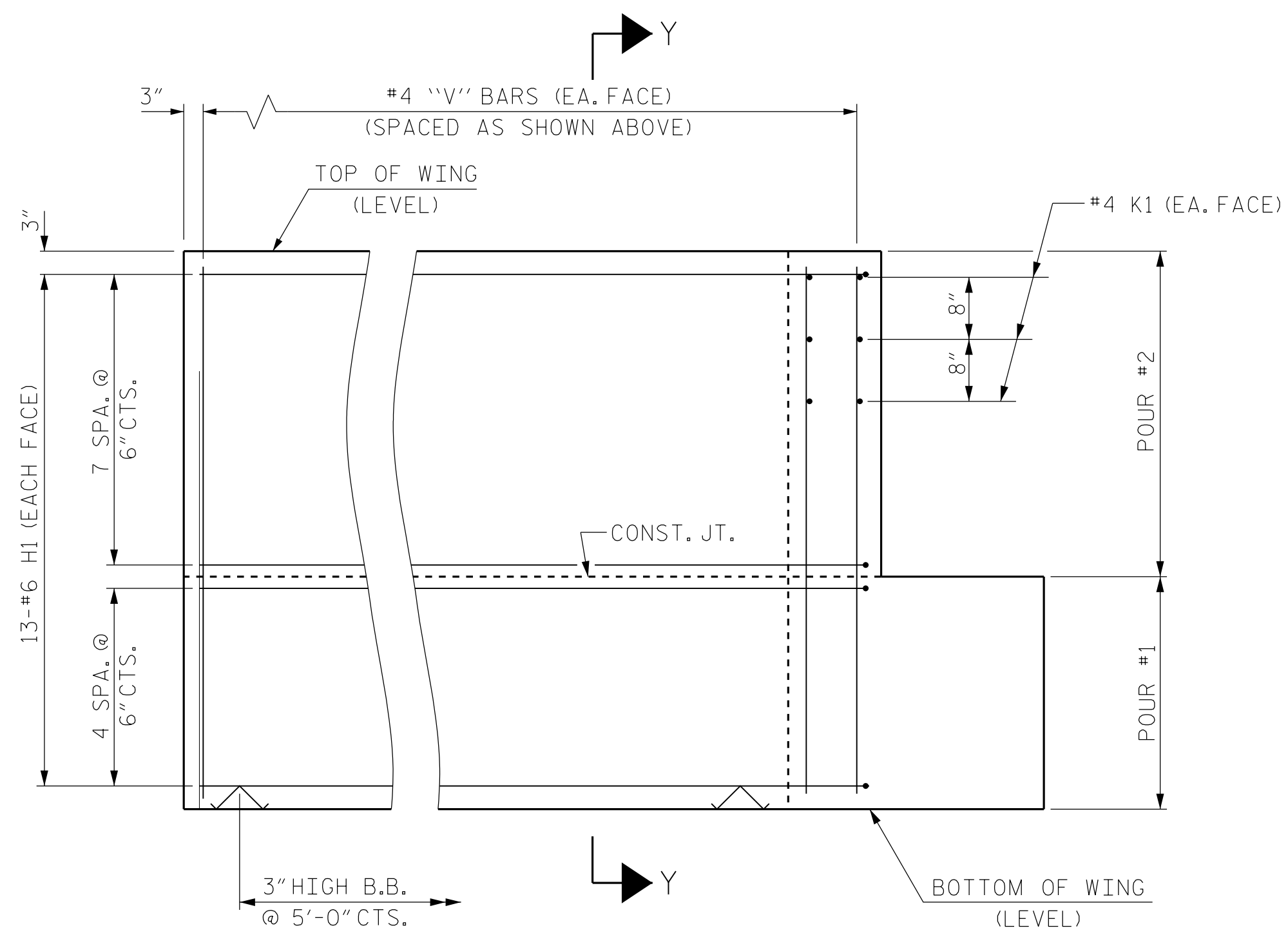
PLAN OF WING (W2)



