

TIP PROJECT: BR-0002

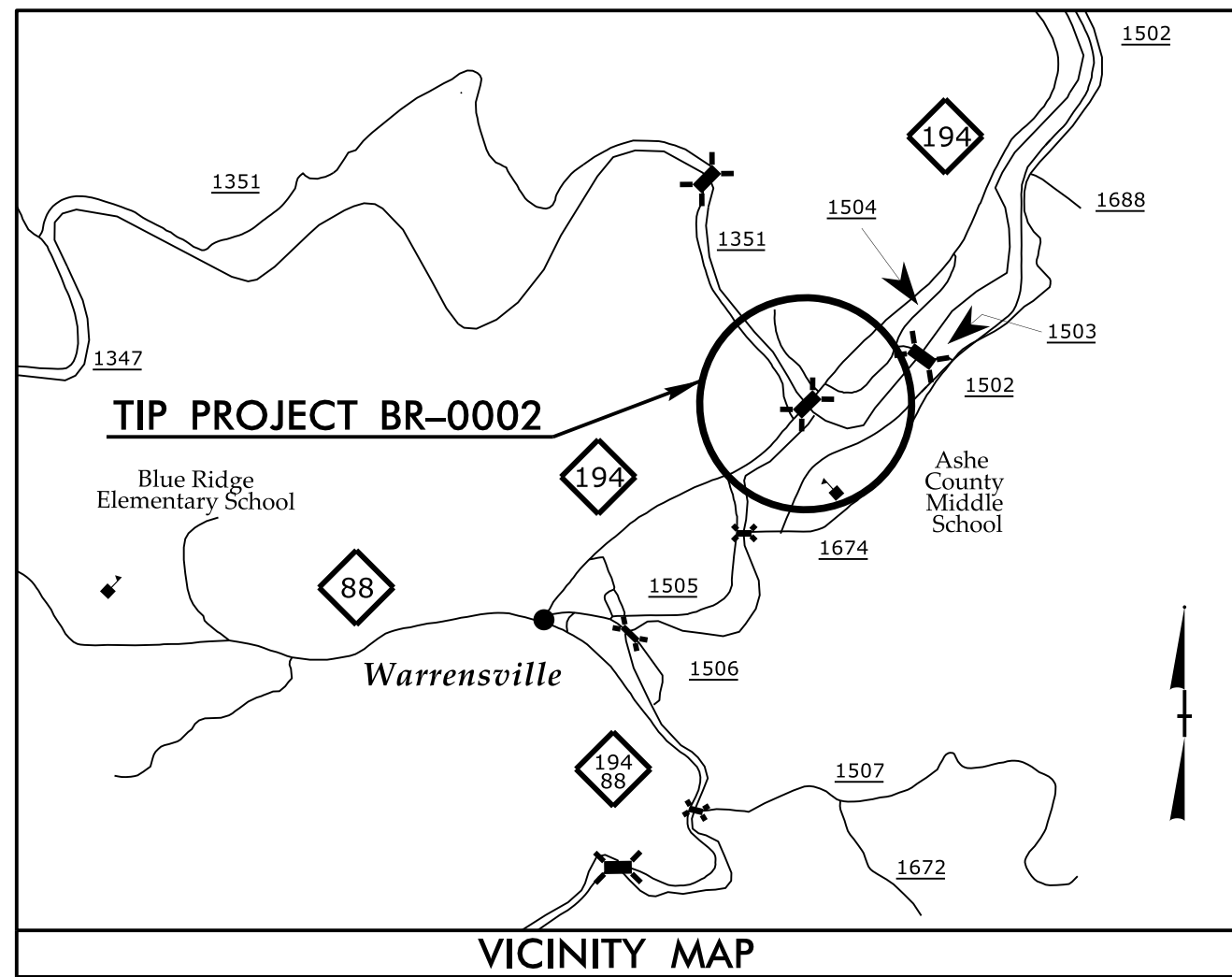
CONTRACT: C204482

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

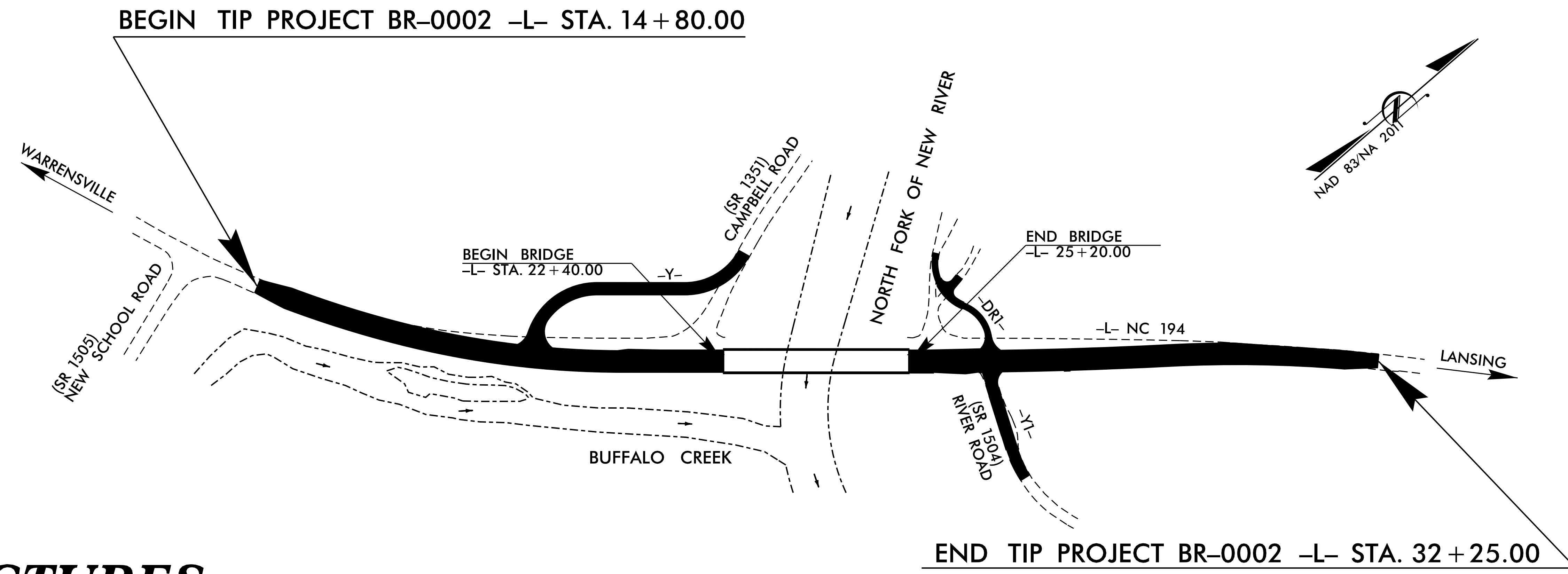
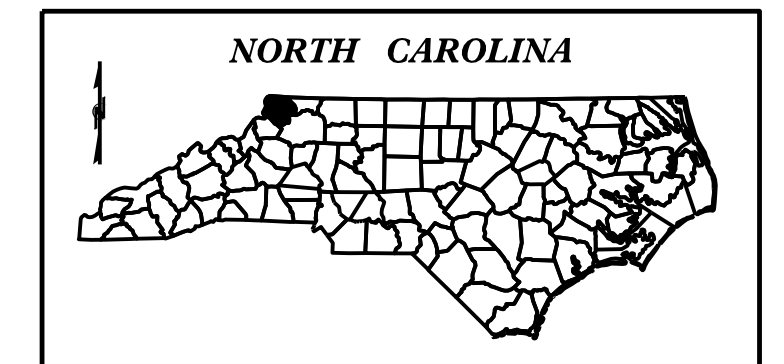
ASHE COUNTY

**LOCATION: BRIDGE NO. 8 ON NC 194 OVER
NORTH FORK NEW RIVER**

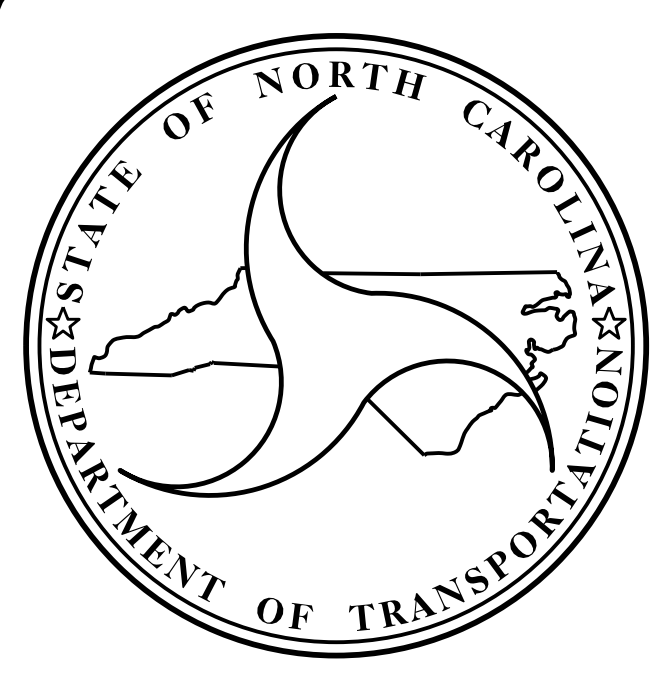
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0002	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
49071.1.1	-	P.E.	
49071.2.1	-	ROW/UTILITIES	
49071.3.1	-	CONST.	



STRUCTURES



DESIGN DATA

ADT 2020 = 4010
ADT 2040 = 4100
K = 12 %
D = 55 %
T = 7 % *
V = 60 MPH
* TTST = 2% DUAL = 5%
FUNC CLASS = MAJOR COLLECTOR REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0002 = 0.269 MI
LENGTH OF STRUCTURE TIP PROJECT BR-0002 = 0.053 MI
TOTAL LENGTH OF TIP PROJECT BR-0002 = 0.330 MI

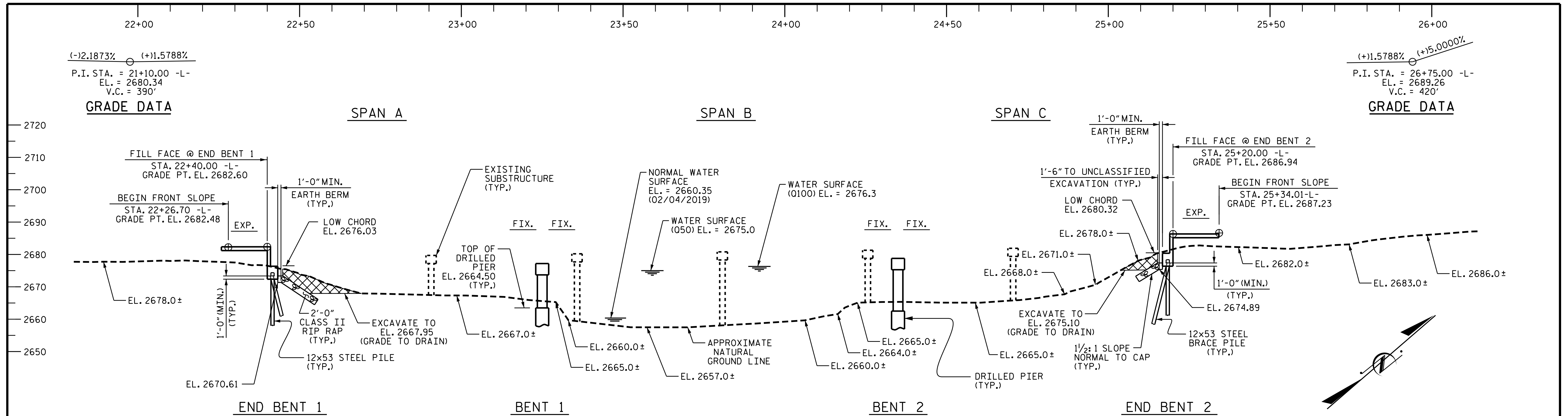
Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

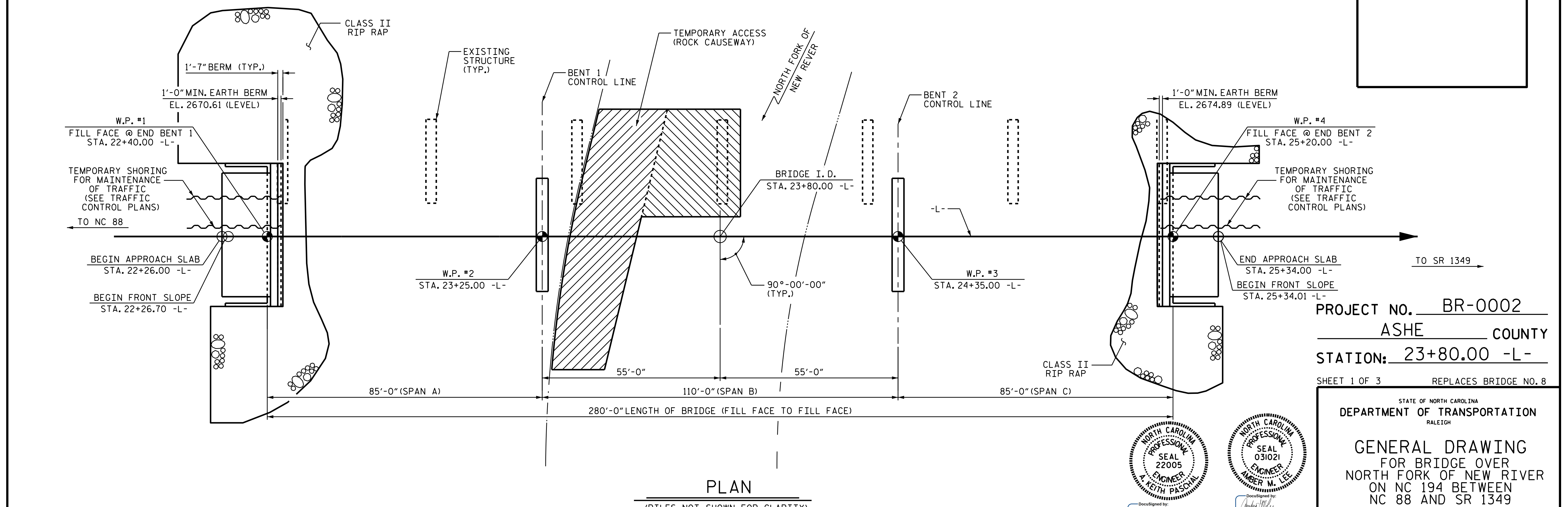
LETTING DATE : SEPTEMBER 21, 2021

A. KEITH PASCHAL, P.E.
PROJECT ENGINEER

AMBER M. LEE, P.E.
PROJECT DESIGN ENGINEER



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 NORTH FORK OF NEW RIVER
 ON NC 88 AND SR 1349

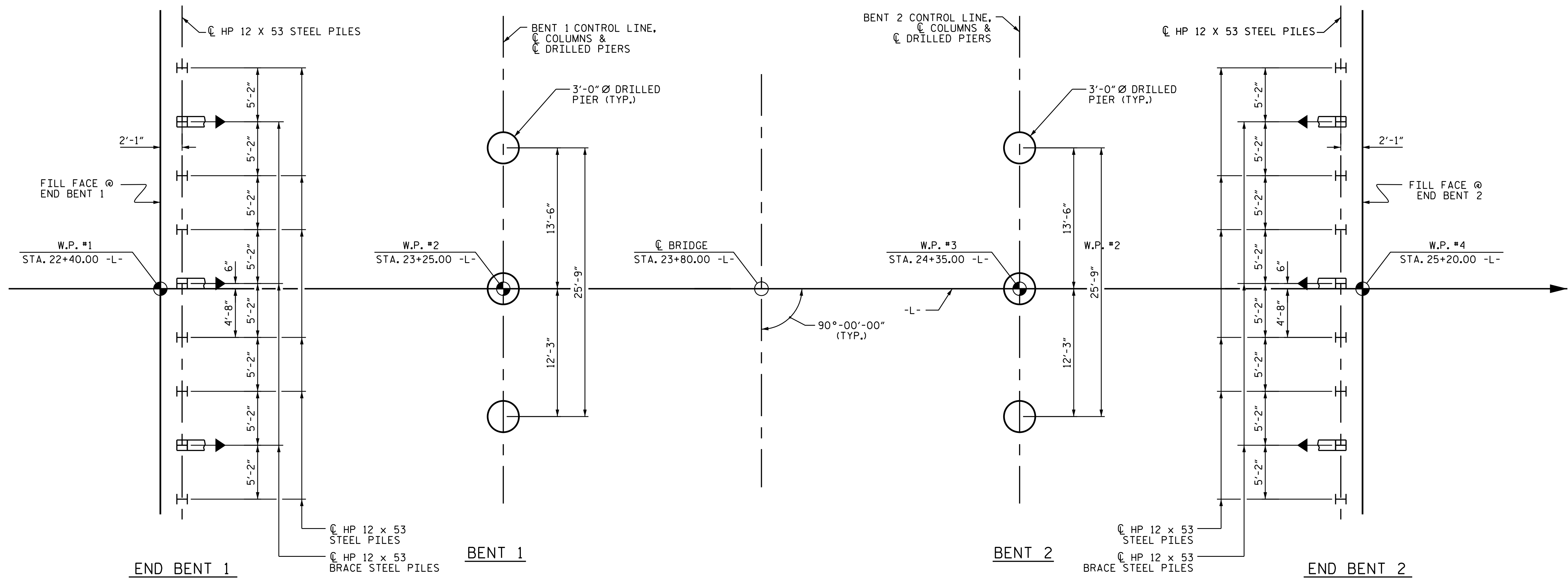
NORTH CAROLINA PROFESSIONAL SEAL 22005 ENGINEER A. KEITH PASCOAL
 NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE
 Documented by: A. Keith Pascoal 8/3/2021
 Documented by: Amber M. Lee 8/3/2021

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : H. LOCKLEAR DATE : 06/2020
 DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

REMOVE AFTER EXISTING BENT DEMOLITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			40



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO CENTERLINE OF PILES AND DRILLED PIERS

▢▢▢▢ INDICATES PILE BATTER IN DIRECTION SHOWN
BRACE PILES BATTERED AT 3:12

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS 1 & 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENTS 1 & 2 TO A REQUIRED DRIVING RESISTANCE OF 142 TONS PER PILE.

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

DRILLED PIERS AT BENT 1 AND AT BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 483 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 115 TSF.

INSTALL DRILLED PIERS AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN EL. 2649.5 FT. WITH THE REQUIRED RESISTANCE AND A PENETRATION OF AT LEAST 6 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT 2 TO A TIP ELEVATION NO HIGHER THAN EL. 2650.5 FT. WITH THE REQUIRED RESISTANCE AND A PENETRATION OF AT LEAST 6 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 2654.5 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

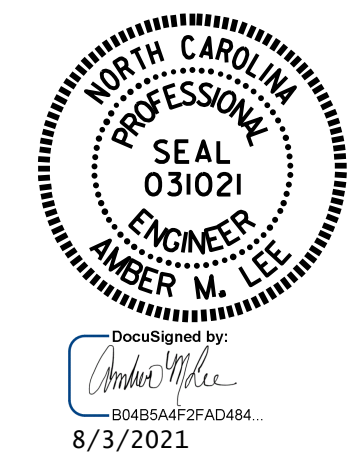
THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION 2655.5 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 1 AND END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 NORTH FORK OF NEW RIVER
 ON NC 194 BETWEEN
 NC 88 AND SR 1349

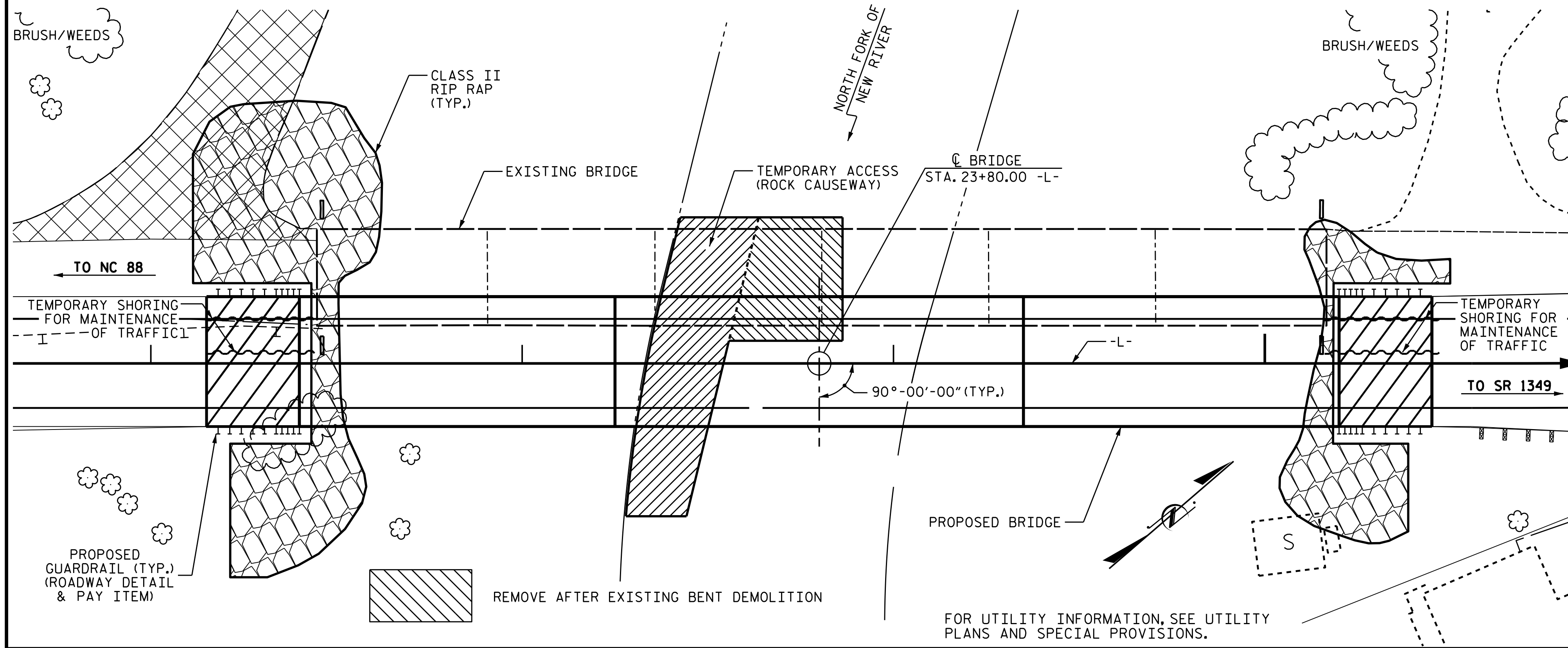
DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : H. LOCKLEAR DATE : 06/2020
 DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			40

BENCHMARK #1 RR SPIKE SET IN BASE OF TRIPLE 15" SYCAMORE TREE AT STATION 17+59 -L- ; 65' LT., ELEVATION = 2663.58 NAVD 88

NOTES



LOCATION SKETCH

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 1 @ 45'-3", 4 SPANS @ 45'-0" AND 1 @ 45'-3" WITH RC SLAB ON I-BEAM AND A CLEAR ROADWAY WIDTH OF 26'-0" ON A SUBSTRUCTURE, END BENT CONSISTING OF RC CAPS ON STEEL H PILES, AND BENT CONSISTING OF RC CAPS ON COLUMN ON SPREAD FOOTINGS AT THE PROPOSED STRUCTURE LOCATION 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.

FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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 AT THE PROJECT SITE.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25' LT. AND 24' RT. EACH SIDE OF CENTERLINE ROADWAY, AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE CLOSE PROXIMITY OF TEMPORARY SHORING TO THE PROPOSED END BENTS. SHORING MUST BE INSTALLED ACCURATELY IN ACCORDANCE WITH TRAFFIC CONTROL PLANS.

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

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 23+80.00 -L-.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE" AT STATION 23+80.00 -L-.

HYDRAULIC DATA

DESIGN DISCHARGE	14,800 C.F.S.
FREQUENCY OF DESIGN FLOOD	50 YRS.
DESIGN HIGH WATER ELEVATION	2675.0 FT.
DRAINAGE AREA	119 SQ.MI.
BASIC DISCHARGE (Q100)	17,400 C.F.S.
BASIC HIGH WATER ELEVATION	2676.3 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	22,900+ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	500+ YRS.
OVERTOPPING FLOOD ELEVATION	2681.9 FT.

TOTAL BILL OF MATERIAL

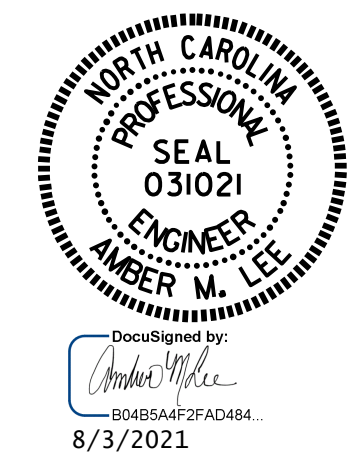
	CONSTRUCTION MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-0" Ø DRILLED PIERS IN SOIL	3'-0" Ø DRILLED PIERS NOT IN SOIL	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE								10,627	9722		LUMP SUM	
END BENT 1										46.5		6372
BENT 1				24	21	1				23.4		8733
BENT 2				20	22	1				24.5		8852
END BENT 2										46.7		6372
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	44	43	2	LUMP SUM	10,627	9722	141.1	LUMP SUM	30,329

TOTAL BILL OF MATERIAL

	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LBS.	NO. LIN. FT.	EA.	NO. LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		15 1377.92				555.7			LUMP SUM	LUMP SUM
END BENT 1			9	9	160	9	387	430		
BENT 1	1242									
BENT 2	1284									
END BENT 2			9	9	135	9	181	201		
TOTAL	2526	15 1377.92	18	18	295	18	555.7	631	LUMP SUM	LUMP SUM

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : H. LOCKLEAR DATE : 06/2020
 DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

28-JUL-2021 15:48
 R:\Structures\Final Plans\400_007_BR-0002.SMU_GD_003_040008.dgn
 amlee



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 3 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 40
2			4			

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER
 NORTH FORK OF NEW RIVER
 ON NC 194 BETWEEN
 NC 88 AND SR 1349

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

LOAD FACTORS:

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

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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.085	--	1.75	0.832	1.235	A	ER	40.90	0.832	1.249	A	ER	65.70	0.80	0.832	1.085	A	ER	40.90		
	HL-93(0pr)	N/A	--	1.085	--	1.35	0.832	1.600	A	ER	40.90	0.832	1.619	A	ER	65.70	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.452	52.282	1.75	0.832	1.653	A	ER	40.90	0.832	1.560	A	ER	49.28	0.80	0.832	1.452	A	ER	40.90		
	HS-20(0pr)	36.000	--	1.452	52.282	1.35	0.832	2.142	A	ER	40.90	0.832	2.022	A	ER	49.28	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.351	45.235	1.40	0.832	4.766	A	ER	40.90	0.832	4.449	A	ER	49.28	0.80	0.832	3.351	A	ER	40.90	
		SNGARBS2	20.000	--	2.466	49.315	1.40	0.832	3.507	A	ER	40.90	0.832	3.223	A	ER	49.28	0.80	0.832	2.466	A	ER	40.90	
		SNAGRIS2	22.000	--	2.322	51.088	1.40	0.832	3.303	A	ER	40.90	0.832	3.015	A	ER	49.28	0.80	0.832	2.322	A	ER	40.90	
		SNCOTTS3	27.250	--	1.667	45.413	1.40	0.832	2.371	A	ER	40.90	0.832	2.227	A	ER	49.28	0.80	0.832	1.667	A	ER	40.90	
		SNAGGRS4	34.925	--	1.381	48.219	1.40	0.832	1.964	A	ER	40.90	0.832	1.890	A	ER	49.28	0.80	0.832	1.381	A	ER	40.90	
		SNS5A	35.550	--	1.351	48.026	1.40	0.832	1.922	A	ER	40.90	0.832	1.937	A	ER	49.28	0.80	0.832	1.351	A	ER	40.90	
		SNS6A	39.950	--	1.235	49.319	1.40	0.832	1.756	A	ER	40.90	0.832	1.778	A	ER	65.70	0.80	0.832	1.235	A	ER	40.90	
	SNS7B	42.000	--	1.175	49.370	1.40	0.832	1.672	A	ER	40.90	0.832	1.747	A	ER	65.70	0.80	0.832	1.175	A	ER	40.90		
	TTST	TNAGRIT3	33.000	--	1.504	49.631	1.40	0.832	2.139	A	ER	40.90	0.832	2.110	A	ER	49.28	0.80	0.832	1.504	A	ER	40.90	
		TNT4A	33.075	--	1.509	49.918	1.40	0.832	2.147	A	ER	40.90	0.832	2.037	A	ER	49.28	0.80	0.832	1.509	A	ER	40.90	
		TNT6A	41.600	--	1.229	51.139	1.40	0.832	1.749	A	ER	40.90	0.832	1.860	A	ER	65.70	0.80	0.832	1.229	A	ER	40.90	
		TNT7A	42.000	--	1.233	51.783	1.40	0.832	1.754	A	ER	40.90	0.832	1.823	A	ER	65.70	0.80	0.832	1.233	A	ER	40.90	
		TNT7B	42.000	--	1.269	53.313	1.40	0.832	1.806	A	ER	40.90	0.832	1.706	A	ER	65.70	0.80	0.832	1.269	A	ER	40.90	
		TNAGRIT4	43.000	--	1.212	52.120	1.40	0.832	1.724	A	ER	40.90	0.832	1.652	A	ER	65.70	0.80	0.832	1.212	A	ER	40.90	
TNAGRIT5A		45.000	--	1.145	51.525	1.40	0.832	1.629	A	ER	40.90	0.832	1.641	A	ER	65.70	0.80	0.832	1.145	A	ER	40.90		
TNAGRIT5B	45.000	3	1.133	50.988	1.40	0.832	1.612	A	ER	40.90	0.832	1.571	A	ER	65.70	0.80	0.832	1.133	A	ER	40.90			

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.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

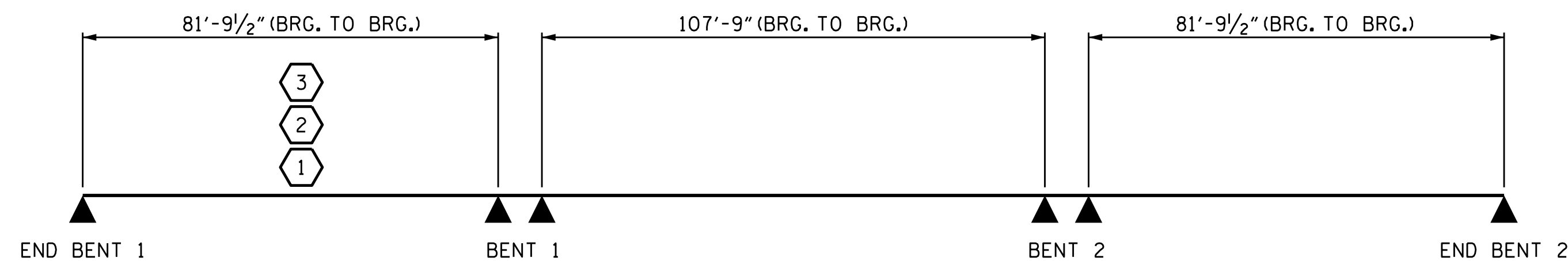
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

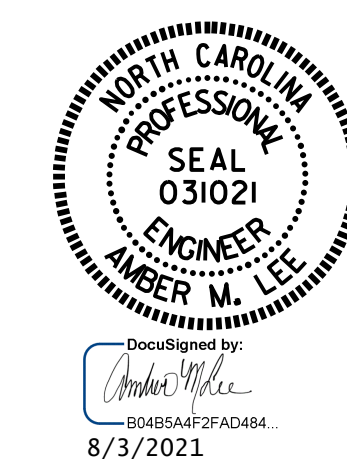
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

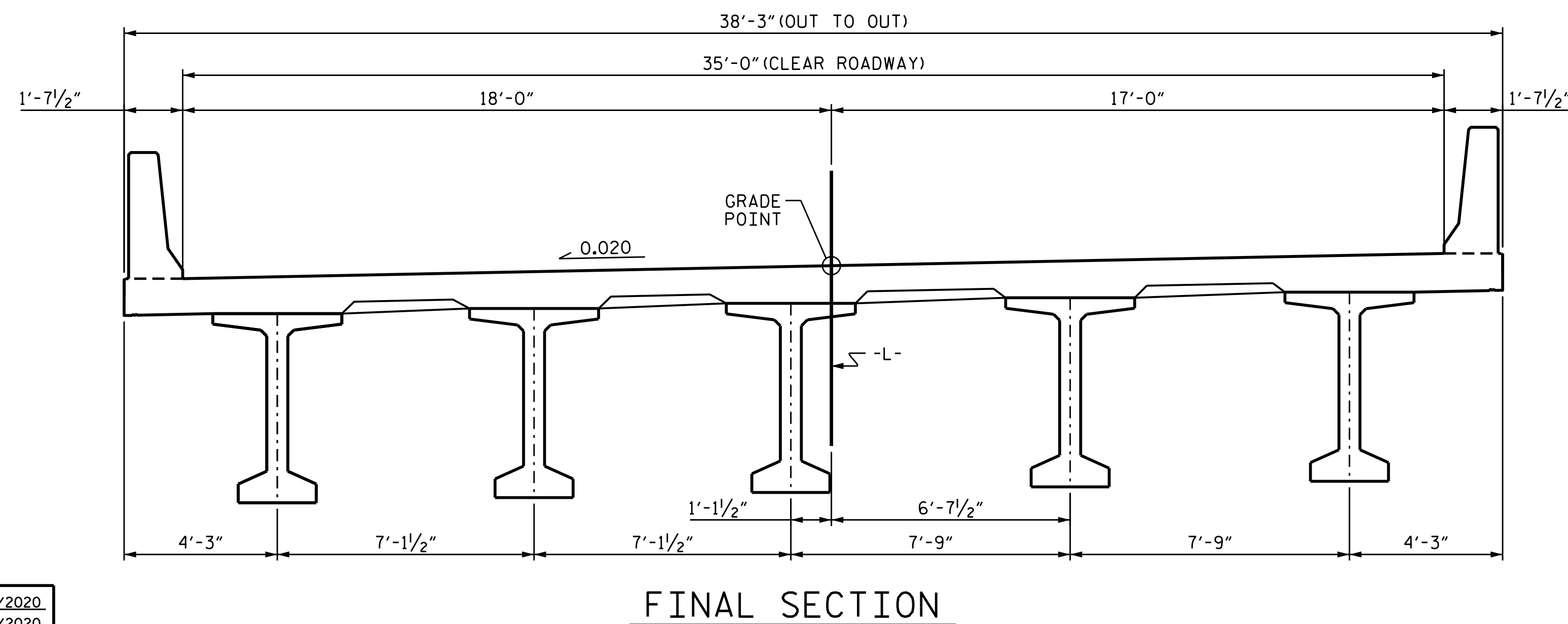
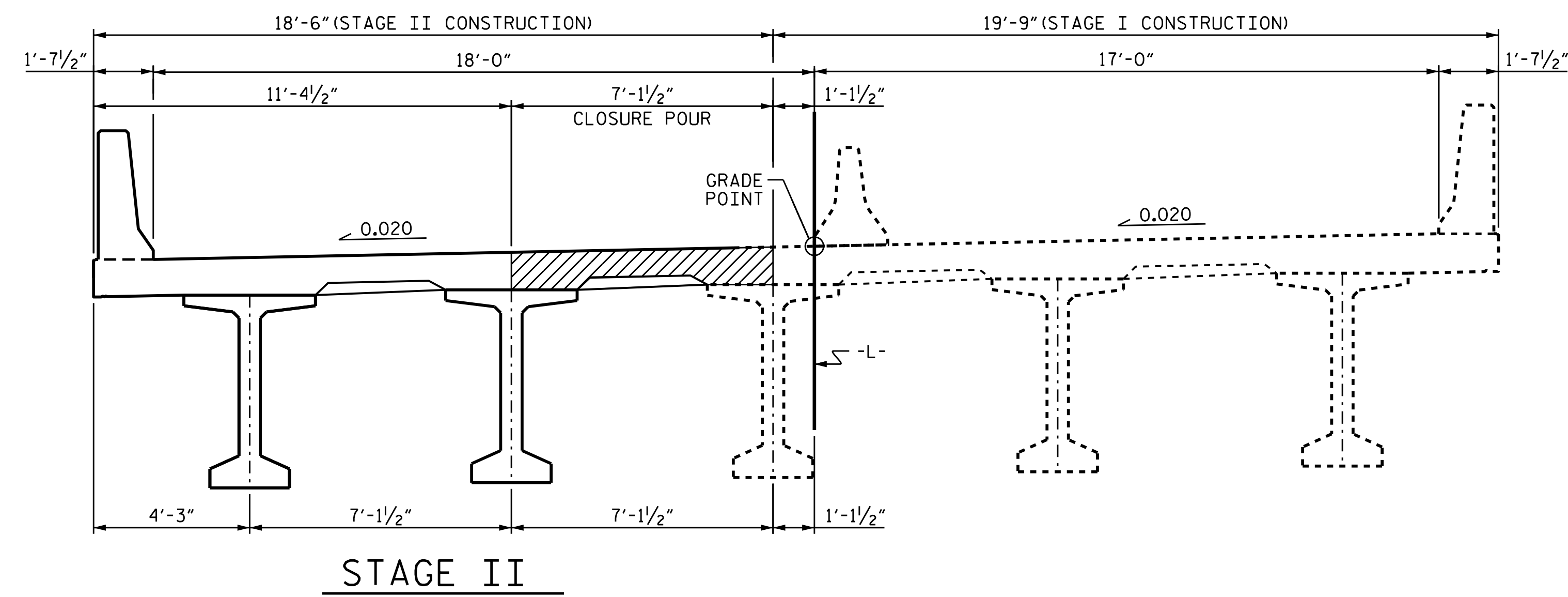
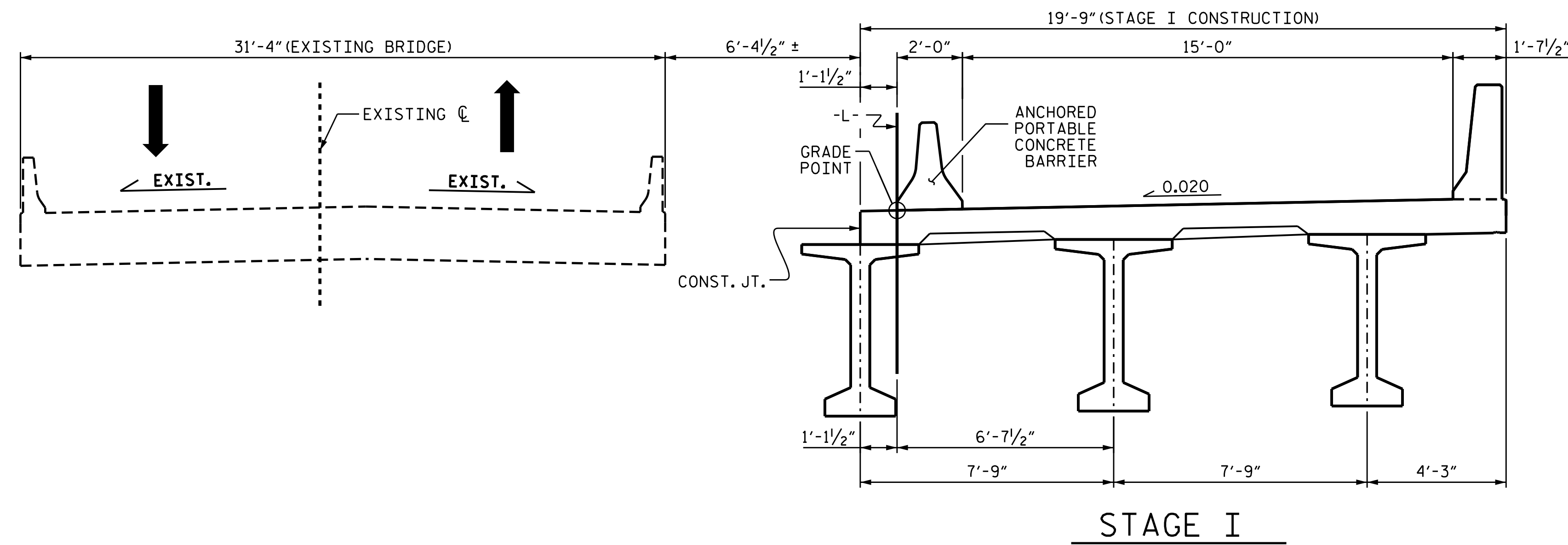
ASSEMBLED BY : M. G. SHAIKH	DATE : 06/2020
CHECKED BY : H. LOCKLEAR	DATE : 06/2020
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

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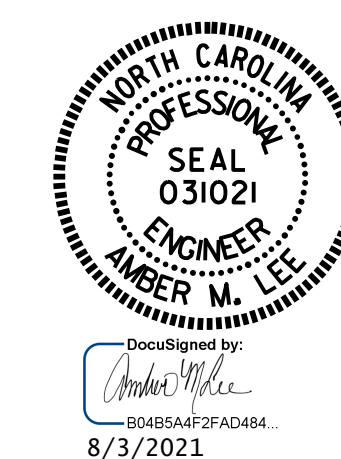
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS 40
2			4			

NOTES

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER RAIL.
FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.



PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING SEQUENCE

DRAWN BY : M. G. SHAIKH DATE : 06/2020
CHECKED BY : H. LOCKLEAR DATE : 06/2020
DESIGN ENGINEER OF RECORD: K. PUROHIT DATE : 11/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			40

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2/2" ABOVE THE TOP OF THE REMOVABLE FORM.

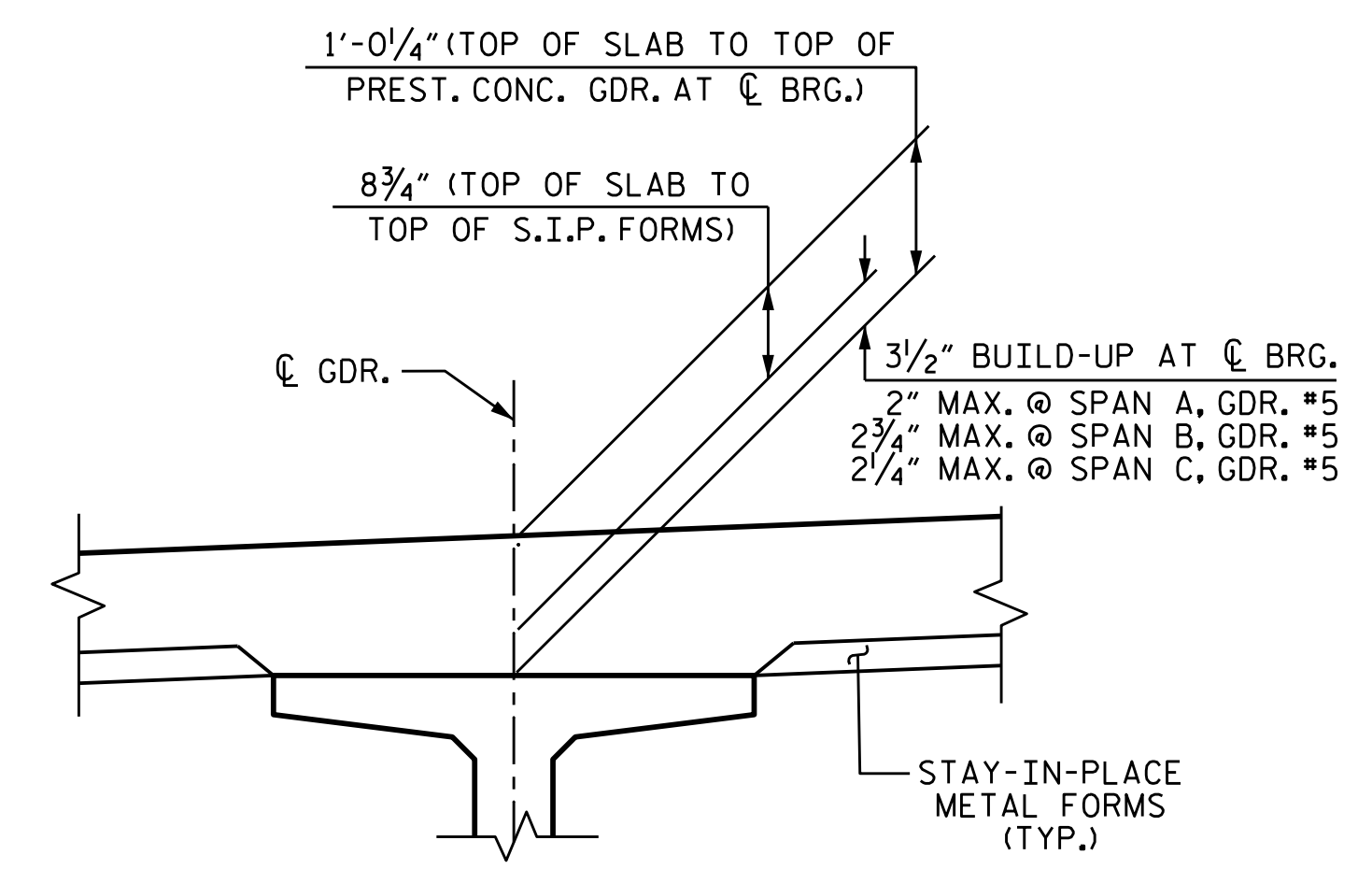
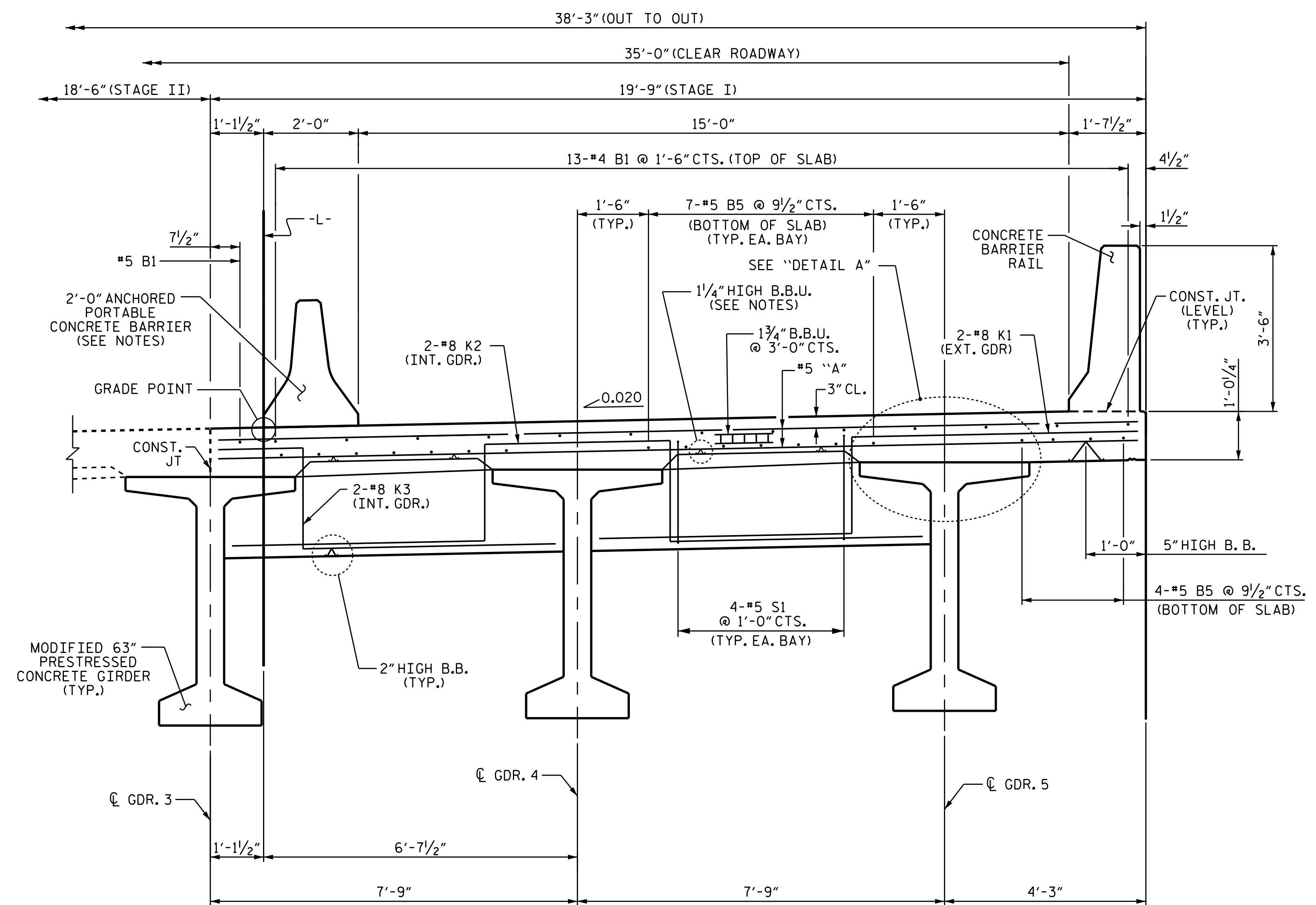
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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

BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP SLAB REINFORCING STEEL.

SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY ITEM OF ANCHORED PORTABLE CONCRETE BARRIER.



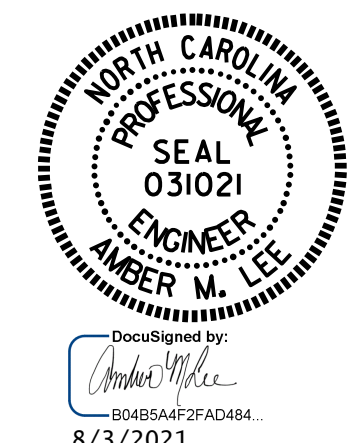
DETAIL A

* BASE ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

TYPICAL SECTION @ END BENT DIAPHRAGMS (STAGE I)

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 1 OF 5



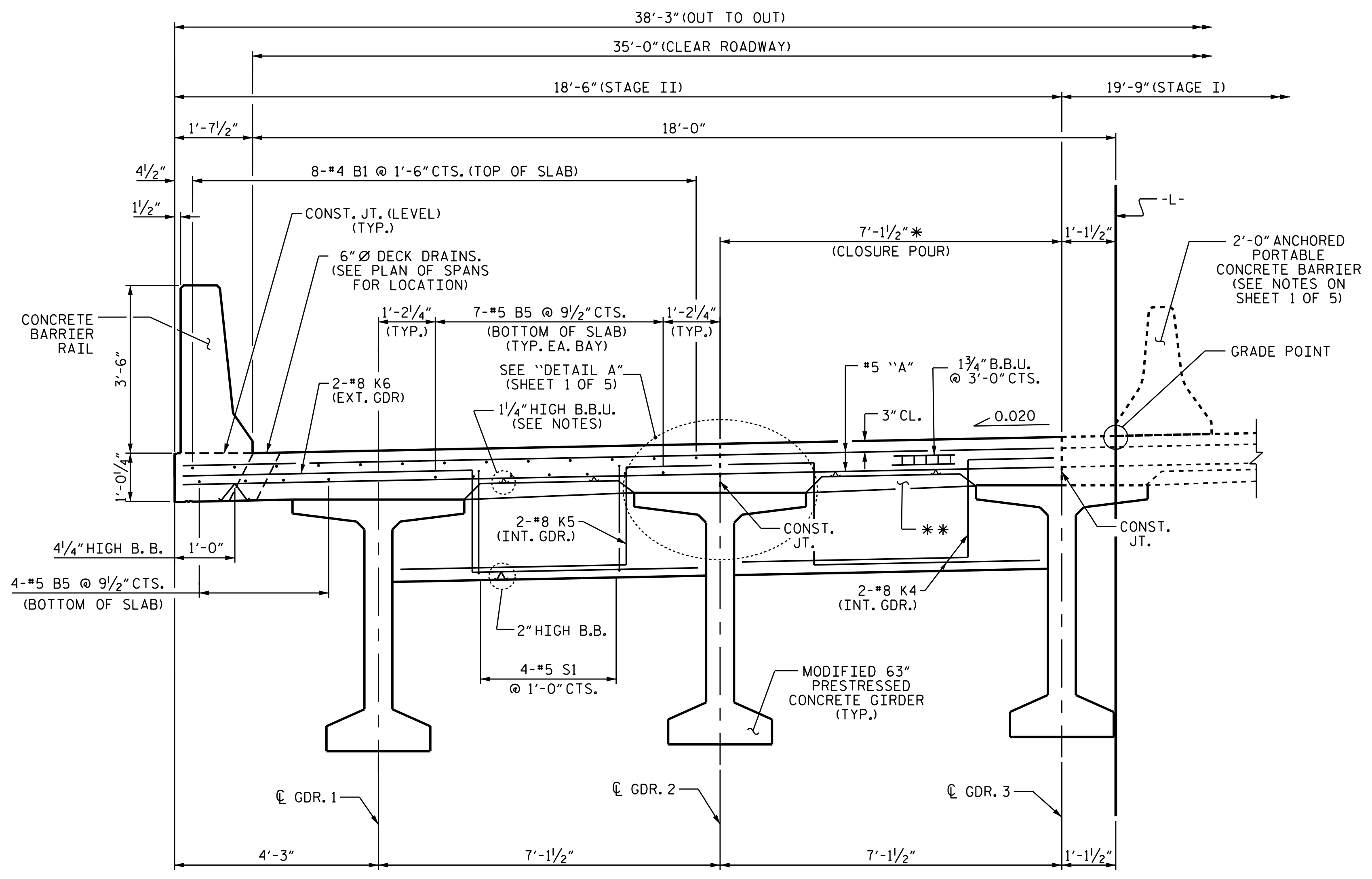
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : A. LEE DATE : 06/2020
 DESIGN ENGINEER OF RECORD: K. PUROHIT DATE : 11/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			40

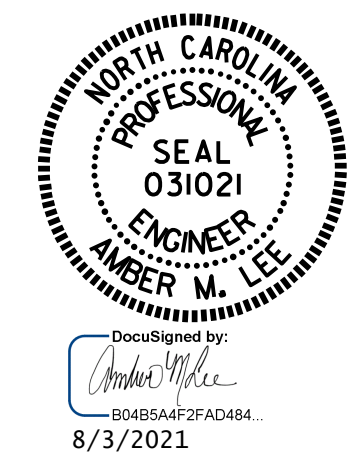


TYPICAL SECTION @ END BENT DIAPHRAGMS
(STAGE II)

* FOR CLOSURE POUR DETAILS, SEE SHEET S-9.
 ** SIP METAL FORMS IN THE CLOSURE BAY SHALL BE
 INSTALLED AFTER STAGE II DECK HAS BEEN CAST.

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 5



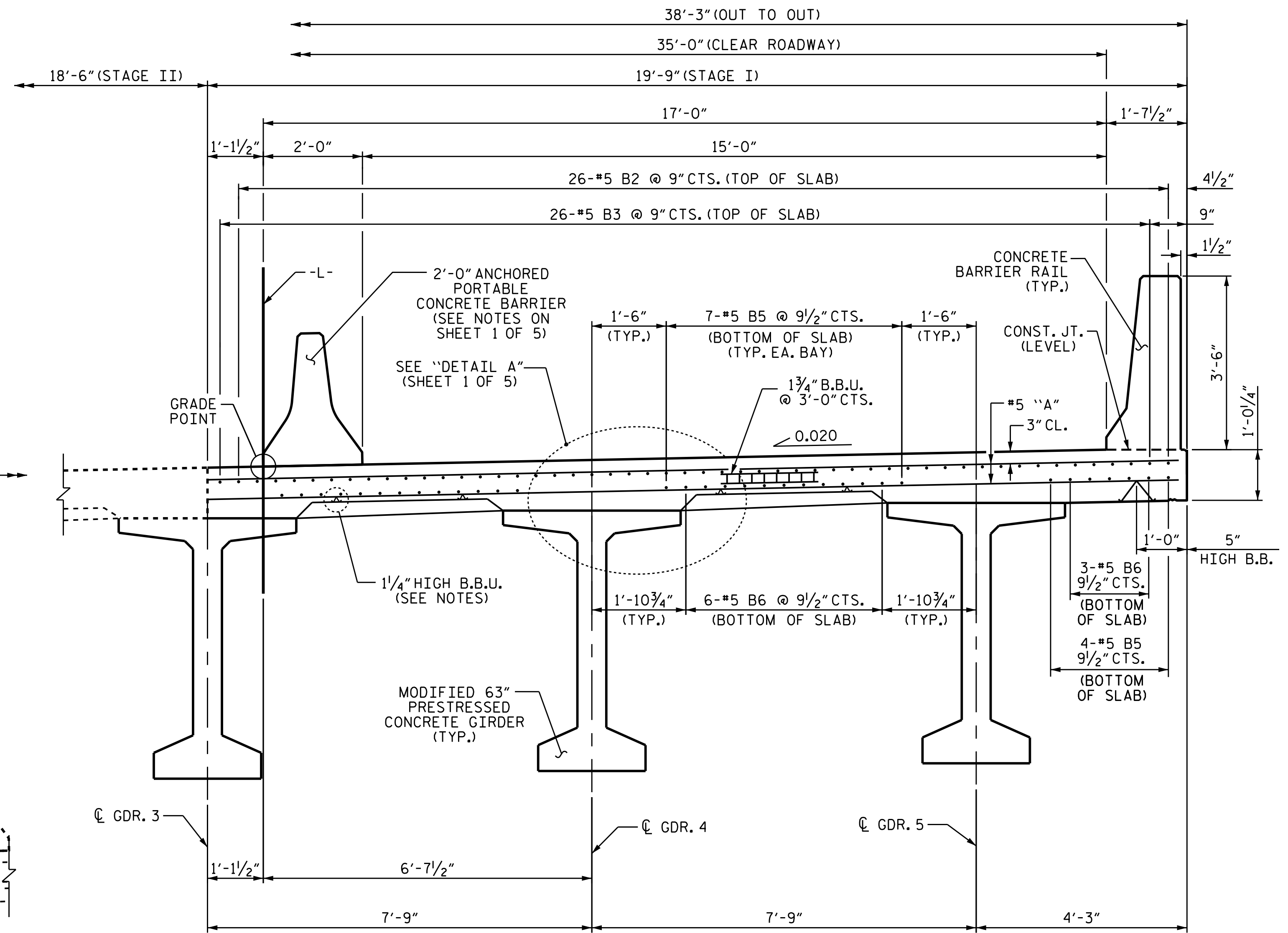
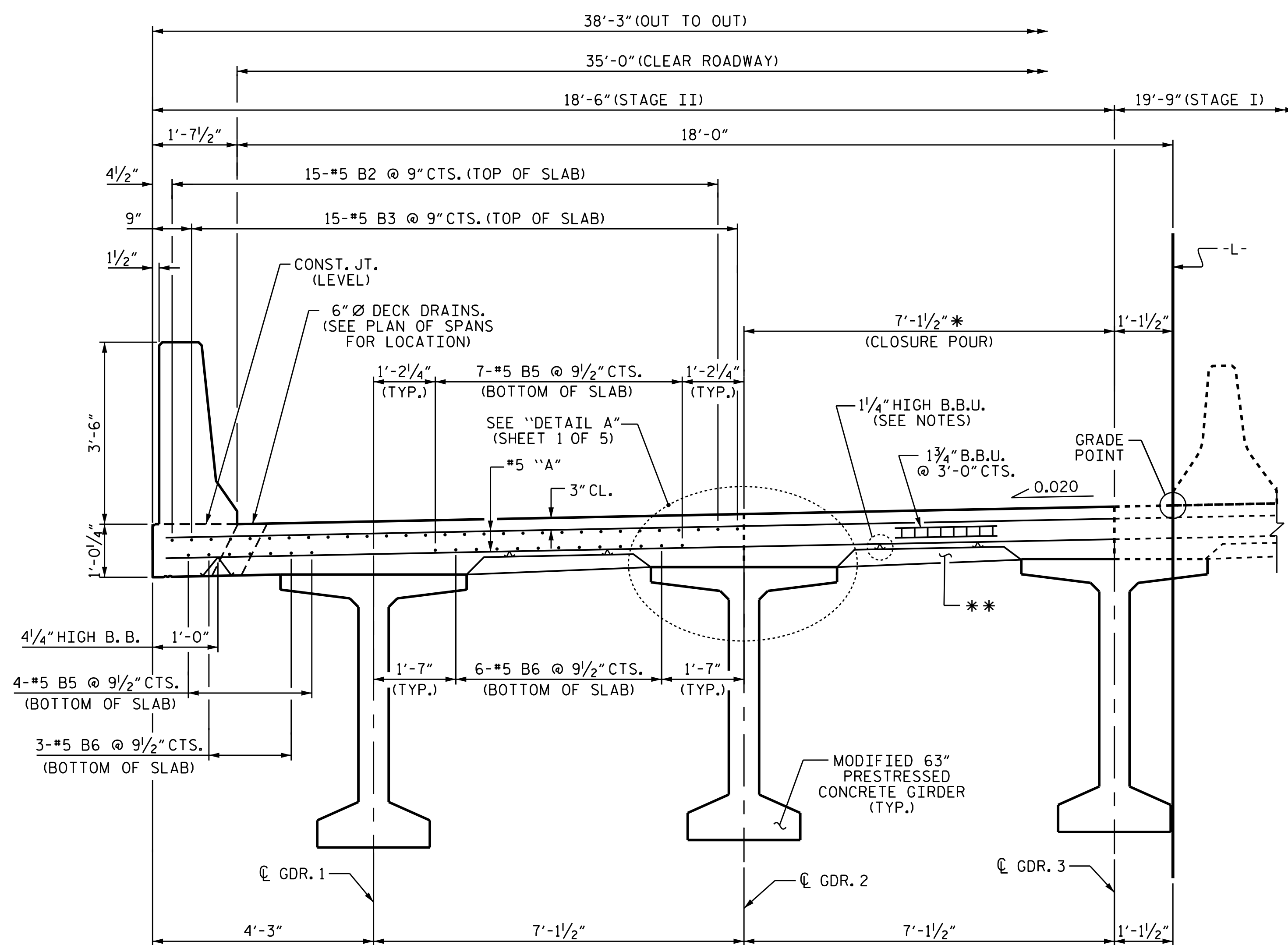
STATE OF NORTH CAROLINA
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SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : M. G. SHAIKH DATE : 06/2020
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			40

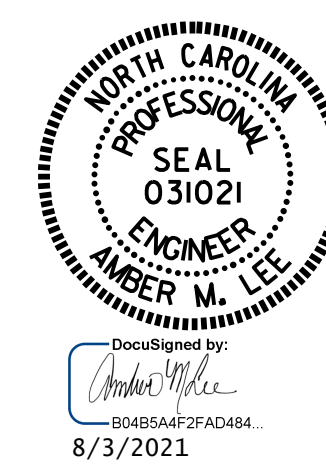


LINK SLAB AT BENT (STAGE I)

LINK SLAB AT BENT (STAGE II)

* FOR CLOSURE POUR DETAILS, SEE SHEET S-9.
 ** SIP METAL FORMS IN THE CLOSURE BAY SHALL BE INSTALLED AFTER STAGE II DECK HAS BEEN CAST.