SECTION X-X

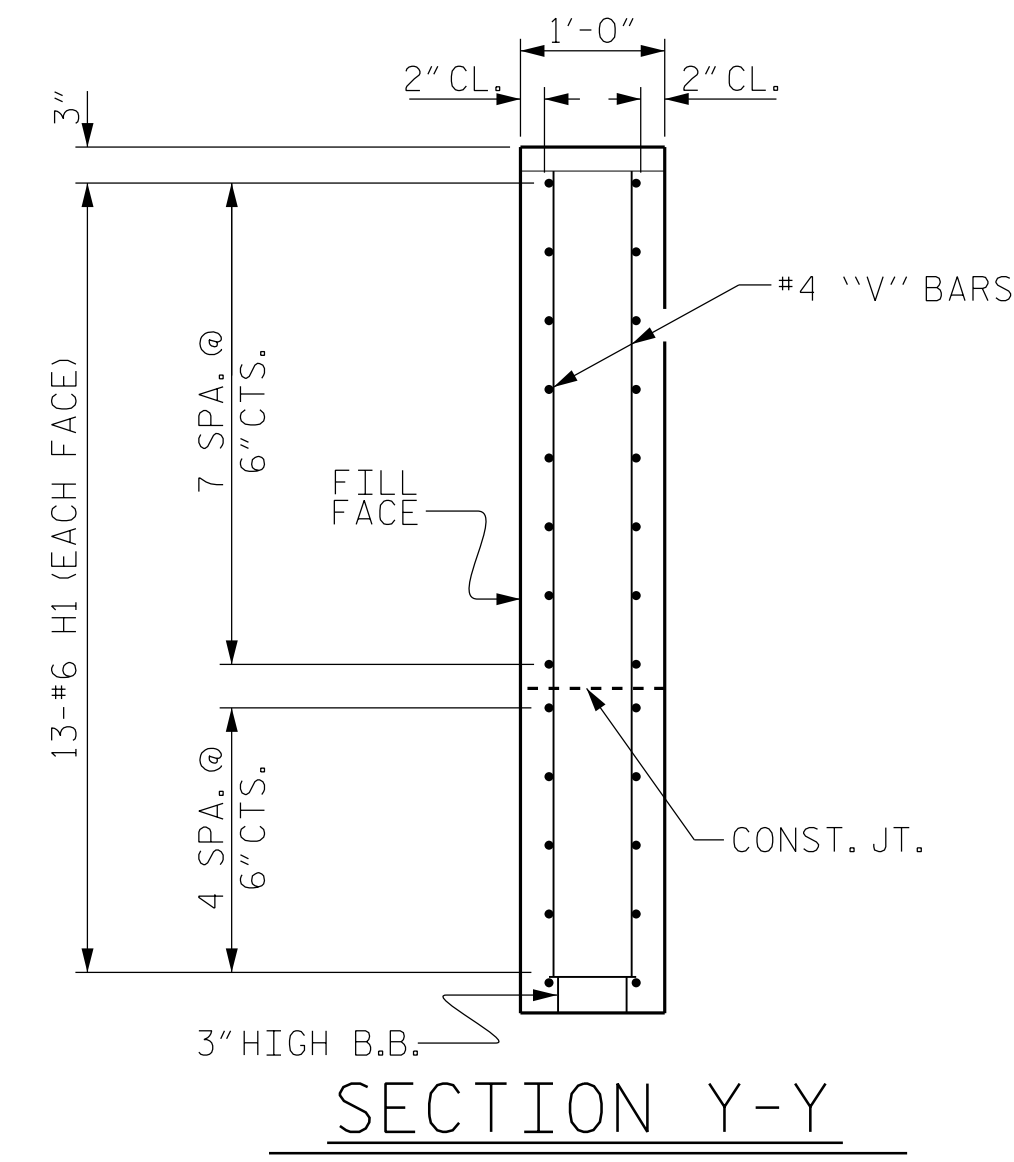


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

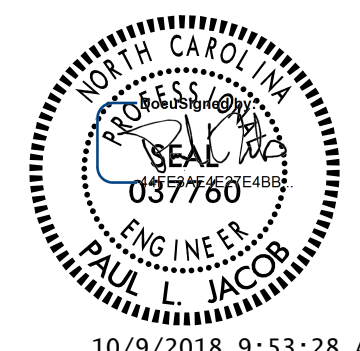
WING DETAILS



SECTION Y-Y

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-

SHEET 3 OF 4



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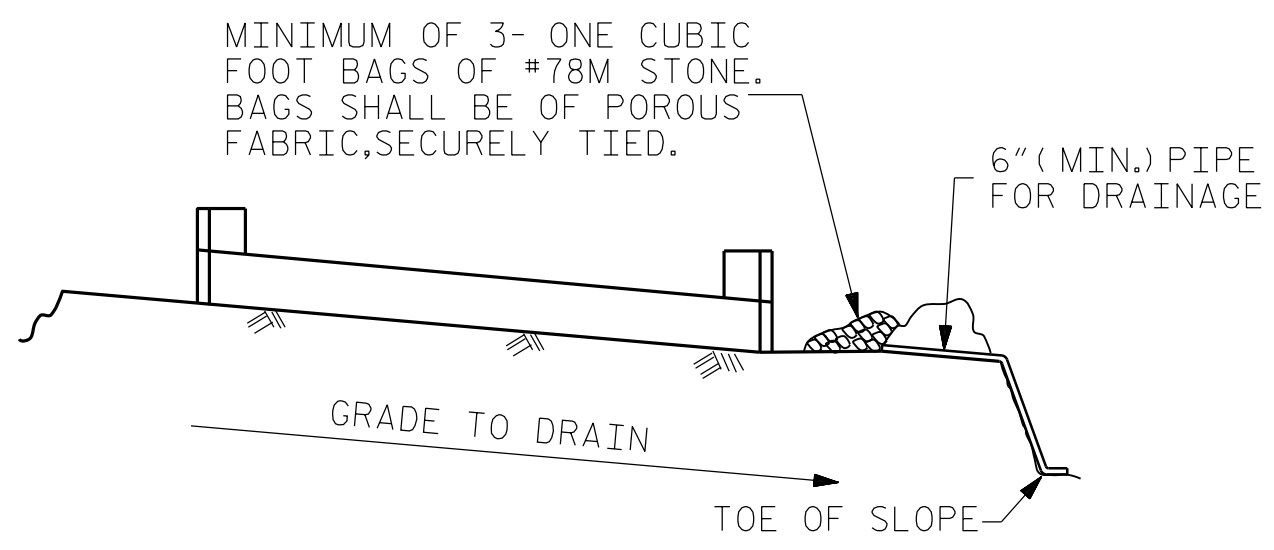
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2			4			18

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT
 WING DETAILS

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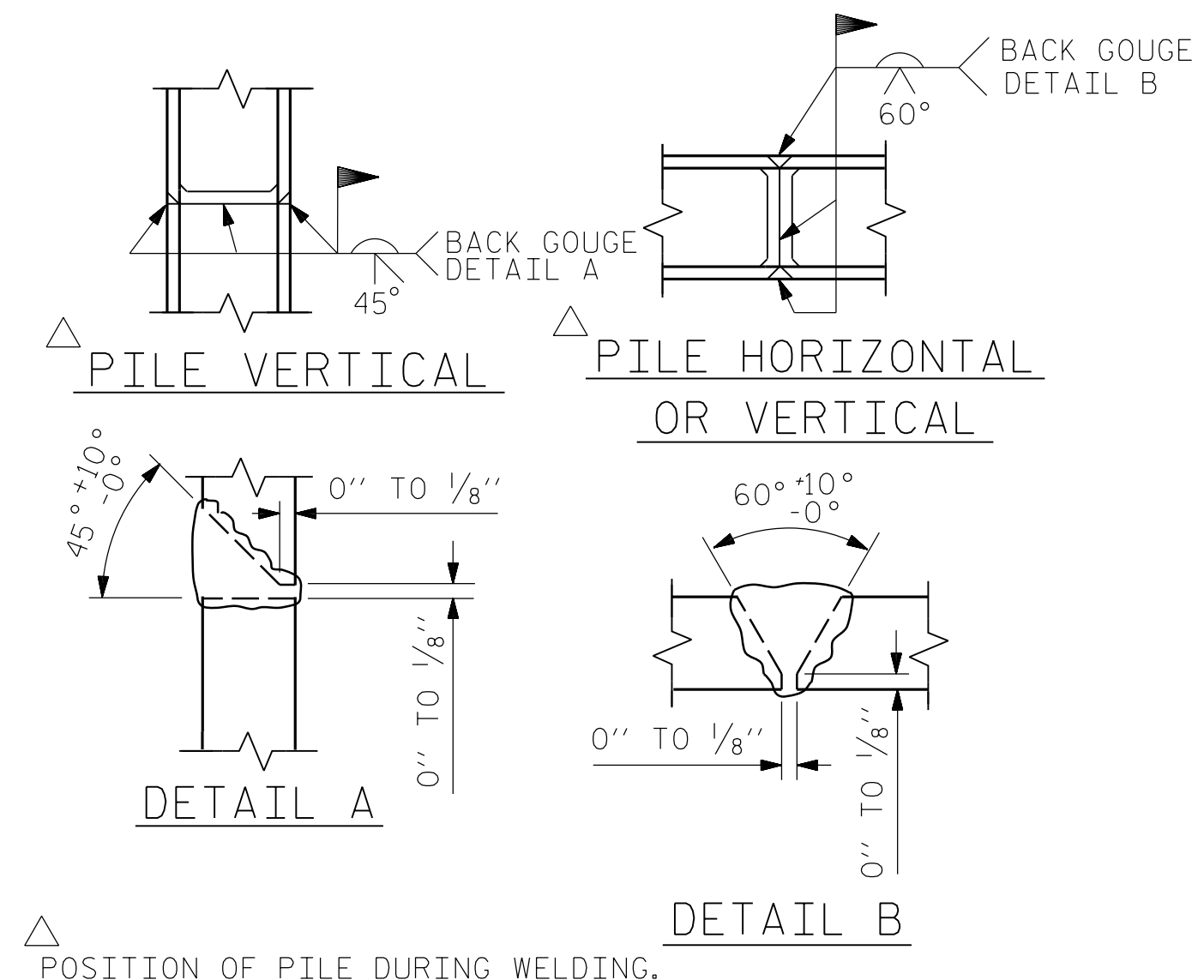


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

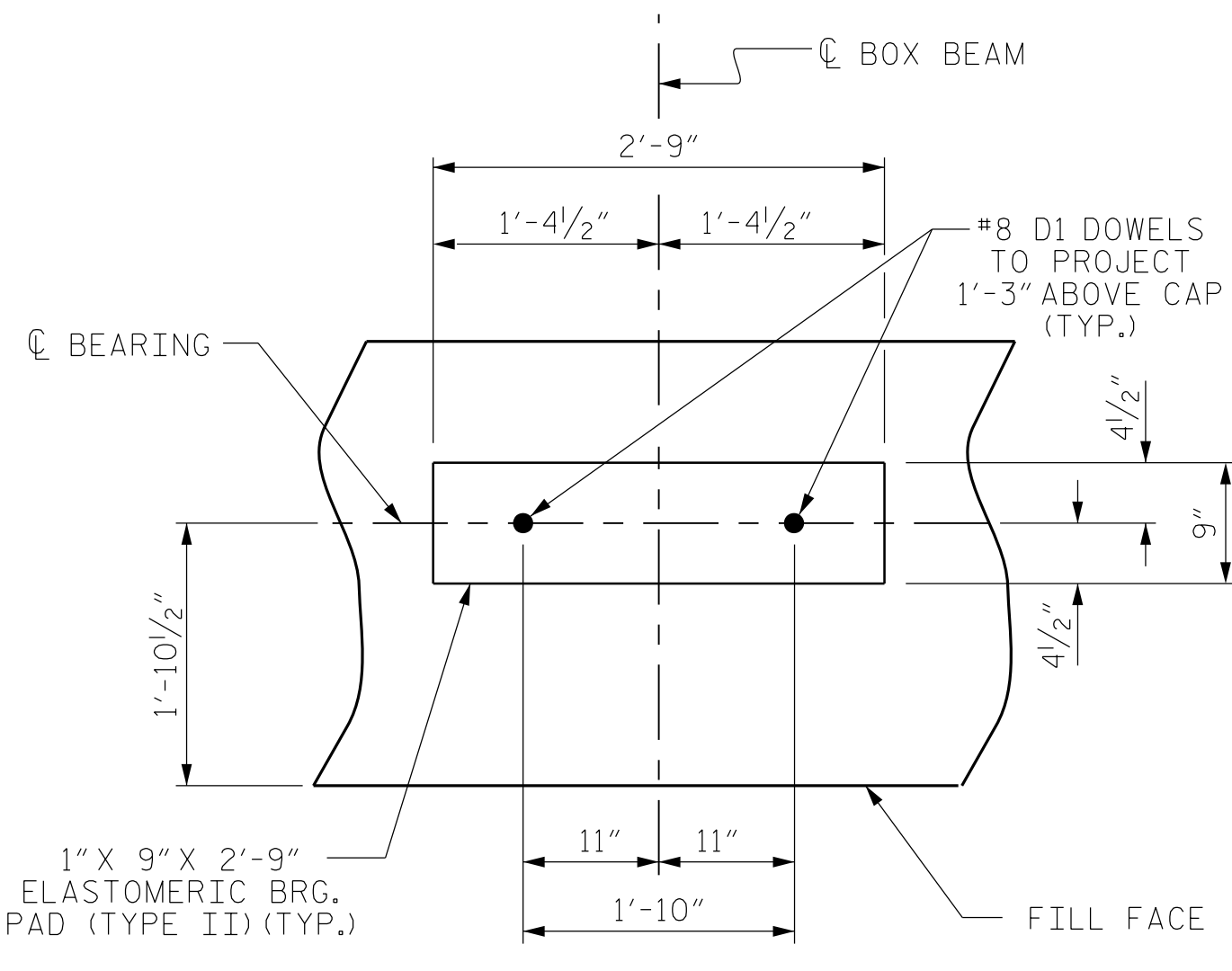
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

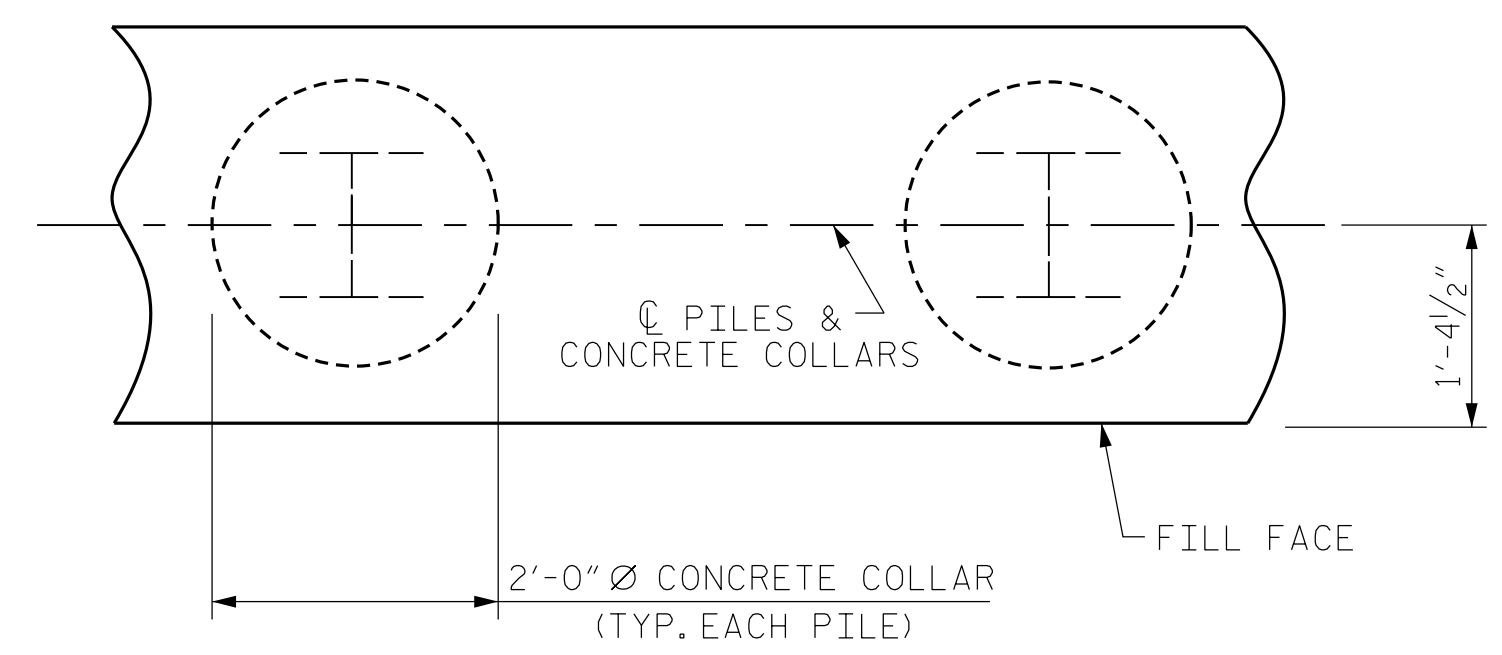
BAR TYPES		BILL OF MATERIAL FOR ONE END BENT				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
B1	#8		41'-0"	1115		
B2	#4	STR	20'-7"	220		
B3	#4	STR	2'-5"	16		
D1	#8	STR	2'-3"	132		
H1	#6	2	8'-4"	651		
K1	#4	STR	2'-11"	23		
K2	#4	STR	20'-7"	165		
S1	#4	3	7'-5"	307		
S2	#4	4	3'-2"	131		
S3	#4	5	6'-6"	61		
U1	#4	6	3'-8"	81		
V1	#4	STR	5'-11"	95		
V2	#4	STR	6'-3"	100		
V3	#6	STR	4'-4"	191		
REINFORCING STEEL (FOR ONE END BENT)				3288	LBS.	
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)						
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				13.8	C.Y.	
POUR #2 BACKWALL & UPPER PART OF WINGS				6.4	C.Y.	
TOTAL CLASS A CONCRETE				20.2	C.Y.	
END BENT No. 1 HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 490		END BENT No. 2 HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 490				
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7				
PILE REDRIVES NO: 4		PILE REDRIVES NO: 4				

ALL BAR DIMENSIONS ARE OUT TO OUT.