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 3 OF 5



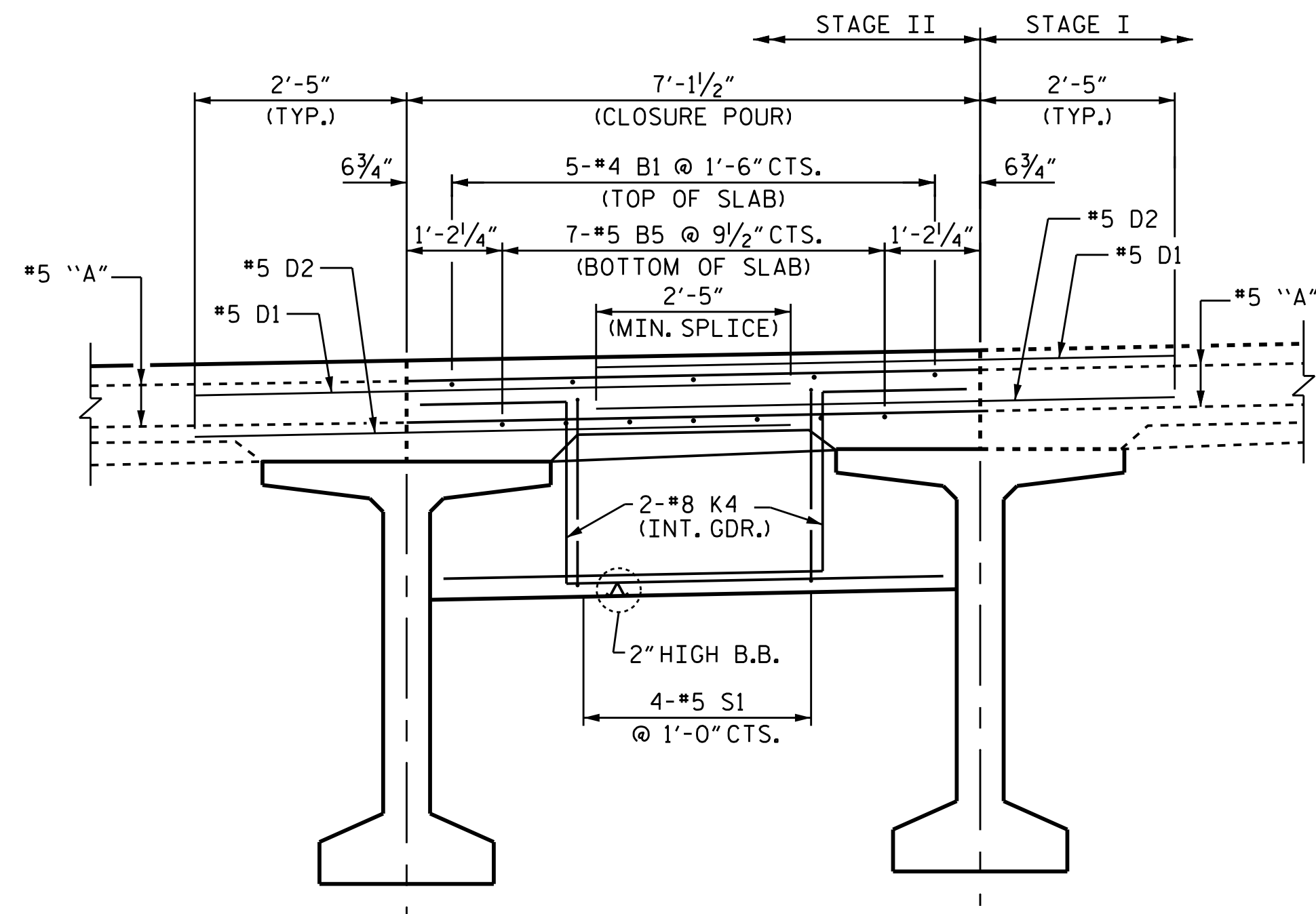
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

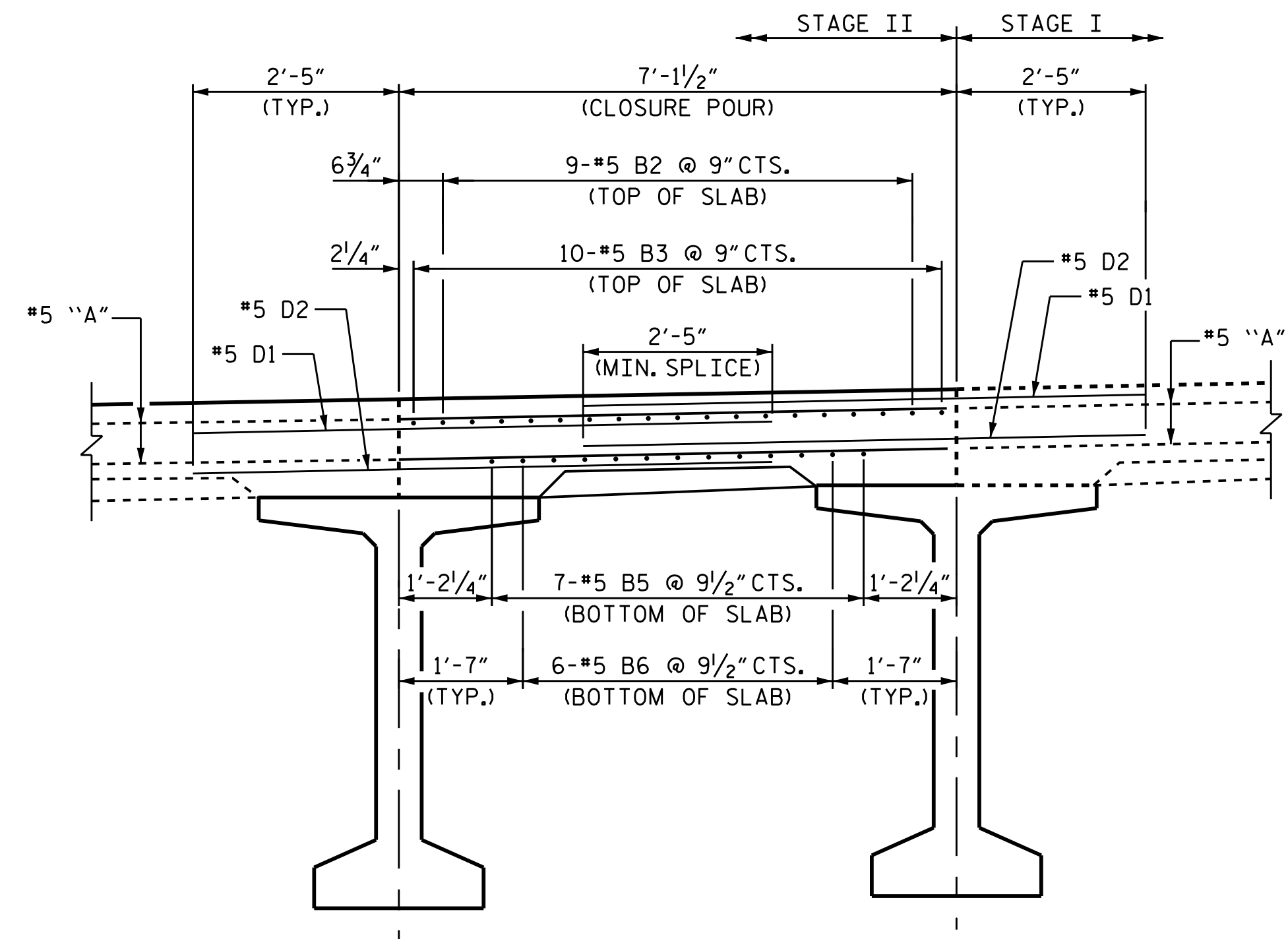
DRAWN BY : M. G. SHAIKH DATE : 06/2020
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 DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 40
2			4			



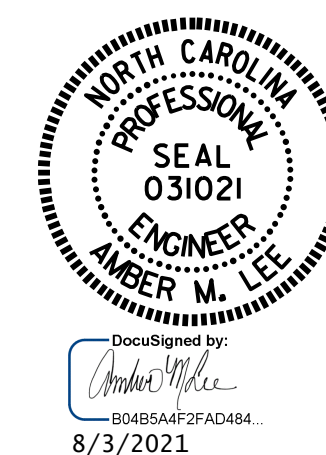
CLOSURE POUR DETAIL @ END BENT



CLOSURE POUR DETAIL @ BENT

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 4 OF 5



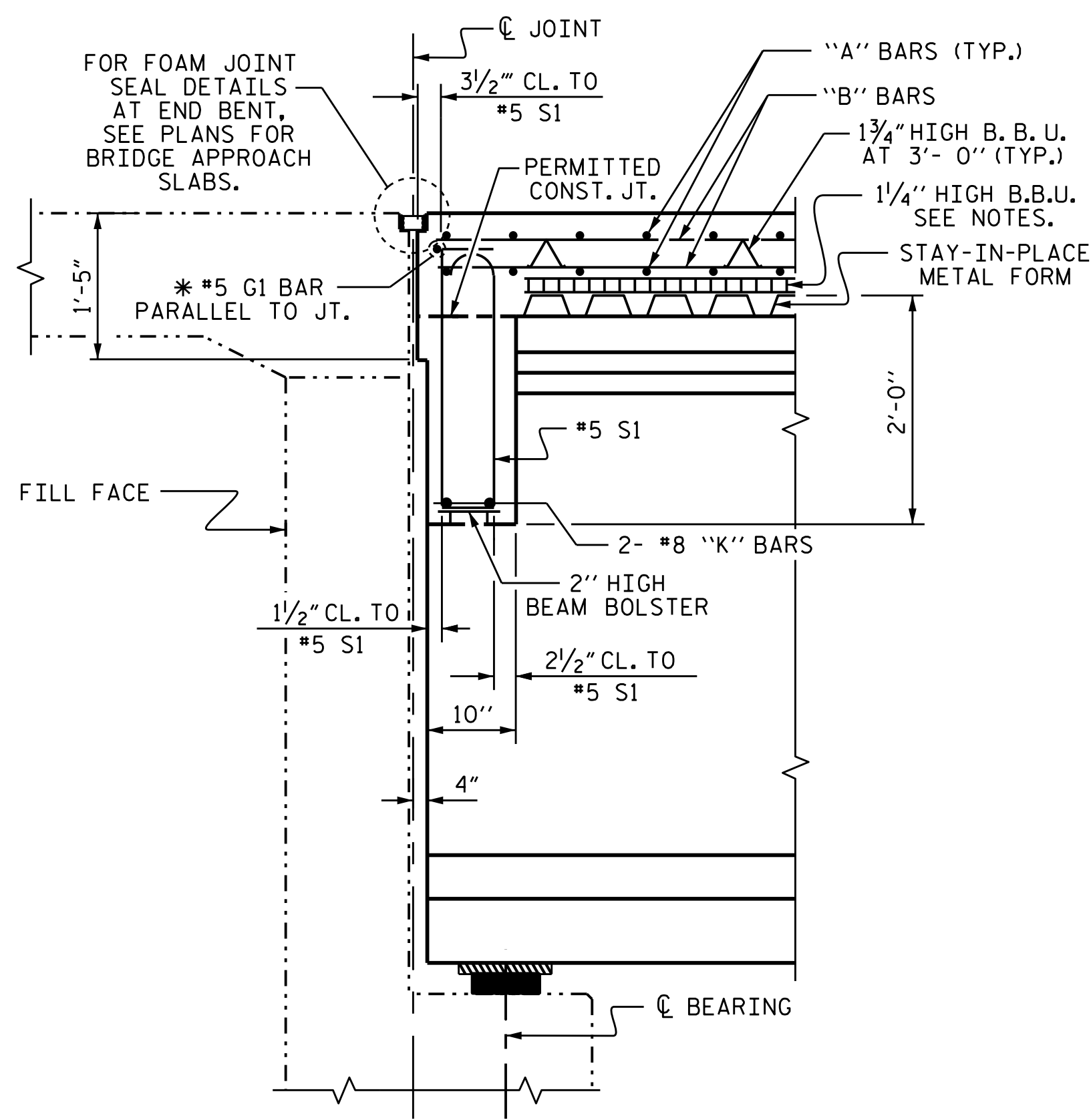
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : A. LEE DATE : 06/2020
 DESIGN ENGINEER OF RECORD: K. PUROHIT DATE : 11/2019

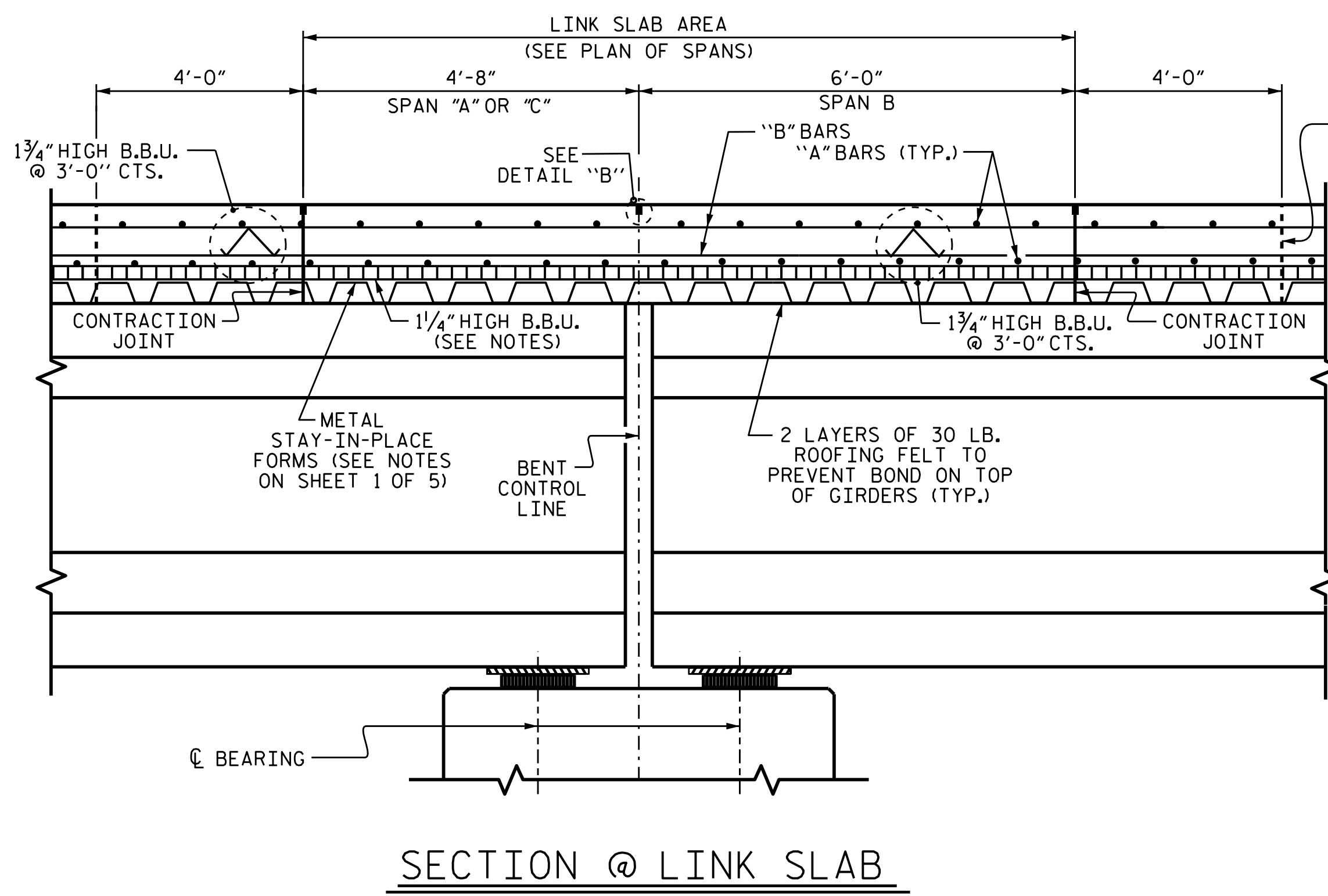
DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			40

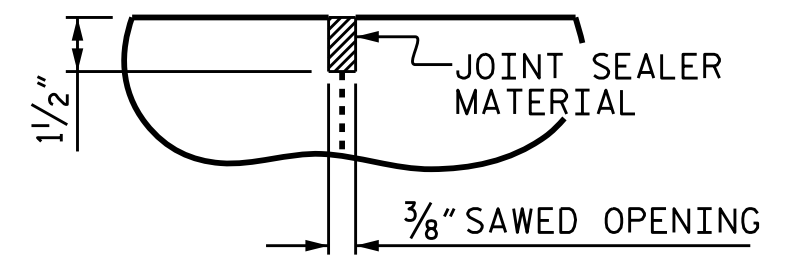


SECTION THROUGH END BENT DIAPHRAGM

* #5 G1 MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.

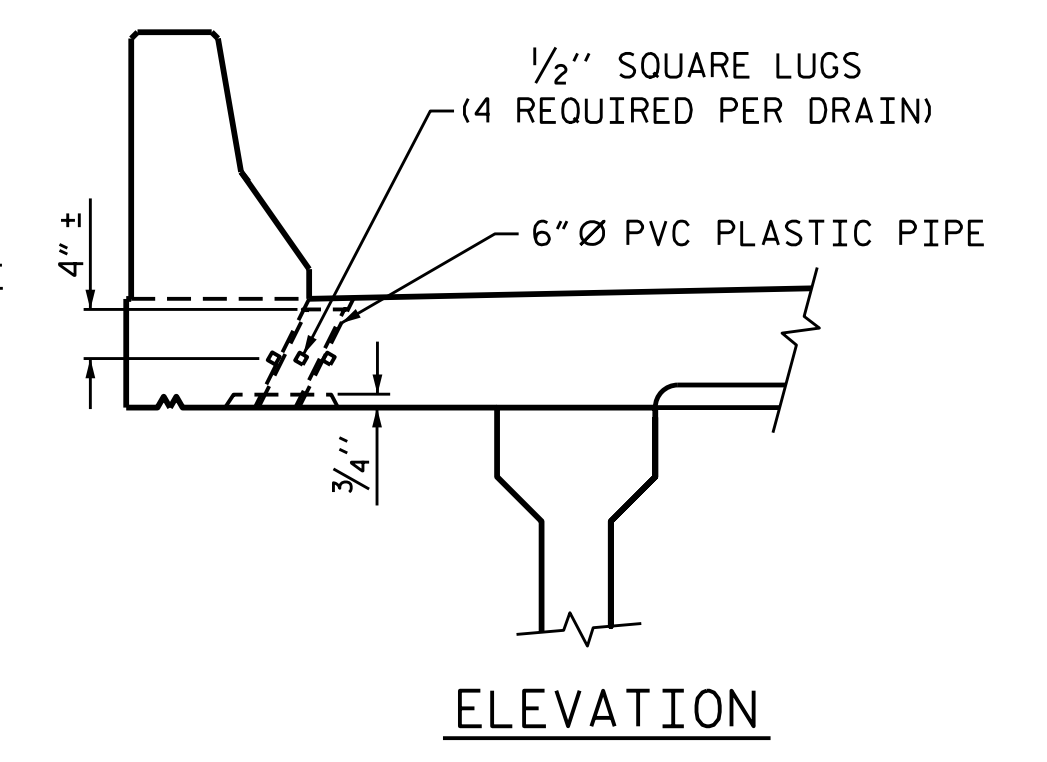


SECTION @ LINK SLAB

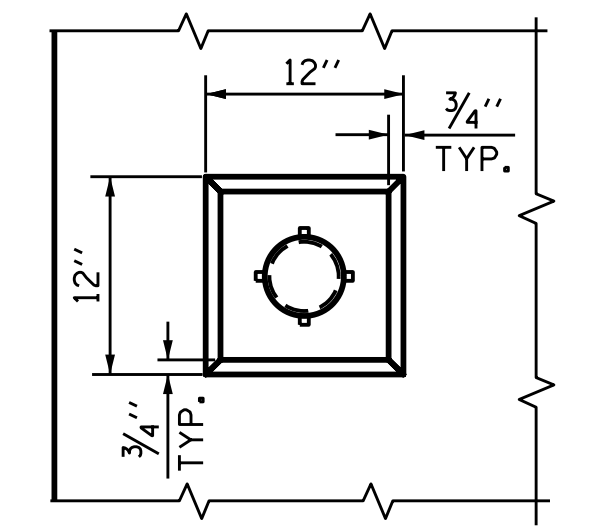


DETAIL "B"

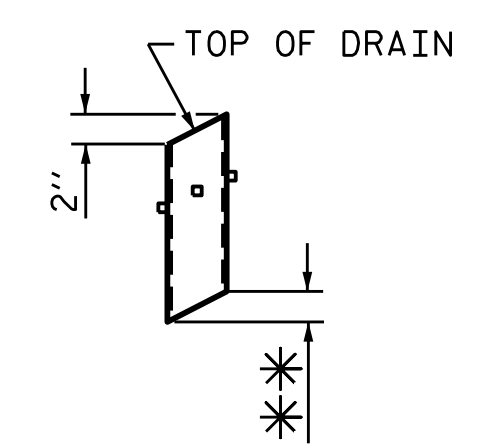
A 1 1/2" DEEP CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



ELEVATION



PLAN OF RECESS



PIPE DETAIL

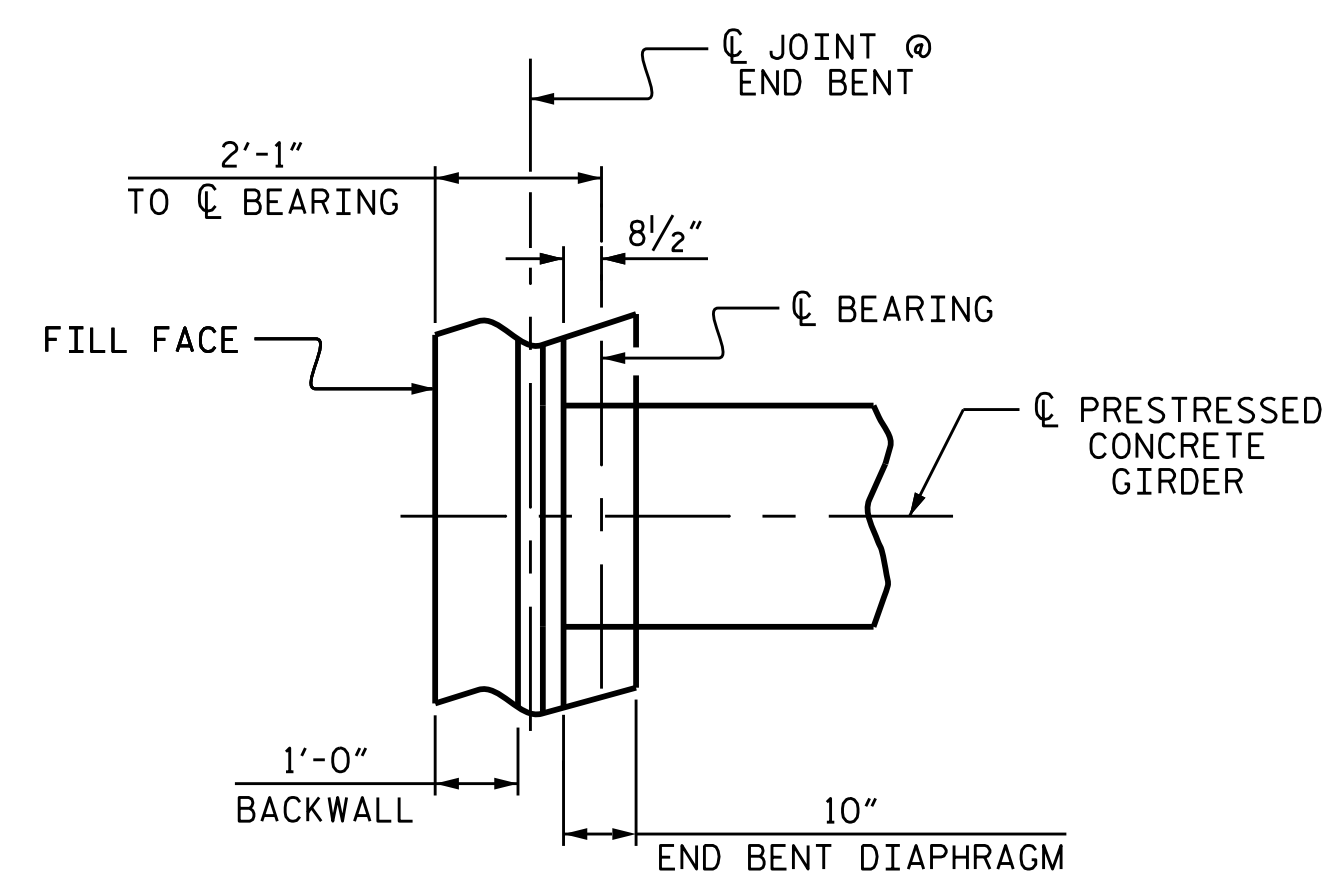
** TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG (14 DRAINS REQUIRED)

TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.

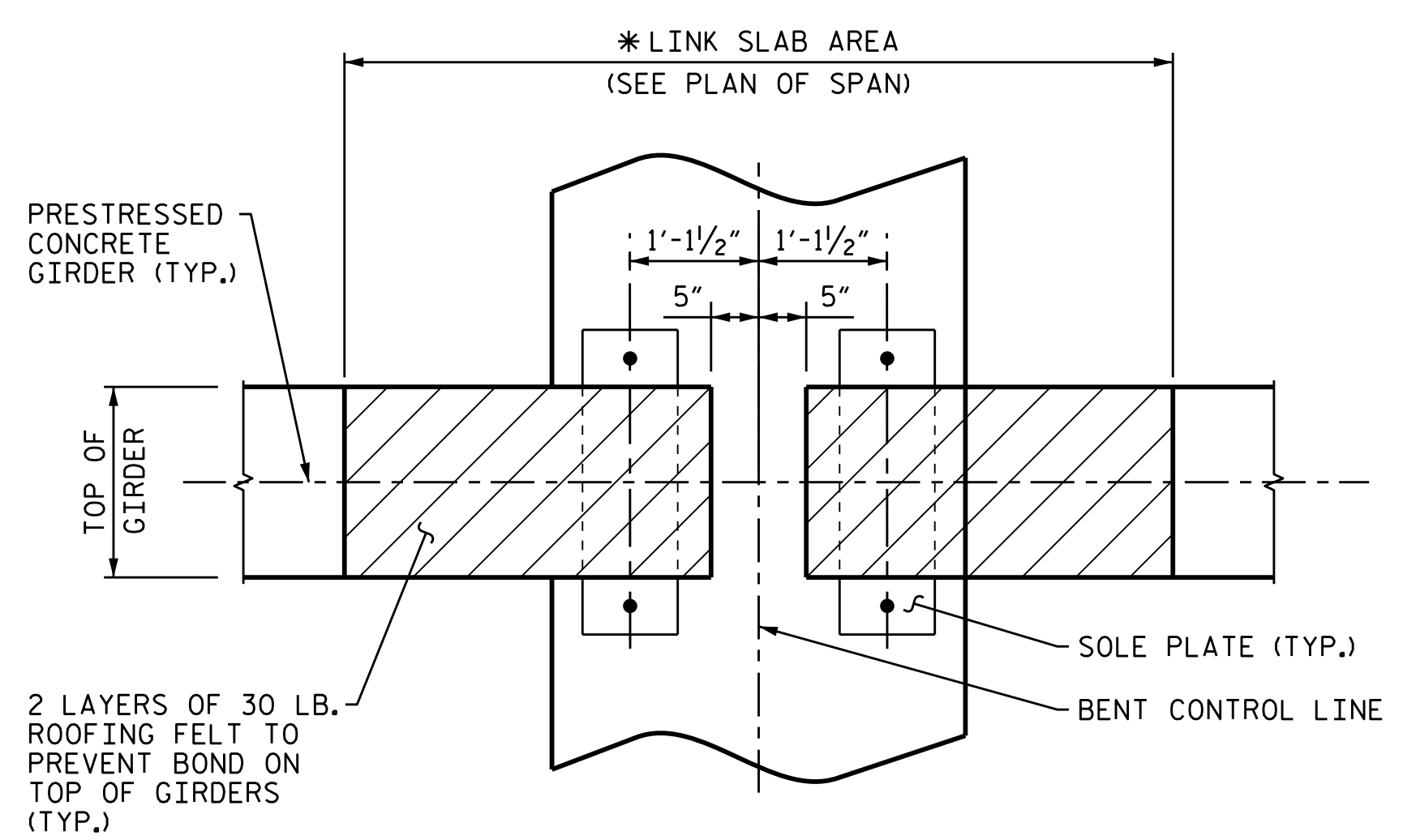
4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

DRAIN DETAILS



PLAN OF END BENT DIAPHRAGM

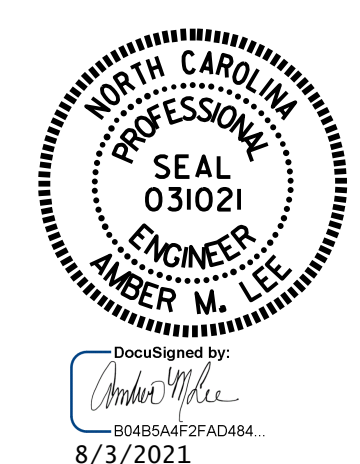


PLAN @ BENT

** THE TOP OF THE GIRDER IN THE AREA OF THE LINK SLAB SHALL BE SMOOTH AND FREE OF STIRRUPS OR ANCHOR STUDS.

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 5 OF 5



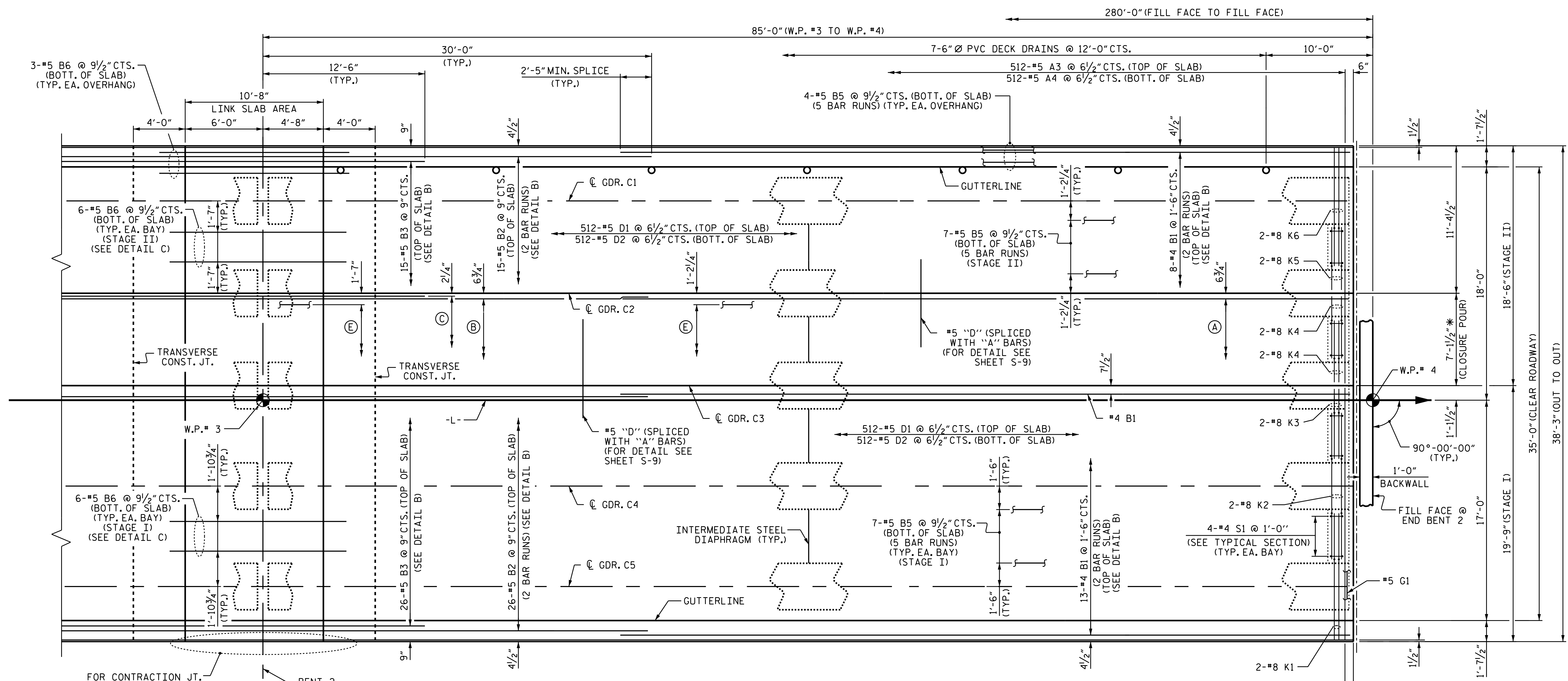
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : A. LEE DATE : 06/2020
 DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

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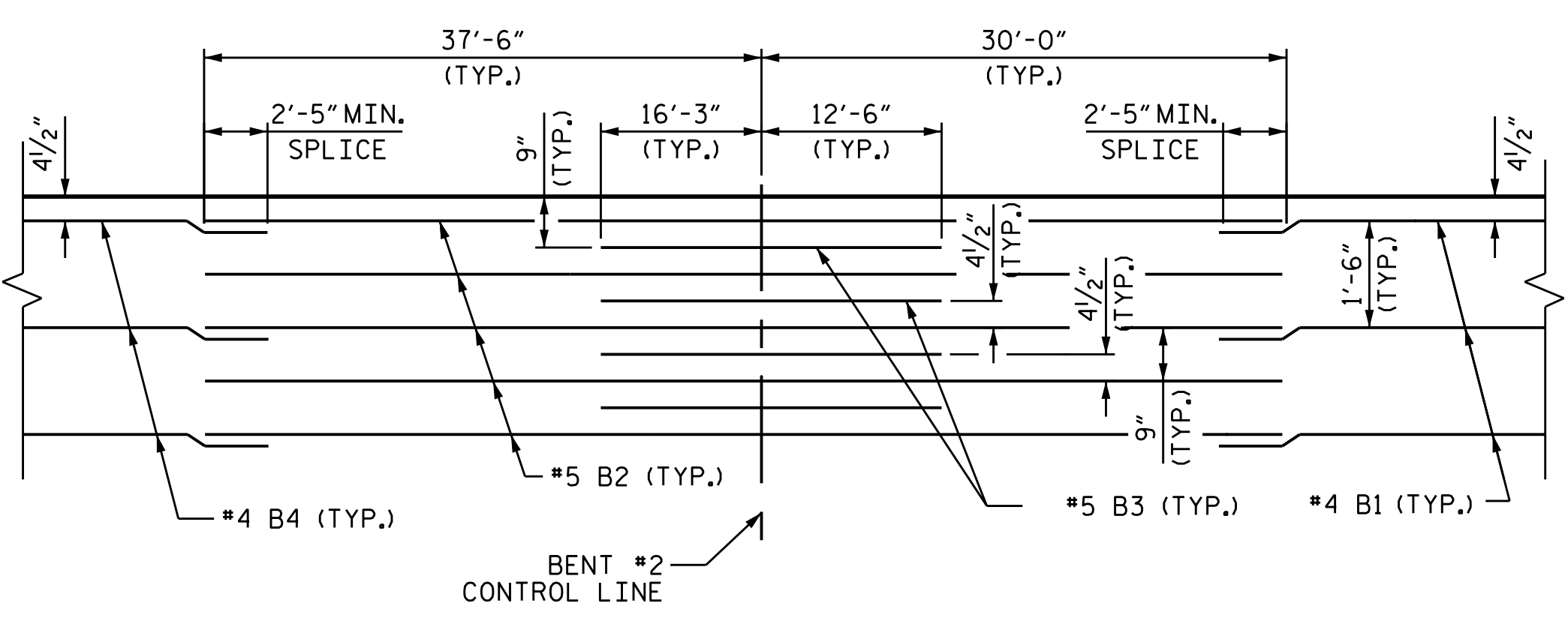
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			40



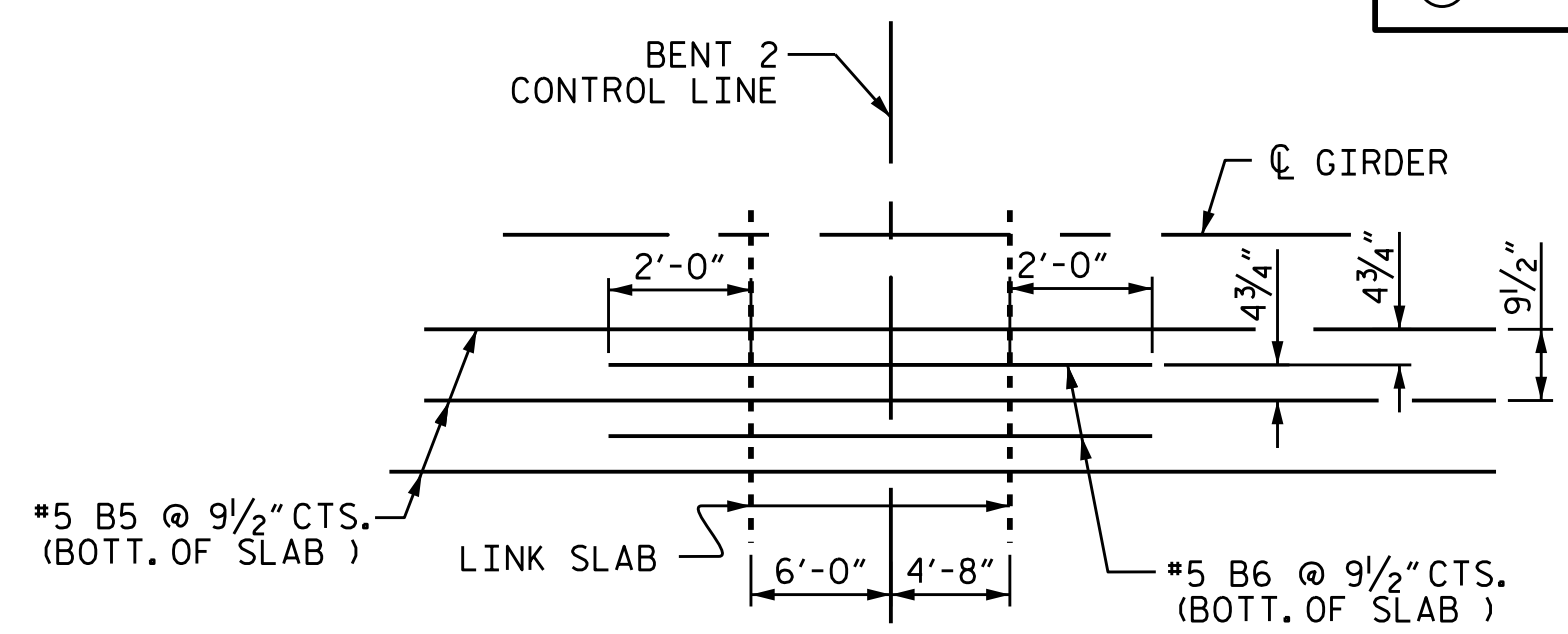
PLAN OF SPAN C

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.
 FOR TOP OF SLAB REINFORCING AT BENT, SEE DETAIL B AT BENT 2.
 FOR BOTTOM OF SLAB REINFORCING AT BENT, SEE DETAIL C AT BENT 2.
 *FOR CLOSURE POUR DETAILS, SEE SHEET S-9.

- (A) 5-#4 B1 @ 1'-6" CTS. (TOP OF SLAB)
- (B) 9-#5 B2 @ 9" CTS. (2 BAR RUNS) (TOP OF SLAB)
- (C) 10-#5 B3 @ 9" CTS. (TOP OF SLAB)
- (E) 6-#5 B6 @ 9/2" CTS. (BOTTOM OF SLAB)



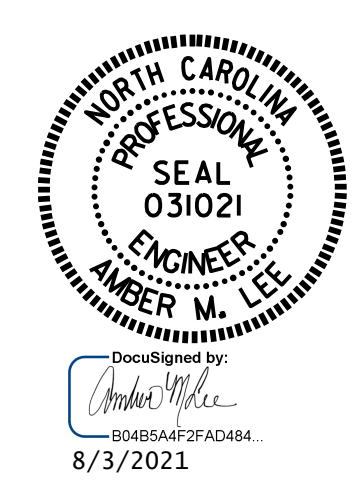
DETAIL B AT BENT 2



DETAIL C AT BENT 2

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 3 OF 3



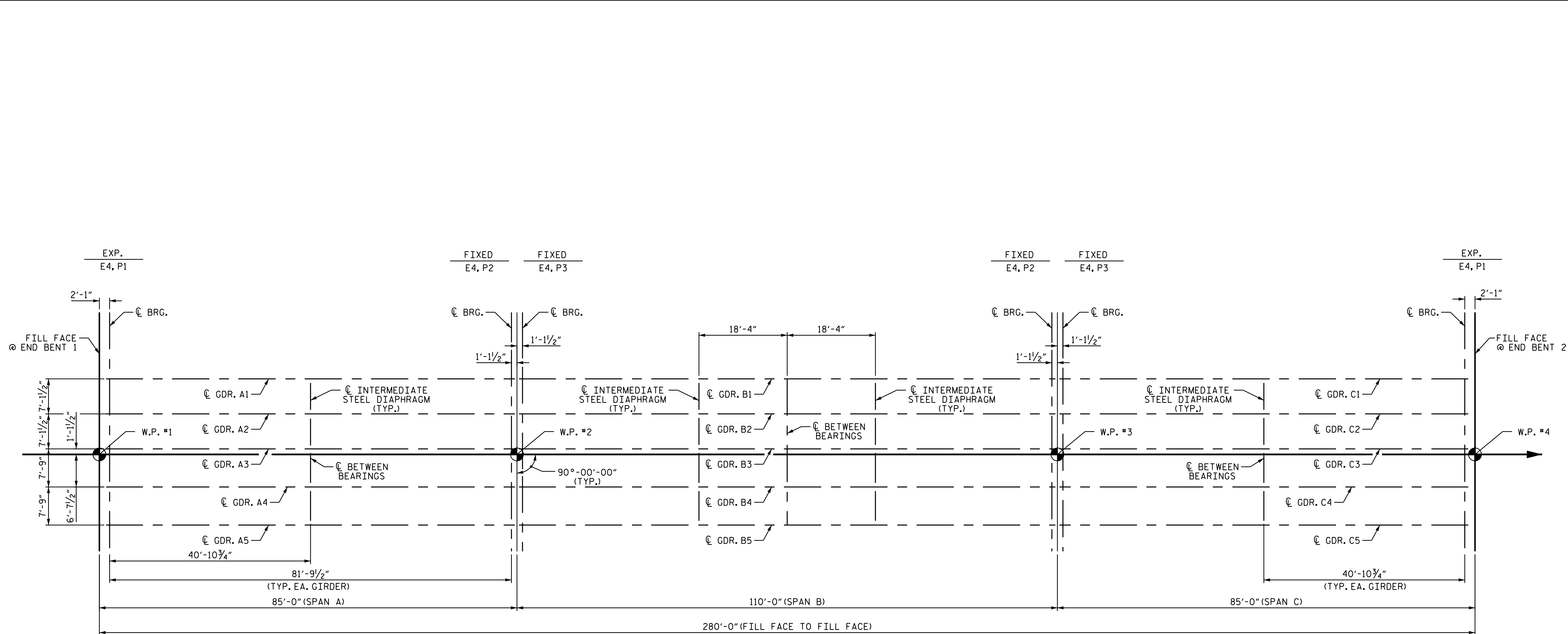
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN C**

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : A. LEE DATE : 06/2020
 DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

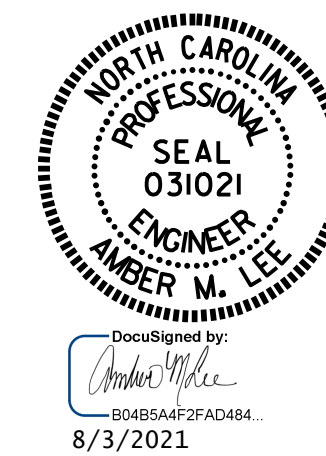
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			40



FRAMING PLAN

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-



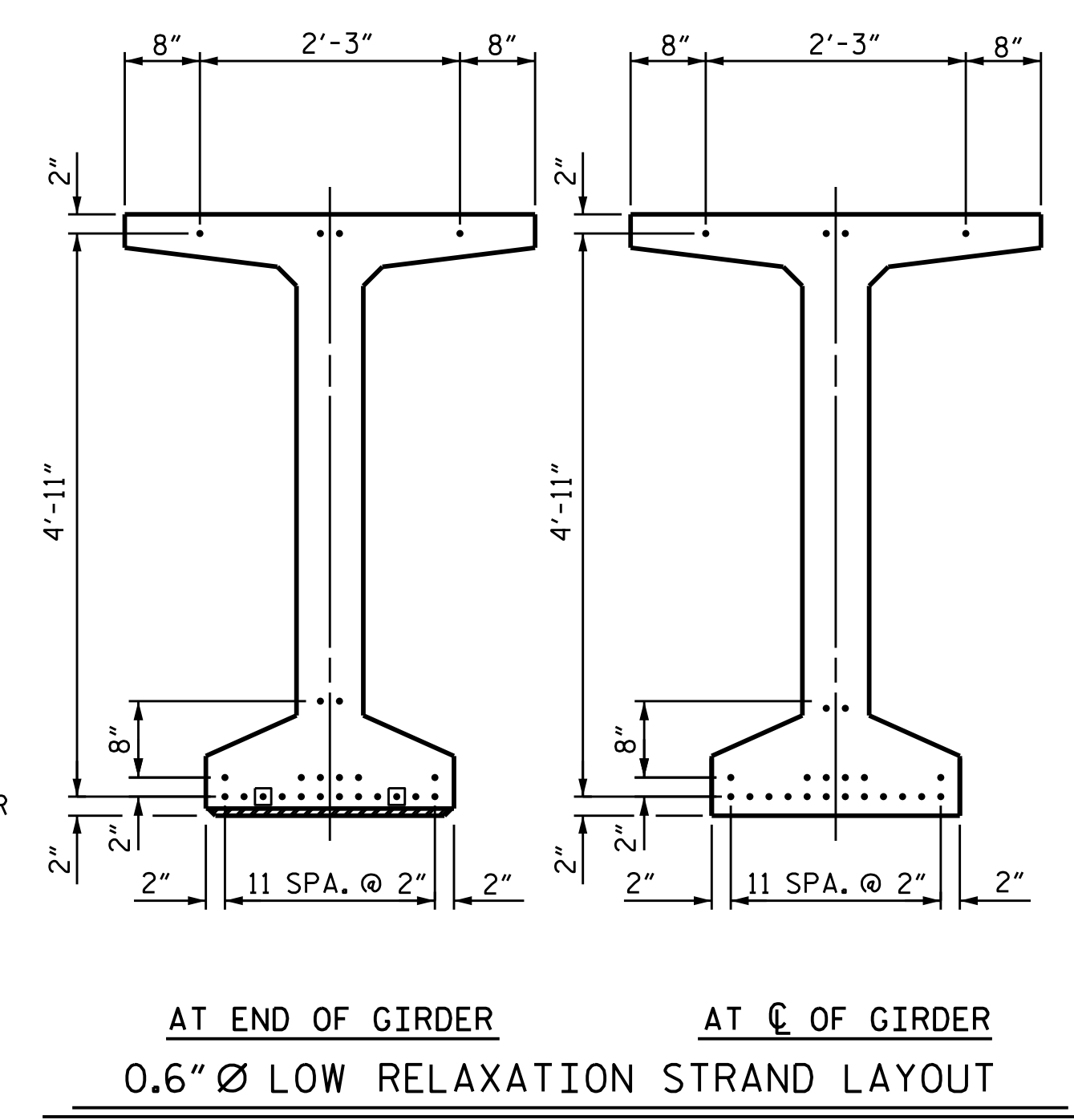
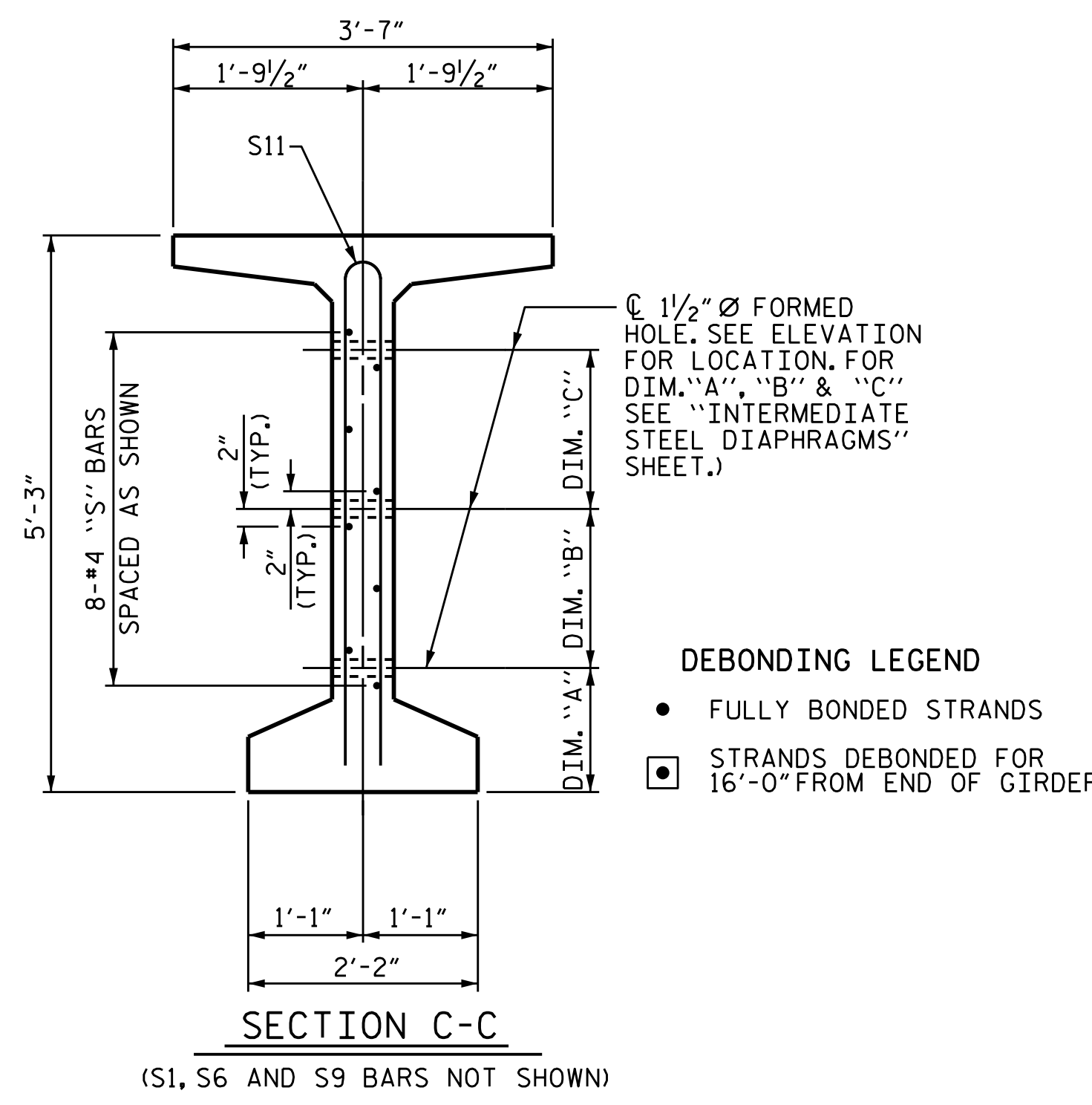
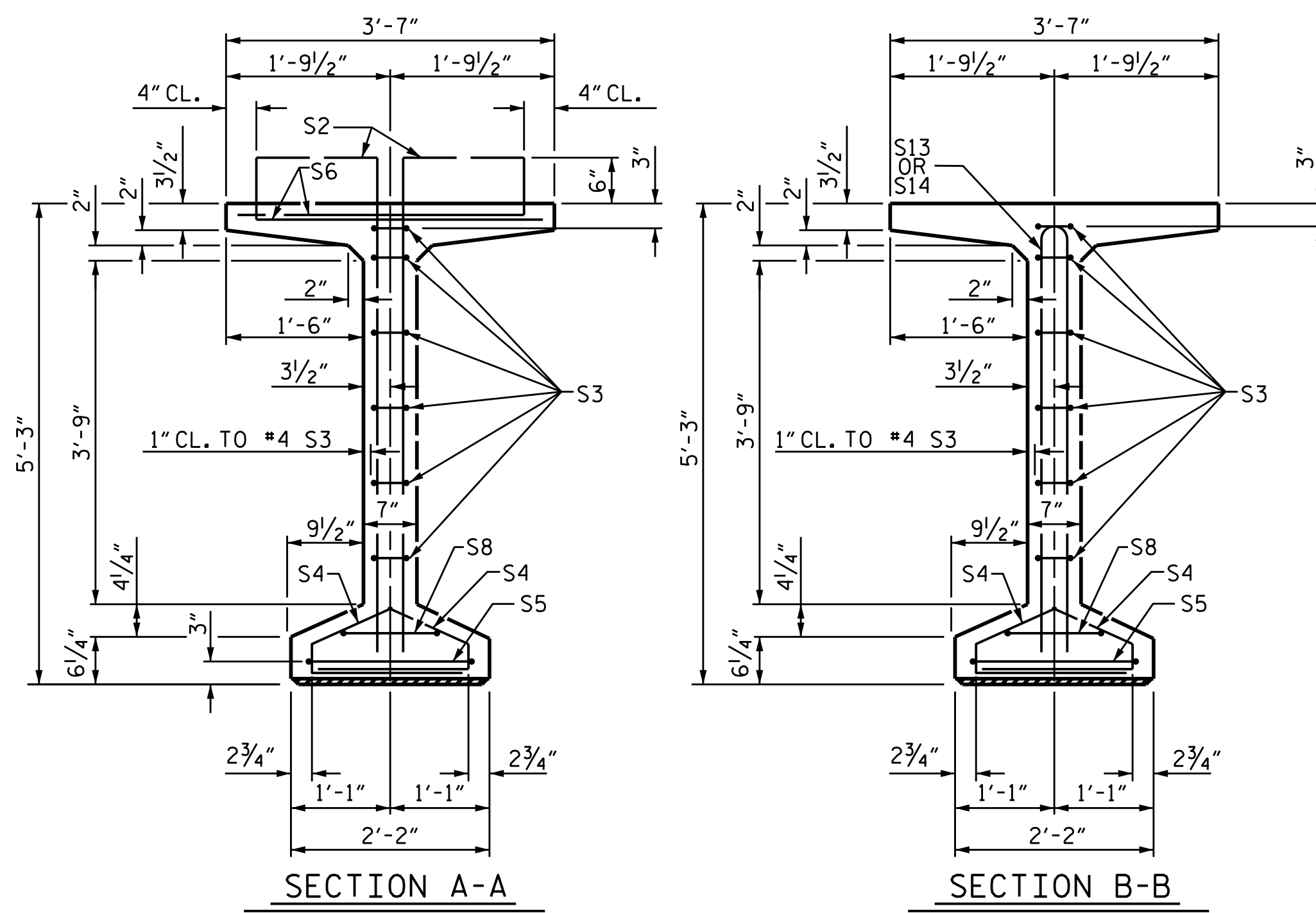
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 FRAMING PLAN**

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : H. LOCKLEAR DATE : 06/2020
 DESIGN ENGINEER OF RECORD: K. PUROHIT DATE : 10/2019

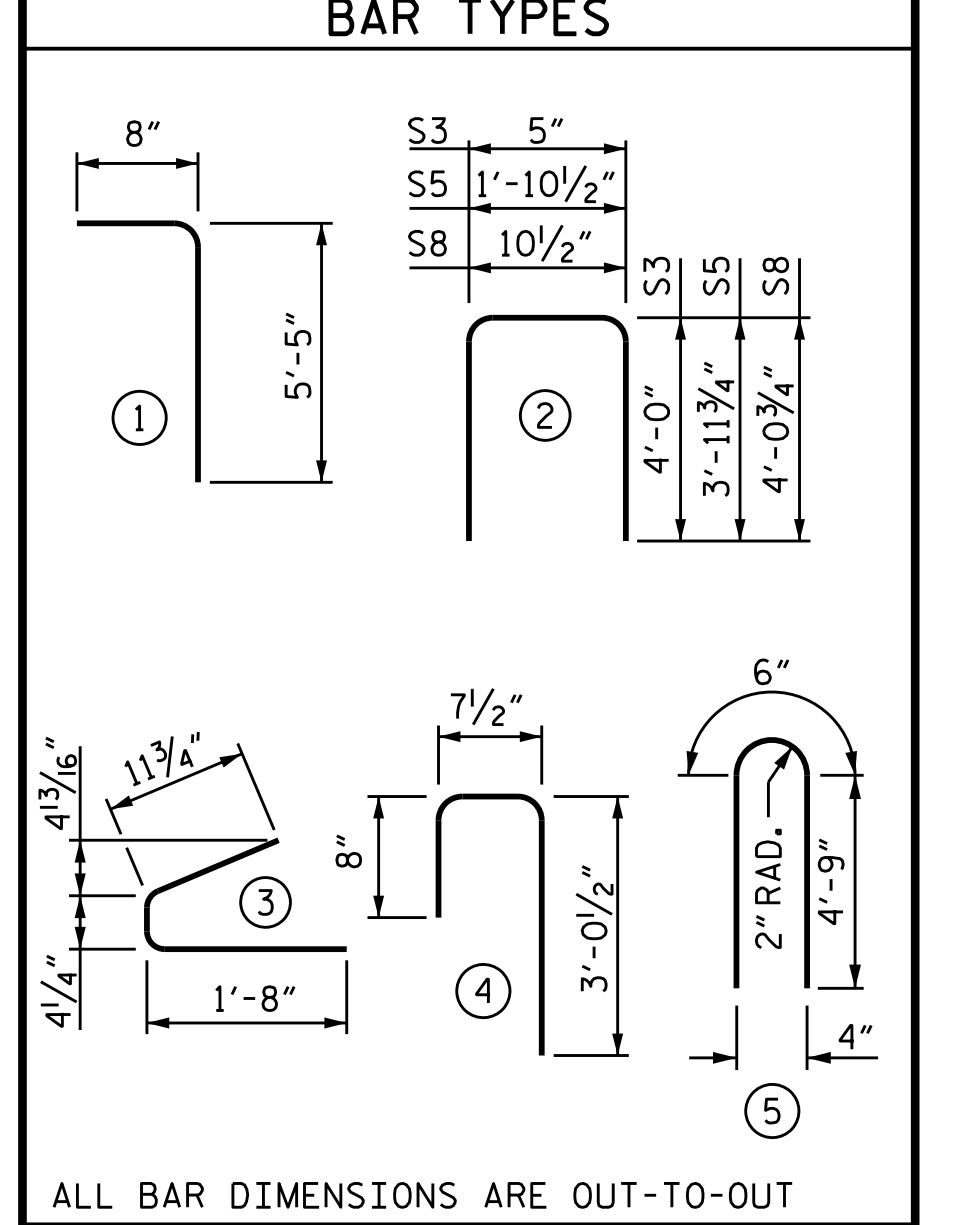
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			40



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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	140	#4	1	6'-1"	569
S2	12	#5	1	6'-1"	76
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	2	#5	2	9'-10"	21
S6	152	#5	4	4'-4"	689
S8	2	#5	2	9'-0"	19
S9	15	#5	STR	3'-3"	51
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43
S13	6	#5	5	10'-0"	63
S14	4	#4	5	10'-0"	27

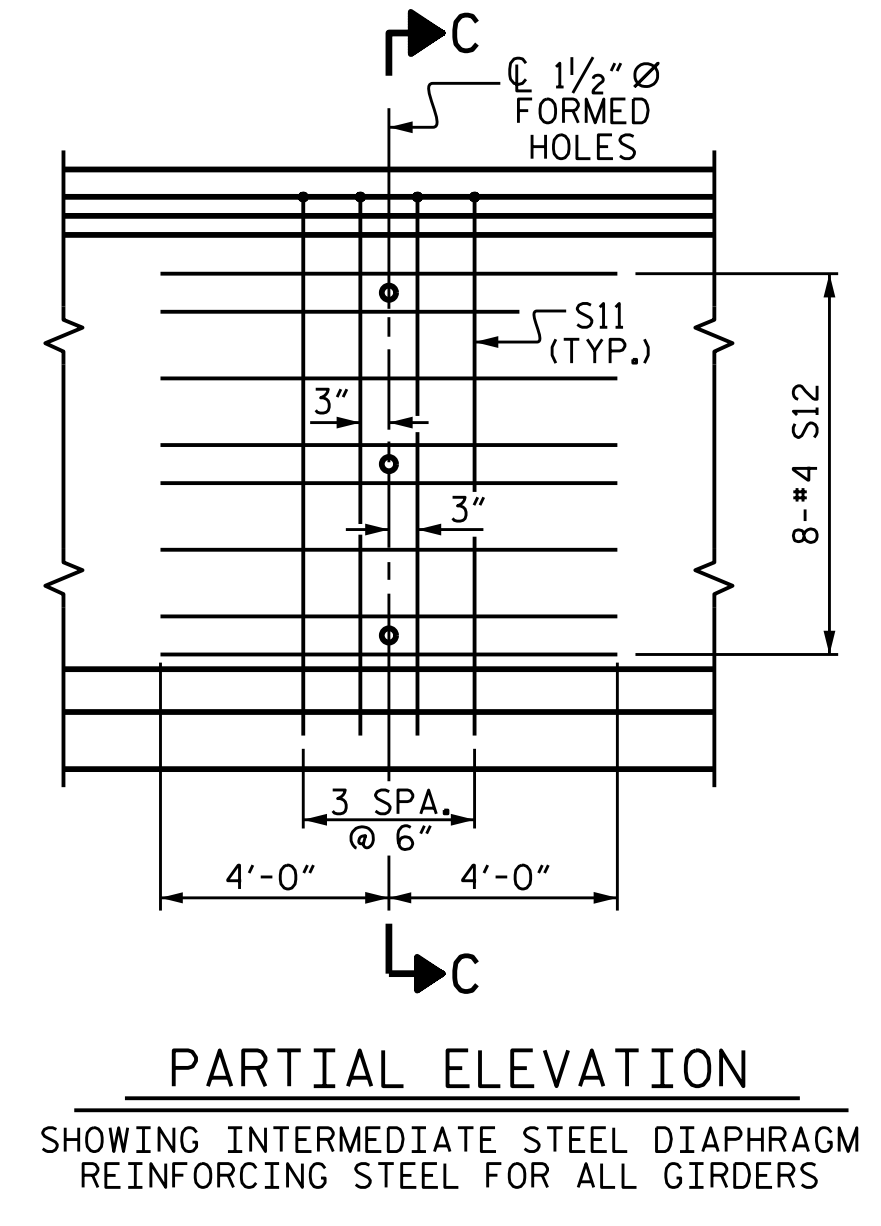
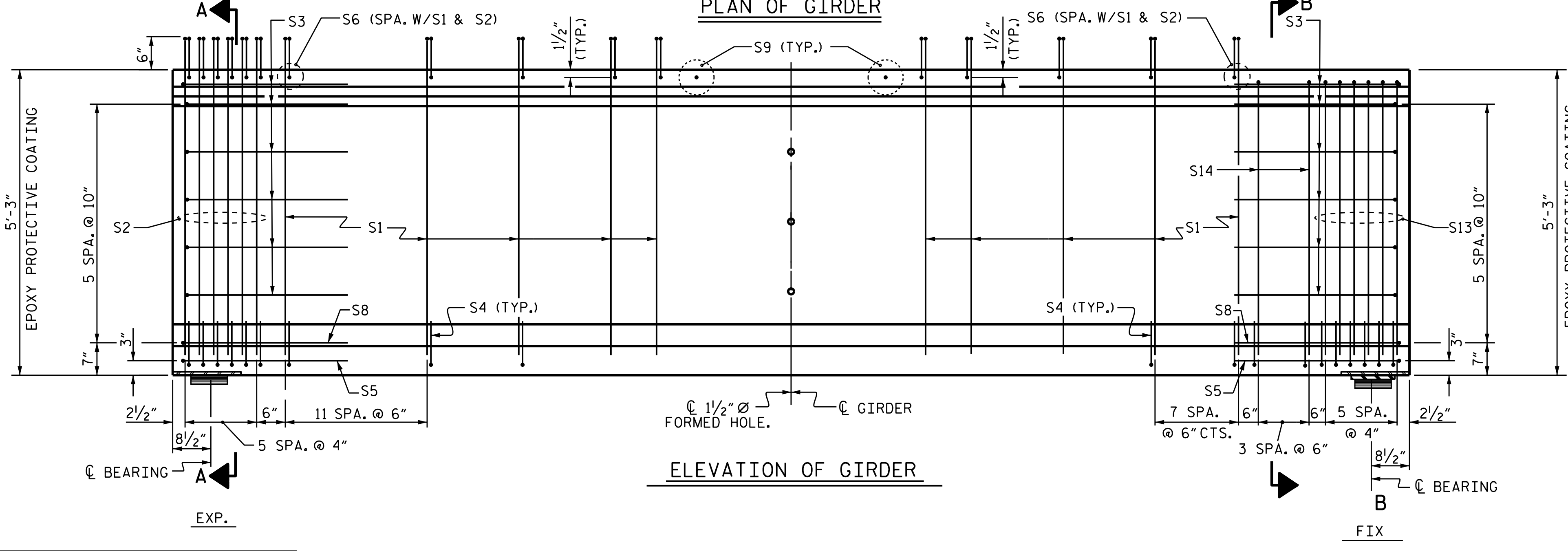
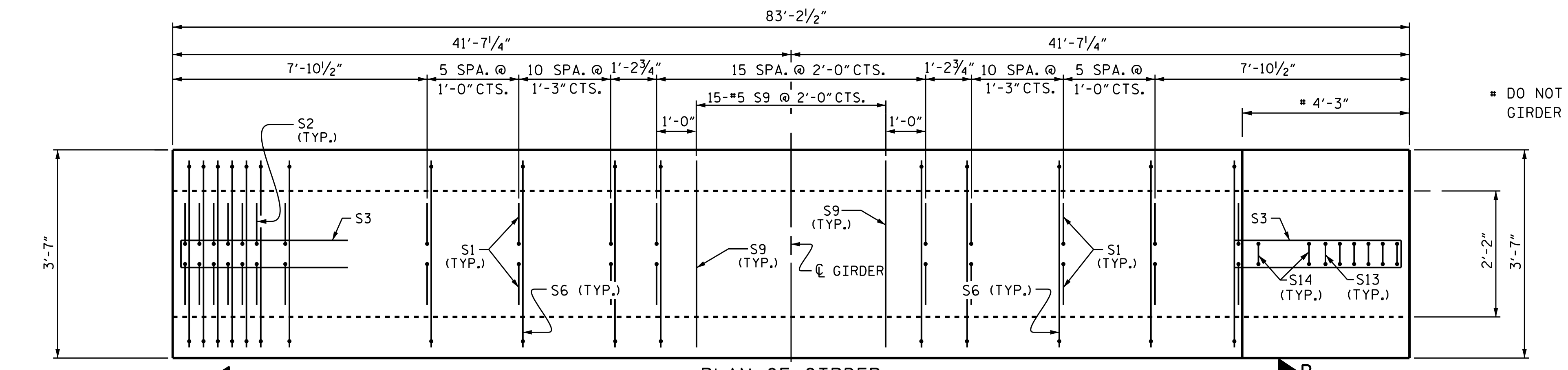


QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	5,500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1811	16.5	24

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	83'-2 1/2"	416'-0 1/2"

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-

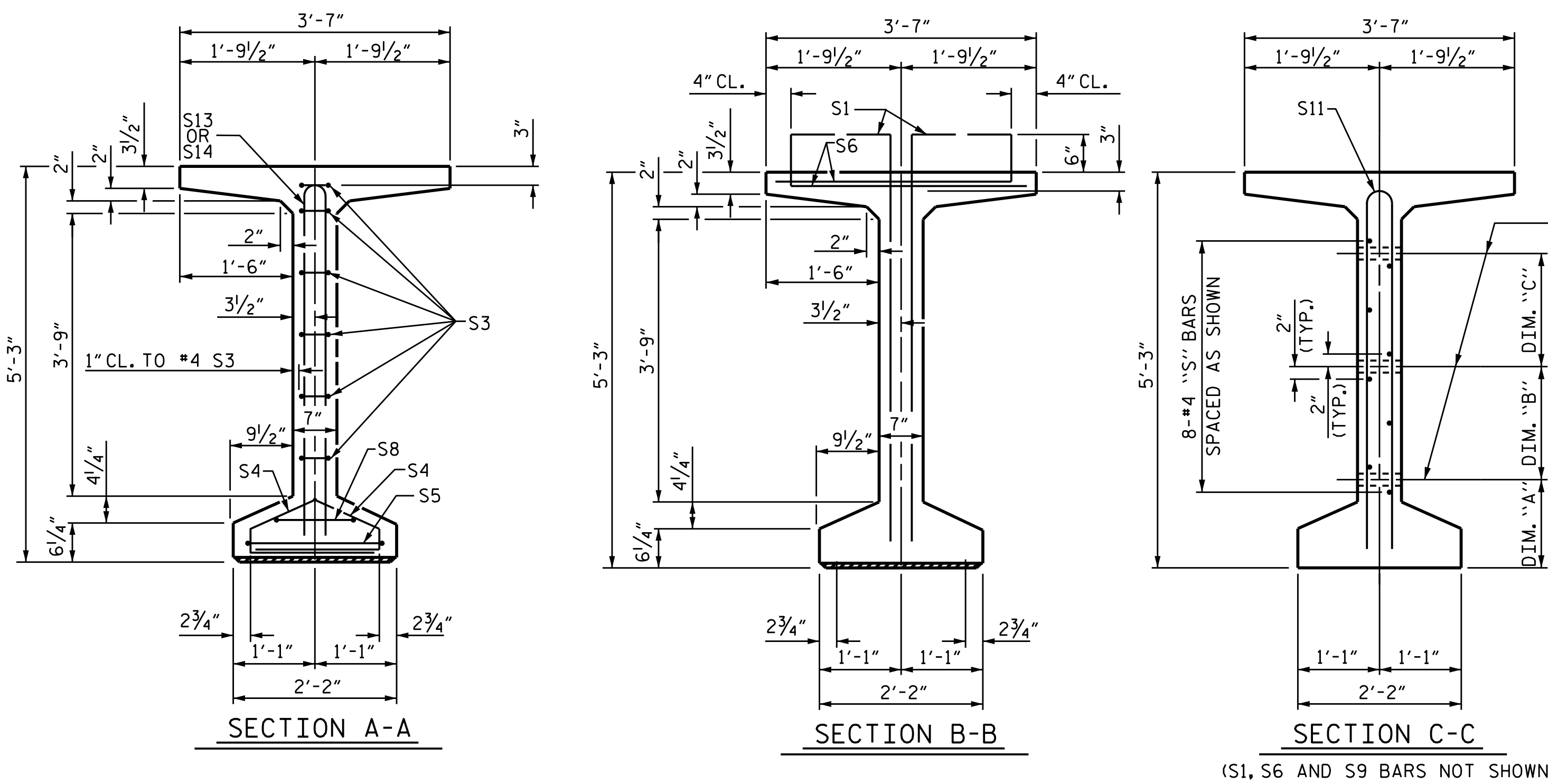
SHEET 1 OF 4
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 (SPAN A & C)



ASSEMBLED BY: M. G. SHAIKH DATE: 06/2020
 CHECKED BY: A. LEE DATE: 06/2020
 DRAWN BY: EEM 2/6/97 REV. 6/13 MAA/GM

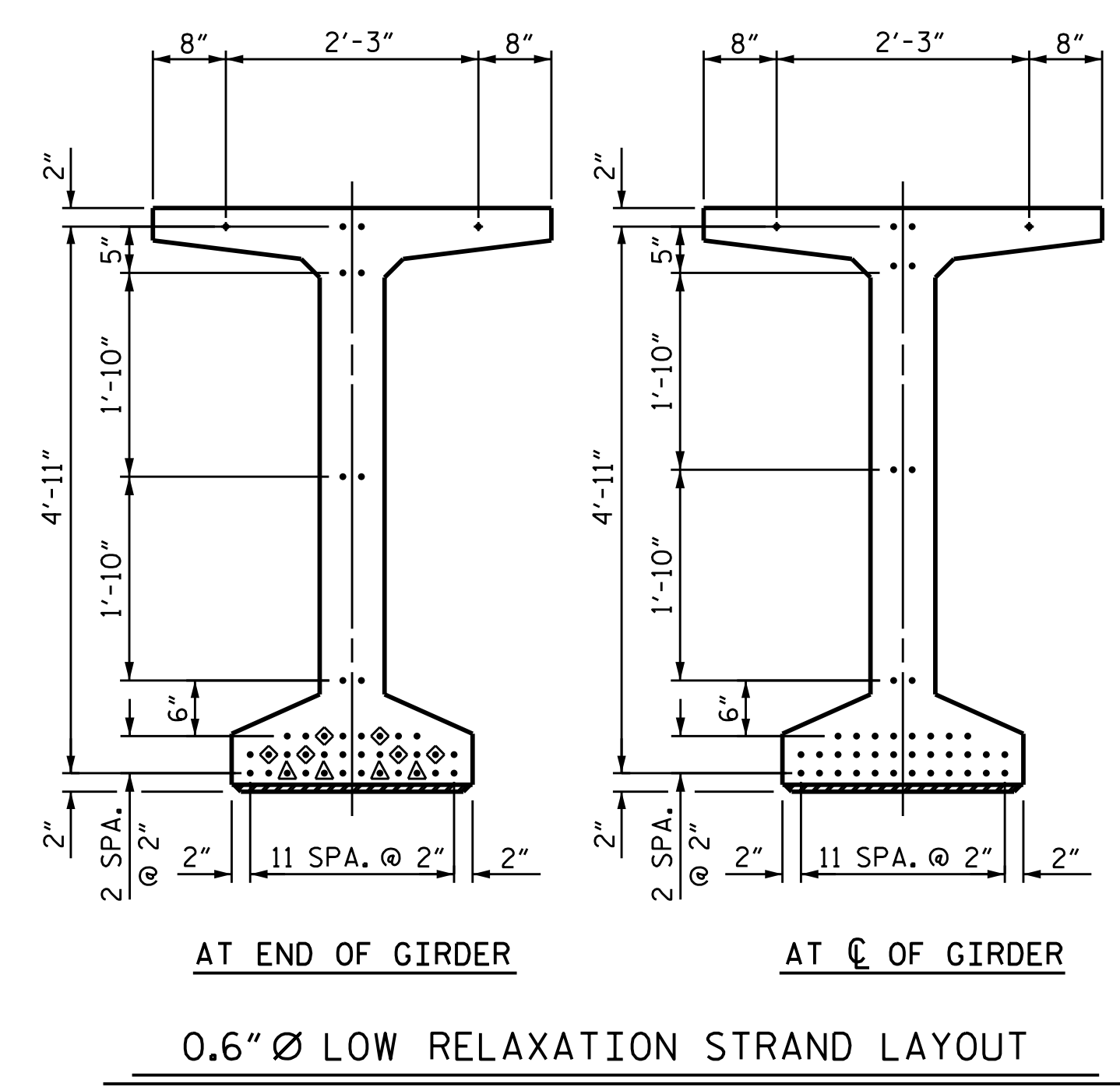
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS 40



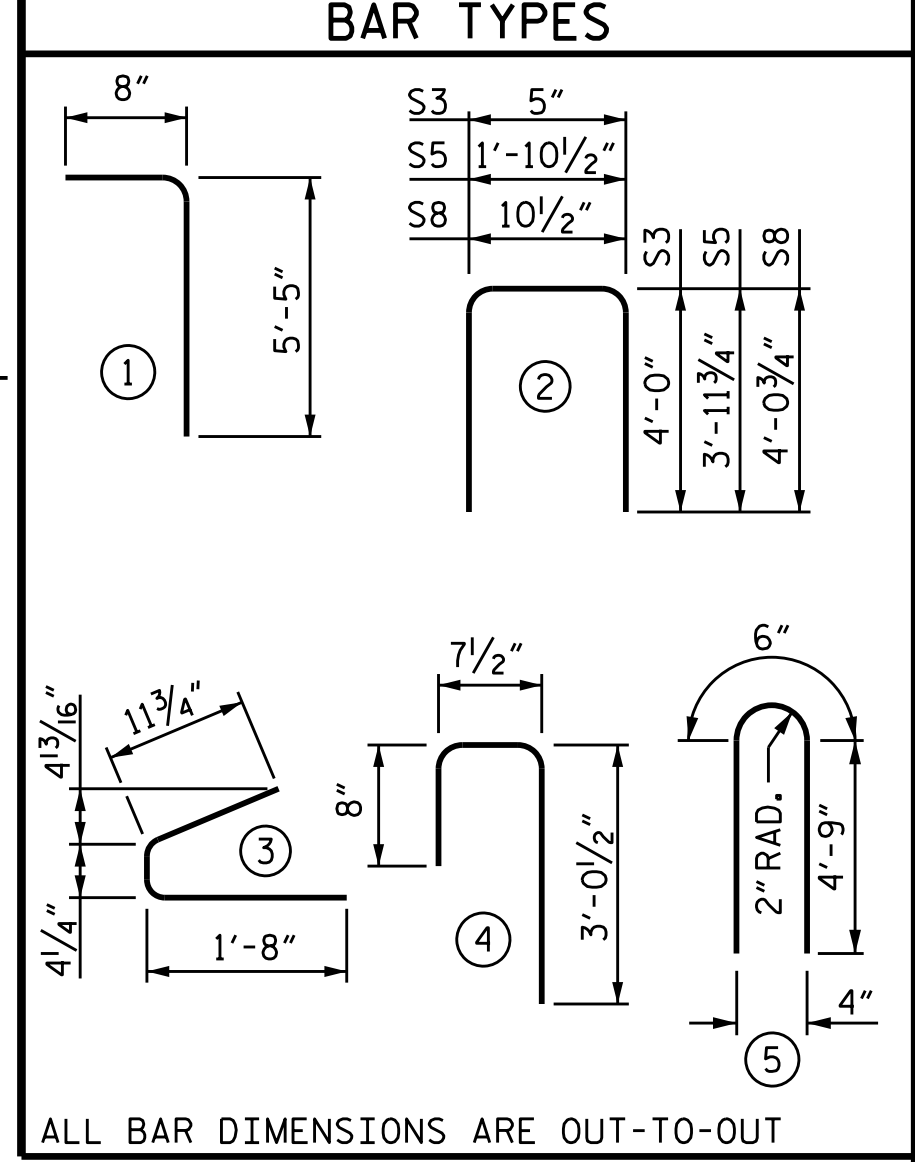
1/2" Ø FORMED HOLE. SEE ELEVATION FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.)

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
 - ▲ STRANDS DEBONDED FOR 20'-0" FROM END OF GIRDER



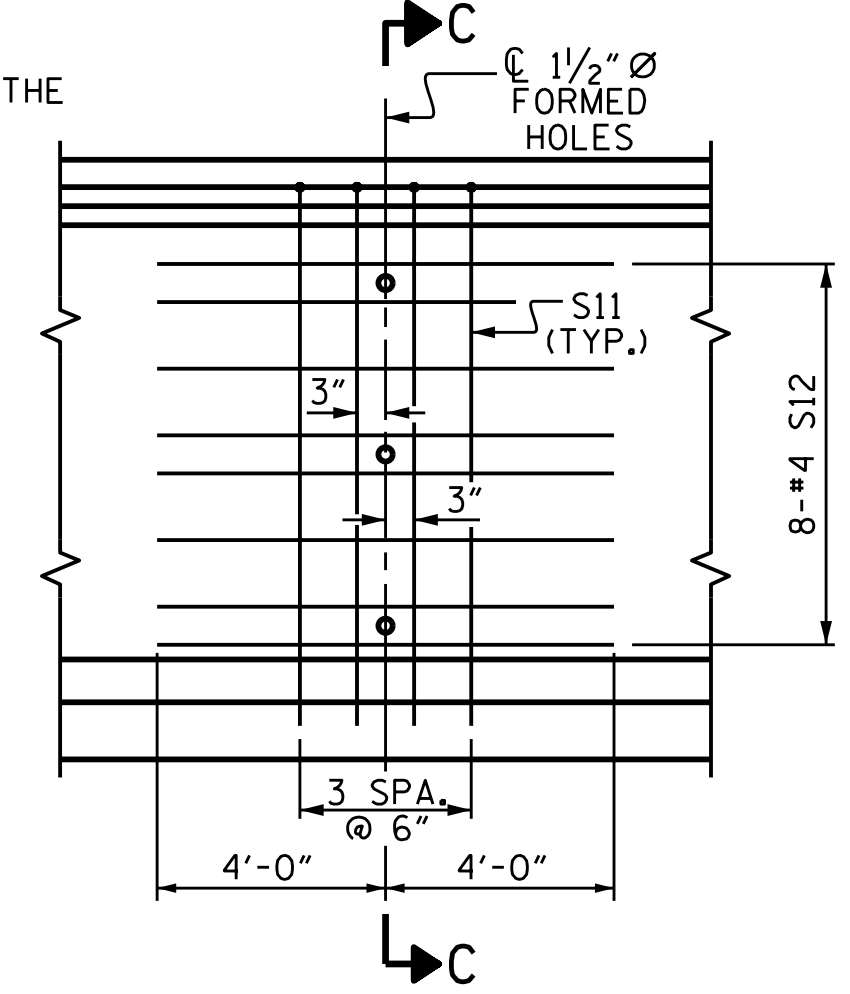
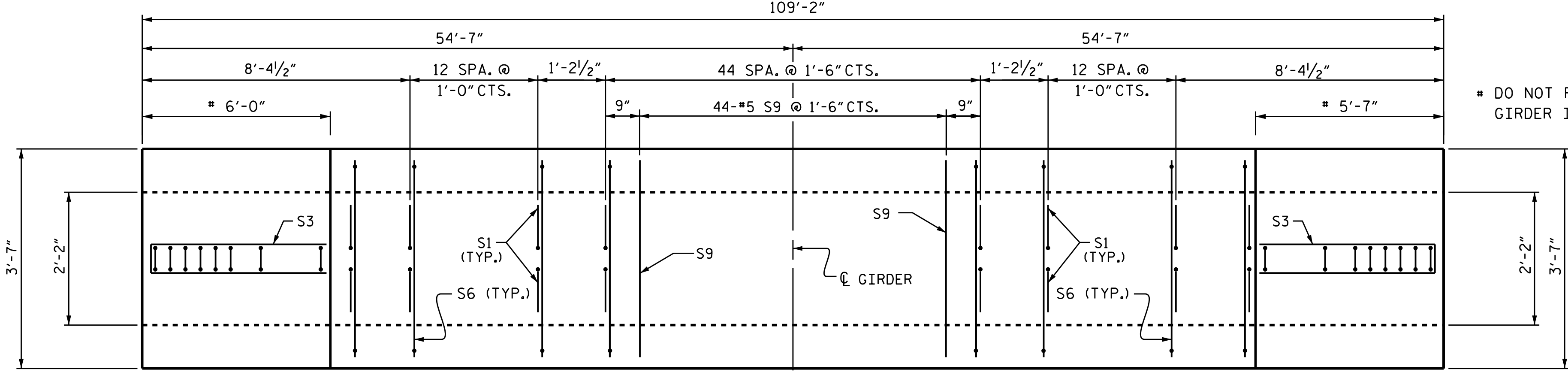
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	158	#4	1	6'-1"	642
S3	12	#4	2	8'-5"	67
S4	76	#4	3	3'-0"	152
S5	2	#5	2	9'-10"	21
S6	158	#5	4	4'-4"	714
S8	2	#5	2	9'-0"	19
S9	44	#5	STR	3'-3"	149
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	12	#5	5	10'-0"	125
S14	16	#4	5	10'-0"	107

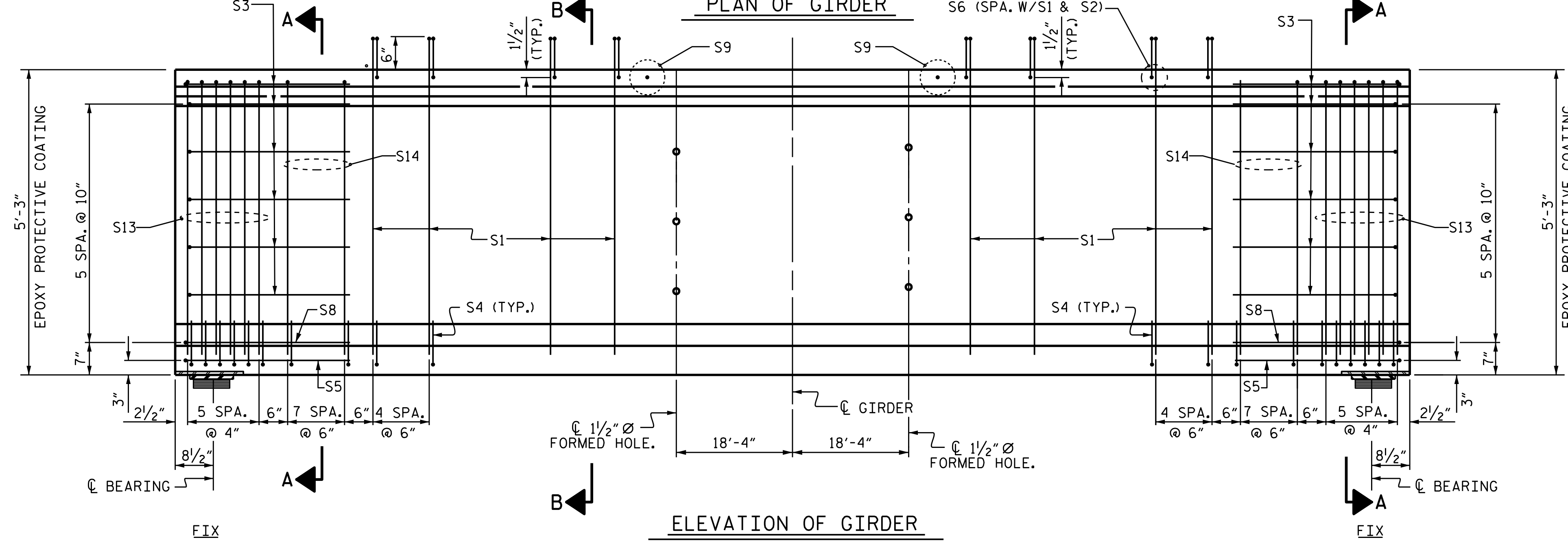


QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	8,500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
2165	21.6	42

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	109'-2"	545'-10"



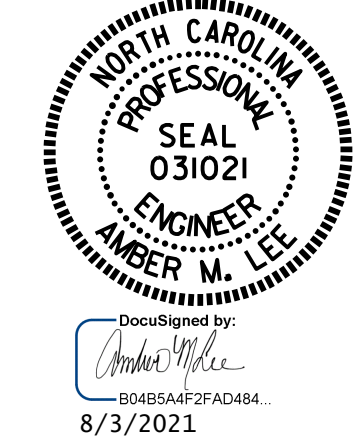
PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 63" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 (SPAN B)



ASSEMBLED BY : M. G. SHAIKH	DATE : 06/2020
CHECKED BY : A. LEE	DATE : 06/2020
DRAWN BY : EEM 2/6/97	REV. 6/13 MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

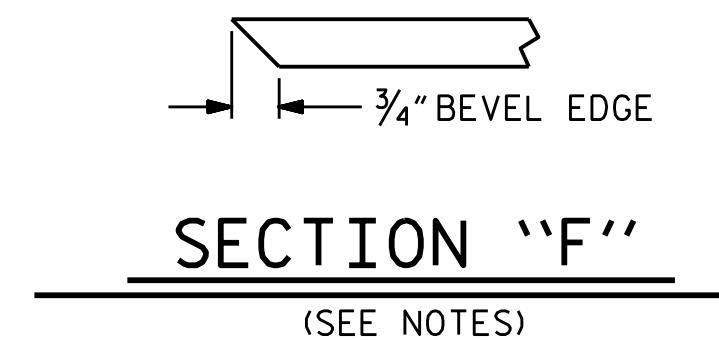
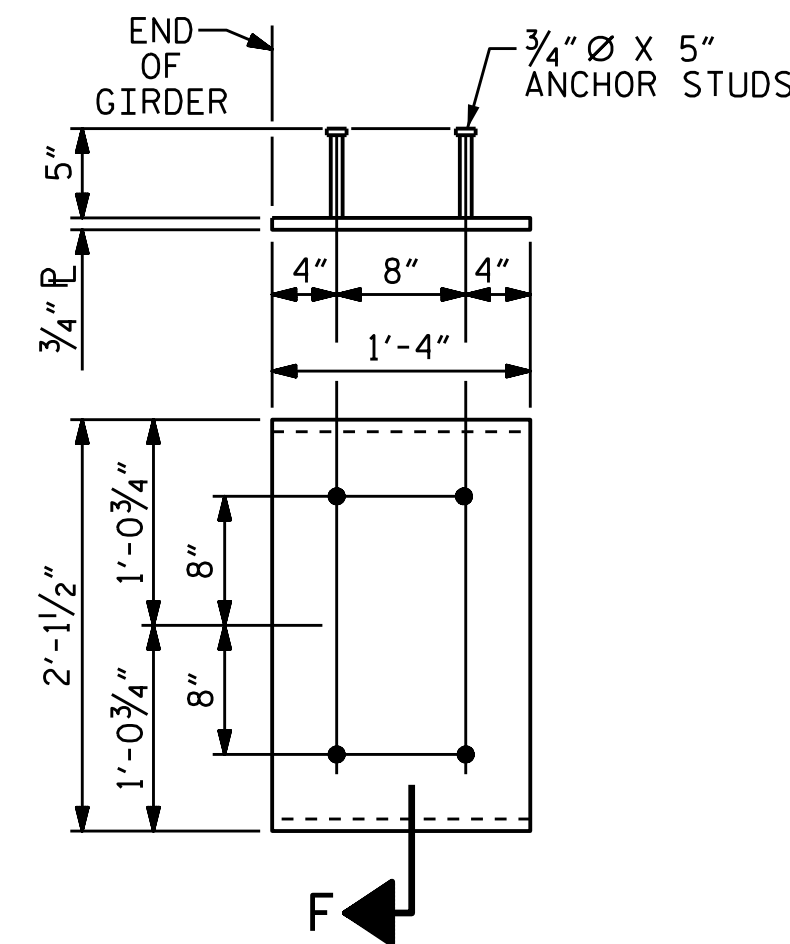
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI. FOR SPAN A & C AND 6600 PSI. FOR SPAN B.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDER

0.6" Ø LOW RELAXATION		SPAN B (GIRDER 1 & 5)																																								
FOURIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.017	0.035	0.052	0.069	0.085	0.101	0.115	0.130	0.143	0.156	0.167	0.178	0.186	0.195	0.202	0.208	0.212	0.216	0.217	0.219	0.217	0.216	0.212	0.208	0.202	0.195	0.186	0.178	0.167	0.156	0.143	0.130	0.115	0.101	0.085	0.069	0.052	0.035	0.017	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.013	0.025	0.038	0.050	0.062	0.073	0.084	0.095	0.104	0.114	0.122	0.130	0.136	0.143	0.147	0.152	0.155	0.158	0.159	0.160	0.159	0.158	0.155	0.152	0.147	0.143	0.136	0.130	0.122	0.114	0.104	0.095	0.084	0.073	0.062	0.050	0.038	0.025	0.013	0
FINAL CAMBER	↑	0	1/16"	1/8"	3/16"	1/4"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	7/16"	3/8"	5/16"	1/4"	1/4"	3/16"	1/8"	1/16"	0	

DEAD LOAD DEFLECTION TABLE FOR GIRDER

0.6" Ø LOW RELAXATION		SPAN B (GIRDER 2, 3, & 4)																																								
FOURIETH POINTS	0	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.017	0.035	0.052	0.069	0.085	0.101	0.115	0.130	0.143	0.156	0.167	0.178	0.186	0.195	0.202	0.208	0.212	0.216	0.217	0.219	0.217	0.216	0.212	0.208	0.202	0.195	0.186	0.178	0.167	0.156	0.143	0.130	0.115	0.101	0.085	0.069	0.052	0.035	0.017	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.011	0.023	0.034	0.045	0.055	0.065	0.075	0.084	0.093	0.101	0.108	0.116	0.121	0.127	0.131	0.135	0.138	0.140	0.141	0.142	0.141	0.140	0.138	0.135	0.131	0.127	0.121	0.116	0.108	0.101	0.093	0.084	0.075	0.065	0.055	0.045	0.034	0.023	0.011	0
FINAL CAMBER	↑	0	1/16"	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	3/4"	13/16"	13/16"	7/8"	7/8"	7/8"	15/16"	15/16"	15/16"	15/16"	15/16"	7/8"	7/8"	7/8"	13/16"	13/16"	3/4"	11/16"	5/8"	5/8"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	1/16"	0

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

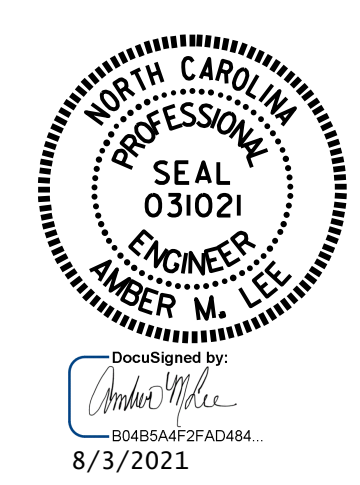
DEAD LOAD DEFLECTION TABLE FOR GIRDER

0.6" Ø LOW RELAXATION		SPAN A & C (GIRDER 1 & 5)																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.017	0.034	0.049	0.064	0.076	0.088	0.096	0.103	0.106	0.108	0.106	0.103	0.096	0.088	0.076	0.064	0.049	0.034	0.017	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.009	0.018	0.026	0.035	0.041	0.047	0.051	0.055	0.057	0.058	0.057	0.055	0.051	0.047	0.041	0.035	0.026	0.018	0.009	0
FINAL CAMBER	↑	0	1/8"	3/16"	1/4"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	1/2"	7/16"	3/8"	1/4"	3/16"	1/8"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDER

0.6" Ø LOW RELAXATION		SPAN A & C (GIRDER 2, 3, & 4)																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.017	0.034	0.049	0.064	0.076	0.088	0.095	0.103	0.105	0.108	0.105	0.103	0.095	0.088	0.076	0.064	0.049	0.034	0.017	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.008	0.017	0.025	0.032	0.038	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.038	0.032	0.025	0.017	0.008	0
FINAL CAMBER	↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	5/8"	5/8"	5/8"	5/8"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0

ASSEMBLED BY : M. G. SHAIKH DATE : 06/2020
CHECKED BY : A. LEE DATE : 06/2020
DRAWN BY : ELR 11/91 REV. 1/15 MAA/TMC
CHECKED BY : GRP 11/91 REV. 2/15 MAA/TMC
REV. 12/17 MAA/THC



PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			40

STRUCTURAL STEEL NOTES

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

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

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

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

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

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

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

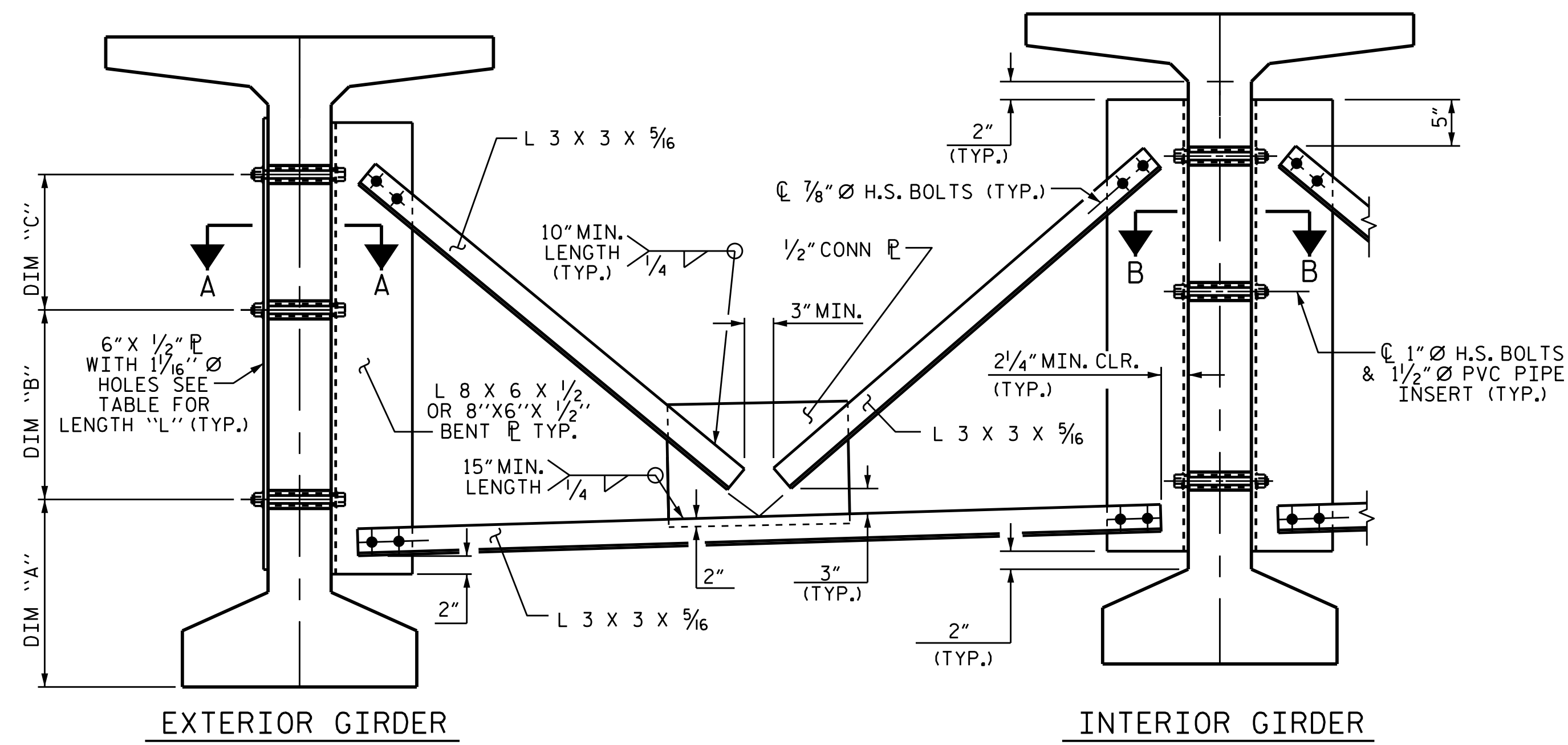
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

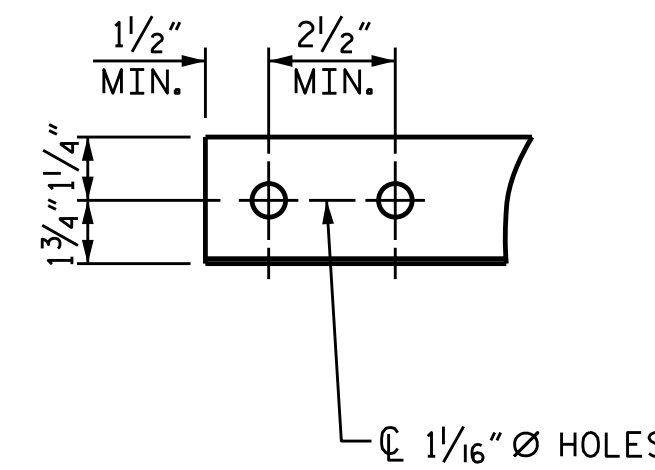
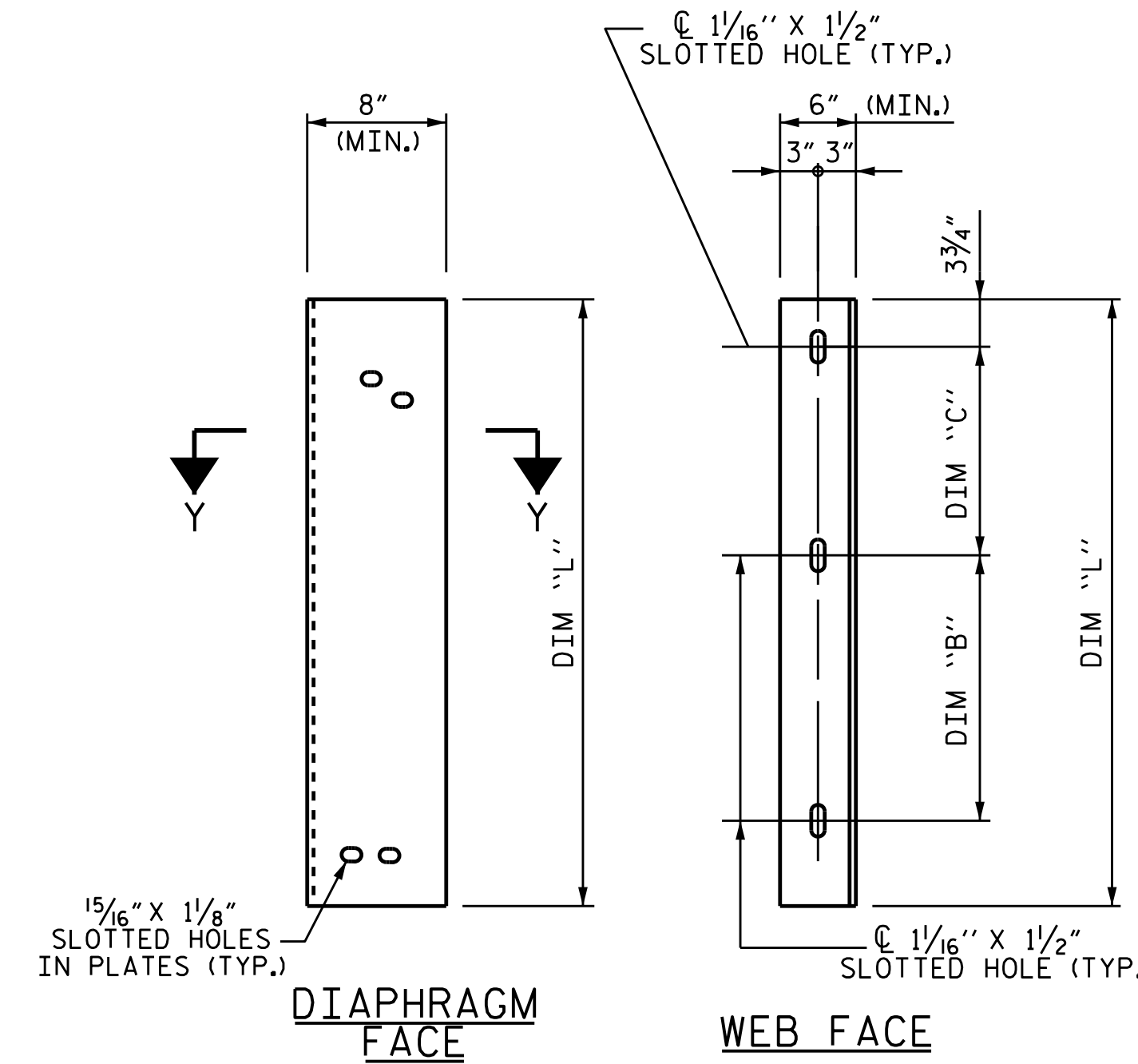
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

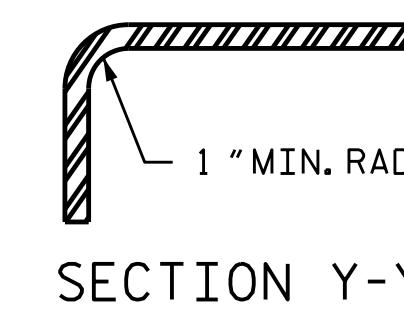
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



PART SECTION AT INTERMEDIATE DIAPHRAGM
(63" BULB TEE BULB TEE GIRDER SHOWN)



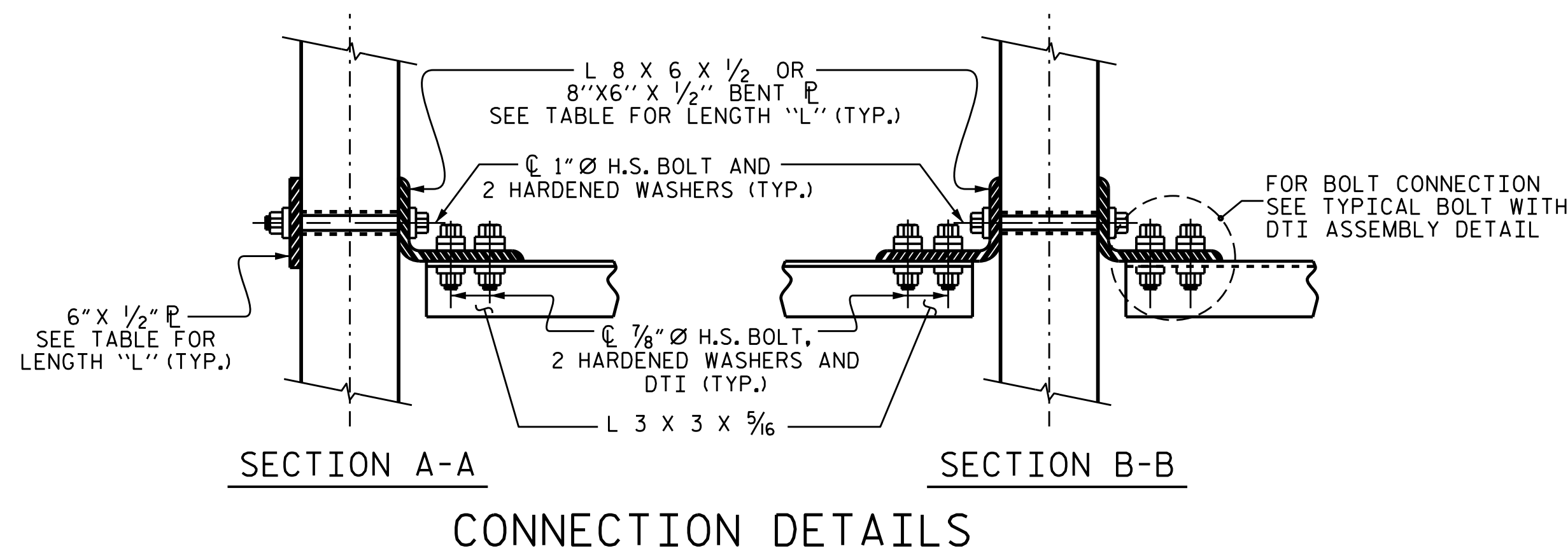
ANGLE END
(L 3 X 3 X 5/16)



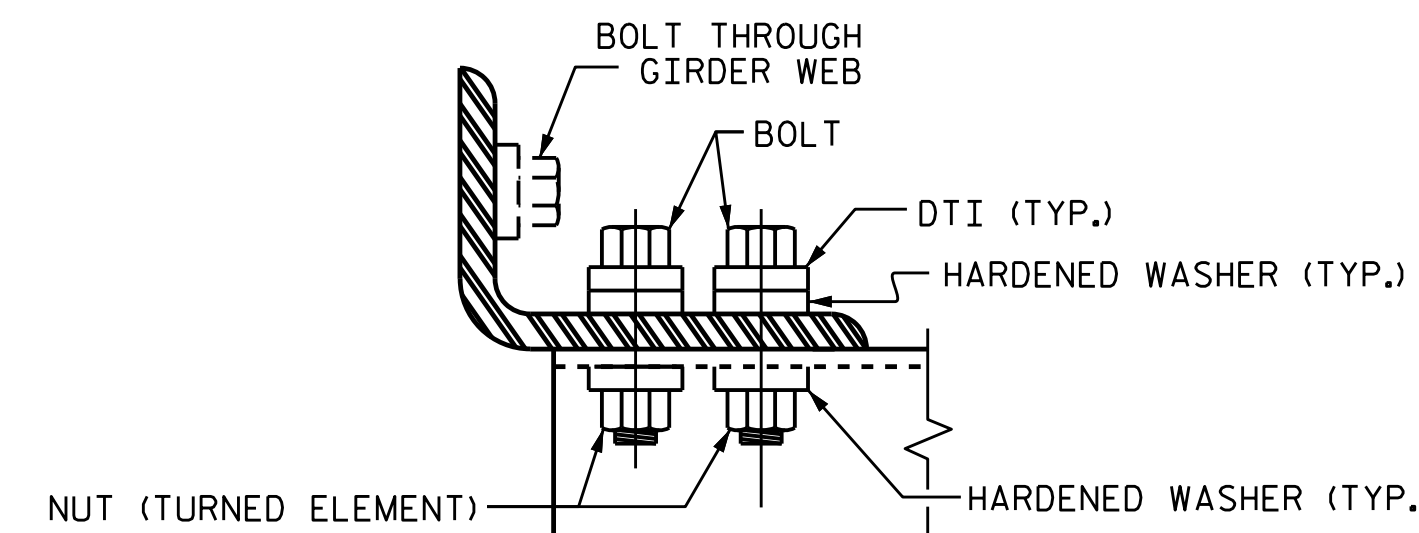
CONNECTOR PLATE DETAIL

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-6 3/4"	1'-6"	1'-1"	3'-5"



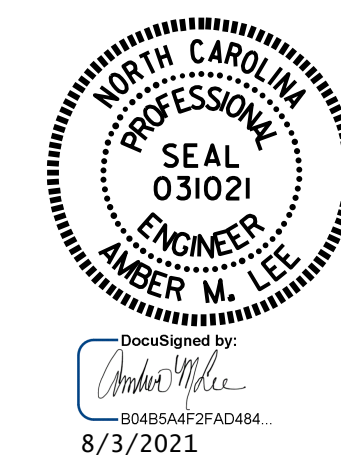
CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR 63"
MODIFIED BULB TEE
PRESTRESSED CONCRETE
GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 40
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : M. G. SHAIKH DATE : 06/2020
CHECKED BY : H. LOCKLEAR DATE : 06/2020
DRAWN BY : RWW 11/09 REV. 10/11/11 MAA/GM
CHECKED BY : GM 11/09 REV. 12/17 MAA/THC

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

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

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

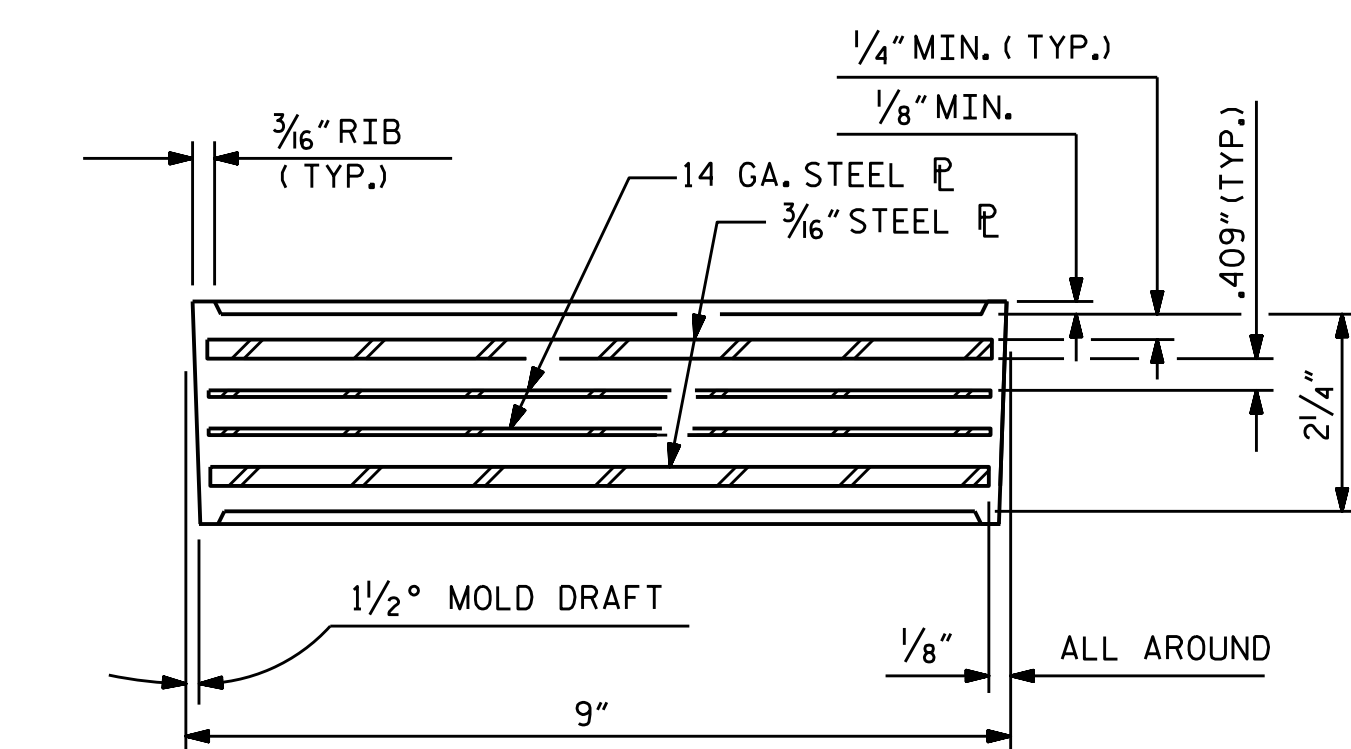
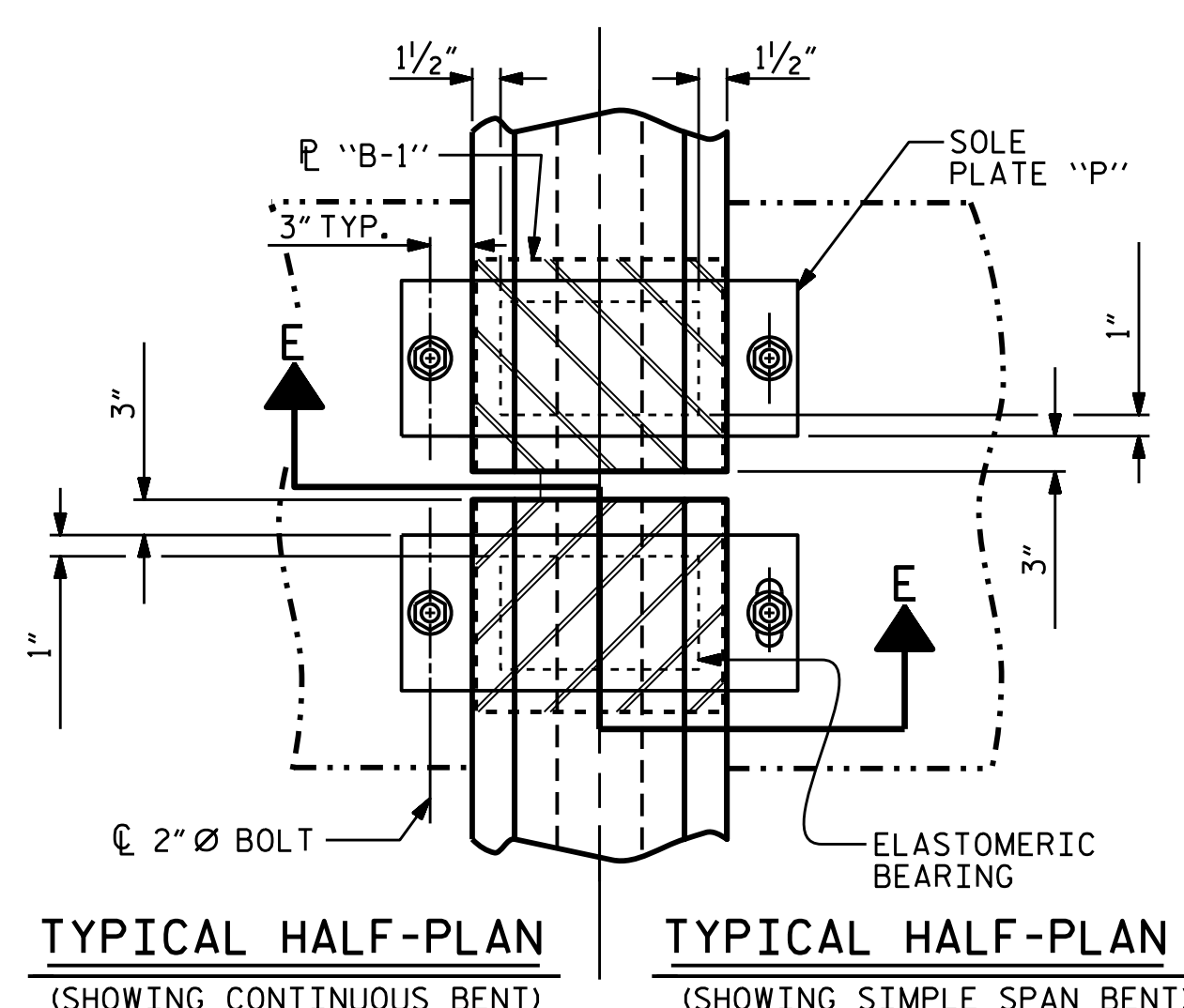
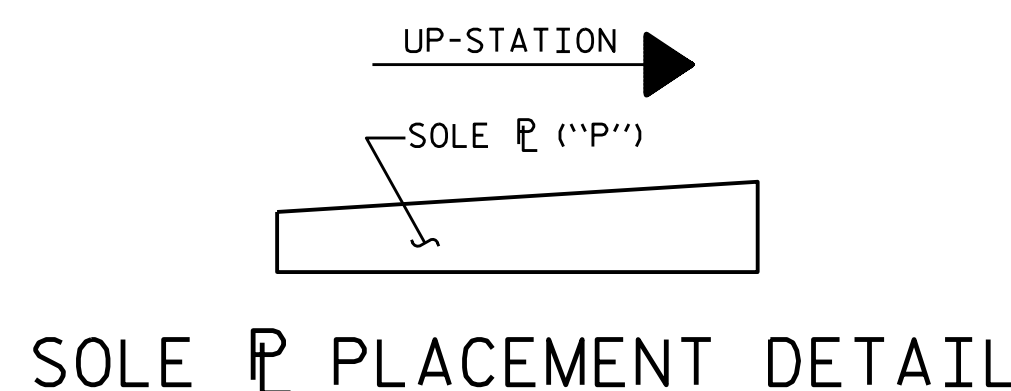
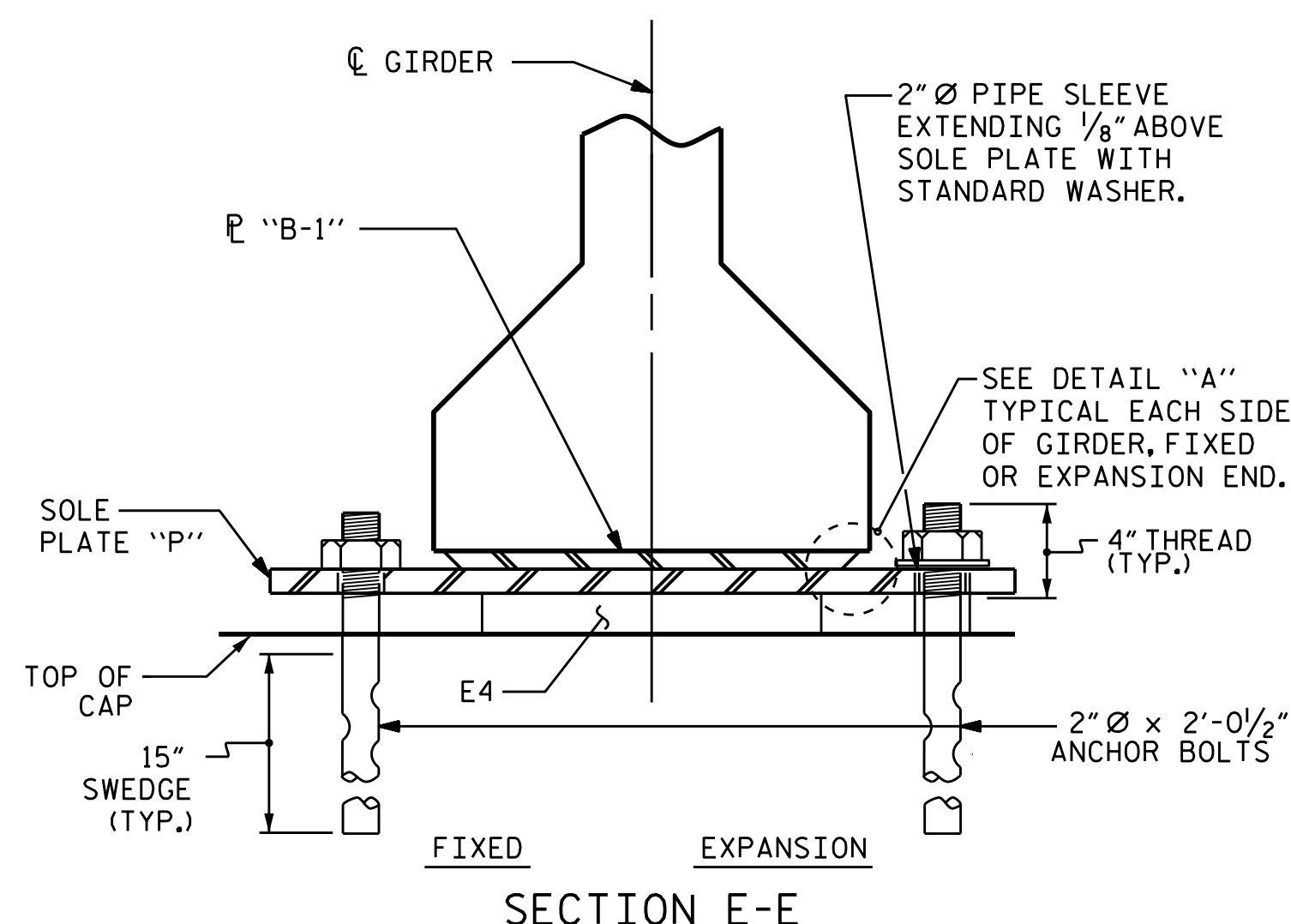
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

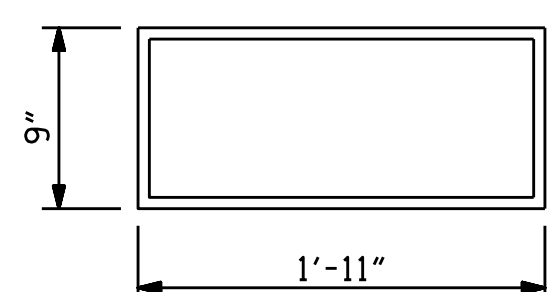
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

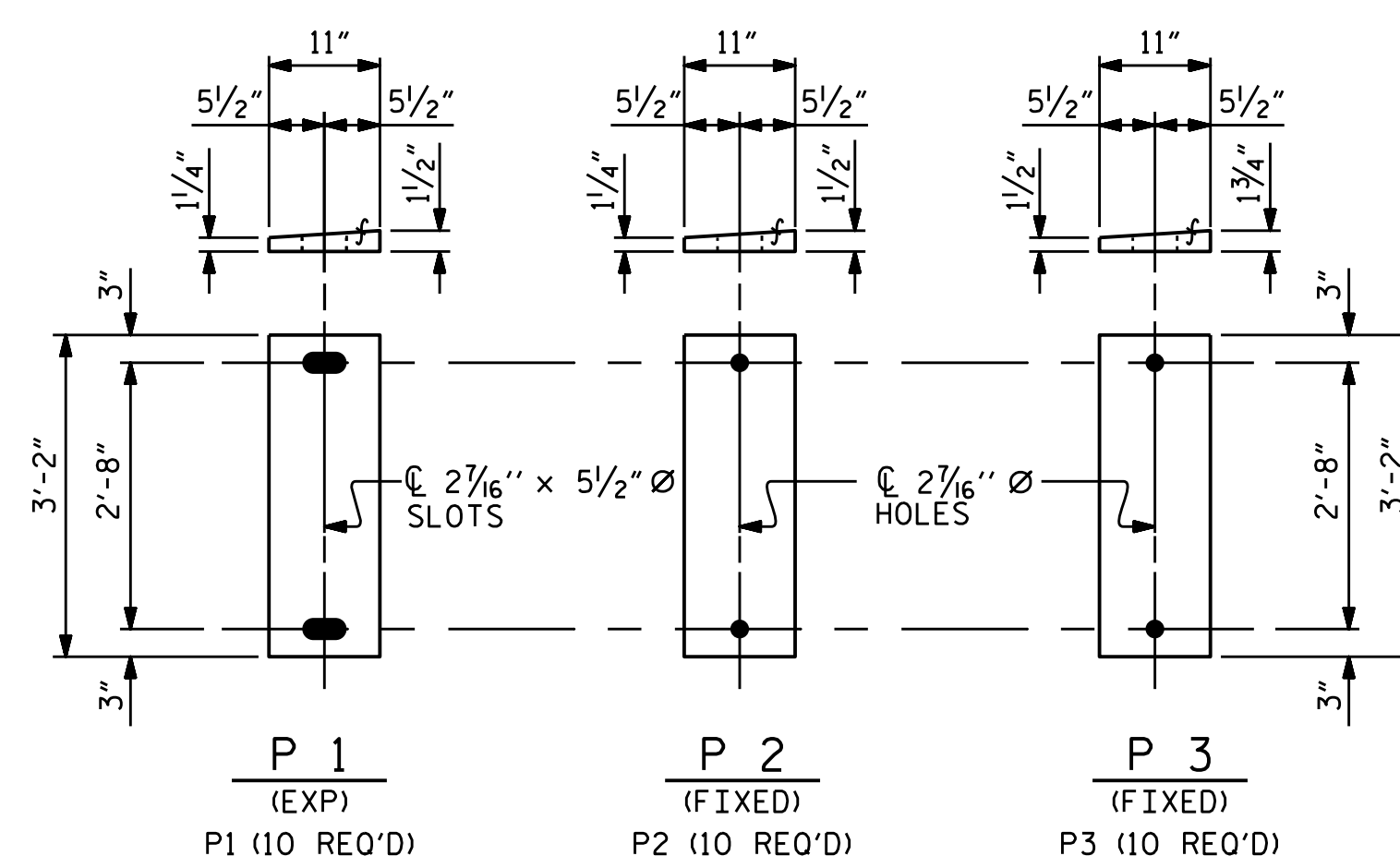


TYPICAL SECTION OF ELASTOMERIC BEARINGS

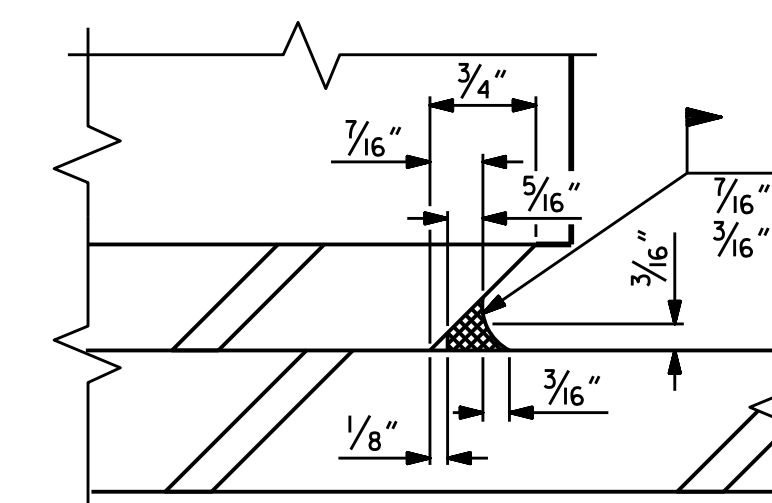


E4 (30 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



SOLE PLATE DETAILS ("P")



DETAIL "A"