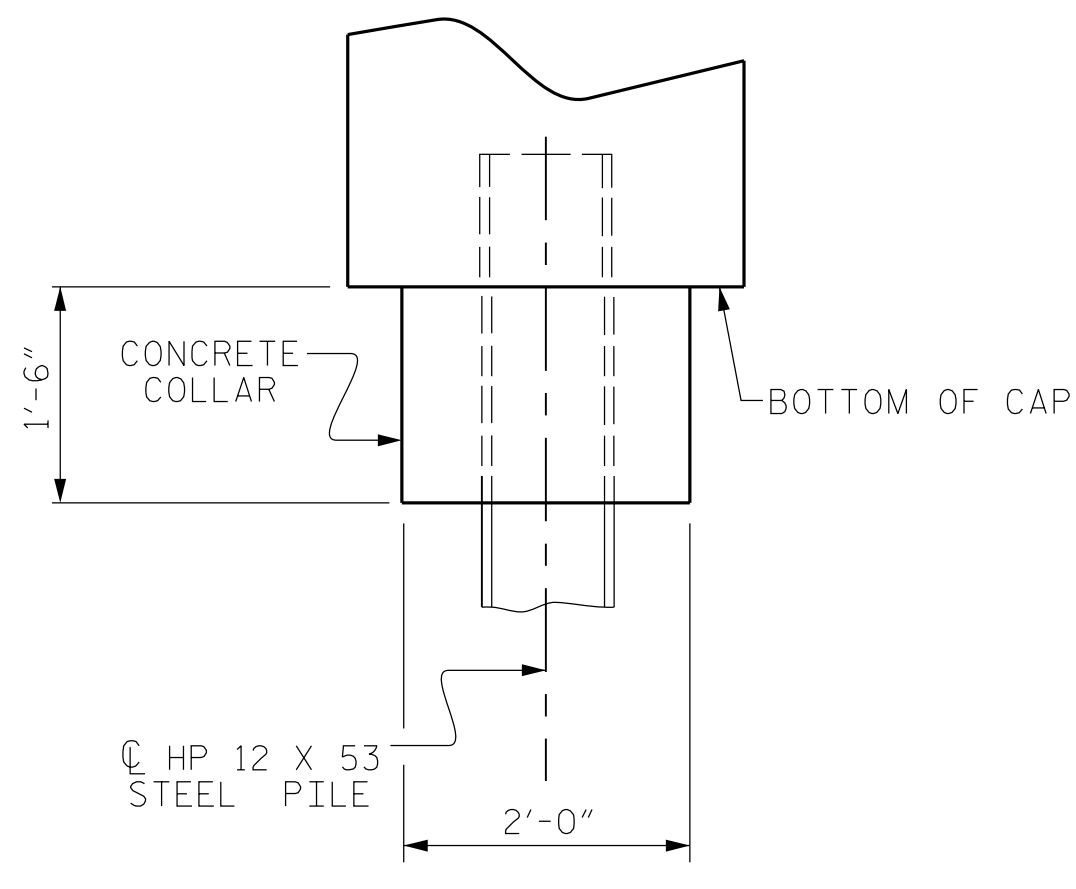
DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

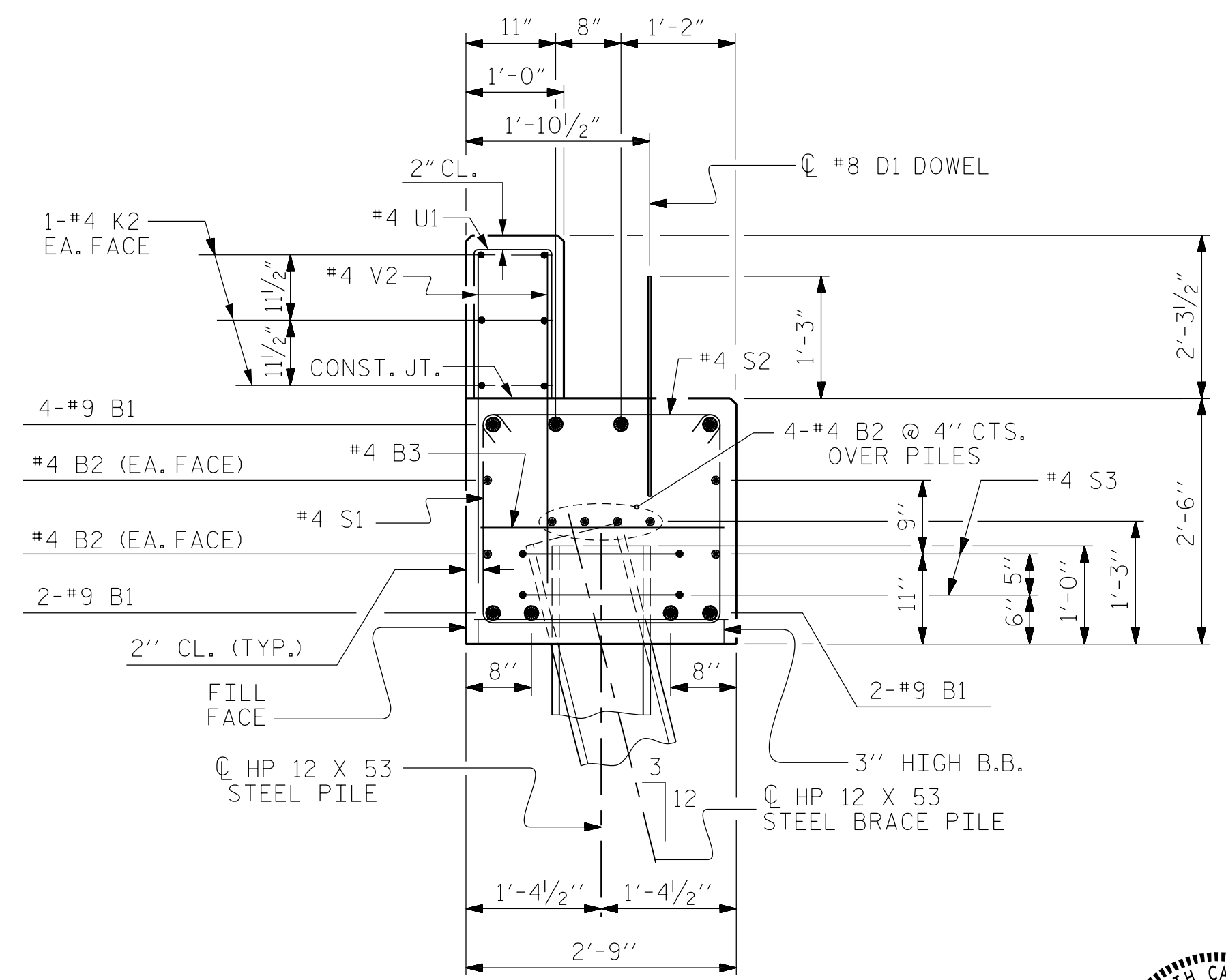


CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

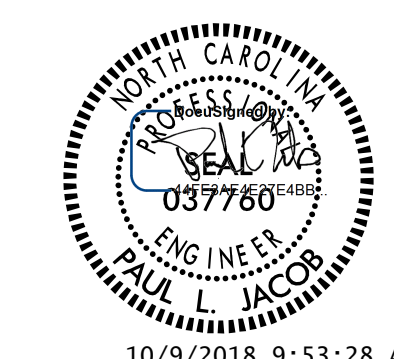


ELEVATION



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")



PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1 & 2
 DETAILS

DRAWN BY :	J. SWYERS	DATE :	08/2018
CHECKED BY :	P. JACOB	DATE :	08/2018
DESIGN ENGINEER OF RECORD:	P. JACOB	DATE :	08/2018

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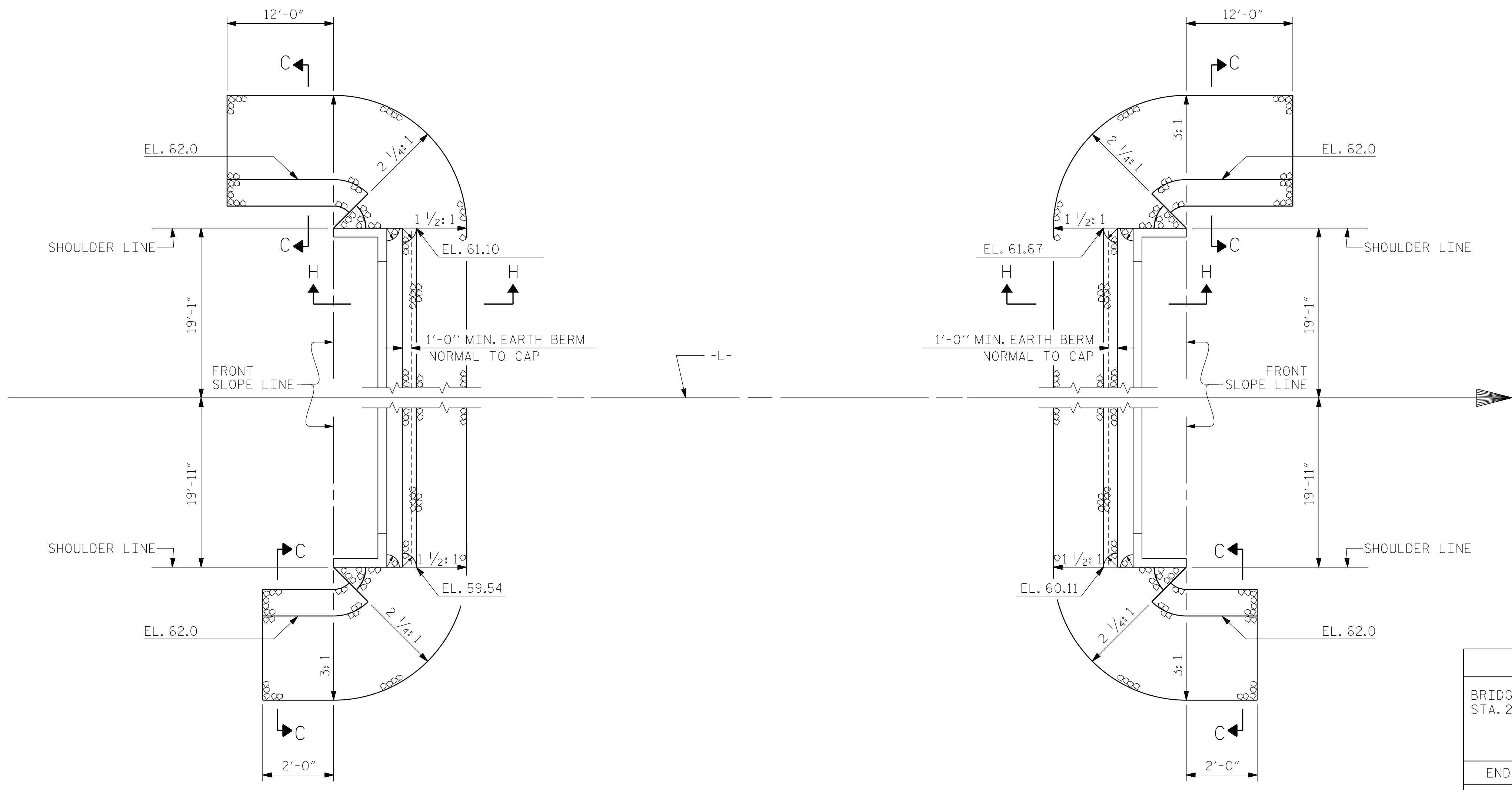
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2			4		

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NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