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-

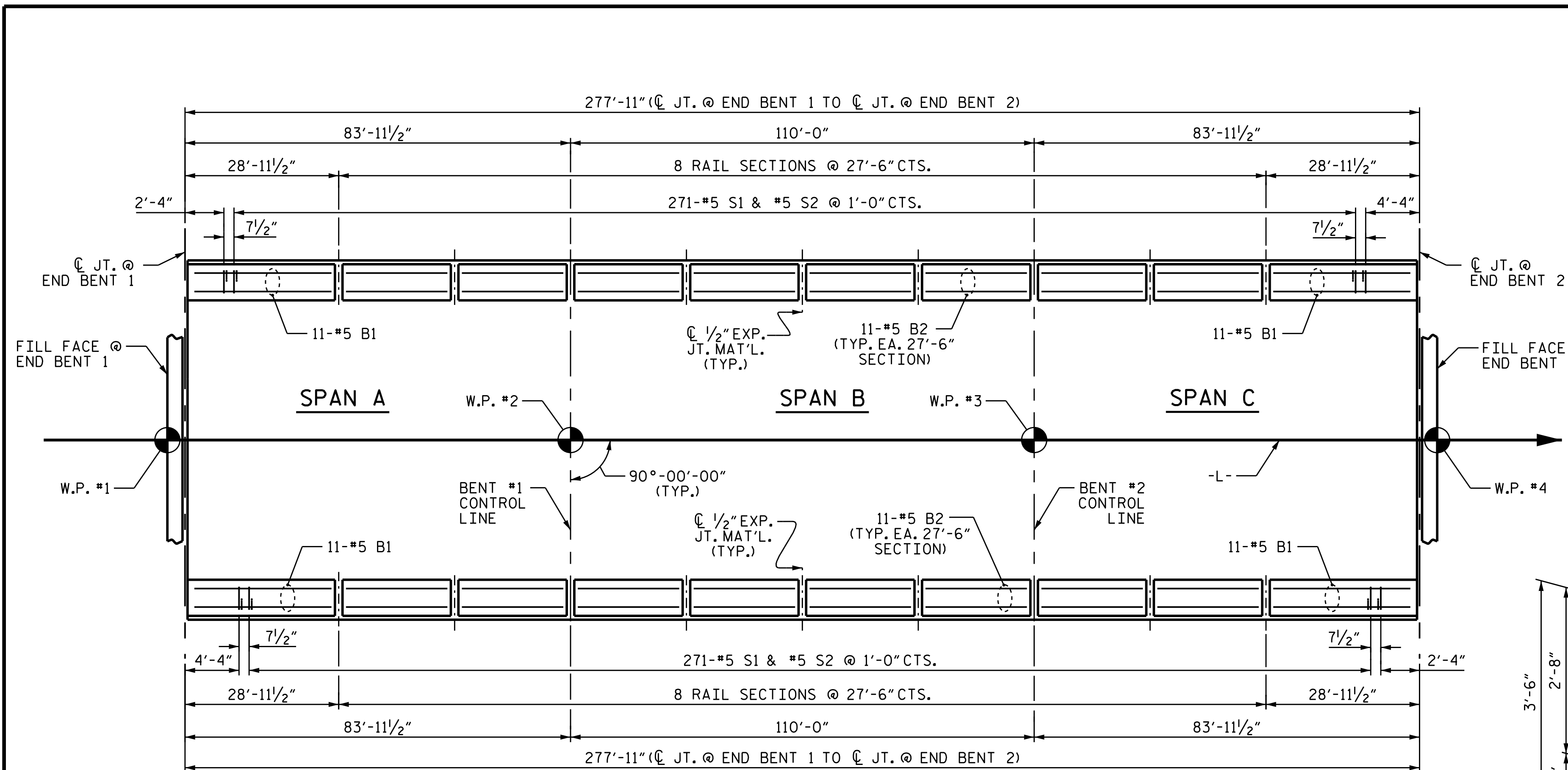


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
ELASTOMERIC BEARING
DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

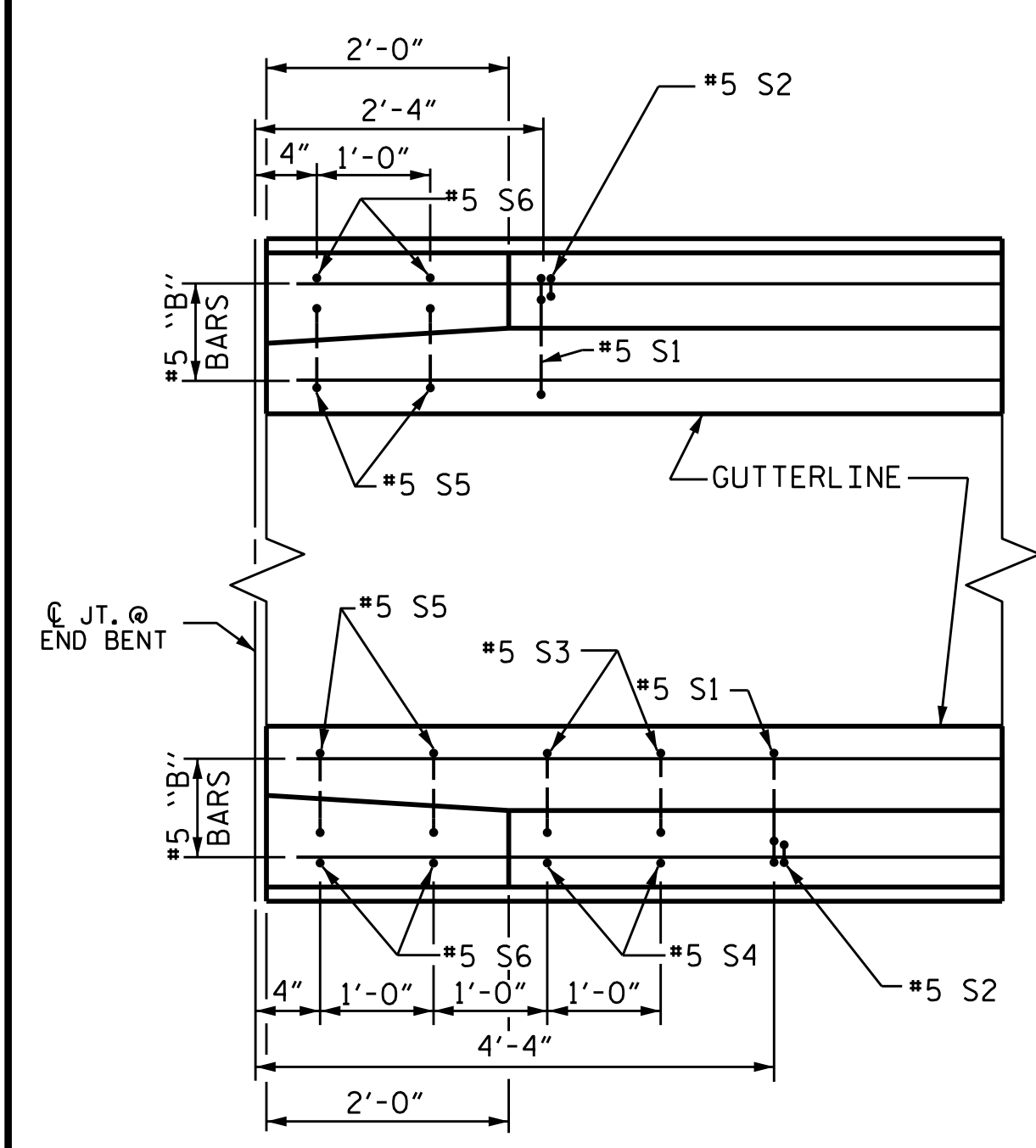
ASSEMBLED BY : M. G. SHAIKH	DATE : 06/2020
CHECKED BY : H. LOCKLEAR	DATE : 06/2020
DRAWN BY : EEM 2/97	REV. 6/13 AAC/MAA
CHECKED BY : VAP 2/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

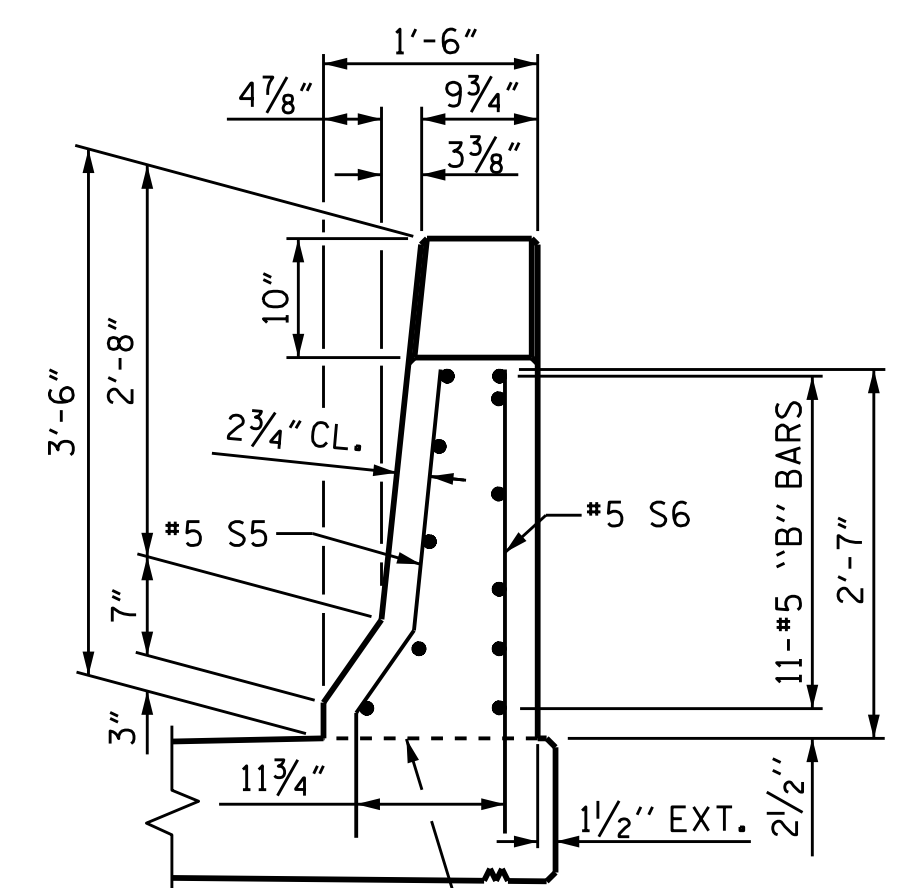
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	40
1			3			
2			4			



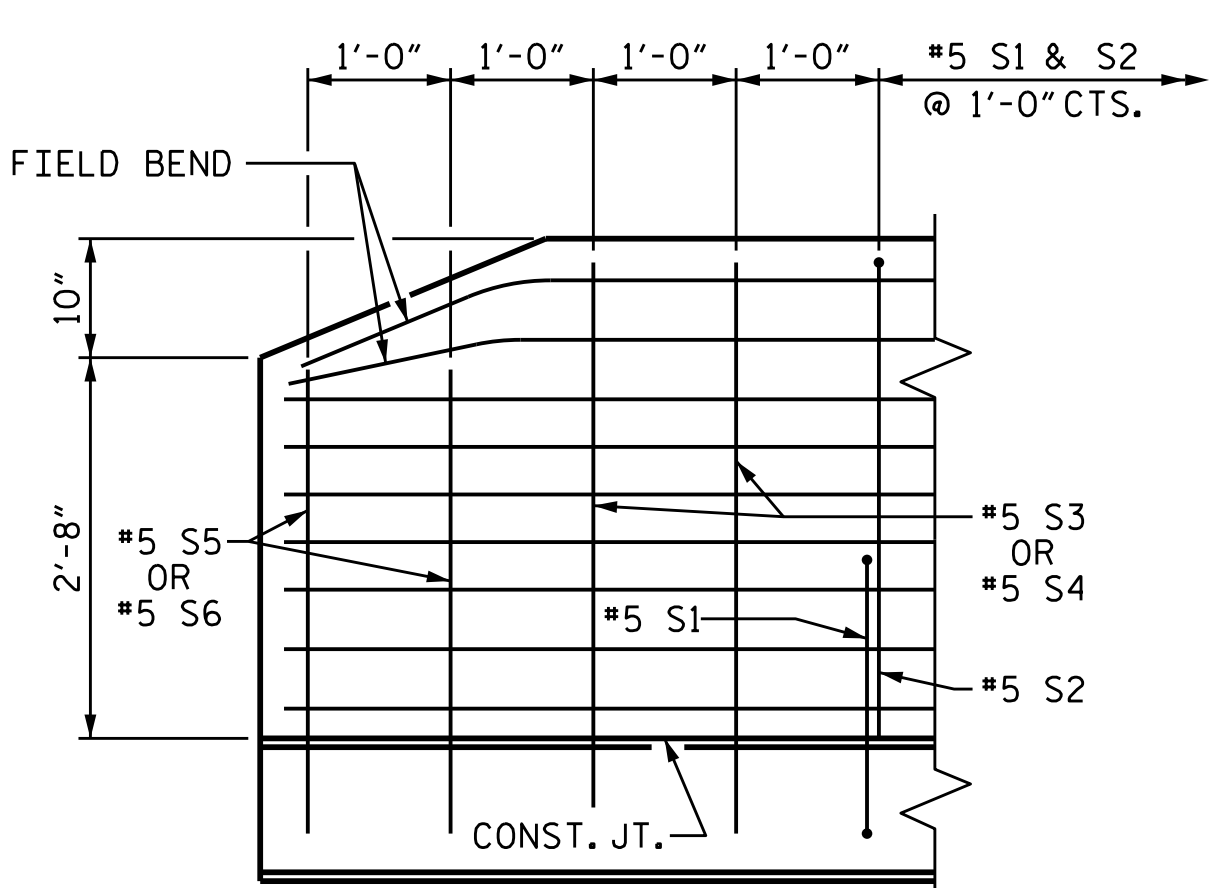
PLAN



PLAN

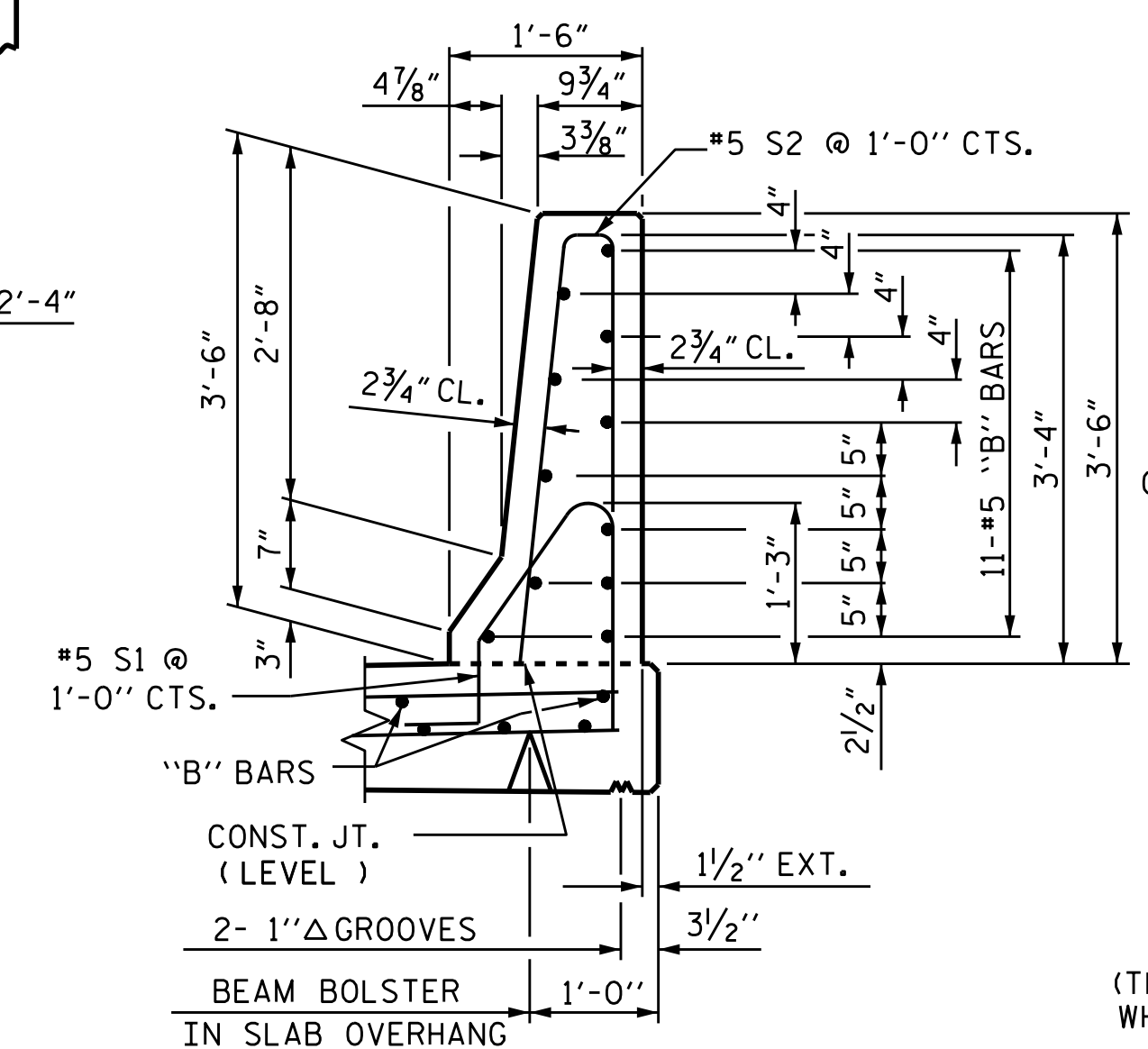


END VIEW

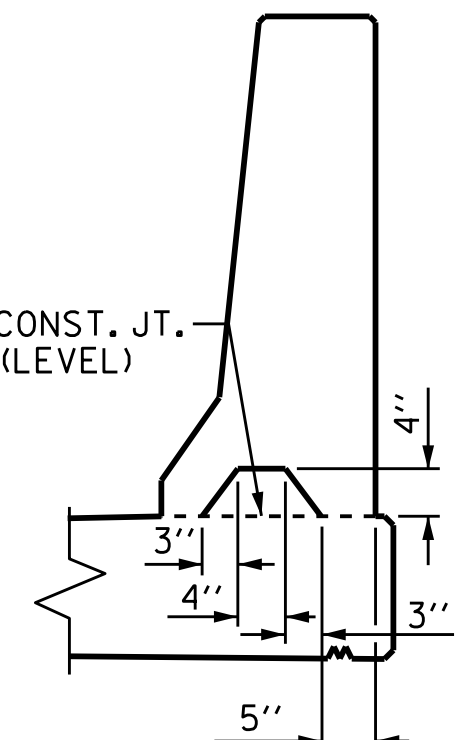


SIDE VIEW

END OF RAIL DETAILS
FOR ADHESIVE ANCHORING AT SAWED JOINTS

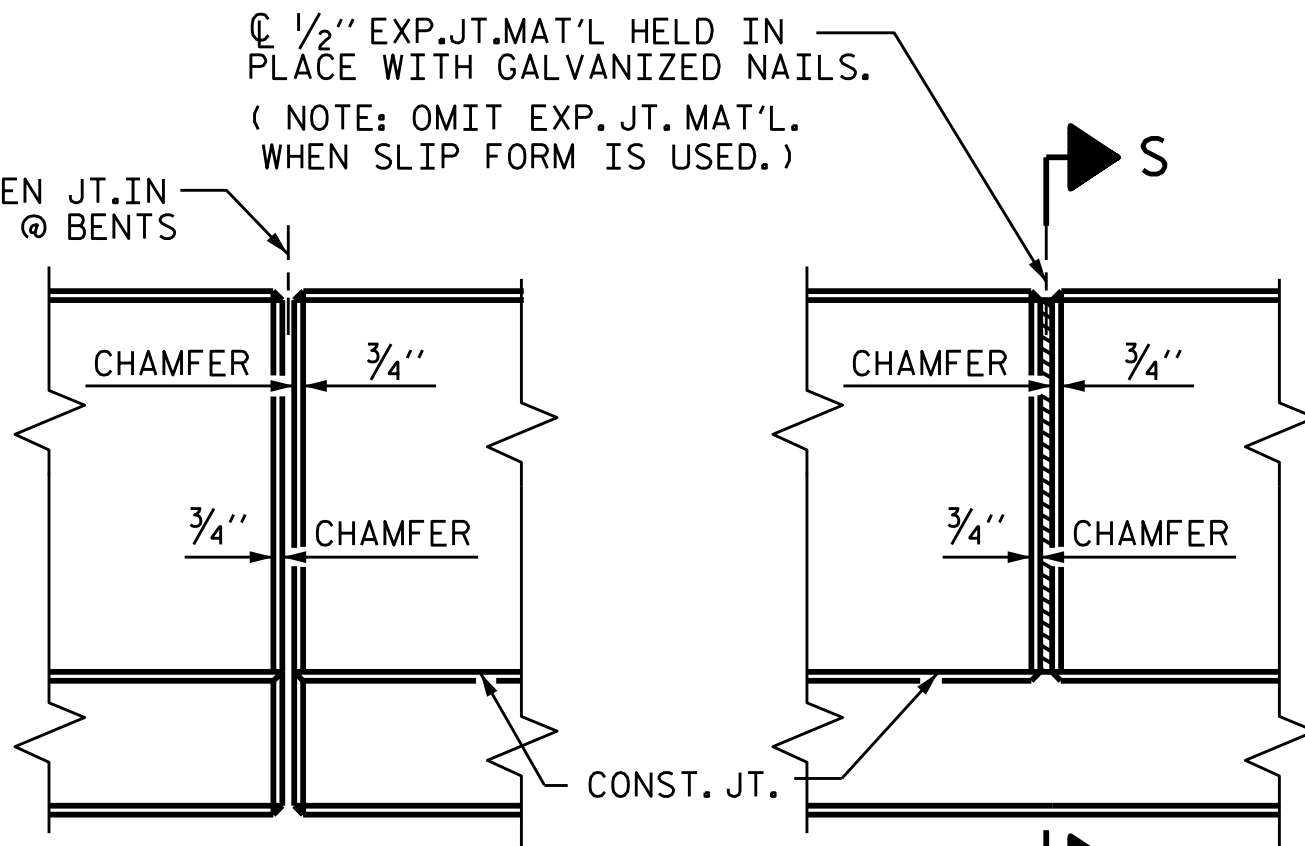


SECTION THRU RAIL



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

NOTES

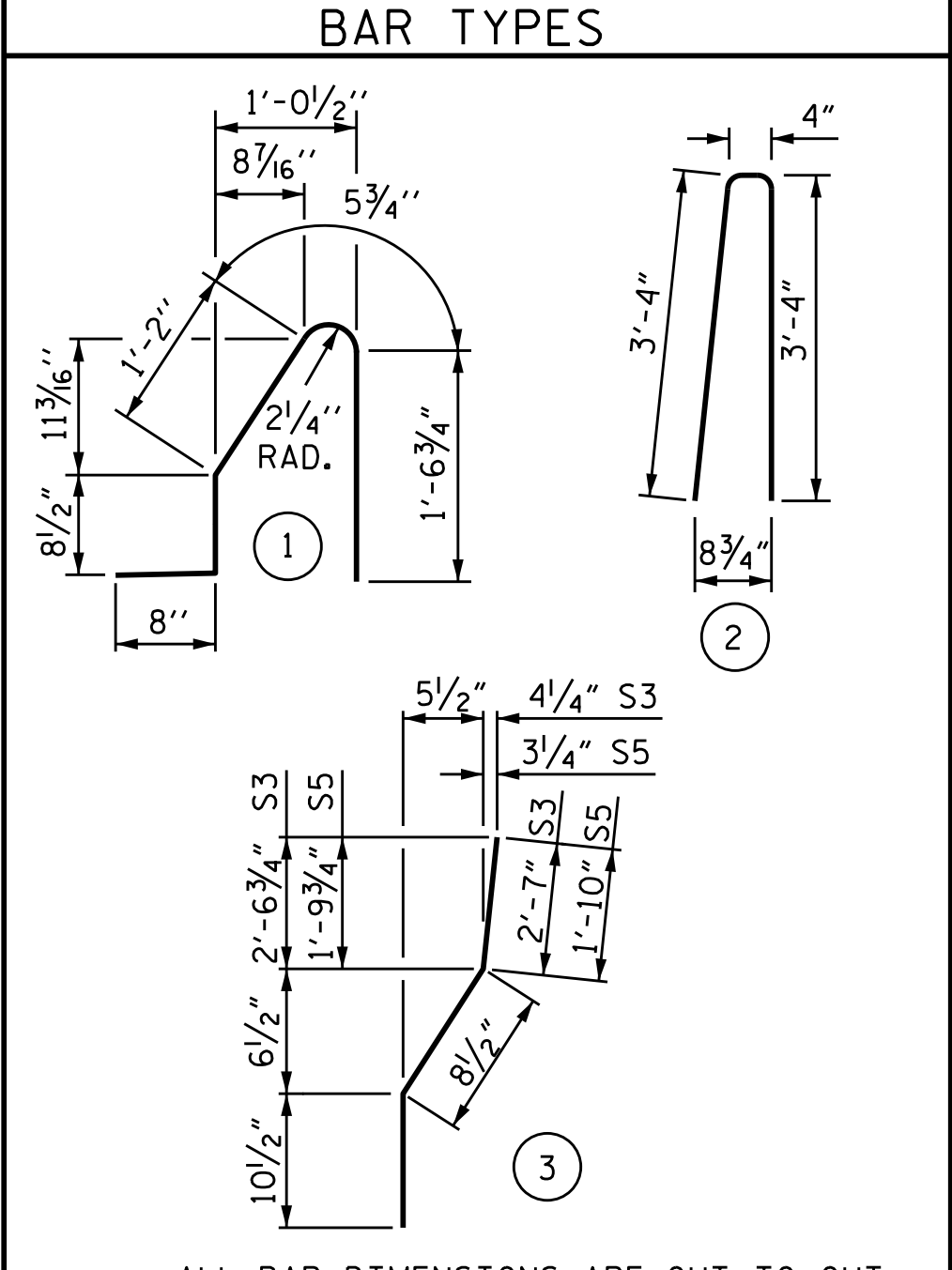
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3, S4, S5 AND S6 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3, S4, S5 AND S6 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.



ALL BAR DIMENSIONS ARE OUT TO OUT

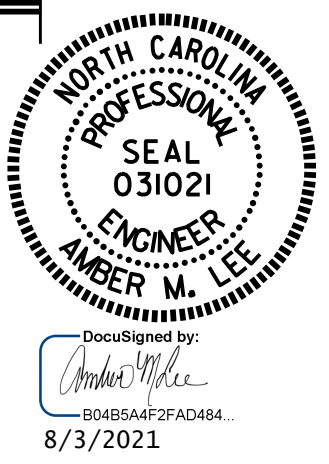
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5 STR	28'-6"	1308
* B2	176	#5 STR	27'-1"	4972
* S1	542	#5 1	4'-7"	2591
* S2	542	#5 2	7'-0"	3957
* S3	4	#5 3	4'-2"	17
* S4	4	#5 STR	4'-0"	17
* S5	8	#5 3	3'-5"	29
* S6	8	#5 STR	3'-3"	27
* EPOXY COATED REINFORCING STEEL				12,918 LBS.
CLASS AA CONCRETE				75.6 CU. YDS.
CONCRETE BARRIER RAIL				555.7 LIN. FT.

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL



DRAWN BY: M. G. SHAIKH DATE: 06/2020
CHECKED BY: A. LEE DATE: 06/2020
DESIGN ENGINEER OF RECORD: K. PUROHIT DATE: 11/2019

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NOTES

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

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.)

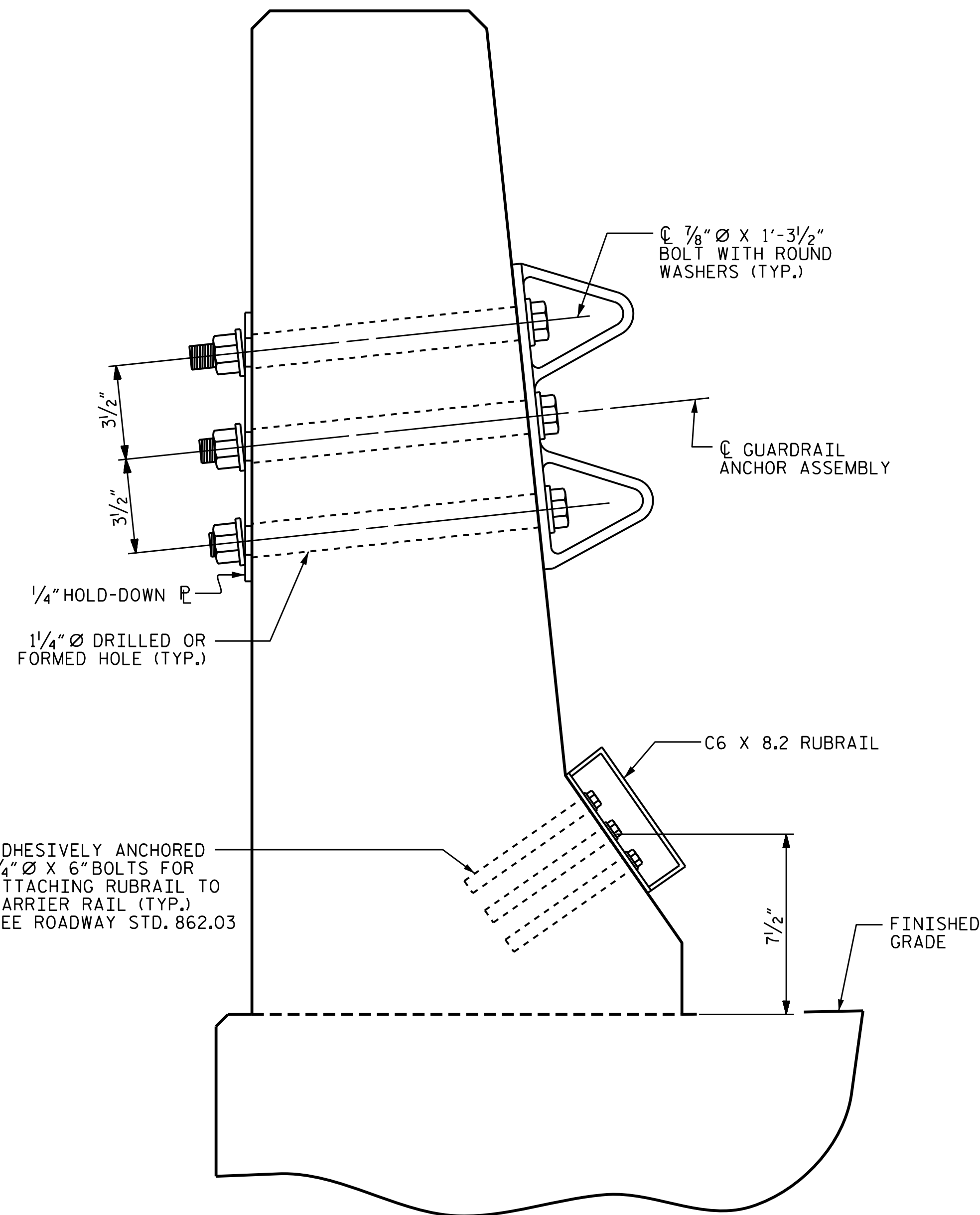
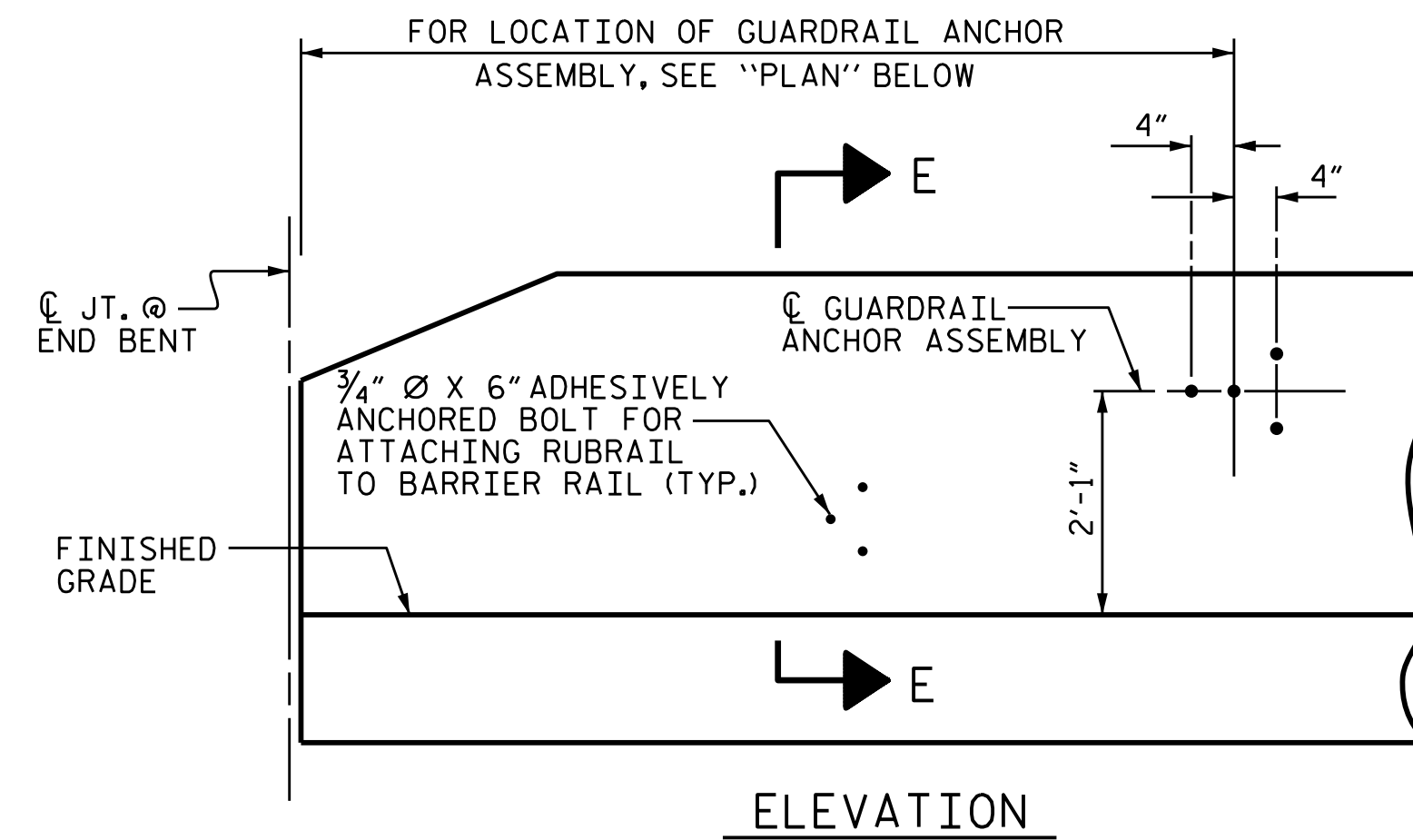
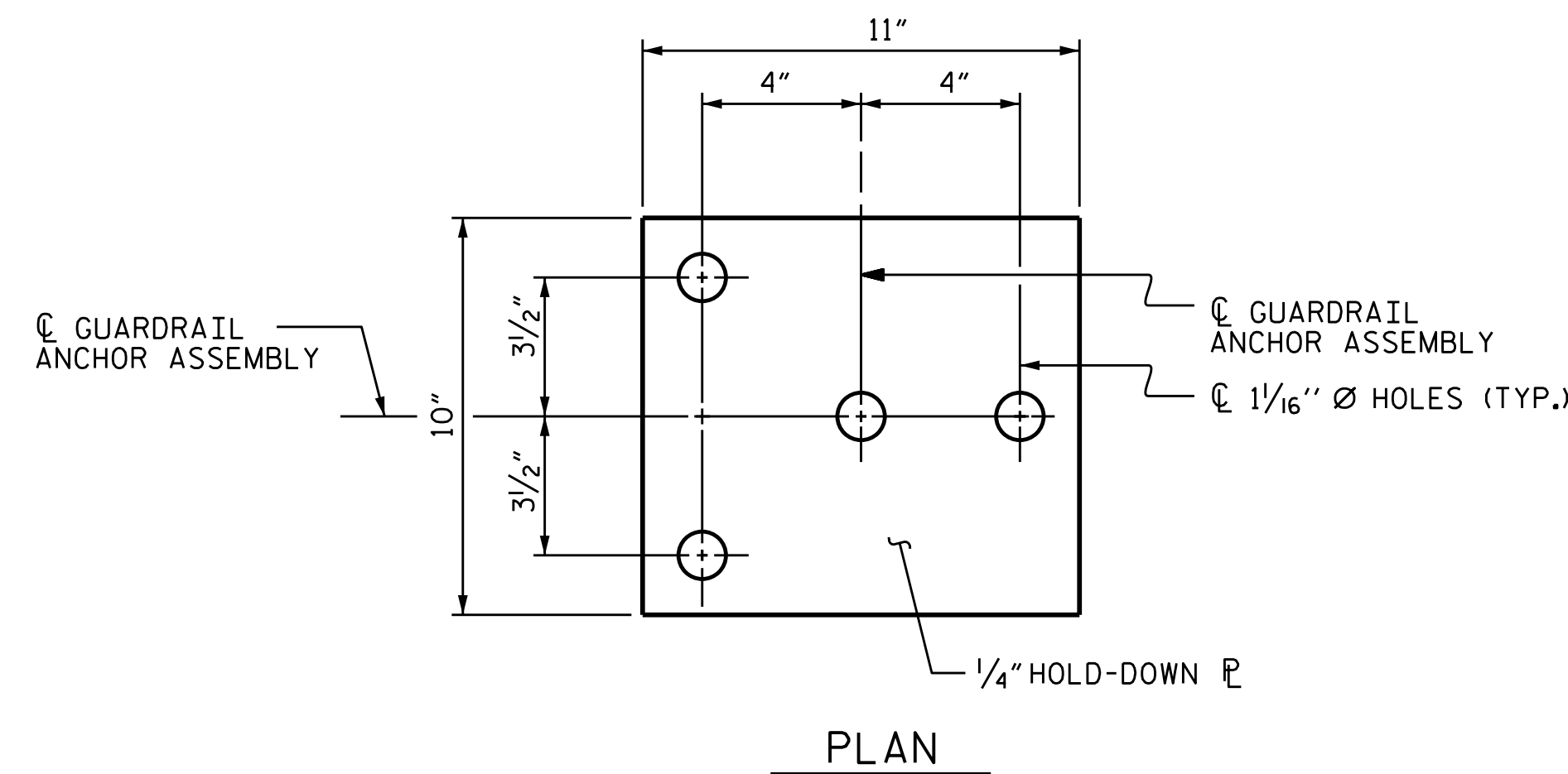
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

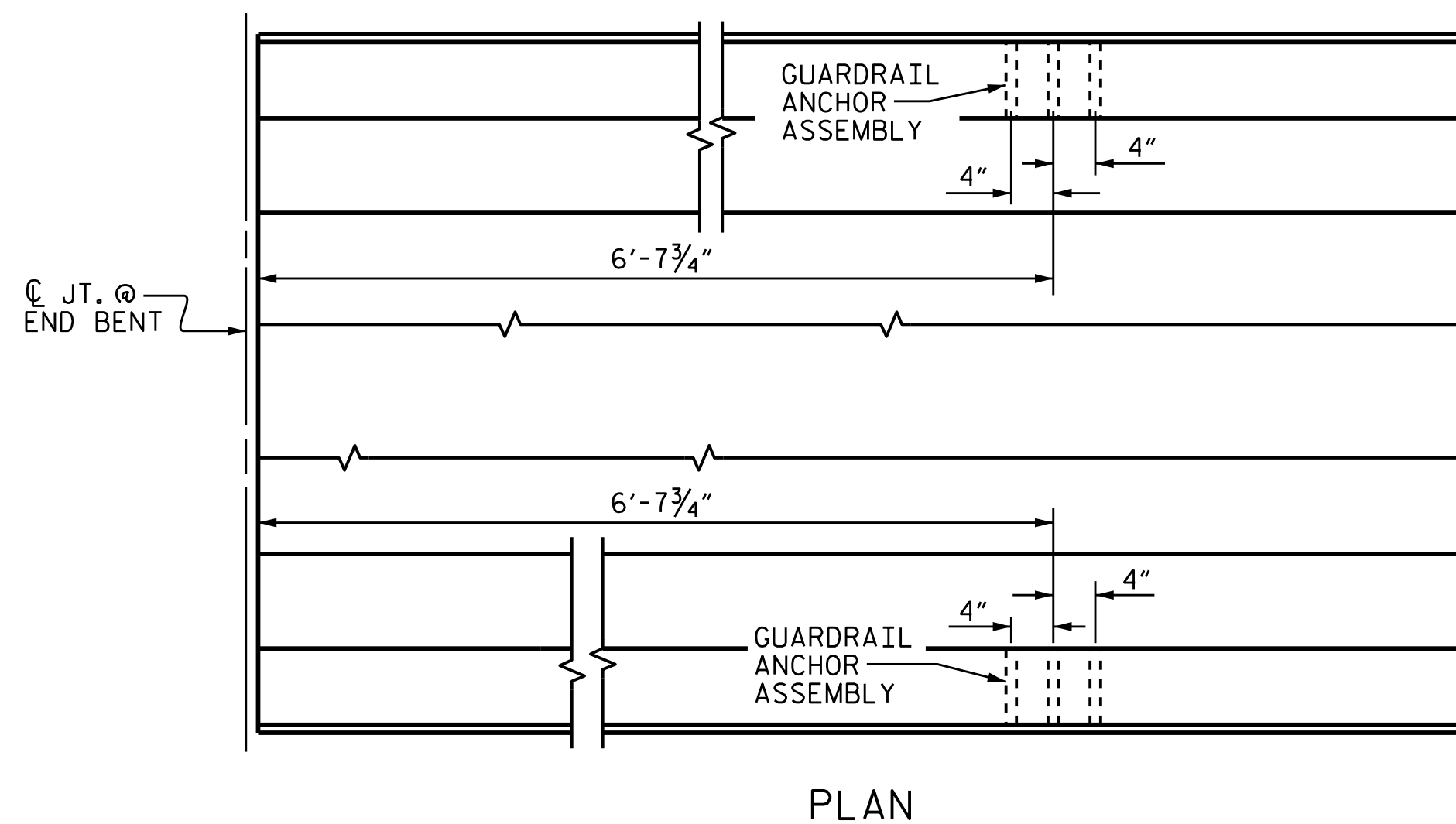
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

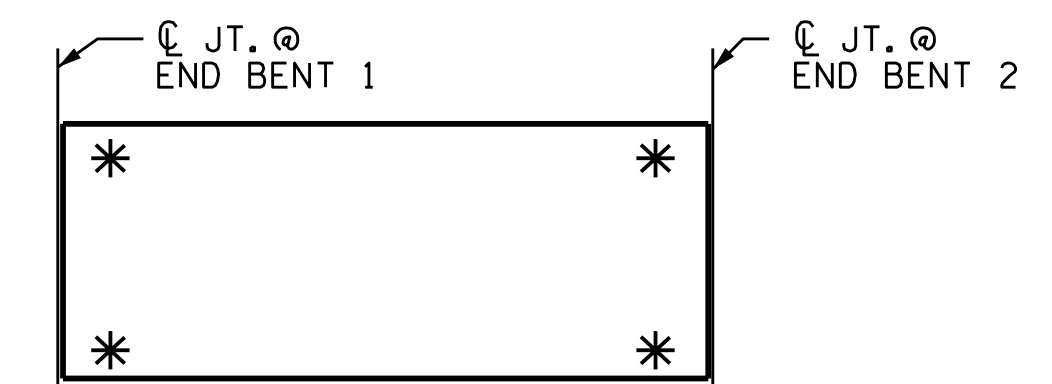


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

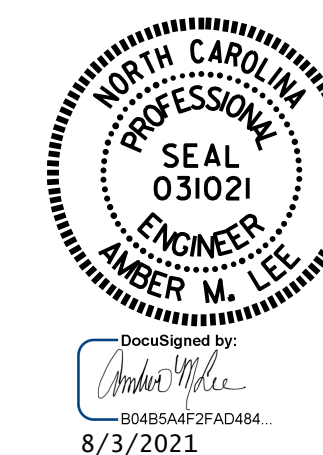
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-

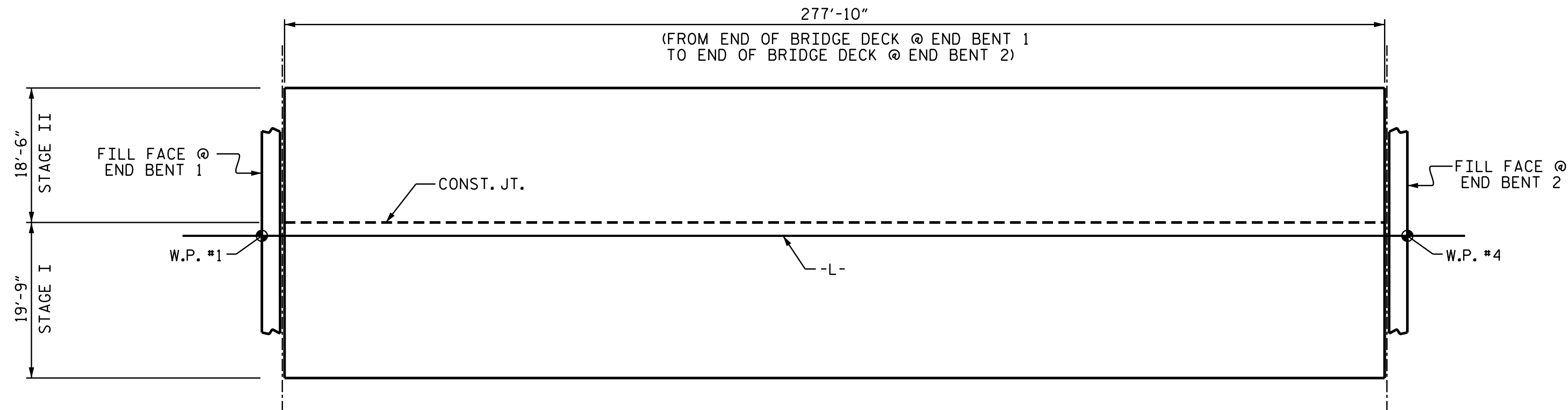


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

ASSEMBLED BY : M. G. SHAIKH	DATE : 06/2020
CHECKED BY : H. LOCKLEAR	DATE : 06/2020
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

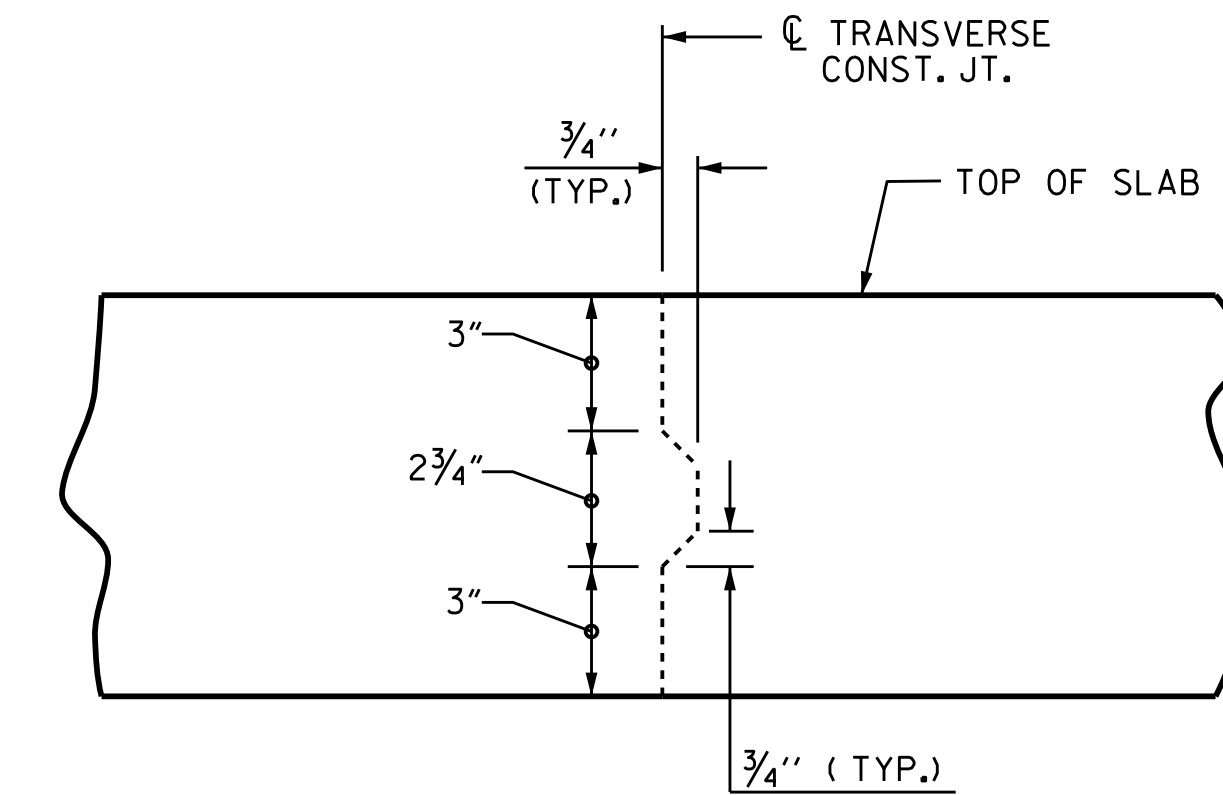
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1			3			TOTAL SHEETS
2			4			40



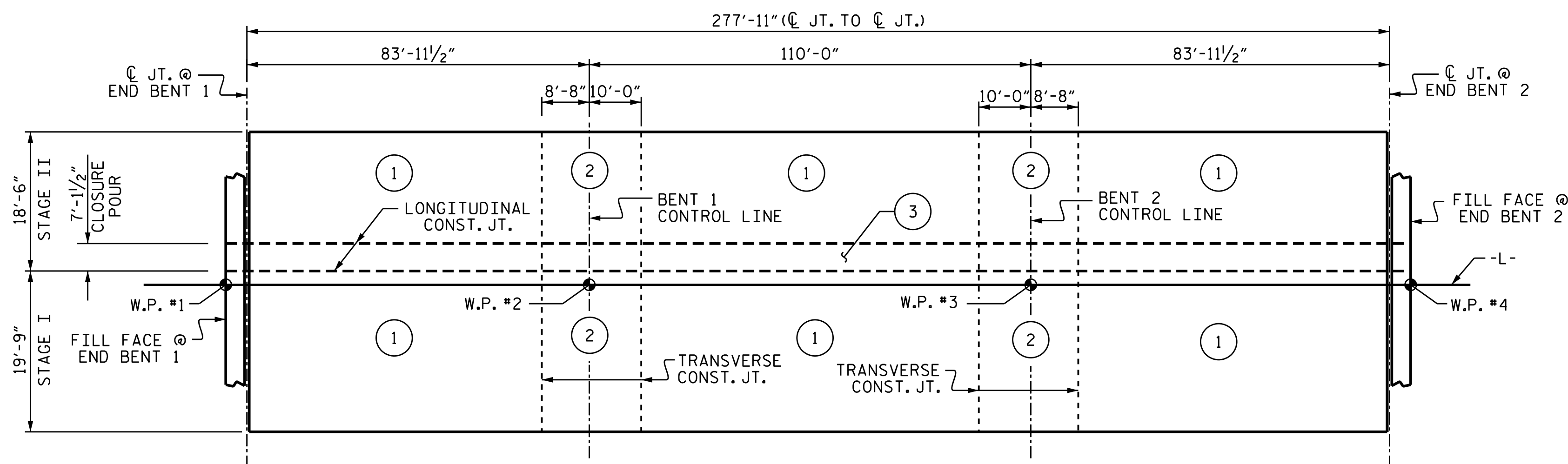
**LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB**

(STAGE I = 5487 SQ. FT.)
(STAGE II = 5140 SQ. FT.)
(TOTAL = 10,627 SQ. FT.)



**TRANSVERSE CONSTRUCTION
JOINT DETAIL**

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

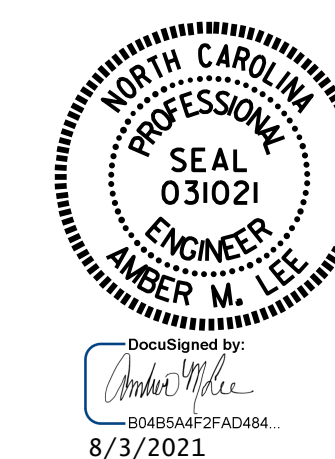


POUR SEQUENCE

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

PROJECT NO. BR-0002
ASHE COUNTY
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SHEET 1 OF 2



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

DRAWN BY : M. G. SHAIKH DATE : 06/2020
CHECKED BY : H. LOCKLEAR DATE : 06/2020
DESIGN ENGINEER OF RECORD: K. PUROHIT DATE : 11/2019

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

SHEET NO.
S-22
TOTAL
SHEETS
40

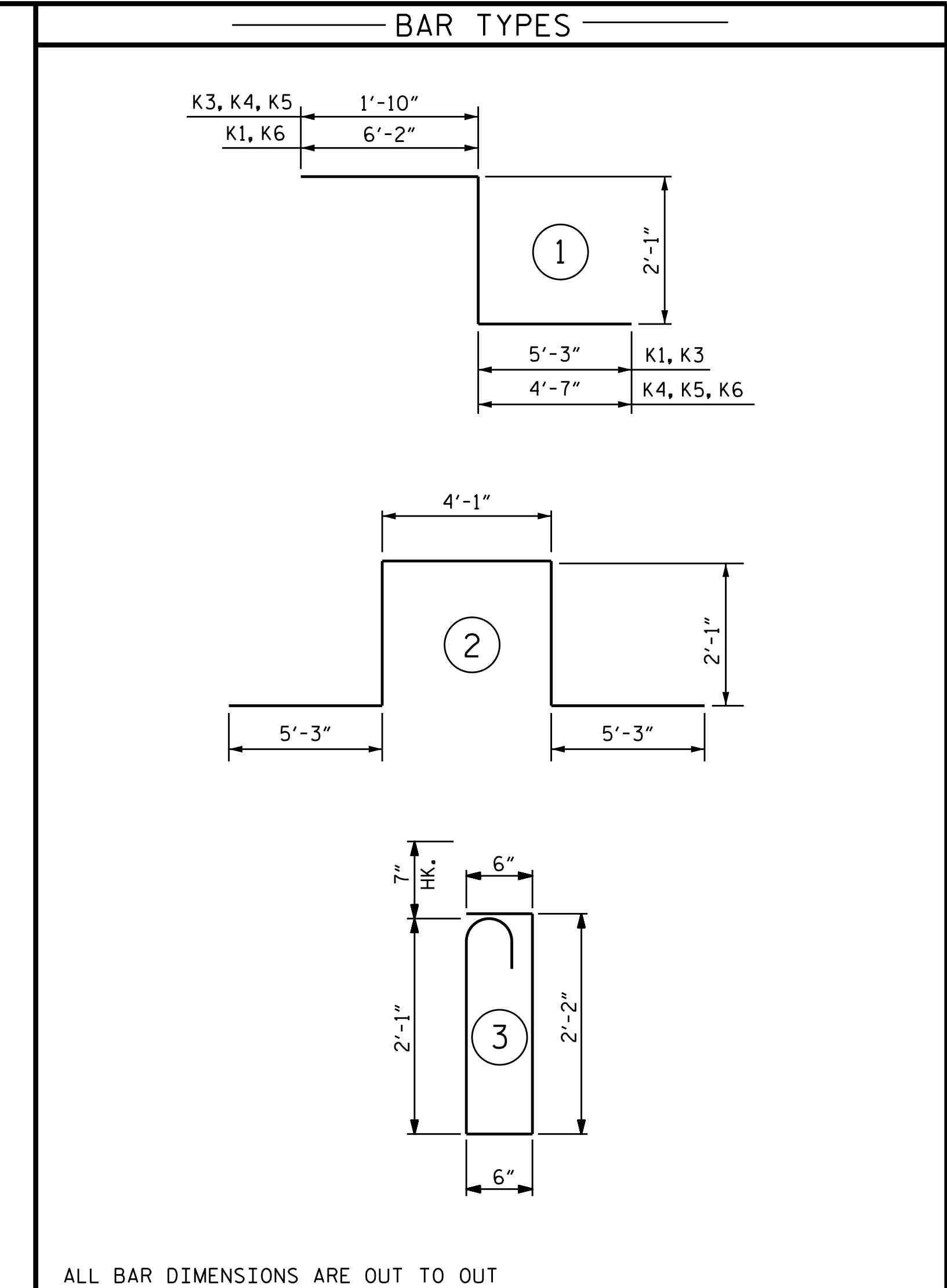
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
*4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
*5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
*6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
*7	4'-2"	2'-9"			
*8	4'-9"	3'-2"			

REINFORCING BAR SCHEDULE						
STAGE I						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	512	#5	STR	19'-5"	10,369	
A2	512	#5	STR	19'-5"	10,369	
*B1	56	#4	STR	29'-1"	1088	
*B2	104	#5	STR	35'-0"	3797	
*B3	52	#5	STR	28'-9"	1559	
*B4	14	#4	STR	39'-10"	373	
B5	70	#5	STR	57'-3"	4180	
B6	30	#5	STR	14'-8"	459	
*D1	512	#5	STR	6'-9"	3605	
D2	512	#5	STR	6'-9"	3605	
*G1	2	#5	STR	19'-5"	41	
*K1	4	#8	1	13'-6"	144	
*K2	4	#8	2	18'-9"	200	
*K3	4	#8	1	9'-2"	98	
*S1	16	#4	3	5'-10"	62	
REINFORCING STEEL					18,613 LBS.	
*EPOXY COATED REINF. STEEL					21,336 LBS.	

REINFORCING BAR SCHEDULE						
STAGE II						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A3	512	#5	STR	18'-2"	9701	
A4	512	#5	STR	18'-2"	9701	
*B1	32	#4	STR	29'-1"	622	
*B2	60	#5	STR	35'-0"	2190	
*B3	30	#5	STR	28'-9"	900	
*B4	8	#4	STR	39'-10"	213	
B5	55	#5	STR	57'-3"	3284	
B6	18	#5	STR	14'-8"	275	
*D1	512	#5	STR	6'-9"	3605	
D2	512	#5	STR	6'-9"	3605	
*G2	2	#5	STR	18'-2"	38	
*K5	4	#8	1	8'-6"	91	
*K6	4	#8	1	12'-10"	137	
*S1	8	#4	3	5'-10"	31	
REINFORCING STEEL					16,865 LBS.	
*EPOXY COATED REINF. STEEL					17,528 LBS.	

REINFORCING BAR SCHEDULE						
CLOSURE POUR						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	20	#4	STR	29'-1"	389	
*B2	36	#5	STR	35'-0"	1314	
*B3	20	#5	STR	28'-9"	600	
*B4	5	#4	STR	39'-10"	133	
B5	35	#5	STR	57'-3"	2090	
B6	12	#5	STR	14'-8"	184	
*K4	8	#8	1	8'-6"	182	
*S1	8	#4	3	5'-10"	31	
REINFORCING STEEL					2274 LBS.	
*EPOXY COATED REINF. STEEL					2649 LBS.	



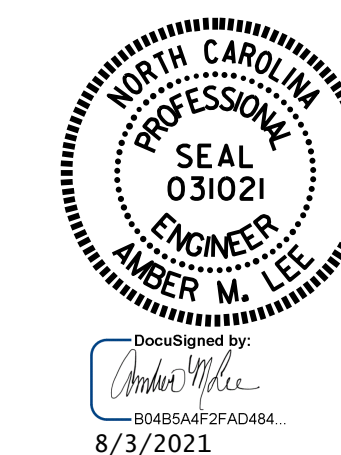
GROOVING BRIDGE FLOORS		
STAGE I		
APPROACH SLABS	454	SO.FT.
BRIDGE DECK	4597	SO.FT.
TOTAL	5051	SO.FT.
STAGE II		
APPROACH SLABS	420	SO.FT.
BRIDGE DECK	4251	SO.FT.
TOTAL	4671	SO.FT.
TOTAL		
APPROACH SLABS	874	SO.FT.
BRIDGE DECK	8848	SO.FT.
TOTAL	9722	SO.FT.

CONCRETE BREAKDOWN		
	CLASS AA CONCRETE (CU. YDS.)	
	STAGE I	STAGE II
POUR #1	162.1	95.2
POUR #2	24.9	14.6
POUR #3 (CLOSURE POUR)	----	65.9
TOTAL **	187.0	175.7

** QUANTITIES FOR BARRIER RAIL IS NOT INCLUDED

TOTAL BILL OF MATERIAL		
	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
STAGE I	18,613	21,336
STAGE II	16,865	17,528
CLOSURE POUR	2,274	2649
TOTAL **	37,752	41,513

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 2 OF 2



REVISIONS						SHEET NO.
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2			4			

DRAWN BY : M. G. SHAIKH DATE : 06/2020
 CHECKED BY : A. LEE DATE : 06/2020
 DESIGN ENGINEER OF RECORD: K. PUROHIT DATE : 11/2019

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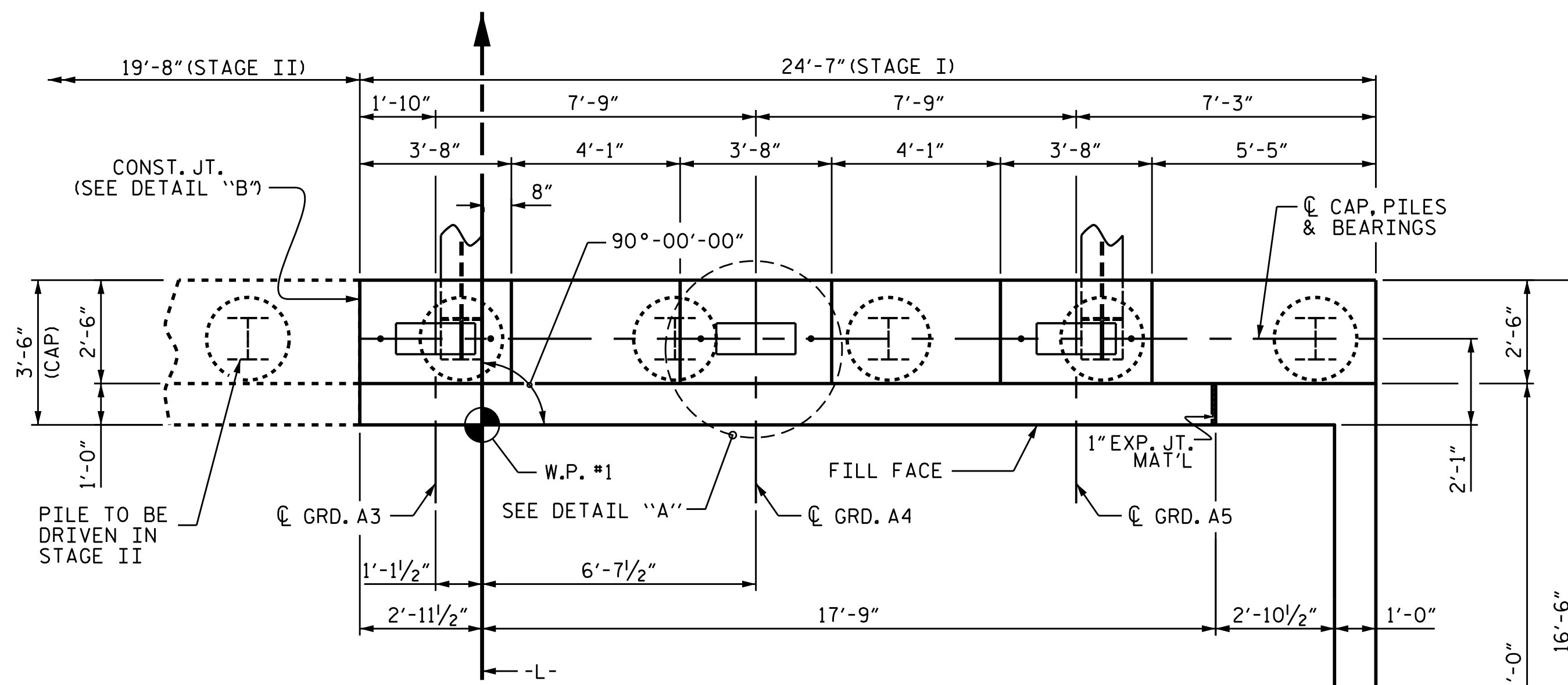
NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #5 "V" BARS.