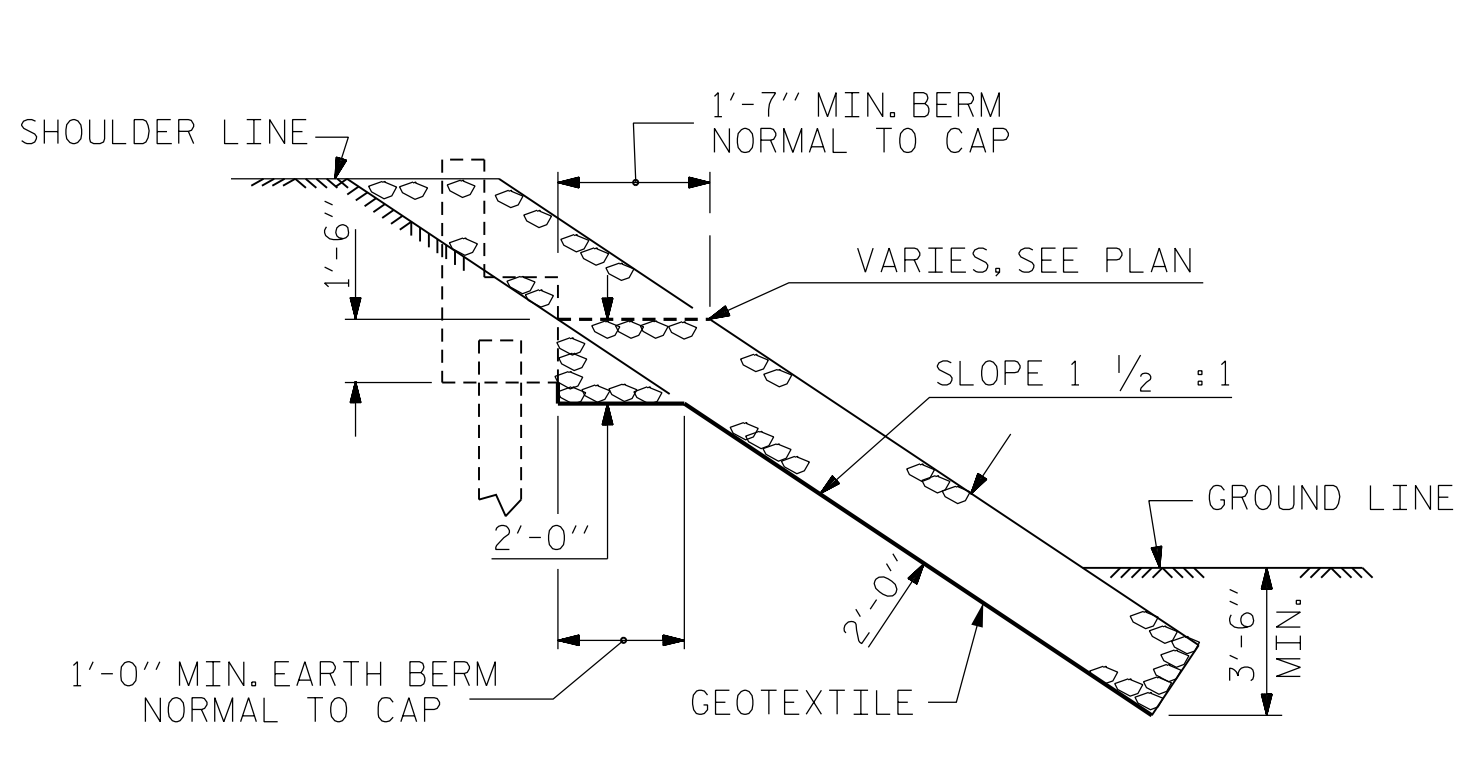


END BENT No. 1

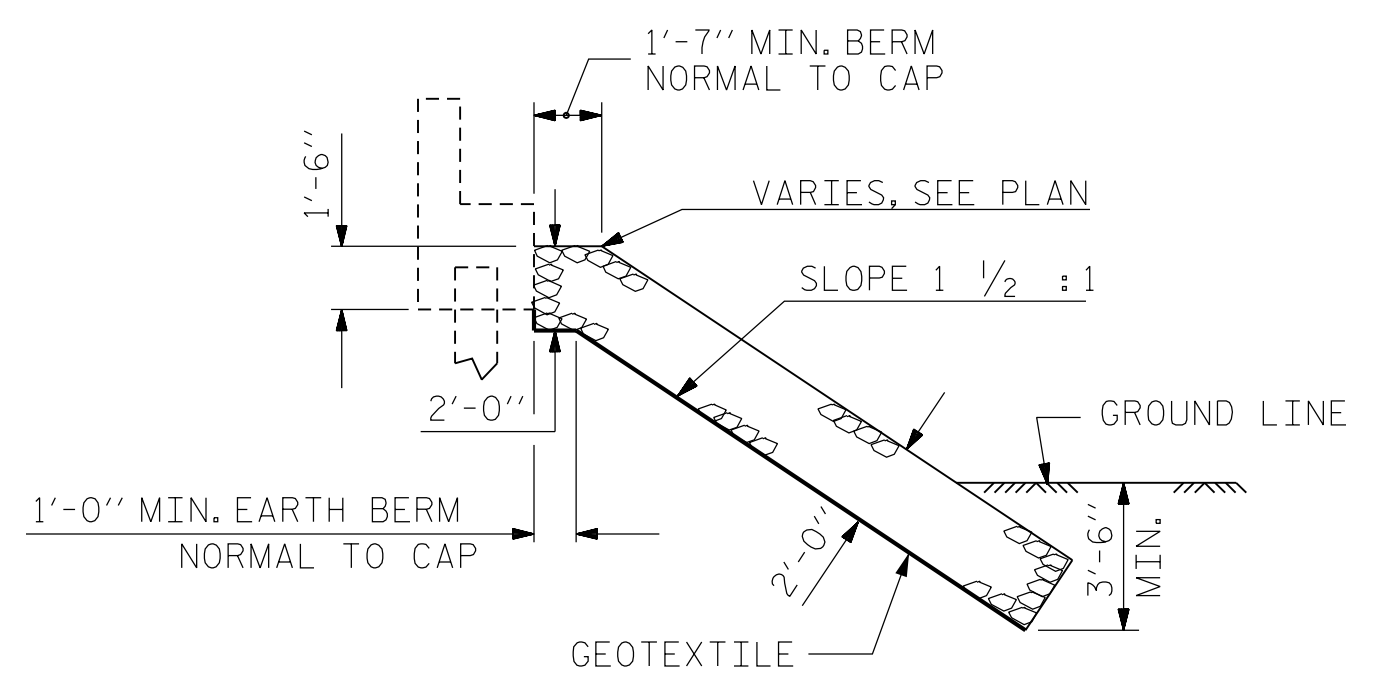
END BENT No. 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 25+27.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	70	80
END BENT 2	65	70

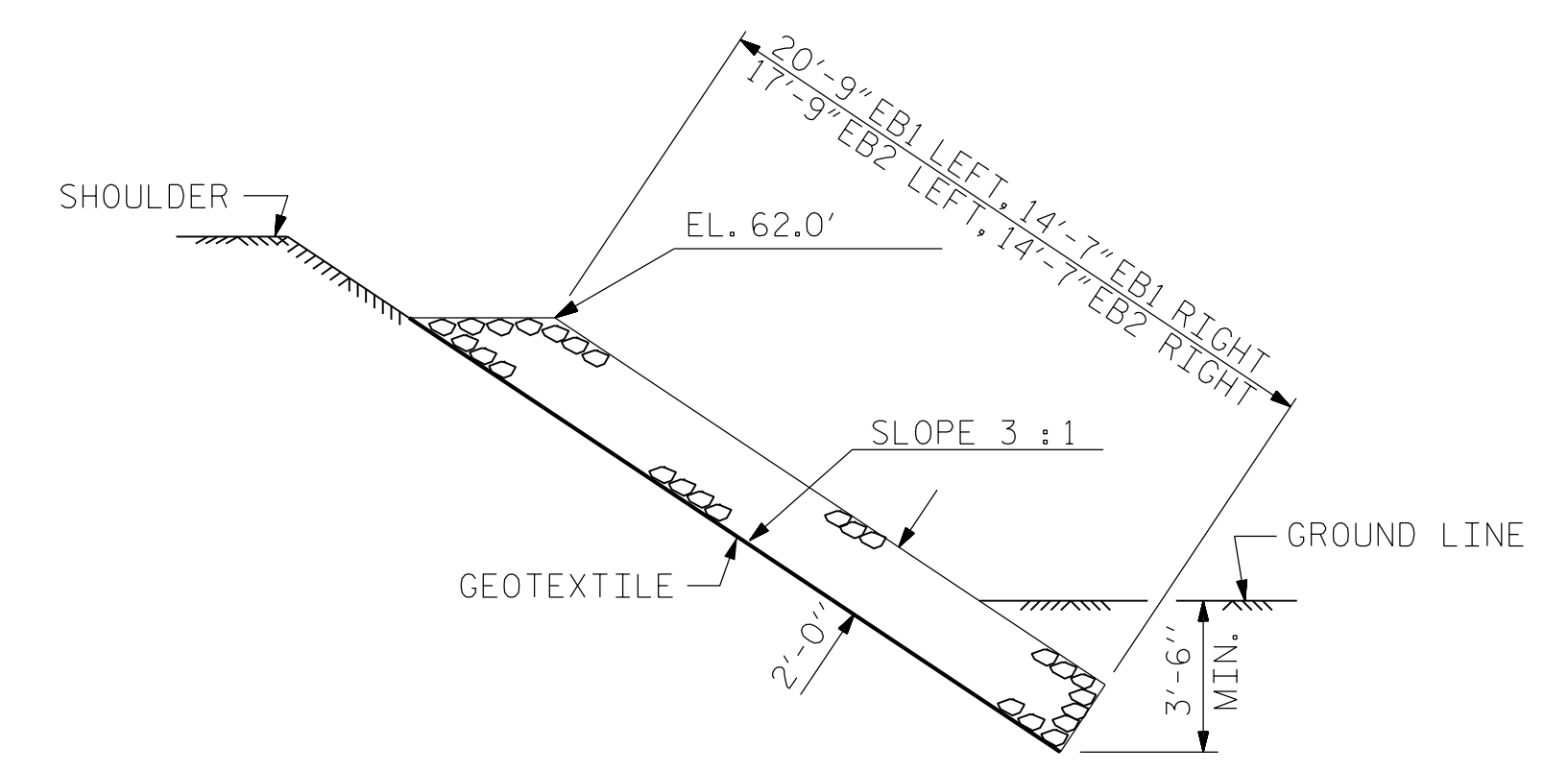
PLAN



SECTION H-H



SECTION C-C
BERM RIP RAPPED

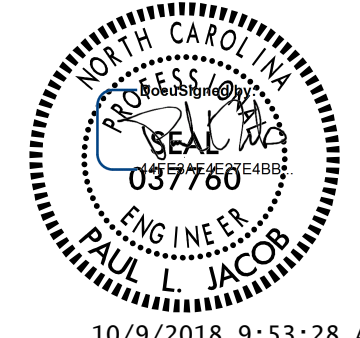


SECTION C-C

PROJECT NO. B-4438
BRUNSWICK COUNTY
STATION: 25+27.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

—RIP RAP DETAILS—



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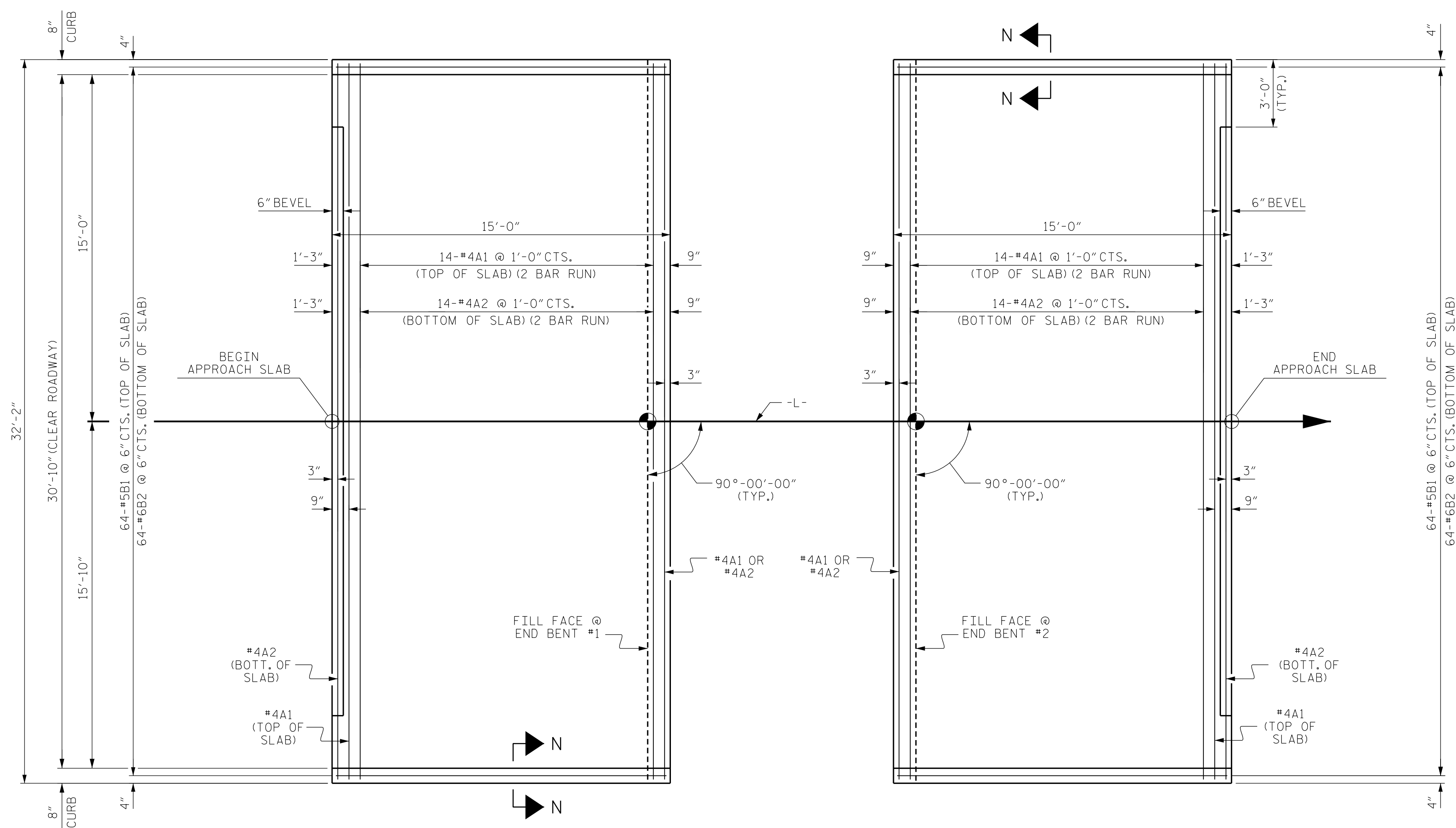
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CHECKED BY : P. JACOB DATE : 08/2018
DESIGN ENGINEER OF RECORD: P. JACOB DATE : 08/2018

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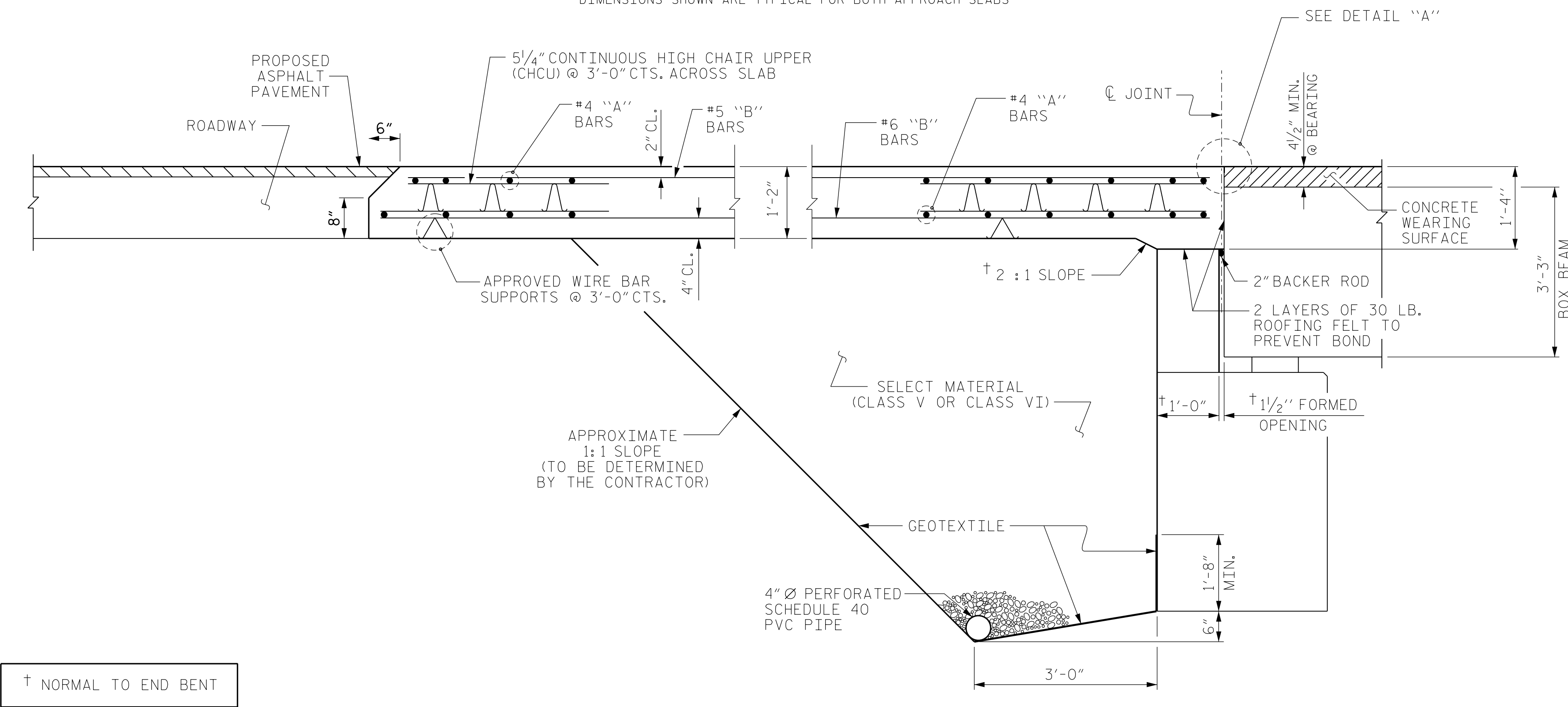
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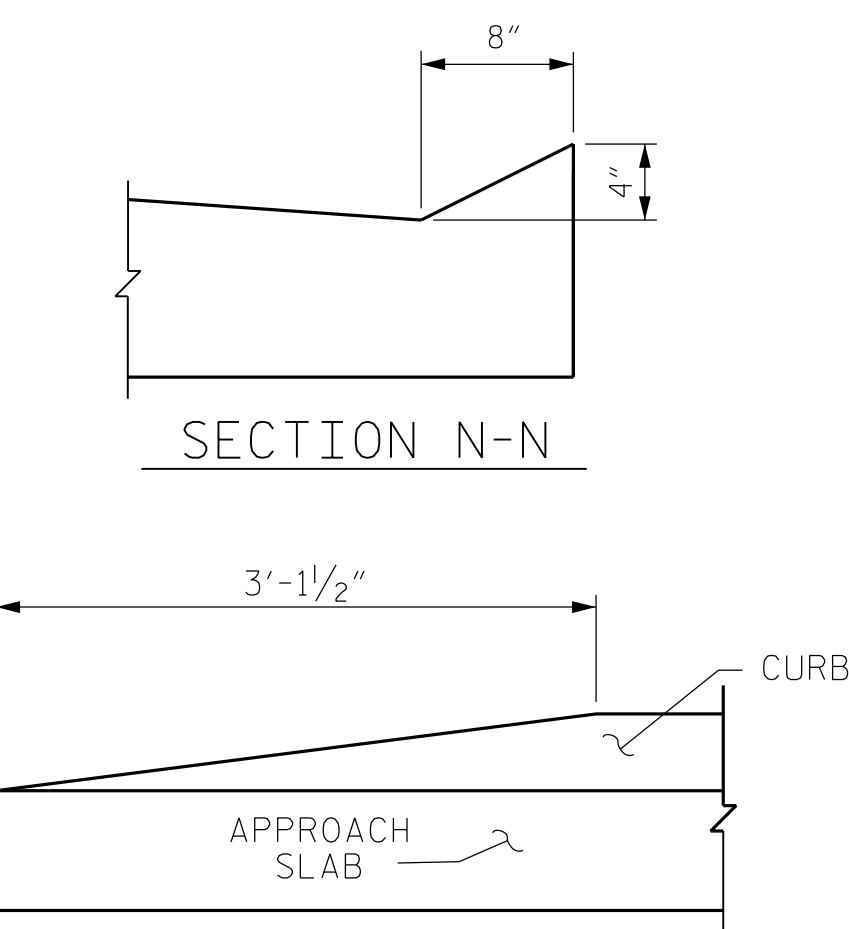
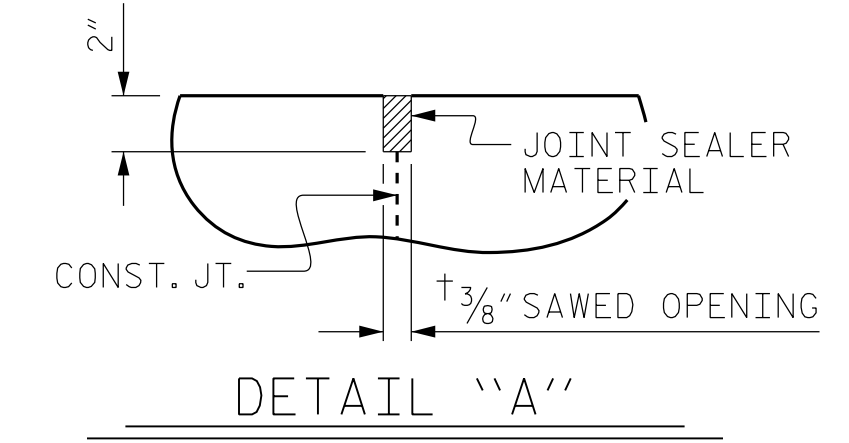
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PLAN @ END BENT #1
 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
 (TYPE II - STANDARD APPROACH FILL)



END OF CURB WITHOUT
 SHOULDER BERM GUTTER
 CURB DETAILS

NOTES

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

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

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

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

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

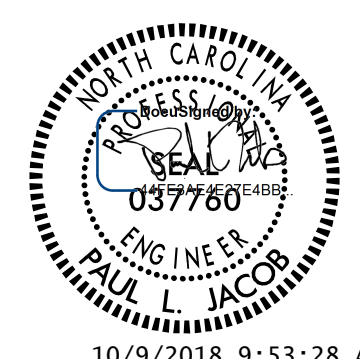
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

APPROACH SLABS SHALL BE POURED AFTER CONCRETE WEARING SURFACE IS POURED.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	32	#4	STR	16'-11"	362	
A2	32	#4	STR	16'-9"	358	
* B1	64	#5	STR	14'-2"	946	
B2	64	#6	STR	14'-8"	1410	
REINFORCING STEEL					LBS.	1768
* EPOXY COATED REINFORCING STEEL					LBS.	1308
CLASS AA CONCRETE					C. Y.	21.2
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	32	#4	STR	16'-11"	362	
A2	32	#4	STR	16'-9"	358	
* B1	64	#5	STR	14'-2"	946	
B2	64	#6	STR	14'-8"	1410	
REINFORCING STEEL					LBS.	1768
* EPOXY COATED REINFORCING STEEL					LBS.	1308
CLASS AA CONCRETE					C. Y.	21.2

PROJECT NO. B-4438
BRUNSWICK COUNTY
 STATION: 25+27.50 -L-



10/9/2018 9:53:28 AM PDT

STATE OF NORTH CAROLINA
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 RALEIGH

BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 BOX BEAM

DRAWN BY : M. RAY DATE : 10/2018
 CHECKED BY : P. JACOB DATE : 10/2018
 DESIGN ENGINEER OF RECORD: P. JACOB DATE : 10/2018

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