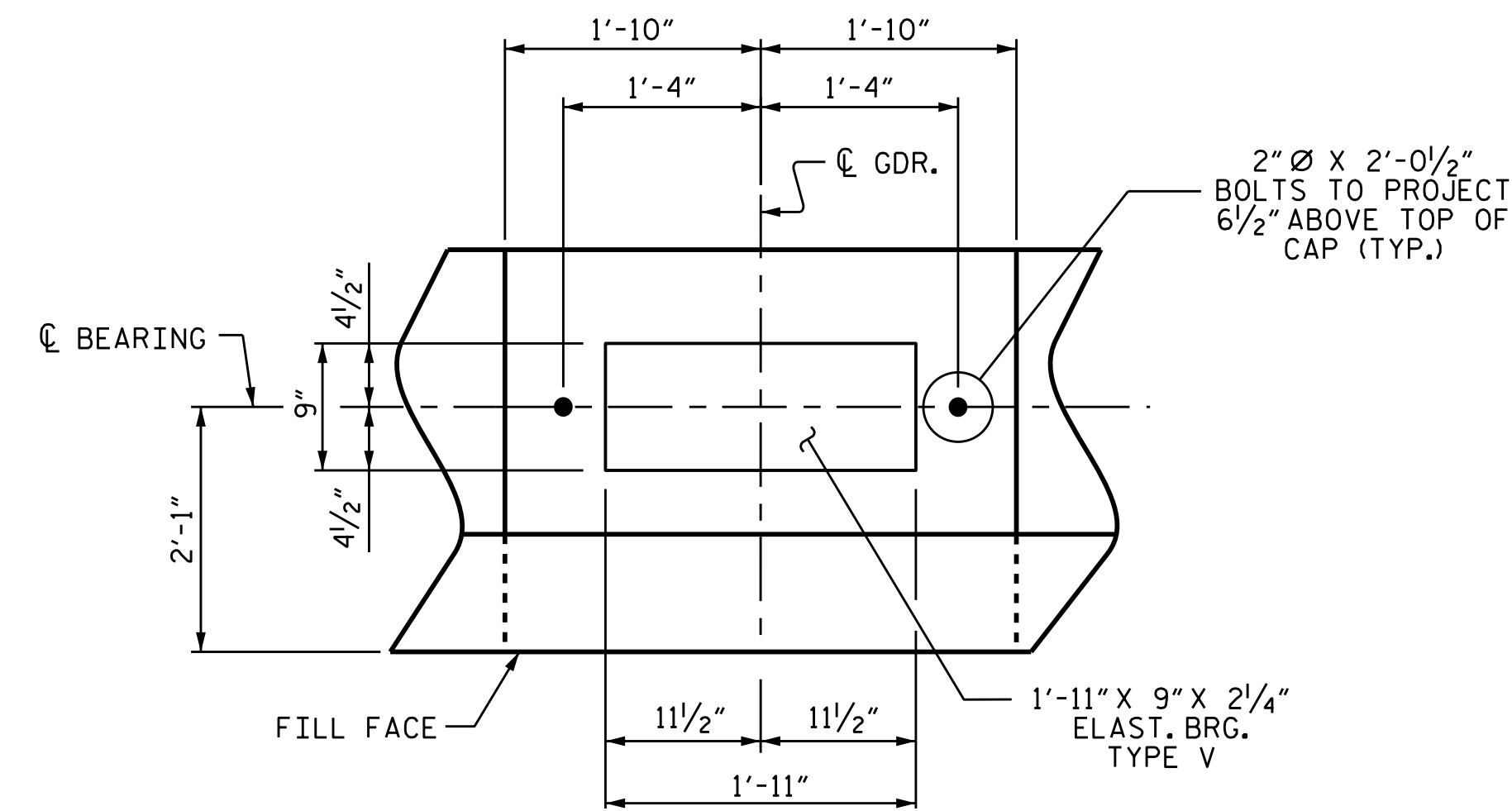
THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE AND EROSION CONTROL AT THE END BENT.

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

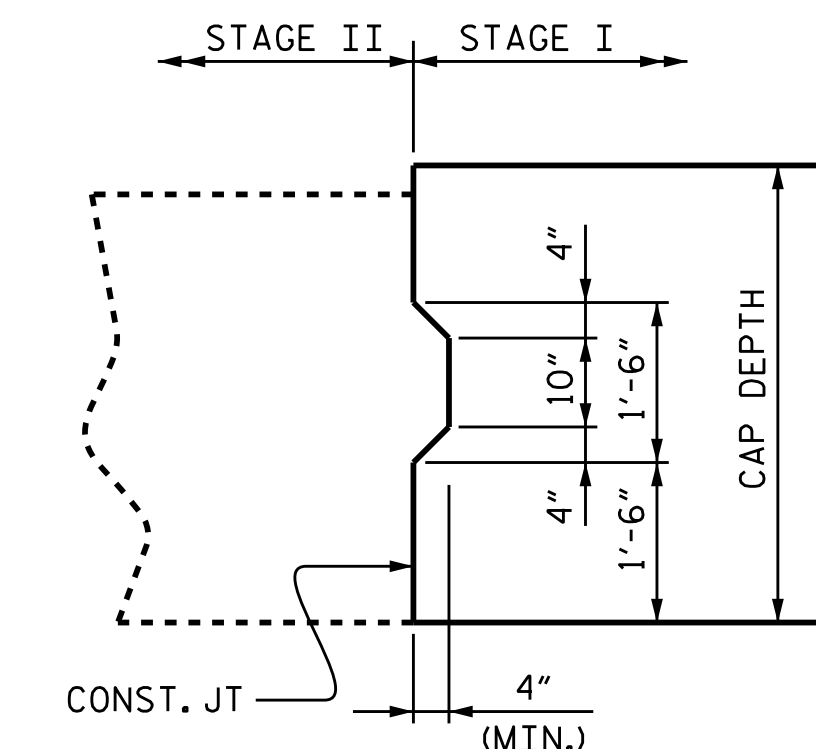
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.



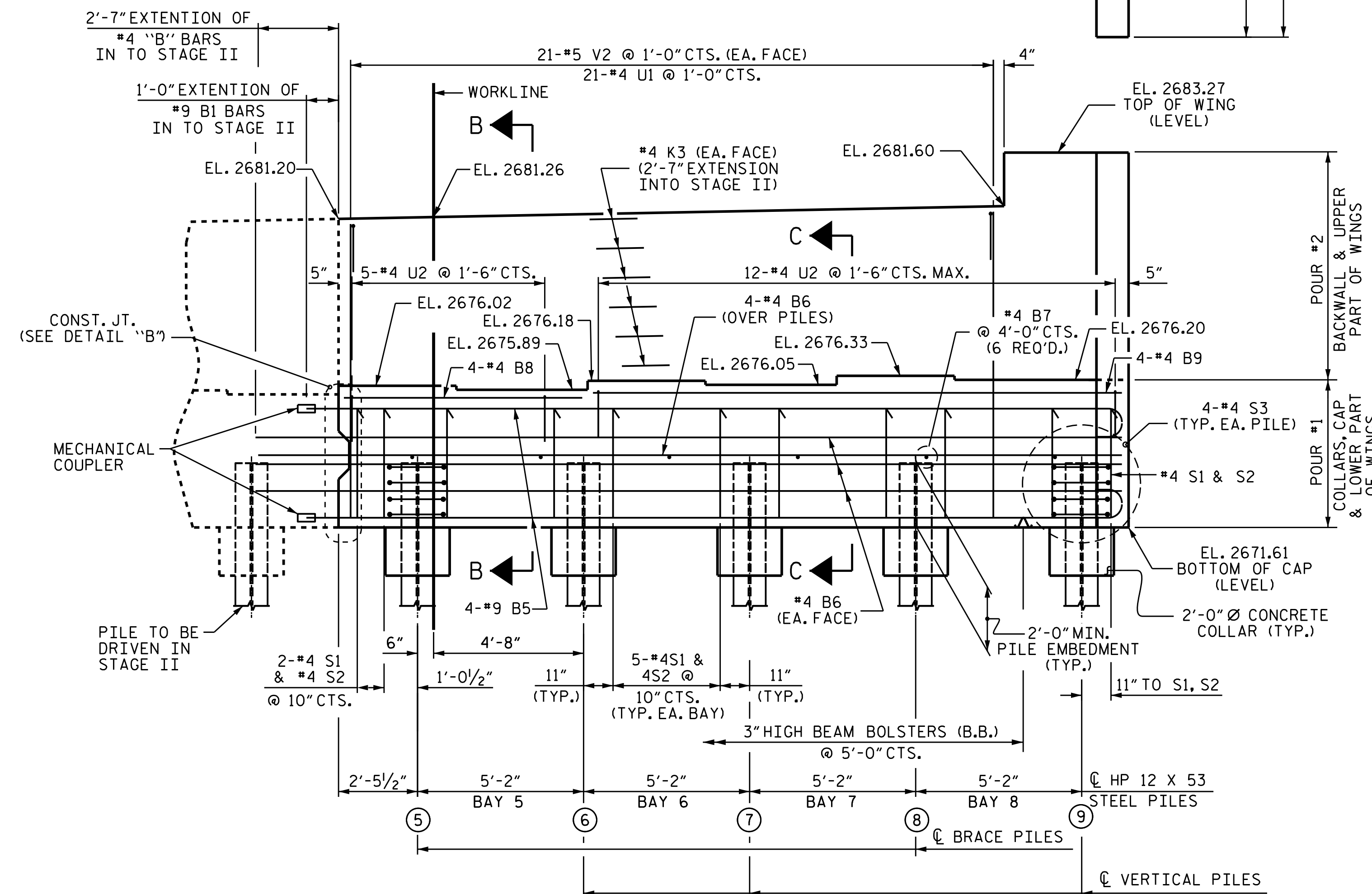
PLAN



DETAIL "A"
(TYP. EA. GDR.)



DETAIL "B"



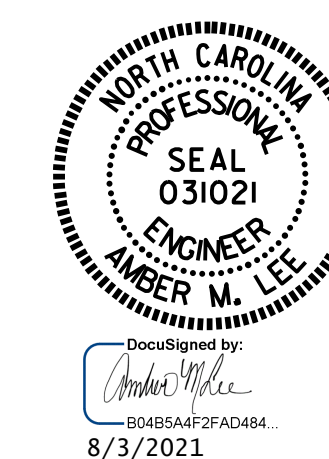
ELEVATION

PROJECT NO. BR-0002

ASHE COUNTY

STATION: 23+80.00 -L-

SHEET 1 OF 4



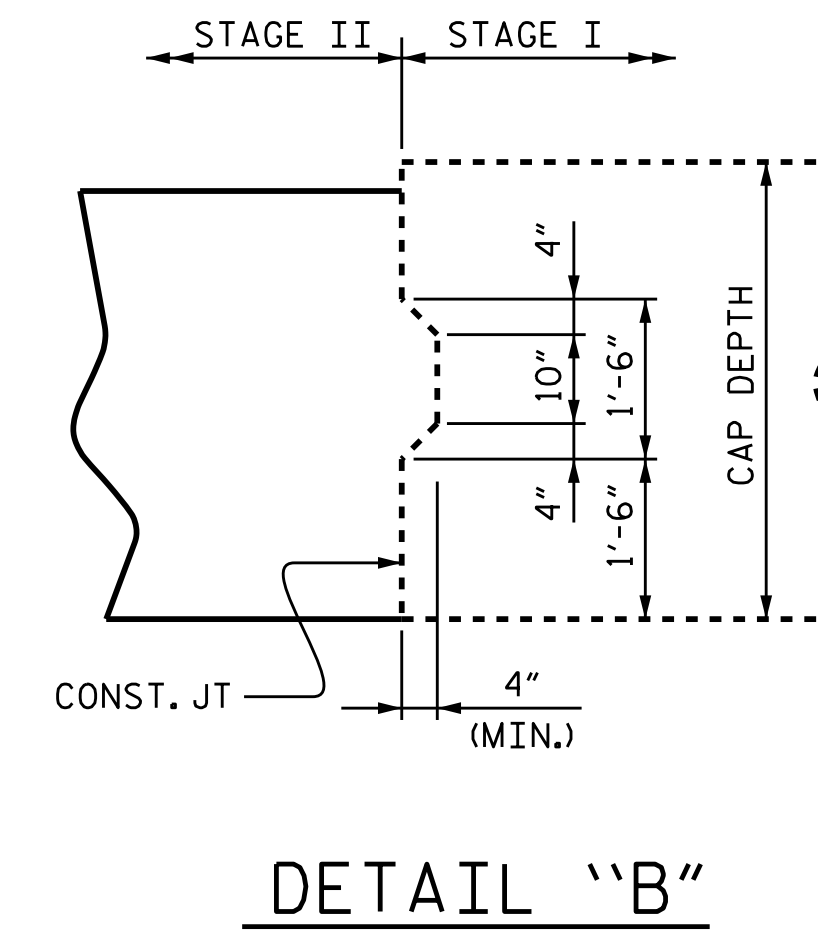
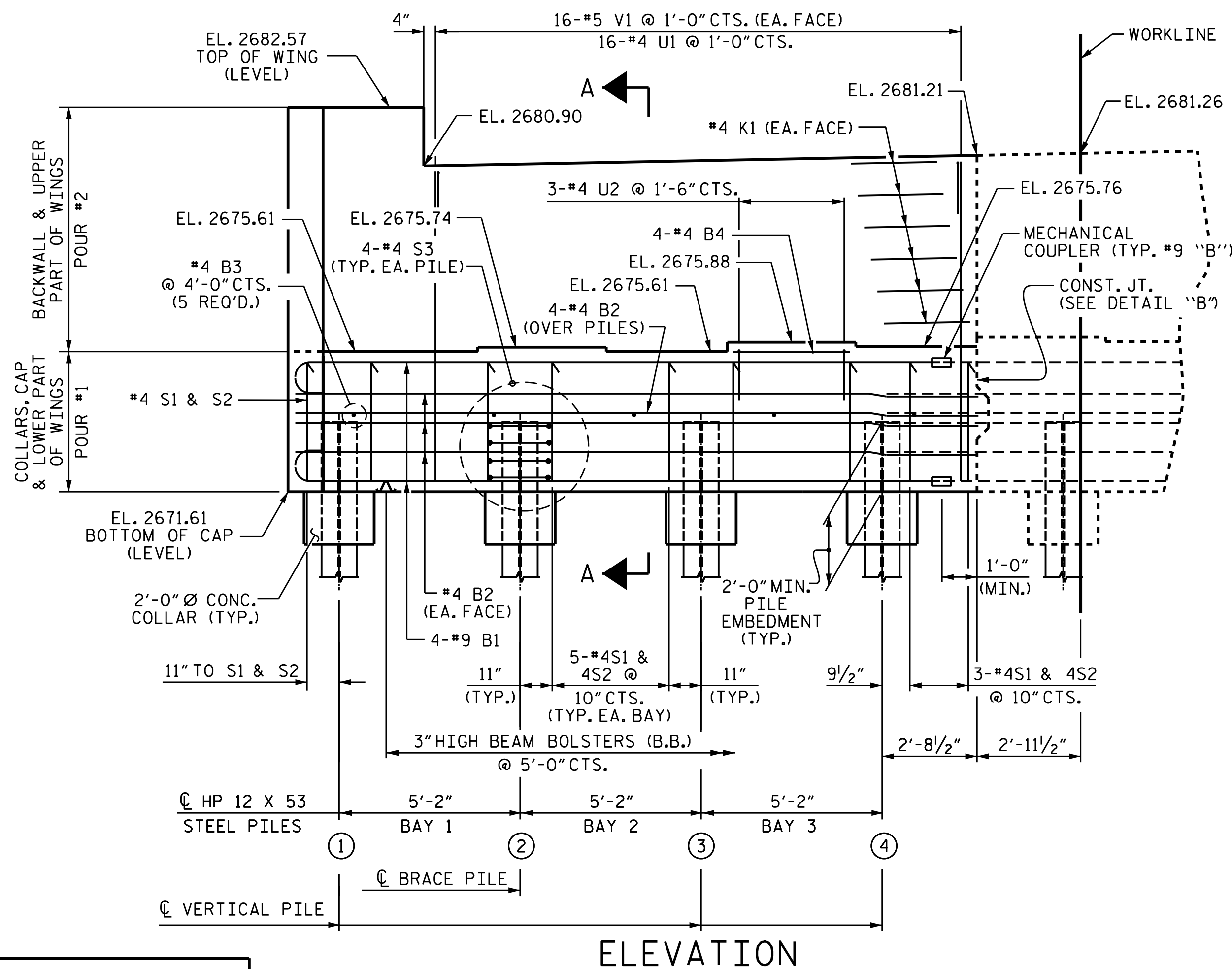
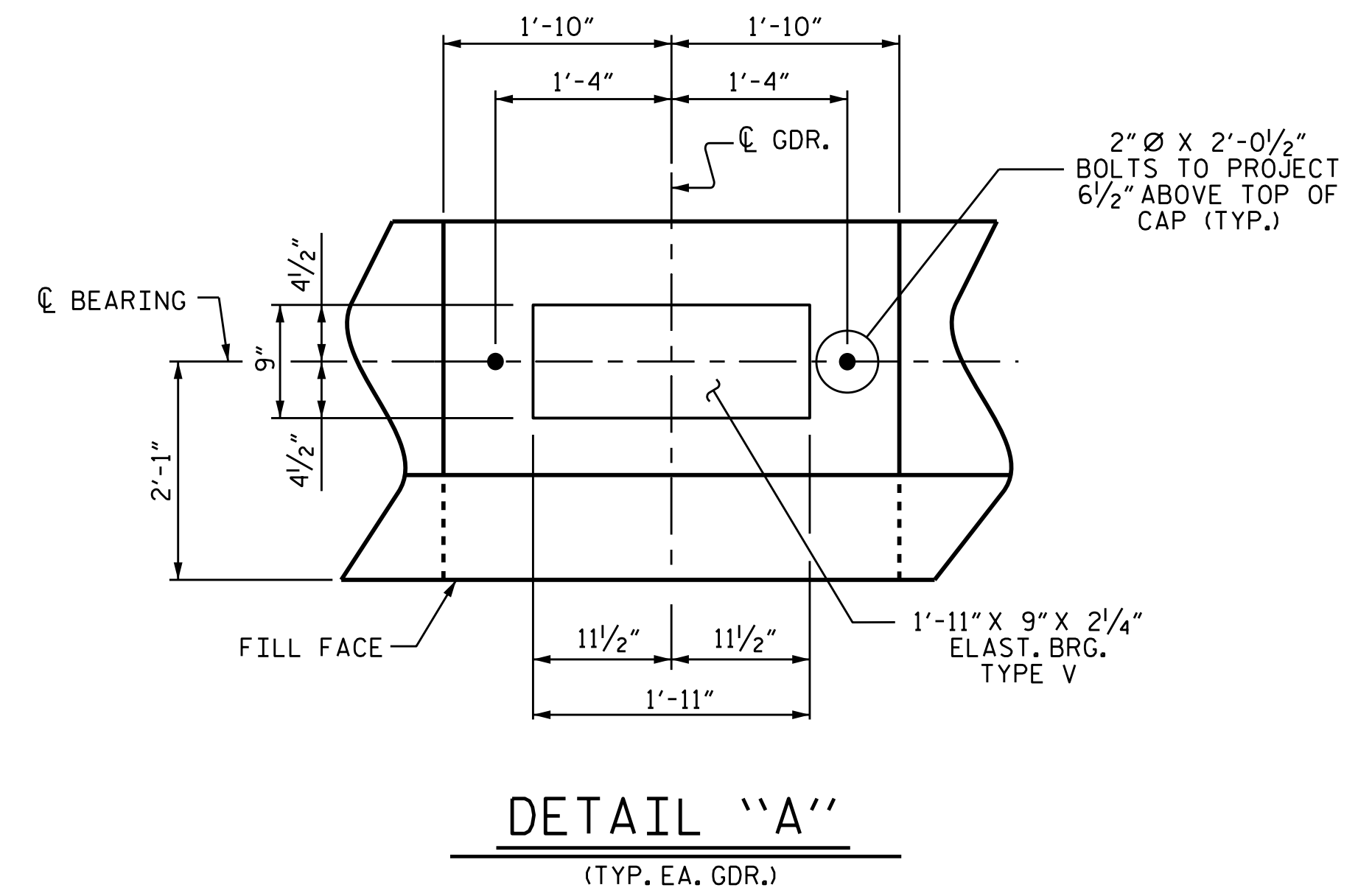
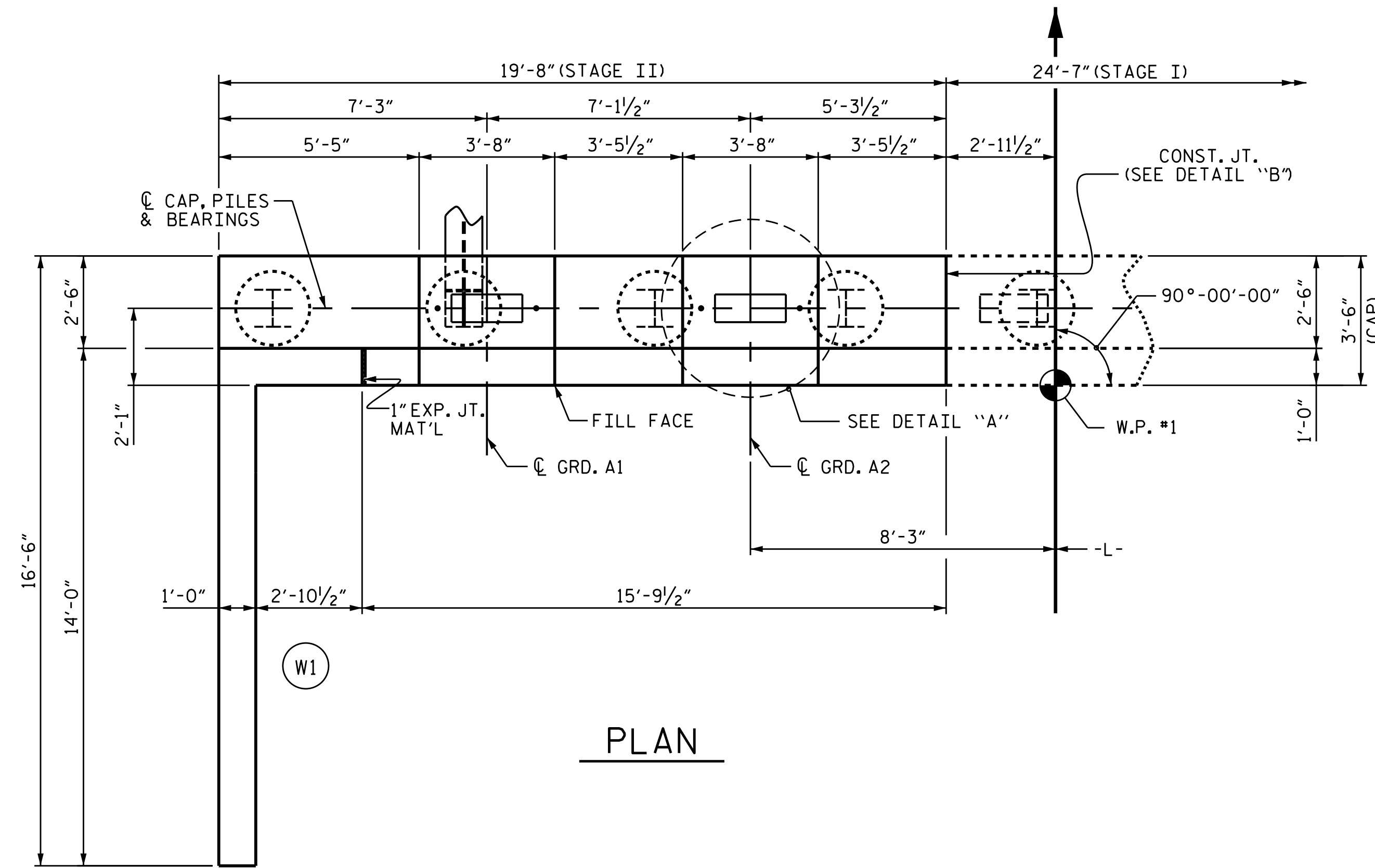
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 1
(STAGE I)**

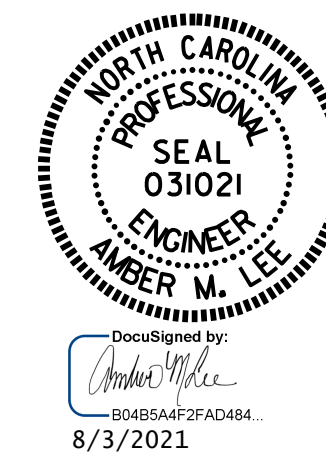
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DESIGN ENGINEER OF RECORD : J. TILLMAN DATE : 12/2019

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2			4			40



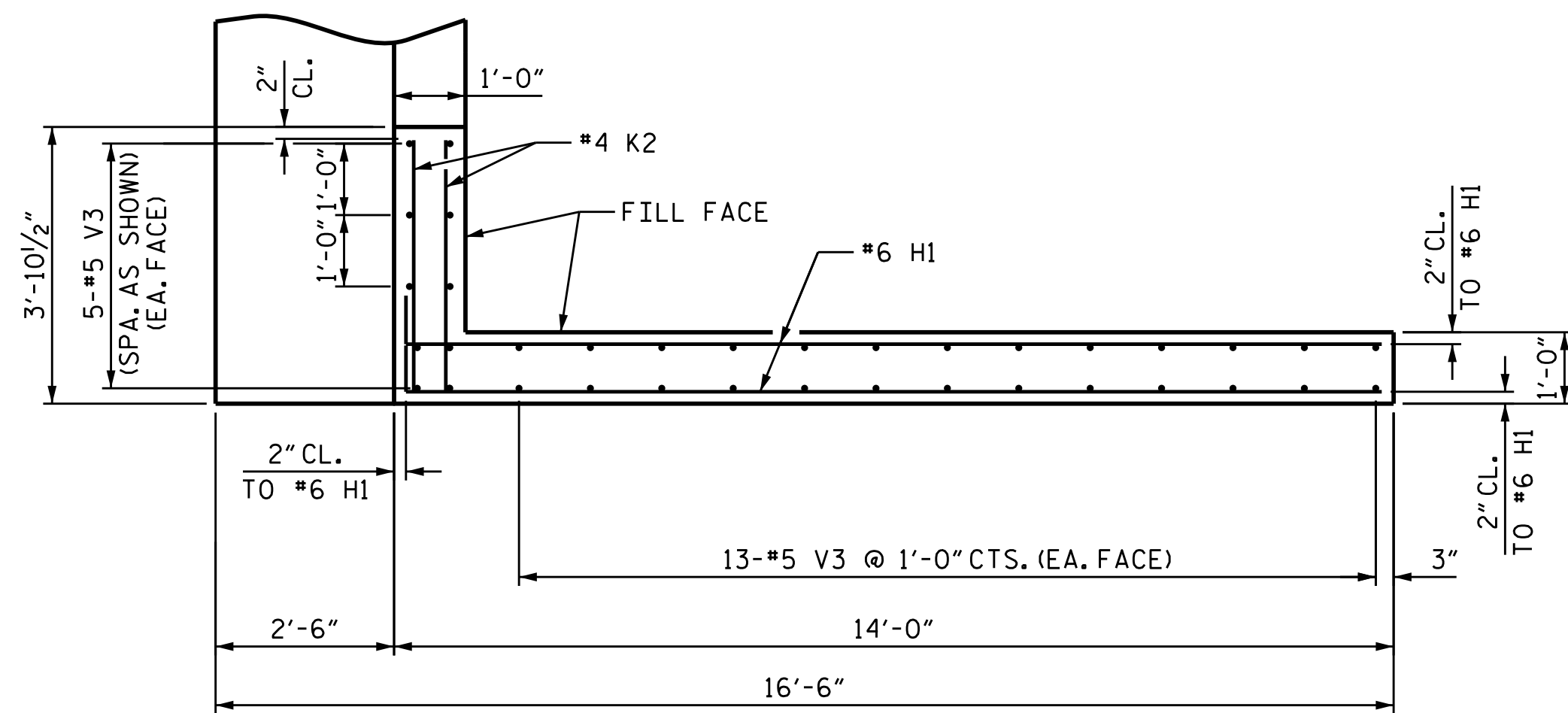
PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 2 OF 4



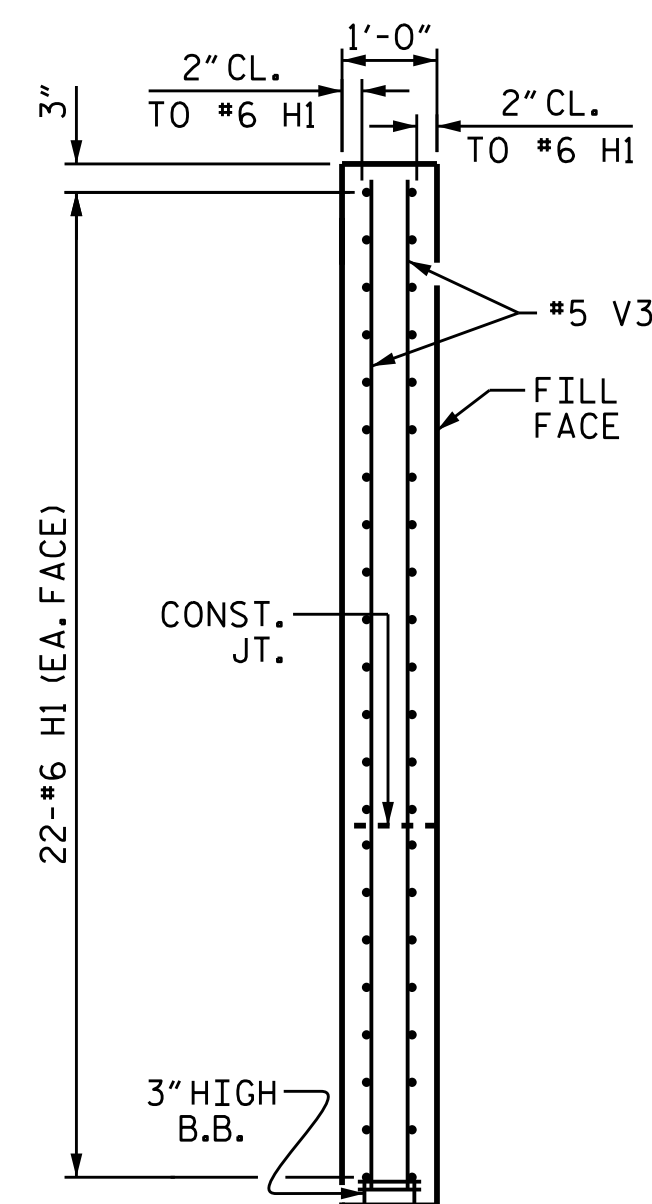
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 (STAGE II)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-25
					TOTAL SHEETS 40

DRAWN BY: A. SORSENGINH DATE: 06/2020
 CHECKED BY: K. PUROHIT DATE: 06/2020
 DESIGN ENGINEER OF RECORD: J. TILLMAN DATE: 12/2019

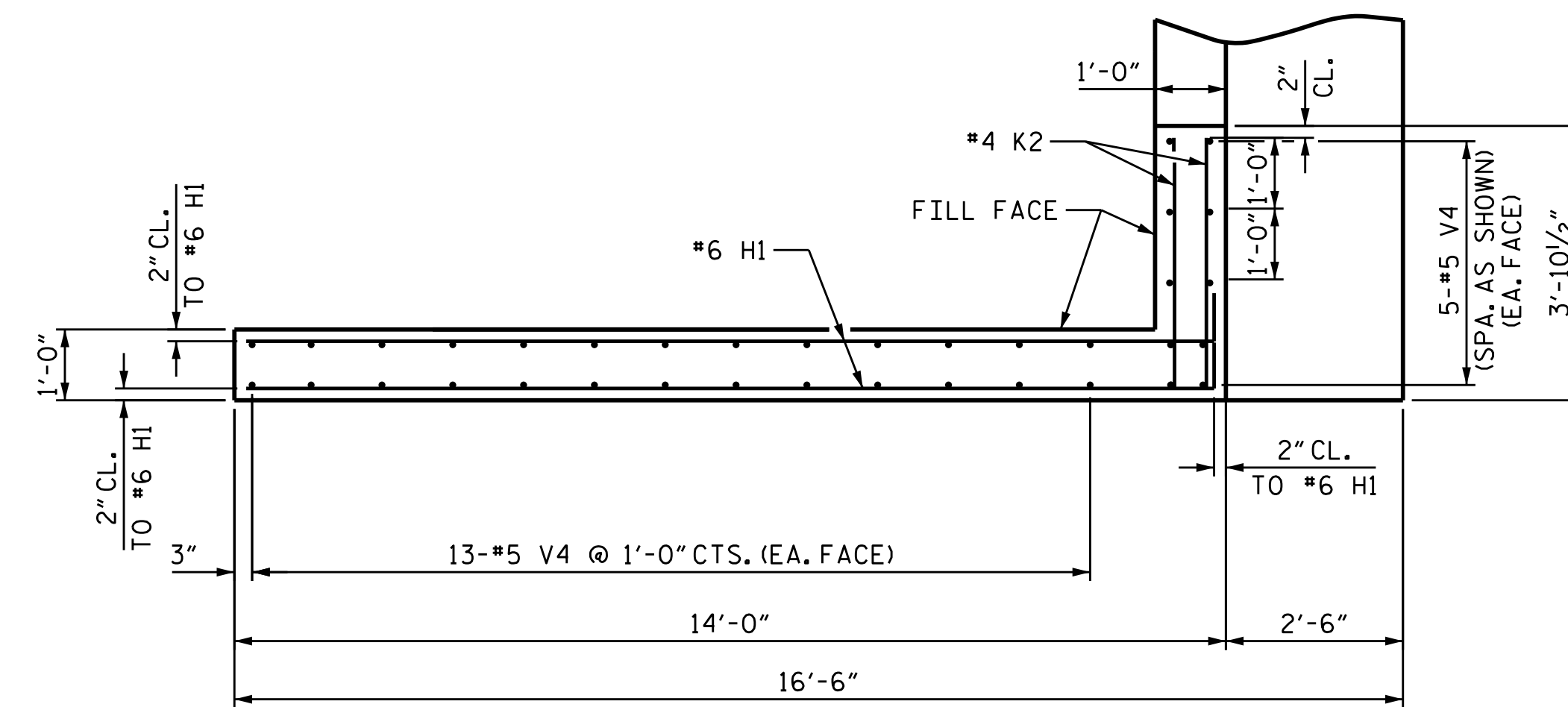
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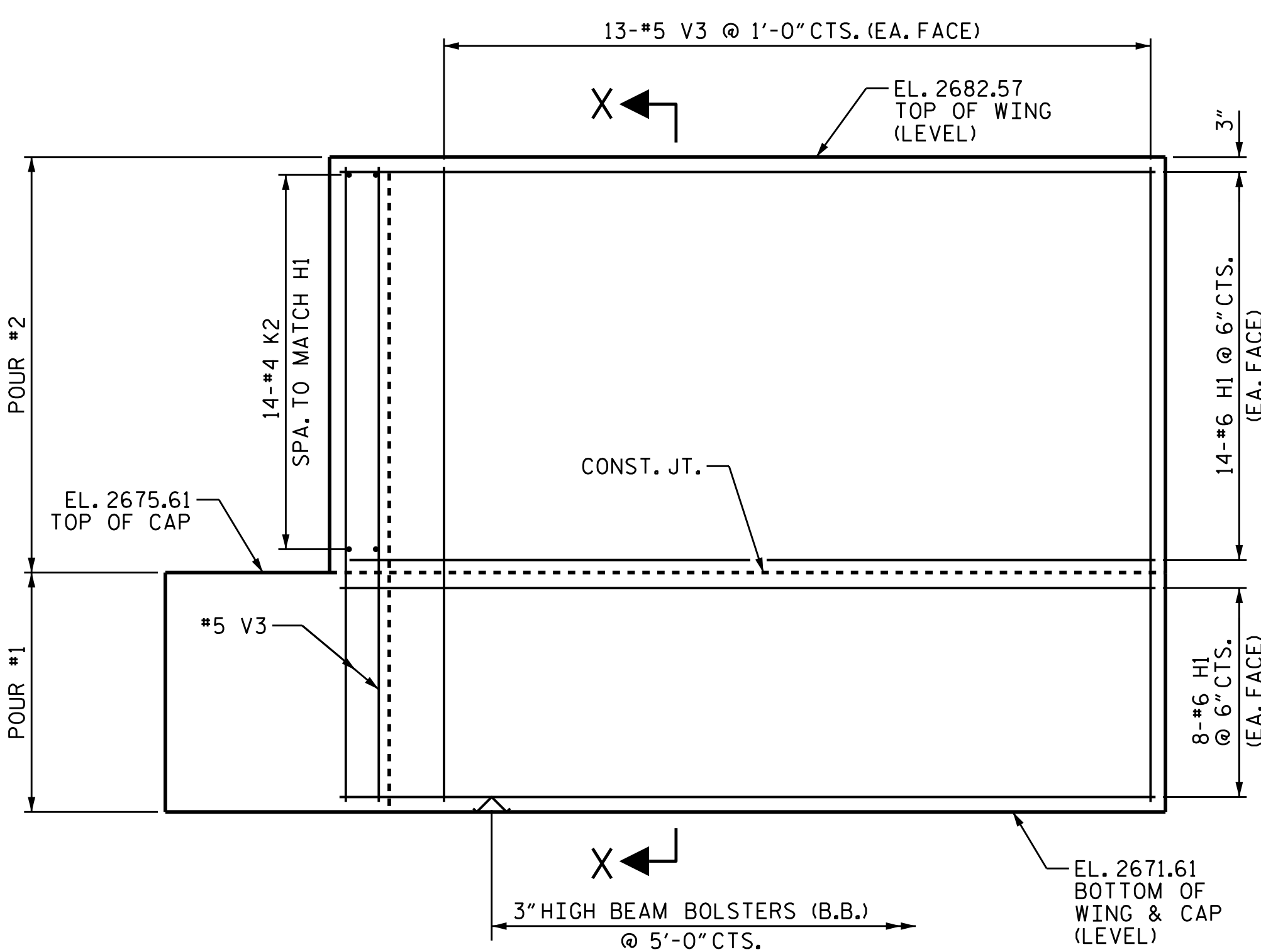
PLAN OF RIGHT WING - W1
(STAGE II)



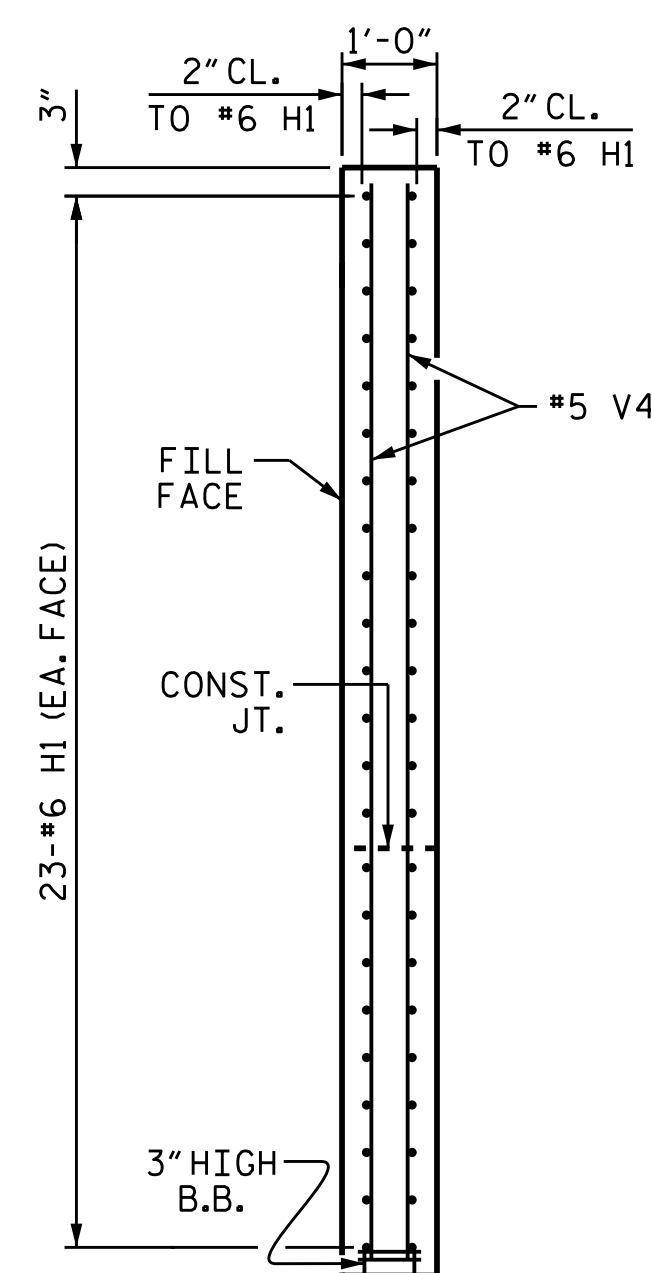
SECTION X-X



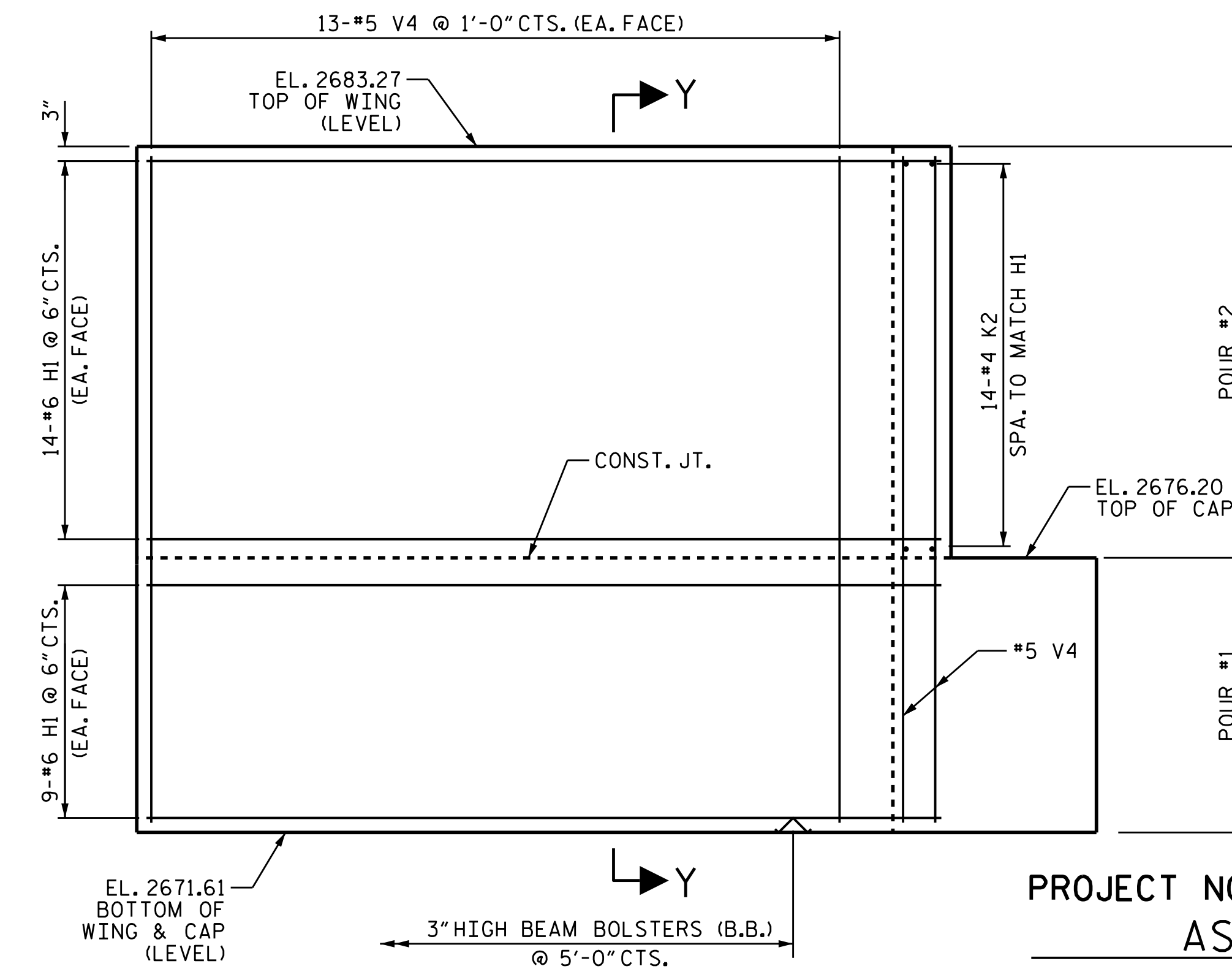
PLAN OF LEFT WING - W2
(STAGE I)



ELEVATION OF RIGHT WING - W1
(STAGE II)



SECTION Y-Y



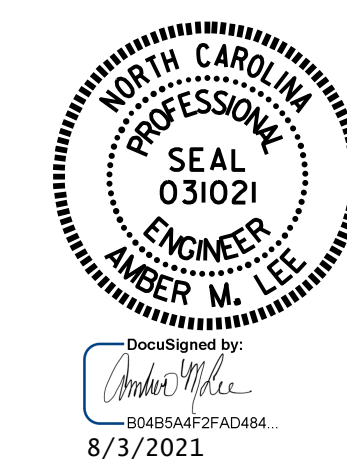
ELEVATION OF LEFT WING - W2
(STAGE I)

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

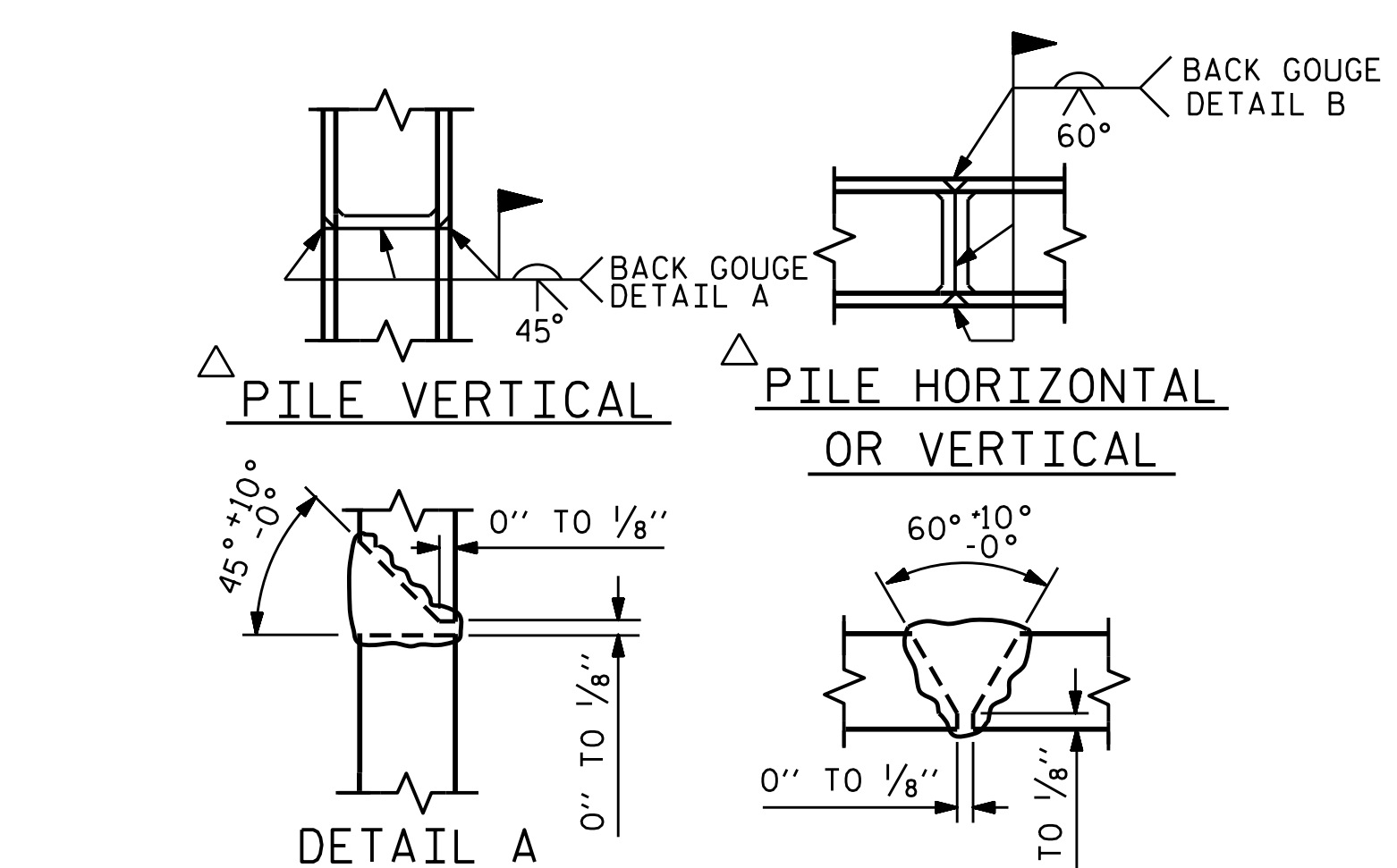
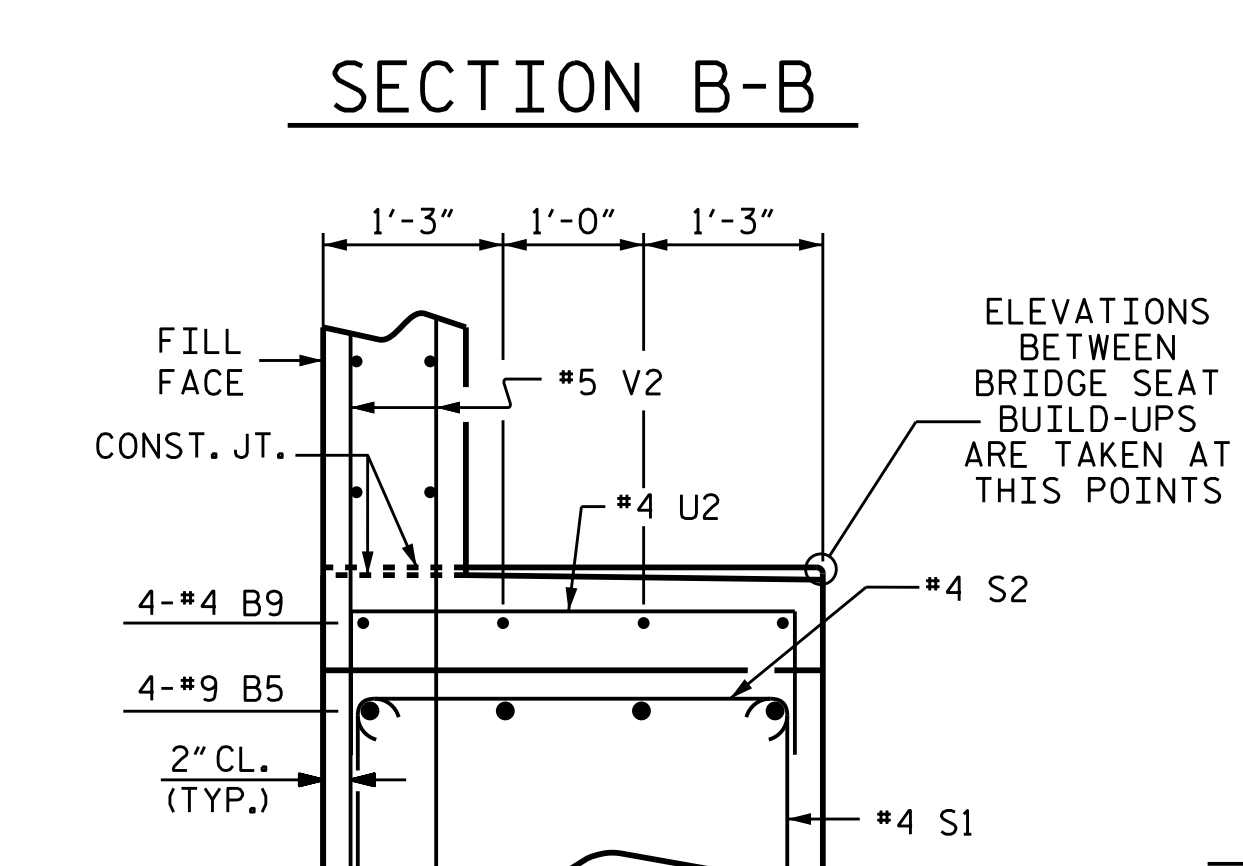
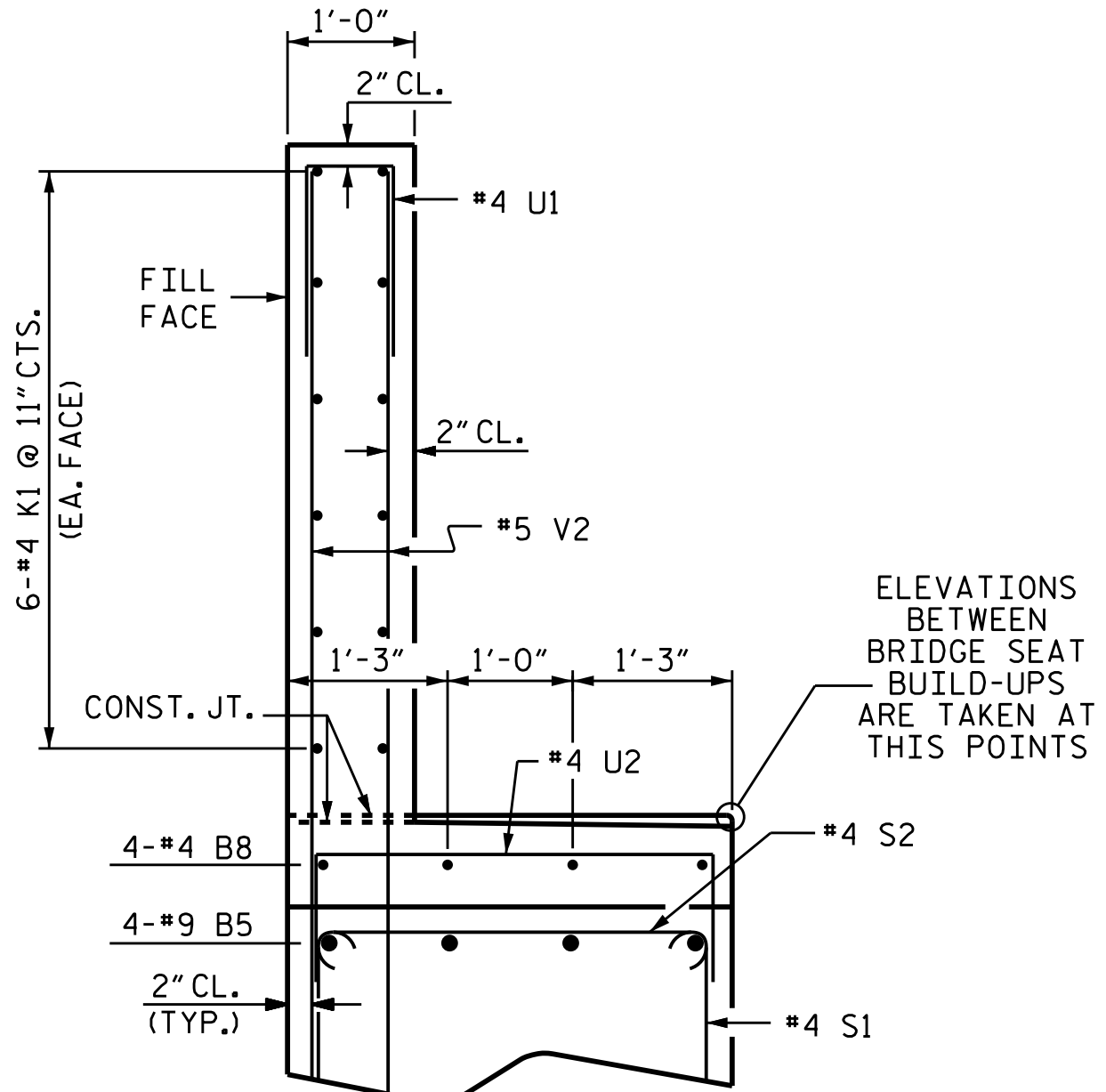
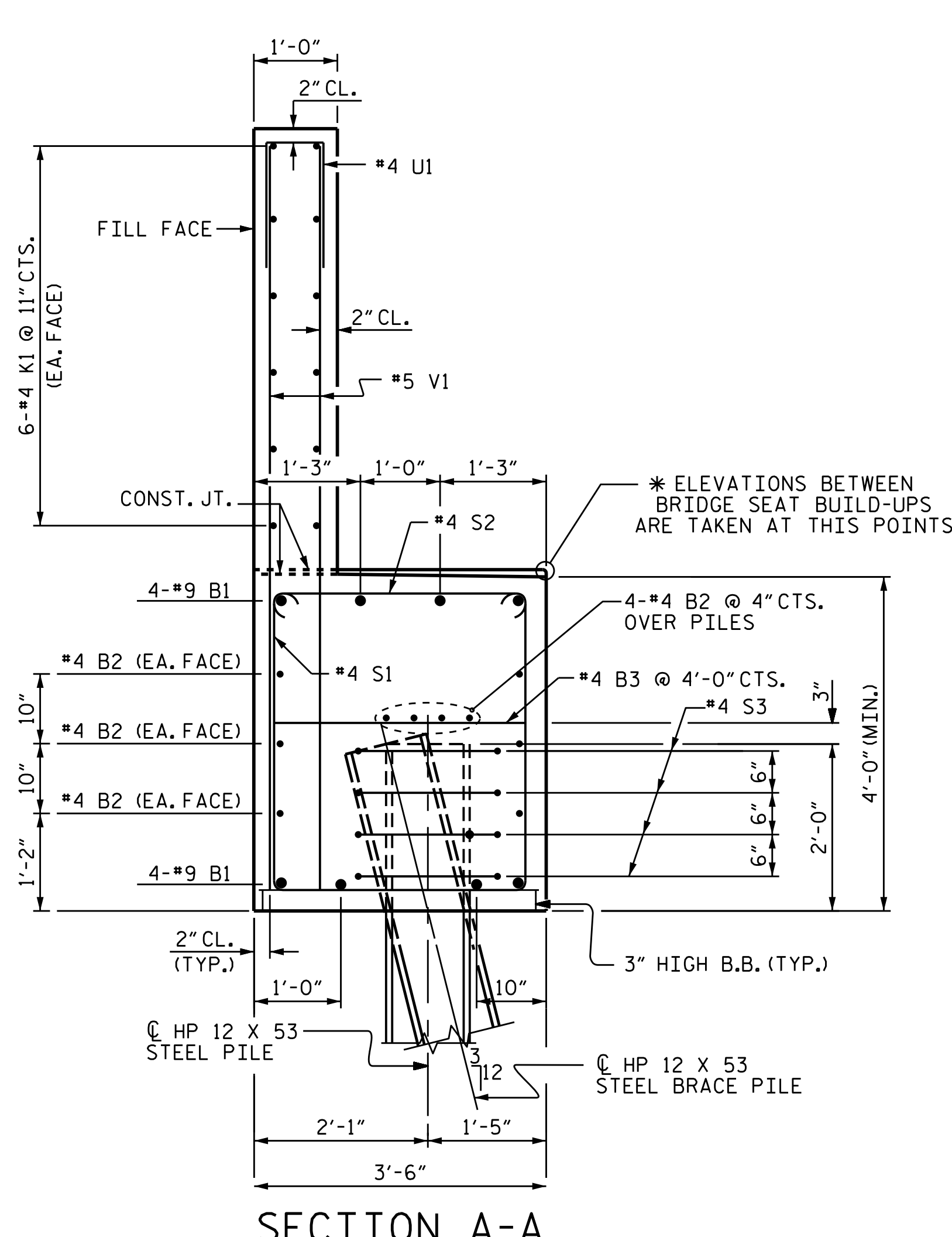
SUBSTRUCTURE
END BENT 1
(WINGS)



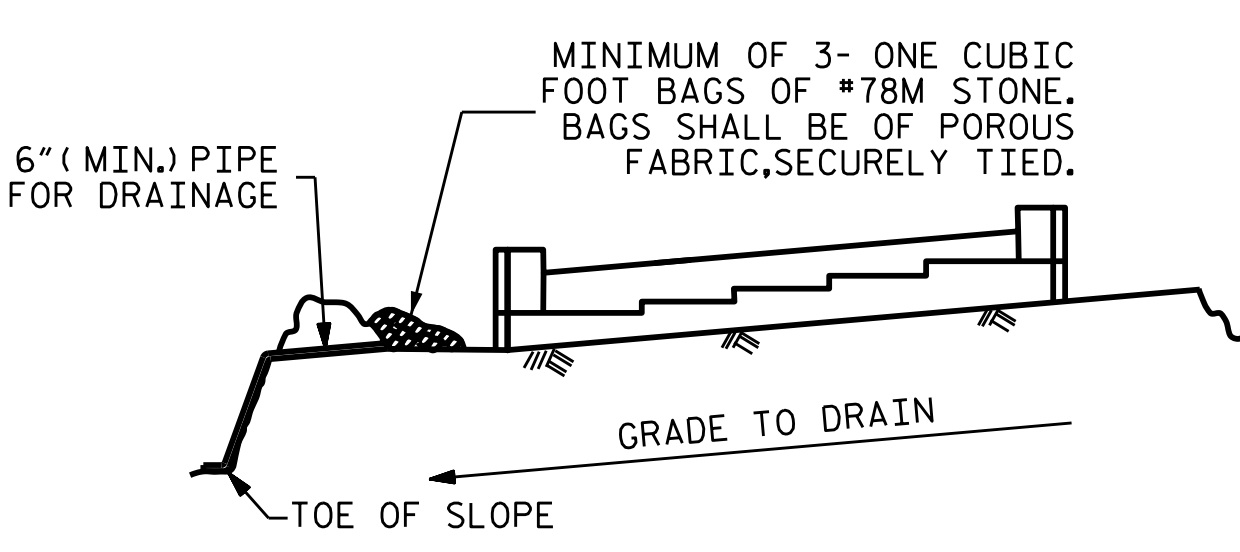
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2			4			40	



PILE SPLICE DETAILS

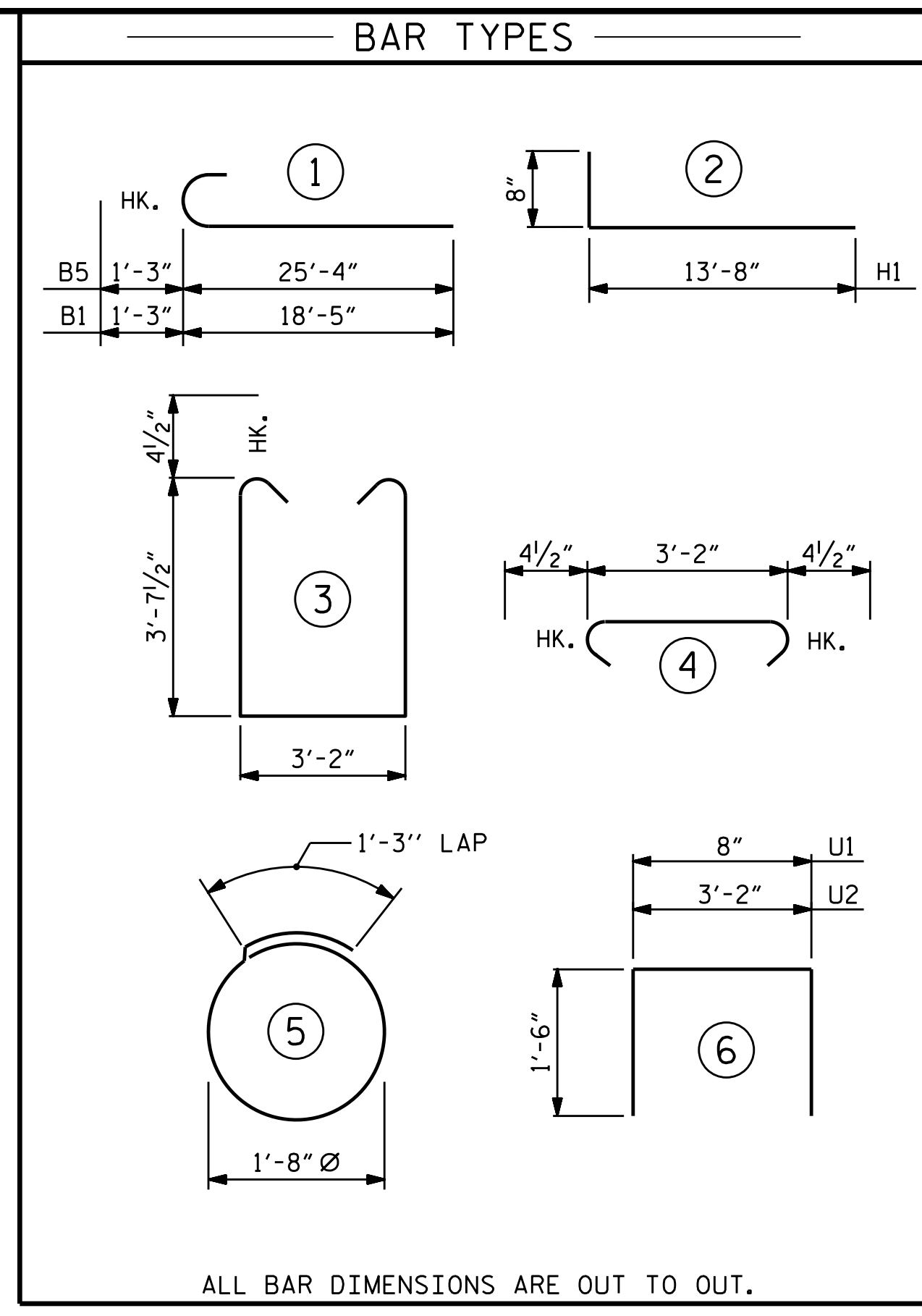


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

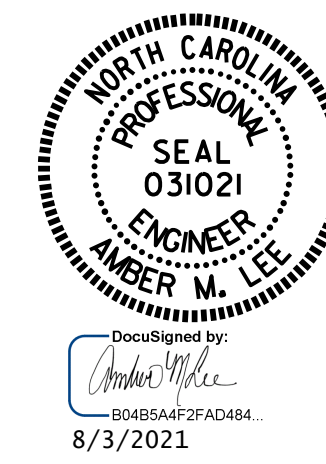


CORROSION PROTECTION FOR STEEL PILES DETAIL

BILL OF MATERIAL											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	8	#9	1	26'-7"	723	B1	8	#9	1	19'-8"	535
B6	10	#4	STR	27'-0"	180	B2	10	#4	STR	19'-6"	130
B7	6	#4	STR	3'-2"	13	B3	5	#4	STR	3'-2"	11
B8	4	#4	STR	7'-5"	20	B4	4	#4	STR	3'-4"	9
B9	4	#4	STR	16'-5"	44						
						H1	44	#6	2	14'-4"	947
						K1	12	#4	STR	19'-6"	156
						K2	28	#4	STR	3'-6"	65
						S1	19	#4	3	11'-2"	142
						S2	19	#4	4	3'-11"	50
						S3	16	#4	5	6'-6"	69
						U1	16	#4	6	3'-8"	39
						U2	3	#4	STR	6'-2"	12
						V1	32	#5	STR	8'-10"	295
						V4	36	#5	STR	10'-7"	397
REINFORCING STEEL					3515 LBS.	REINFORCING STEEL					2857 LBS.
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WING & COLLARS				17.4 C.Y.		POUR #1 CAP, LOWER PART OF WING & COLLARS				13.1 C.Y.	
POUR #2 BACKWALL & UPPER PART OF WING				8.5 C.Y.		POUR #2 BACKWALL & UPPER PART OF WING				7.5 C.Y.	
TOTAL CLASS A CONCRETE				25.9 C.Y.		TOTAL CLASS A CONCRETE				20.6 C.Y.	
HP 12 X 53 STEEL PILES						HP 12 X 53 STEEL PILES					
No. 5 _____ LIN FT. 80						No. 4 _____ LIN FT. 80					
STEEL PILE POINTS _____ NO. 5						STEEL PILE POINTS _____ NO. 4					
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES _____ 5 EA.						PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES _____ 4 EA.					

DRAWN BY : A. SORSENGINH DATE : 06/2020
 CHECKED BY : K. PUROHIT DATE : 06/2020
 DESIGN ENGINEER OF RECORD : J. TILLMAN DATE : 12/2019

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS 40	
2			4				



PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

NOTES

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

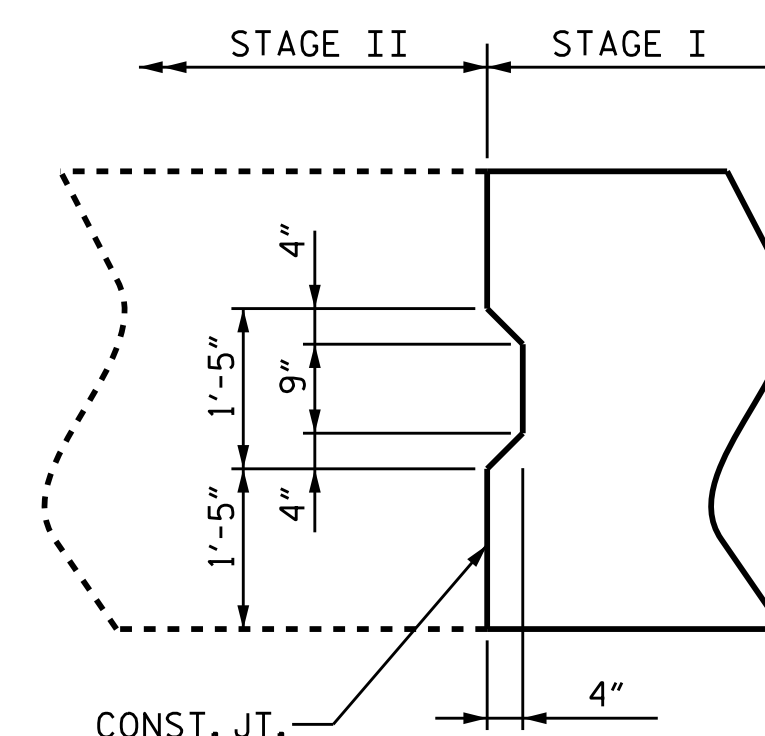
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

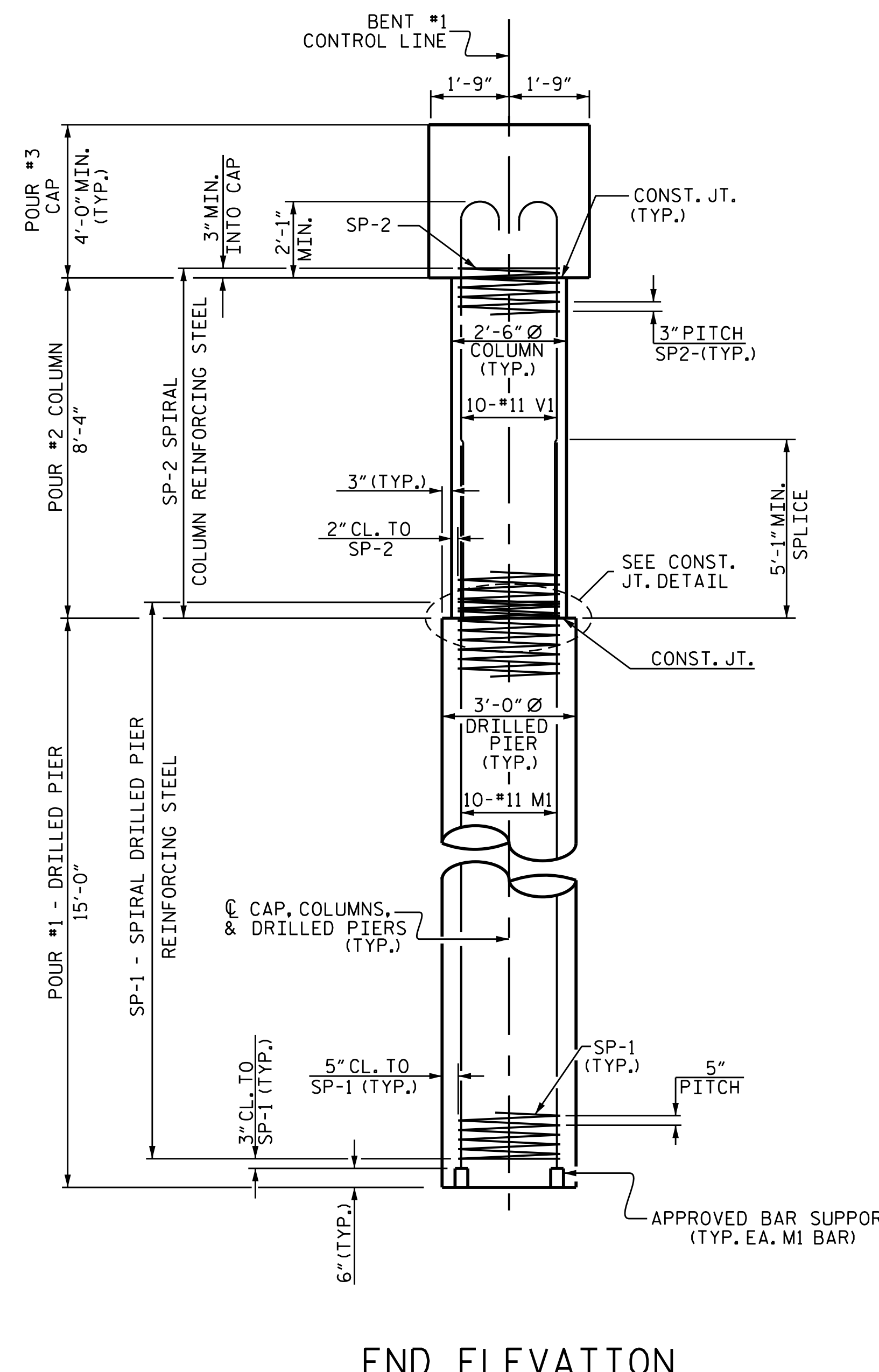
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

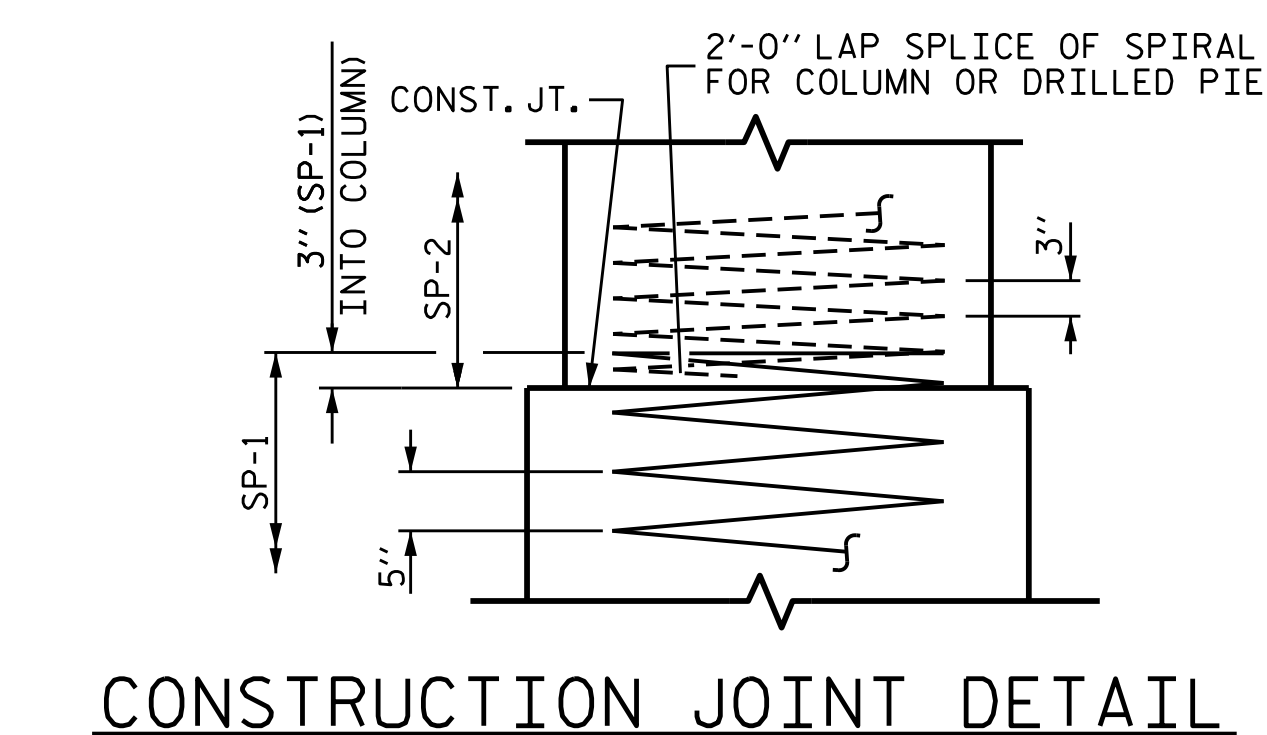
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



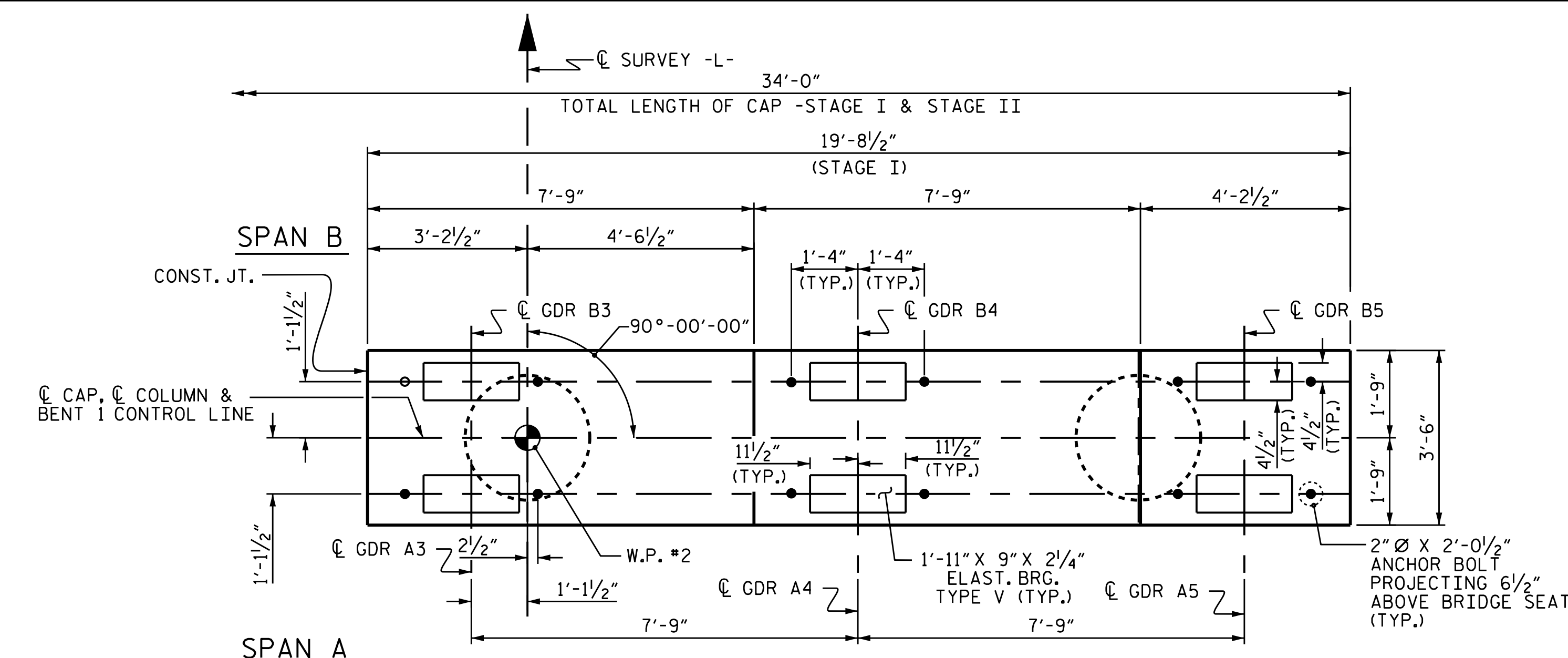
DETAIL 'A'



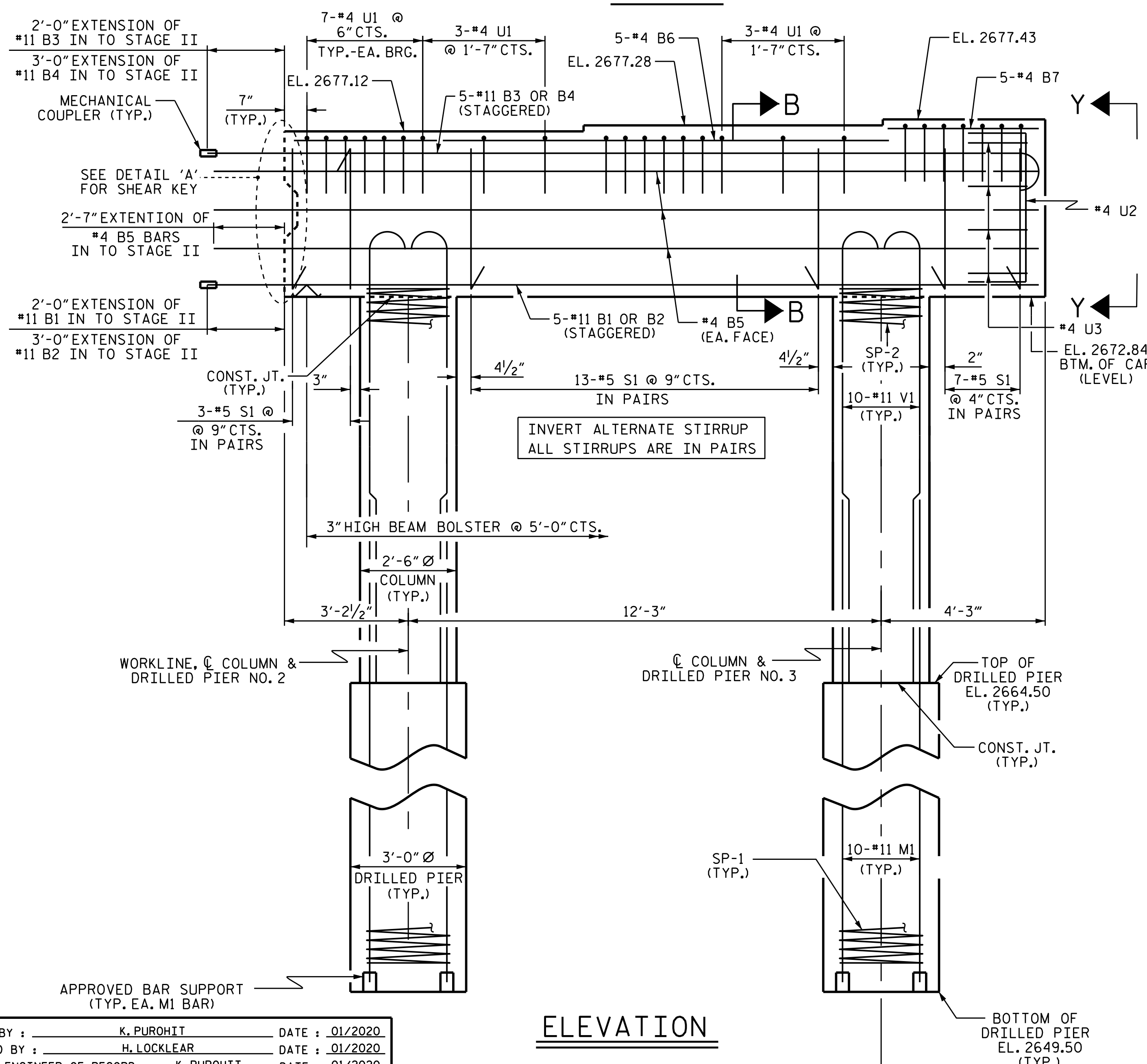
END ELEVATION



CONSTRUCTION JOINT DETAIL



PLAN



ELEVATION

PROJECT NO. BR-0002

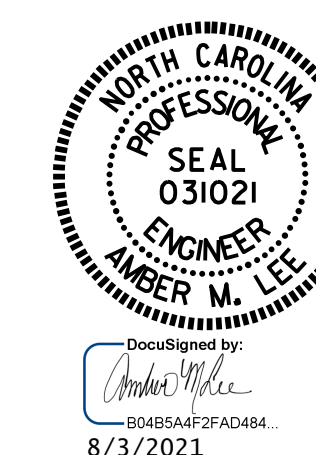
ASHE COUNTY

STATION: 23+80.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
STAGE I



DocuSigned by:
Amber M. Lee
B04B8A8F2FAD484
8/3/2021

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			40

DRAWN BY: K. PUROHIT DATE: 01/2020
CHECKED BY: H. LOCKLEAR DATE: 01/2020
DESIGN ENGINEER OF RECORD: K. PUROHIT DATE: 01/2020

NOTES

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

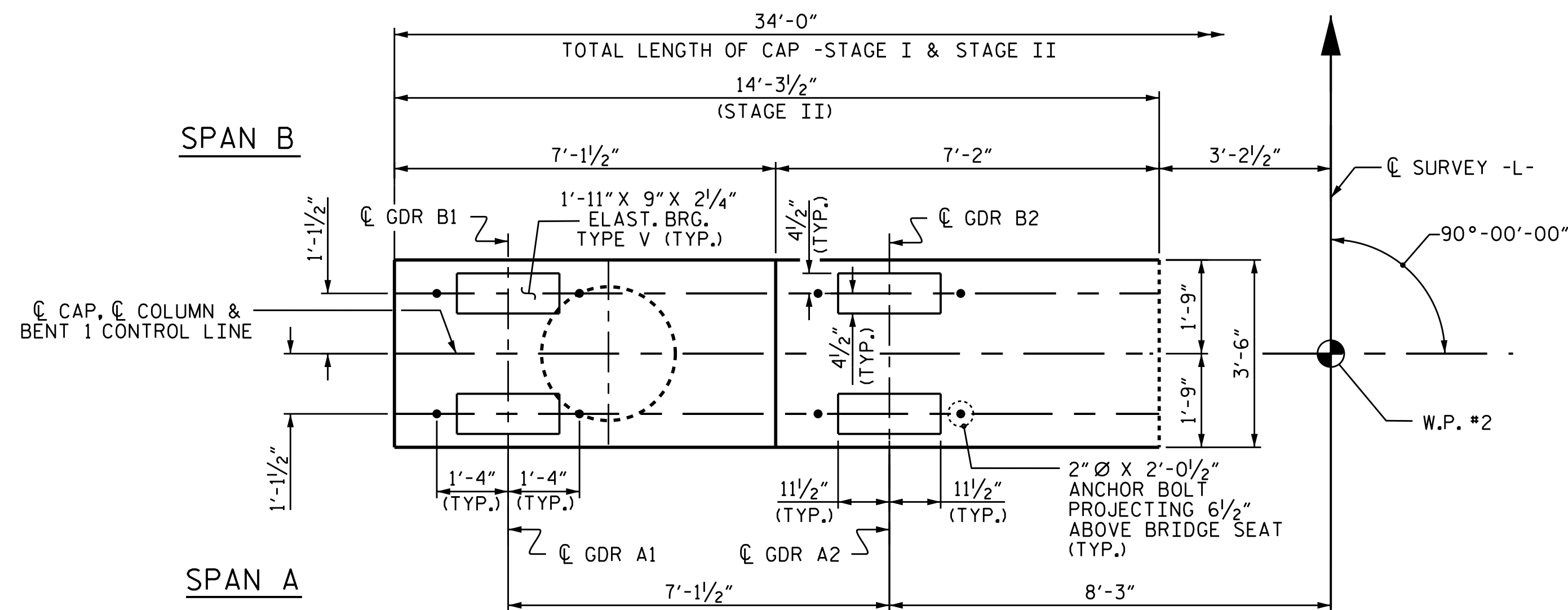
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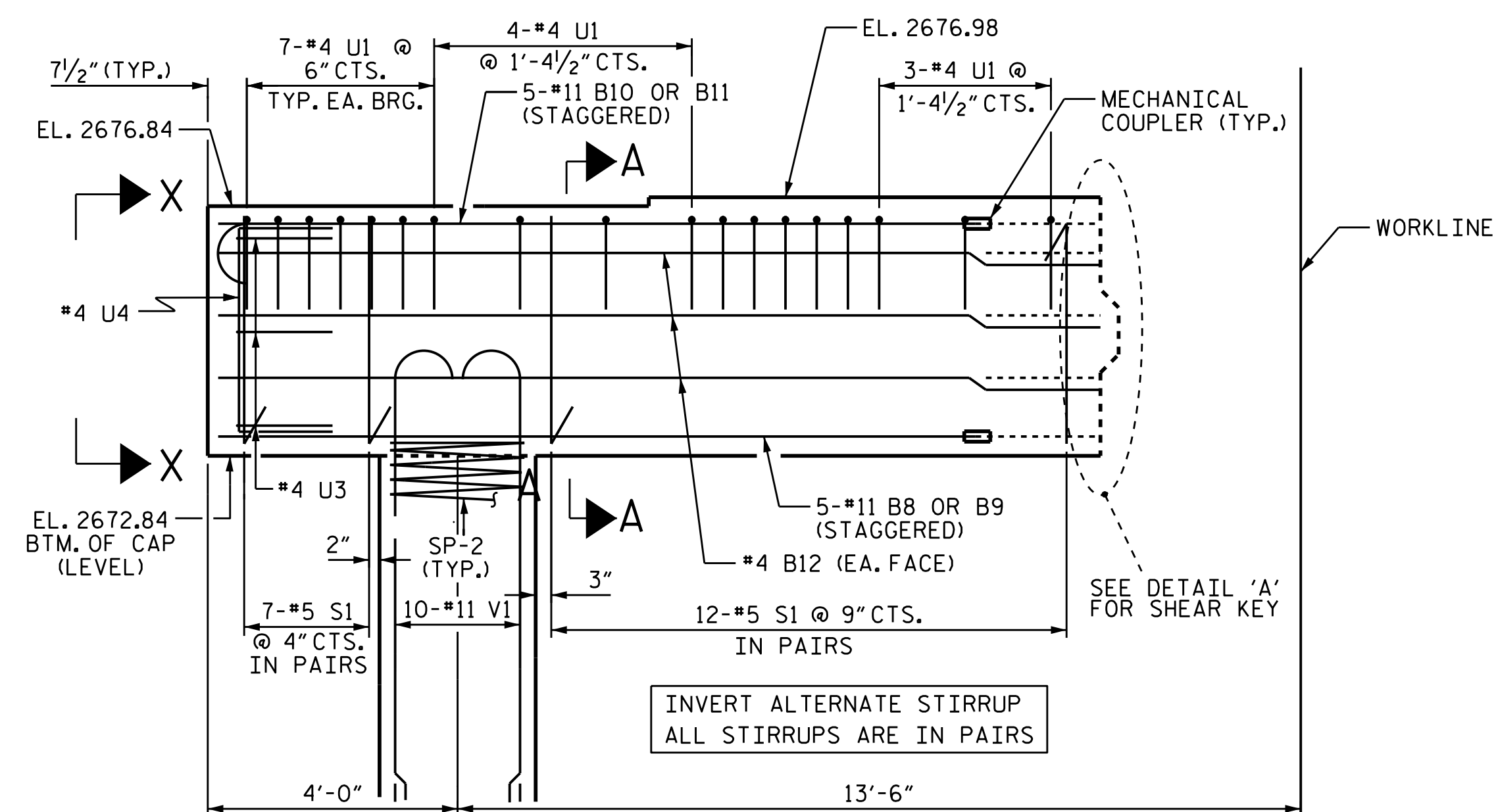
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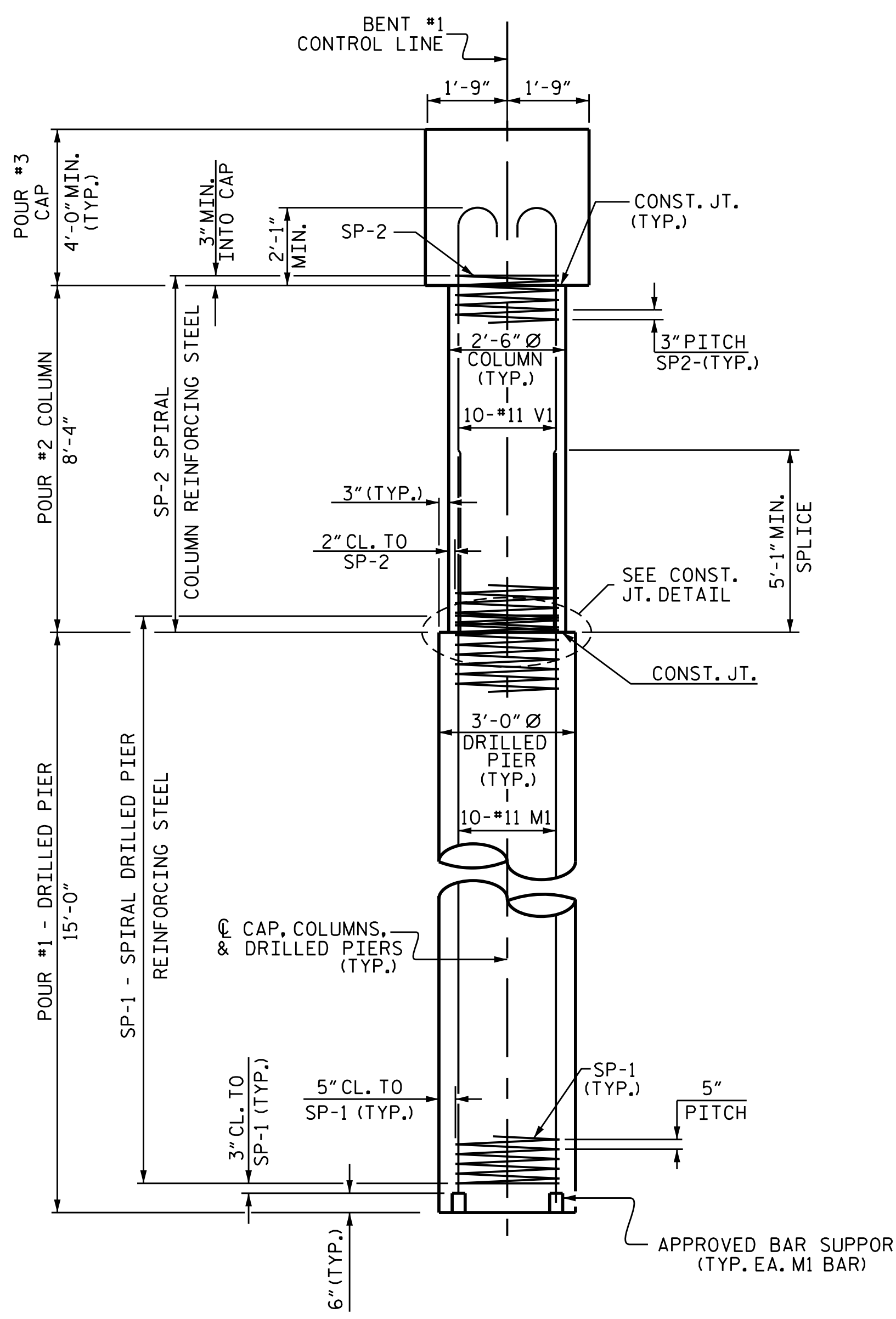
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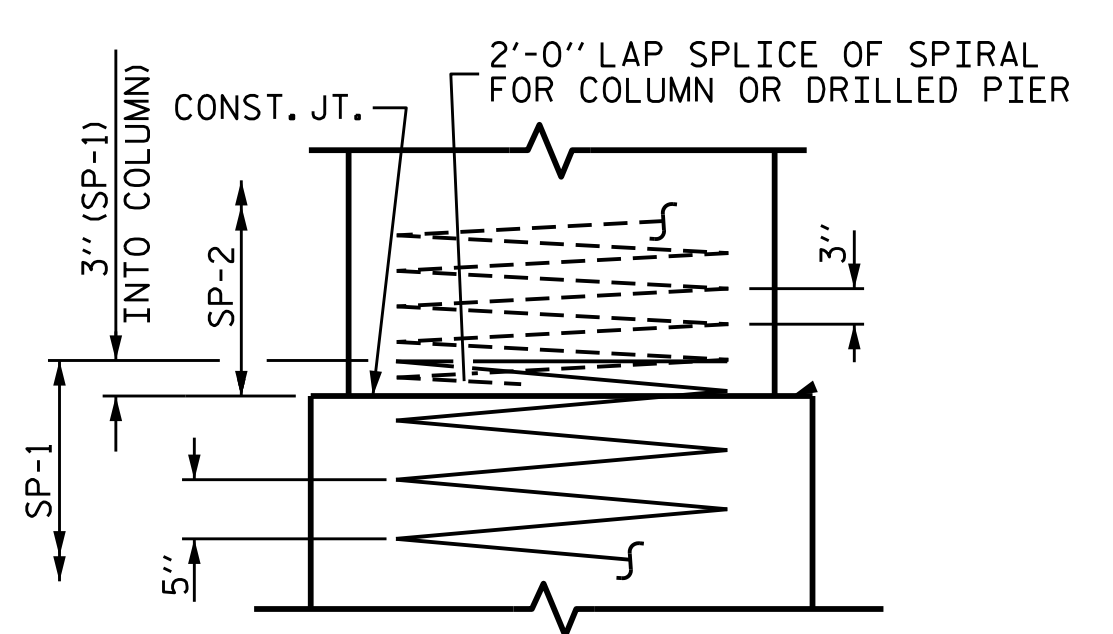
PLAN



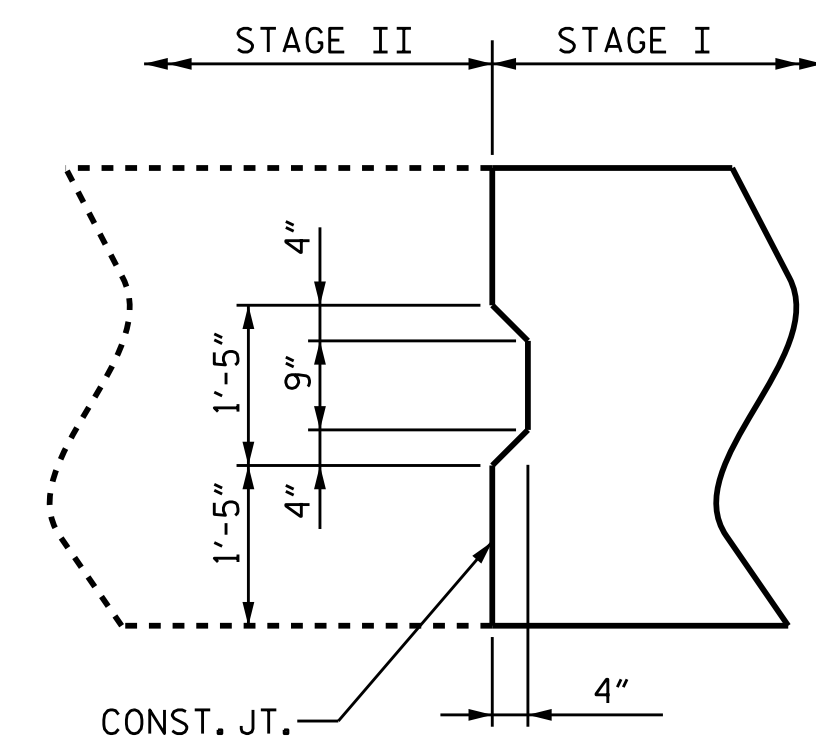
ELEVATION



END ELEVATION

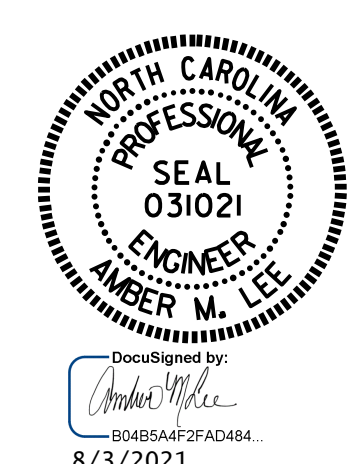


CONSTRUCTION JOINT DETAIL



DETAIL 'A'

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 STAGE II

DRAWN BY: K. PUROHIT DATE: 01/2020
 CHECKED BY: H. LOCKLEAR DATE: 01/2020
 DESIGN ENGINEER OF RECORD: K. PUROHIT DATE: 01/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			40

NOTES

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

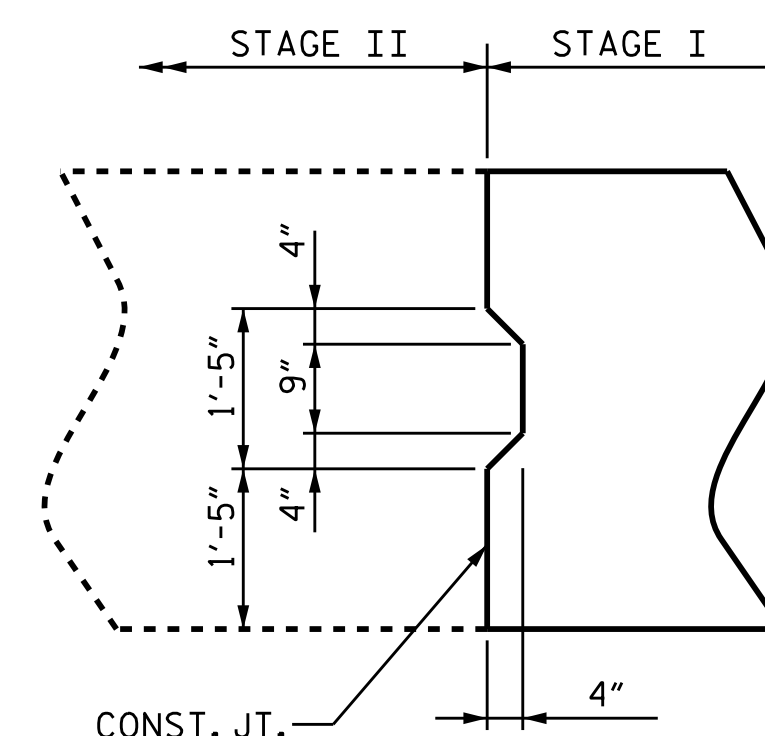
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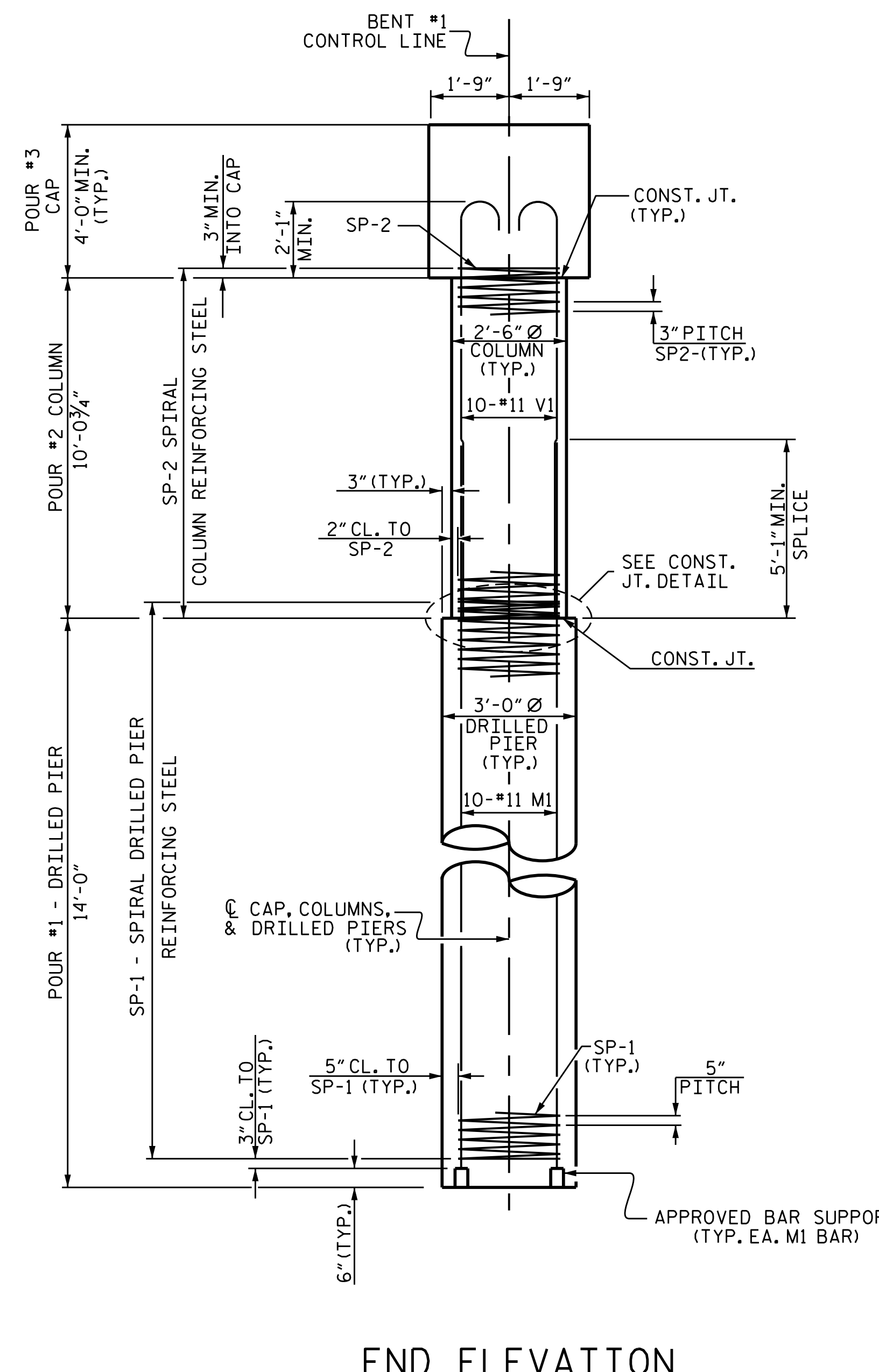
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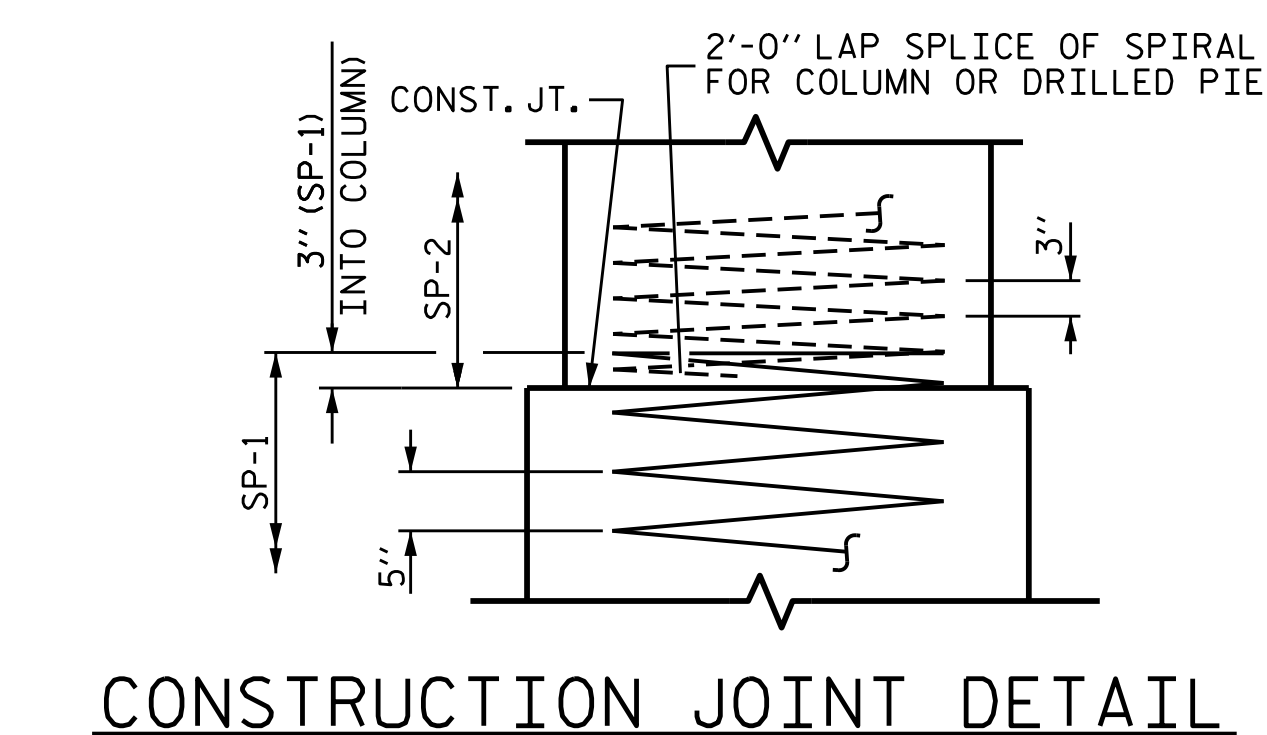
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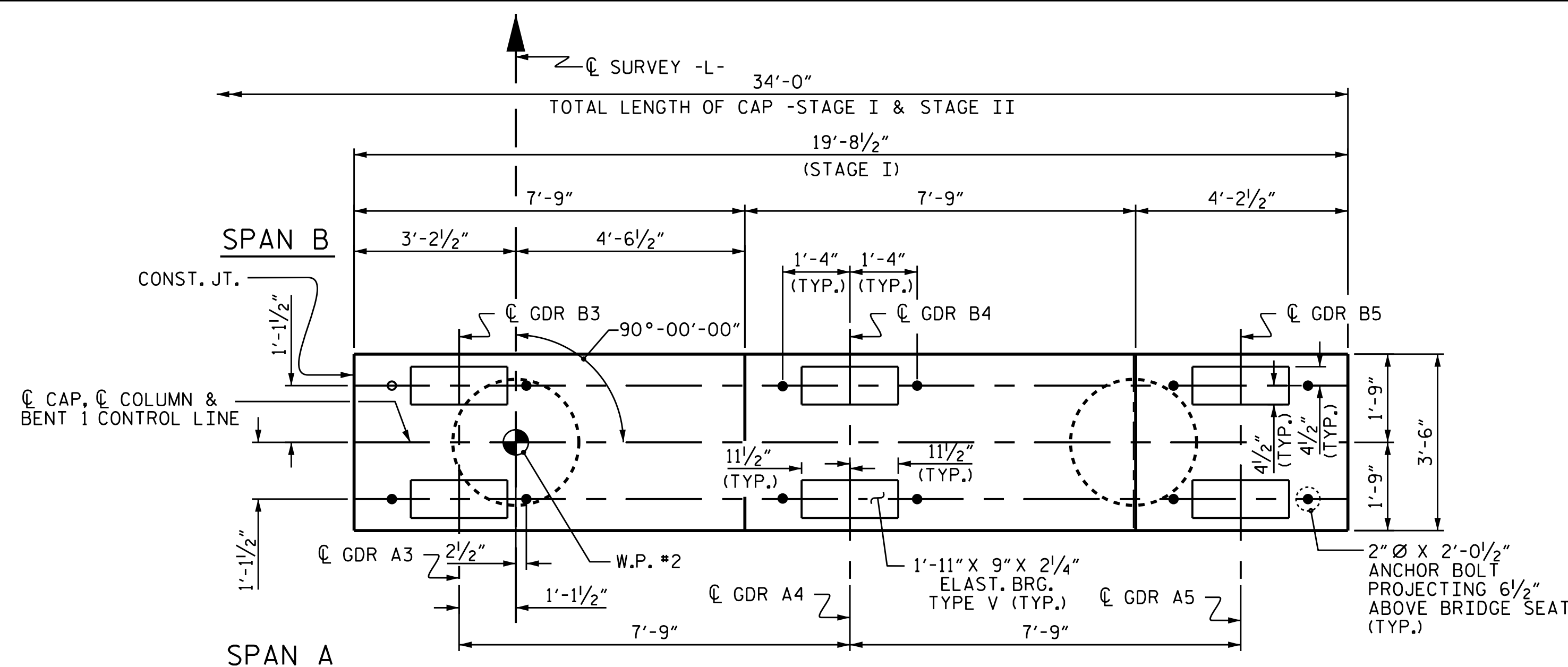
DETAIL 'A'



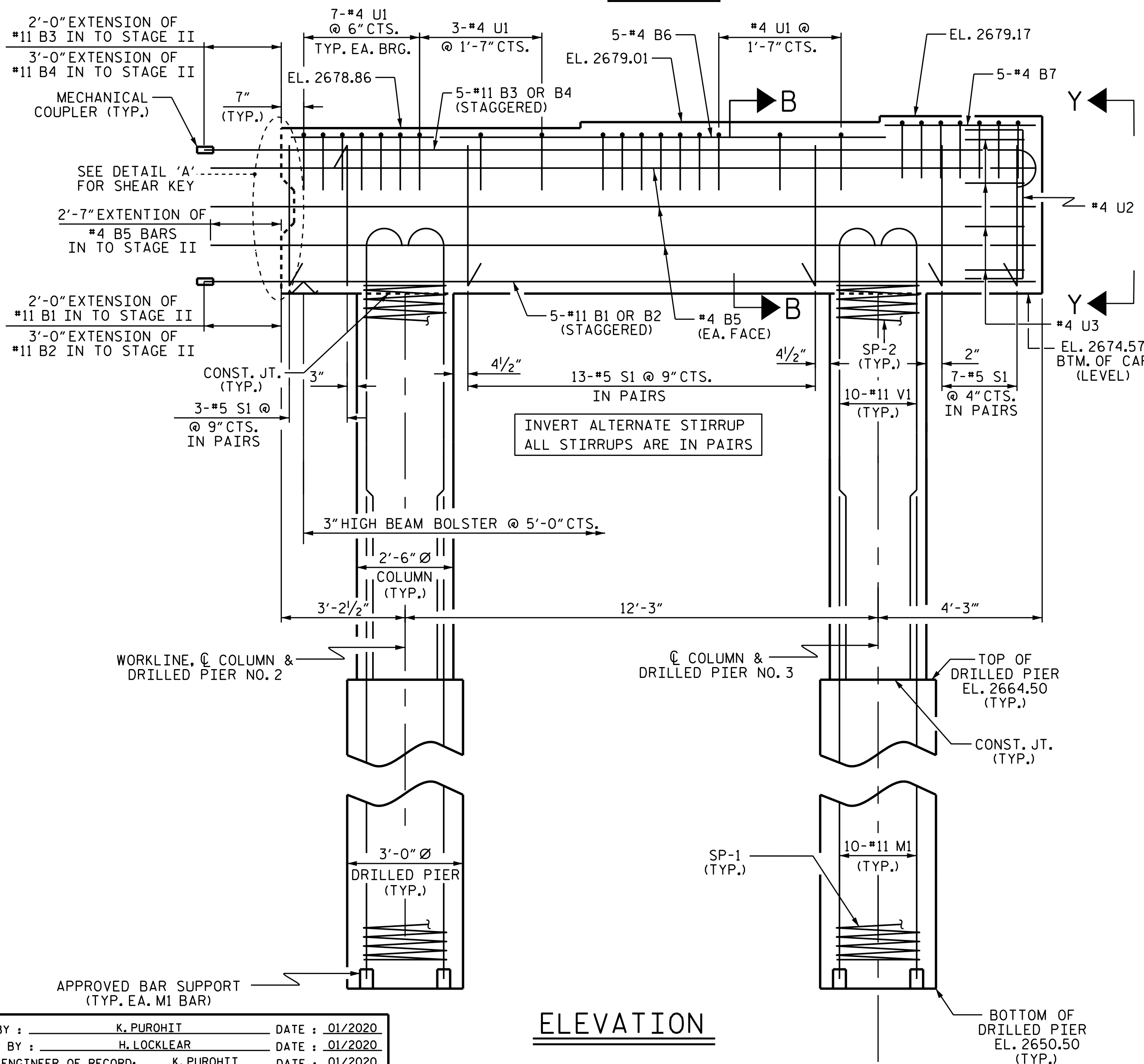
END ELEVATION



CONSTRUCTION JOINT DETAIL



PLAN



ELEVATION

PROJECT NO. BR-0002

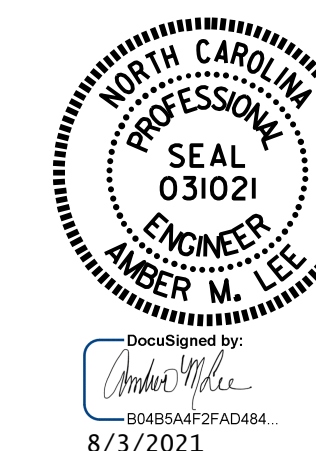
ASHE COUNTY

STATION: 23+80.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2
STAGE I



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			40

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: K. PUROHIT DATE: 01/2020
CHECKED BY: H. LOCKLEAR DATE: 01/2020
DESIGN ENGINEER OF RECORD: K. PUROHIT DATE: 01/2020

NOTES

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

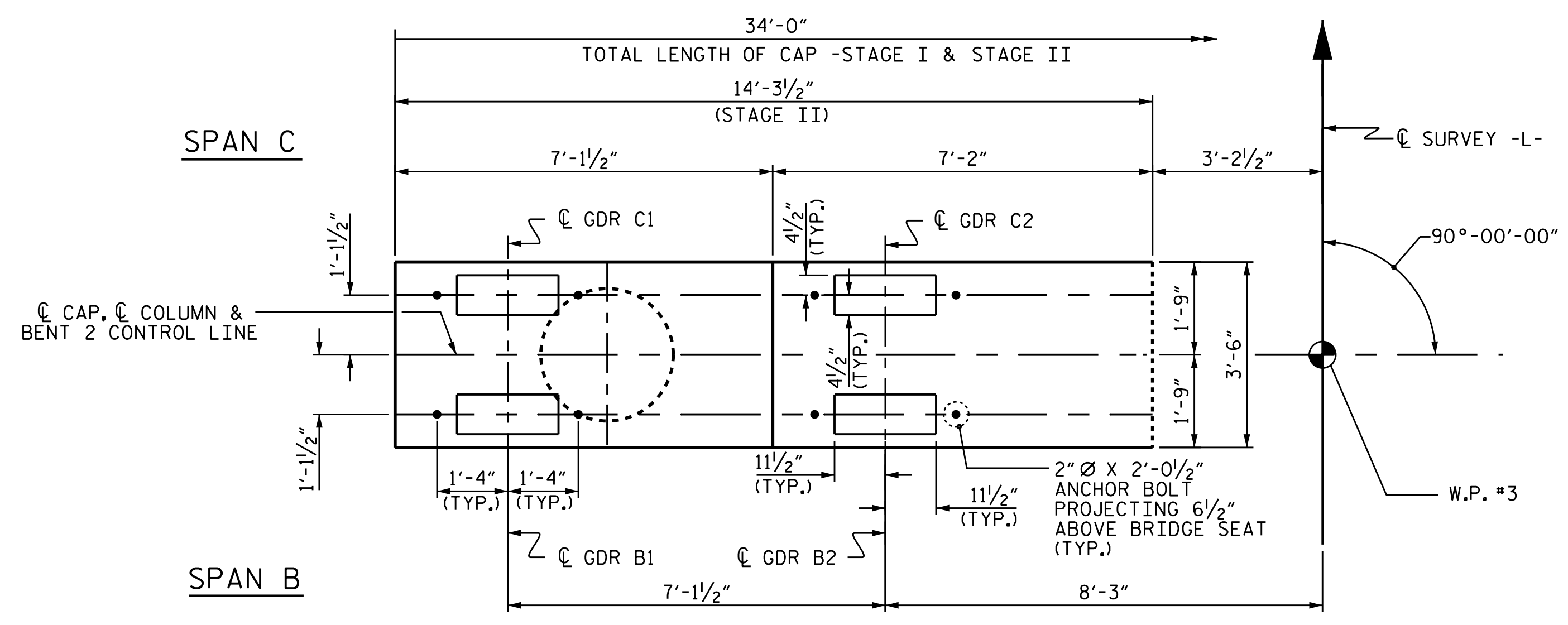
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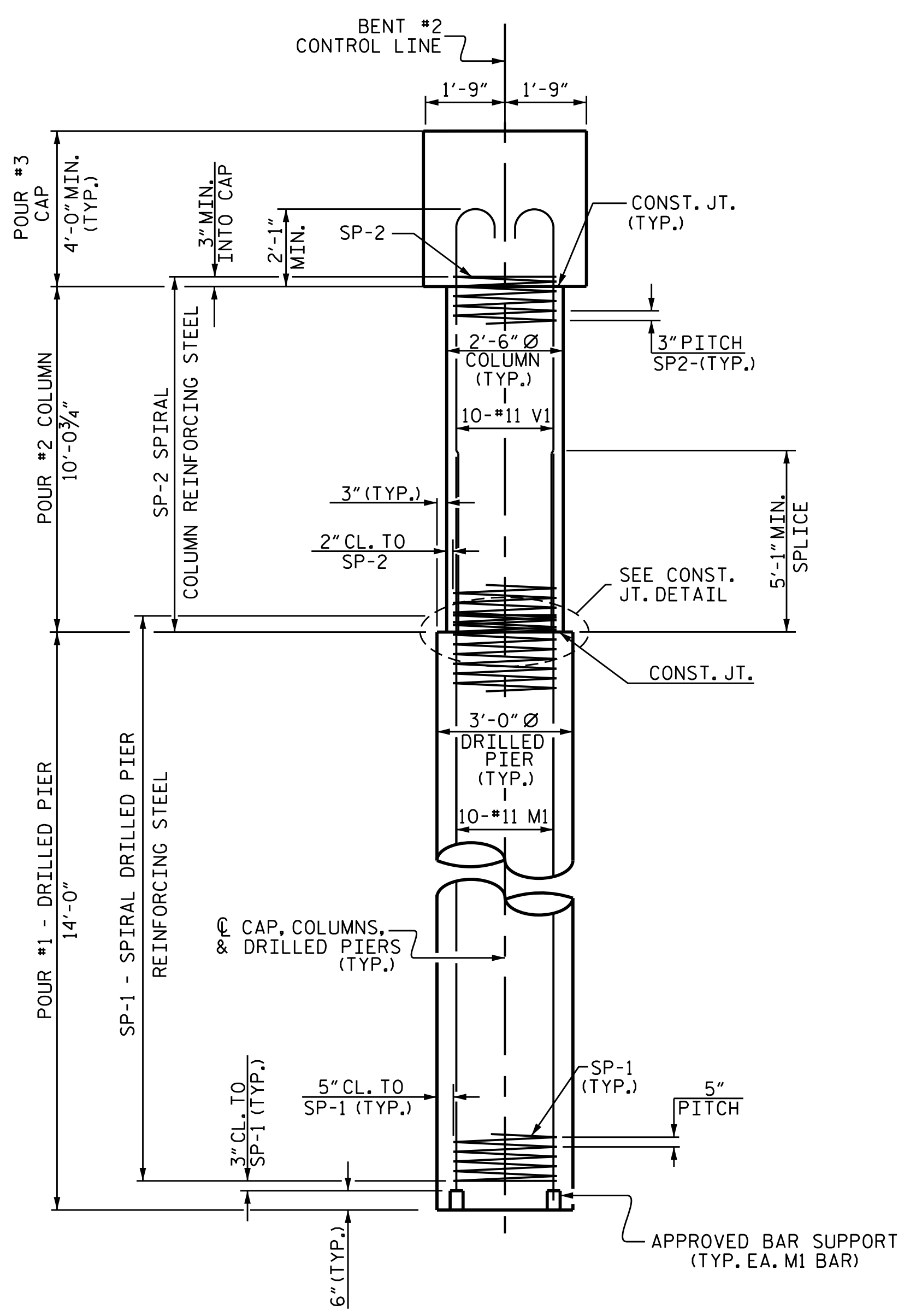
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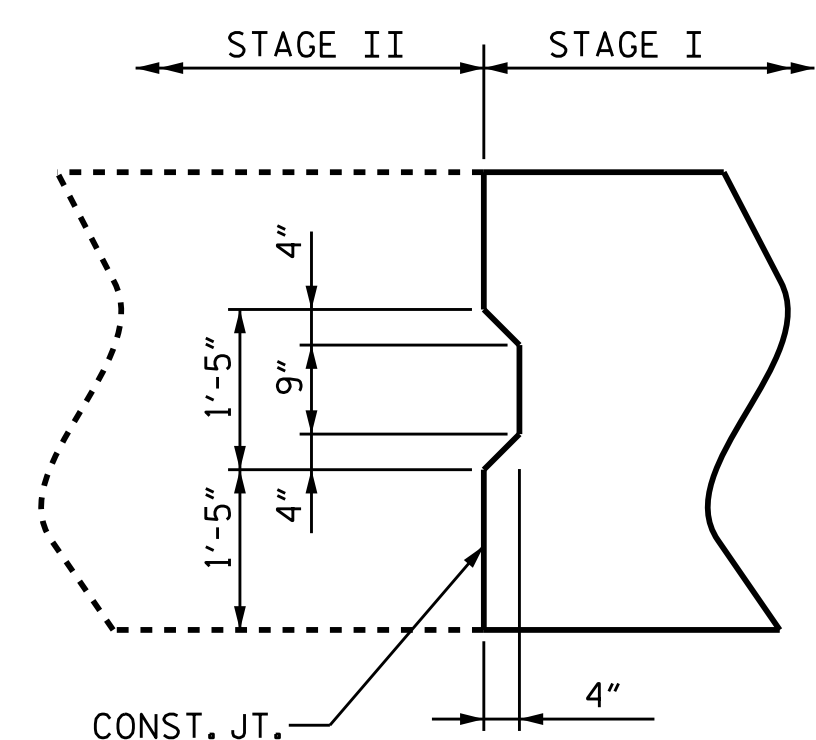
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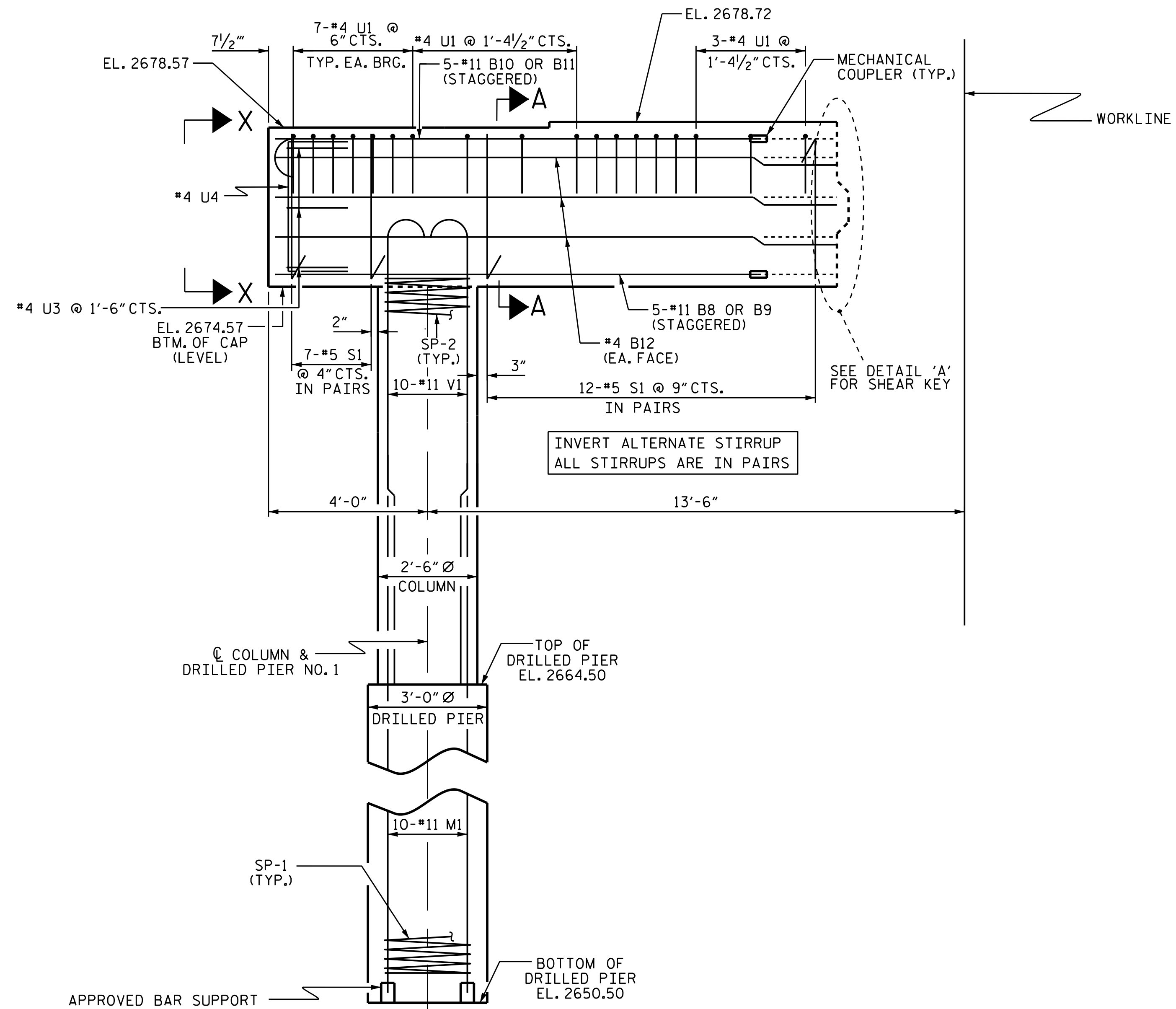
PLAN



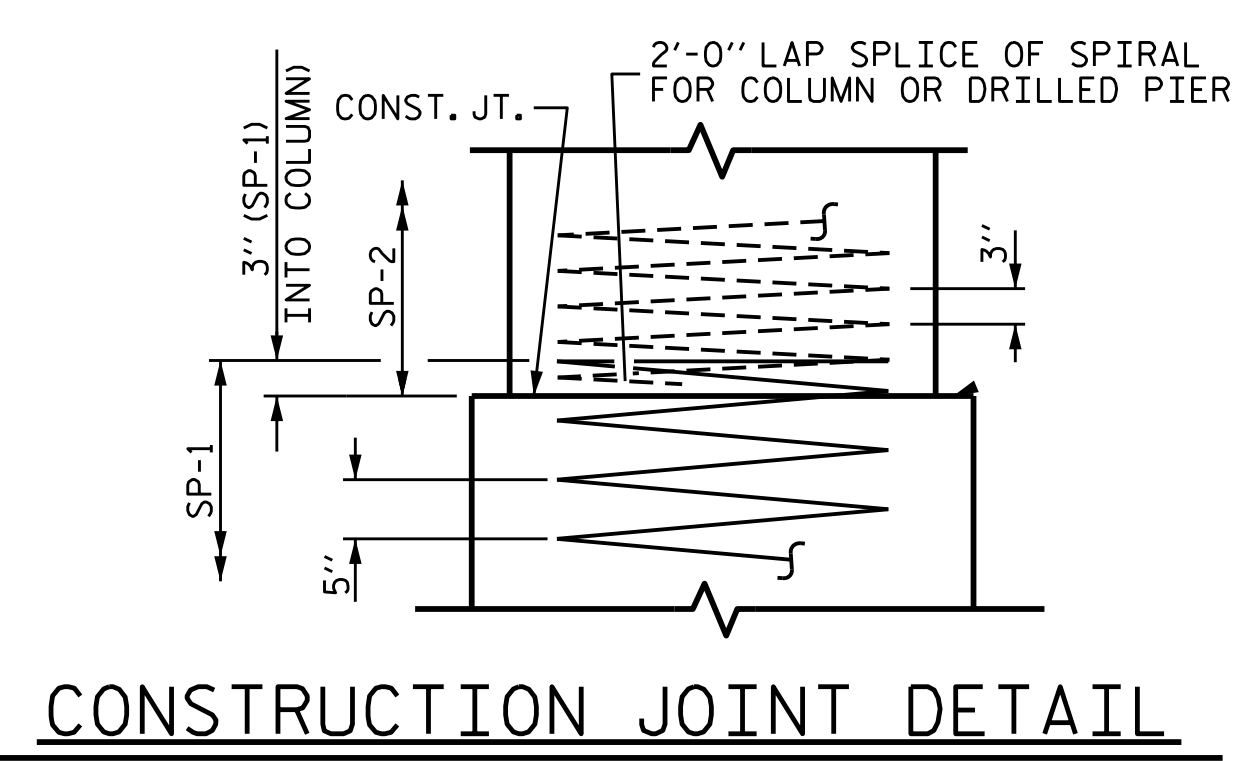
END ELEVATION



DETAIL 'A'

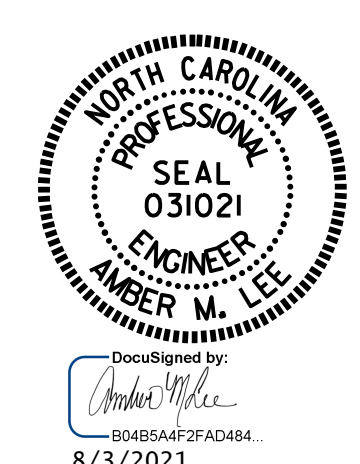


ELEVATION



CONSTRUCTION JOINT DETAIL

PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 BENT 2
 STAGE II**

DRAWN BY: K. PUROHIT DATE: 01/2020
 CHECKED BY: H. LOCKLEAR DATE: 01/2020
 DESIGN ENGINEER OF RECORD: K. PUROHIT DATE: 01/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			40

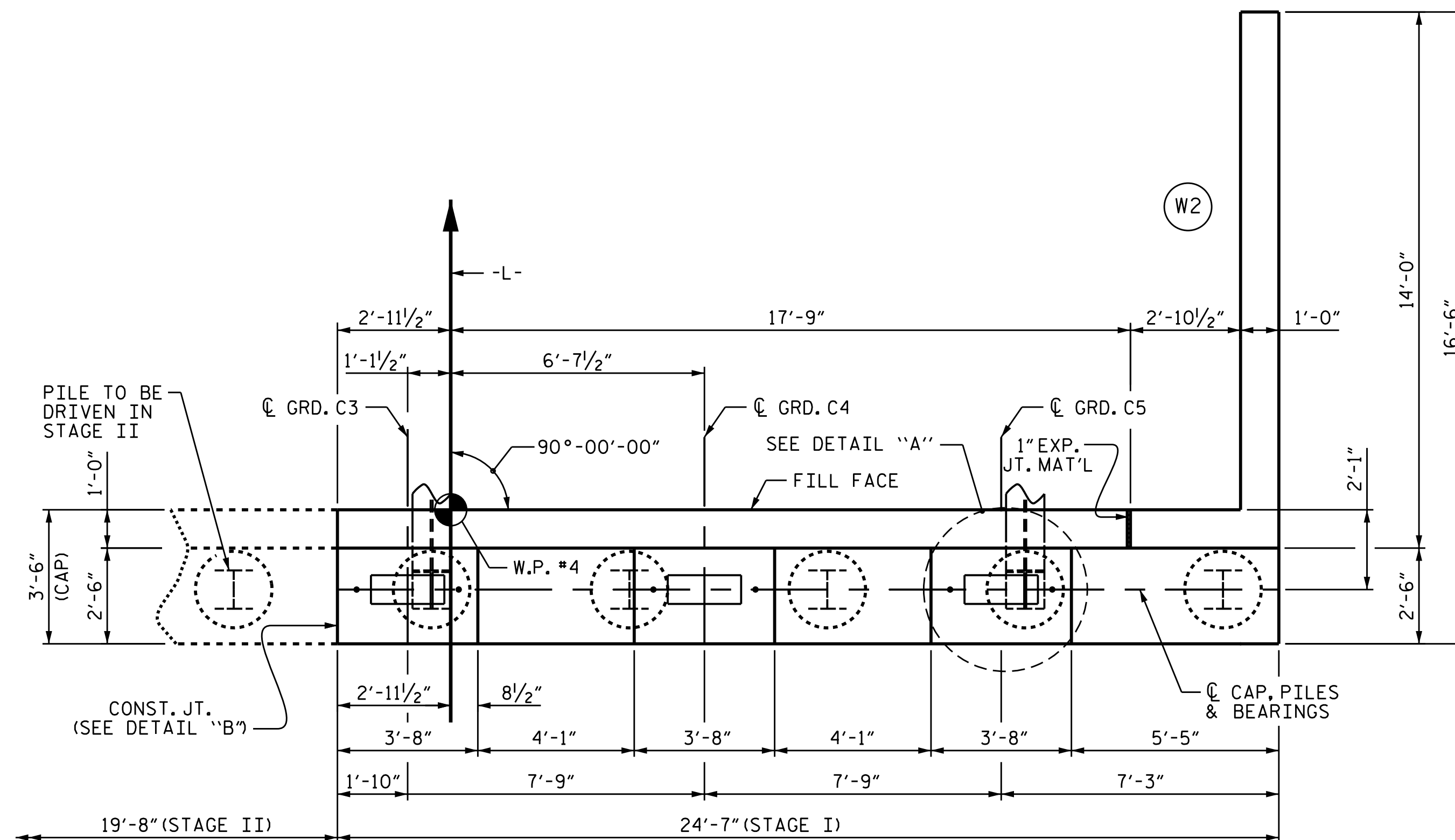
NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #5 "V" BARS.

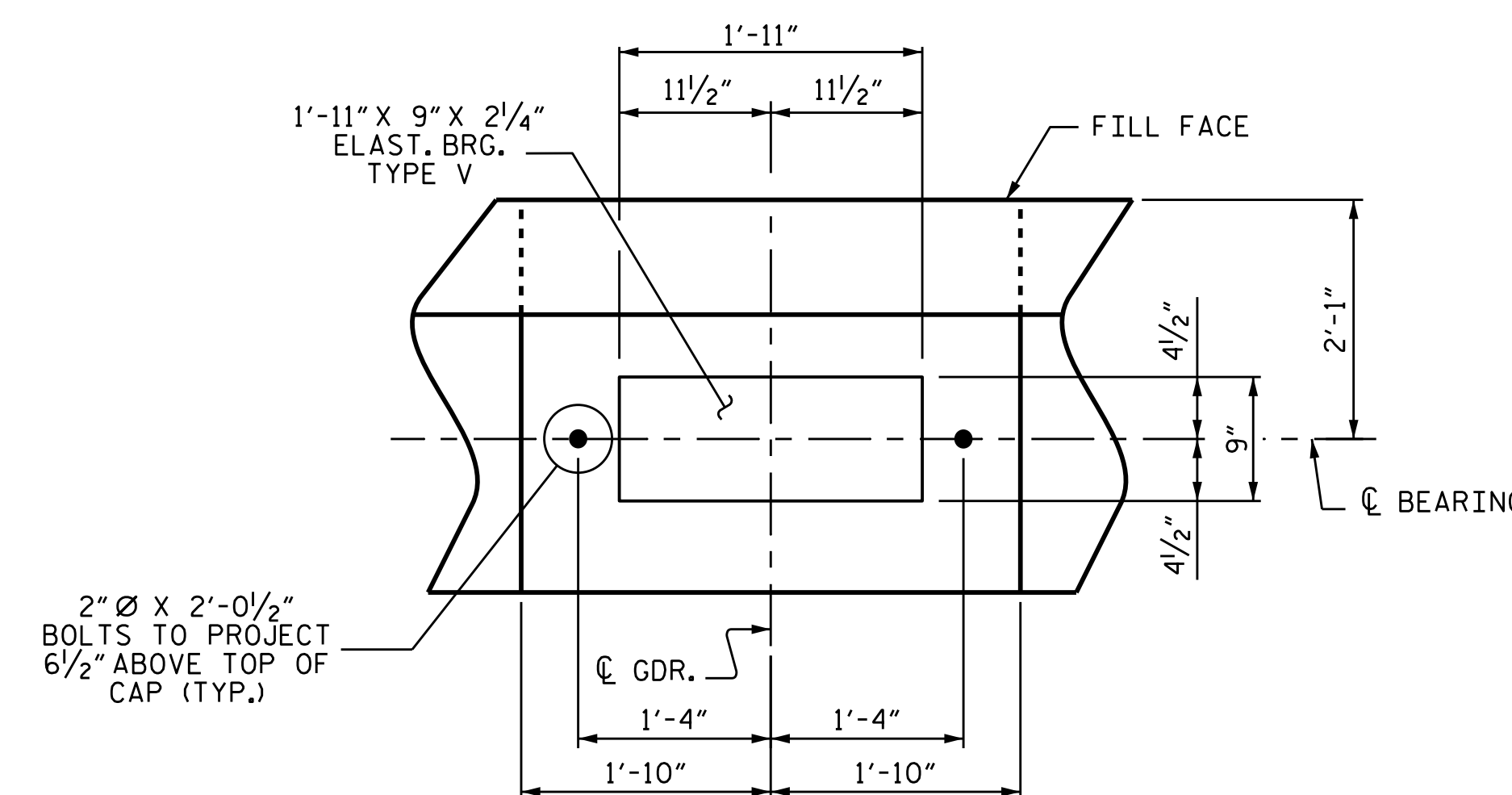
THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY DRAINAGE AND EROSION CONTROL AT THE END BENT.

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

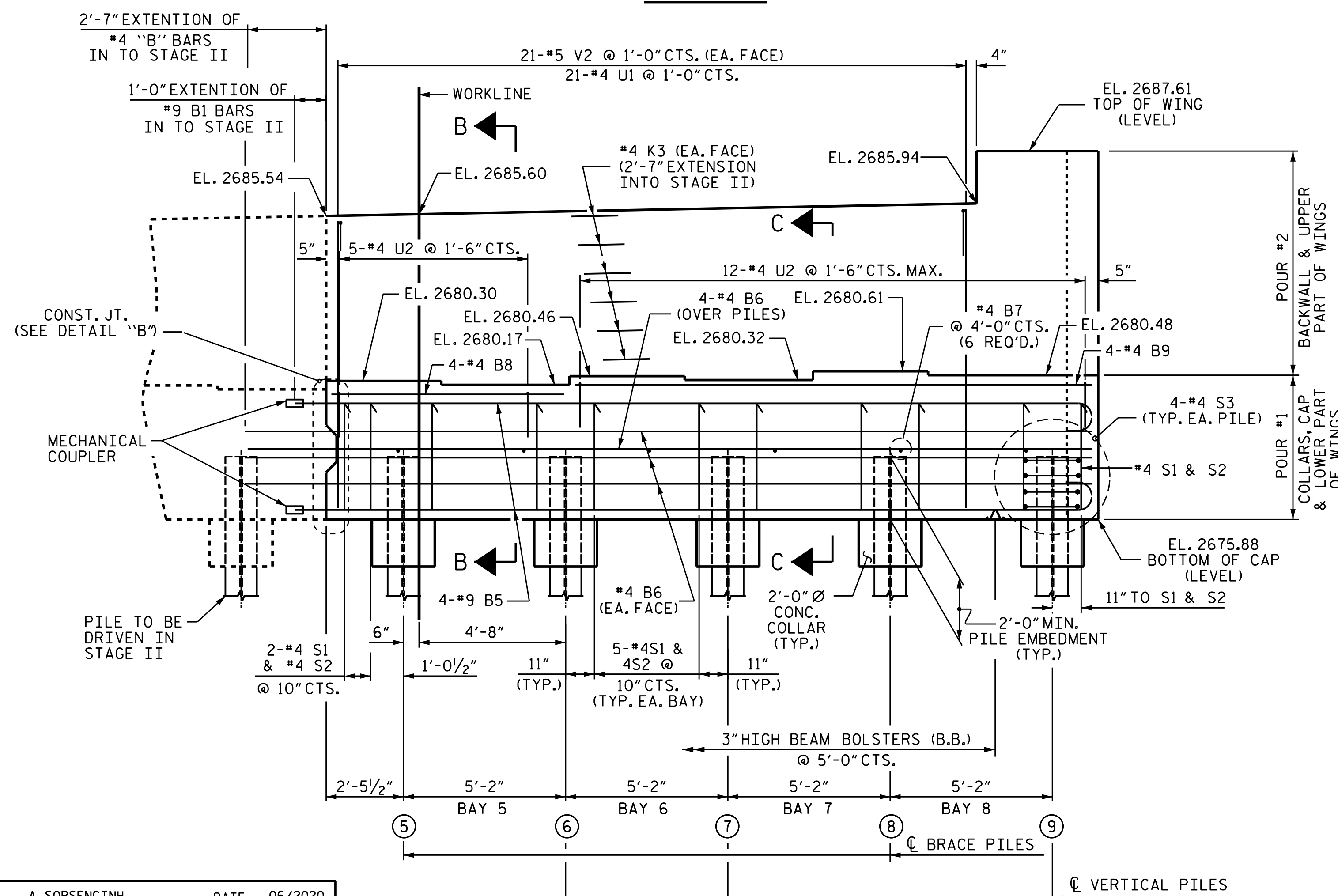
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.



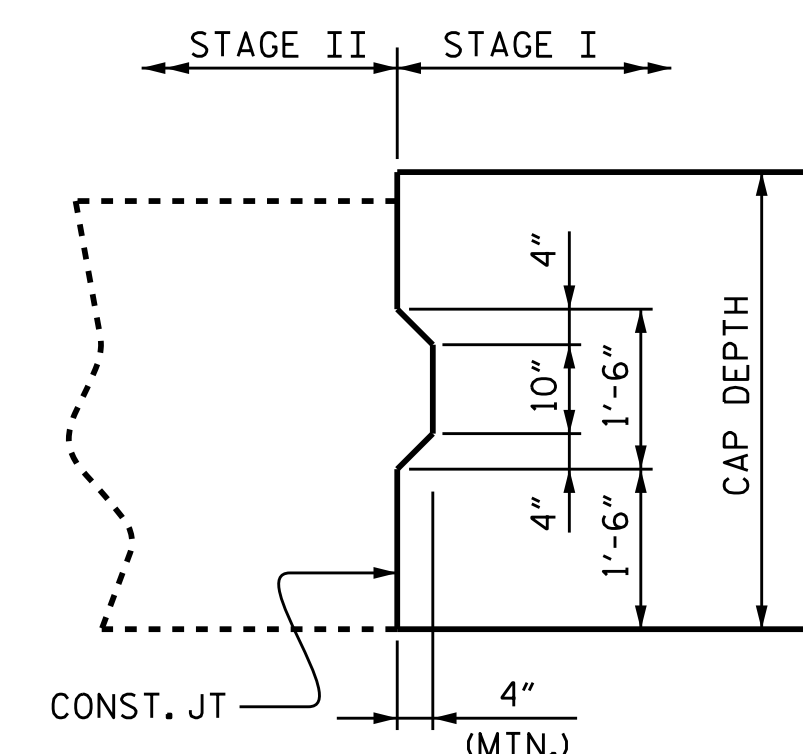
PLAN



DETAIL "A"



ELEVATION



DETAIL "B"

PROJECT NO. BR-0002

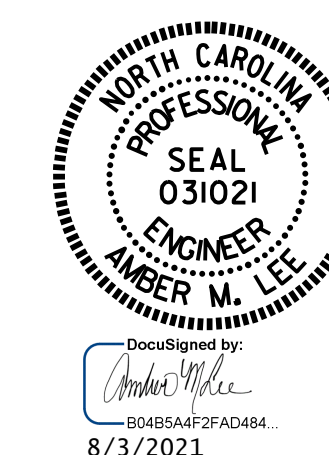
ASHE COUNTY

STATION: 23+80.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

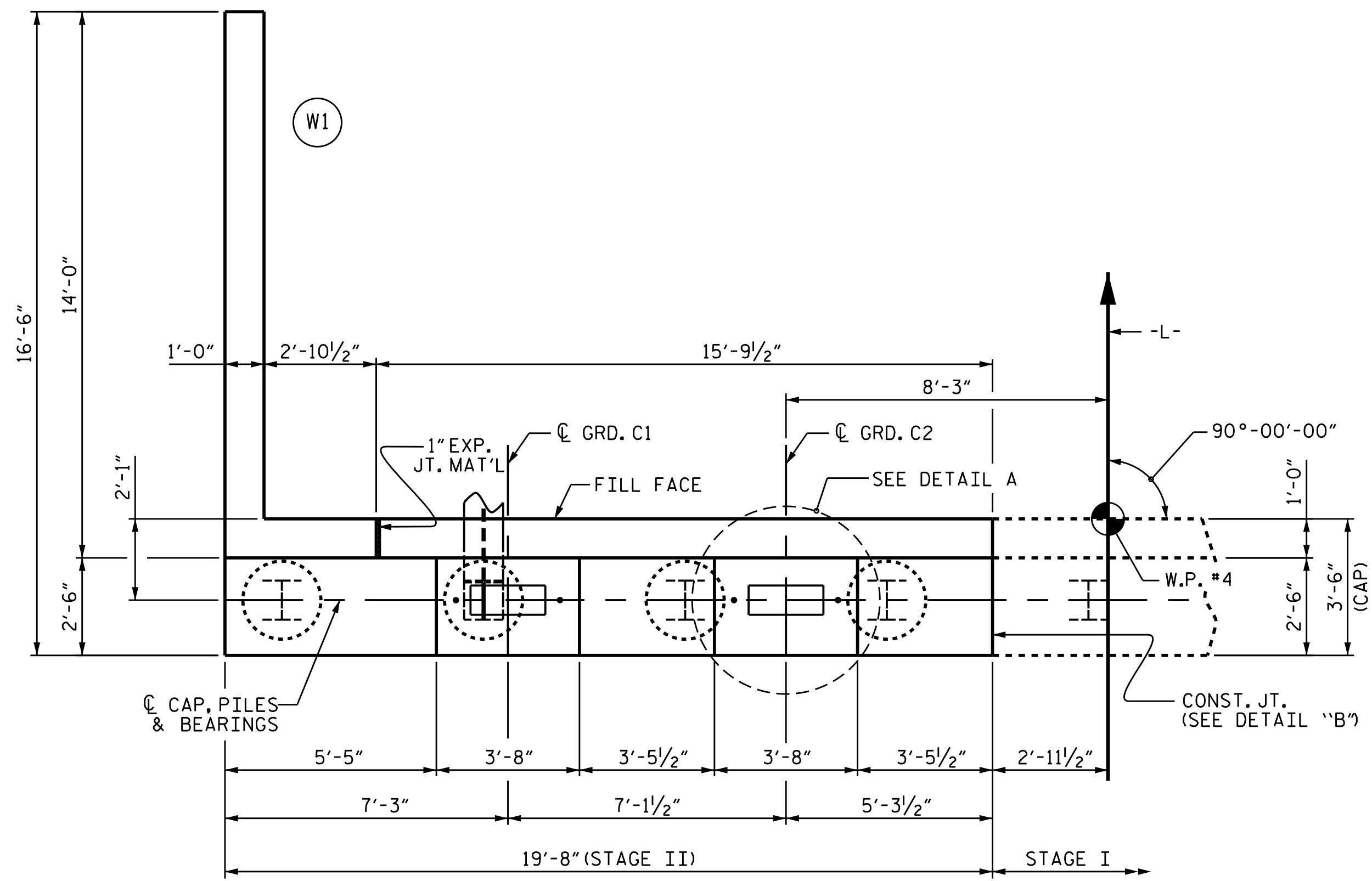
SUBSTRUCTURE
END BENT 2
(STAGE I)



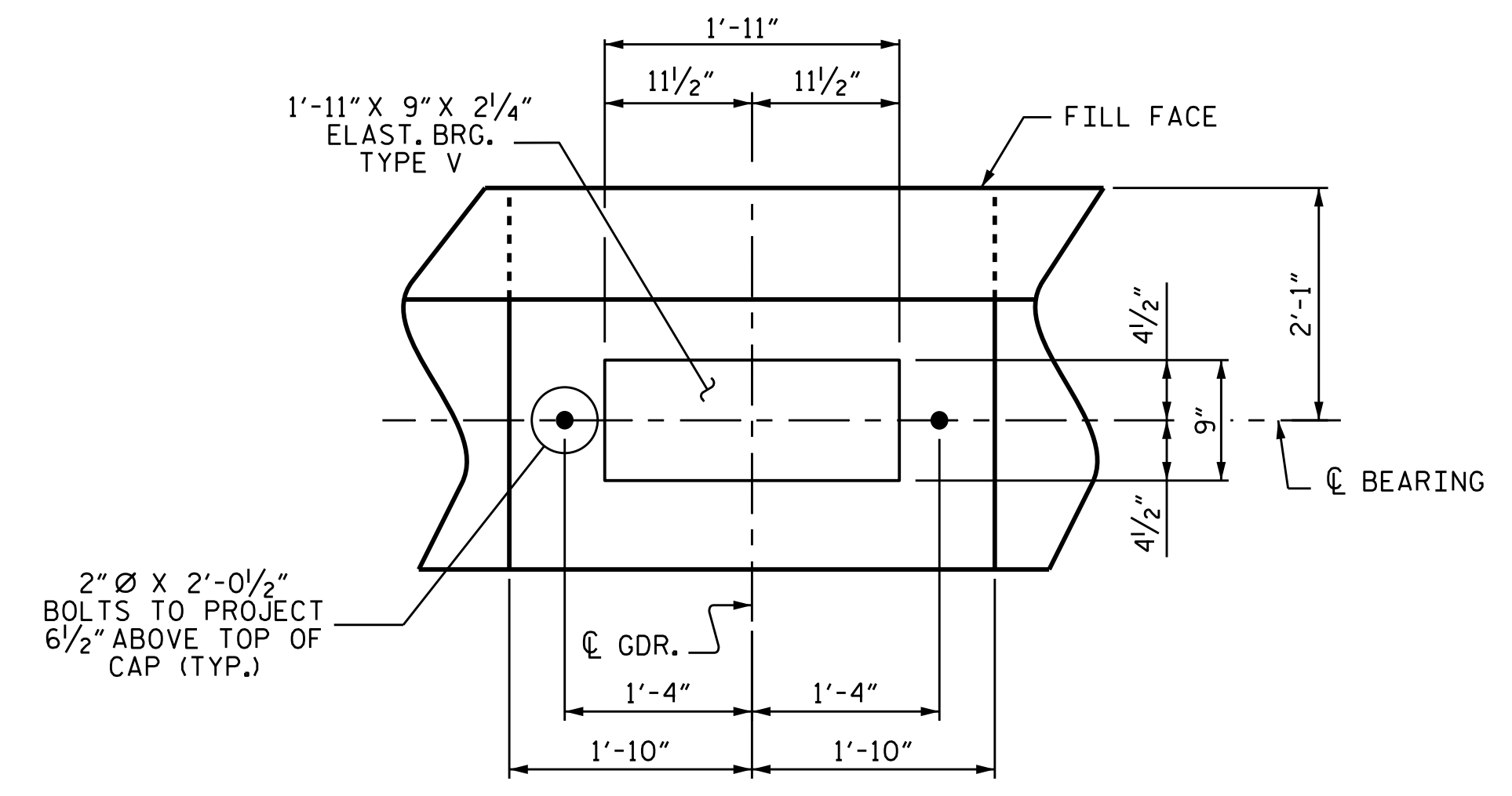
DRAWN BY : A. SORSENGINH DATE : 06/2020
 CHECKED BY : K. PUROHIT DATE : 06/2020
 DESIGN ENGINEER OF RECORD : J. TILLMAN DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

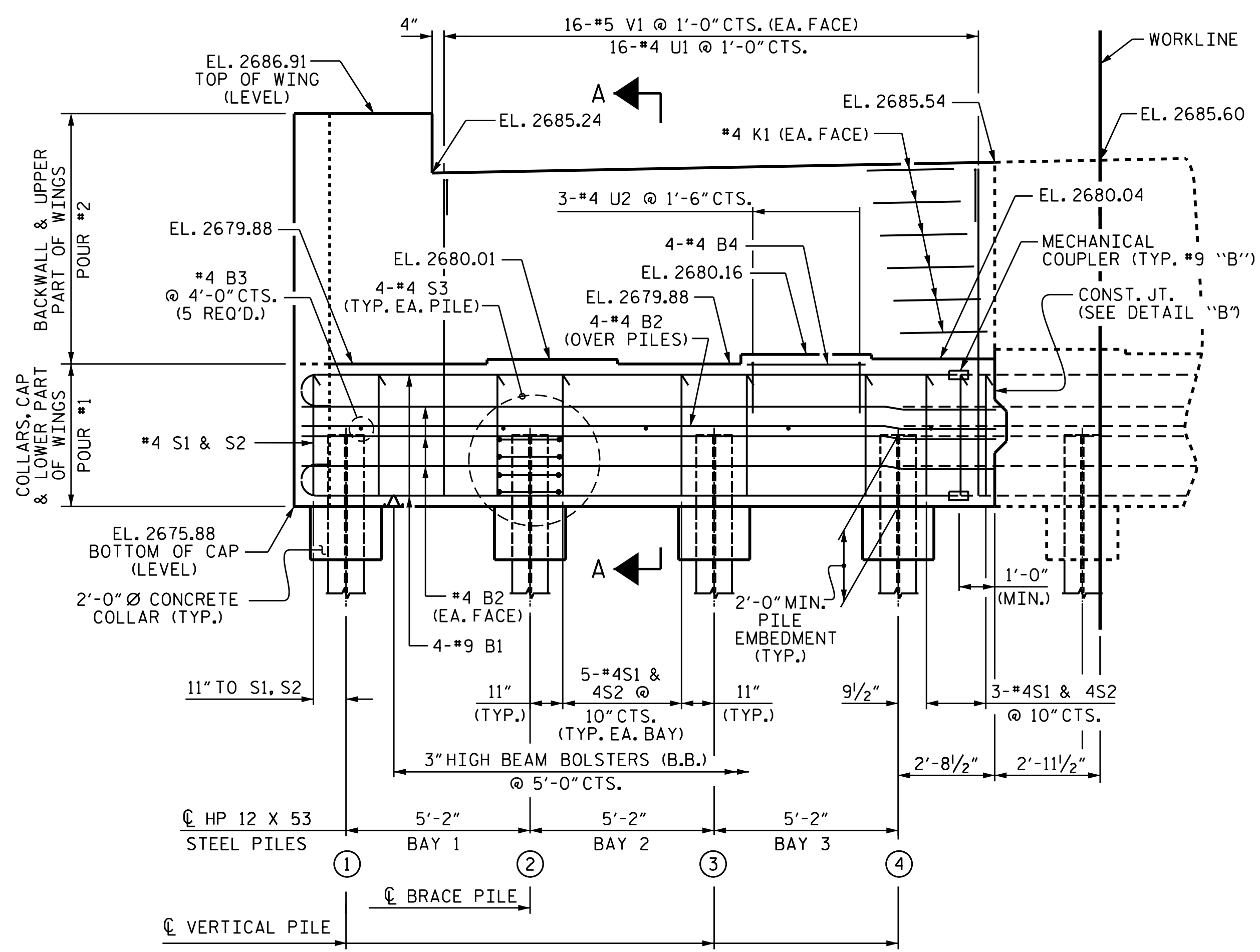
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			40



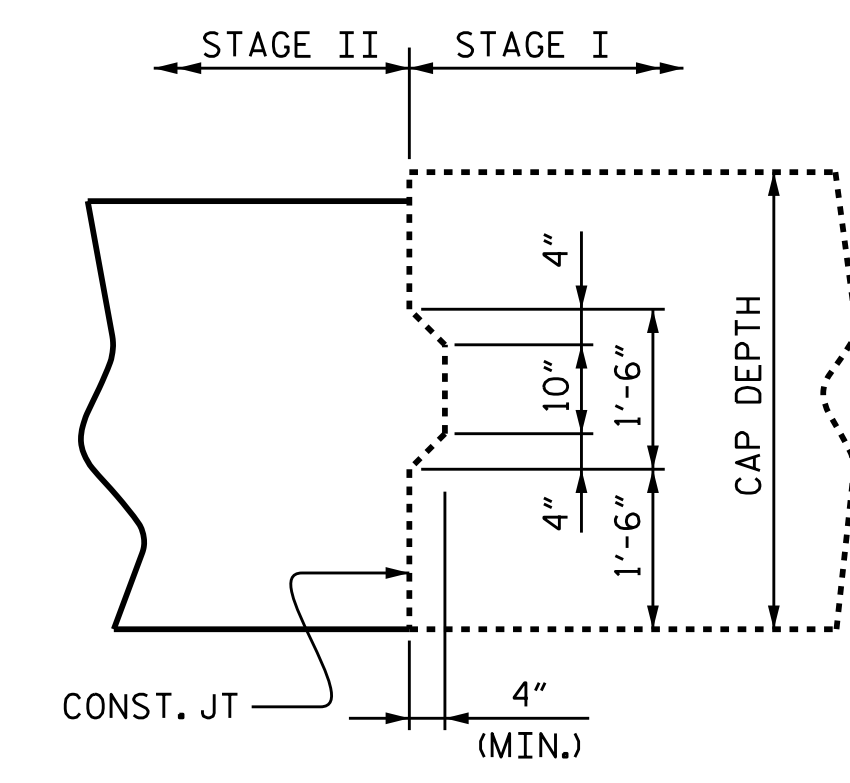
PLAN



DETAIL "A"



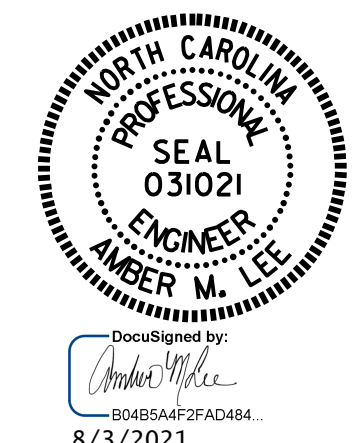
ELEVATION



DETAIL "B"

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 2 OF 4

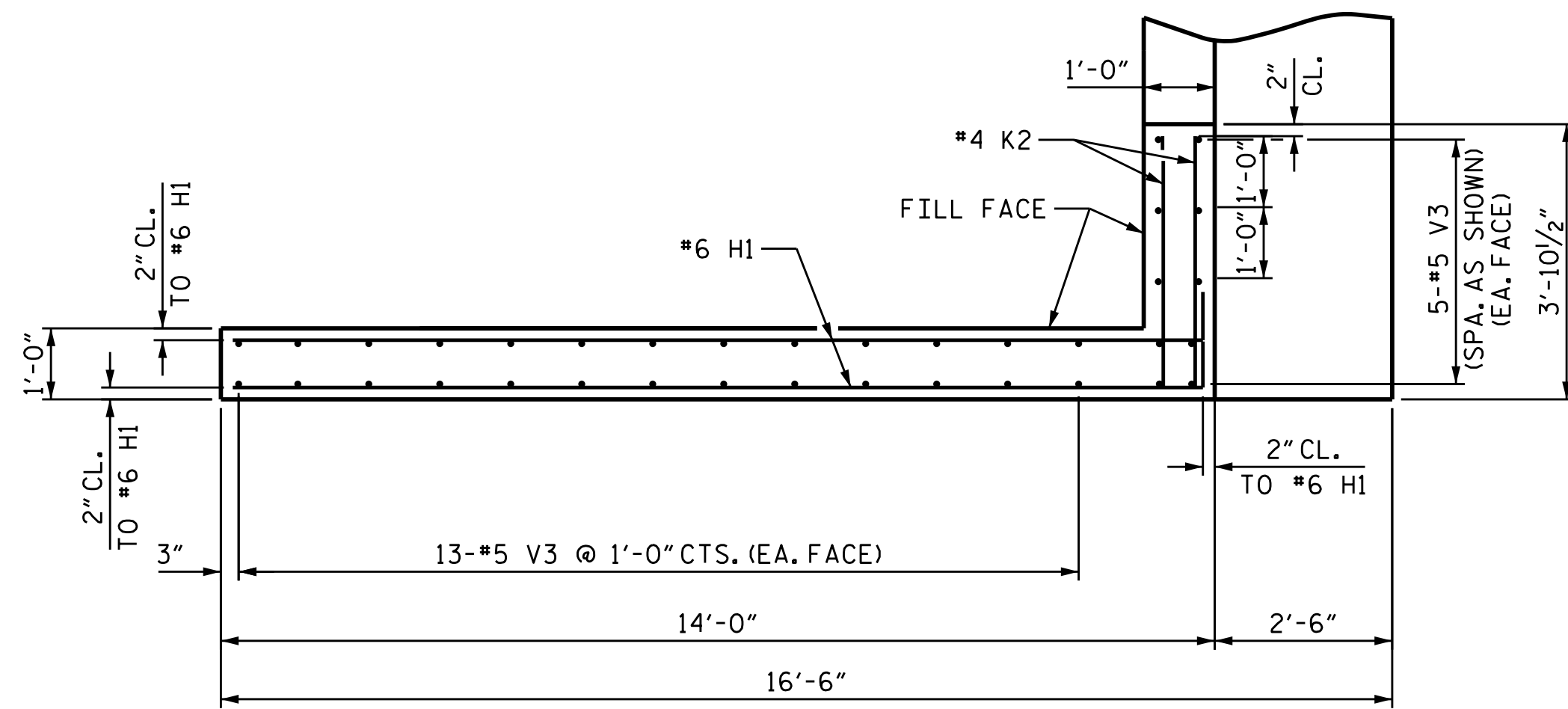


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2
 (STAGE II)

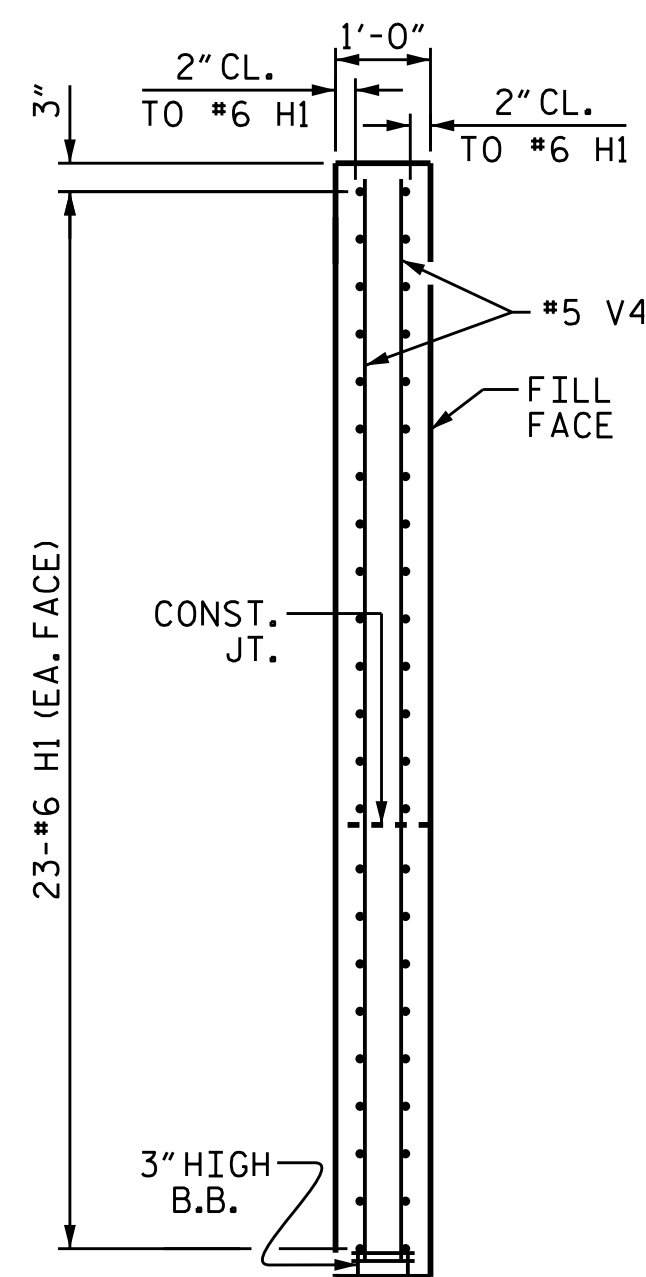
DRAWN BY : A. SORSENGINH DATE : 06/2020
 CHECKED BY : K. PUROHIT DATE : 06/2020
 DESIGN ENGINEER OF RECORD : J. TILLMAN DATE : 12/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
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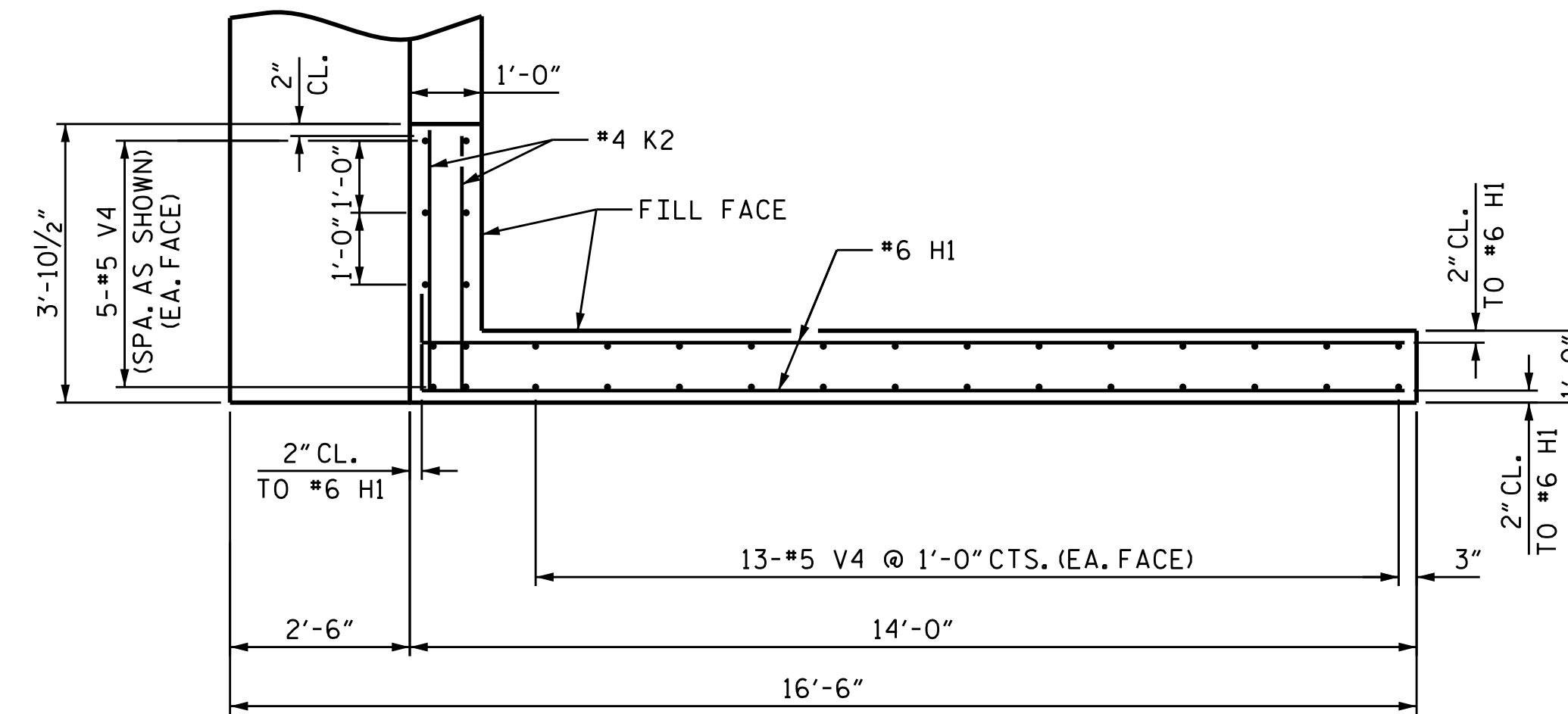
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			40



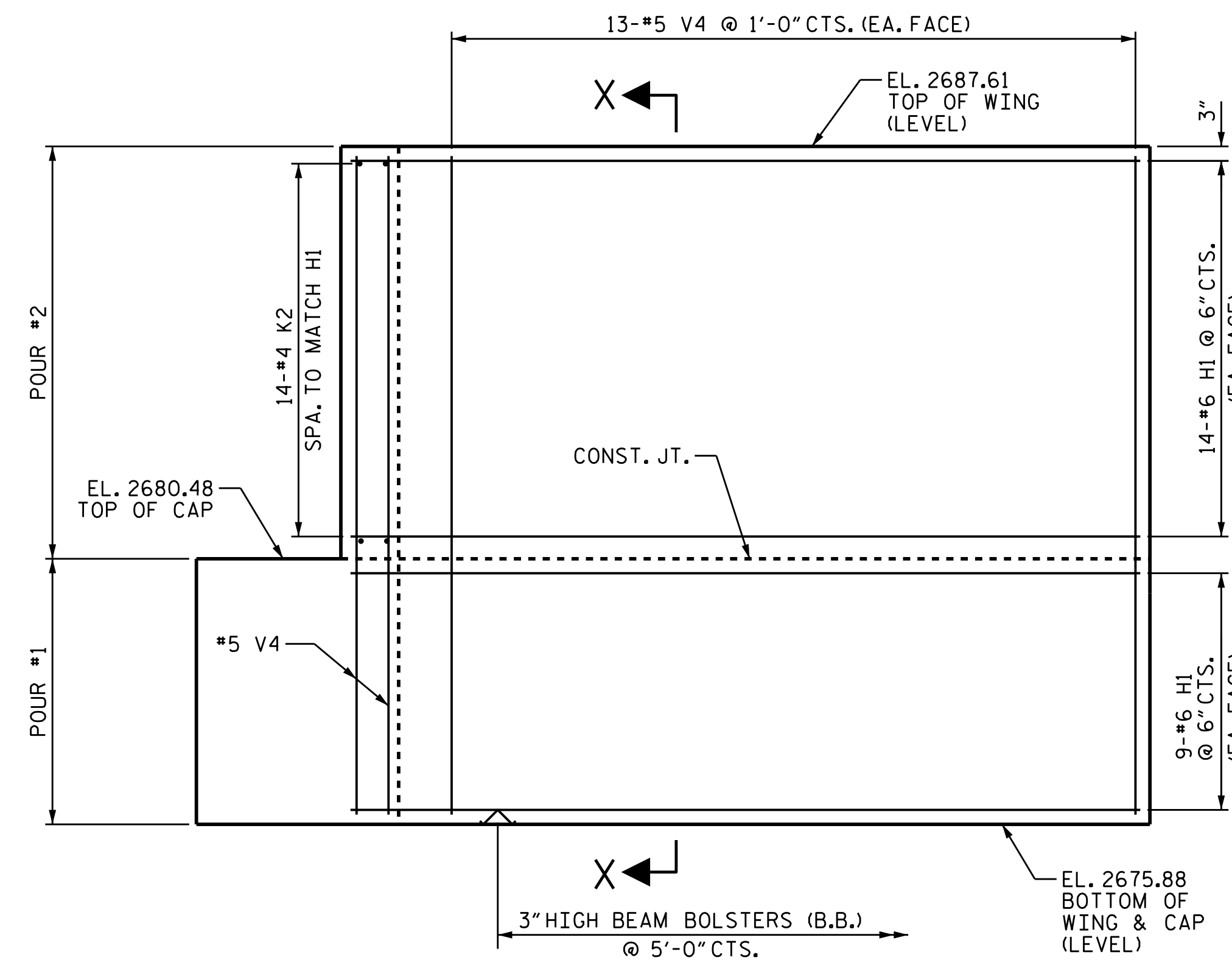
PLAN OF LEFT WING - W1
(STAGE II)



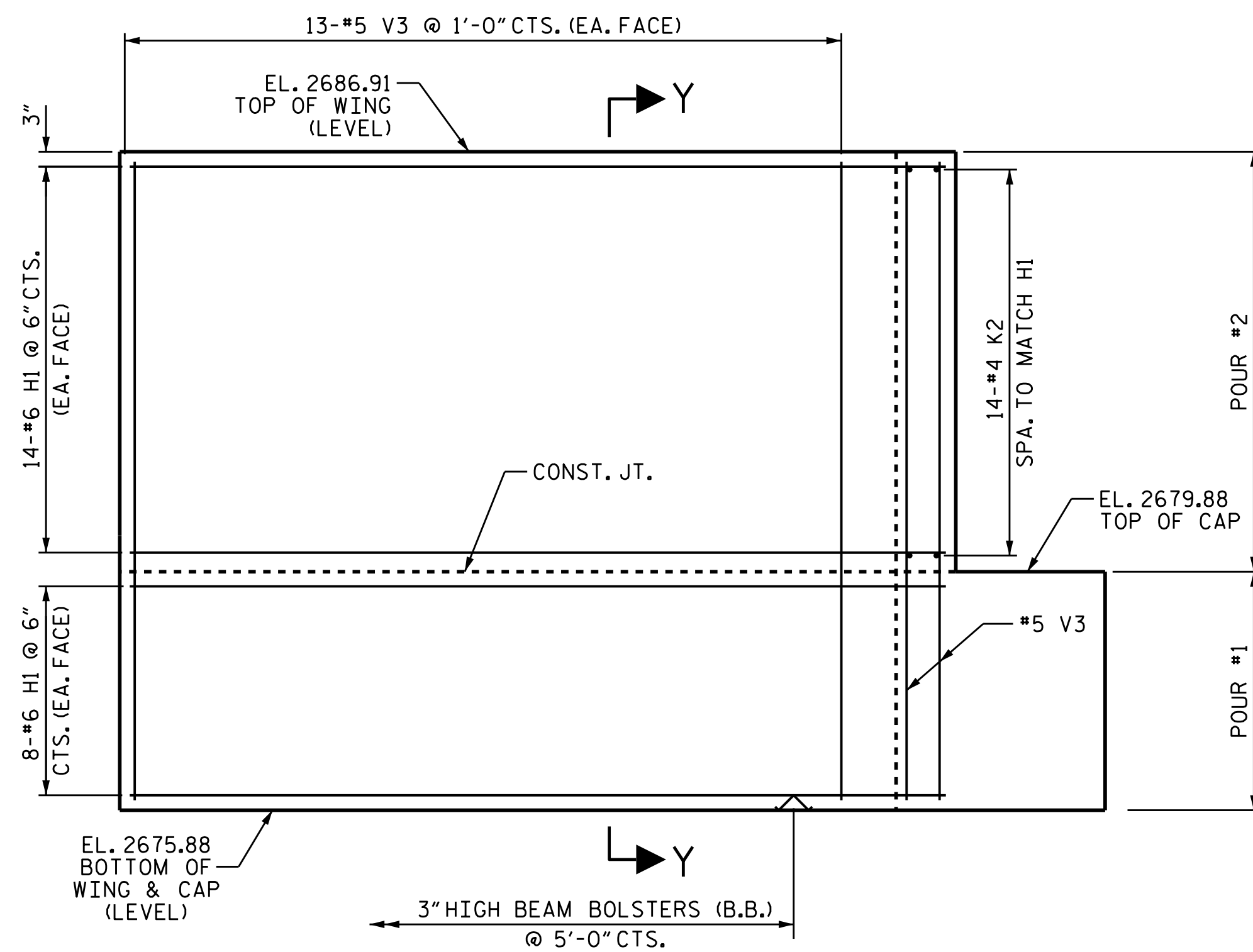
SECTION X-X



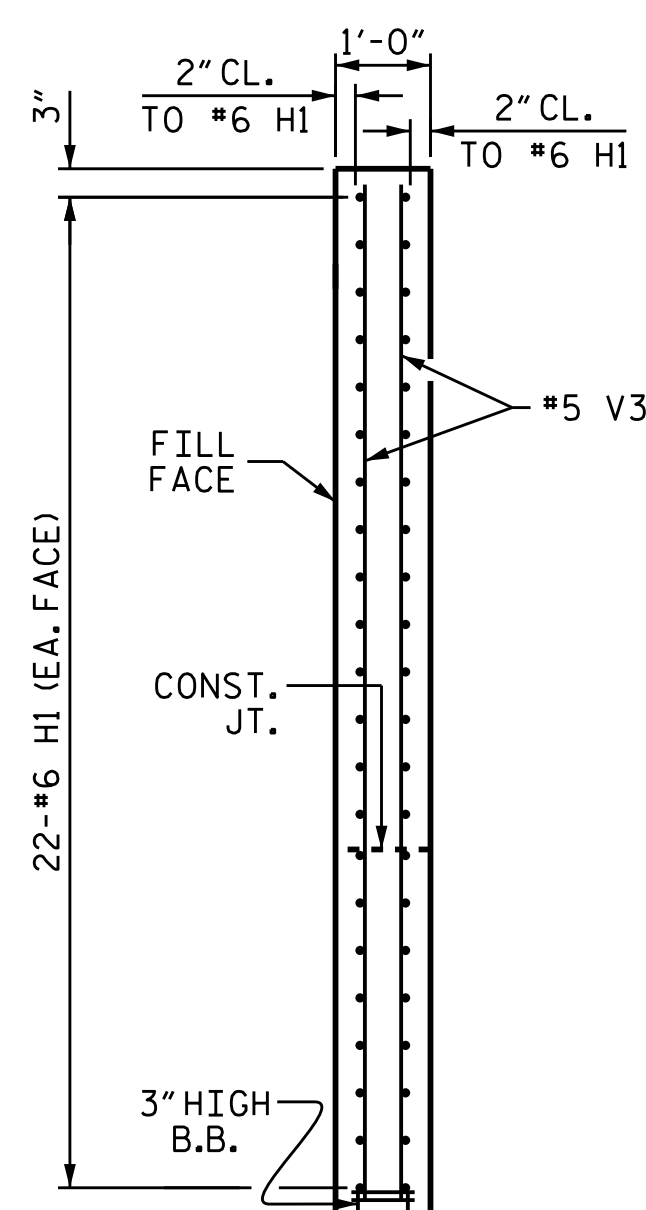
PLAN OF RIGHT WING - W2
(STAGE I)



ELEVATION OF RIGHT WING - W2
(STAGE I)



ELEVATION OF LEFT WING - W1
(STAGE II)



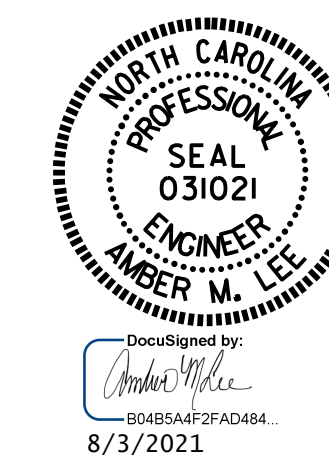
SECTION Y-Y

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
(WINGS)

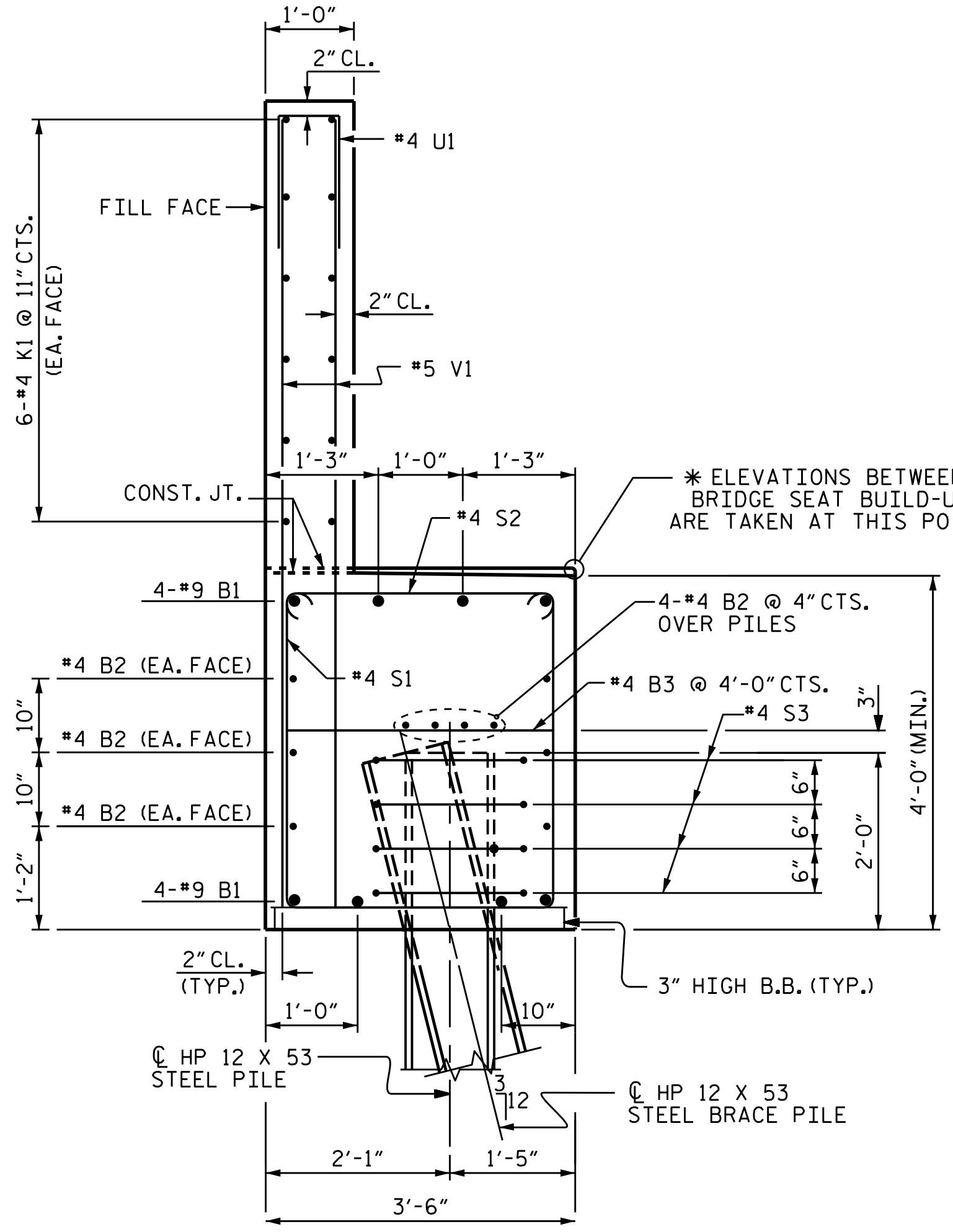


DocuSigned by:
Amber M. Lee
8/3/2021

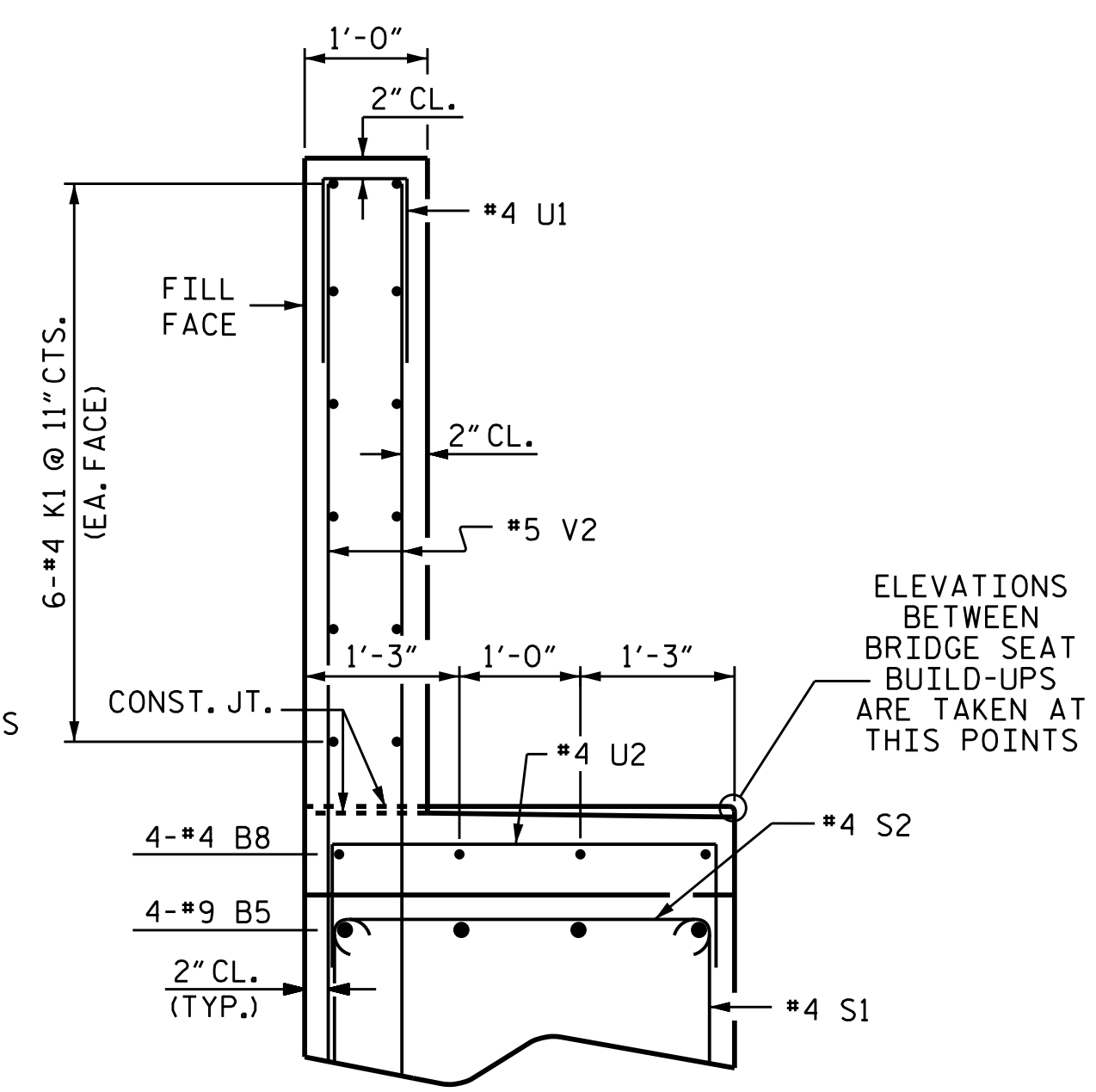
DRAWN BY: A. SORSENGINH DATE: 06/2020
CHECKED BY: K. PUROHIT DATE: 06/2020
DESIGN ENGINEER OF RECORD: J. TILLMAN DATE: 12/2019

DOCUMENT NOT CONSIDERED
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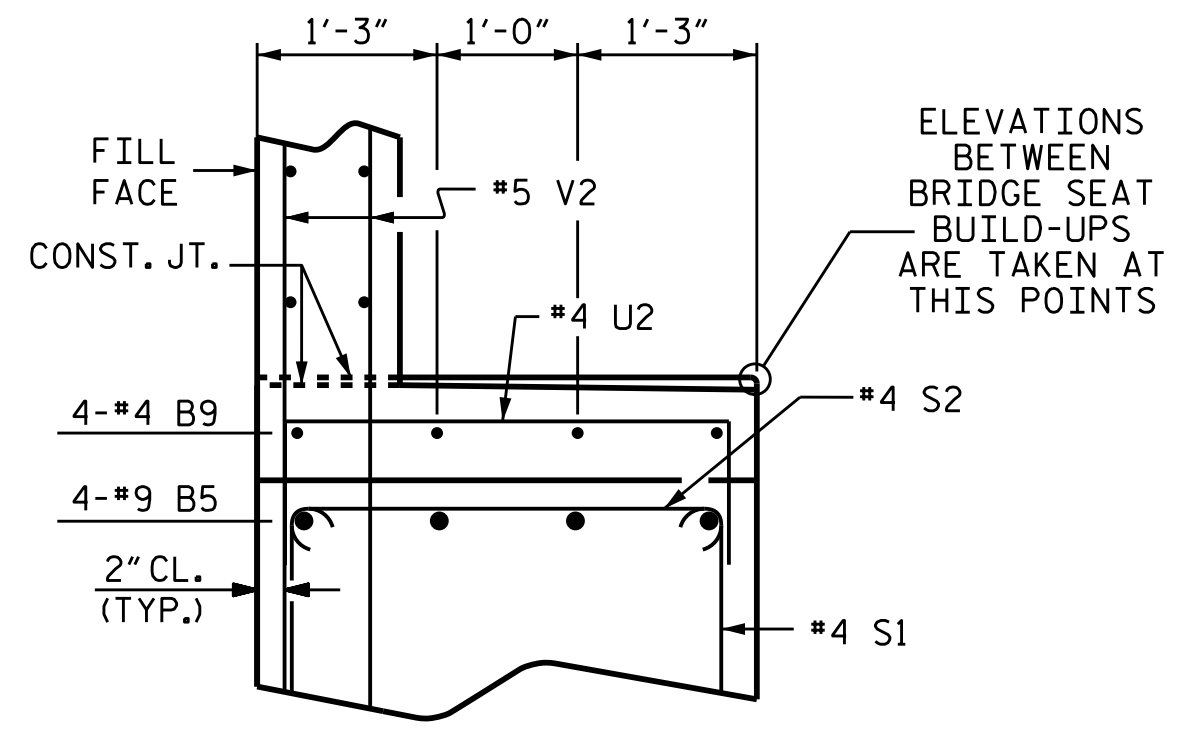
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			40



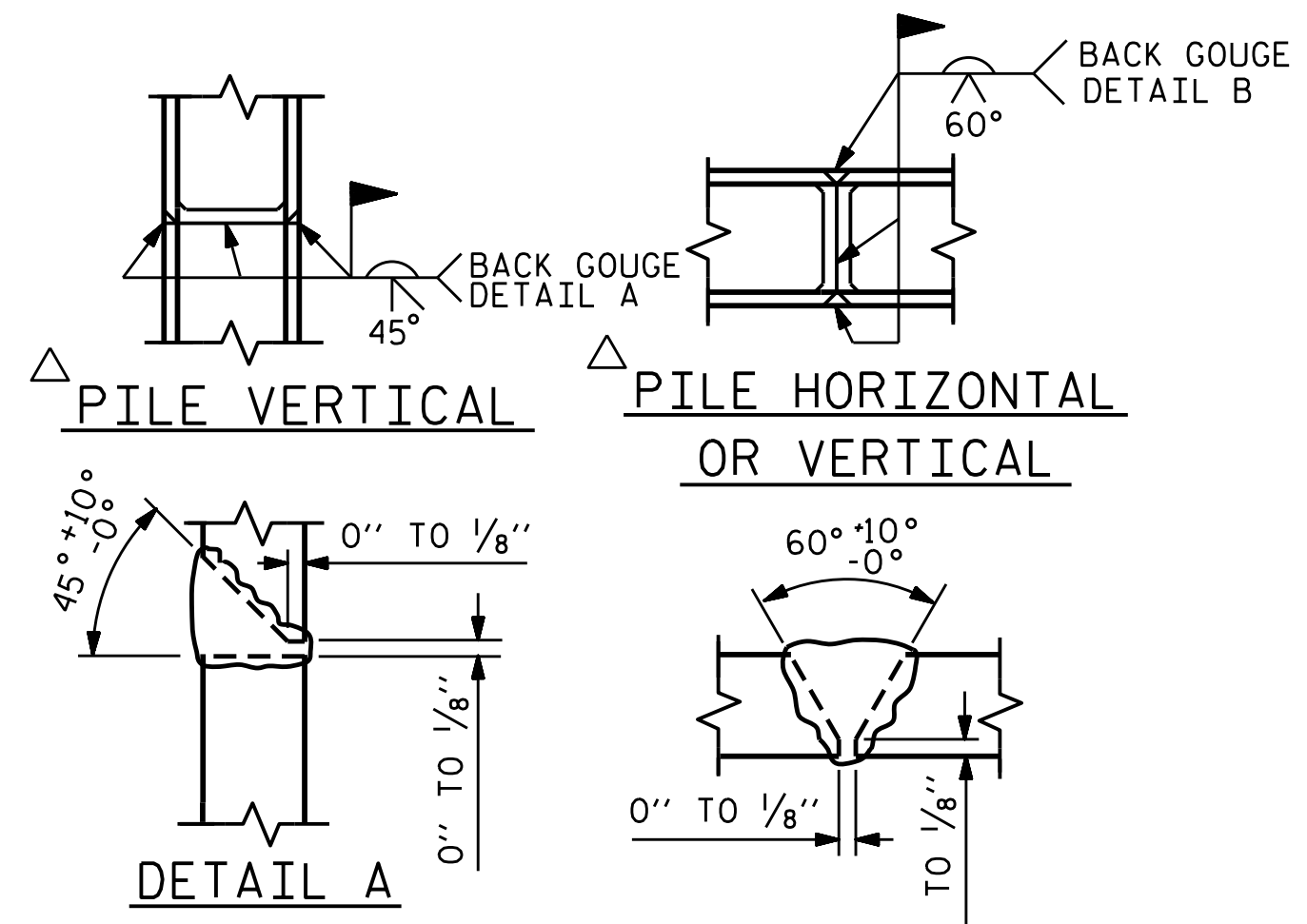
SECTION A-A



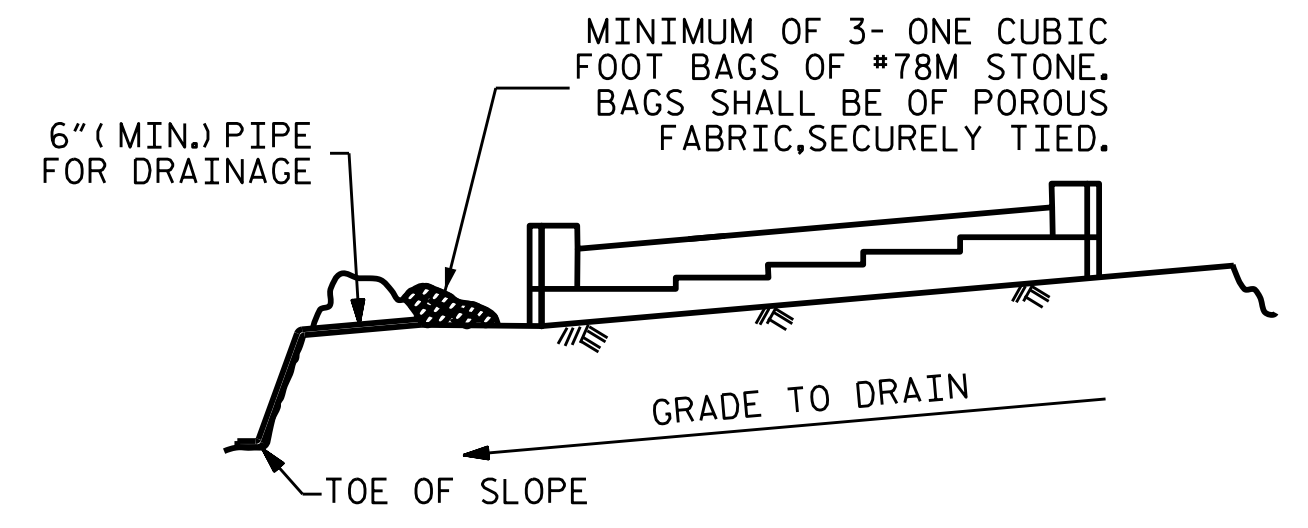
SECTION B-B



SECTION C-C



PILE SPLICE DETAILS

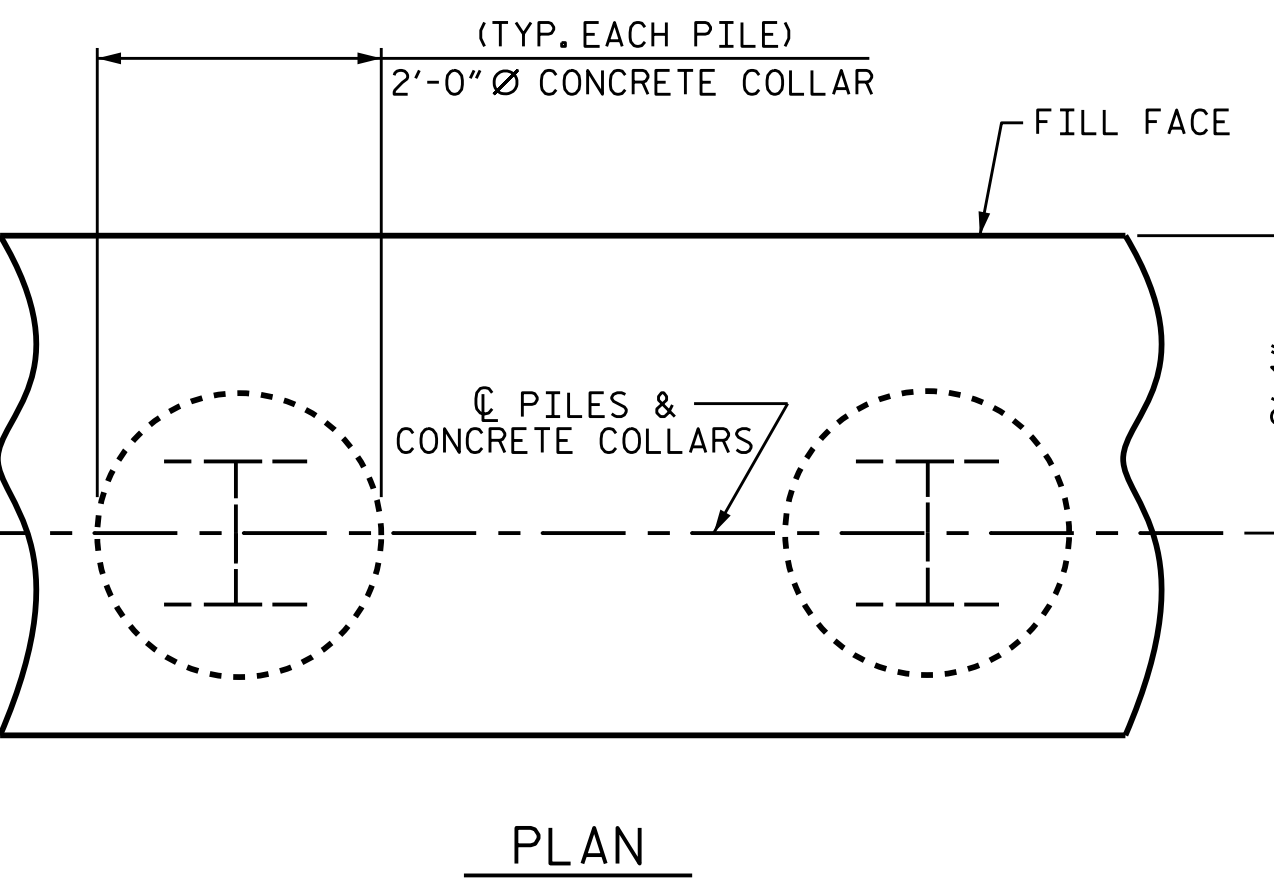
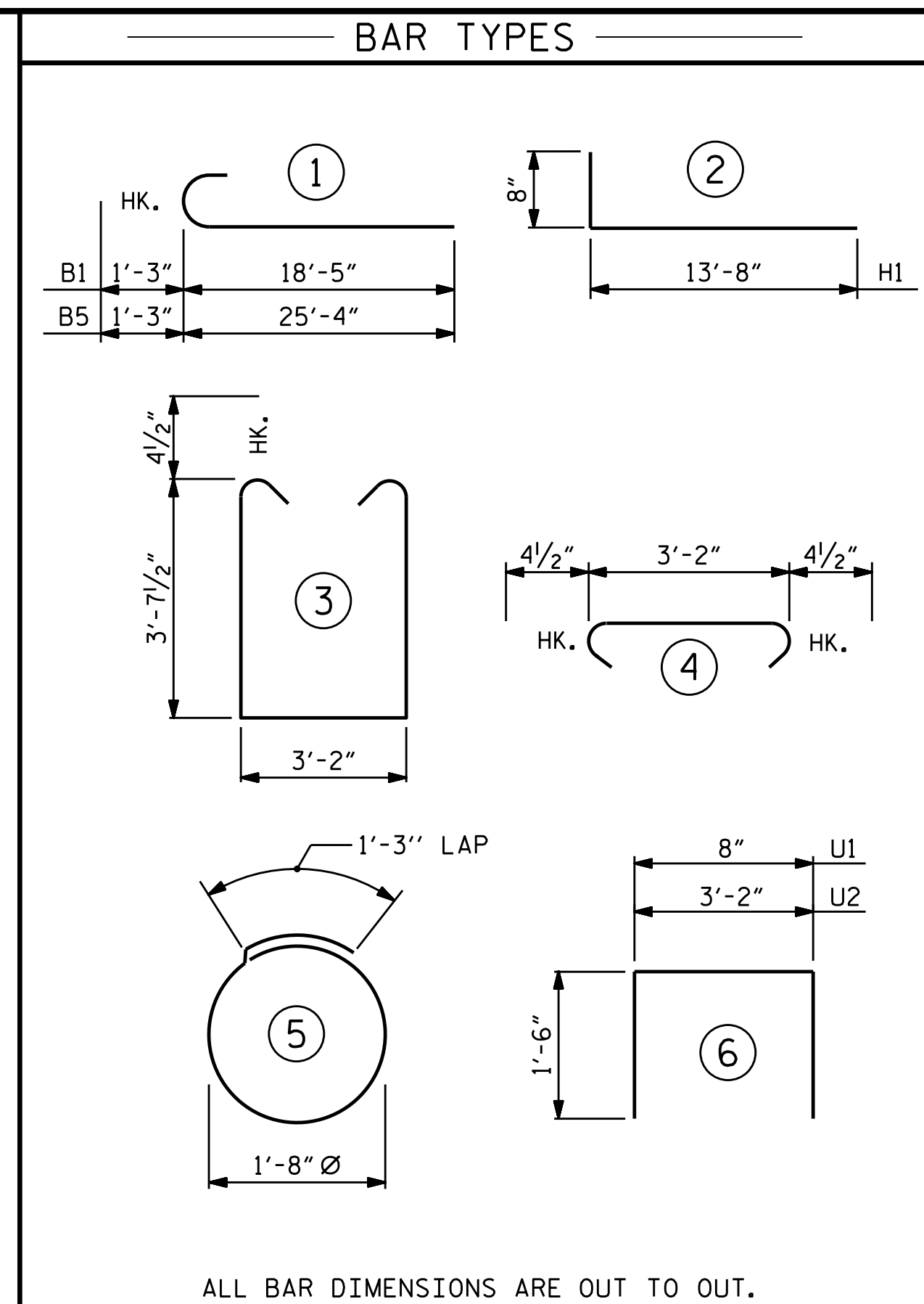


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



CORROSION PROTECTION FOR STEEL PILES DETAIL

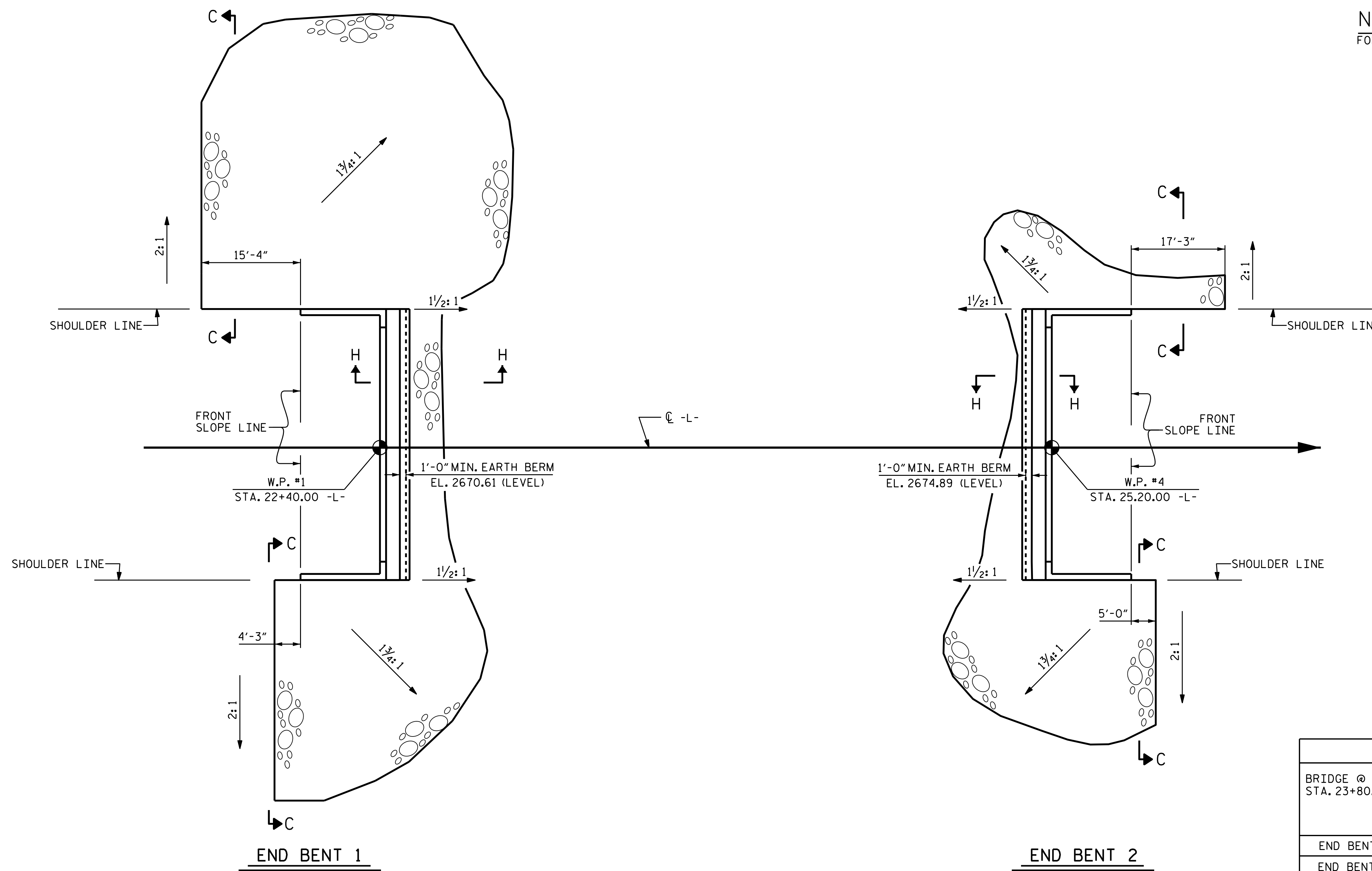
BILL OF MATERIAL											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B5	8	#9	1	26'-7"	723	B1	8	#9	1	19'-8"	535
B6	10	#4	STR	27'-0"	180	B2	10	#4	STR	19'-6"	130
B7	6	#4	STR	3'-2"	13	B3	5	#4	STR	3'-2"	11
B8	4	#4	STR	7'-5"	20	B4	4	#4	STR	3'-4"	9
B9	4	#4	STR	16'-5"	44						
						H1	44	#6	2	14'-4"	947
						K1	12	#4	STR	19'-6"	156
						K2	28	#4	STR	3'-6"	65
						S1	19	#4	3	11'-2"	142
						S2	19	#4	4	3'-11"	50
						S3	16	#4	5	6'-6"	69
						U1	16	#4	6	3'-8"	39
						U2	3	#4	STR	6'-2"	12
						V2	42	#5	STR	9'-1"	398
						V4	36	#5	STR	11'-4"	426
REINFORCING STEEL					3515 LBS.	REINFORCING STEEL					2857 LBS.
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WING & COLLARS					17.4 C.Y.	POUR #1 CAP, LOWER PART OF WING & COLLARS					13.1 C.Y.
POUR #2 BACKWALL & UPPER PART OF WING					8.6 C.Y.	POUR #2 BACKWALL & UPPER PART OF WING					7.6 C.Y.
TOTAL CLASS A CONCRETE					26.0 C.Y.	TOTAL CLASS A CONCRETE					20.7 C.Y.
HP 12 X 53 STEEL PILES						HP 12 X 53 STEEL PILES					
No. 5 _____ LIN FT. 75						No. 4 _____ LIN FT. 60					
STEEL PILE POINTS _____ NO. 5						STEEL PILE POINTS _____ NO. 4					
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES _____ 5 EA.						PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES _____ 4 EA.					

DRAWN BY : A. SORSENGINH DATE : 06/2020
 CHECKED BY : K. PUROHIT DATE : 06/2020
 DESIGN ENGINEER OF RECORD : J. TILLMAN DATE : 12/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

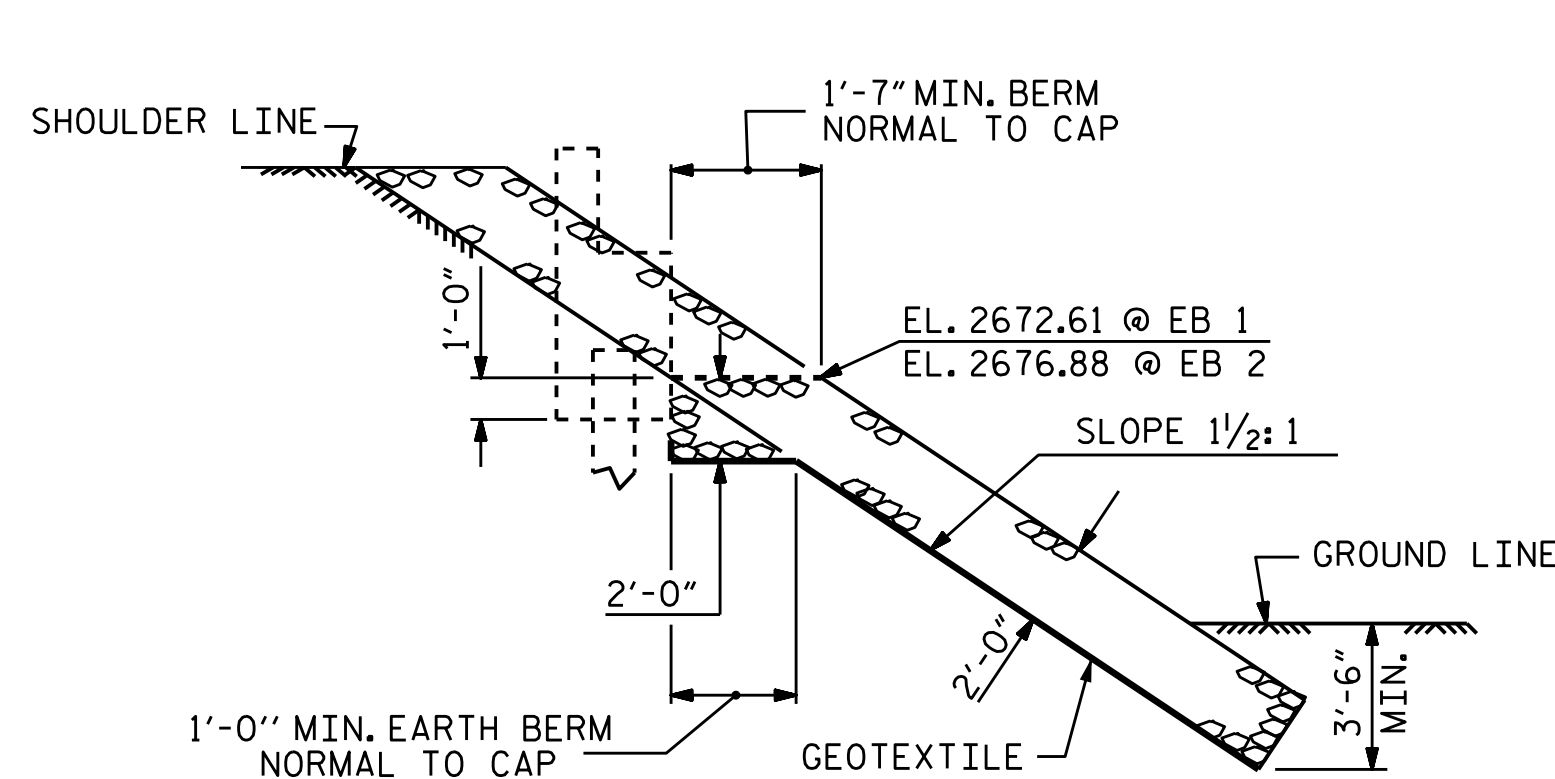
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS 40
2			4			

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

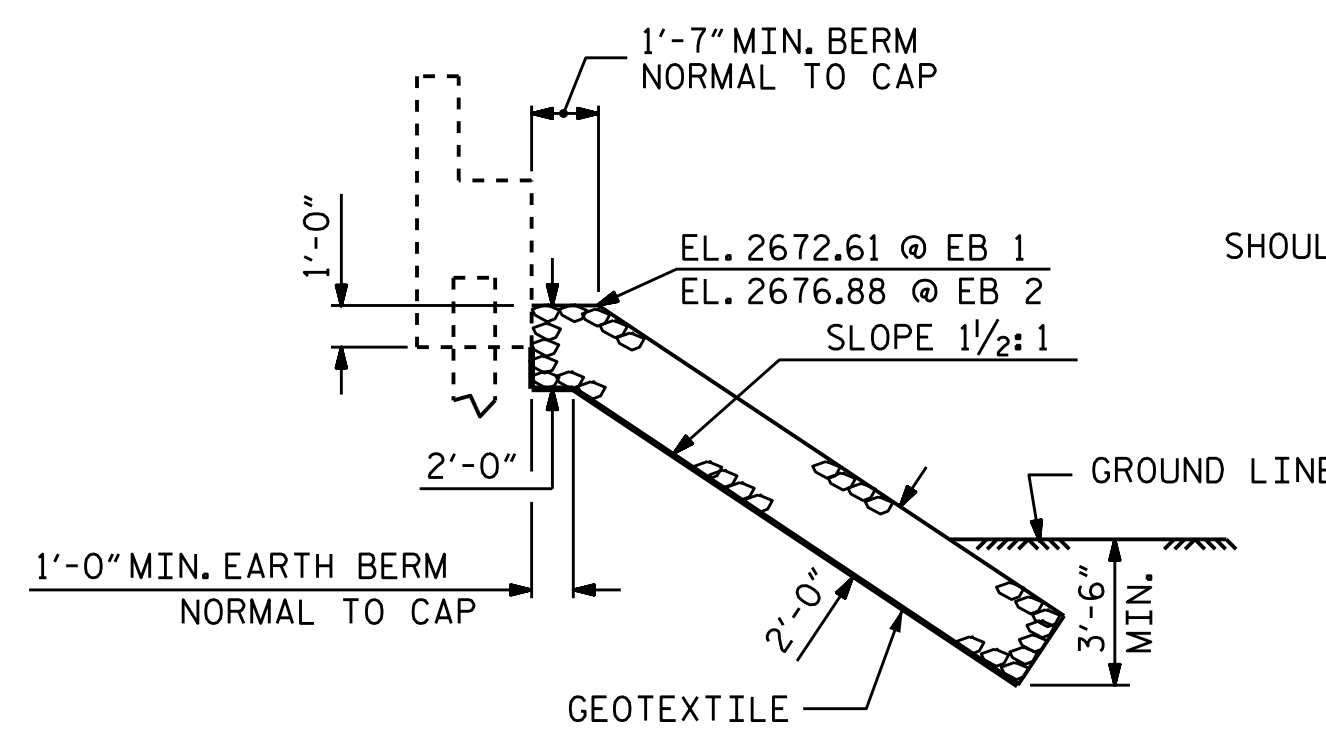


PLAN

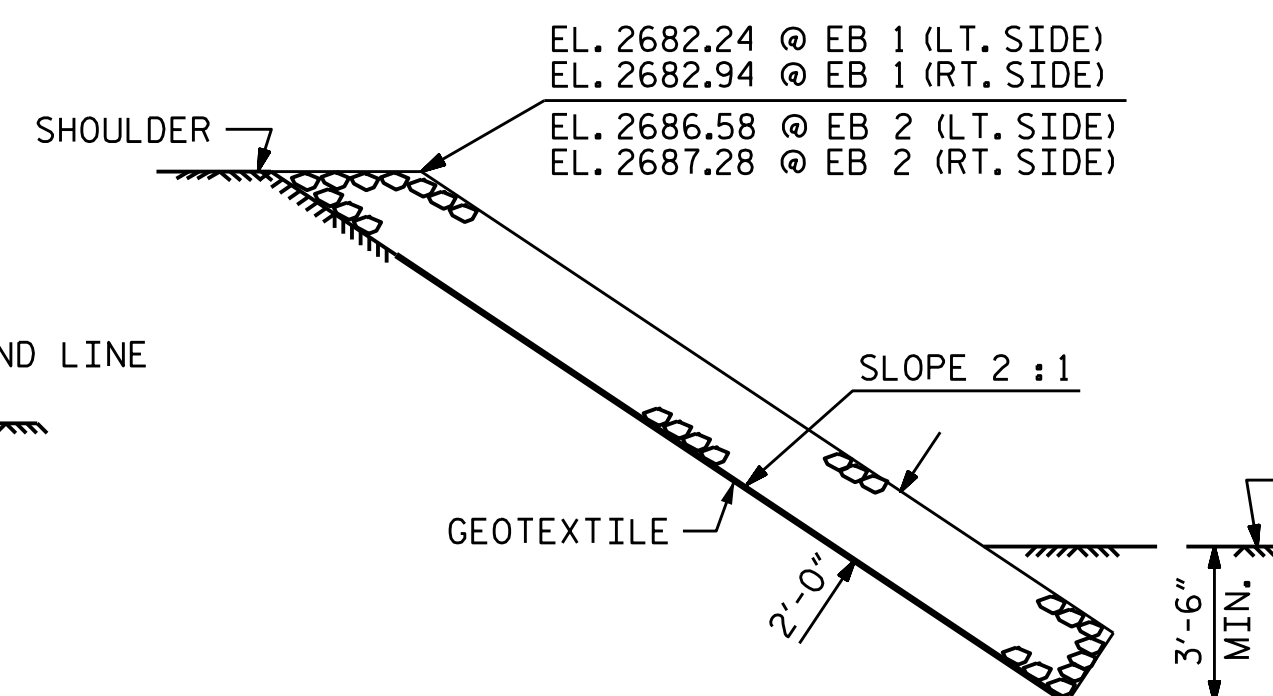
ESTIMATED QUANTITIES		
BRIDGE @ STA. 23+80.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	387	430
END BENT 2	181	201



SECTION H-H

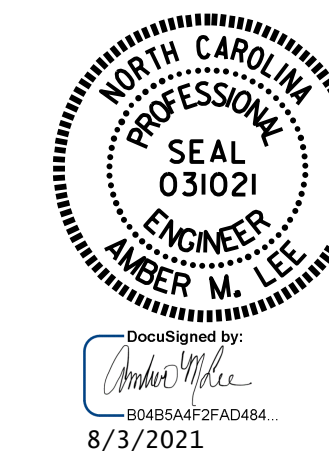


SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. BR-0002
ASHE COUNTY
STATION: 23+80.00 -L-



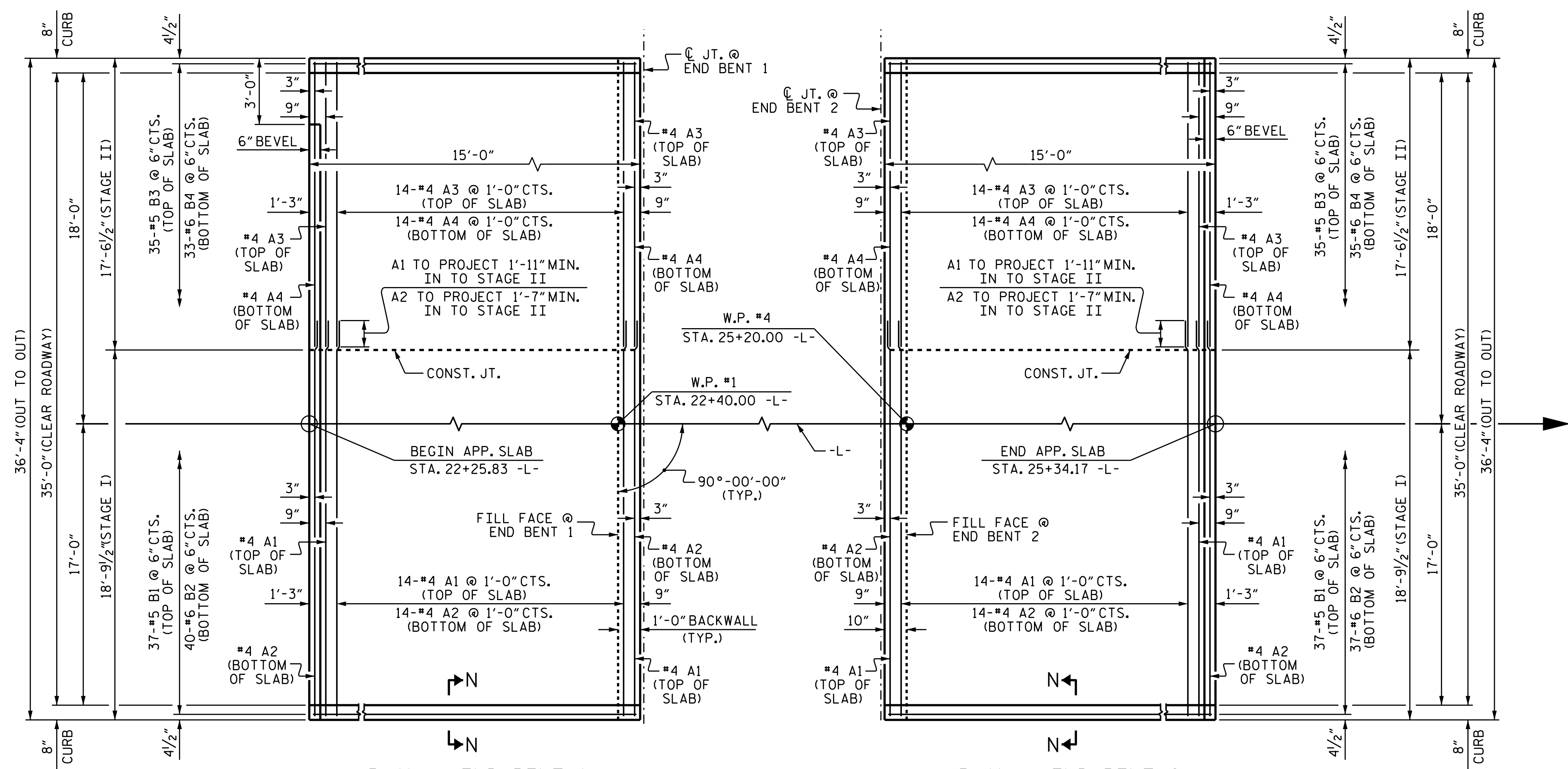
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

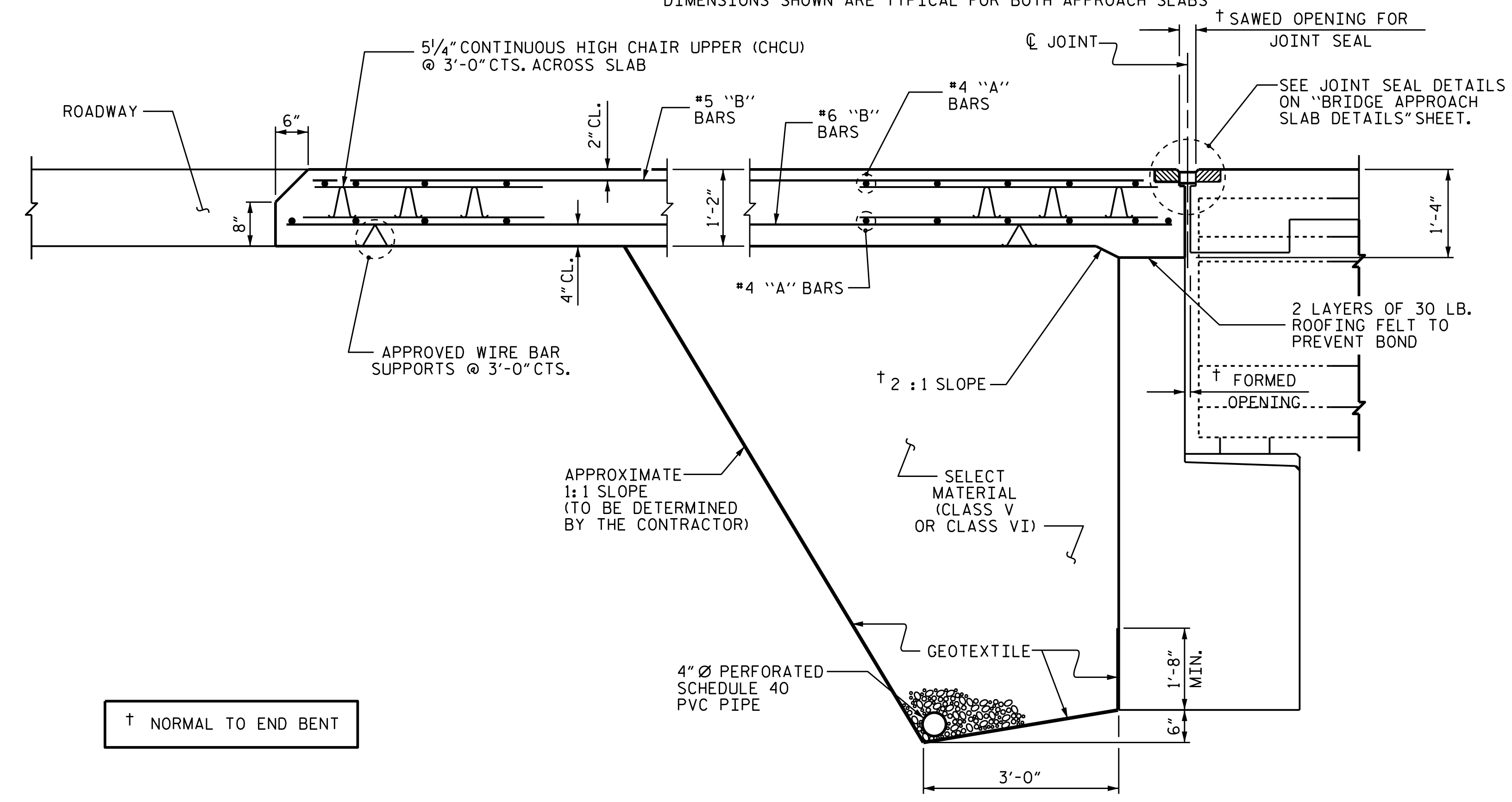
DRAWN BY : M. G. SHAIKH DATE : 06/2020
CHECKED BY : H. LOCKLEAR DATE : 06/2020
DESIGN ENGINEER OF RECORD : K. PUROHIT DATE : 11/2019

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-38
2			4			40

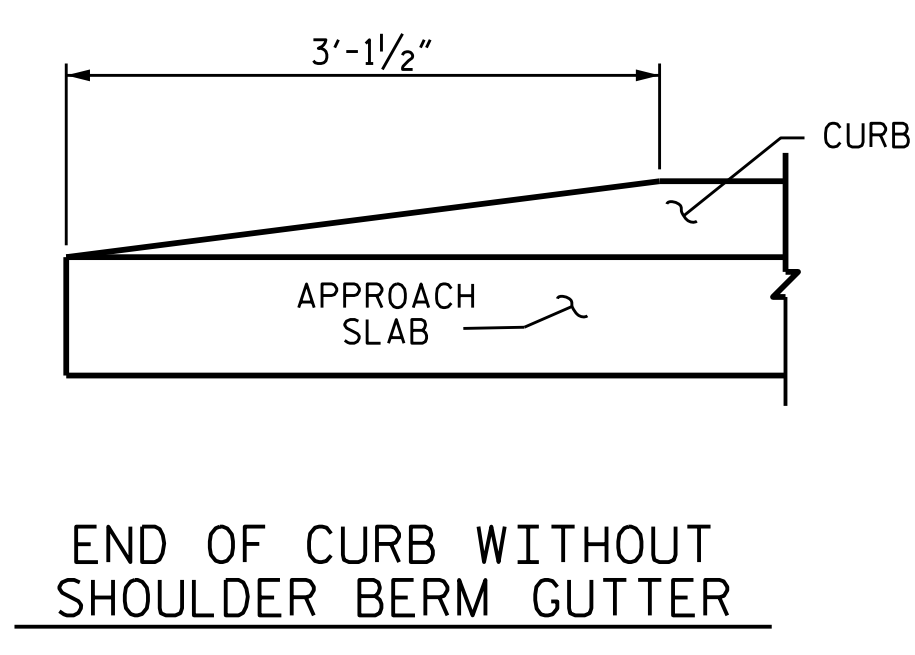
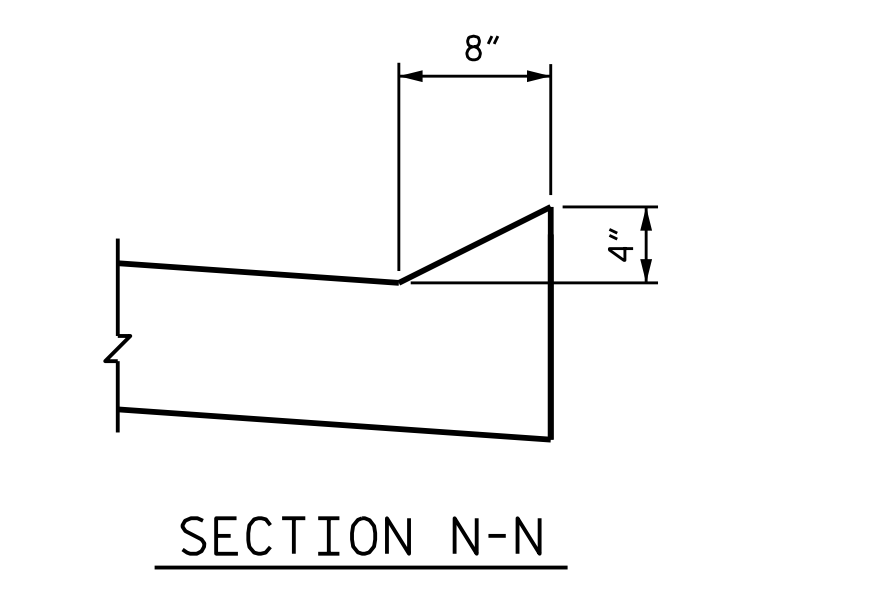


PLAN @ END BENT 1
 PLAN @ END BENT 2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
 (TYPE II - MODIFIED APPROACH FILL)

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



BILL OF MATERIAL FOR ONE APPROACH SLAB (2 REQ'D)											
STAGE I (2 REQ'D)					STAGE II (2 REQ'D)						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
* A1	16	#4	STR	20'-9"	222	* A3	16	#4	STR	17'-2"	183
A2	16	#4	STR	20'-5"	218	A4	16	#4	STR	17'-2"	183
* B1	37	#5	STR	14'-2"	547	* B3	35	#5	STR	14'-2"	517
B2	37	#6	STR	14'-8"	815	B4	35	#6	STR	14'-8"	771
REINFORCING STEEL					LBS.	REINFORCING STEEL					LBS.
* EPOXY COATED REINFORCING STEEL					LBS.	* EPOXY COATED REINFORCING STEEL					LBS.
CLASS AA CONCRETE					C. Y.	CLASS AA CONCRETE					C. Y.

NOTES

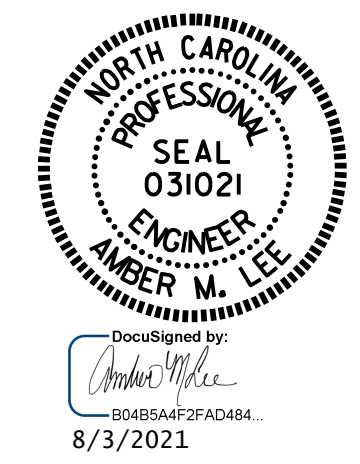
- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE I IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.
- FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

- WITH FOAM JOINT SEAL
- FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
- THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".
- FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

PROJECT NO. BR-0002
 ASHE COUNTY
 STATION: 23+80.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

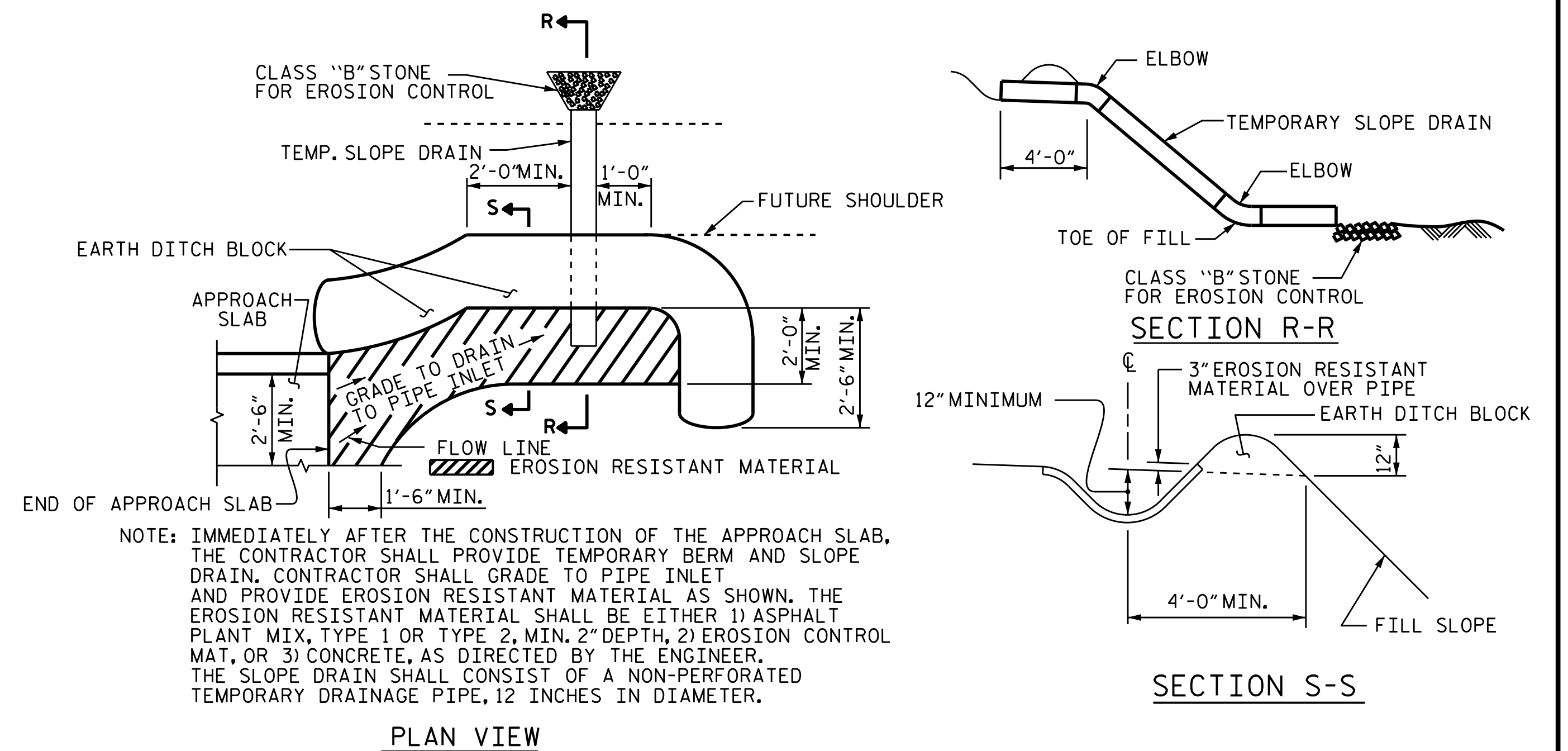
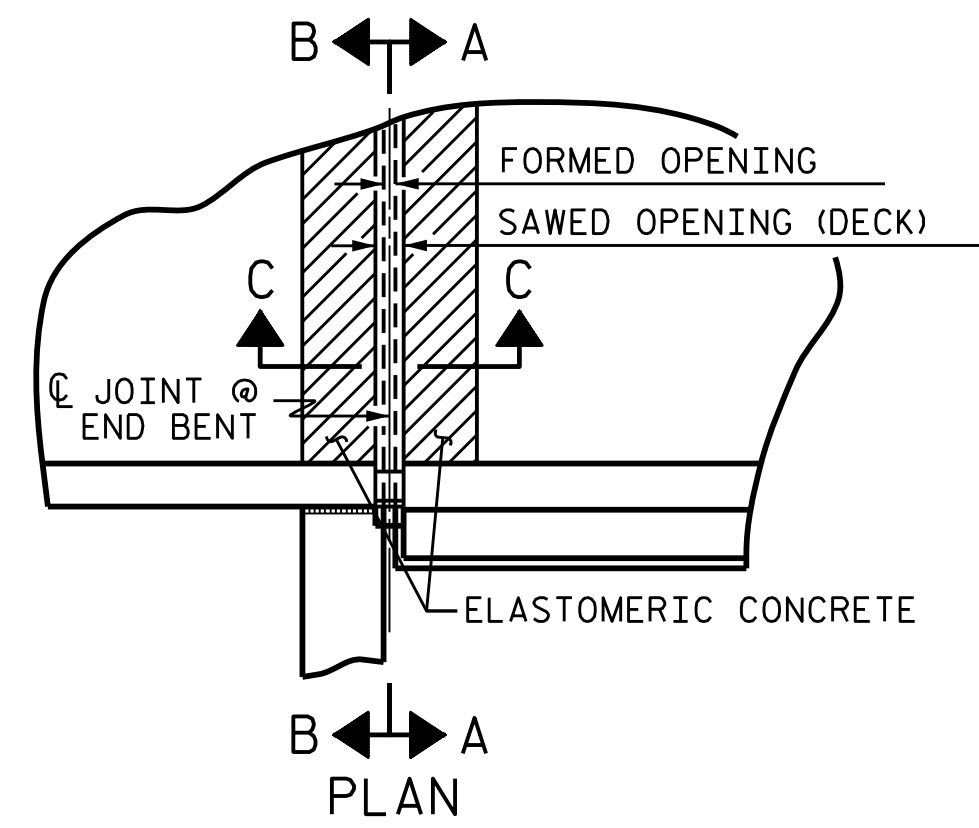
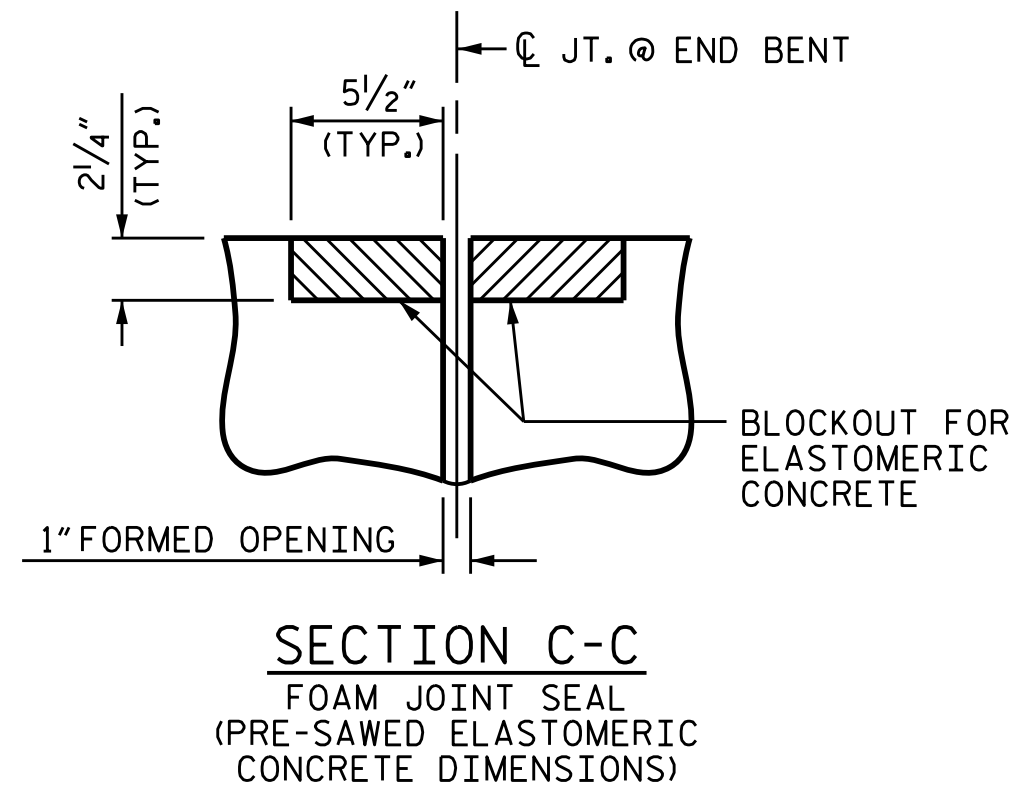


ASSEMBLED BY :	KOUCEKI	DATE :	06/2020
CHECKED BY :	H. LOCKLEAR	DATE :	06/2020
DRAWN BY :	EEM	REV. 6/13	MAA/GM
CHECKED BY :	VAP	REV. 12/17	MAA/THC
		REV. 06/19	BNB/THC

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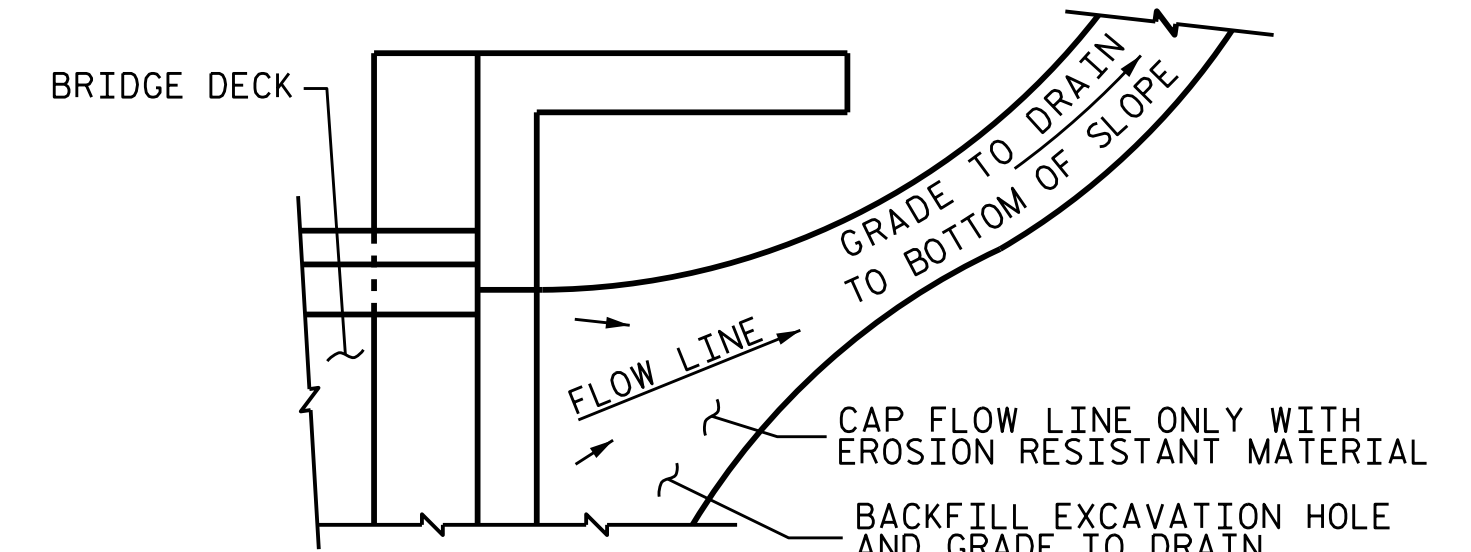
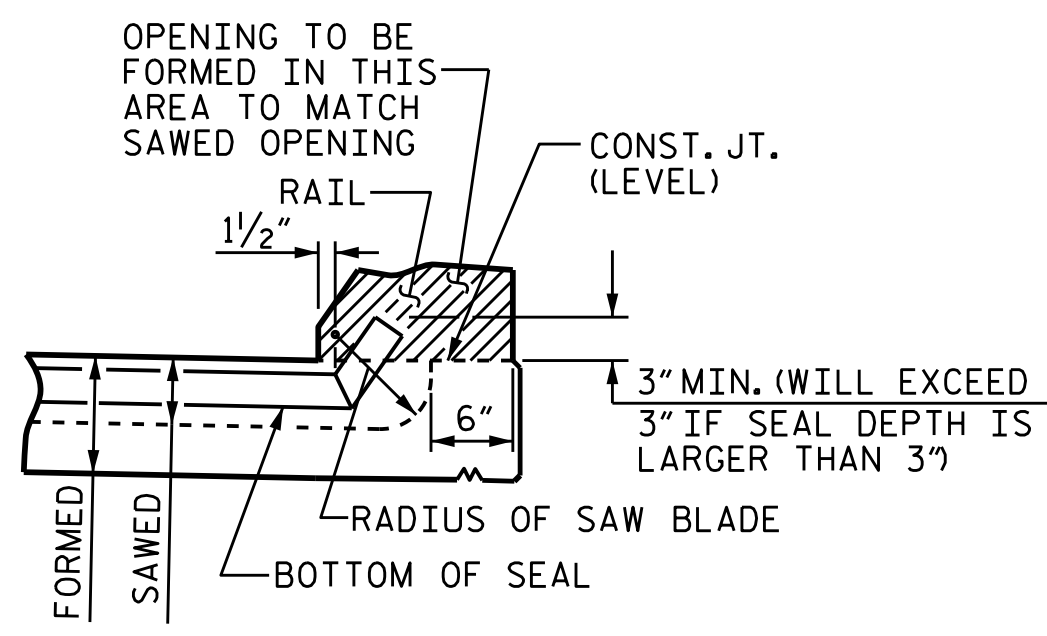
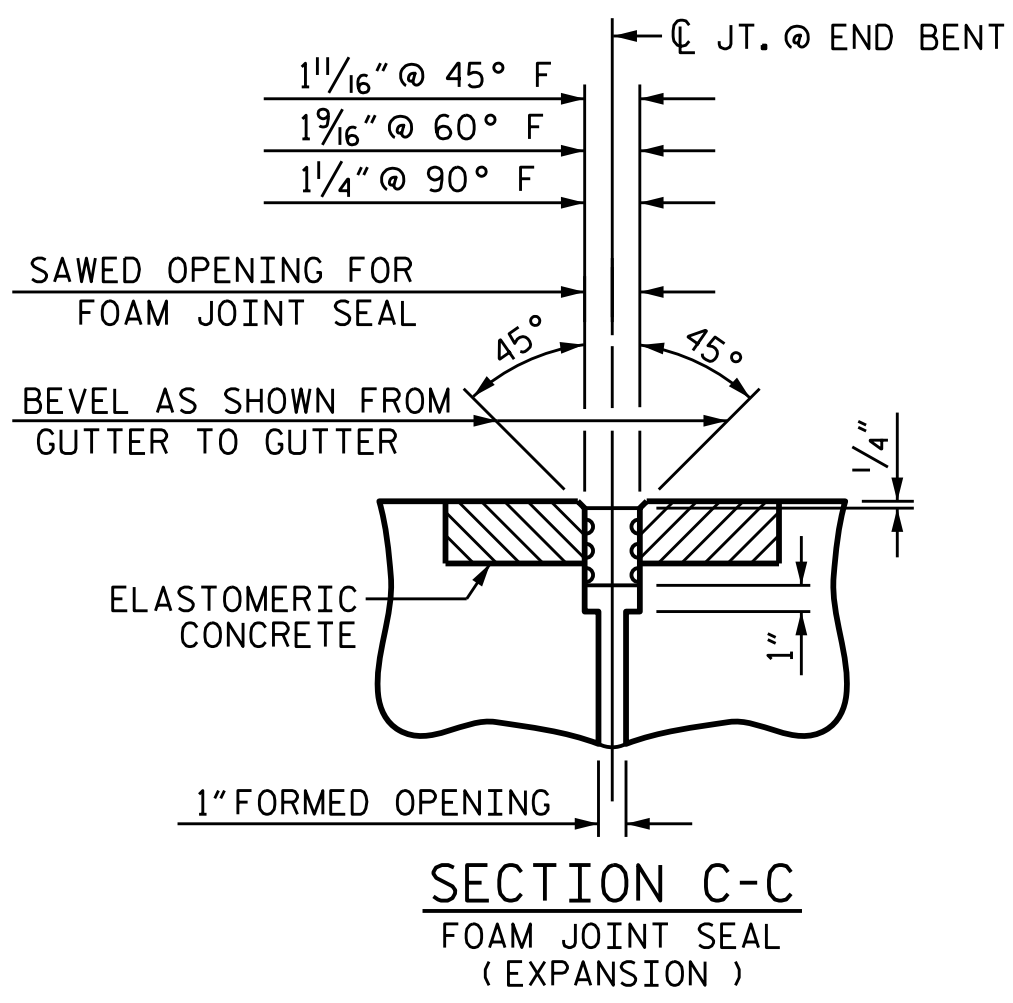
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2			4		

TOTAL SHEETS 40

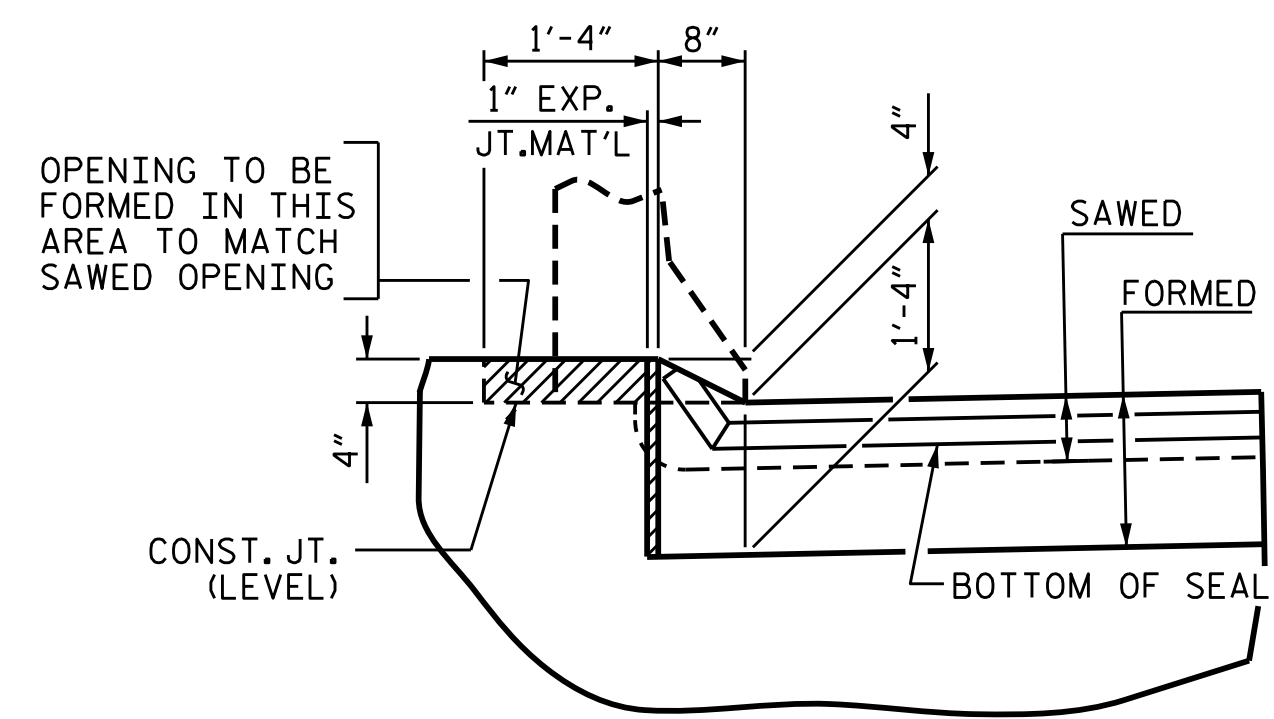


TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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



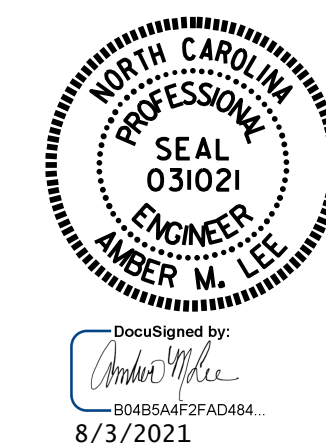
JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.02
2	6.02
TOTAL	12.04

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

ASSEMBLED BY :	KOUCHKI	DATE :	06/2020
CHECKED BY :	H. LOCKLEAR	DATE :	06/2020
DRAWN BY :	FCJ	REV. 6/13	MAA/GM
CHECKED BY :	ARB	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC



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PROJECT NO. BR-0002
ASHE COUNTY
 STATION: 23+80.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

NO.	REVISIONS		DATE	BY	DATE	SHEET NO.
	BY	DATE				
1						S-40
2						TOTAL SHEETS 40

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A $\frac{1}{4}$ " RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{1}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{1}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{1}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{1}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN